
Meridian 1

Upgrade system installation to X11 release 24

Upgrading to Meridian 1 system options

Document Number: 553-3001-258

Document Release: Standard 4.00

Date: June 1999

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Upgrading to Meridian 1 system options

Revision history

August 1996

Standard, release 1.00

October 1997

Standard, release 2.00. This document is reissued for technical content and to include information on the 68060 NT5D10 Call Processor and NT5D61 IODU/C cards.

April 1998

Standard, release 3.00. This document is reissued for technical content.

June 1999

Standard, release 4.00 This document is reissued for technical content and to include information on the 68060E NT5D03 Call Processor card.

Contents

General information	1
Upgrade strategy	1
Software Install Kit	2
Security device and keycode	3
NT5D03 Call Processor card	5
Upgrade strategy	7
Tools	8
Upgrade preparation	9
Terminal and modem connections	9
Module backplane connections	10
 Upgrades to Meridian 1 Option 51C	 13
Database conversion requirements	14
Upgrading ST and STE systems to option 51C	17
Equipment required	18
Upgrade preparation	23
Converting the customer database to release 24	24
Install the option 51C hardware	27
Transferring the database from 4 MB to IODU/C	29
Installing release 24 software	35
Converting the ST/STE system hardware	38
Completing the upgrade	42
Upgrading option 21/21E module to option 51C	43
Equipment required	43
Upgrade preparation	49

Converting the customer database to release 21	50
Installing option 51C hardware	53
Transferring the database from 4 MB to IODU/C	55
Installing release 24 software	63
Defining the option 51C system software	67
Moving the network cards	68
Moving the peripheral equipment cards	70
Installing external cables	70
Completing the upgrade	71
Upgrading option 21E card cage to option 51C	72
Equipment required	72
Upgrade preparation	78
Converting the customer database to release 21	80
Removing and installing the card cage	83
Transferring the database from 4 MB to IODU/C	95
Installing release 24 software	101
Completing the upgrade	104
Upgrading option 51 to option 51C	109
Equipment required	110
Upgrade preparation	112
Removing and installing the card cage	114
Transferring the database from 4 MB to IODU/C	126
Installing release 24 software	132
Completing the upgrade	135
Upgrades to Meridian 1 option 61C	139
Database conversion requirements	140
Upgrading ST and STE systems to option 61C	143
Equipment required	144
Upgrade preparation	148
Converting the customer database to release 21	150
Converting the SL-1 hardware	155
Installing external cables	156
Transferring the database from 4 MB to IODU/C	158
Installing release 24 software in Core/Net 1	163
Copying software and database to Core/Net 0	166

Returning the system to redundant mode	168
Moving the network cards	170
Upgrading an RT system to option 61C	173
Equipment required	174
Upgrade preparation	179
Converting the RT hardware	182
Installing external cables	183
Transferring the database from 4 MB to IODU/C	185
Installing release 24 software in Core/Net 1	190
Copying the software and database to Core/Net 0	193
Returning the system to redundant mode	195
Moving network cards	197
Completing the upgrade	198
Upgrading an NT system to option 61C	199
Equipment required	200
Upgrade preparation	205
Installing the connector housings	208
Converting the SL-1 hardware	209
Installing external cables	211
Transferring the database from 4 MB to IODU/C	213
Installing release 24 software in Core/Net 1	217
Copying the software and database to Core/Net 0	220
Returning the system to redundant mode	223
Moving network cards	225
Completing the upgrade	226
Upgrading option 21E to option 61C	228
Equipment required	229
Upgrade preparation	234
Converting the customer database to release 21	236
Converting the SL-1 hardware	241
Installing external cables	242
Transferring the database from 4 MB to IODU/C	244
Installing release 24 software in Core/Net 1	251
Copying the software and database to Core/Net 0	254
Returning the system to redundant mode	256
Moving network cards	258

Completing the upgrade	259
Upgrading option 51 to option 61C	261
Equipment required	261
Upgrade preparation	267
Converting the hardware	269
Installing external cables	270
Transferring the database from 4 MB to IODU/C	272
Installing release 24 software in Core/Net 1	277
Copying the software and database to Core/Net 0	279
Returning the system to redundant mode	281
Moving the network cards	283
Completing the upgrade	285
Upgrading option 61 to option 61C	286
Equipment required	287
Upgrade preparation	288
Installing the card cage	290
Transferring the database from 4 MB to IODU/C	301
Installing release 24 software in Core/Net 1	305
Installing intermodule cables	308
Copying the software and database to Core/Net 0	311
Returning the system to redundant mode	313
Completing the upgrade	315
Upgrading option 51C to option 61C	317
Equipment required	317
Upgrade preparation	324
Converting the database to release 24	327
Installing intermodule cables	329
Upgrading the software in Core/Net 0	331
Completing the upgrade	333
Upgrades to Meridian 1 option 81C	337
Upgrading option 61 to option 81C	341
Equipment required	344
Upgrade preparation	350
Installing new modules	351
Installing intermodule cables	353

Transferring the database from 4 MB to IODU/C	355
Installing release 24 software in Core/Net 1	360
Configuring the system	363
Installing Core/Net 0	366
Installing the IPE card cage	379
Copying the software and database to Core/Net 0	385
Completing the upgrade	387
Upgrading option 61C (NT9D11 card cage) to option 81C	390
Equipment required	391
Upgrade preparation	396
Installing new modules	397
Performing a data dump	402
Splitting the Cores	402
Installing intermodule cables	403
Transferring the customer database to 2MB diskettes	406
Converting the database to release 24	408
Configuring the new system	411
Installing the card cage in Core/Net 0	416
Copying software in Core/Net 0	436
Completing the upgrade	438
Upgrading option 61C (NT5D21 card cage) to option 81C	442
Equipment required	446
Upgrade preparation	451
Installing the new modules	452
Performing a data dump	454
Splitting the CPUs on the Option 61C	455
Transferring the customer database to 2MB diskettes	456
Converting the database to release 24	457
Configuring the system	460
Moving the clock controller cards	463
Copying software in Core/Net 0	470
Completing the upgrade	472
Option 71 card cage upgrade to option 81C	475
Equipment required	478
Upgrade preparation	480
Upgrading the CPU 1cardcage	487

Transferring the database to IODU/C	508
Installing release 24 software in Core/Net 1	513
Configuring the system	516
Upgrading CPU 0	523
Copying software and database to Core/Net 0	537
Completing the upgrade	540
Upgrades to Meridian 1 option 81C	545
Option 81 card cage upgrade to Option 81C	545
Equipment required	547
Upgrade preparation	549
Splitting the Cores	555
Upgrading Core 1	556
Converting the customer database to release 24	576
Configuring the system	579
Upgrading Core 0	587
Copying software in Core/Net 0 with IODU/C	600
Completing the upgrade	602
XT and Option 71 Core/Net module upgrade to Option 81C	608
Equipment required	612
Upgrade planning	617
Upgrade preparation	621
Installing intermodule cables and connector housings	628
Preparing the new column(s)	642
Transferring call processing to CPU 0 in XT and option 71	653
Transferring the database from 4 MB to IODU/C	656
Installing release 24 software in Core/Net 1	661
Configuring the system	664
Transferring call processing to Core/Net 1	669
Upgrading the software and ROMs on Core/Net 0	671
Completing the upgrade	678
XT Core/Net and Network module upgrade to Option 81C	686
Equipment required	689
Upgrade planning	694
Upgrade preparation	696
Core/Net and Network module installation	698

Transferring the database from 4 MB to IODU/C	701
Installing release 24 software in Core/Net 1	707
Configuring the system	710
Upgrading the software and ROMs in Core/Net 0	714
Testing the Cores	717
Installing network-to-PE cabling and connector housings	719
Installing external cables and connector housings	723
Transferring service to the Option 81C	734
Completing the upgrade	743
Database transfer	745
Database transfer for option 21E, 51, 61, 71, STE, NT, and XT systems	746
Using the Database Transfer Utility	746
Using the direct cabling method	748
Database transfer for option 51C, 61C, 81, and 81C systems	755
Using the Database Transfer Utility	755
Using the Copy database command	756
Databases on X11 release 16 G (Phase 7)	758
Upgrading to a new Call Processor card	761
Upgrading to a new CP card in Options 61C, 81, or 81C	762
Performing a data dump	762
Splitting the cores	763
Upgrading Core 1	764
Upgrading Core 0	767
Completing the upgrade	770
Backing out of the CP card upgrade	771
Upgrading to a new CP card in an Option 51C	773
Performing a data dump	774
Installing the new NT5D03 CP card and release 24 software	774
Completing the upgrade	777
Upgrading to a new CP card in Options 61C, 81, or 81C with IODU/C	778
Performing a data dump	778
Splitting the cores	779
Upgrading Core 1	780
Upgrading Core 0	784

Completing the upgrade	788
Upgrading to a new CP card in an Option 51C with IODU/C	790
Performing a data dump	790
Installing the new CP card and release 24 software	791
Completing the upgrade	794
System monitor upgrade installation	797
System monitoring in NT/XT systems and	
QCA60-type cabinets	799
System monitoring in ST and RT systems	806
Configuration 1—ST system with QCA136 and PE Module	809
Configuration 2—ST system with QCA136 and CE/PE Module ..	813
Configuration 3—ST/RT system with QCA137 and CE/PE Module	820
Configuration 4—ST system with QCA136, QCA137, and	
PE Module	824
Configuration 5—ST system with QCA136, QCA137, and	
CE/PE Module	829
Configuration 6—RT system with QCA147 and PE Module	838
Configuration 7—RT system with QCA147 and CE/PE Module .	842
Configuration 8—RT system with QCA147, QCA137, and	
PE Module	847
Configuration 9—RT system with QCA147, QCA137, and	
CE/PE Module	853
Configuration 10—RT system with two QCA137s and	
CE/PE Module	860
Configuration 11—RT system with QCA147, two QCA137s, and	
PE Module	865
Configuration 12—RT system with QCA147, two QCA137s, and	
CE/PE Module	871
Ground package installation	879
Installing Ground Package P0677580	879
Installing Ground Package P0677587	882
Installing Ground Package P0677588	885

Network hybrid installation	889
Removing the BTUs	890
Installing the Network Hybrids	892
Using the Extraction Tool	895
 Core Module upgrades using NTND33BB/BC/BD cable kits	 897
Installing NTND33Bx cable kits	897
Labelling cables	899
Assembling and mounting connector housings	908
Preparing the Core Module columns	913
Connecting intercabinet cables	920
 Terminal and modem connections	 927
Options 51C, 61C, 81, and 81C terminal and modem connections	934
Configuring an A0638930 Motorola 28.8 Data/Fax Modem	943
Configuring an A0381391 UDS FastTalk modem	946
Connecting a modem to an SDI port	948
Connecting a modem to a switch box and CPSI and SDI ports ...	950
 Troubleshooting	 955
Troubleshooting procedures	955

List of figures

Figure 1	
Meridian 1 option 51C	28
Figure 2	
Location of NT5D54 cable on IODU/C card	30
Figure 3	
Cabling the MDU to the IODU/C card	32
Figure 4	
IODU/C and MDU cabled in Core/Net 1	32
Figure 5	
Meridian 1 option 51C	54
Figure 6	
Location of NT5D54 cable on IODU/C card	58
Figure 7	
Cabling the MDU to the IODU/C card	60
Figure 8	
IODU/C and MDU cabled in Core/Net 1	60
Figure 9	
Meridian 1 option 51C	79
Figure 10	
Location of the trim panels	83
Figure 11	
Power connectors on the rear of the AC CE/PE module backplane ..	84
Figure 12	
Location of the screws for the Module Power Distribution Unit (MPDU)	86

Figure 13	
Location of the jumper on the NT5D21 backplane	87
Figure 14	
Power connectors on the rear of the NT5D21 Core/Network Module	88
Figure 15	
Positioning the extraction tool and caution labels	90
Figure 16	
NT5D21 Core/Network Module (rear)—RS-232 cable connections for CPSI ports	93
Figure 17	
Location of NT5D54 cable on IODU/C card	96
Figure 18	
Cabling the MDU to the IODU/C card	98
Figure 19	
IODU/C and MDU cabled in Core/Net 1	98
Figure 20	
Meridian 1 option 51C	111
Figure 21	
Location of the trim panels	114
Figure 22	
Power connectors on the rear of the CPU/Network module backplane	115
Figure 23	
Location of the screws for the Module Power Distribution Unit (MPDU)	117
Figure 24	
Location of the jumper on the NT5D21 backplane	118
Figure 25	
Power connectors on the rear of the NT5D21 Core/Network module	120
Figure 26	
Positioning the extraction tool and caution labels	121
Figure 27	
NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports	124

Figure 28	
Location of NT5D54 cable on IODU/C card	127
Figure 29	
Cabling the MDU to the IODU/C card	129
Figure 30	
IODU/C and MDU cabled in Core/Net 1	129
Figure 31	
Meridian 1 option 61C	149
Figure 32	
Cabling the MDU to the IODU/C card	160
Figure 33	
Meridian 1 option 61C	180
Figure 34	
Cabling the MDU to the IODU/C card	187
Figure 35	
Meridian 1 option 61C	206
Figure 36	
Cabling the MDU to the IODU/C card	215
Figure 37	
Meridian 1 option 61C	235
Figure 38	
Cabling the MDU to the IODU/C card	247
Figure 39	
Meridian 1 option 61C	268
Figure 40	
Cabling the MDU to the IODU/C card	274
Figure 41	
Location of the trim panels	290
Figure 42	
Power connectors on the rear of the CPU/Network module backplanes	292
Figure 43	
Location of the screws for the Module Power Distribution Unit (MPDU)	293

Figure 44	
Location of the jumper on the NT5D21 backplane	294
Figure 45	
Power connectors on the rear of the NT5D21 Core/Network module	296
Figure 46	
Positioning the extraction tool and caution labels	297
Figure 47	
Cabling the MDU to the IODU/C card	303
Figure 48	
NT5D21 Core/Net module (rear)—NTND13 and NTND11 cables . .	308
Figure 49	
NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports	309
Figure 50	
NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables	331
Figure 51	
Upgrade from Option 61 to Option 81C	342
Figure 52	
Meridian 1 Option 81C	343
Figure 53	
Cabling the MDU to the IODU/C card	357
Figure 54	
Location of the trim panels	366
Figure 55	
Power connectors on the rear of the NT6D39 CPU/Network module backplanes	368
Figure 56	
Location of the screws for the Module Power Distribution Unit (MPDU)	369
Figure 57	
Location of the jumper on the NT5D21 Core/Net backplane	370

Figure 58	
Power connectors on the rear of the NT5D21 Core/Network module .	372
Figure 59	
Positioning the extraction tool and caution labels	373
Figure 60	
NT5D21 Core/Net module (rear)—NT7D90, NTND13, and NTND11 cables	375
Figure 61	
QPC412 IGS card cable assignments to the InterGroup module	376
Figure 62	
NT5D21 Core/Net module (rear)—backplane connections for CNI slots	378
Figure 63	
NT8D37 backplane cable designations for 12-cable configuration . . .	383
Figure 64	
NT8D37 IPE Module I/O panels for 12-cable configuration	384
Figure 65	
Upgrade from Option 61C (NT9D11) to Option 81C	400
Figure 66	
Meridian 1 Option 81C	401
Figure 67	
QPC412 IGS card cable assignments to the InterGroup module	405
Figure 68	
NT5D21 Core/Net module (rear)—backplane connections for CNI slots	407
Figure 69	
Location of the trim panels	417
Figure 70	
Power connectors on the rear of the NT9D11 Core/Net module backplane	419
Figure 71	
Location of the screws for the Module Power Distribution Unit (MPDU)	420
Figure 72	
Location of the jumper on the NT5D21 backplane	421

Figure 73	
NT5D21 Core/Net module (rear)—IOP to IOP and CP to CP cables .	423
Figure 74	
NT5D21 Core/Net module (rear)—RS-232 cable connections for CPSI ports	424
Figure 75	
NT5D21 Core/Network Module location of D and E connectors (rear view)	425
Figure 76	
QPC412 IGS card cable assignments to the InterGroup module	428
Figure 77	
Power connections on the rear of the NT9D11 Core/Net module backplane	430
Figure 78	
NT8D37 backplane cable designations for 12-cable configuration . . .	432
Figure 79	
NT8D37 IPE Module I/O panels for 12-cable configuration	433
Figure 80	
Positioning the extraction tool and caution labels	434
Figure 81	
Upgrade from Option 61C to Option 81C	443
Figure 82	
Alternate upgrade from Option 61C to Option 81C	444
Figure 83	
Meridian 1 Option 61C upgraded to Option 81C	445
Figure 84	
QPC412 IGS card cable assignments to the InterGroup module	464
Figure 85	
NT5D21 Core/Net 1 (rear)—backplane connections for CNI slots . .	466
Figure 86	
QPC412 IGS card cable assignments to the InterGroup module	468
Figure 87	
NT5D21 Core/Net 0 (rear)—backplane connections for CNI slots . .	469

Figure 88	
Upgrade from Option 71 to Option 81C	477
Figure 89	
Location of the trim panels	492
Figure 90	
Power connectors on the rear of the NT8D34 CPU module backplane	494
Figure 91	
Location of the screws for the MPDU	495
Figure 92	
Power connections on the rear of the NT5D21 Core/Net module backplane	497
Figure 93	
Positioning the extraction tool and caution labels	498
Figure 94	
NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 71 to 81C	504
Figure 95	
NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections	505
Figure 96	
Clock controller card connections for network group x, shelf 1	507
Figure 97	
Cabling the MDU to the IODU/C card	510
Figure 98	
NT5D21 Core/Network module; location of D and E connectors (rear view)	533
Figure 99	
NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables ..	534
Figure 100	
Controller card connections for network group x, shelf 0	536
Figure 101	
Upgrade from Option 81 to Option 81C	546

Figure 102	
Location of the trim panels	558
Figure 103	
Power connectors on the rear of the NT6D60 Core module backplane	559
Figure 104	
Location of the screws for the MPDU	560
Figure 105	
Location of the backplane jumper	562
Figure 106	
Power connections on the rear of the NT5D21 Core/Net module backplane	563
Figure 107	
Positioning the extraction tool and caution labels	565
Figure 108	
QPC412 IGS card cable assignments to the InterGroup module	569
Figure 109	
NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C	572
Figure 110	
NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections	573
Figure 111	
Clock controller card connections for network group x, shelf 1	574
Figure 112	
QPC412 IGS card cable assignments to the InterGroup module	594
Figure 113	
NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C	597
Figure 114	
NT5D21 Core/Network module; location of D and E connectors (rear view)	598
Figure 115	
Clock Controller card connections for network group x, shelf 0	599

Figure 116	
NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables . .	603
Figure 117	
Core/Net module upgrade, multi-column installation	610
Figure 118	
Core/Net module upgrade, single-column installation	611
Figure 119	
Cabling path for cables labeled CPU0-CNI-12A to 3PE-GRP0/0-J3 .	620
Figure 120	
NTND33CD Group 0 cable paths	629
Figure 121	
NTND33CC Group 1 and Group 2 cable paths	632
Figure 122	
NTND33CC Groups 3 and 4 cable paths	635
Figure 123	
Possible mounting locations for connector housing	637
Figure 124	
Connector positions on the connector bracket	640
Figure 125	
NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables	644
Figure 126	
Group 0 cables connecting to the connector bracket	648
Figure 127	
Group 1 and 2 cables connecting to the connector bracket	650
Figure 128	
Groups 3 and 4 cables connecting to the connector bracket	652
Figure 129	
Cabling the MDU to the IODU/C card	658
Figure 130	
Power monitor and SDI connections in the QCA55 cabinet	679

Figure 131	
System monitor and SDI filter adapter connections in dual-column installations	680
Figure 132	
System monitor and SDI filter adapter connections in single-column installations	681
Figure 133	
System monitor and SDI connections between XT/71 and Core/Net modules in dual-column installations	682
Figure 134	
System monitor and SDI connections between XT/71 and Core/Net modules in single-column installations	683
Figure 135	
System monitor cross-connections at the MDF	684
Figure 136	
Upgrade from an XT system to an Option 81C	687
Figure 137	
Cabling the MDU to the IODU/C card	703
Figure 138	
Cabling path for network-to-PE connections	720
Figure 139	
Connector housing positions	722
Figure 140	
P0696547 Connector Housing—rectangular access opening	725
Figure 141	
P0696547 Connector Housing—round access openings	726
Figure 142	
P0702380 Connector Housing	728
Figure 143	
Adapter plate mounting bracket for PRI/DTI connectors	729
Figure 144	
P0703905/P0703906 Connector Housing Unit	731

Figure 145	
P0704511 Connector Housing Package	733
Figure 146	
Location of NT5D54 cable on IODU/C card	749
Figure 147	
Option 51C 2-pin jumper location on MDU card	751
Figure 148	
Cabling the MDU to the IODU/C card	752
Figure 149	
IODU/C and MDU cabled in Core/Net 1	752
Figure 150	
Common equipment in existing cabinet equipped with a QPC84 Power Monitor	801
Figure 151	
Common equipment in existing cabinet equipped with a QPC173 Power Monitor	802
Figure 152	
NT8D46AD cable connections	803
Figure 153	
Common equipment in module and existing cabinets equipped with QPC84 Power Monitors	805
Figure 154	
Connecting system monitor—Configuration 1	809
Figure 155	
Connecting system monitor—Configuration 2	813
Figure 156	
NT8D46AT cable field wiring connections	816
Figure 157	
Connecting system monitor—Configuration 3	820
Figure 158	
Connecting system monitor—Configuration 4	824
Figure 159	
Connecting system monitor—Configuration 5	829

Figure 160	
NT8D46AT cable field wiring connections	832
Figure 161	
Connecting system monitor—Configuration 6	838
Figure 162	
Connecting system monitor—Configuration 7	842
Figure 163	
Connecting system monitor—Configuration 8	847
Figure 164	
Connecting system monitor—Configuration 9	853
Figure 165	
Connecting system monitor—Configuration 10	860
Figure 166	
Connecting system monitor—Configuration 11	865
Figure 167	
Connecting system monitor—Configuration 12	871
Figure 168	
Ground Package P0677580	881
Figure 169	
Installing Ground Package P0677587	883
Figure 170	
Installing Ground Package P0677588	886
Figure 171	
BTU and Network Hybrid Locations	891
Figure 172	
Installing the Network Hybrids	893
Figure 173	
Extraction Tool	896
Figure 174	
Cabling path for cables labeled CPU0-CNI-8D to 3PE-GRP0/0-J3 . .	898
Figure 175	
NTND33BB Group 0 cable paths	901

Figure 176	
NTND33BC Group 1 and Group 2 cable paths	904
Figure 177	
NTND33BD Group 3 and Group 4 cable paths	907
Figure 178	
Group 0 connector housing positions—inside of housing	909
Figure 179	
Group 1 and Group 2 (or Group 3 and Group 4) connector housing positions—inside of housing	911
Figure 180	
NT6D60 Core Module (rear)—connections for NTND13 and NTND11 cables	915
Figure 181	
Group 0 cables from the outside of the connector housing	922
Figure 182	
Groups 1 and 2 cables from the outside of the connector housing . . .	924
Figure 183	
Groups 3 and 4 cables from the outside of the connector housing . . .	926
Figure 184	
Terminal connection diagram	927
Figure 185	
Ports and switches on the NT8D41 SDI Paddle Board	930
Figure 186	
Switch locations on the NTND02 MSPS Card	931
Figure 187	
Cabling diagram for the NT8D41 SDI Paddle Board	932
Figure 188	
Cabling diagram for the NTND02 MSPS Card	933
Figure 189	
Cabling diagram for the QPC841 Four-Port SDI Card	933
Figure 190	
One terminal for the CPSI ports	936

Figure 191	
One terminal and a switch box to two CPSI ports	938
Figure 192	
One terminal and a switch box to the SDI and CPSI ports	940
Figure 193	
Modem to SDI port	949
Figure 194	
Modem to a switch box and SDI and CPSI ports (dual-column systems)	952
Figure 195	
Modem to a switch box and SDI and CPSI ports (single-column systems)	953

List of tables

Table 1	
Contents of the Software Install Kit	3
Table 2	
Contents of the Security Device Kit	4
Table 3	
Release 24 call processor and memory configurations	5
Table 4	
List of recommended tools	8
Table 5	
Database conversion requirements, STE to option 51C	14
Table 6	
Database conversion requirements, option 21/21E to option 51C (Part 1 of 2)	15
Table 7	
Database conversion requirements, option 51 upgrade to option 51C	16
Table 8	
Hardware requirements for an AC-powered option 51C (Part 1 of 2)	19
Table 9	
Hardware requirements for a DC-powered option 51C (Part 1 of 2) .	21
Table 10	
Database conversion steps	24
Table 11	
Hardware requirements for an AC-powered option 51C (Part 1 of 2)	45

Table 12	
Hardware requirements for a DC-powered option 51C (Part 1 of 2) .	47
Table 13	
Hardware requirements for an AC-powered option 51C (Part 1 of 2)	74
Table 14	
Hardware requirements for a DC-powered option 51C (Part 1 of 2) .	76
Table 15	
QPC441F 3PE Card—Option settings	91
Table 16	
QPC471 Clock Controller Card switch settings	92
Table 17	
Slot number translation for network cards	92
Table 18	
Hardware required to upgrade an option 51 system to option 51C ...	110
Table 19	
QPC441F 3PE card—option settings	122
Table 20	
QPC471 Clock Controller card switch settings	123
Table 21	
Database conversion requirements, STE to option 61C	140
Table 22	
Database conversion requirements, RT system upgrade to option 61C	141
Table 23	
Database conversion requirements, NT system upgrade to option 61C	141
Table 24	
Database conversion requirements, option 61 upgrade to option 61C	142
Table 25	
Database conversion requirements, option 51C to option 61C	142
Table 26	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	144
Table 27	
Hardware requirements for a DC-powered option 61C (Part 1 of 2) .	146

Table 28	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	175
Table 29	
Hardware requirements for a DC-powered option 61C (Part 1 of 2)	177
Table 30	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	201
Table 31	
Hardware requirements for a DC-powered option 61C (Part 1 of 2)	203
Table 32	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	230
Table 33	
Hardware requirements for a DC-powered option 61C (Part 1 of 2)	232
Table 34	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	263
Table 35	
Hardware requirements for a DC-powered option 61C (Part 1 of 2)	265
Table 36	
Hardware required to upgrade an option 61 system to option 61C ...	287
Table 37	
Backplane jumper settings for NT5D21 Core/Network module	294
Table 38	
QPC441F 3PE card—option settings	299
Table 39	
Slot number translation for network cards	300
Table 40	
Hardware requirements for an AC-powered option 61C (Part 1 of 2)	319
Table 41	
Hardware requirements for a DC-powered option 61C (Part 1 of 3)	321
Table 42	
Database conversion requirements, option 61 upgrade to option 81C	338

Table 43	
Database conversion requirements, option 61C (with NT9D11/NT5D21 card cage) upgrade to option 81C	338
Table 44	
Database conversion requirements, option 71 upgrade to option 81C	339
Table 45	
Database conversion requirements, option 81 upgrade to option 81C	340
Table 46	
Database conversion requirements, XT/71 upgrade to option 81C	340
Table 47	
Hardware requirements for an AC-powered Option 81C (Part 1 of 3)	344
Table 48	
Hardware requirements for a DC-powered Option 81C (Part 1 of 3)	347
Table 49	
Switch settings for clock controller card 1	353
Table 50	
Switch settings for clock controller card 0	354
Table 51	
Typical CNI configurations for an Option 81C	364
Table 52	
QPC441F 3PE card—switch settings	374
Table 53	
Slot number translation for network cards	374
Table 54	
CNI to 3PE NTND14 cable connections for Core/Net 1	377
Table 55	
NT8D37 cable connections for 16-cable configuration	382
Table 56	
Hardware requirements for an AC-powered Option 81C (Part 1 of 2)	392
Table 57	
Hardware requirements for a DC-powered Option 81C (Part 1 of 2)	394

Table 58	
QPC441 3PE card switch settings for Network shelf 1 modules	398
Table 59	
QPC441 3PE card switch settings for Network shelf 0 modules	399
Table 60	
Switch settings for clock controller card 1	404
Table 61	
CNI port to 3PE NTND14 cable connections for Core/Net 1	406
Table 62	
Typical CNI configurations for an Option 81C	413
Table 63	
Switch settings for clock controller card 0	415
Table 64	
CNI port to 3PE NTND14 cable connections for Core/Net 0	426
Table 65	
QPC441F 3PE card switch settings for Group 0, Core/Net 0	427
Table 66	
NT8D37 cable connections for 16-cable configuration	432
Table 67	
Hardware requirements for an AC-powered Option 81C (Part 1 of 2)	447
Table 68	
Hardware requirements for a DC-powered Option 81C (Part 1 of 2) .	449
Table 69	
QPC441 3PE card switch settings for Network shelf 1 modules	453
Table 70	
QPC441 3PE card switch settings for Network shelf 0 modules	454
Table 71	
Typical CNI configurations for Option 61C upgrade to Option 81C .	461
Table 72	
Switch settings for Option 81C clock controller card 1	464
Table 73	
CNI to 3PE NTND14 cable connections for Core/Net 1	465

Table 74	
Switch settings for Option 81C clock controller card 0	467
Table 75	
CNI to 3PE NTND14 cable connections for Core/Net 0	469
Table 76	
Option 81C card vintages	475
Table 77	
Hardware requirements for an AC- or DC-powered Option 81C (Part 1 of 2)	478
Table 78	
NTND14 Core/Net 1-to-CNI cable label assignments	481
Table 79	
NTND14 Core/Net 0-to-CNI cable label assignments	482
Table 80	
Clock controller card switch settings for Option 71	484
Table 81	
Backplane jumper settings for NT5D21 Core/Network module	495
Table 82	
Switch settings for Option 81C clock controller card 1	500
Table 83	
QPC441F 3PE card switch settings for Core/Net 1	501
Table 84	
QPC441 3PE card switch settings for Network shelf 1 modules	502
Table 85	
CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 71 to 81C	503
Table 86	
Option 81C CNI network group default configuration	516
Table 87	
Option 81C CNI network group configuration worksheet	517
Table 88	
Backplane jumper settings for NT5D21 Core/Network module	526

Table 89	
QPC441F 3PE card switch settings for Core/Net 0	529
Table 90	
Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules	530
Table 91	
Clock controller card 0 switch settings	530
Table 92	
CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 71 to 81C	532
Table 93	
Hardware requirements for an AC- or DC-powered Option 81C	548
Table 94	
NTND14 Core/Net 1-to-CNI cable label assignments	550
Table 95	
NTND14 Core/Net 0-to-CNI cable label assignments	551
Table 96	
QPC441F 3PE card switch settings for Core/Net 1	567
Table 97	
QPC441 3PE card switch settings for Network shelf 1 modules	568
Table 98	
Switch settings for Option 81C clock controller card 1	569
Table 99	
CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 81 to 81C	571
Table 100	
Typical option 81 CNI network group configuration	580
Table 101	
Option 81C CNI network group default configuration	580
Table 102	
Option 81C CNI network group configuration worksheet	581
Table 103	
QPC441F 3PE card switch settings for Core/Net 0	592

Table 104	
QPC441 3PE card switch settings for Network shelf 0 modules	593
Table 105	
Clock controller card 0 switch settings	594
Table 106	
CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 81 to 81C	596
Table 107	
Hardware requirements for an AC-powered Option 81C (Part 1 of 3)	612
Table 108	
Hardware requirements for a DC-powered Option 81C (Part 1 of 3) .	614
Table 109	
Clock controller card switch settings for XT/71	623
Table 110	
Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 1 modules	626
Table 111	
Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules	627
Table 112	
NTND33CD Group 0 cable labels	628
Table 113	
NTND33CC Groups 1 and 2 cable labels (Part 1 of 2)	630
Table 114	
NTND33CC Groups 3 and 4 cable labels (Part 1 of 2)	633
Table 115	
Group 0 internal cabinet cables	640
Table 116	
Group 1 and Group 2 internal cabinet cables	641
Table 118	
NTND94DA cable connections on the Core/Net I/O panels	645
Table 119	
Group 0 intercabinet cables	647

Table 120	
Groups 1 and 2 intercabinet cables	649
Table 121	
Group 3 and Group 4 intercabinet cables	651
Table 122	
Typical CNI configurations	664
Table 123	
Clock controller card 1 switch settings	667
Table 124	
Network Shelf 1: NTND95AA cable connections to 3PE cards	668
Table 125	
Clock controller card 0 switch settings	673
Table 126	
Network Shelf 0: NTND95AA cable connections to 3PE cards	674
Table 127	
Hardware requirements for a AC-powered Option 81C (Part 1 of 3)	689
Table 128	
Hardware requirements for an DC-powered Option 81C (Part 1 of 3)	691
Table 129	
QPC441F 3PE card switch settings for Core/Net 1	699
Table 130	
QPC441F 3PE card switch settings for Core/Net 0	699
Table 131	
Option 81C CNI network group default configuration	710
Table 132	
Option 81C CNI network group configuration worksheet	711
Table 133	
Clock controller card 1 switch settings	735
Table 134	
Clock controller card 0 switch settings	736
Table 135	
Card placement in Option 81C	737

Table 136	
Clock controller card 1 switch settings	739
Table 137	
Clock controller card 0 switch settings	740
Table 138	
Card placement in Option 81C	741
Table 139	
SW1 system monitor switch settings for system upgrades (Part 1 of 2)	797
Table 140	
Hardware requirements (Part 1 of 3)	806
Table 141	
NTND33BB Group 0 cable labels (Part 1 of 2)	899
Table 142	
NTND33BC Group 1 and Group 2 cable labels (Part 1 of 2)	902
Table 143	
NTND33BD Group 3 and Group 4 cable labels (Part 1 of 2)	905
Table 144	
Group 0 cables to the inside of the connector housing	909
Table 145	
Group 1 and Group 2 cables to the inside of the connector housing ..	910
Table 146	
Group 3 and Group 4 cables to the inside of the connector housing ..	912
Table 147	
Group 0 connections on the left I/O panel: NTND94CA cables	917
Table 148	
Group 1 connections on the left I/O panel: NTND94CA cables	918
Table 149	
Group 2, 3, and 4 connections on the right I/O panel: NTND94CA cables	920
Table 150	
Group 0 intercabinet cables	921

Table 151
Groups 1 and 2 intercabinet cables 923

Table 152
Group 3 and Group 4 intercabinet cables 925

General information

This document describes how to upgrade SL-1 and Meridian 1 systems running X11 release 19 or higher software and hardware to X11 release 24. When upgrading a system to release 24, in addition to this document, refer to the following documents:

- *Meridian 1 system installation procedures* (553-3001-210)
- *Software conversion procedures* (553-2001-320)
- *Upgrade engineering* (553-3001-150)
- *Circuit card installation and testing* (553-3001-211)
- *Disk drive upgrade procedures* (553-3001-251)
- *Upgrade system installation through X11 release 21* (553-3001-250)
- *X11 input/output guide*
- *X11 features and services*
- *NT5D61 IODU/C reference guide*

Upgrade strategy

X11 release 24 supports Automatic Inline Conversion from X11 release 19 and later in system options 51C, 61C, and 81C.

When upgrading your system, the hardware upgrade and software conversion path you follow depends on the system type you are upgrading from and its current software release.

The upgrade strategy for most system types is to upgrade to the target system at the first release the target system is available.

This upgrade strategy is modified for the following upgrades to options 51C and 61C:

- For STE and option 21E systems at release 20 and earlier, the upgrade strategy is to remain on the current system and convert the database directly to release 21. The hardware upgrade to option 51C or 61C is performed as part of the software upgrade to release 24. This eliminates the requirement of interim hardware.

If the customer database is release 17 or earlier, additional equipment is required for the conversion and must be ordered separately. You can convert it on-site, or send it to Northern Telecom for conversion. If you are converting it on-site, use the instructions in *Software conversion procedures* (553-2001-320).

Software Install Kit

The Software Install Kit is a generic set of X11 software and utility programs that are specific to a single release and issue of X11 software. A new kit must be obtained when upgrading to a new release or issue of software.

Table 1 lists the contents of the Software Install Kit.

Table 1
Contents of the Software Install Kit

Item	Quantity	Description
X11 software CD-ROM	1	Each CD contains all nine generics for a given release and issue of X11 software.
Install Program diskettes (2 MB media)	3	Used to launch the Install Program and to download software from the CD-ROM. Each 2 MB diskette supports one processor type (68060 or 68060E).
Database Transfer Utility diskettes (4 MB media)	3	Used to transfer the customer database from an IOP/CMDU drive onto 2 MB diskettes that can be ready by the IODU/C. Each 4 MB diskette supports one processor type (68060 or 68060E).
Distributor Keycode Application diskette (2 MB media)	1	A Windows 95 utility that supports download of keycodes from a keycode server.
Database diskettes (blank, 2 MB media)	2	Blank 2 MB diskettes that can be used to archive the customer database.
Keycode diskette (blank, 2 MB media)	1	A blank 2 MB diskette that can be used to store a back-up copy of the keycode file.

Security device and keycode

The IODU/C card also requires a security device (a replacement for the current CMDU and IOP/CMDU security data cartridge) and keycode. The security device and keycode are used together to customize software installation for a specific system. The keycode can only be validated and “unlocked” by the security devices for which it was made. Security devices are produced as part of each software order. One security device is mounted onto each IODU/C card.

A keycode is also generated as part of the customer software order. The keycode is customized based on the following parameters:

- a specific release and issue of X11 software
- a specific software generic (representing the combination of the system type and Call Processor type)
- a specific set of feature packages and ISM limits
- a specific set of security devices

A new keycode is required whenever any of these parameters are changed.

Each software order contains the Security Device Kit. The contents of the Security Device Kit are listed in Table 1.

Table 2
Contents of the Security Device Kit

Item	Quantity	Description
Keycode diskette (2 MB media)	1	A 2 MB diskette containing the keycode file.
Keycode acknowledgment	1	A hard-copy printout of the keycode file, including a listing of the parameters for which the keycode was created.
Security devices	The number of security devices provided is determined based on the type order and the number of security devices previously provisioned:	
	0	When security devices have already been provisioned
	1	For single CPU systems
	1	For upgrades from single CPU to dual CPU systems
	1	For replacing single, lost, or damaged security devices
	2	For dual CPU systems
	2	For replacing two lost or damaged security devices
Database diskettes (2 MB media)	2	One 2 MB diskette containing the CE database and one 2 MB diskette containing CE/PE database.

NT5D03 Call Processor card

Although X11 release 23.50 provided software support for use of the NT5D03 Call Processor (CP) card, X11 release 24 formally introduces the NT5D03 CP card for use with options 51C, 61C, 81, and 81C. The NT5D03 CP card also contains a 68060 call processor and exhibits a greater real time capability than the 68060 based NT9D10 CP card. The 68060E CP card is available in 48 MB, 64 MB, 80 MB, 96 MB, 112 MB and 128 MB memory configurations for the option 51C, 61C, 81, and 81C series.

See Table 3 for the supported call processors and memory configurations.

Table 3
NT5D03 call processor memory configurations

Call processor card	Total Memory	Option 51C/61C	Option 81C
NT5D03BA	64 MB	✓ minimum	✓ minimum
NT5D03CA	80 MB	✓	✓
NT5D03DA	96 MB	✓ (new card)	✓ (new card)
NT5D03EA	112 MB	✓	✓
NT5D03FA	128 MB	✓	✓

Tools

Table 4 lists the tools that you will need for upgrading a Northern Telecom system. Special tools required in a procedure are listed in that procedure.

Table 4
List of recommended tools

Digital Multimeter (DMM)
Pliers, needlenose
Pliers, standard
Screwdriver, 3/16" flat blade
Screwdriver, #2 Phillips
Wire cutters
Electrical insulation tape
5/16" socket wrench
Electric drill and drill bits
Hammer and sheet metal center punch
1/4" socket wrench
3/8" socket wrench
1/4" nut driver
7/16" socket driver

Upgrade preparation

Before beginning an upgrade, read the important information on the next few pages pertaining to connection of a system monitor or modem, and backplane connections. Then perform a thorough audit of the system you are upgrading:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

Terminal and modem connections

During an upgrade, and for continuing system operation, connect a terminal to an SDI port in a network slot to provide an I/O interface to the active CPU in the system. Connect another terminal or a modem (for remote access) to either the DTE port or the DCE port on the Core/Net module backplane to provide communication with the CP card in the system. The terminals must be RS-232 and capable of 9600 baud.

The Call Processor card serial interface ports (CPSI ports) are active only when the Core/Net associated with the CP card is active. Therefore, the CPSI ports should not be used as the only I/O connection for the system.

Note: When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

When the upgrade is complete, leave a terminal and/or modem connected to the system. One SDI port in a network slot must be permanently connected to a terminal or modem. On the CPSI ports you can do one of the following:

- disconnect the ports
- leave terminals connected for local monitoring
- connect modems for remote monitoring

Refer to “Terminal and modem connections” on page 927 for instructions on connecting terminals and modems to the option 51C, 61C, and 81C.

Module backplane connections

Module backplanes have a primary side and a secondary side. The primary side (the side that faces the front of the module) contains the primary shrouds that provide mechanical guidance for the pins of the card edge connectors. The secondary side of the backplane (the side that faces the rear of the module) contains the secondary shrouds that provide mechanical guidance for cable connectors.

The columns of secondary backplane shrouds are designated 18 through 12 from left to right (facing the rear of the backplane). This numbering matches the card slots in the front of the module. The rows of connectors on the secondary backplane shrouds are designated A through F from top to bottom.

Before you connect cables to the backplane, visually inspect the secondary shroud connectors to make sure there are no bent pins. To connect cables, do the following:

- 1 Hold the cable so that the connector is perpendicular to the backplane, with the cable extending down at a 45-degree angle.
- 2 Partially insert the cable connector so its guides mate to the corresponding backplane connector.
- 3 Apply a small amount of pressure to push the cable connector straight into the backplane connector. You will feel a distinct click when the connector seats.

CAUTION

Do not push the connector in any further after you hear the click. Pins may be bent or broken if you force the cable connector or insert it at an angle.

Using the cable extraction tool

To disconnect cables from the Core/Network module backplane, you will be required to use the extraction tool provided, located in the rear of the module (behind the I/O safety panel).

CAUTION

You must use the extraction tool to disconnect cables from the backplane in modules to avoid bending or breaking backplane pins. Do not improvise with common hand tools.

Follow the procedure below to remove cable connectors from the backplane. Use extreme caution to avoid bending or breaking backplane pins. Do not insert the extraction tool unless the cable connector is locked into the securing clip; a gentle tug on the cable will allow you to determine whether or not the connector is secured. Do not force the extraction tool deeper than the tab on side of the cable connector hood, and do not pry with the tool.

- 1 Grasp the cable just behind the connector hood.
- 2 Center the long flat edge at the angled end of the tool between the cable connector hood and the securing clip.

Note: There are two versions of the extractor tool, if the straight end of the tool is notched, use that end if the connector can be accessed straight-on. If you must approach the connector from any angle at all, use the angled end.

- 3 Gently insert the extraction tool and gradually apply pressure in the direction directly toward the backplane while gently pulling the cable away from the backplane. A gentle side-to-side rocking motion may be used on the cable if needed.

CAUTION

Do not pry the against the connector with the extraction tool. Simply inserting the tool between the connector and the securing clip is sufficient to unlock the connector. Prying may cause damage to the connector or the backplane pins.

- 4 Stop applying pressure as soon as the cable connector comes loose from the backplane.
- 5 Slowly remove the extraction tool and the cable connector.

Upgrades to Meridian 1 Option 51C

This chapter describes how to upgrade the following SL-1 and Meridian 1 systems running X11 release 19 or higher software to X11 release 24 on the option 51C:

- SL-1 ST/STE to option 51C, page 17
- Meridian 1 option 21E to option 51C (module upgrade), page 43
- Meridian 1 option 21E to option 51C (card cage upgrade), page 72
- Meridian 1 option 51 to option 51C, page 109

CAUTION

Upgrading the customer database on-site requires some system down time. Schedule sufficient down time when planning the system upgrade.

CAUTION

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

Database conversion requirements

Table 5
Database conversion requirements, STE to option 51C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx STE	1511	NTND31
19	21	Release 21.xx option 51C	1711	NT6D66DA (48MB)
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
For converting a release 19 or 20 customer database				
19, 20	21	Release 21.xx option 51C	1711	NT6D66DA (48MB)
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
For converting a release 21 customer database				
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
Note: When upgrading an SL-1 ST to option 51C, it is recommended that you send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this. Alternatively, you can reenter the database on the option 51C after the upgrade is complete.				

Table 6**Database conversion requirements, option 21/21E to option 51C (Part 1 of 2)**

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting an option 21 release 15.57 or 16 customer database (Refer to “Upgrading option 21 to option 21E” in <i>Upgrade system installation through X11 release 21 (553-3001-250)</i> for conversion procedures)				
15.57 or 16	17	Release 17.xx option 21	1011	QPC940
17	19	Release 19.xx option 21E	1511	Not Applicable
19	21	Release 21.xx option 51C	1711	NT6D66DA (48MB)
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
For converting an option 21E release 18 customer database				
18	19	Release 19.xx option 21E	1511	NTND31
19	21	Release 21.xx option 51C	1711	NT6D66DA (48MB)
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
For converting a release 19 or 20 customer database				
19, 20	21	Release 21.xx option 51C	1711	NT6D66DA (48 MB)
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)

Table 6 (Continued)
Database conversion requirements, option 21/21E to option 51C (Part 2 of 2)

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 21 customer database				
21	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
Note: When upgrading an option 21 to option 51C, it is recommended that you send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this. Alternatively, you can reenter the database on the option 51C after the upgrade is complete.				

Table 7
Database conversion requirements, option 51 upgrade to option 51C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx option 51	1111	NTND08
19	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 51C	2211 or 2411 or 2811	NT9D19AA/AB (48MB minimum) NT5D10AA (48MB minimum) NT5D03AA (48MB minimum)
Note: Use the latest software release (e.g., 24.xx) acquired from your Northern Telecom representative. If a specific issue is indicated (e.g., 24.01 and 24.02), it must be used.				

Upgrading ST and STE systems to option 51C

To upgrade an SL-1 ST or STE system to a Meridian 1 option 51C X11 release 24, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 51C next to the ST/STE cabinet
- removing the common equipment (CE) from the ST/STE cabinet
- cabling the cabinet to the option 51C column

IMPORTANT

STE systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to option 51C is performed as part of the software upgrade to release 24. This eliminates the requirement of interim hardware.

Upgrading the software consists of the following:

- transferring the customer database on the ST/STE to extra-high-density disks
- sending the customer database disks to Northern Telecom for conversion for all ST system customers and for those STE system customers who so choose

or

converting the customer database to X11 release 24 compatibility for STE customers who choose to convert the database on-site. Alternatively, you can reenter the database on the option 51C after the upgrade is complete.

Note: It is recommended that ST system customers send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this.

Equipment required

Upgrading an ST or an STE system to an option 51C requires installing the option 51C column next to the ST/STE system cabinet. The option 51C column provides CE and network equipment housing. The existing ST/STE system cabinet is used to support the PE cards including the PRI/DTI cards.

Tables 8 and 9 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the ST/STE system cabinet to the QPC414 Network cards in the option 51C column. The number of cables required depends on the number of network cards installed. The required cables are listed below:

- NT8D86 cables connect the QPC414 Network cards to the Core/Network module I/O panels
- NT8D73 cables connect the I/O panels in the Core/Network module to the cabinet I/O panels
- NT9J98 cables connect the peripheral buffer to the cabinet I/O panels (this cable type is also used to connect the QPC414 Network cards to Meridian Mail or PRI/DTI cards)

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

Table 8
Hardware requirements for an AC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21AA	Core/Network module, AC
1	NT6D65AA	Core to Network Interface card (CNI)
1 1 1	NT9D19 or NT5D10 or NT5D03	Call Processor card (CP) (see note 1)
1	NT6D81	Power Regulator card (see note 2)
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
1	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 3)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC

Table 8 (Continued)
Hardware requirements for an AC-powered option 51C (Part 2 of 2)

Qty	Part number	Description
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or QPC775E	Clock Controller Card (see note 4)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT6D81 Power Regulator card is required when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 and resides in any network card slot. Note 3: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 4: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Table 9
Hardware requirements for a DC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT6D81	Power Regulator card (see note 2)
1	NT7D00BA	Top Cap, AC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 1)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

Table 9 (Continued)
Hardware requirements for a DC-powered option 51C (Part 2 of 2)

Qty	Part number	Description
1	NT8D52DD	Pedestal Blower Unit, DC
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
1	QPC43R	Peripheral Signaling card (PS)
1	QPC441F	Three-Port Extender card (3PE)
1	QPC471H or QPC775E	Clock Controller Card (see note 4)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT6D81 Power Regulator card is required when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 and resides in any network card slot. Note 3: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 4: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Upgrade preparation

Some preparation is required before the conversion of the ST/STE hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 51C.
- Back up the customer database to tape or disk by doing a data dump.
- Convert the ST/STE customer database to release 24.

Verify power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Perform a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the ST/STE system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the customer database to release 24

The database can be converted on-site, or sent to Northern Telecom for conversion..

Table 10
Database conversion steps

Converting a release 18 database consists of:

- converting release 18 to 19 on the STE system
- converting release 19 to 21 on the STE system
- converting release 21 to 24 on the option 51C system

Converting a release 19 database consists of:

- converting release 19 to 21 on the option STE system
- converting release 21 to 24 on the option 51C system

Note: You have to convert the customer database to release 21 in the STE system before converting it to release 24 in option 51C.

Converting a release 18 and 19 database to release 21

To use this procedure, your STE system must currently be running version 18.20 or higher.

- 1 Perform the preconversion procedure in *Software conversion procedures* (553-2001-320) before beginning the following conversion procedures. Remove the front covers from the STE system.
- 2 Log into the system.

- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

- 4 Set the ENB/DIS switch on the QPC742 FDI or NT9D34 EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 18 software with the QMM42 cartridge for release 19 software. Reinstall and enable the FDI card or EMSI card.
- 5 Remove the disks containing release 18 software from the drives and insert floppy disks with release 19 software into the FDU or SMDU drives. Insert disk A1 in drive A and disk B1 in drive B.
- 6 Perform a data dump. At the prompt, enter **EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 Set the ENB/DIS switch on the QPC742 FDI or NT9D34 EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 19 software with the QMM42 cartridge for release 21 software. Reinstall and enable the FDI card or EMSI card.
- 8 Remove the disks containing release 19 software from the drives and insert floppy disks with release 21 software into the FDU or SMDU drives. Insert disk A1 in drive A and disk B1 in drive B.

- 9 Perform a data dump. At the prompt, enter
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 10 Press the RLD button on the NTND01 CPU card to begin a sysload. System messages similar to the following will appear:

SYS000
SYSLOAD RLS: xxISSUE:x
DONE
INI000

- 11 Log into the system.

- 12 Perform a data dump:

LD 43 to load the program
EDD to begin the data dump

- 13 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter

******** to exit the program

If an “EDD034” message appears when the data dump is completed, ignore the message. This message appears when SW2-4 on the NT9D34 card is OFF.

- 14 Verify the system by using the test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 15 Follow “Postconversion procedure” in *Software conversion procedures* (553-2001-320).

You will complete converting the database to release 24 later in these procedures after you upgrade the hardware. Proceed with “Install the option 51C hardware” to continue with the upgrade.

Install the option 51C hardware

Option 51C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/C and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 1 shows option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

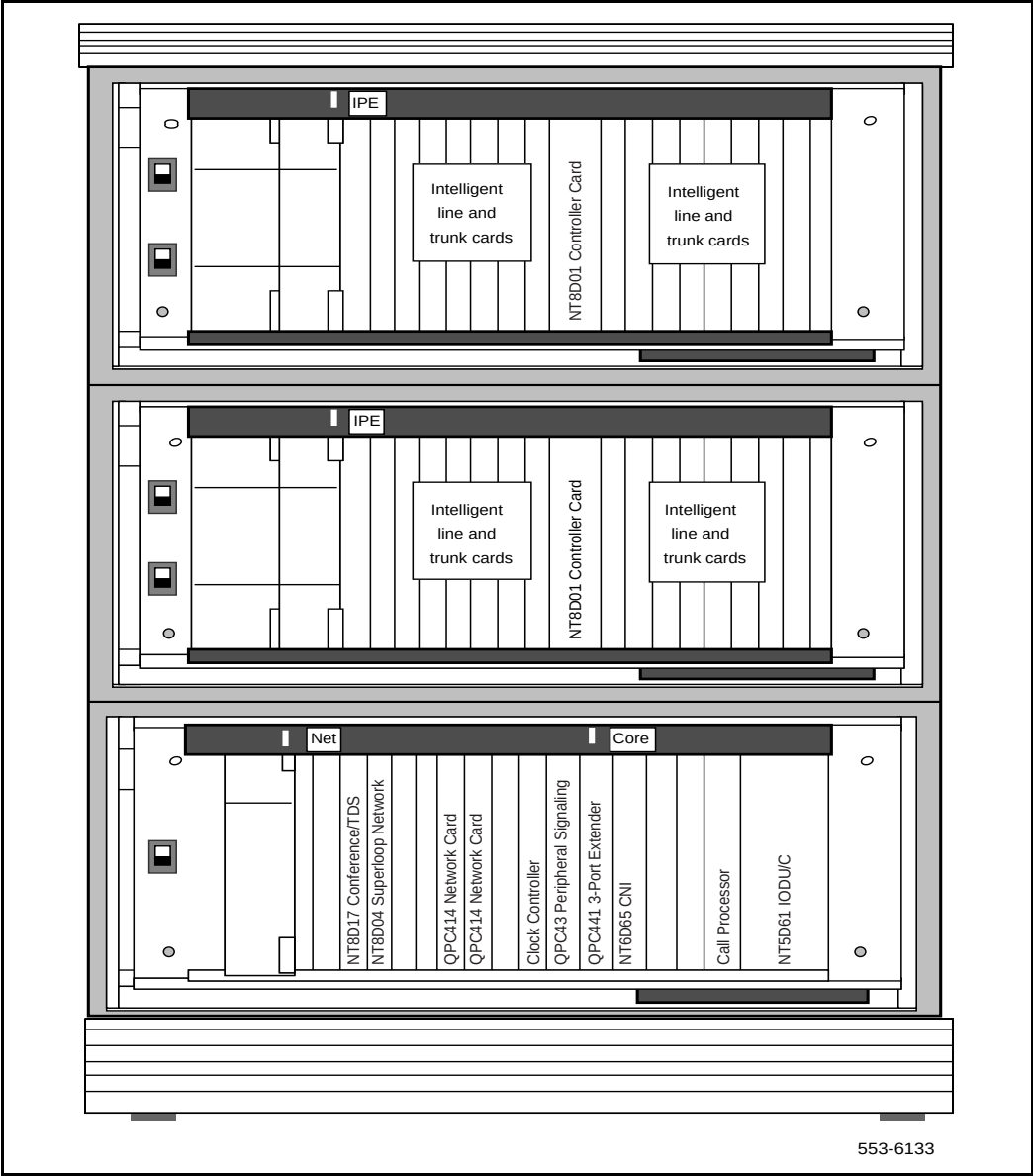
To install the option 51C at your site, follow the procedures in *Meridian 1 system installation procedures* (553-3001-210). For upgrade purposes, do not perform the following procedures during the installation process:

- do not install cabling
- do not provide power to the option 51C
- do not perform the acceptance tests
- do not replace the covers and grills on the front and rear of the system

When the option 51C hardware is installed, continue with the procedures on the following pages of this chapter.

Note: Make sure a terminal is connected to J25 on the I/O panel in the Core/Network module. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

Figure 1
Meridian 1 option 51C



Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the STE 4MB database to the IODUC. This is accomplished using the direct cabling method.

The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

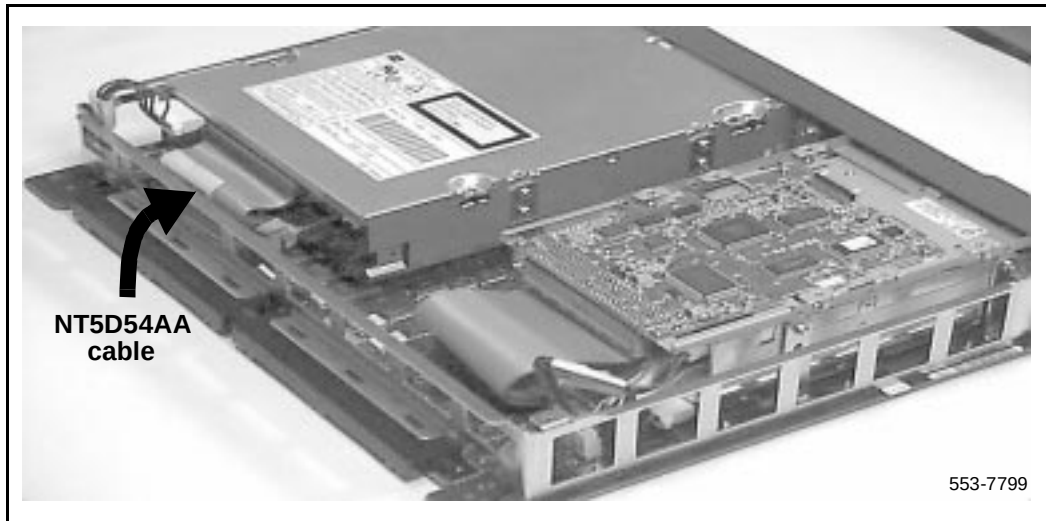
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 28, on page 127). **Do not** disconnect the cable from the IODU/C circuit board.

Figure 2
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

MDU cabling

- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

CAUTION

The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 7, on page 60). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 8). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

Figure 3
Cabling the MDU to the IODU/C card

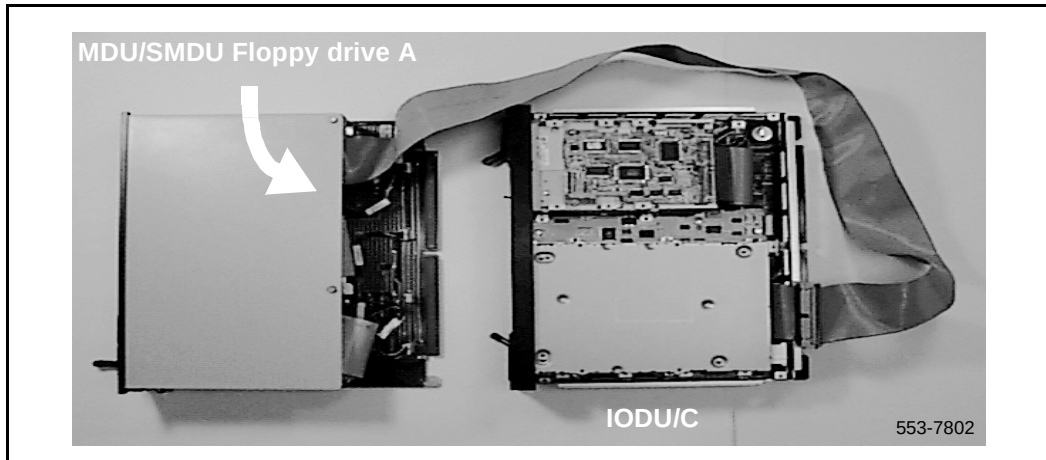
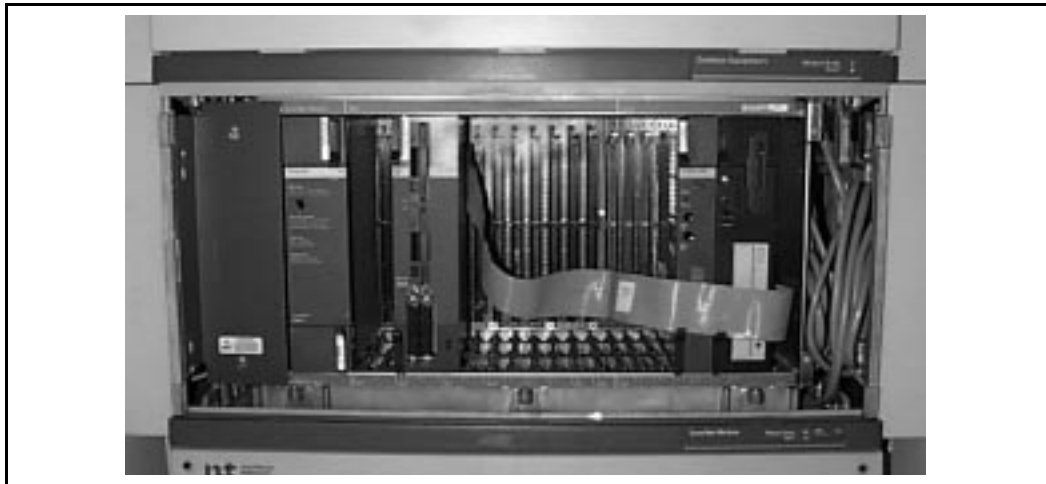


Figure 4
IODU/C and MDU cabled in Core/Net 1



8 Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:
 - <u>** to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 - <a>** to continue with keycode validation
 - <y>** to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:
 - <d>** to install customer database only
 - <f>** to transfer the customer database from the MDU
 - <a>** to continue the database transfer
 - <a>** to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 - <cr>** to continue
the Installation Status Summary menu appears to confirm database transfer
 - <y>** to start installation
 - <a>** Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 - <cr>** Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 - <cr>** Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
 - <q>** When the Install Menu appears, select <q> to quit.
Remove any
 - <y>** to confirm quit
 - <a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

13 Shut down power to the Core/Net module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16** Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18** Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19** Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software.

Installing release 24 software

Before you begin:

- all cards must be installed in the Core/Net module
- the Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional on the Core/Net module:

LD 135	to load the program
STAT CPU	to display the CPU status
- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43	to load the program
- 9 When “EDD000” appears on the terminal, enter:

EDD	to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2	to load the overlay
STAD	DD MM YY HR MN SC
- 12 Clear displays, major alarms, and minor alarms:

LD 135	to load the program
CDSP	to clear the display
CMAJ	to clear all major alarms
CMIN ALL	to clear all minor alarms
CDSP	to clear the display
****	to exit LD 135

- 13 Load overlay 137 to verify status of the CMDU and IOP:

LD 137	to load the program
STAT	to get the status of the CMDU and IOP.
****	to exit the program
- 14 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 15 Insert a B1 database disk from the software upgrade package into the IODU/C for backup.
- 16 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program
- 17 When “EDD000” appears on the terminal, enter

EDD	to begin the data dump
- 18 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the ST/STE system hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set the ENB/DIS switches on all cards in the ST/STE system to DIS.
- 2 Set all shelf circuit breakers to OFF.

- 3 Disconnect all network loop cables connected to the QPC414 Network cards and cables connected to the SDI cards.
- 4 Set the CAB INP circuit breaker at the front of the cabinet to OFF.
- 5 Disconnect AC power for the cabinet by setting the commercial AC power supply circuit breaker at the service panel to OFF.
- 6 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 7 Disconnect cables from the MSU faceplate, release the locking devices and remove the MSU.
- 8 Disconnect the MSU shelf alarm connector.
- 9 Remove remaining cards from the main CE shelf and store them in a safe place.
- 10 If you are using the ST/STE CE shelf for PRI/DTI cards, install the PRI/DTI cards into the CE shelf card slots. Refer to *ISDN Primary Rate Interface installation* (553-2901-200) for PRI installation procedures.
- 11 Install the NT6D81 Power Regulation card into the CE shelf of the ST/STE cabinet. The NT6D81 Power Regulation card is required only when a QCA136 cabinet is retained as part of the upgraded system. One card is required per QCA136 cabinet and resides in any network card slot.

Moving the network cards

The following steps describe how to move the network cards from the ST/STE system to the option 51C.

- 1 Label each card that is being transferred to a Core/Network module with loop 0–15 for the card.
- 2 If not already done, remove the network cards that are being transferred from the ST/STE system shelf to the option 51C Core/Network module.
- 3 Install the network cards in the option 51C Core/Network module and hook the locking devices.

4 Cable the network loops.

For QPC414 Network cards and associated QPC659 Dual Loop Peripheral Buffer (DLB) cards:

- If the columns containing the network and DLB cards are in the same row, the network loop is cabled from the faceplate of the network card to the faceplate of the DLB card.
- If the columns containing the network and DLB cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the DLB card I/O panel.

For NT8D04 Superloop Network cards and associated NT8D01 Controller cards:

- If the columns containing the network and controller cards are in the same row, the network loop is cabled from the faceplate of the network card to the backplane for the controller card.
- If the columns containing the network and controller cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the controller card I/O panel.

Refer to *Meridian 1 system installation procedures* (553-3001-210) for more information on cabling network loops. For external cabling procedures, refer to “Installing external cables” on page 70.

5 Enable the faceplate switches.

Installing external cables

After the option 51C column is installed and the ST/STE peripheral cabinet is prepared, you must connect them with external cables.

- 1 Install network cables between the ST/STE cabinet and the option 51C column. The network cables connect the QPC414 Network cards in the Core/Network module to a dual loop peripheral buffer (DLB) card, DTI/PRI card, or Meridian Mail.

Each QPC414 Network card connection requires three cables:

- Connect the NT8D86 cable from the faceplate connector of the QPC414 Network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network Module to the I/O panel of the ST/STE cabinet.
- Connect the NT9J98 cable from the faceplate connector of the QPC659 Dual Loop Peripheral Buffer card to the I/O panel on the ST/STE cabinet (the same cable type is used to connect QPC414 Network cards to Meridian Mail and PRI/DTI cards).

Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of the cables required to connect network loops between a cabinet and an option 51C column.

- 2 Connect the system monitor in the option 51C to the power monitor in the ST/STE cabinet.
- 3 If you are using PRI/DTI cards, connect the PRI cables. Refer to *ISDN Primary Rate Interface installation* (553-2901-200) for PRI cabling requirements and procedures.
- 4 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to the appropriate procedure in *Meridian 1 system installation procedures* (553-3001-210) for IPE module I/O panel external cabling procedures.

Completing the upgrade

- 1 Verify that all cards in the option 51C are enabled (all ENB/DIS switches are set to ENB) and that the MAINT/NORM switch on the CP card is set to NORM.
- 2 Perform a system reload by pressing the RLD button on the CP card. Watch the terminal for system reload (SYS) and initialization (INI) messages. Following this, the option 51C core is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 955.
- 3 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).
- 5 Restore power to the ST/STE system.

The option 51C release 24 system is now operational. Install all module covers to complete the upgrade.

Upgrading option 21/21E module to option 51C

A module upgrade from an option 21/21E system to an option 51C X11 release 24 consists of upgrading both the hardware and the software.

Upgrading the hardware consists of the following:

- installing a Meridian 1 option 51C next to the option 21/21E
- removing the common equipment (CE) from the option 21/21E
- cabling the option 21/21E to the option 51Cn

IMPORTANT

Option 21E systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to option 51C is performed as part of the software upgrade to release 24. This eliminates the requirement of interim hardware.

Upgrading the software consists of the following:

- sending the customer database disks to Northern Telecom for conversion
or

converting the customer database to X11 release 24 compatibility for those customers who choose to convert the database on-site

Alternatively, you can reenter the database on the option 51C after the upgrade is complete.

Note: It is recommended that option 21 customers send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this.

- defining the system configuration in the option 51C customer database

Equipment required

Tables 11 and 12 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

If the option 21E and option 51C columns are positioned side-by-side, you must install column spacer kits and route cables between the columns as outlined in *Meridian 1 system installation procedures* (553-3001-210). If the columns are not adjacent to each other, installing external cables between the option 21E and option 51C is required to connect network loops in the option 21E to network cards in the option 51C column. The number of cables required depends on the number of network cards installed. The required cables are listed below.

For NT8D04 Superloop Network cards:

- NT8D88 cables connect the option 51C network cards to the Core/Network module I/O panels
- NT8D98 cables connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables connect the peripheral controller to the IPE module I/O panels

For QPC414 Network cards:

- NT8D86 cables connect the option 51C network cards to the Core/Network module I/O panels
- NT8D73 cables connect the I/O panels in the Core/Network module to the IPE/PE module I/O panels
- NT8D86 cables connect the peripheral controller to the IPE module I/O panels (this cable type is also used to connect the QPC414 Network card to Meridian Mail or DTI/PRI cards)

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 11
Hardware requirements for an AC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21AA	Core/Network Module, AC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 11
Hardware requirements for an AC-powered option 51C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or QPC775E	Clock Controller (see note 3)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Table 12
Hardware requirements for a DC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D21DA	Core/Network Module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board

Table 12 (Continued)
Hardware requirements for a DC-powered option 51C (Part 2 of 2)

Qty	Part number	Description
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
1	NT8D77	FDI/FDU Interface cable (Note 2)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC441F	Three-Port Extender Card (3PE)
1	QPC471H or QPC775	Clock Controller Card (see note 3)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Upgrade preparation

Some preparation is required before the conversion of the option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 51C.
- Back up the customer database to tape or disk by doing a data dump.
- Convert the customer database to release 24 compatibility.

Note: Obtain extra-high-density floppy disks containing system software from your Northern Telecom representative.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) to install new power equipment and to provide a good ground for the equipment.

Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media.
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 Exit the program. At the prompt, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the customer database to release 21

Note: It is recommended that option 21 customers send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this. For option 21 conversion procedures, refer to *Software conversion procedures* (553-2001-320) and *Upgrade system installation through X11 release 21* (553-3001-250).

If the option 21E is running on X11 release 19 or 20 software, you must convert it to release 21 before continuing. You can convert the database on-site, or send it to Northern Telecom for conversion. All on-site database conversions are performed on the option 21E system.

If your system is running release 21 software, skip this section and continue with “Installing option 51C hardware” on page 53.

You will complete converting the database to release 24 later in these procedures after you upgrade the hardware.

CAUTION

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

Converting a release 18 and 19 database to release 21 To use this procedure, your option 21/21E must currently be running version 18.20 or higher.

Note: If your system is already running release 21, you do not have to perform these conversion procedures. Skip this section and continue with “Installing option 51C hardware” on page 53.

- 1 Remove the front cover from the CE/PE Module on the option 21E.
- 2 On the option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 3 Install the QMM42 data cartridge for release 19 onto the QPC742 FDI card and reinstall the card.
- 4 Set the ENB/DIS switch on the QPC742 FDI card to ENB.
- 5 Insert the floppy disks with X11 release 19 software into the disk drives in the option 21/21E. Insert disk A in drive A and disk B in drive B.
- 6 Perform a data dump. At the prompt, enter
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 On the option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 8 Install the QMM42 data cartridge for release 21 onto the QPC742 FDI card and reinstall the card.
- 9 Set the ENB/DIS switch on the QPC742 FDI card to ENB.
- 10 Insert the floppy disks with X11 release 21 software into the disk drives in the option 21/21E. Insert disk A in drive A and disk B in drive B.

- 11 Perform a data dump. At the prompt, enter
EDD to begin the data dump
- 12 In the option 21E, press the RST button on the NTND02 MSPS card to begin a sysload. System messages similar to the following will appear:
SYS000
SYSLOAD RLS: xxISSUE:x
DONE
INI000
- 13 Install disks A2 and A3 when you are prompted to do so.
- 14 When the software installation is complete, install disk A1.
- 15 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

If an “EDD034” message appears when the data dump is complete, ignore this message. This message appears when SW2-4 on the NT9D34 card is OFF.

- 16 Verify the system by using the test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 17 Follow “Postconversion procedure” in *Software conversion procedures* (553-2001-320)

You will complete converting the database to release 24 later in these procedures after you upgrade the hardware.

Installing option 51C hardware

Option 51C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/Cs and power supplies, are shipped in separate packages to prevent damage to the cards.

Before installing the option 51C, disable the system monitor in the option 21/21E using the Input/Output Diagnostic (LD 37).

- 1 Log into the option 21/21E.
- 2 Load the Input/Output Diagnostic (LD 37):

LD 37	to load the program
DIS TTY x	to disable the system monitor and TTY port
- 3 Exit the program. At the prompt, enter

****	to exit the program

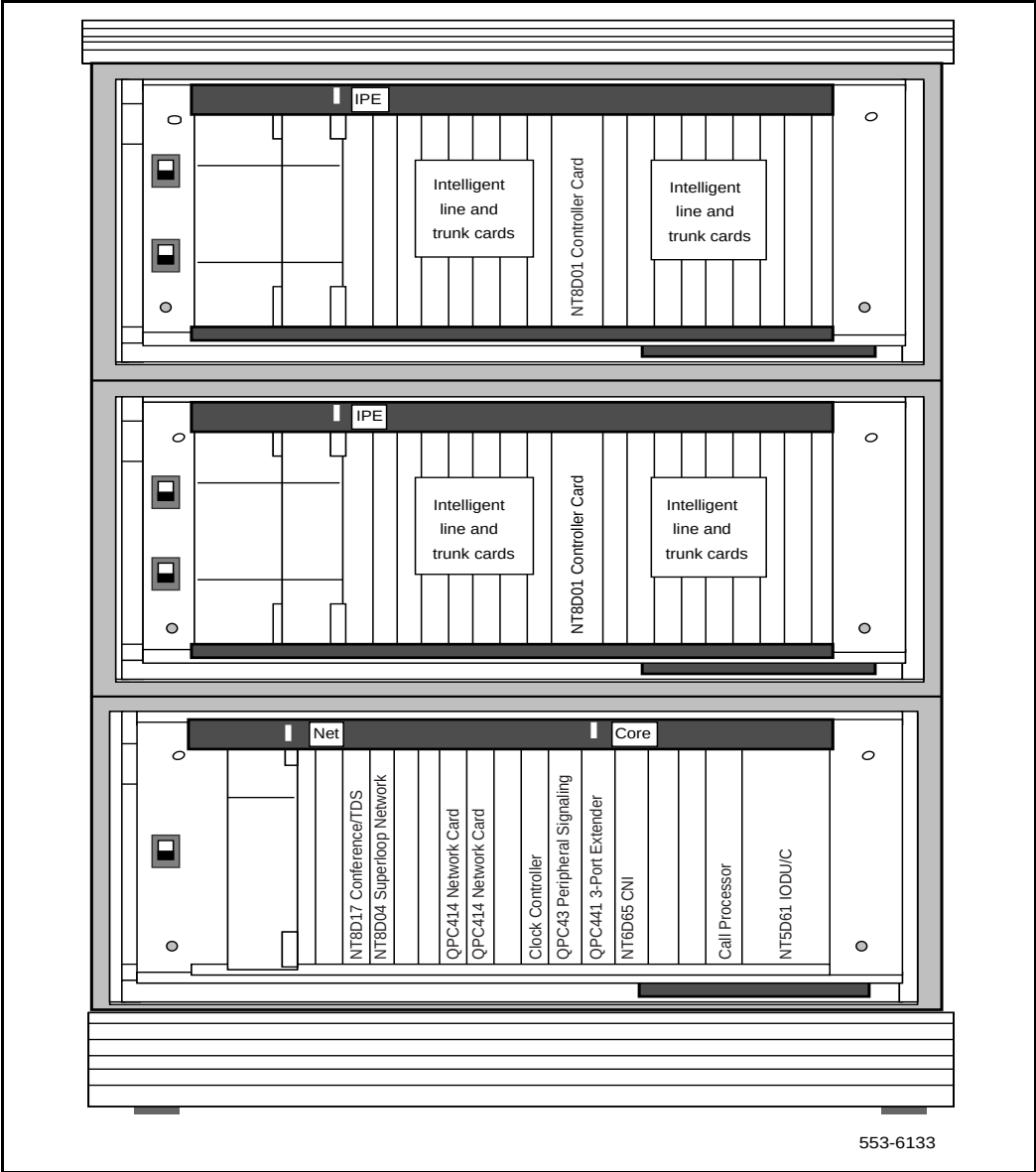
Figure 5 shows option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots. To install the option 51C at your site, follow the procedures in *Meridian 1 system installation procedures* (553-3001-210). For upgrade purposes, do not complete the following procedures during the installation process:

- When configuring the system monitor, ensure that the option 51C is configured as the master and any additional columns (including the option 21/21E) are configured as slaves.
- Do not install cabling.
- Do not provide power to the option 51C.
- Do not perform the acceptance tests.
- Do not replace the covers and grills on the front and rear of the system.

When the option 51C hardware is installed, continue with the procedures on the following pages of this chapter.

Note: Make sure a terminal is connected to J25 on the I/O panel at the rear of the Core/Network module. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

Figure 5
Meridian 1 option 51C



Transferring the database from 4 MB to IODU/C

To use the following procedures, the option 21E database must be at release 21. Before beginning the database conversion procedure, obtain all of the system software disks required.

To convert the database to release 24, you will move the data for loop 28 in the option 21E, transfer the customer database to a 2 MB format, and then install release 24 software on the option 51C.

Move loop 28

- 1 Remove the front cover from the CE/PE Module on the option 21.
- 2 Disable loop 28 using the Network and Peripheral Equipment Diagnostic Program (LD 32). Refer to *X11 input/output guide* for instructions on using LD 32.
- 3 Configure a new superloop and controller using configuration record 2 (LD 97). Refer to *X11 input/output guide* for instructions on using LD 97.
Note: When configuring superloops, assign loop numbers beginning with 0, 4, 8, or 12. Then configure each superloop for either a left or right slot location. The remaining slot (right or left of the superloop) may contain only DTI, PRI, or I/O cards.
- 4 Move the data for loop 28 to the newly configured superloop using the Move Data Blocks Program (LD 25). Refer to *X11 input/output guide* for instructions on using LD 25.
- 5 After the data for loop 28 has been moved to the new loop, remove loop 28 using configuration record 2 (LD 97). Refer to *X11 input/output guide* for instructions on using LD 97.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
EDD to begin the data dump

When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 Remove the database diskettes from the disk drives in the option 21E.
- 8 In the option 51C, connect a terminal to the CPSI port in the Core/Net module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

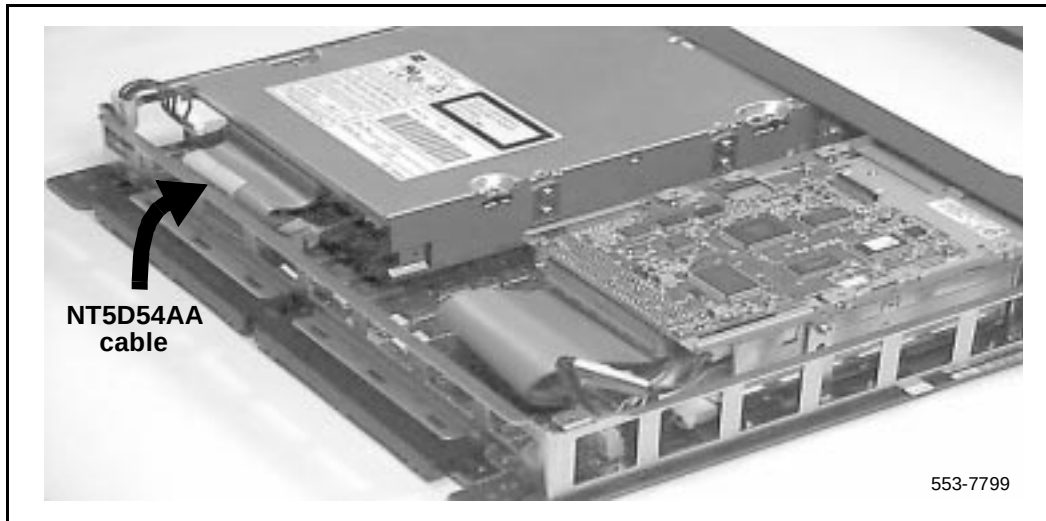
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 28, on page 127). **Do not** disconnect the cable from the IODU/C circuit board.

Figure 6
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

MDU cabling

- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

CAUTION

The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 7). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 8). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

Figure 7
Cabling the MDU to the IODU/C card

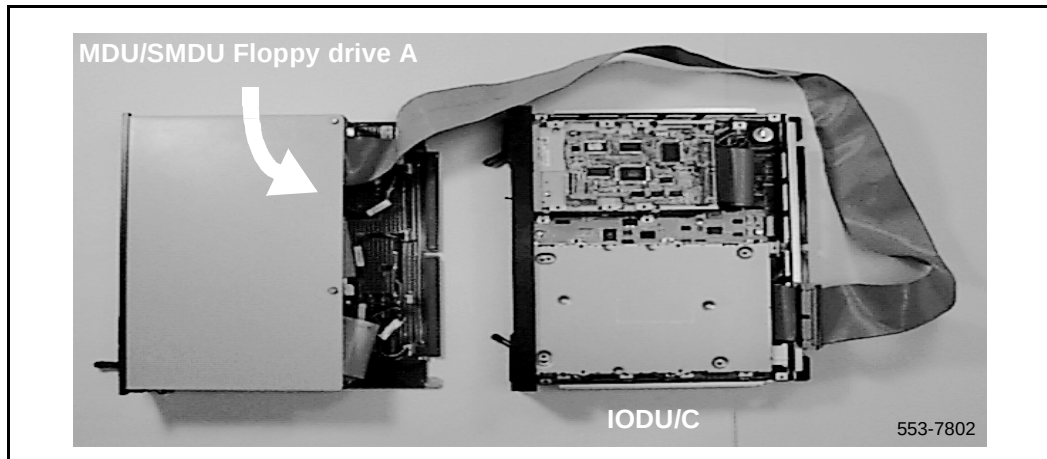
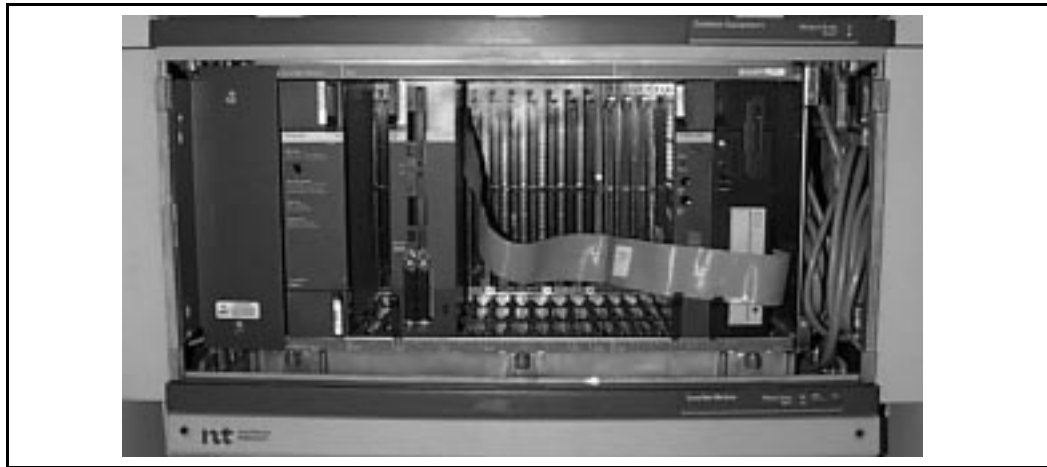


Figure 8
IODU/C and MDU cabled in Core/Net 1



8 Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:
 - <u> to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 - <a> to continue with keycode validation
 - <y> to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:
 - <d> to install customer database only
 - <f> to transfer the customer database from the MDU
 - <a> to continue the database transfer
 - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 - <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
 - <y> to start installation
 - <a> Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 - <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 - <cr> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
 - <q> When the Install Menu appears, select <q> to quit.
Remove any
 - <y> to confirm quit
 - <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

13 Shut down power to the Core/Net module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software.

Installing release 24 software

Before you begin:

- all cards must be installed in the Core/Net module
- the Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

- 12 Clear displays, major alarms, and minor alarms:

LD 135 to load the program
CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
CDSP to clear the display
******** to exit LD 135

- 13** Load overlay 137 to verify status of the IODU/C:
- | | |
|---------------|----------------------------------|
| LD 137 | to load the program |
| STAT | to get the status of the IODU/C. |
| **** | to exit the program |
- 14** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 15** Insert a B1 database disk (from the release 24 disk set) into the IODU/C for backup.
- 16** Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- | | |
|--------------|---------------------|
| LD 43 | to load the program |
|--------------|---------------------|
- 17** When “EDD000” appears on the terminal, enter
- | | |
|------------|------------------------|
| EDD | to begin the data dump |
|------------|------------------------|
- 18** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
- | | |
|-------------|---------------------|
| **** | to exit the program |
|-------------|---------------------|

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Defining the option 51C system software

The following steps describe how to define the option 51C software configuration.

- 1 Reassign the configuration data from the network loops in the option 21/21E to the appropriate loops in the option 51C.
 - Define the target Controller card using the Configuration Record 2 (LD 97).
 - Define the network loops using the Configuration Record 2 (LD 97) and the Configuration Record (LD 17).

Refer to *X11 input/output guide* for instructions on using LD 97 and LD 17.

- 2 Move the network loops using the Move Data Blocks Program (LD 25).
Refer to *X11 input/output guide* for instructions on using LD 25.
- 3 Configure the I/O devices to reflect the current configuration (if required).
- 4 Reenter customer data blocks (if required). System options and features must reflect the current configuration.
- 5 Configure station data blocks (if required).
- 6 Configure route data blocks (if required).
- 7 Configure trunk data blocks (if required).
- 8 Configure remaining system configuration records (if required).
- 9 Verify system operation before adding new equipment (if required).
- 10 Configure new equipment and functions, if any.
- 11 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 12 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump

- 13 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
**** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving the network cards

The following steps describe how to move the network cards from the option 21E to the option 51C.

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set all option 21E circuit breakers to OFF.
- 2 Label each card that is being transferred to a Core/Network module with loop 0–15 for the card.
- 3 On all network cards that are being transferred from the option 21/21E to the Core/Network module, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Install the network cards in the option 51C Core/Network module and hook the locking devices.

5 Cable the network loops.

For QPC414 Network cards and associated QPC659 Dual Loop Peripheral Buffer (DLB) Cards:

- If the columns containing the network and DLB cards are in the same row, the network loop is cabled from the faceplate of the network card to the faceplate of the DLB card.
- If the columns containing the network and DLB cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the DLB card I/O panel.

For NT8D04 Superloop Network cards and associated NT8D01 Controller cards:

- If the columns containing the network and controller cards are in the same row, the network loop is cabled from the faceplate of the network card to the backplane for the controller card.
- If the columns containing the network and controller cards are in different rows, the cards require I/O panel connections, and a shielded cable to connect the network card I/O panel to the controller card I/O panel.

Refer to *Meridian 1 system installation procedures* (553-3001-210) for more information on cabling network loops. For external cabling procedures, refer to “Installing external cables” on page 70.

- 6** If you are using the option 21E for PRI/DTI cards, install the PRI/DTI cards into the NT8D11 Common/Peripheral Equipment Module card slots. Refer to *ISDN Primary Rate Interface installation* (553-2901-200) for PRI installation procedures.
- 7** Enable the faceplate switches.

Moving the peripheral equipment cards

- 1 Remove the IPE cards from the option 21E CE/PE module.
- 2 Transfer the IPE cards to the option 51C intelligent peripheral equipment modules.
- 3 Install the IPE cards in the option 51C corresponding slots and hook the locking devices.

Installing external cables

Installing external cables between the option 21E and option 51C columns is required if the two columns are not positioned side-by-side.

- 1 Install network cables between the option 21E and option 51C columns. The network cables connect network cards in the Core/Network module to the IPE/PE module of the option 21E.

Each NT8D04 Superloop connection requires three cables:

- Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D98 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
- Connect the NT8D92 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module.

Each QPC414 Network card connection requires three cables:

- Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D73 cable from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
- Connect the NT8D86 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module (the same cable type is used to connect to Meridian Mail and PRI/DTI cards).

- 2 If not already done, daisy-chain the slave system monitors to the master. Refer to *Meridian 1 system installation procedures* (553-3001-210) for cabling procedures.
- 3 If you are using PRI/DTI cards, connect the PRI cables. Refer to *ISDN Primary Rate Interface installation* (553-2901-200) for PRI cabling requirements and procedures.
- 4 Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to the appropriate procedure in *Meridian 1 system installation procedures* (553-3001-210) for IPE module I/O panel external cabling procedures.

Completing the upgrade

- 1 Verify that all cards in the option 51C are enabled (all ENB/DIS switches are set to ENB) and the MAINT/NORM switch on the CP card is set to NORM.
- 2 Perform a system reload by pressing the RLD button on the CP card. Watch the terminal for system reload (SYS) and initialization (INI) messages. If the sysload or initialization fails, refer to “Troubleshooting” on page 955.
- 3 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).
- 5 Restore power to the option 21/21E.

The option 51C X11 release 24 system is now operational. Install all module covers to complete the upgrade.

Upgrading option 21E card cage to option 51C

A card cage upgrade from an option 21E to a Meridian 1 option 51C consists of upgrading both the hardware and the software. Upgrading the hardware consists of the following:

- removing the card cage from the option 21E
- installing the option 51C card cage
- installing new CPU cards in the card cage

IMPORTANT

Option 21E systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to option 51C is performed as part of the software upgrade to release 24. This eliminates the requirement of interim hardware.

Upgrading the software consists of the following:

- for those option 21E customers who so choose, sending the customer database disks to Northern Telecom for conversion

or

for those customers who choose to convert the database on-site, converting the customer database to X11 release 24 compatibility

Alternatively, you can reenter the database on the option 51C after the upgrade is complete.

Figure 9 shows an Option 51C as typically configured.

Equipment required

Tables 13 and 14 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 51C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

Table 13
Hardware requirements for an AC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R90BA	Upgrade Kit
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D89CA	CP to I/O Panel RS-232 Cable
1	NT7D90CA	IODU/C to I/O Panel Ethernet Cable
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card (see note 2)
1	NT8D06AA	Peripheral Equipment Power Supply, AC (see note 3)

Table 13 (Continued)**Hardware requirements for an AC-powered option 51C (Part 2 of 2)**

Qty	Part number	Description
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 3, note 4)
1	NT8D40AU	MDPU to CEPS Cable Harness (see note 4)
1	NT8D56AA	Common Equipment Module Power Distribution Unit
1	NT9D91AE	Network to Controller Cable (8 ft.)
2	NT9D17AA	Module Side Cover
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC441F	Three-Port Extender Card (3PE)
1	QPC471H or QPC775E	Clock Controller (see note 5)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: These items are included to provide replacement card slot availability for the existing IPE cards located in the unused NT8D11 module. Note 4: Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 5: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Table 14
Hardware requirements for a DC-powered option 51C (Part 1 of 2)

Qty	Part number	Description
1	NT1R90BA	Upgrade Kit
1	NT1R91AA	Modem Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D40AB	Peripheral Equipment Power Supply DC
1	NT6D41AB	Common Equipment Power Supply DC
1	NT6D65AA	Core to Network Interface Card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D11AG	Power Harness to Backplane Cable
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IODU/C to I/O Panel Ethernet Cable
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card (see note 2)
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2, note 4)
1	NT8D40AU	MDPU to CEPS Cable Harness (see note 3)
1	NT9D91AE	Network to Controller Cable (8 ft.)
2	NT9D17AA	Module Side Cover
1	QPC43R	Peripheral Signaling Card (PS)

Table 14 (Continued)**Hardware requirements for a DC-powered option 51C (Part 2 of 2)**

Qty	Part number	Description
1	QPC441F	Three-Port Extender Card (3PE)
1	QPC471H or QPC775E	Clock Controller (see note 5)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: These items are included to provide replacement card slot availability for the existing IPE cards located in the unused NT8D11 module. Note 4: Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 5: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or one QPC775 (vintage E) Clock Controller card to perform this upgrade.		

Upgrade preparation

Some preparation is required before the conversion of the option 21 or option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Back up the customer database to tape or disk by doing a data dump.
- Convert the customer database to release 24 compatibility

Note: Obtain extra-high-density floppy disks containing system software from your Northern Telecom representative.

Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

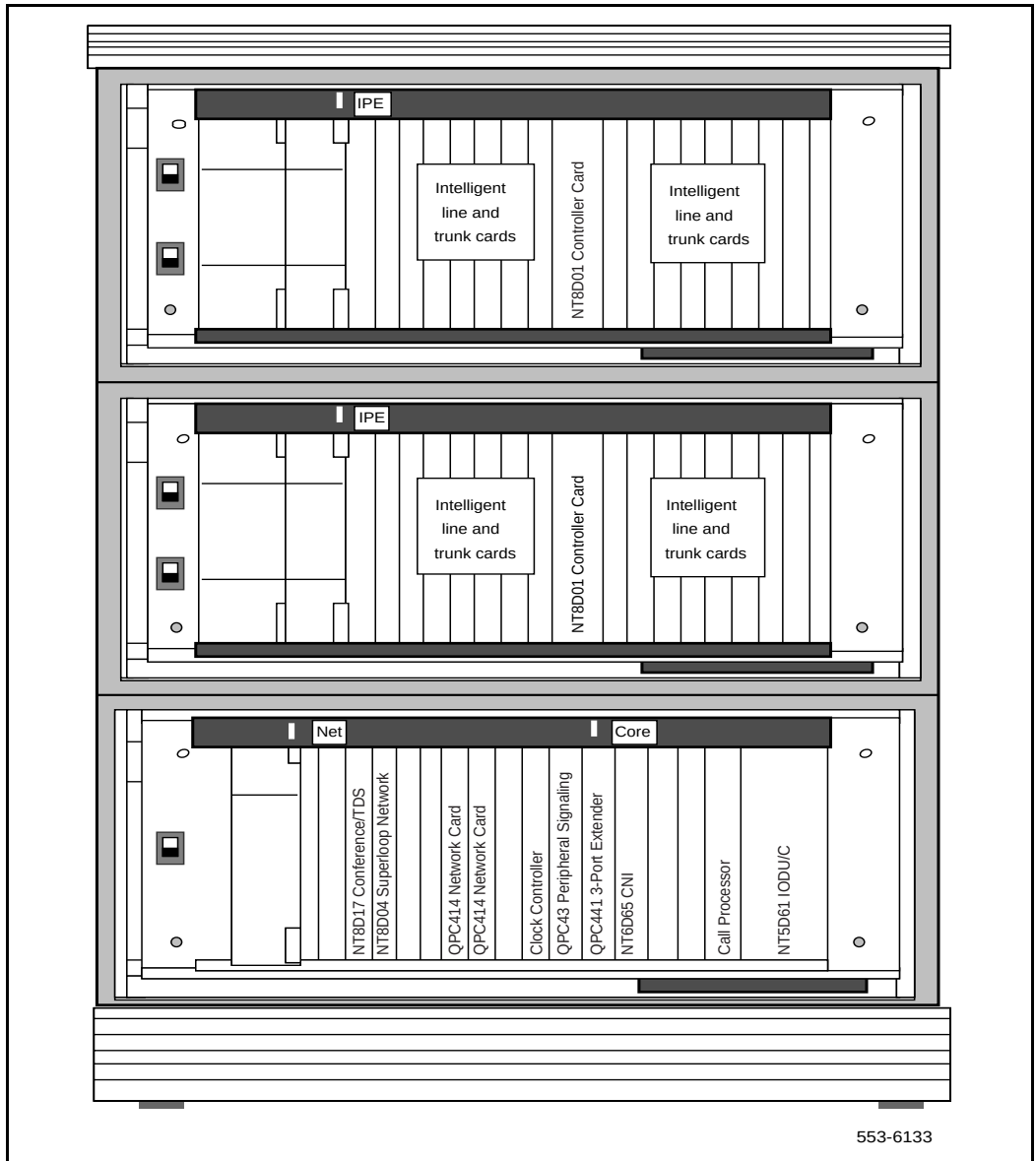
Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 Exit the program. At the prompt, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Figure 9
Meridian 1 option 51C



Converting the customer database to release 21

Note: It is recommended that option 21 customers send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this. For option 21 conversion procedures, refer to *Software conversion procedures* (553-2001-320) and *Upgrade system installation through X11 release 21* (553-3001-250).

If the option 21E is running on X11 release 18 or 20 software, you must convert it to release 21 before continuing. You can convert the database on-site, or send it to Northern Telecom for conversion. All on-site database conversions are performed on the option 21E system.

If your system is running release 21 software, skip this section and continue with “Removing and installing the card cage” on page 83.

You will complete converting the database to release 24 later in these procedures after you upgrade the hardware.

CAUTION

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

Converting a release 18 and 19 database to release 21 To use this procedure, your option 21/21E must currently be running version 18.20 or higher.

Note: If your system is already running release 21, you do not have to perform these conversion procedures. Skip this section and continue with “Installing option 51C hardware” on page 53.

- 1 Remove the front cover from the CE/PE Module on the option 21E.
- 2 On the option 21/21E, set the ENB/DIS switch on the QPC742 FDI card to DIS and remove the card from the CPU/MEM shelf.
- 3 Install the QMM42 data cartridge for release 19 onto the QPC742 FDI card and reinstall the card.
- 4 Set the ENB/DIS switch on the QPC742 FDI card to ENB.
- 5 Insert the floppy disks with X11 release 19 software into the disk drives in the option 21/21E. Insert disk A in drive A and disk B in drive.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Perform a data dump. At the prompt, enter
EDD to begin the data dump
- 7 In the option 21E, press the RST button on the NTND02 MSPS card to begin a sysload. System messages similar to the following will appear:
SYS000
SYSLOAD RLS: xxISSUE:x
DONE
INI000
- 8 Log into the system.

- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

- 10 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 19 software with the QMM42 cartridge for release 21 software. Reinstall and enable the card.
- 11 Remove the disks containing release 19 software from the drives and insert ED floppy disks with release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.
- 12 Install disks A2 and A3 when you are prompted to do so.
- 13 When the software installation is complete, install disk A1.
- 14 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

If an “EDD034” message appears when the data dump is complete, ignore this message. This message appears when SW2-4 on the NT9D34 card is OFF.

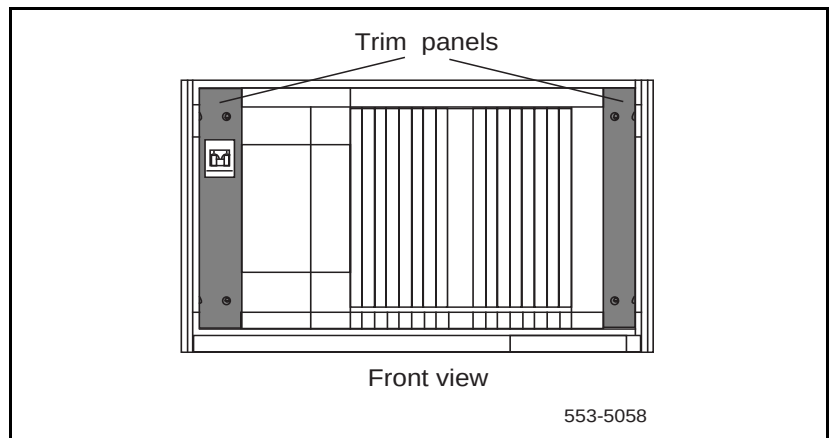
- 15 Verify the system by using the test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 16 Follow “Postconversion procedure” in *Software conversion procedures* (553-2001-320)

You will continue converting the database to release 24 after you upgrade the hardware. Proceed with “Removing and installing the card cage”.

Removing and installing the card cage

- 1 Perform the appropriate step below to turn off power to the column:
 - For AC-powered systems, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker for the module to OFF (down) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the module (see Figure 21). Keep the screws for reuse.

Figure 10
Location of the trim panels



- 3 Tag and disconnect all cables connected to the front of each card in the CE/PE module. Note the exact positions of the cables connected to cards on the network side of the card cage; they must connect to the same cards when the card cage is reassembled. Tape over the cable connector contacts to avoid accidental grounding. Tape or tie all cables out of the way so that the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.

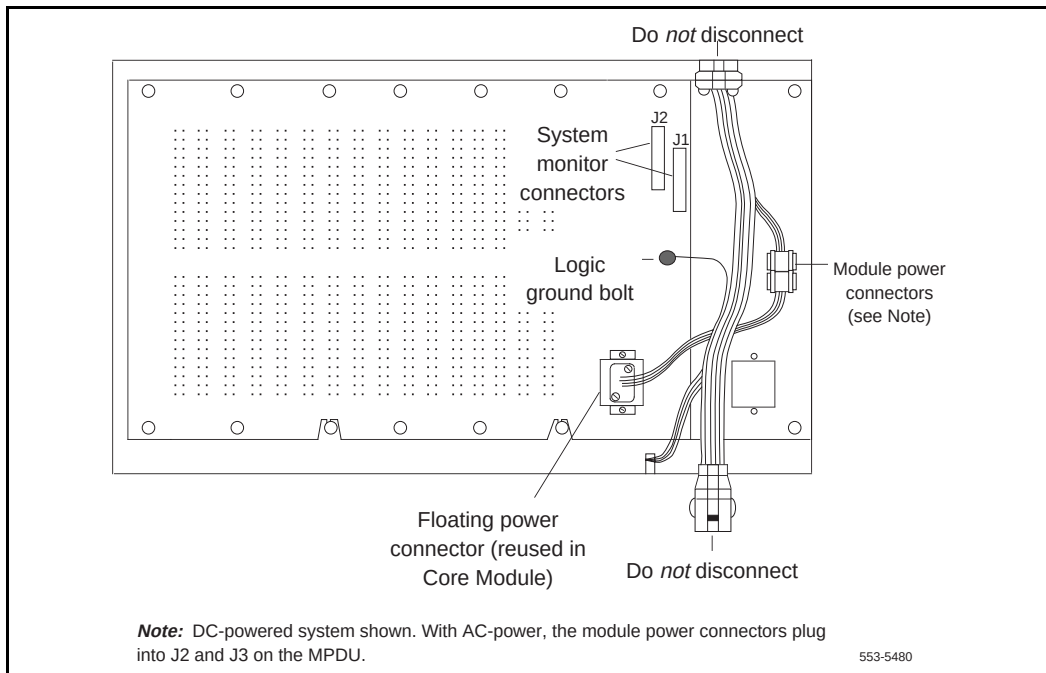
- 5 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

WARNING

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards back into the same slots after the screws have been removed.

- 6 Remove the I/O safety panel that covers the rear of the backplane, and tag and disconnect all cables connecting from the inside and outside of the left I/O panel.
- 7 Tag and disconnect the system monitor ribbon cables from J1 and J2 on the backplane (see Figure 22).

Figure 11
Power connectors on the rear of the AC CE/PE module backplane



- 8 If one or more NT8D41 Paddle Boards are installed in connectors at the rear of the backplane, tag and disconnect all cables from them and remove them from the backplane.
- 9 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

WARNING

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 10 Pull the card cage forward until it is halfway out of the module.

WARNING

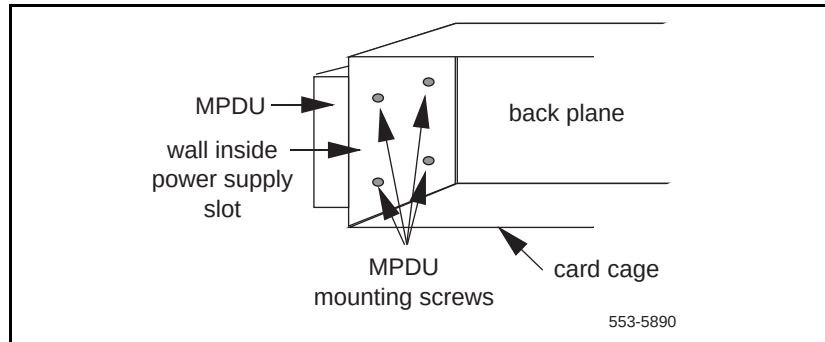
Do not disconnect the main power connectors (the large orange connectors) at the top and bottom of the module.

- 11 Remove the logic ground (orange) wire from the backplane bolt. Be careful to not drop the nut or lock washer into the pedestal (see Figure 22).
- 12 Tag and disconnect the module power connectors. These are the small orange connectors plugged into the module power distribution unit (MPDU) with AC power, or connected to each other with DC power.
- 13 Remove the card cage from the module.

Note: For AC-powered systems: If the new NT5D21 Core/Network module did not come with a Module Power Distribution Unit (MPDU), remove the MPDU from the CE/PE card cage and reinstall it on the new Core/Network card cage after the CE/PE card cage has been removed from the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 23).

- 14 Remove the left I/O panel and install the new I/O panel from the upgrade package. Orient the new panel so that the word "LEFT" is located at the top and facing you.

Figure 12
Location of the screws for the Module Power Distribution Unit (MPDU)



- 15** Remove the existing floating power connector (the black connector) from the rear of the CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cage. Orient the connector so that pin 1 is at the bottom.

Note: Check the orientation of the connector. Viewed from the rear of the card cage, the upper left corner position should be empty (no wire) and the lower right corner position should have a wire installed. The green wire should be up.

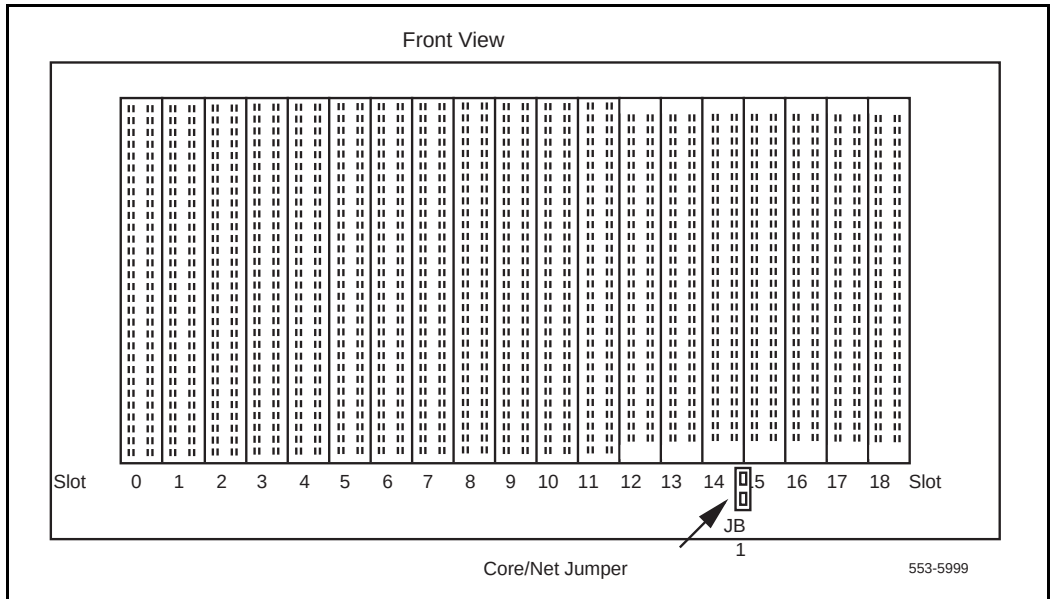
- 16** Check the backplane jumper in the Core/Network card cage. The jumper is located near the bottom of the front side of the backplane, between slots 14 and 15 (see Figure 24). Verify that the jumper is installed on the pins.

CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load or operate correctly.

- 17** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

Figure 13
Location of the jumper on the NT5D21 backplane

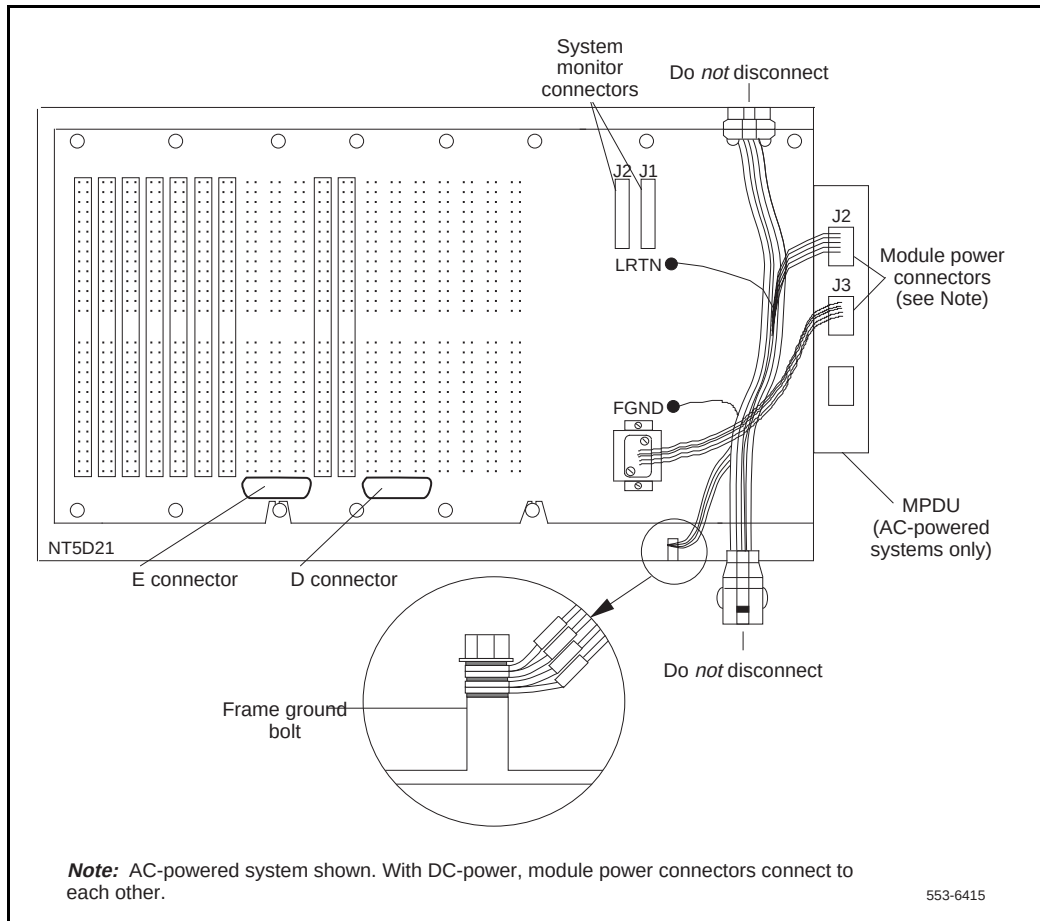


18 Slide the new card cage about halfway into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 25):

- Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut.

Note: For all of the terminal lugs to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third, or the third and fourth terminal lugs.

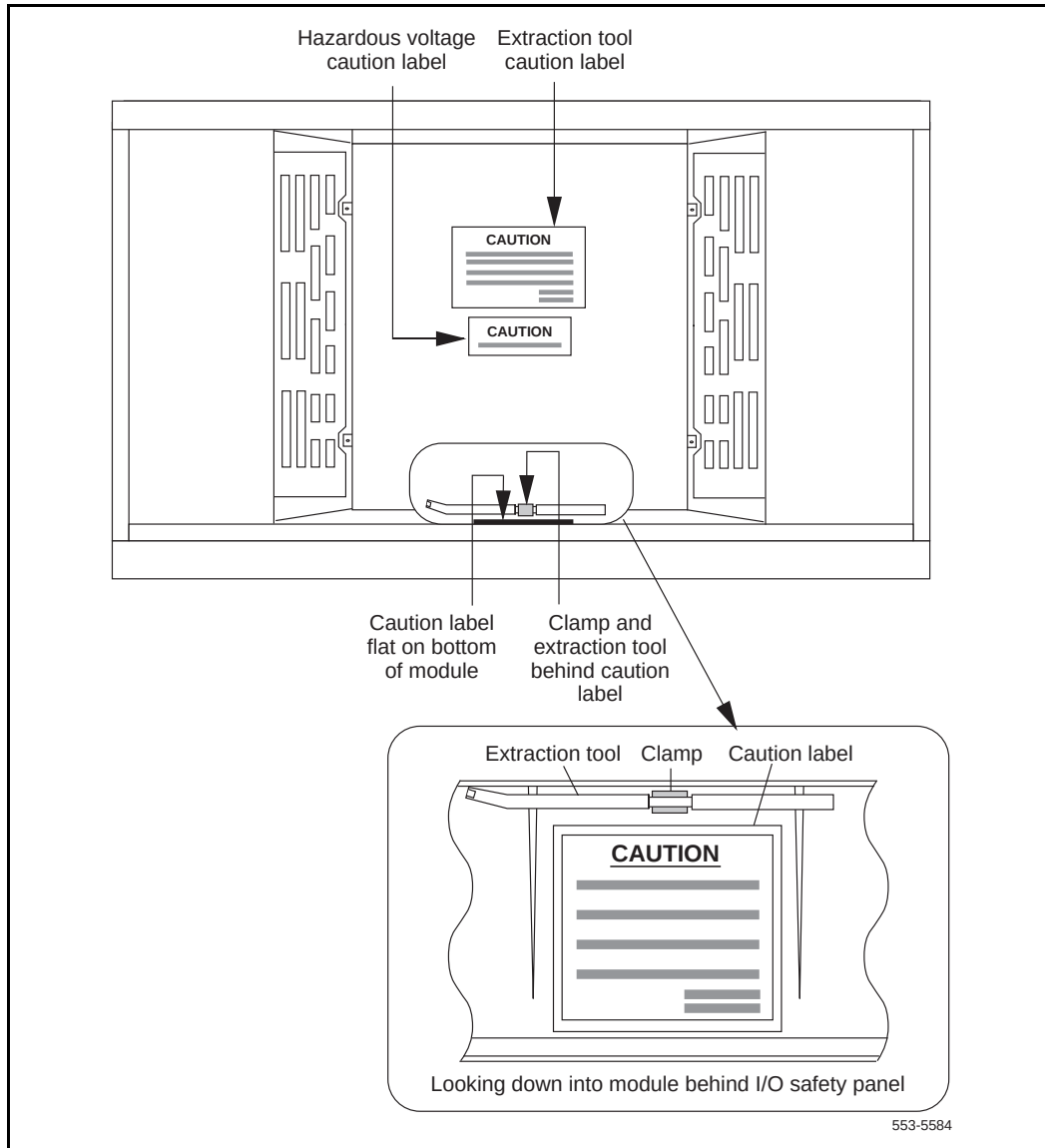
Figure 14
Power connectors on the rear of the NT5D21 Core/Network Module



- Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)
- Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
- Attach the system monitor ribbon cables. Connect the cable from the pedestal to connector J1; connect the cable from the module above to connector J2.

- 19** Slide the card cage all the way into the module.
- 20** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 21** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 22** On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 26).
- 23** In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 24** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 25** Snap the extraction tool into the clamp.
- 26** Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the module (see Figure 26). Attach the large label on top of the existing label. Attach the smaller label at the rear of the module.
- 27** Install the module power supply (removed from the CPU card cage) in the slot labeled "CE pwr sup."

Figure 15
Positioning the extraction tool and caution labels



- 28 Turn on power to the module. With AC power, set the main circuit breaker to ON (up) in the rear of the pedestal. With DC power, set the breaker to ON (up) in the pedestal.
- 29 Check the LED on the hybrid terminators located between slots 11 and 12. All LEDs must be off. The LEDs are set by the jumper on the backplane. If any LEDs are on, check the jumper on the backplane (see Figure 24 on page 118).
- 30 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down). With DC power, set the breaker to OFF (down) in the pedestal.
- 31 Check the vintage of the QPC441 3PE Card—it must be minimum vintage F. Set the front panel ENB/DIS switch to ENB. Set the option switches and jumper on the card (see Table 15). Place the card in slot 11.

Table 15
QPC441F 3PE Card—Option settings

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
RN27 jumper at E35: set to "A"							

- 32 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to ENB.

- 33 Set the option switches on the QPC471 Clock Controller (must be vintage H or later) or QPC775 Clock Controller (must be vintage E or later) card as shown in Table 16. Set the front panel ENB/DIS switch to ENB. Place the clock controller card in slot 9.

Table 16
QPC471 Clock Controller Card switch settings

Switch	1	2	3	4
SW1	On	On	On	On
SW2	Off	Off	Off	Off
SW4	Off	On	Off	Off

- 34 Remove the network cards from the CE/PE card cage and reinstall them in the new Core/Network card cage. Install the cards in slot numbers indicated in Table 17. Notice that although the slot numbers have changed, the relative positions of the cards in the modules have not.

Table 17
Slot number translation for network cards

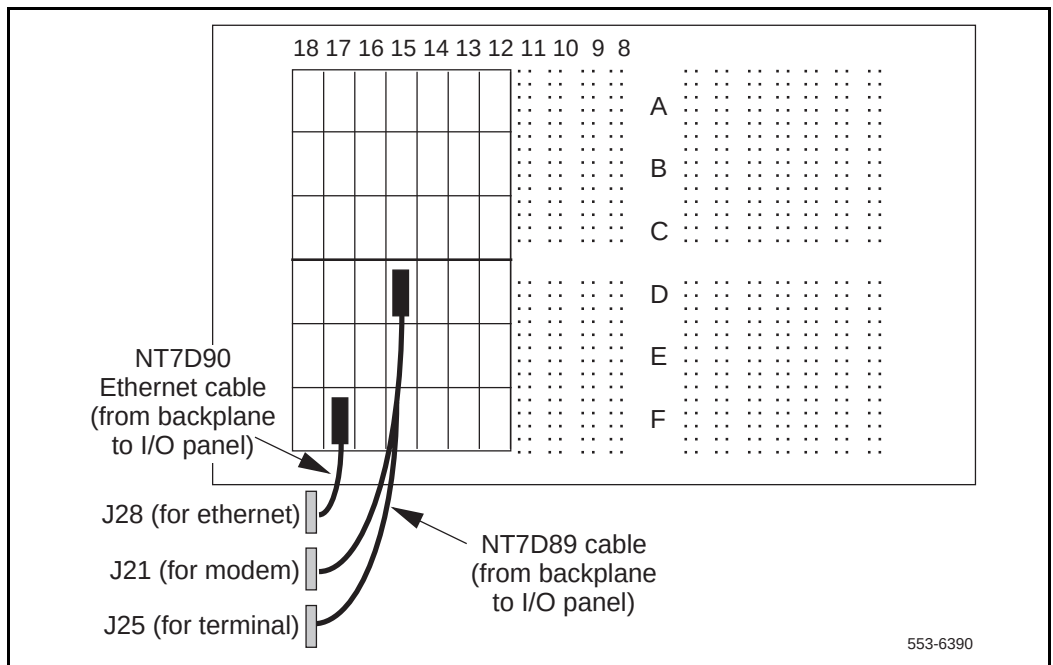
NT8D11 CE/PE Slot Number	NT5D21 Core/Net Slot Number
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

- 35 Follow the steps below to install the NT7D89 RS-232 Y-cable. The cable connects one connector on the backplane to two connectors on the left I/O panel (see Figure 16).

Note: Verify that the left I/O panel is correctly installed: The word “LEFT” faces you at the top of the panel. The connector numbers listed below match the designations on the outside of the left I/O panel.

- On the inside of the I/O panel, connect port A (DTE) to J21 (modem port).
- On the inside of the I/O panel, connect port B (DCE) to J25 (terminal port).
- Connect the single connector end of the cable to backplane connector position 15D.

Figure 16
NT5D21 Core/Network Module (rear)—RS-232 cable connections for CPSI ports



36 At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 16).

37 Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

Note: You may have cables left over after completing this step. You should leave these cables installed until the new option 51C switch has been tested and is working correctly. They will be removed later in this procedure.

38 Connect a terminal to the J25 (DCE) port on the I/O panel. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

Note: Refer to “Terminal and modem connections” on page 927 before connecting the terminal.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 21E 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

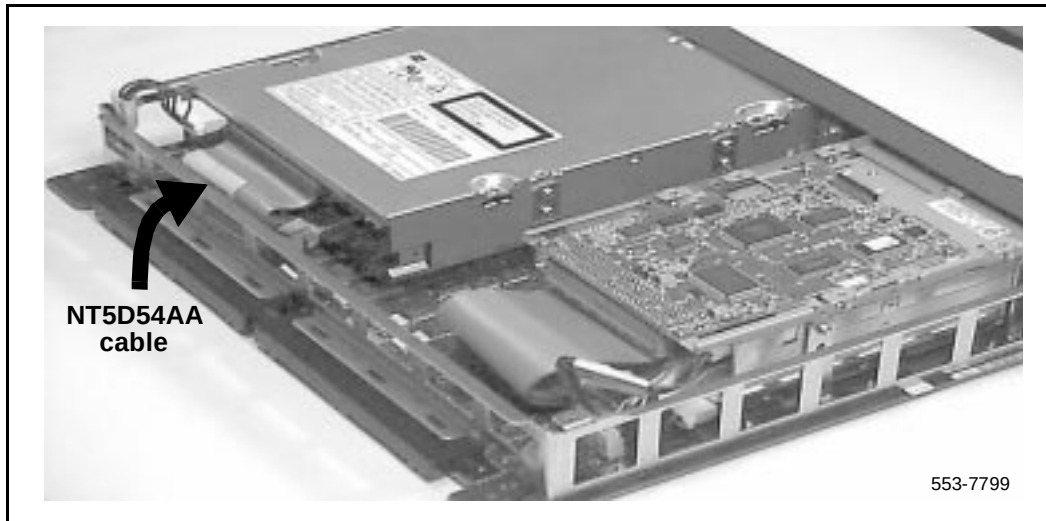
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 28, on page 127). **Do not** disconnect the cable from the IODU/C circuit board.

Figure 17
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

MDU cabling

- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

CAUTION

The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 18, on page 98). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 19, on page 98). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

Figure 18
Cabling the MDU to the IODU/C card

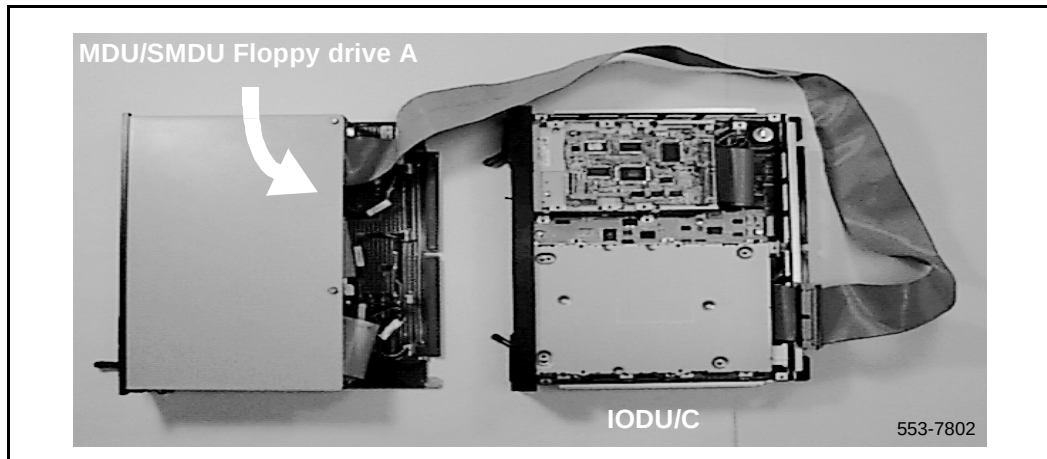
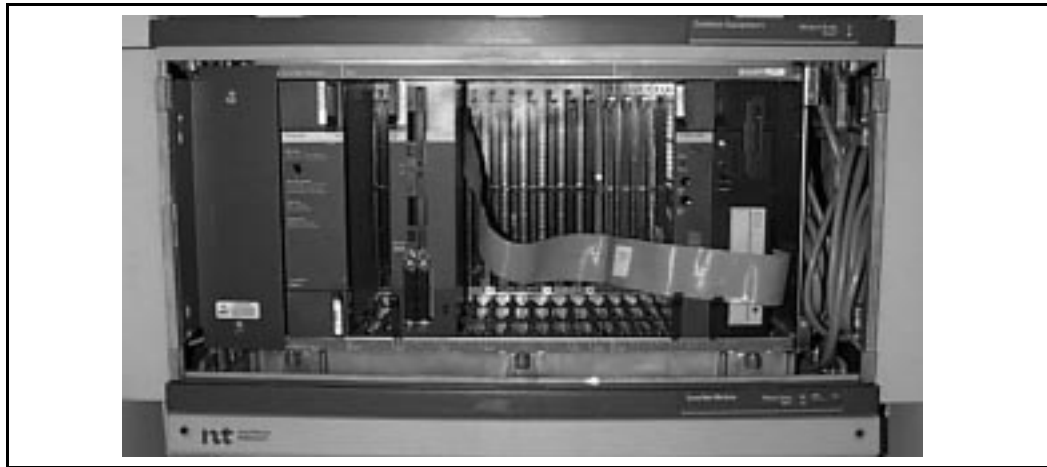


Figure 19
IODU/C and MDU cabled in Core/Net 1



8 Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:
 - <u> to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 - <a> to continue with keycode validation
 - <y> to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:
 - <d> to install customer database only
 - <f> to transfer the customer database from the MDU
 - <a> to continue the database transfer
 - <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 - <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
 - <y> to start installation
 - <a> Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 - <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 - <cr> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
 - <q> When the Install Menu appears, select <q> to quit.
Remove any
 - <y> to confirm quit
 - <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.
- 13 Shut down power to the Core/Net module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software.

Installing release 24 software

Before you begin:

- all cards must be installed in the Core/Net module
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

- 12 Clear displays, major alarms, and minor alarms:

LD 135 to load the program
CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
CDSP to clear the display
******** to exit LD 135

- 13 Load overlay 137 to verify status of the IODU/C:
- | | |
|---------------|----------------------------------|
| LD 137 | to load the program |
| STAT | to get the status of the IODU/C. |
| **** | to exit the program |
- 14 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 15 Insert a B1 database disk (from the release 24 disk set) into the IODU/C for backup.
- 16 Load the Equipment Data Dump Program (LD 43). This command creates backups on both the hard disk and the floppy disk in the IODU/C if a floppy disk is installed. At the prompt, enter
- | | |
|--------------|---------------------|
| LD 43 | to load the program |
|--------------|---------------------|
- 17 When “EDD000” appears on the terminal, enter
- | | |
|------------|------------------------|
| EDD | to begin the data dump |
|------------|------------------------|
- 18 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
- | | |
|-------------|---------------------|
| **** | to exit the program |
|-------------|---------------------|

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Completing the upgrade

- 1 Reenter system configuration data into the customer database, if required, in the following sequence:
 - To reassign configuration data previously moved from loop 28 to an appropriate loop in the option 51C, do the following:
 - Define the target loop using the Configuration Program (LD 17).

- Move the loops using the Move Data Blocks Program (LD 25).

Refer to *X11 input/output guide* for instructions on using LD 17 and LD 25.

- Move the network cards from the option 21/21E to the network card slots previously defined.
- Configure I/O devices to reflect the current configuration.
- Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 1000 and 500, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
- Reenter customer data blocks. System options and features must reflect the current configuration.
- Configure station data blocks.
- Configure route data blocks.
- Configure trunk data blocks.
- Configure remaining system configuration records.
- Verify system operation before adding new equipment.
- Configure new equipment and functions, if any.

- 2 Load overlay 22 and print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration

After verifying the changes, enter

******** to exit the program

- 3 Insert the release 24 B1 disk into the IODU/C.

- 4 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Verify that the ENB/DIS switch is set to ENB on all of the cards in the network area of the Core/Network module.
- 6 Press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)

- 7 Check for dial tone. If there is no dial tone, do the following:
 - Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
 - Verify that all cables are properly and securely connected in the front and rear of the module.
 - Check the status of the CNI card with LD 135 “STAT CNI” and ensure that it is software enabled.
 - If the CNI card is software disabled, test the card with LD 135 “TEST CNI c s.”
 - If the test is successful, enable the card in LD 135, perform a data dump with LD 43, and recheck the CNI status in LD 135.
 - Check for dial tone again.
 - If dial tone is still not present, press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)
- 8 Following a successful dial tone test, perform the following basic sanity tests:
 - Make sure calls can be placed internally and externally.
 - Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.
- 9 Clear displays, major alarms, and minor alarms:

LD 135	to load the program
CDSP	to clear the display
CMAJ	to clear all major alarms
CMIN ALL	to clear all minor alarms
CDSP	to clear the display
****	to exit LD 135

- 10 Load overlay 60 and software enable clock controller cards and any PRI/DTI cards in the Core/Network Module:

LD 60	to load the program
ENL CC x	to enable clock controller card 0 or 1
TRCK aaa	if necessary, to set tracking
ENLL loop	to enable the specified network loop and associated PRI/DTI card
****	to exit the program
- 11 Install the appropriate trim panels from the upgrade package to the Core/Network module.
- 12 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

Upgrading option 51 to option 51C

This section describes upgrading a Meridian 1 option 51 to an option 51C X11 release 24. Upgrading requires powering down the option 51, removing the NT6D39 CPU/Network card cage, installing the NT5D21 Core/Network card cage, and upgrading the customer database.

CAUTION

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. Read this procedure thoroughly before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Verify that all equipment needed for the upgrade has been identified and is available.
- Check for minimum vintage requirements on all circuit cards that will be used in the upgraded system.
- Resolve any existing operational problems, error messages, or other problems.

CAUTION

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

Equipment required

The hardware required for this upgrade is provided in the Core/Net Card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 release 24. You must order replacements for equipment that does not comply.

Additional equipment may also be needed to meet site requirements. Verify that all equipment needed for the upgrade has been identified.

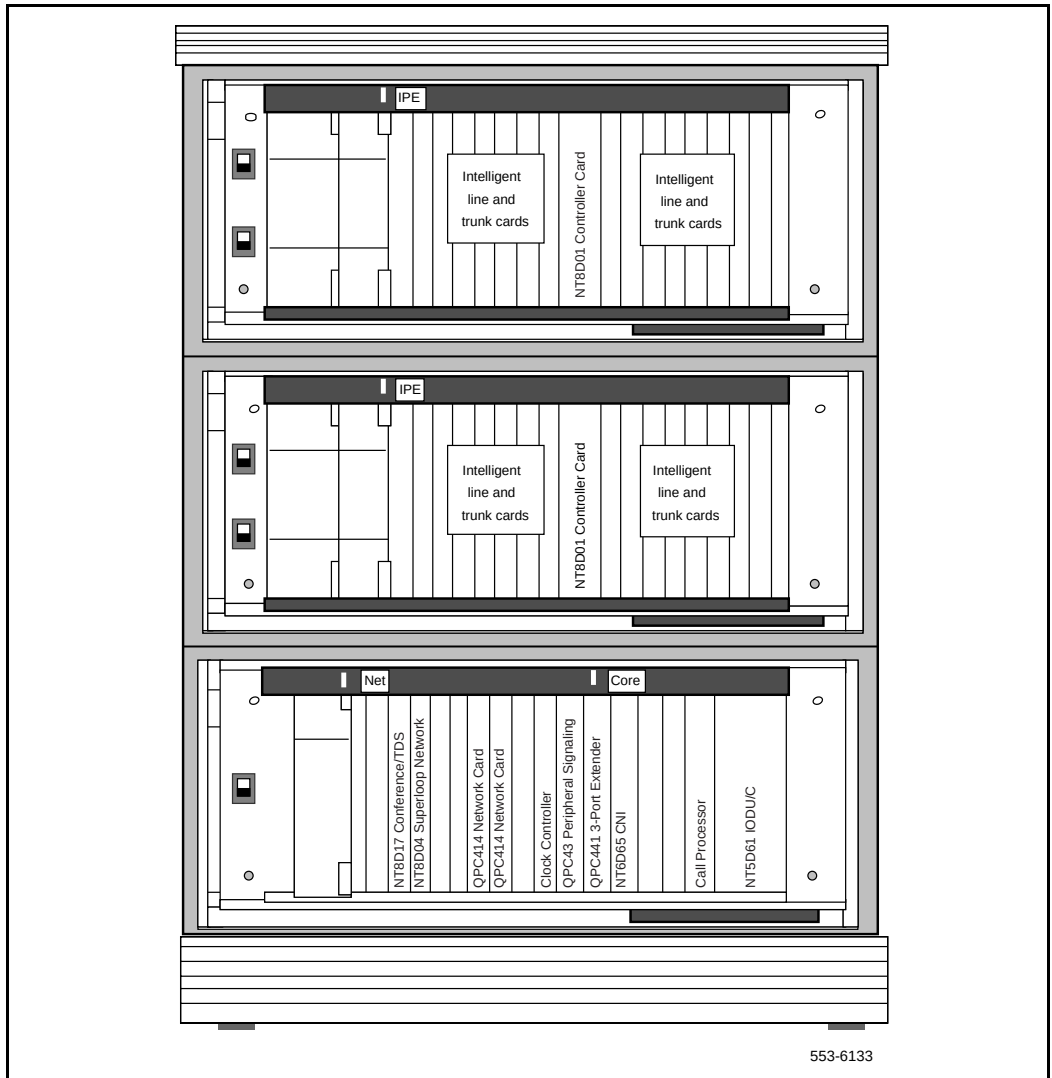
Table 18 lists the equipment required to upgrade a Meridian 1 option 51 system to a Meridian 1 option 51C system.

Table 18
Hardware required to upgrade an option 51 system to option 51C

Quantity	Part Number	Description
1	NT1R90AB	Trim Panel Kit
1	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
1	NT5D2103	Core/Network Card Cage
1	NT6D65AA	Core to Network Interface card (CNI)
1	NT9D19 or	Call Processor card (CP) (see note 1)
1	NT5D10 or	
1	NT5D03	
1	NT7D89CA	CP to I/O Panel RS-232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	QPC471H or QPC775E	Clock Controller card (see note 2)
Note 1: One NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E)CP card is required. For X11 release 24 option 51C systems, the minimum memory requirement for a CP card is 48 MB. Note 2: If PRI or DTI cards are installed in the option 51C, you must have one QPC471 Clock Controller card (vintage H) or oneQPC775 (vintage E) Clock Controller card to perform this upgrade.		

Figure 20 shows option 51C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

Figure 20
Meridian 1 option 51C



In addition, verify that the QPC441 3PE card installed in your current option 51 is revision F or higher and that the QPC471 Clock Controller card is revision H or higher. Revisions earlier than these will not work in an option 51C.

Upgrade preparation

The following summarizes the steps you must perform before beginning the upgrade:

- 1 Check equipment required for the upgrade.
- 2 Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 3 Check the tool list in “Tools” on page 6. Make sure all the tools are on hand.
- 4 Check the cards that you will be reusing to ensure that they can be used in the 51C. Refer to *Product compatibility* (553-3001-156) for specific compatibility information.
- 5 Prepare cables for the installation. Separate the cables in the upgrade package. Label both ends of all cables.
- 6 If the QPC471 Clock Controller card in the option 51 is not minimum vintage H, you must replace it before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)
- 7 Convert the option 51 customer database to release 24 compatibility.
- 8 Follow “Procedure 1: Preconversion procedure,” *Software conversion procedures* (553-2001-320), and print configuration records.

Check the configuration record printouts to identify all configured I/O ports. When you switch service to the Core/Network module, one I/O address must be available for a CPSI port. Refer to “Terminal and modem connections” on page 927 for specific information regarding the terminal and modem settings.

- If only one address is available, the CPSI port for a terminal connection is automatically assigned to it.

- If more than one address is available, the CPSI port for a terminal connection is automatically assigned to the first available address (the lowest number). If more than one address is available, the I/O port for a modem connection is also assigned automatically.
- If there is no address available, the device assigned to I/O address 15 is automatically replaced by the CPSI port for a terminal connection.

Performing a data dump

Before starting the upgrade, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the option 51.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.
- 3 Insert the source B1 disk into the NTND16 MDU.
- 4 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 5 Exit the program. At the prompt, enter ******** to exit the program

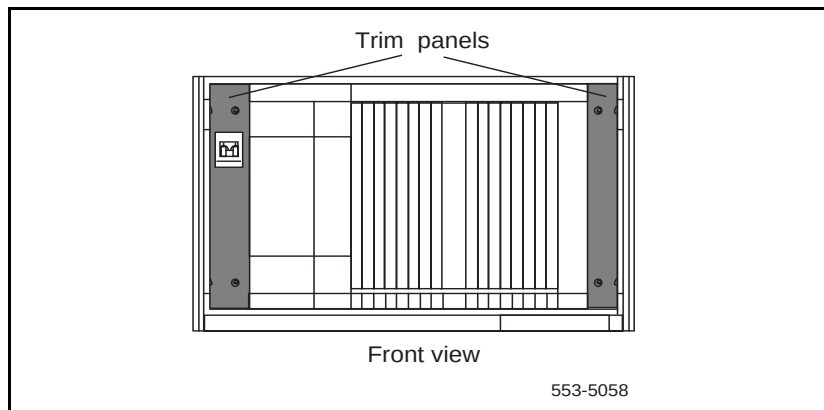
CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Removing and installing the card cage

- 1 Perform the appropriate step below to turn off power to the column:
 - For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the module (see Figure 21). Keep the screws for reuse.

Figure 21
Location of the trim panels



- 3 Tag and disconnect all cables connected to the front of each card in the CPU/Network module. Note the exact positions of the cables connected to cards on the network side of the card cage; they must connect to the same cards when the module is reassembled. Tape over the cable connector contacts to avoid accidental grounding. Tape or tie all cables out of the way so that the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.

- 5 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

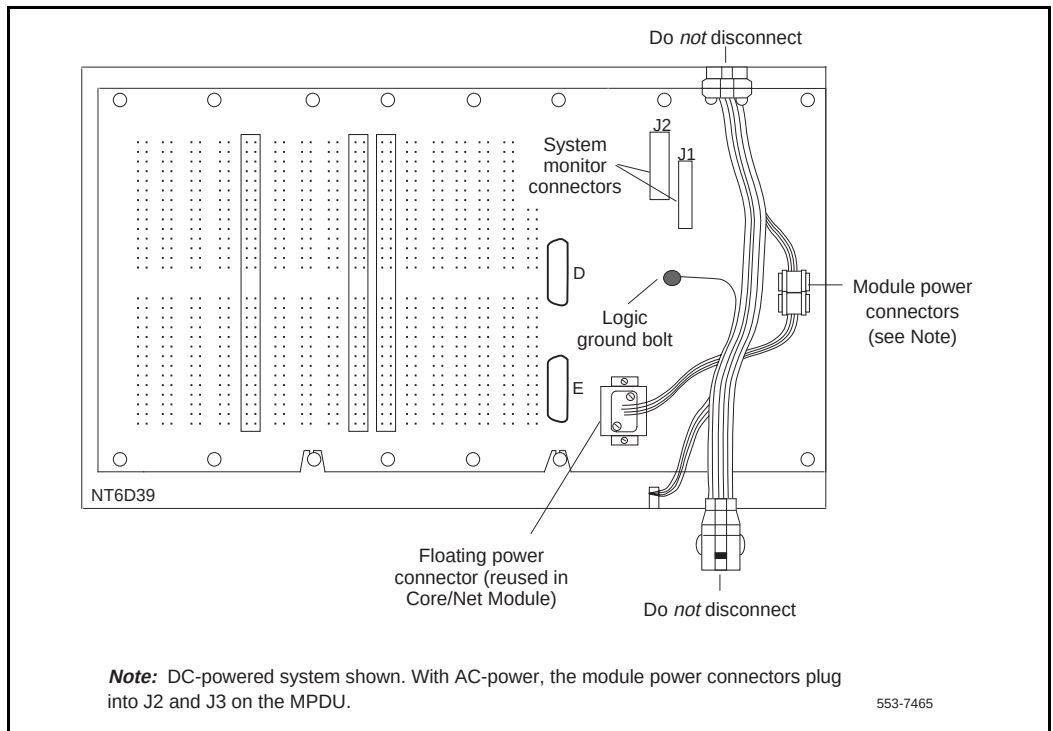
WARNING

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards back into the same slots after the screws have been removed.

- 6 Tag and disconnect all cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 7 Tag and disconnect the system monitor ribbon cables to J1 and J2 (see Figure 22).

Figure 22

Power connectors on the rear of the CPU/Network module backplane



- 8 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

WARNING

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 9 Pull the card cage forward until it is halfway out of the module.

WARNING

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

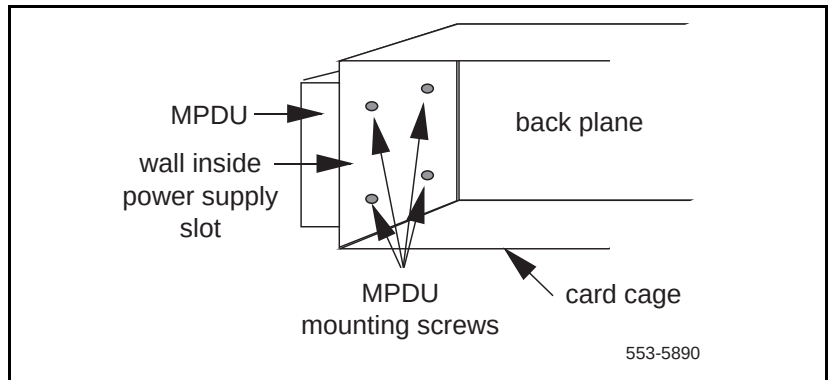
- 10 Remove the logic ground (orange) wire from the backplane bolt. Be careful to not drop the nut or lock washer into the pedestal (see Figure 22).
- 11 Tag and disconnect the module power connectors. These are the small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.

- 12 Remove the card cage from the module.

Note: For AC-powered systems: If the new NT5D21 Core/Network module did not come with a module Power Distribution Unit (MPDU), you must remove the MPDU from the CPU/Network card cage and reinstall it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 23).

Figure 23

Location of the screws for the Module Power Distribution Unit (MPDU)



- 13 Remove the existing floating power connector (the black connector) from the rear of the CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cage.

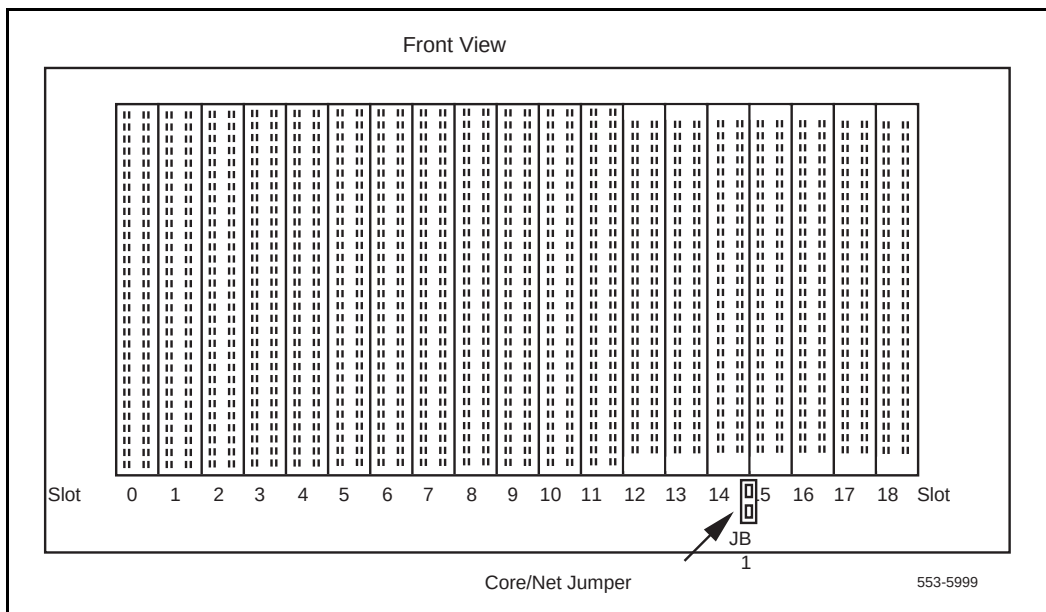
Note: Check the orientation of the connector. Viewed from the rear of the card cage, the upper left corner position should be empty (no wire) and the lower right corner position should have a wire installed. The green wire should be up.

- 14 Check the backplane jumper in the Core/Network card cage. The jumper is located near the bottom of the front side of the backplane, behind slot 14 (see Figure 24). Verify that the jumper is installed on the pins.

CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load or operate correctly.

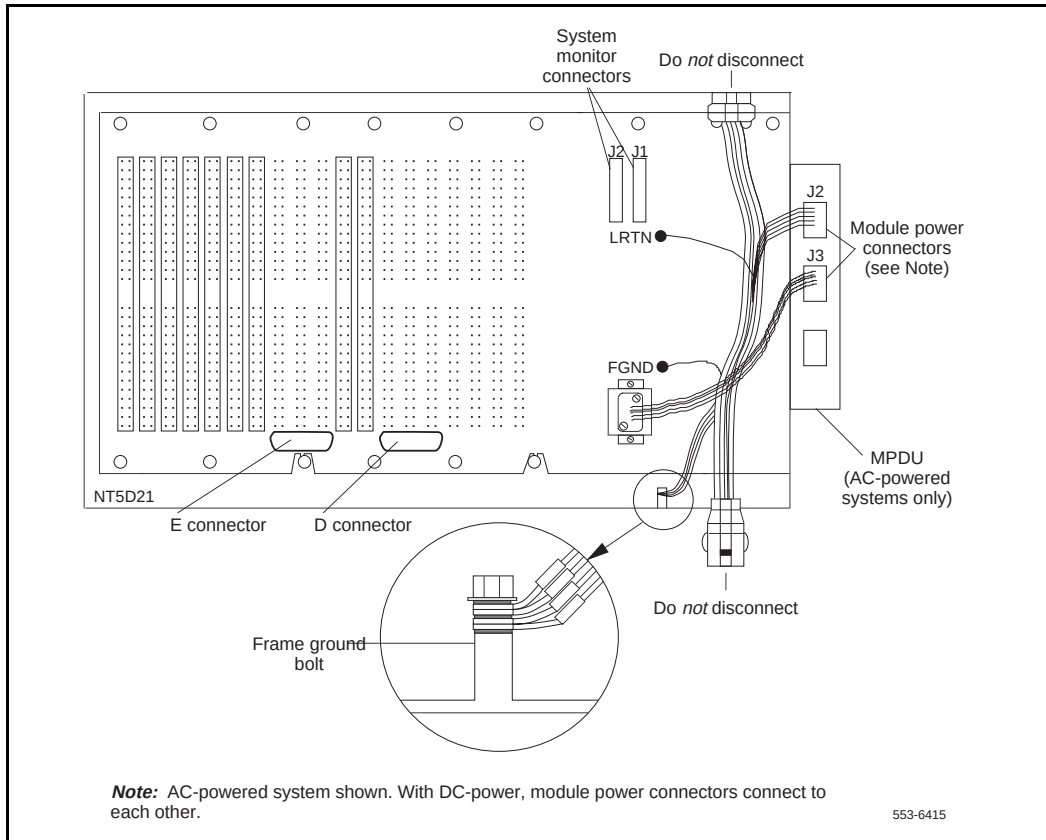
Figure 24
Location of the jumper on the NT5D21 backplane



- 15 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

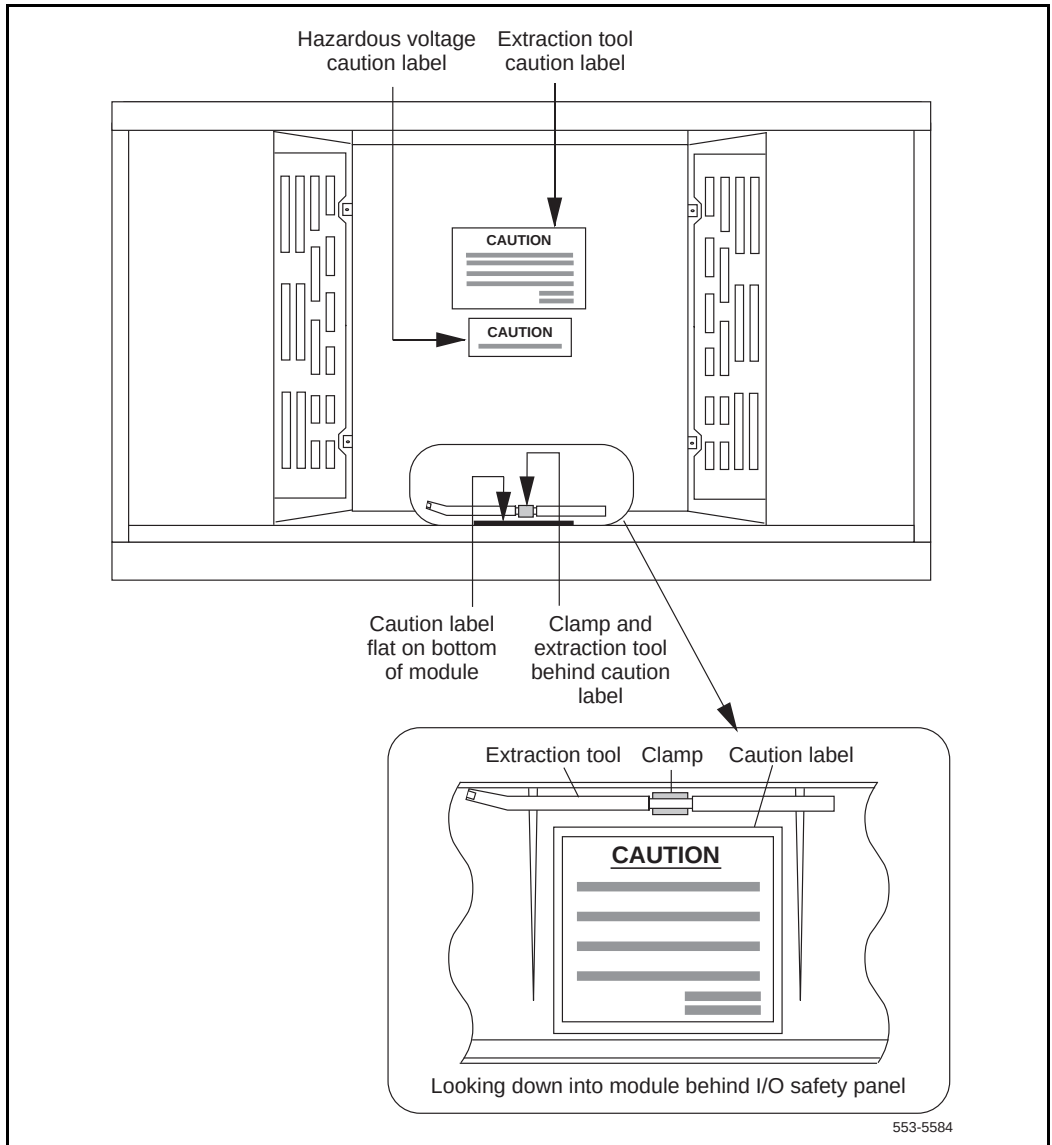
- 16** Slide the new card cage about halfway into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 25):
- Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut.
- Note:** For all of the terminal lugs to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third or the third and fourth terminal lugs.
- Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)
 - Connect the module power connectors to the MPDU for AC power or to each other for DC power.
 - Attach the system monitor ribbon cables. Connect the cable from the pedestal to connector J1; connect the cable from the module above to connector J2.
- 17** Slide the card cage all the way into the module.
- 18** Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 19** Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 20** On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 26).
- 21** In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 22** In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 23** Snap the P0741489 extraction tool into the clamp.

Figure 25
Power connectors on the rear of the NT5D21 Core/Network module



- 24 Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the module (see Figure 26). Attach the large label on top of the existing label. Attach the smaller label at the rear of the module.
- 25 Install the module power supply (removed from the CPU card cage) in the slot labeled “CE pwr sup.”

Figure 26
Positioning the extraction tool and caution labels



- 26 Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 27 Check the LEDs on the hybrid terminators located between slots 11 and 12 in the Core/Net module. All LEDs must be off. The LEDs are determined by the jumper setting on the backplane. If any LEDs are on, check the jumper on the backplane (see Figure 24 on page 118).
- 28 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down position). With DC power, set the breaker to OFF (down position) in the pedestal.
- 29 Place the NT6D65 CNI card in slot 12. Set the front panel ENB/DIS switch to ENB.
- 30 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to ENB. Set the option switches and jumper on the card (see Table 19). Place the card in slot 11.

Table 19
QPC441F 3PE card—option settings

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
RN27 jumper at E35: set to "A"							

- 31 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to ENB.

- 32** Set the option switches on the QPC471 Clock Controller card as shown in Table 20. Set the front panel ENB/DIS switch to ENB. Place the clock controller card in slot 9.

Table 20
QPC471 Clock Controller card switch settings

Switch	1	2	3	4
SW1	On	On	On	On
SW2	Off	Off	Off	Off
SW4	Off	On	Off	Off

- 33** Remove the network cards from the old CPU card cage and reinstall them into exactly the same position on the new Core/Network card cage.

WARNING

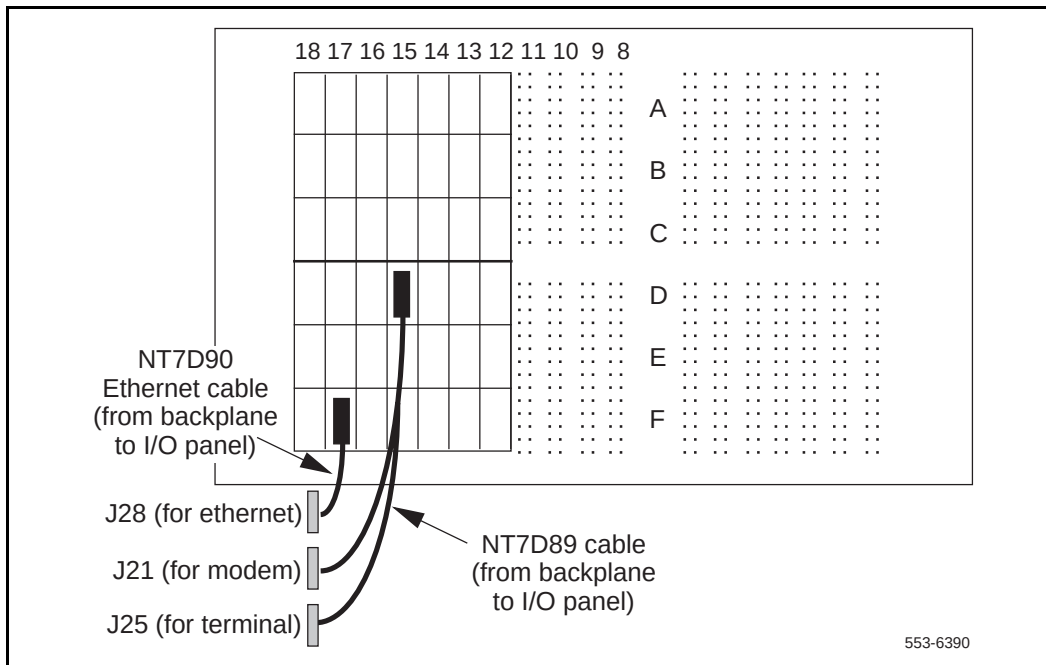
The slot-numbering system is different for the NT6D39 CPU/Network module and the NT5D21 Core/Network module. A network card removed from CPU/Network module slot 3 is placed into Core/Network module slot 2. While the slot numbers have changed, the relative positions of the cards have not.

- 34** Follow the steps below to install the NT7D89 RS-232 cable that connects the CPSI ports on the CP card to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 27).

Note: The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- On the inside of the I/O panel, connect port A (for connecting a modem) to J21.
- On the inside of the I/O panel, connect port B (for connecting a terminal) to J25.
- Connect the single connector end of the cable to backplane location 15D.

Figure 27
NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports



- 35** At the rear of the Core/Net module, connect the NT7D90 Ethernet Cable from backplane location 17F to J28 on the I/O panel.

Note: Route these cables as perpendicular as possible to nearby power cables.

- 36** Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

Note: You may have cables left over after completing this step. You should leave these cables installed until the new option 51C switch has been tested and is working correctly. They will be removed later in this procedure.

- 37** Connect a terminal to the J25 (DCE) port on the I/O panel. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

Note: Refer to “Terminal and modem connections” on page 927 before connecting the terminal.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 51 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

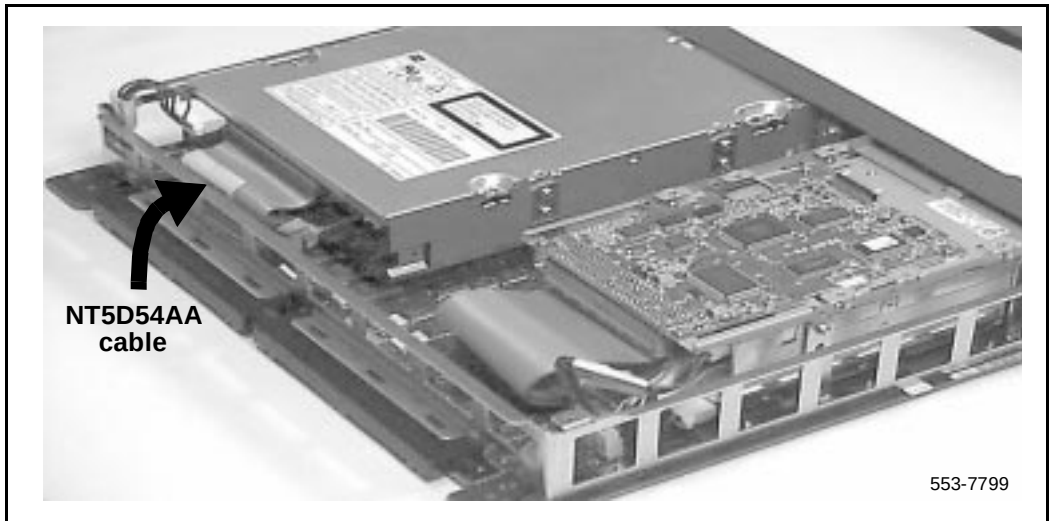
Ensure that the Core/Net module is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 Verify that the Core/Net module is powered down.
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip when inserting the security device. Ensure that the security device is securely in place.

IODU/C cabling

- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 28, on page 127). **Do not** disconnect the cable from the IODU/C circuit board.

Figure 28
Location of NT5D54 cable on IODU/C card



- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of the Core/Net module.

MDU cabling

- 1 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

CAUTION

The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 2 Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (to change the SCSI ID and avoid conflict with the IODU/C floppy drive). The jumper has six pins and three jumpers.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 29, on page 129). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net module (see Figure 30, on page 129). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of the Core/Net module. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 7 Insert the Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.

Figure 29
Cabling the MDU to the IODU/C card

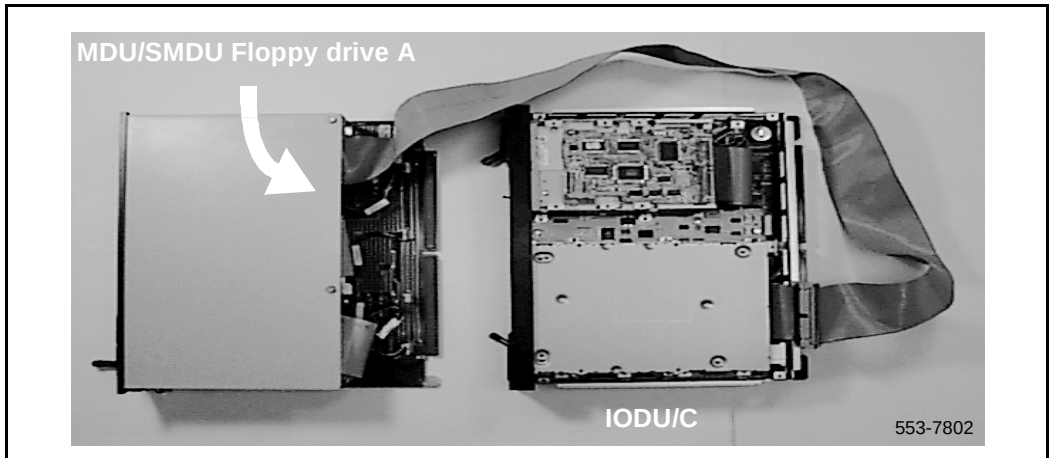
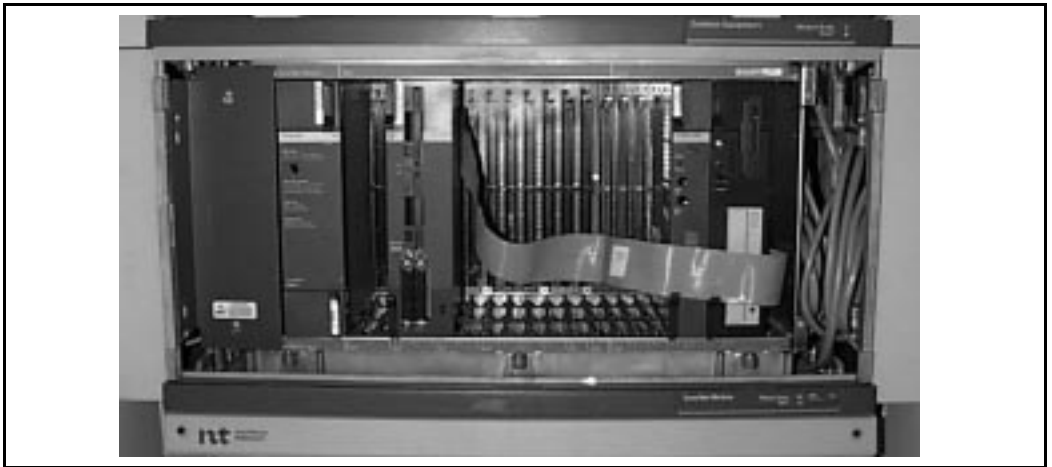


Figure 30
IODU/C and MDU cabled in Core/Net 1



- 8 Apply power to the module.

The system will load software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.

- 9 Enter the time and date, when prompted.
- 10 Initiate the database installation by selecting the following command from the menu:

 <u> to Install menu
- 11 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 12 When the Install Menu appears, select the following options in sequence:

 <d> to install customer database only
 <f> to transfer the customer database from the MDU
 <a> to continue the database transfer
 <a> to transfer the database from the floppy to the hard disk
 (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 <cr> to continue
 the Installation Status Summary menu appears to confirm database transfer
 <y> to start installation
 <a> Yes, transfer the database

 Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 <cr> Press return to return to the Install Menu.
 Remove any diskettes from the floppy drive.
 <q> When the Install Menu appears, select <q> to quit.
 Remove any
 <y> to confirm quit
 <a> to reboot the system

 The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

13 Shut down power to the Core/Net module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 14 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 15 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 16 Insert the Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 17 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 18 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 19 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software.

Installing release 24 software

Before you begin:

- all cards must be installed in the Core/Net module
- the Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette.
Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM
release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in the Core/Net module.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

Completing the upgrade

- 1 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 1000 and 500, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
- 2 Load overlay 22 and print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration

After verifying the changes, enter

****	to exit the program

- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- | | |
|--------------|---------------------|
| LD 43 | to load the program |
|--------------|---------------------|

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD	to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 4 Verify that the ENB/DIS switch is set to ENB on all of the cards in the network area of the Core/Network module.
- 5 Press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)

- 6 Check for dial tone. If there is no dial tone, do the following:
 - Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
 - Verify that all cables are properly and securely connected in the front and rear of the module.
 - Check the status of the CNI card with LD 135 “STAT CNI” and ensure that it is software enabled.
 - If the CNI card is software disabled, test the card with LD 135 “TEST CNI c s.”
 - If the test is successful, enable the card in LD 135, perform a data dump with LD 43, and recheck the CNI status in LD 135.
 - Check for dial tone again.
 - If dial tone is still not present, press the MAN INT button on the CP card. Watch the initialization process. Make sure the CNI and 3PE cards are auto-enabled. (The faceplate LEDs should go out.)
- 7 Following a successful dial tone test, perform the following basic sanity tests:
 - Make sure calls can be placed internally and externally.
 - Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.
- 8 Clear displays, major alarms, and minor alarms:

LD 135	to load the program
CDSP	to clear the display
CMAJ	to clear all major alarms
CMIN ALL	to clear all minor alarms
CDSP	to clear the display
***	to exit LD 135

- 9 Load overlay 60 and software enable clock controller cards and any PRI/DTI cards in the Core/Network module:

LD 60	to load the program
ENL CC x	to enable clock controller card 0 or 1
TRCK aaa	if necessary, to set tracking
ENLL loop	to enable the specified network loop and associated PRI/DTI card
****	to exit the program
- 10 Install the appropriate trim panels from the upgrade package to the Core/Network module.
- 11 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

Upgrades to Meridian 1 option 61C

This chapter describes how to upgrade the following SL-1 and Meridian 1 systems running X11 release 19 or higher software to release 24 on the option 61C:

- SL-1 ST/STE upgrade to option 61C, page 143
- SL-1 RT upgrade to option 61C, page 173
- SL-1 NT upgrade to option 61C, page 199
- Meridian 1 option 21/21E upgrade to option 61C, page 228
- Meridian 1 option 51 upgrade to option 61C, page 261
- Meridian 1 option 61 upgrade to option 61C, page 286
- Meridian 1 option 51C upgrade to option 61C, page 317.

CAUTION

Upgrading the customer database on-site requires some system down time. Schedule sufficient down time when planning the system upgrade.

CAUTION

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

Database conversion requirements

Table 21
Database conversion requirements, STE to option 61C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx STE	1511	NTND31
19	21	Release 21.xx option 61C	1811	NT6D66DA (48MB)
21	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
For converting a release 19 customer database				
19	21	Release 21.xx option 61C	1811	NT6D66DA (48MB)
21	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
For converting a release 21 customer database				
21	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
Note: When upgrading an SL-1 ST to option 61C, it is recommended that you send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this. Alternatively, you can reenter the database on the option 61C after the upgrade is complete.				

Table 22**Database conversion requirements, RT system upgrade to option 61C**

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx RT	1311	NTND08
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)

Table 23**Database conversion requirements, NT system upgrade to option 61C**

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx NT	1111	NTND08
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)

Table 24
Database conversion requirements, option 61 upgrade to option 61C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx option 61	1111	NTND08
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)

Table 25
Database conversion requirements, option 51C to option 61C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 20, 21, 22, oe 23 customer database				
20	24	Release 24.xx option 61C	2311 or 2511 or 2911	NT9D19CA/CB (64MB Minimum) NT5D10BA (64MB Minimum) NT5D03BA (64MB Minimum)

Upgrading ST and STE systems to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an SL-1 ST or STE system to a Meridian 1 option 61C X11 release 24, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 61C next to the SL-1 cabinet
- removing the common equipment (CE) from the SL-1 cabinet
- connecting the cabinet to the option 61C column

IMPORTANT

STE systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to option 61C is performed as part of the software upgrade to release 24.

This eliminates the requirement of interim hardware.

Upgrading the software consists of the following:

- transferring the customer database on the ST to extra-high-density disks
- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those customers who choose to convert the database on-site, converting the customer database to release 24 compatibility

Note: It is recommended that ST system customers send the customer database diskette to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this.

Equipment required

Tables 26 and 27 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Table 26
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply , AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)

Table 26
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
1	NT8D81	Power Regulation card
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 27
Hardware requirements for a DC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
1	NT8D81	Power Regulation card

Table 27
Hardware requirements for a DC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB.		
Note 2: One NT6D42CC Ringing Generator, DC, must be added for each IPE module in which analog-type peripheral cards are to be used.		
Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the ST/STE hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Install the option 61C hardware.
- Back up the customer database to tape or disk by doing a data dump.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Installing option 61C hardware

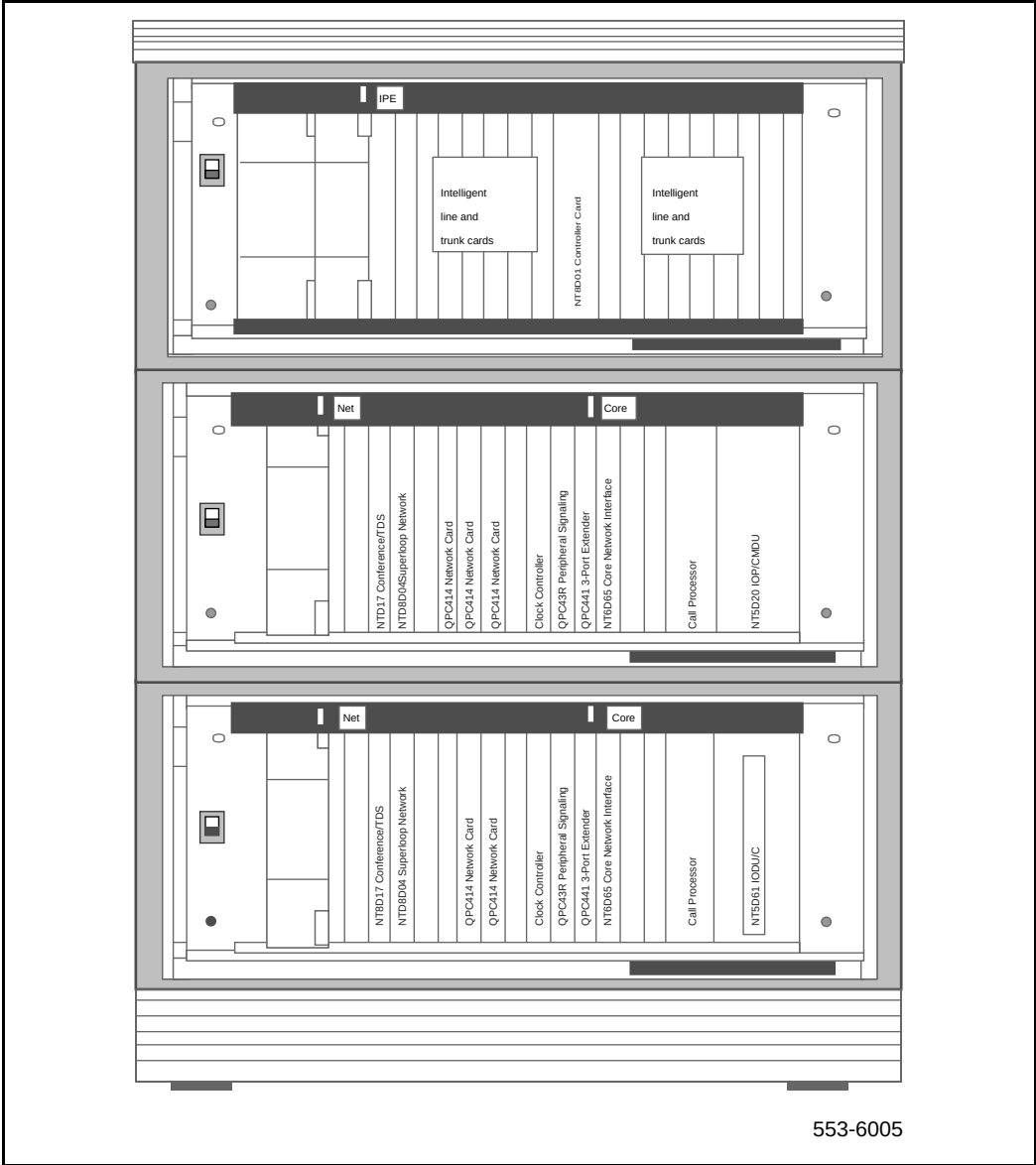
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/C and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 31 shows option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the option 61C at your site, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) and then continue with the procedures on the following pages of this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 156).

Figure 31
Meridian 1 option 61C



Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the ST/STE system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the customer database to release 21

If the ST/STE is running X11 release 18 or 20 software, you must convert the database to release 21 before continuing with the upgrade. You can convert the database on-site, or send it to Northern Telecom for conversion.

If your system is running release 21 software, skip this section and continue with “Converting the SL-1 hardware” on page 155.

Note: It is recommended that ST system customers send the customer database diskettes to Northern Telecom for conversion; contact your Northern Telecom representative to arrange for this.

You will complete converting the database to release 24 later in these procedures after you convert the software to release 21 and upgrade the hardware.

CAUTION

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

Perform the preconversion procedure in *Software conversion procedures* (553-2001-320) before beginning the following conversion procedures. During the preconversion procedure, always enter LD 43 using the source media.

Converting release 18 and 19 database to release 21

- 1 Remove the front covers from the CPU/Network cabinet in the STE system.
- 2 Log into the system.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

Note: Your system will have either a QPC584 MSI card or an NT9D34 EMSI card.

- 4 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 18 software with the QMM42 cartridge for release 19 software.
- 5 For MSI cards, set position 4 on switch SW3 to OFF. For EMSI cards, set position 4 on switch SW2 to OFF. Reinstall and enable the card.
- 6 Remove the disks containing release 18 software from the drives and insert ED floppy disks with release 19 software into the NTND16 MDU drives. Insert disk A in DRV A and disk B in DRV B.

- 7 Perform a data dump. At the prompt, enter
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Simultaneously press both RLD buttons on the NTND10 CMA cards. System messages similar to the following will appear:
- SYS000**
SYSLOAD RLS: xxISSUE:x
DONE
INI000
- 9 Log into the system.
- 10 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.
- 11 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 19 software with the QMM42 cartridge for release 21 software. Reinstall and enable the card.
- 12 Remove the disks containing release 19 software from the drives and insert ED floppy disks with release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.

- 13 Perform a data dump. At the prompt, enter
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 14 Simultaneously press both RLD buttons on the NTND10 CMA cards. When prompted, remove disk A1 from the A drive and insert disk A2. System messages similar to the following will appear:

SYS000
INSERT DISK A2 INTO DRIVE A
SYSLOAD RLS: xxISSUE:x
DONE
INI000

- 15 Immediately following the system initialization sequence, remove disk A2 from drive A and insert disk A1.

- 16 Log into the system.

- 17 Copy the contents of the data disks to the hard disk by entering

LD 43 to load the program
RES to copy the entire contents of the backup to the hard disk

Insert the additional system disk (A2) when requested. When the restore sequence is complete, enter

******** to exit the program

- 18 Remove disk A2 from drive A and insert disk A1.

- 19 Set the ENB/DIS switch on each MSI or EMSI card to DIS.

- 20 Remove each MSI or EMSI card. For MSI cards, set position 4 on switch SW3 to ON. For EMSI cards, set position 4 on switch SW2 to ON.
- 21 Reinstall each MSI or EMSI card and set the ENB/DIS switch to ENB.
- 22 If you are installing an MDU and the system is not configured for a hard disk drive, change the configuration record:
- | | |
|--------------|--|
| LD 17 | to load the program |
| IOTB | enter YES to change I/O devices |
| ADAN | enter CHG HDK 0 to add a hard disk unit |
| **** | to exit the program |
- 23 Perform a data dump:
- | | |
|--------------|------------------------|
| LD 43 | to load the program |
| EDD | to begin the data dump |

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 24 Verify the system by using the test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.

You will continue converting the database to release 24 later in these procedures after you upgrade the hardware. Proceed with “Converting the SL-1 hardware” on page 155 to continue with the upgrade.

Converting the SL-1 hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1** Set the ENB/DIS switches on all CE cards to DIS.
- 2** Disconnect all network loop cables connected to the QPC414 Network cards and cables connected to the SDI cards.
- 3** Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 4** Disconnect cables from the MSU faceplate, release the locking devices, and remove the MSU.
- 5** Disconnect the MSU shelf alarm connector.
- 6** Remove remaining cards from the CE shelf and store them in a safe place.
- 7** Install the NT8D81 Power Regulation card into slot 2 of the CE shelf in the ST cabinet.

Installing external cables

After the option 61C columns are installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1 Install network cables between the SL-1 cabinet and the option 61C modular column. These cables connect network cards in the Core/Network module to the peripheral buffer card in the PE shelf in the cabinet. Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of connector kits and cables required to connect network loops between a cabinet and an option 61C column.

Each network loop connection requires three cables:

- Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the SL-1 cabinet. A connector housing kit is required for the cabinet to accept the cable.
- Connect the NT9J98 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.

- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 797.
- 3 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface.
- 4 Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the SL-1 cabinet CE shelf.
- 5 Install one PRI/DTI card in this module as the primary clock reference, and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).

- 6 Verify that PRI/DTI cards in the SL-1 peripheral cabinet CE shelf are connected to the MDF or network interface.
- 7 Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to *Meridian 1 system installation procedures* (553-3001-210) for the installation procedures for the IPE module I/O panel external cable.

Note: Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.

- 7 data bits
- 1 stop bit
- Space parity
- Full duplex
- XON protocol

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the STE 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Ensure that the round 1/2” diameter IODU/C security device is installed. If it is not installed:
 - Locate the IODU/C security device.
 - With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.
- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).

- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:

- Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:

LD 37 to load the program

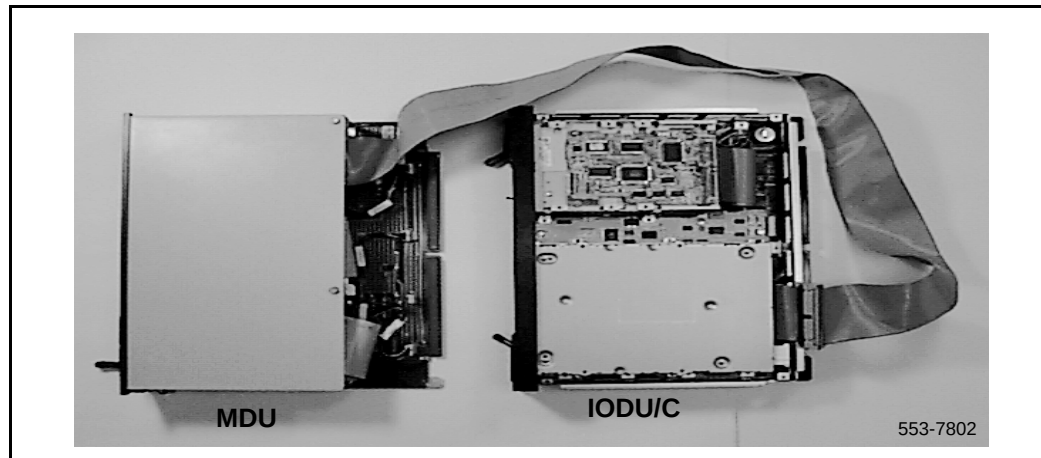
DIS MSI 0 to disable the card

- Remove the floppy diskettes from the disk drives.
- Label and disconnect cables from the faceplate of the MDU or SMDU.
- Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 32). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 32
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation
<y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only
<f> to transfer the customer database from the MDU
<a> to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit. Remove any
- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive .

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
 - the CP Install Program diskette must be in the IODU/C floppy drive
 - the module must be powered on
 - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
 - 2 When the NT logo appears, press <CR> to continue.
 - 3 Log into the system.
 - 4 Enter the date and time when prompted.

- 5 When the Main Menu appears, select the following options in sequence:

 <u> to Install menu

- 6 Remove the CP Install Program diskette and insert the Keycode diskette.
 Select the following when prompted:

 <a> to continue with keycode validation

 <y> to confirm that the keycode matches the CD-ROM
 release

- 7 When the Install Menu appears, select the following options in sequence:

 <a> to install software, CP-BOOTROM, and IOP-ROM

 <a> to verify that the CD-ROM is now in drive

 The Installation Status Summary screen appears to confirm that
 you are installing CD to disk, disk to ROM, CP-BOOTROM, and
 IOP-ROM. Select the following to continue:

 <y> to start installation

 <a> to continue with upgrade

 The software installation begins. The CD-ROM files are copied to
 the system hard disk. When you are prompted to replace the
 previous CP-software with ROM image files, select:

 <a> to continue with ROM upgrade

 When all files were copied from the CD-ROM to the hard disk,
 press:

 <CR> to continue

 You are prompted to replace old CP-BOOTROM with the ROM
 image files. Select:

 <a> to continue with ROM upgrade (this installs CP flash ROM
 on the Call Processor card)

 The system confirms that the release and issue of IOP-ROM is the
 same release and issue of the ROM image file. Select the following
 options in sequence:

 <y> to start installation

 <a> to continue with ROM upgrade (IOP-ROM is installed)

 The Installation Status Summary screen appears to confirm that
 CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were
 installed successfully. Press:

 <CR> to continue

 When the Install Menu appears, select the following options in
 sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

8 When the sysload is complete, log into the system.

9 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program

STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

11 When "EDD000" appears on the terminal, enter:

EDD to begin the data dump

12 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

13 Set date and time:

LD 2	to load the overlay
STAD	DD MM YY HR MN SC

14 Set the ENB/DIS switch on all CNI cards in Core 1 to ENB.

15 Perform the following three steps in uninterrupted sequence:

- set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS
- press and hold the MAN INT button on the CP card in Core/Net 1
- release the MAN INT button

After the system initialization has finished (INI messages are no longer displayed on the system terminal), proceed with “Copying software and database to Core/Net 0” on page 166.

Copying software and database to Core/Net 0

1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.

- 7 data bits
- 1 stop bit
- Space parity
- Full duplex
- XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1** Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2** Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.

- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:

<cr> <u>	to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a>	continue with keycode validation
<y>	to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<o>	to copy system software from the other Core
<a>	to continue
<a>	to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR>	press <CR> when you are ready to continue
<y>	to start installation
<a>	to continue with ROM upgrade
<y>	to start installing CP-BOOT ROM
<a>	to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR>	to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f>	to install IOP-ROM only

When the Installation Status Summary screen appears:

<y>	to start installation
<y>	to continue installing IOP-ROM

<a> to continue with ROM upgrade
When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu
When the Install Menu appears, install the database:

<d> to install database only
When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk
When the Installation Status Summary screen appears:

<CR> to return to the Install Menu
When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system
Wait for "DONE" and then "INI" messages to be displayed before continuing.

Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS ENTERING CP VOTE

An "HW5134" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

6 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test the CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

7 Test the inactive Core, then switch Cores and test the other side:

SCPU	to switch to Core 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

Note: Testing the CP card can take up to 20 minutes.

8 Get the status of the CP cards and memories and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs
****	to exit LD 135

9 Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active)
SYNC	to synchronize the hard disks
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 30 minutes.

10 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

STAT	to get the status of IODU/Cs, and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit LD 137

- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12 Insert a B1 database disk into each IODU/C for backup. Load overlay 43 and perform a data dump to the backup disks. This command creates a backup on the floppy disk in the active IODU/C.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 13 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving the network cards

- 1 Perform the appropriate step to turn off power in each Core/Network module:
 - For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
 - For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.

- 5 Switch the cables at the PE end:
 - If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.
- 6 Turn on power to the cabinet:
 - Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
 - Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8 Follow the appropriate step below to restore power in each Core/Network module.

Note: If power to both Core/Network modules is restored simultaneously, the IODU/Cs should still be synchronized.

- For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
 - For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).
- 9 Reenter system configuration data into the customer database, if required, in the following sequence:
 - Balance the network loops between both Core/Network shelves. To do this, do the following:
 - Define the target loop using the Configuration Program (LD 17).
 - Move the loops using the Move Data Blocks Program (LD 25).
- Refer to *X11 input/output guide* for instructions on using LD 17 and LD 25.

Note: You may have to add one or more network loops in the database for network shelf 1 (loops 16 through 31) to make the network shelf operational.

- Move the network cards from the ST/STE system to the network card slots previously defined.
 - Configure I/O devices to reflect the current configuration.
 - Reenter customer data blocks. System options and features must reflect the current configuration.
 - Configure station data blocks.
 - Configure route data blocks.
 - Configure trunk data blocks.
 - Configure remaining system configuration records.
 - Verify system operation before adding new equipment.
 - Configure new equipment and functions, if any.
- 10** Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 11** Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The option 61C X11 release 24 system is now operational. Install all module covers to complete the upgrade.

Upgrading an RT system to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

This section describes how to upgrade an RT system to a Meridian 1 option 61C running on X11 release 24.

To upgrade an RT system, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 61C cabinet next to the RT cabinet
- cabling the cabinet to the option 61C column
- removing the common equipment (CE) from the RT cabinet

Upgrading the software consists of the following:

- transferring the customer database on the SL-1 to extra-high-density disks
- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those RT system customers who choose to convert the database on-site, converting the customer database to release 24 compatibility.

Equipment required

Tables 28 and 29 list the items required to upgrade an AC- or DC-powered RT system to a Meridian 1 option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect peripheral shelves in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Network module to the cabinet I/O panel

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 28
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 28
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB.		
Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.		
Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 29
Hardware requirements for a DC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 29
Hardware requirements for a DC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB.		
Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.		
Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the RT hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to release 24 compatibility.
- Install the option 61C hardware.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Installing option 61C hardware

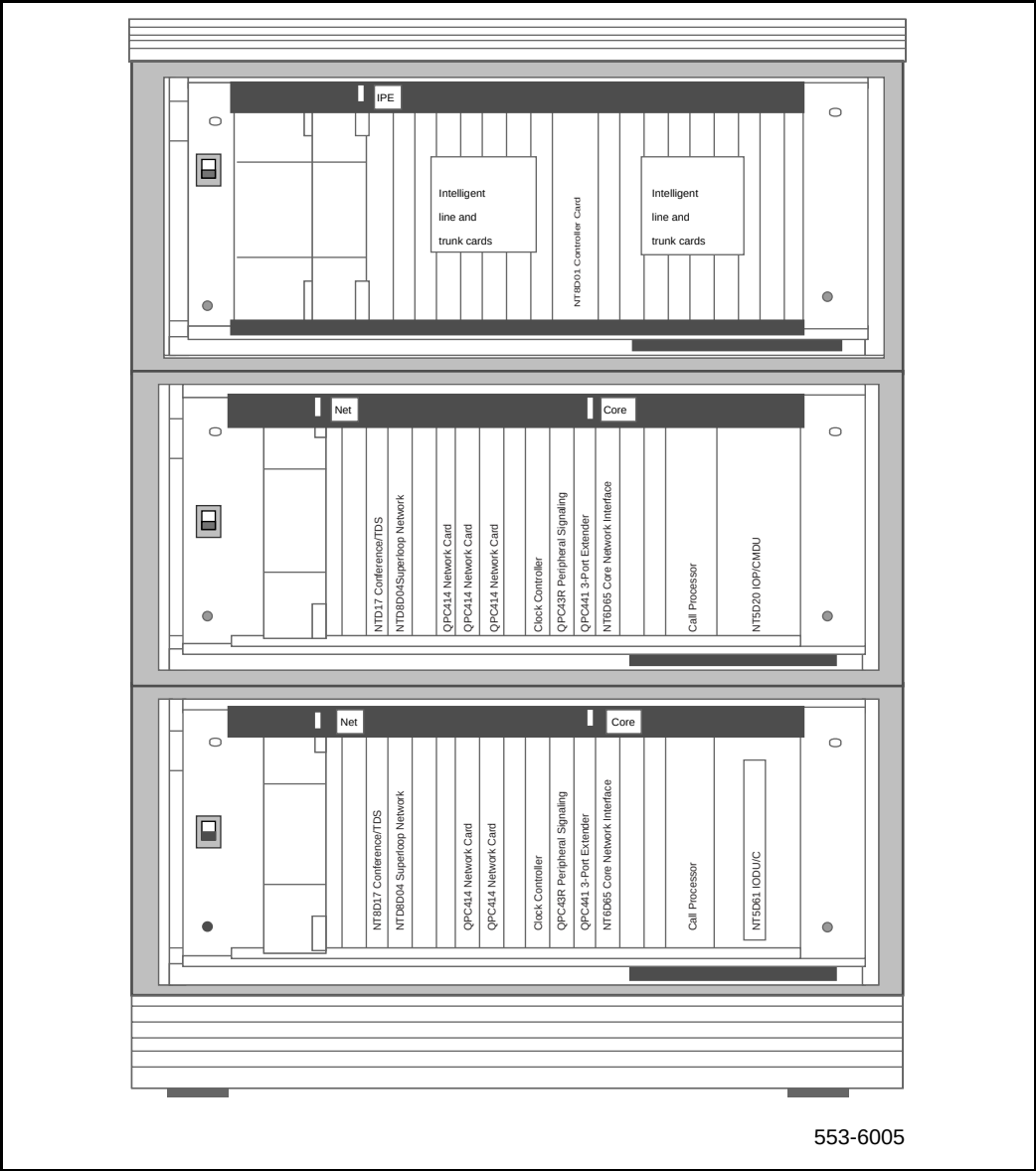
The option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as MDUs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 33 shows the option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the option 61C at your site, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 211).

Figure 33
Meridian 1 option 61C



Performing a data dump

Before beginning the upgrade, you must perform a data dump to your current tapes or disks.

- 1 On the RT system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the RT hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Remove the covers from the front and rear of the cabinet.
- 2 Set ENB/DIS switches to DIS.
- 3 Set all shelf circuit breakers to OFF.
- 4 Disconnect all network loop cables connected to QPC414 Network cards and the cables connected to QPC139 SDI cards.
- 5 Set the CAB INP circuit breaker at the front of the cabinet to OFF.
- 6 Disconnect the AC power for the cabinet by setting the commercial AC power supply circuit breaker at the service panel to OFF.
- 7 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 8 Disconnect cables from the MSU faceplate, release the locking devices, and remove the MSU.
- 9 Disconnect the MSU shelf alarm connector.
- 10 Remove remaining cards from the main CE shelf and store them in a safe place.
- 11 If you are using the CE shelf for PRI/DTI cards, do the following:
 - Install PRI/DTI cards into card slots 3, 5, 7, 9, and 11 of the CE shelf.
 - Install at least one PRI/DTI card, as a primary clock reference, in the Core/Network module of the option 61C column. This provides the clock reference for the PRI/DTI cards. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).

- 12** Do the following, if you are not going to use the CE shelf for PRI/DTI cards:
- Tag and disconnect power connectors and alarm connectors from the QSD18, QSD19, or QSD2 shelf, if equipped. Tape all exposed power leads with electrical insulation tape.
- Note:** If the cabinet is equipped with an expansion CE shelf (a second CE shelf), disconnect and remove the wiring between the +5V, +12V, -12V, and LGND connections on the CE shelf.
- Tag and disconnect all CE alarm connectors.
 - Remove the QPC84 Power Monitor and set the switches to disable power monitoring in the CE shelf. A QPC84 Power Monitor vintage S or later is required. Refer to *Circuit card installation and testing* (553-3001-211) for switch setting information.
 - Install the QPC84S Power Monitor.

Installing external cables

Now that the option 61C column is installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1** Install network cables between the peripheral cabinet and the new modular column. This connects network cards in the Core/Network module to the peripheral buffer card in the PE shelf of the cabinet. Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of the connector kits and cables required to connect peripheral shelves in a cabinet to an option 61C column.

Each network loop connection requires that three cables be installed:

- Connect the NT8D86 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the peripheral cabinet.
- Connect the NT9J98 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.

- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 797.
- 3 Connect the external cable from the Core/Network module I/O panel connector (labeled “PRI/DTI”) to the network interface.
- 4 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).
- 5 Verify that the PRI/DTI cards in the peripheral cabinet CE shelf are connected to the MDF.
- 6 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to the appropriate procedure in *Meridian 1 system installation procedures* (553-3001-210) for IPE module cabling procedures.
- 7 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface. Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the existing cabinet CE shelf.
- 8 Verify that PRI/DTI cards in the existing peripheral cabinet CE shelf are connected to the cross connect or network interface.

Connect all external cables from the cross connect to the PE shelf connectors on cabinet I/O panels and IPE module I/O panels. Refer to the appropriate procedure in *Meridian 1 system installation procedures* (553-3001-210) for IPE module I/O panel external cable installation procedures.

Note: Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data, 1 stop bit, space parity, full duplex, XON protocol.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the RT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Verify that the round 1/2” diameter IODU/C security device is installed. If the security device is not installed:
 - Locate the IODU/C security device.
 - With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.

- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

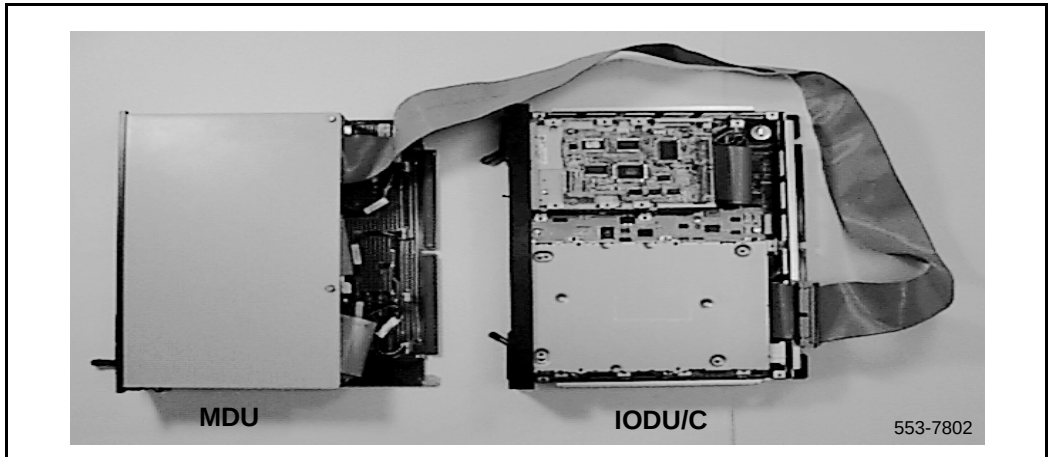
MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 34). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 34
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

 <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:

 <d> to install customer database only
 <f> to transfer the customer database from the MDU
 <a> to continue the database transfer
 <a> to transfer the database from the floppy to the hard disk
 (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 <cr> to continue
 the Installation Status Summary menu appears to confirm database transfer
 <y> to start installation
 <a> yes, transfer the database

 Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 <CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 <CR> Press return to return to the Install Menu.

Remove any diskettes from the floppy drive.

- <q>** When the Install Menu appears, select <q> to quit.
- <y>** to confirm quit
- <a>** to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21** Reinstall the MDU/SMDU into CPU 0:
 - Connect the cable(s) to the faceplate of the MDU.
 - Install the floppy diskette in the MDU
 - Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
 - Software enable the MSI, EMSI, or FDI card:
 - LD 37** to load the program
 - ENB MSI 0** to enable the card

- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 2 Enter the date and time when prompted.
- 3 When the Main Menu appears, select the following options in sequence:
<u> to Install menu

- 4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation
<y> to confirm that the keycode matches the CD-ROM release

- 5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM
<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation
<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation
<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit
<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program

STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When "EDD000" appears on the terminal, enter:

EDD to begin the data dump

- 10 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay

STAD DD MM YY HR MN SC

Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:

`<cr> <u>` to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation
`<y>` to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.

- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<o> to copy system software from the other Core
<a> to continue
<a> to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue
<y> to start installation
<a> to continue with ROM upgrade
<y> to start installing CP-BOOT ROM
<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation
<y> to continue installing IOP-ROM
<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

When the Installation Status Summary screen appears:

<y> to start installation
<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit
<y> to confirm quit

<a> to reboot the system
Wait for "DONE" and then "INI" messages to be displayed before continuing.

Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS ENTERING CP VOTE

An "HW5134" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 6 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test the CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Test the inactive Core, then switch Cores and test the other side:
SCPU to switch to Core 0
TEST CPU to test the inactive CP card and CP-to-CP cable

Note: Testing the CP can take up to 20 minutes.

- 8** Get the status of the CP cards and memories and of the CNIs:
- | | |
|-----------------|--|
| STAT CPU | to get the status of both Cores |
| STAT CNI | to get the status of all configured CNIs |
| **** | to exit LD 135 |
- 9** Load overlay 137 and synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:
- | | |
|------------------|---|
| LD 137 | to load the program |
| STAT | to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active) |
| SYNC | to synchronize the hard disks |
| TEST CMDU | Performs hard and floppy disk test. |
- Note:* Synchronization may take up to 30 minutes.
- 10** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:
- | | |
|-------------|--|
| STAT | to get the status of IODU/Cs, and redundancy |
| SWAP | to switch IODU/Cs (if necessary) |
| **** | to exit LD 137 |
- 11** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12** Insert a B1 database disk into each IODU/C for backup. Load overlay 43 and perform data dump. This creates a backup on the floppy disk in the active IODU/C:
- | | |
|--------------|------------------------|
| LD 43 | to load the program |
| EDD | to begin the data dump |

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving network cards

- 1** Follow the appropriate step below to turn off power in each Core/Network module:
 - With AC power, set the circuit breaker on the MPDU in the module to OFF (down position).
 - With DC power, set the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2** Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3** On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4** Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Enable the faceplate switches.
- 5** Switch the cables at the PE end:
 - If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.
- 6** Turn on power to the cabinet:
 - Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
 - Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7** In the option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8** Follow the appropriate step below to restore power in each Core/Network module.

Note: If power to both Core/Network modules is restored simultaneously, the CMDUs should still be synchronized.

- For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
- For DC-powered systems, simultaneously set the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

Completing the upgrade

- 1 After the system initializes, reenter system configuration data into the customer database, if required, in the following sequence:
 - Configure network loops to match loop types and loop numbers of the current configuration.
 - Configure I/O devices to reflect the current configuration.
 - Reenter customer data blocks. System options and features must reflect the current configuration.
 - Configure station data blocks.
 - Configure route data blocks.
 - Configure trunk data blocks.
 - Configure remaining system configuration records.
 - Verify system operation before adding new equipment.
 - Configure new equipment and functions, if any.
- 2 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 3 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The Meridian 1 X11 release 24 option 61C is now operational. Install all module covers to complete the upgrade.

Upgrading an NT system to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an NT system to an option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 61C cabinet next to the NT cabinet
- installing new connector housings on the NT cabinet
- cabling the cabinet to the option 61C column
- removing the common equipment (CE) from the NT cabinet

Upgrading the software consists of the following:

- transferring the customer database on the SL-1 to extra-high-density disks
- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those customers who choose to convert the database on-site, converting the customer database to X11 release 24 compatibility

Equipment required

Tables 30 and 29 list the items required to upgrade an AC- or DC-powered system to an X11 release 24 Meridian 1 option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect peripheral shelves in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D86AC cables that connect QPC414 network cards to the Core/Net I/O panel
- NT8D73 cables that connect the I/O panel in the Core/Network module to the cabinet I/O panel
- NT9J96 cables that connect the peripheral buffer card to the cabinet I/O panel

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 30
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 30
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB.		
Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.		
Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 31
Hardware requirements for a DC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 1)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 31
Hardware requirements for a DC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
1	NT8D80	CPU/MDU Interface Cable (Note 2)
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the NT hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Back up the customer database to disk by doing a data dump
- Convert the NT system database to X11 release 24 compatibility.
- Install the option 61C hardware.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Installing option 61C hardware

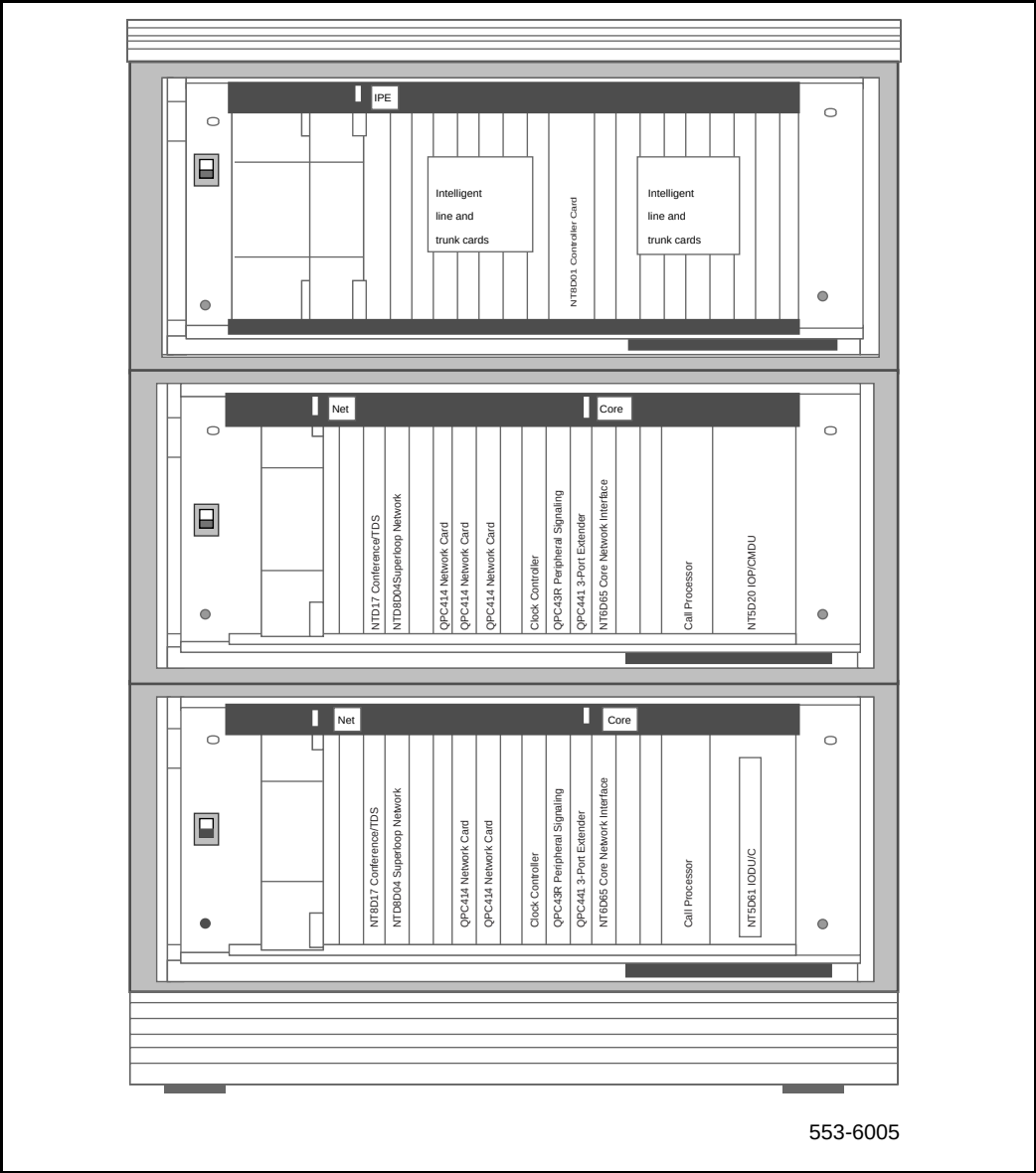
The option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 33 shows the option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the option 61C at your site, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing the connector housings” on page 208).

Figure 35
Meridian 1 option 61C



Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks.

- 1 On the NT system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing the connector housings

The connector housings connect cables in the peripheral cabinets to cables from the option 61C, while also reducing electromagnetic interference (EMI). Housings are installed on the peripheral cabinet: on cabinets with a top I/O panel, the housing is installed on top of the cabinet; On cabinets with cover plates on the cabinet side panel, the housing is installed on the side panel. Both housings can accommodate six cables. These are the connector housing kits:

- P0696547 side-mounted connector housing
- P0702380 top-mounted connector housing

Note: For a detailed description of connector housings and installation procedures, refer to *Upgrade engineering* (553-3001-150).

Converting the SL-1 hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

To prepare an NT system for conversion to an option 61C:

- 1** Set all shelf circuit breakers to OFF.
- 2** Set the CAB INP circuit breaker on the QSP43 power control shelf in the QCA58 cabinet and all other shelf circuit breakers to OFF.
- 3** Set the AC input circuit breaker on the –48V rectifier in the QCA58 cabinet to OFF.
- 4** Disconnect all network loop cables connected to QPC414 Network cards and cables connected to QPC139 SDI cards.
- 5** Set the ENB/DIS switch on the faceplate of the QPC33 Tape Unit Interface (TUI) card located in the CPU/MEM shelf to DIS. If equipped with a mass storage unit, repeat this step for the mass storage unit interface card.
- 6** Remove the tape and set the power switch on the faceplate of the tape unit to OFF or 0. If equipped with a mass storage unit, repeat this step by removing the disks and turning the MSU power switch to OFF.
- 7** Disconnect and remove the cable from the faceplate of the QPC33 card to the tape unit. If equipped with a mass storage unit, disconnect the cable between the MSU and the MSI or EMSI faceplates.
- 8** Disconnect cables from the faceplate connectors on cards located in the CPU/MEM and network shelves.
- 9** Remove cards from the CPU/MEM shelf and store them in a safe place.

10 Disconnect power and alarm connections:

- Disconnect all alarm connectors from the harness to the CPU/MEM shelf.
- Unplug all power converter cards and all common equipment cards from the CPU/MEM shelf.
- Disconnect power connections and the power monitor connector from the cabinet power distribution harness of the backplane on the QSP41 shelf.
- Tape all exposed power leads with electrical insulation tape.
- Remove the QPC84 Power Monitor and set switches to disable power monitoring in the CPU/MEM shelf. A QPC84 Power Monitor vintage S or later is required. Refer to *Circuit card installation and testing* (553-3001-211) for switch setup.
- Reinstall the QPC84S Power Monitor.

11 Remove cards from network shelves and store them in a safe place.

12 Disconnect the tape unit or the mass storage unit power monitor and alarm connectors. To do this, you must first remove the tape unit or the mass storage unit and then disconnect the connectors. Tape all exposed power leads with electrical insulation tape.

13 If you are using network shelves for PRI/DTI cards, do the following:

- Install the PRI/DTI cards in network shelf card slots 2, 4, 6, 8, 10, and 12.
- Plan to install at least one PRI/DTI card, as a master card with clock reference, in the Core/Network module of the option 61C column to obtain clock reference for the PRI/DTI cards.

- 14** If you are not going to use network shelves for PRI/DTI cards, do the following:
- Disconnect alarm connectors from the harness to network shelves.
 - Unplug all power converter cards from each network shelf.
 - Disconnect power connections and the power monitor connector from the cabinet power distribution harness to the backplane on QSD39 and QSD40 shelves.
 - Tape all exposed power leads with electrical insulation tape.

Installing external cables

Now that the option 61C column is installed and the peripheral cabinet has been prepared, you must connect them with external cables.

- 1** Install network cables between the peripheral cabinet and the new modular column. This connects network cards in the Core/Network module to the peripheral buffer card in the PE shelf of the cabinet. Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of the connector kits and cables required to connect peripheral shelves in a cabinet to an option 61C column.

Each network loop connection requires that three cables be installed:

- Connect the NT8D86AC cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
 - Connect the NT8D73 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the top or the side of the peripheral cabinet. A connector housing kit is required for the cabinet to accept the cable connector.
 - Connect the NT9J96 cable from the faceplate connector of the peripheral buffer to the I/O panel connector at the top or the side of the cabinet.
- 2** Install alarm cables as outlined in “System monitor upgrade installation” on page 797.

- 3 Connect the external cable from the Core/Network module I/O panel connector (labeled “PRI/DTI”) to the network interface.
- 4 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the peripheral cabinet CE shelf. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).
- 5 Verify that the PRI/DTI cards in the peripheral cabinet CE shelf are connected to the MDF.
- 6 Connect all external cables from the MDF to the PE shelf connectors on the cabinet I/O panels and the IPE module I/O panels. Refer to *Meridian 1 system installation procedures* (553-3001-210) for IPE module cabling procedures.
- 7 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface. Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the existing cabinet CE shelf.
- 8 Verify that PRI/DTI cards in the existing peripheral cabinet CE shelf are connected to the cross connect or network interface.

Connect all external cables from the cross connect to the PE shelf connectors on cabinet I/O panels and IPE module I/O panels. Refer to *Meridian 1 system installation procedures* (553-3001-210) for the installation procedures for the IPE module I/O panel external cable.

Note: Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data, 1 stop bit, space parity, full duplex, XON protocol.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the NT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

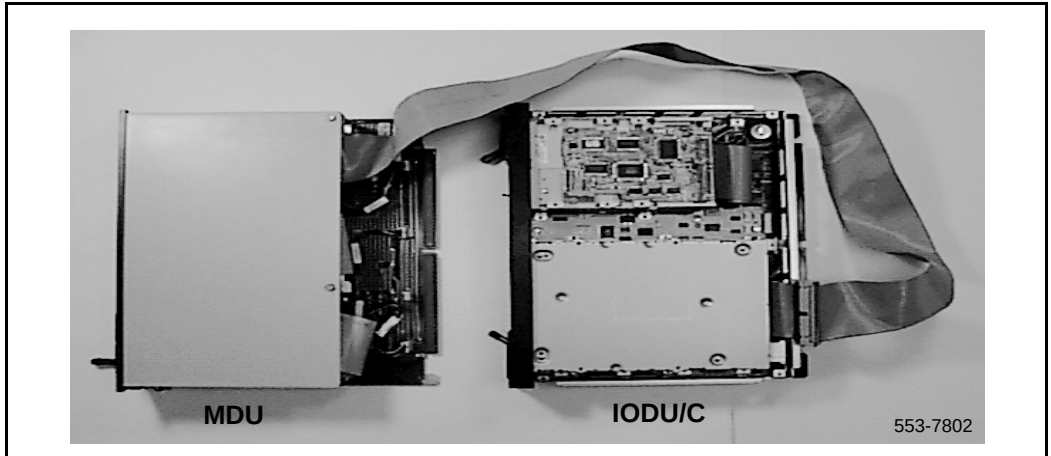
- 1 **Verify that the Core/Net module is powered down.**
- 2 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 3 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.
- 4 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 5 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 6 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 7 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 36). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).

Figure 36
Cabling the MDU to the IODU/C card



- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive .
- 9 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 10 When the NT logo appears, CP Install Program diskette press <CR> to continue.
- 11 Enter the date and time, when prompted.
- 12 When the Main Menu appears, select the following command from the menu:

<u> to Install menu

- 13 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

- <a> to continue with keycode validation
- <y> to confirm that the keycode matches the CD-ROM release and return to the Install Menu

- 14 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 1.

- 15 When the Install Menu appears, select the following options in sequence:

- <d> to install customer database only
- <f> to transfer the customer database from the MDU
- <a> to continue the database transfer
- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
The Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

Remove any diskettes from the floppy drive.

- <q> When the Install Menu appears, select <q> to quit.
- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

- 16 Shut down power to Core/Net 1 module.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
 - the CP Install Program diskette must be in the IODU/C floppy drive
 - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

- 2 Enter the date and time when prompted.
- 3 When the Main Menu appears, select the following options in sequence:
 <u> to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette.
 Select the following when prompted:
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 5 When the Install Menu appears, select the following options in sequence:
 <a> to install software, CP-BOOTROM, and IOP-ROM
 <a> to verify that the CD-ROM is now in drive
 The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:
 <y> to start installation
 <a> to continue with upgrade
 The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:
 <a> to continue with ROM upgrade
 When all files were copied from the CD-ROM to the hard disk, press:
 <CR> to continue
 You are prompted to replace old CP-BOOTROM with the ROM image files. Select:
 <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)
 The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:
 <y> to start installation
 <a> to continue with ROM upgrade (IOP-ROM is installed)
 The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:
 <CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

- 6 When the sysload is complete, log into the system.
- 7 In Core/Net 1, faceplate enable the CNI card.
- 8 Confirm that the X11 release 24 software is installed and functional on Core/Net 1:
 - LD 135** to load the program
 - STAT CPU** to display the CPU status
- 9 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
 - LD 43** to load the program
- 10 When “EDD000” appears on the terminal, enter:
 - EDD** to begin the data dump

- 11 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

**** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 12 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
- 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Verify that the MAINT/NNORM switch on the CP card in Core 0 is set to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.

- 3 Insert the remaining Core/Net cards and faceplate enable them, but leave the CNI card in Core/Net 0 faceplate disabled.
- 4 Apply power to the module.
- 5 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 When the NT logo appears, press <CR> to continue.
- 7 When the Main Menu appears, select the following options in sequence:
 <u> to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release

- 9 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<o> to copy system software from the other core
 <a> to copy /p partition from Core1 to Core 0
 <a> to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue
 <y> to start installation
 <a> to continue with ROM upgrade
 <y> to start installation
 <a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation
 <y> to continue installing IOP-ROM
 <a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only
 <d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation
 <a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 10 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

Returning the system to redundant mode

- 1 Connect a terminal to the J25 CPSI or SDI port in Core/Net 1
- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS ENTERING CP VOTE

An "HWI534" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an "HWI533" message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 6 Perform a redundancy sanity test:

LD 135 to load the program

STAT CNI to get the statu of the CNI card

STAT CPU to get the status of both Cores

TEST CPU to test the inactive CP card and CP-to-CP cable

TEST CNI c s to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Switch Cores and test the other CPU:
- | | |
|-----------------|---|
| SCPU | to switch to Core 0 |
| TEST CPU | to test the inactive CP card and CP-to-CP cable |

Note: Testing the CP can take up to 20 minutes.

- 8 Get the status of the CP cards and memories and of the CNIs:
- | | |
|-----------------|--|
| STAT CPU | to get the status of both Cores |
| STAT CNI | to get the status of all configured CNIs |
| SCPU | to swap to Core/Net 1 active |
| **** | to exit LD 135 |

- 9 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	to get the status of IODU/Cs and redundancy
SYNC	synchronize the hard disk drives
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 10 Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:

STAT	to get the status of IODU/Cs and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit the program

- 11 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 12 Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump to the backup disks.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program

- 13 When “EDD000” appears on the terminal, enter

EDD	to begin the data dump

- 14** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
**** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving network cards

- 1** Follow the appropriate step below to turn off power in each Core/Network module:
 - With AC power, set the circuit breaker on the MPDU in the module to OFF (down position).
 - With DC power, set the switch on the module power supply to OFF (down position).
- 2** Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3** On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4** Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Enable the faceplate switches.
- 5** Switch the cables at the PE end:
 - If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.

- 6 Turn on power to the cabinet:
 - Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
 - Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).

Completing the upgrade

- 1 Follow the appropriate step below to restore power in each Core/Network module.

Note: If power to both Core/Network modules is restored simultaneously, the IODU/Cs should still be synchronized.

 - For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
 - For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).
- 2 After the system initializes, reenter system configuration data into the customer database, if required, in the following sequence:
 - Configure network loops to match loop types and loop numbers of the current configuration.
 - Configure I/O devices to reflect the current configuration.
 - Reenter customer data blocks. System options and features must reflect the current configuration.
 - Configure station data blocks.
 - Configure route data blocks.
 - Configure trunk data blocks.
 - Configure remaining system configuration records.
 - Verify system operation before adding new equipment.
 - Configure new equipment and functions, if any.

- 3 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The Meridian 1 X11 release 24 option 61C is now operational. Install all module covers to complete the upgrade.

Upgrading option 21E to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an option 21E to a Meridian 1 option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 61C next to the option 21E column
- removing the common equipment (CE) from the option 21E column
- connecting the cabinet to the option 61C column

Upgrading the software consists of the following

- transferring the customer database on the option 21E to extra-high-density disks
- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those customers who choose to convert the database on-site, converting the customer database to X11 release 24 compatibility.

IMPORTANT

Option 21E systems on release 20 will remain on their current system and convert the database directly to release 21. The hardware upgrade to option 61C is performed as part of the software upgrade to release 24. This eliminates the requirement of interim hardware.

Equipment required

Tables 30 and 29 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect network loops in the cabinet to network cards in the column. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

An NT8D01 Controller Card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

Table 32
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network Module, AC
2	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment Module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)

Table 32
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT5D21AA	Core/Network Module, AC
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling Card (PS)
2	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or	Clock Controller cards (see note 3)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 4: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 33
Hardware requirements for a DC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21DA	Core/Network Module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface Card (CNI)
2 2 2	NT9D19 or NT5D10 or NT5D03	Call Processor cards (CP) (see note 1)
1	NT7D00BA	Top Cap DC
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module, DC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D52DD	Pedestal Blower Unit, DC

Table 33
Hardware requirements for a DC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
2	NT8D80BZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP/CMDU to IOP/CMDU SCSI cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling Card (PS)
1	NT8D80	CPU/MDU Interface Cable
2	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: One NT6D42CC Ringing Generator, DC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: Determine whether additional NTND21AA Module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 4: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the option 21 or option 21E hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Install the option 61C hardware.
- Back up the customer database to tape or disk by doing a data dump.

Note: Obtain extra-high-density floppy disks containing system software from your Northern Telecom representative.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Installing option 61C hardware

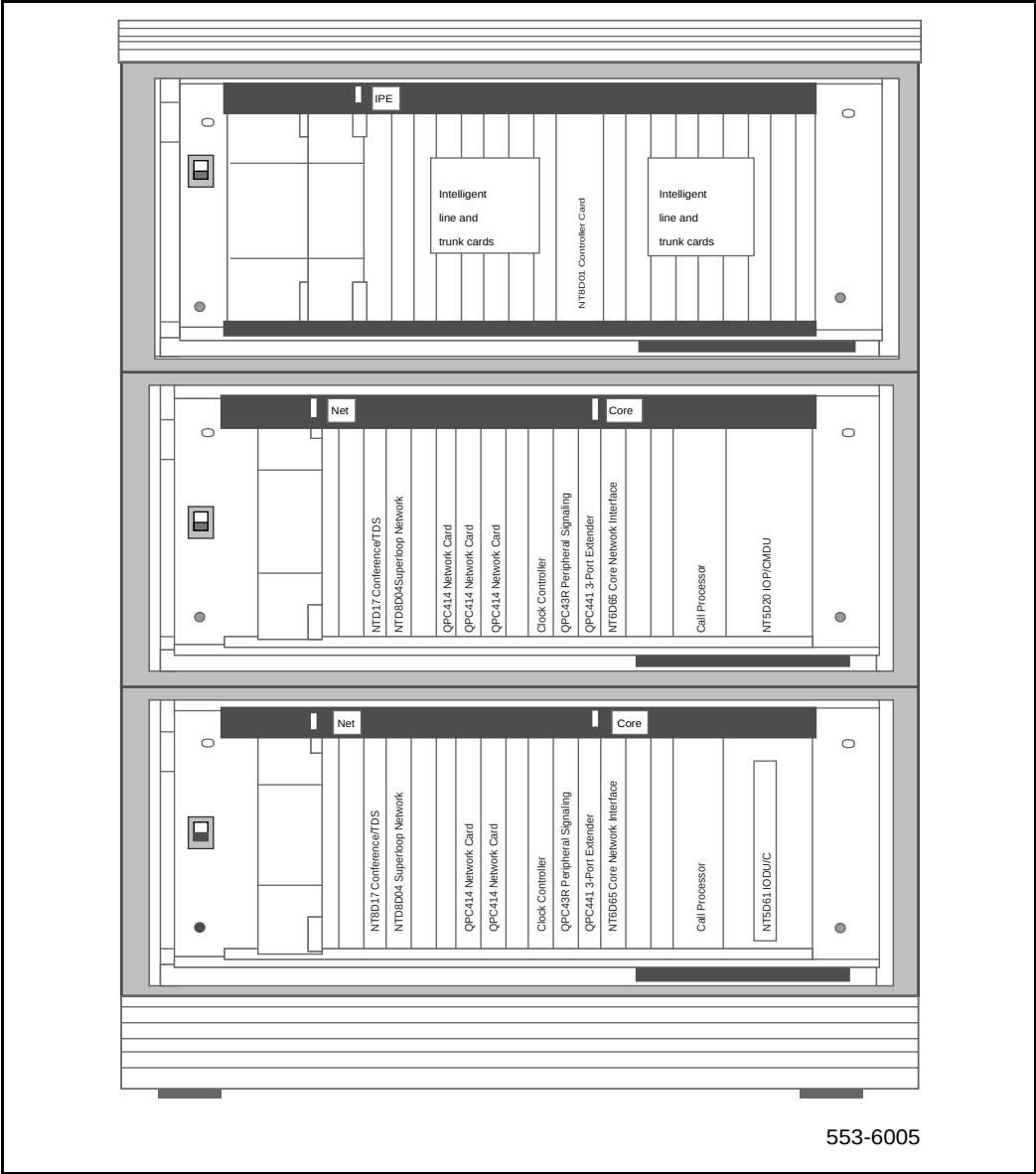
Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IOP/CMDUs and power supplies, are shipped in separate packages to prevent damage to the cards.

Figure 33 shows option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the option 61C at your site, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) and then continue with the procedures on the following pages of this section.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 270).

Figure 37
Meridian 1 option 61C



Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks by using the Equipment Data Dump Program (LD 43).

- 1 Log into the option 21E.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 Exit the program. At the prompt, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the customer database to release 21

If the option 21E is running X11 release 18 or 19 software, you must convert the database to release 21 before continuing. You can convert the database on-site, or send it to Northern Telecom for conversion.

Note: If your system is running release 21 software, skip this section and continue with “Converting the SL-1 hardware” on page 241.

You will complete converting the database to release 24 later in these procedures after you convert the software to release 21 and upgrade the hardware.

CAUTION

Upgrading the customer database on-site requires some system downtime. Schedule for this when planning the system upgrade.

Converting the database from release 18 and 19 to release 21

- 1 Remove the front covers from the CPU/Network cabinet in the 21E system.
- 2 Log into the system.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.

Note: Your system will have either a QPC584 MSI card or an NT9D34 EMSI card.

- 4 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 18 software with the QMM42 cartridge for release 19 software.
- 5 For MSI cards, set position 4 on switch SW3 to OFF. For EMSI cards, set position 4 on switch SW2 to OFF. Reinstall and enable the card.
- 6 Remove the disks containing release 18 software from the drives and insert ED floppy disks with release 19 software into the NTND16 MDU drives. Insert disk A in DRV A and disk B in DRV B.
- 7 Perform a data dump. At the prompt, enter **EDD** to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Simultaneously press both RLD buttons on the NTND10 CMA cards. System messages similar to the following will appear:
SYS000
SYSLOAD RLS: xxISSUE:x
DONE
INI000
- 9 Log into the system.
- 10 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43. When “EDD000” appears on the terminal, proceed to the next step.
- 11 Set the ENB/DIS switch on the MSI or EMSI card to DIS and remove the card. Replace the QMM42 cartridge for release 19 software with the QMM42 cartridge for release 21 software. Reinstall and enable the card.
- 12 Remove the disks containing release 19 software from the drives and insert ED floppy disks with release 21 software into the NTND16 MDU drives. Insert disk A1 in DRV A and disk B1 in DRV B.

- 13 Perform a data dump. At the prompt, enter
EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 14 Simultaneously press both RLD buttons on the NTND10 CMA cards. When prompted, remove disk A1 from the A drive and insert disk A2. System messages similar to the following will appear:

SYS000
INSERT DISK A2 INTO DRIVE A
SYSLOAD RLS: xxISSUE:x
DONE
INI000

- 15 Immediately following the system initialization sequence, remove disk A2 from drive A and insert disk A1.

- 16 Log into the system.

- 17 Copy the contents of the data disks to the hard disk by entering

LD 43 to load the program
RES to copy the entire contents of the backup to the hard disk

Insert the additional system disk (A2) when requested. When the restore sequence is complete, enter

******** to exit the program

- 18 Remove disk A2 from drive A and insert disk A1.

- 19 Set the ENB/DIS switch on each MSI or EMSI card to DIS.

- 20 Remove each MSI or EMSI card. For MSI cards, set position 4 on switch SW3 to ON. For EMSI cards, set position 4 on switch SW2 to ON.
- 21 Reinstall each MSI or EMSI card and set the ENB/DIS switch to ENB.
- 22 If you are installing an MDU and the system is not configured for a hard disk drive, change the configuration record:
- | | |
|--------------|--|
| LD 17 | to load the program |
| IOTB | enter YES to change I/O devices |
| ADAN | enter CHG HDK 0 to add a hard disk unit |
| **** | to exit the program |

- 23 Perform a data dump:

LD 43	to load the program
EDD	to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 24 Verify the system by using the test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 25 Follow “Postconversion procedure” in *Software conversion procedures* (553-2001-320).

You will continue converting the database to release 24 later in these procedures after you upgrade the hardware. Proceed with “Converting the SL-1 hardware”.

Converting the SL-1 hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set ENB/DIS switches on all CE cards to DIS.
- 2 Set all shelf circuit breakers to OFF.
- 3 Disconnect all network loop cables connected to the NT8D04 Network Cards and cables connected to the SDI cards.
- 4 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 5 Remove remaining cards from the CE shelf and store them in a safe place.

Installing external cables

After the option 61C columns are installed and the option 21E column has been prepared, you must connect them with external cables.

Note: Installing external cables between the option 21E and option 61C columns is required only if the two columns are not positioned side-by-side. If these columns are adjacent to each other, you must install column spacer kits and route cables between the columns as outlined in *Meridian 1 system installation procedures* (553-3001-210).

- 1 Install network cables between the option 21E column and the option 61C column. These cables connect network cards in the Core/Network module to the IPE controller card in the IPE shelf of the option 21. Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of connector kits and cables required to connect network loops between a cabinet and an option 61C column.

Each network loop connection requires three cables:

- Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
 - Connect the NT8D98 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
 - Connect the NT8D92 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module.
- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 797.
 - 3 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface.
 - 4 Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the option 21E CE/Network shelf.

- 5 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the option 21 CE/Network shelf. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).
- 6 Verify that PRI/DTI cards in the option 21 CE/Network shelf are connected to the MDF or network interface.
- 7 Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to *Meridian 1 system installation procedures* (553-3001-210) for IPE module I/O panel external cable installation procedures.

Note: Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 21E 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

To use the following procedures, the option 21E database must be at release 21.

- 1 Remove the front cover from the CE/PE Module on the option 21.
- 2 Disable loop 28 using the Network and Peripheral Equipment Diagnostic Program (LD 32). Refer to *X11 input/output guide* for instructions on using LD 32.
- 3 Configure a new superloop and controller using configuration record 2 (LD 97). Refer to *X11 input/output guide* for instructions on using LD 97.

Note: When configuring superloops, assign loop numbers beginning with 0, 4, 8, or 12. Then configure each superloop for either a left or right slot location. The remaining slot (right or left of the superloop) may contain only DTI, PRI, or I/O cards.

- 4 Move the data for loop 28 to the newly configured superloop using the Move Data Blocks Program (LD 25). Refer to *X11 input/output guide* for instructions on using LD 25.
- 5 After the data for loop 28 has been moved to the new loop, remove loop 28 using configuration record 2 (LD 97). Refer to *X11 input/output guide* for instructions on using LD 97.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
EDD to begin the data dump

When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 7 Remove the database diskettes from the disk drives in the option 21E.

IODU/C cabling

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

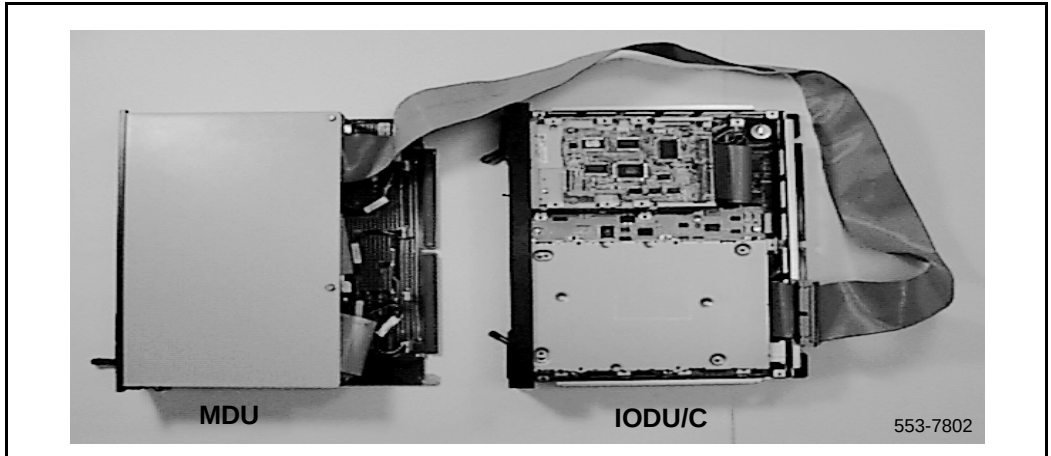
- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board..
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 38). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 38
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
 <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
 <d> to install customer database only
 <f> to transfer the customer database from the MDU

- <a> to continue the database transfer
- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <CR> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit.
- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Reinstall the MDU/SMDU into CPU 0:
 - Connect the cable(s) to the faceplate of the MDU.
 - Install the floppy diskette in the MDU
 - Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
 - Software enable the MSI, EMSI, or FDI card:
LD 37 to load the program
ENB MSI 0 to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:

`<cr> <u>` to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation
`<y>` to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.

- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

<o> to copy system software from the other Core

<a> to continue

<a> to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue

<y> to start installation

<a> to continue with ROM upgrade

<y> to start installing CP-BOOT ROM

<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system
Wait for “DONE” and then “INI” messages to be displayed before continuing.

Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS ENTERING CP VOTE

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 6 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the statu of the CNI card
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Switch Cores and test the other CPU:

SCPU	to switch to Core 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

- 8** Get the status of the CP cards and memories and of the CNIs:
- | | |
|-----------------|--|
| STAT CPU | to get the status of both Cores |
| STAT CNI | to get the status of all configured CNIs |
| SCPU | to swap to Core/Net 1 active |
| **** | to exit LD 135 |
- 9** Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:
- | | |
|------------------|--|
| LD 137 | to load the program |
| STAT | to get the status of IODU/Cs, and redundancy |
| SYNC | synchronize the hard disk drives |
| TEST CMDU | Performs hard and floppy disk test. |
- Note:* Synchronization may take up to 50 minutes.
- 10** Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:
- | | |
|-------------|---|
| STAT | to get the status of IODU/Cs and redundancy |
| SWAP | to switch IODU/Cs (if necessary) |
| **** | to exit the program |
- 11** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12** Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump to the backup disks.
- Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- | | |
|--------------|---------------------|
| LD 43 | to load the program |
|--------------|---------------------|
- 13** When “EDD000” appears on the terminal, enter
- | | |
|------------|------------------------|
| EDD | to begin the data dump |
|------------|------------------------|

- 14 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
**** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving network cards

- 1 Perform the appropriate step to turn off power in each Core/Network module:
 - For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
 - For DC-powered systems, set the switch on the circuit breaker (located at the rear of the pedestal) to OFF (down position).
- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0-31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.
- 5 Switch the cables at the PE end:
 - If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.

- 6 Turn on power to the cabinet:
 - Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
 - Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).

Completing the upgrade

- 1 Follow the appropriate step below to restore power in each Core/Network module.

Note: If power to both Core/Network Modules is restored simultaneously, the IODU/Cs should still be synchronized.

 - For AC-powered systems, simultaneously set the MPDU in both Core/Network Modules to ON (up position).
 - For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).
- 2 Reenter system configuration data into the customer database, if required, in the following sequence:
 - Reassign configuration data previously moved from loop 28 to an appropriate loop in the option 61C, and balance the network loops between both Core/Network shelves. To do this, do the following:
 - Define the target loop using the Configuration Program (LD 17).
 - Move the loops using the Move Data Blocks Program (LD 25).

Refer to *X11 input/output guide* for instructions on using LD 17 and LD 25.

Note: You may have to add one or more network loops in the database for network shelf 1 (loops 16 through 31) to make the network shelf operational.

- Move the network cards from the option 21E to the network card slots previously defined.
 - Configure I/O devices to reflect the current configuration.
 - Reenter customer data blocks. System options and features must reflect the current configuration.
 - Configure station data blocks.
 - Configure route data blocks.
 - Configure trunk data blocks.
 - Configure remaining system configuration records.
 - Verify system operation before adding new equipment.
 - Configure new equipment and functions, if any.
- 3 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 4 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The option 61C X11 release 24 system is now operational. Install all module covers to complete the upgrade.

Upgrading option 51 to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an option 51 to a Meridian 1 option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing a Meridian 1 option 61C next to the option 51
- removing network equipment from the option 51
- connecting the option 51 to the option 61C

Upgrading the software consists of the following:

- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those customers who choose to convert the database on-site, converting the customer database to X11 release 24 compatibility

Equipment required

Tables 34 and 35 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade. Whenever a new column is installed, you must also provide NT8D49AA Column Spacer Kits and P0699724 Modular Side Covers.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Network cables are required to connect the network cards in the new Core/Net module to the IPE Controller card in the IPE shelf of the option 51. The number of cables required depends on the number of network cards installed. These are the cables:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

An NT8D01 Controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 34
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT6D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap, AC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal, AC
2	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
3	NT8D44AA	SDI Paddle Board to I/O Cable
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

Table 34
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
1	NT8D75BD	Clock Controller to Clock Controller Cable
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 3: Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary, and order separately. Note 4: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 35
Hardware requirements for a DC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT6D61AA	Input-Output Disk Unit with CDROM (IODU/C)
2	NT5D21AA	Core/Network module, AC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
2	NT6D65AA	Core to Network Interface card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00BA	Top Cap, AC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four card
1	NT8D04BA	Superloop Network card
2	NT8D17FA	Conference/TDS card
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, AC (see note 2)
2	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D46AG	System Monitor to SDI Paddle Board Cable (34 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)

Table 35
Hardware requirements for a DC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D52DD	Pedestal Blower Unit, DC
1	NT8D75BD	Clock Controller to Clock Controller Cable
2	NT8D80AZ	CPU Interface Cable (5 ft.)
3	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AB	CPU to Network Cable (2 ft.)
2	NTND11BA	CP-to-CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
6	NTND21AA	Module Side Cover (see note 3)
2	QPC43R	Peripheral Signaling card (PS)
1	QPC84S	Power Monitor
2	QPC441F	Three-Port Extender card (3PE)
2	QPC471H or	Clock Controller cards (see note 4)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB.		
Note 2: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used.		
Note 3: Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary, and order separately.		
Note 4: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the option 51 hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Install the option 61C hardware.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to release 24 compatibility.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Installing option 61C hardware

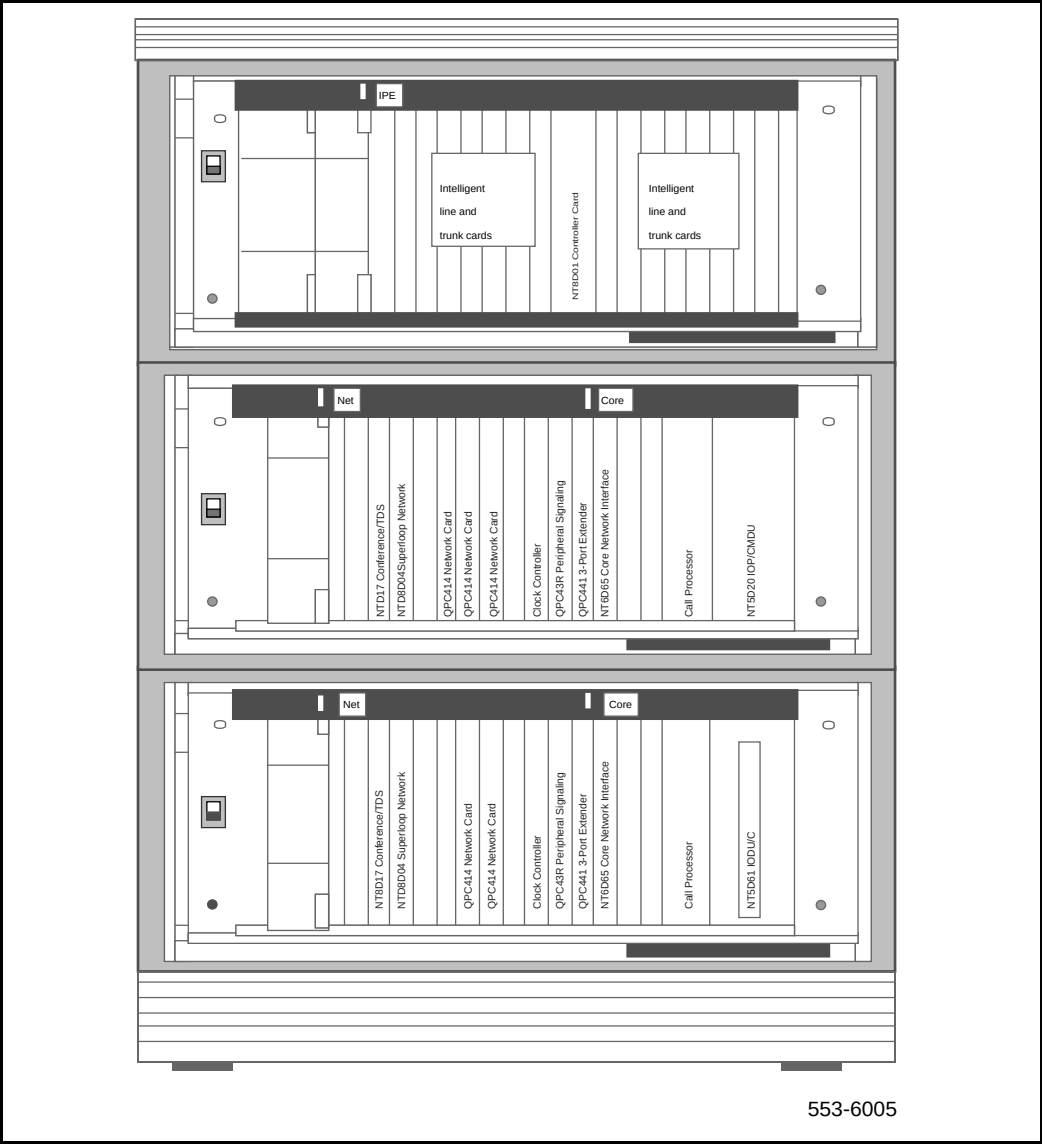
The option 61C equipment is preconfigured at the factory according to your requirements. The equipment includes the pedestal, Core/Network modules, IPE module, cards, and top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage to the cards.

Figure 33 shows the option 61C common equipment and intelligent peripheral equipment modules and cards installed in their typical card slots.

To install the option 61C at your site, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) and then continue with the procedures in this chapter.

Also install any external cables that can be installed at this time without interrupting service (see “Installing external cables” on page 270).

Figure 39
Meridian 1 option 61C



Performing a data dump

Before converting your customer database, you must perform a data dump to your current disks.

- 1 On the option 51, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter ******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the hardware

CAUTION

Continuing with the upgrade will disrupt system operation. Minimal service can be maintained if a power failure transfer unit (PFTU) is installed.

- 1 Set ENB/DIS switches on all CE cards to DIS.
- 2 Set all shelf circuit breakers to OFF.
- 3 Disconnect all network loop cables connected to the NT8D04 Network cards and cables connected to the SDI cards.

- 4 Disconnect and remove any remaining cables connected to cards in the CE shelf.
- 5 Remove remaining cards from the CE shelf and store them in a safe place.

Installing external cables

After the option 61C columns are installed and the option 51 column has been prepared, you must connect them with external cables.

Note: Installing external cables between the option 51 and option 61C columns is required only if the two columns are not positioned side-by-side. If these columns are adjacent to each other, you must install column spacer kits and route cables between the columns as outlined in *Meridian 1 system installation procedures* (553-3001-210).

- 1 Install network cables between the option 51 column and the option 61C column. These cables connect network cards in the Core/Network module to the IPE Controller card in the IPE shelf of the option 51. Refer to *Upgrade engineering* (553-3001-150) for a detailed explanation of connector kits and cables required to connect network loops between a cabinet and an option 61C column.

Each network loop connection requires three cables:

- Connect the NT8D88 cable from the faceplate connector of the network card to the I/O panel connector at the rear of the Core/Network module.
- Connect the NT8D98 cable (up to 16 feet in length) from the I/O panel connector on the Core/Network module to the I/O panel on the IPE module.
- Connect the NT8D92 cable from the faceplate connector of the peripheral controller to the I/O panel connector at the rear of the IPE module.

- 2 Install alarm cables as outlined in “System monitor upgrade installation” on page 797.
- 3 Connect the external cable to the Core/Network module I/O panel connecting PRI/DTI to the network interface.

- 4 Install one PRI/DTI card in this module to be the master card and install the rest of the PRI/DTI cards, as slaves, in the option 51 CPU/Network shelf.
- 5 Install one PRI/DTI card in this module as the primary clock reference and install the rest of the PRI/DTI cards in the option 51 CPU/Network shelf. For installation procedures, refer to *Circuit card installation and testing* (553-3001-211).
- 6 Verify that PRI/DTI cards in the option 51 CPU/Network shelf are connected to the MDF or network interface.
- 7 Connect all external cables from the MDF to IPE shelf connectors in cabinet I/O panels and IPE module I/O panels. Refer to *Meridian 1 system installation procedures* (553-3001-210) for IPE module I/O panel external cable installation procedures.

Note: Make sure a terminal is connected to J25 on the I/O panel in Core 1. If you are using only one terminal or a switch box for the CPSI ports, set the connection to Core/Net 1. Verify that the terminal is set for 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 51 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Locate the IODU/C card and round 1/2” diameter IODU/C security device.
- 4 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Ensure that the security device is securely in place.

IODU/C cabling

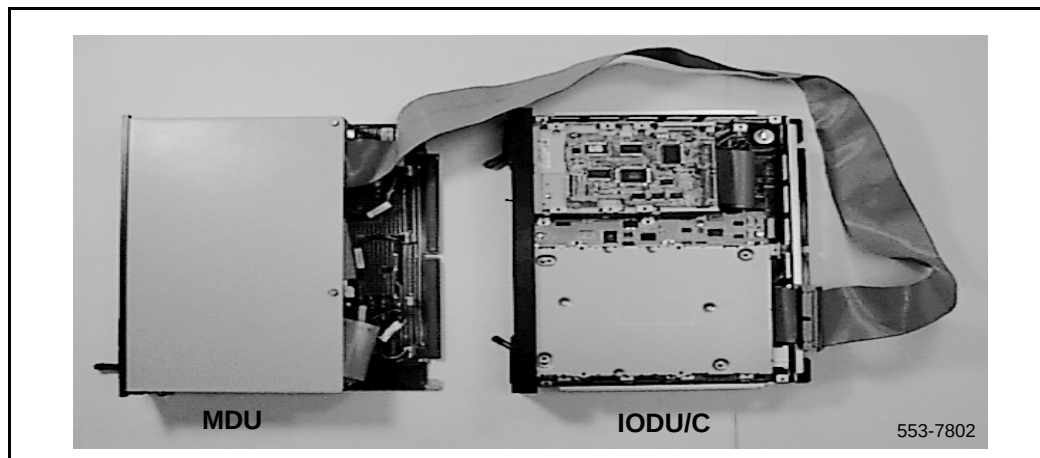
- 1 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 2 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 3 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 4 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 40, on page 274). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.

Figure 40
Cabling the MDU to the IODU/C card



- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu

- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation
<y> to confirm that the keycode matches the CD-ROM release

- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only
<f> to transfer the customer database from the MDU
<a> to continue the database transfer
<a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
<cr> to continue
the Installation Status Summary menu appears to confirm database transfer
<y> to start installation
<a> yes, transfer the database
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
<CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
<CR> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
<q> When the Install Menu appears, select <q> to quit.
<y> to confirm quit
<a> to reboot the system
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

- 16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Reinstall the MDU/SMDU into CPU 0:
 - Connect the cable(s) to the faceplate of the MDU.
 - Install the floppy diskette in the MDU
 - Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
 - Software enable the MSI, EMSI, or FDI card:
LD 37 to load the program
ENB MSI 0 to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program

STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
LD 43 to load the program
- 9 When “EDD000” appears on the terminal, enter:
EDD to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:
LD 2 to load the overlay
STAD DD MM YY HR MN SC

Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Set the MAINT/NNORM switch on the CP card in Core 0 to MAINT.
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 3 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 Initiate the installation by selecting the following prompt from the menu:

`<cr> <u>` to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation
`<y>` to confirm that keycode matches CD-ROM release
- 6 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

`<o>` to copy system software from the other Core
`<a>` to continue
`<a>` to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

`<CR>` press <CR> when you are ready to continue
`<y>` to start installation
`<a>` to continue with ROM upgrade
`<y>` to start installing CP-BOOT ROM

<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

Returning the system to redundant mode

- 1 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 2 In Core/Net 0, press and release the MAN RST button.
- 3 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**

- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS

ENTERING CP VOTE

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

- 6 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the statu of the CNI card
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 7 Switch Cores and test the other CPU:

SCPU	to switch to Core 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

- 8 Get the status of the CP cards and memories and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs
SCPU	to swap to Core/Net 1 active
****	to exit LD 135

- 9 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	to get the status of IODU/Cs, and redundancy
SYNC	synchronize the hard disk drives
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 10** Get the status of the IODU/Cs and be sure IODU/C is active. Switch IODU/Cs if necessary:

STAT	to get the status of IODU/Cs and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit the program
- 11** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.
- 12** Insert a B1 database disk into IODU/C 0. Load overlay 43 and perform a data dump.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program
- 13** When “EDD000” appears on the terminal, enter

EDD	to begin the data dump
- 14** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving the network cards

- 1** Perform the appropriate step to turn off power in each Core/Network module:
 - For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
 - For DC-powered systems, set the switch on the circuit breaker (located at the rear of the pedestal) to OFF (down position).

- 2 Label each card that is being transferred to a Core/Network module with the shelf (0 or 1) and loop (0–31) for the card.
- 3 On all cards that are being transferred to Core/Network modules, disable the faceplate switches, disconnect all cables, and remove the cards.
- 4 Connect all cables to the cards (including the NT8D88 cables from the I/O panels to the NT8D04 Superloop cards). Enable the faceplate switches.
- 5 Switch the cables at the PE end:
 - If NT8D92 cables inside the IPE modules are not connected, connect them to the faceplates of the appropriate NT8D01 Controller cards.
- 6 Turn on power to the cabinet:
 - Set the AC input circuit breaker on the –48V rectifier in the cabinet to ON.
 - Set the CAB INP circuit breaker on the power control shelf in the cabinet and all other shelf circuit breakers to ON.
- 7 In the option 61C, verify that all cards are enabled (all ENB/DIS switches are set to ENB).
- 8 Follow the appropriate step below to restore power in each Core/Network module.

Note: If power to both Core/Network modules is restored simultaneously, the CMDUs should still be synchronized.

- For AC-powered systems, simultaneously set the MPDU in both Core/Network modules to ON (up position).
- For DC-powered systems, simultaneously set the switch on the circuit breaker (located at the rear of the pedestal) in both Core/Network modules to ON (up position).

Completing the upgrade

- 1 Reenter system configuration data into the customer database, if required, in the following sequence:
 - To improve system performance, balance the network loops between both Core/Network shelves. To do this, do the following:
 - Define the target loop using the Configuration Program (LD 17).
 - Move the loops using the Move Data Blocks Program (LD 25).

Refer to *X11 input/output guide* for instructions on using LD 17 and LD 25.

Note: You may have to add one or more network loops in the database for network shelf 1 (loops 16 through 31) to make the network shelf operational.

 - Move the network cards from the option 51 to the network card slots previously defined.
 - Configure I/O devices to reflect the current configuration.
 - Reenter customer data blocks. System options and features must reflect the current configuration.
 - Configure station data blocks.
 - Configure route data blocks.
 - Configure trunk data blocks.
 - Configure remaining system configuration records.
 - Verify system operation before adding new equipment.
 - Configure new equipment and functions, if any.
- 2 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 3 Perform the postconversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The option 61C X11 release 24 system is now operational.

Upgrading option 61 to option 61C

This section describes upgrading a Meridian 1 option 61 to an option 61C. Upgrading requires powering down the option 61, removing and replacing the NT6D39 CPU/Network card cages with the NT5D21 Core/Network card cages, and installing the release 24 software.

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

CAUTION

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an option 61 has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. The upgrade must be planned for a time when the impact to the telephone users will be minimal.

Equipment required

The hardware required for this upgrade is provided in the core card cage upgrade package. All existing equipment that will be retained must be compatible with X11 release 24. You must order replacements for equipment that does not comply.

Additional equipment may also be needed to meet site requirements. Verify that all equipment needed for the upgrade has been identified.

Table 36 lists the equipment required to upgrade a Meridian 1 option 61 system to a Meridian 1 option 61C system.

Table 36
Hardware required to upgrade an option 61 system to option 61C

Quantity	Part Number	Description
2	NT5D61AA	Input-Output Disk Unit w/ CDROM (IODU/C)
2	NT5D2103	Core/Network Card cages
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
2	NT6D65AA	Core to Network Interface card (CNI)
2	NTND11	CP-to-CP Cable
1	NTND13	SCSI Cable
2	NT7D89	RS-232 Cable
2	NT7D90	IOP-to-I/O Panel Ethernet Cable
2	NT8D80AZ	3PE to 3PE Cable
1	NT8D75AD	Clock to Clock Cable
2	NT8D99AB	D and E port cable
2	NT1R90AB	Trim Panel Kit
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for CP cards is 64 MB.		

In addition, verify that the following cards installed in your current option 61 system are the correct vintages (vintages earlier than these will not work in an option 61C):

- QPC441 3PE card vintage F
- QPC471 Clock Controller card vintage H
- QPC775 Clock Controller card vintage E

Upgrade preparation

The following summarizes the steps you must perform before beginning the upgrade:

- 1 Check equipment required for the upgrade.
- 2 Prepare cables for the installation.
- 3 Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 4 Check the tool list in “Tools” on page 6. Make sure all the tools are on hand.
- 5 Check the cards that you will be reusing to ensure that they can be used in the 61C switch.
- 6 Separate the cables in the upgrade package. Label both ends of all cables.
- 7 If they are not already labeled, label both ends of the existing cables to the clock controller cards in both CPU 1 and CPU 0.
- 8 If QPC471 Clock Controller cards in the option 61 are not minimum vintage H, you must replace them before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)
- 9 Convert the customer database to release 24 compatibility.

- 10 Follow “Procedure 1: Pre-conversion procedure,” *Software conversion procedures* (553-2001-320), and print configuration records:

Check the configuration record printouts to identify all configured I/O ports. When you transfer call processing to Core/Network modules, one I/O address should be available for a CPSI port. Refer to “Terminal and modem connections” on page 927 for specific information regarding the terminal and modem settings.

- If only one address is available, the CPSI port for a terminal connection is automatically assigned to it.
- If more than one address is available, the CPSI port for a terminal connection is automatically assigned to the first available address (the lowest number). If more than one address is available, the I/O port for a modem connection is also assigned automatically.
- If there is no address available, the device assigned to I/O address 15 is automatically replaced by the CPSI port for a terminal connection.

Performing a data dump

Before converting your customer database, you must perform a data dump to your current tapes or disks.

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” displays on the terminal, enter ******* to exit the program

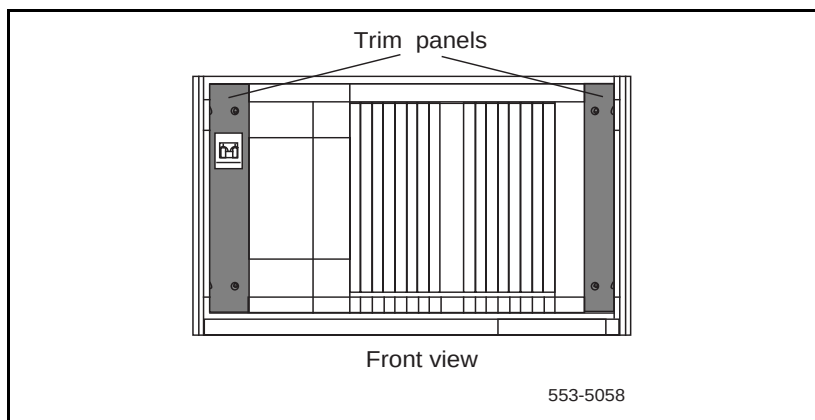
CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing the card cage

- 1 Perform the appropriate step below to turn off power to the column:
 - For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the modules (see Figure 41). Keep the screws for reuse.

Figure 41
Location of the trim panels



- 3 Tag and disconnect all cables connected to the front of each card in each CPU/Network module. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the switch is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 4 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.

- 5 On each card cage, remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

WARNING

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.

- 6 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 7 Tag and disconnect the system monitor ribbon cables to J1 and J2.
- 8 On each card cage, remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

WARNING

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

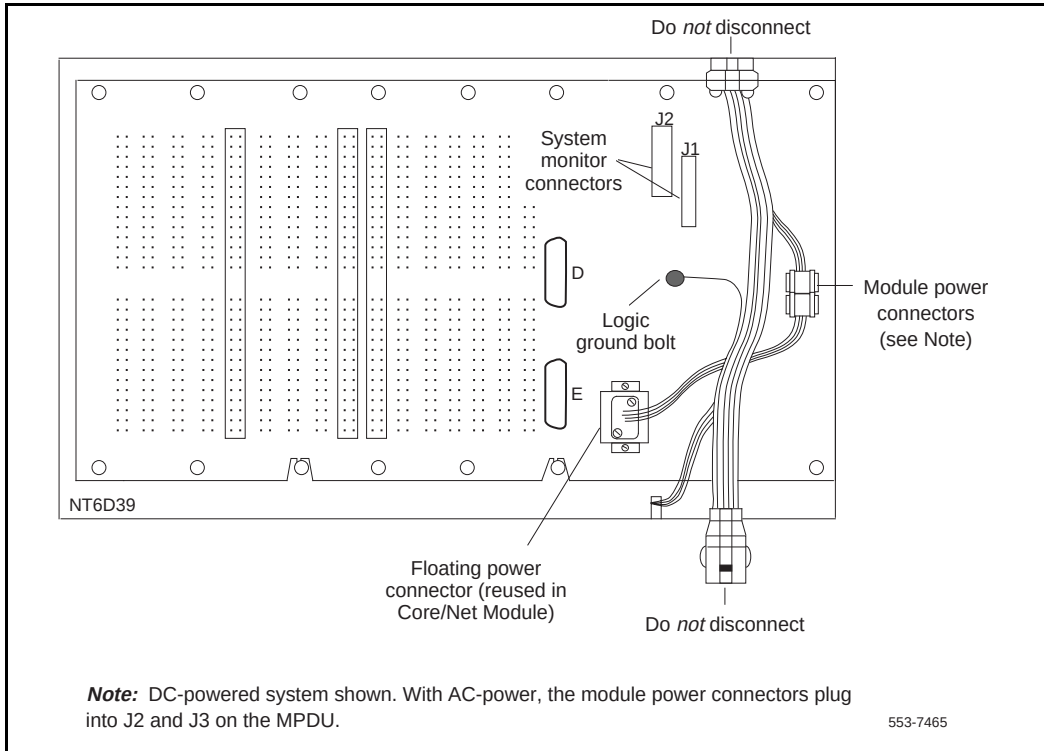
- 9 Pull each card cage forward until it is halfway out of the module.
- 10 Working from the rear of the module, tag and disconnect the two cables that connect the D and E connectors on the bottom (CPU/Network 0) module to the D and E connectors on the top (CPU/Network 1) module (see Figure 42).

WARNING

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

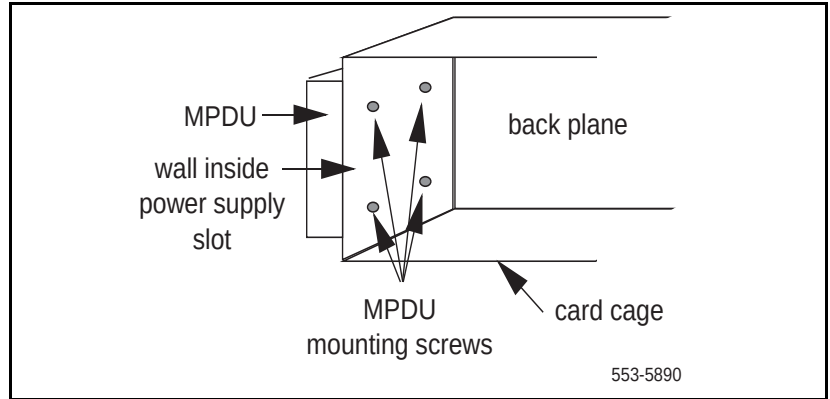
- 11 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.

Figure 42
Power connectors on the rear of the CPU/Network module backplanes



- 12 Tag and remove all SDI Paddle boards. They will be reused in the new Core/Net module.
- 13 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module Power Distribution Unit (MPDU) with AC power or connected to each other with DC power.
- 14 Remove the CPU card cages from the modules.

Note: For AC-powered systems: If the new NT5D21 Core/Network modules did not come with a module Power Distribution Unit (MPDU), you must remove the MPDU from each CPU/Network card cage and reinstall it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 43).

Figure 43**Location of the screws for the Module Power Distribution Unit (MPDU)**

- 15 Remove the existing floating power connector (the black connector) from the rear of each CPU card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Network card cages.

Note: Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 16
- Check the backplane jumpers in the Core/Network card cages to identify Core/Net 0 and Core/Net 1 (see Table 37 and Figure 44). The jumpers are located on the bottom, front side of the backplane near slot 14.

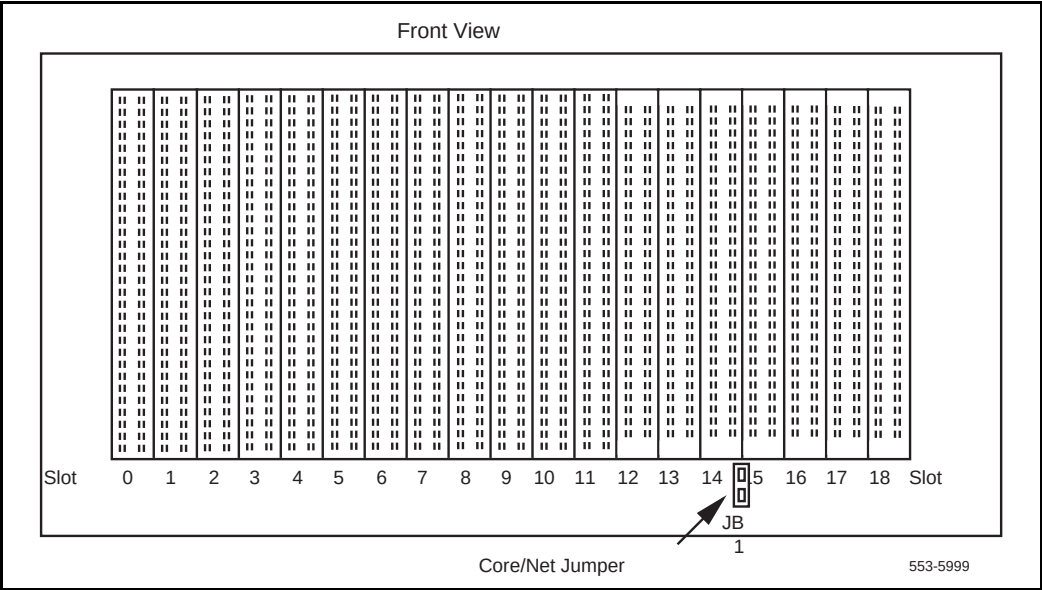
CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load and operate correctly.

Table 37
Backplane jumper settings for NT5D21 Core/Network module

Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

Figure 44
Location of the jumper on the NT5D21 backplane



- 17 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. The tape will be removed later.
- 18 Slide the Core/Net 0 card cage about halfway into the lower module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 45):

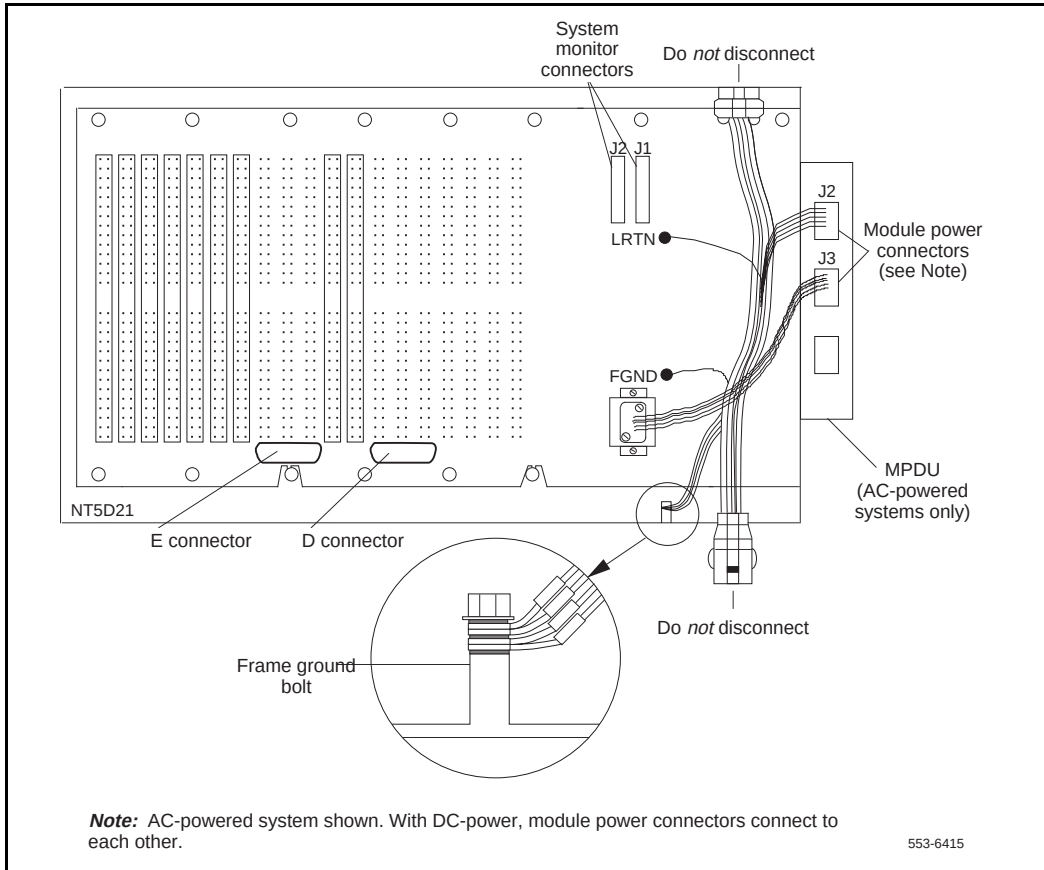
- Attach the new frame ground (green) wire to the frame ground post in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the post. Put the frame ground connector over the post. Reinstall the top lock washer and the nut, then tighten the nut down.

Note: For all of the connectors to fit on the post, you need to remove one of the lock washers. You must leave a lock washer at the bottom of the post and at the top of the post. Leave a third lock washer between the second and third, or the third and fourth, connectors.

- Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the connector over the post, reinstall the lock washer and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)
- Connect the module power connectors to the MPDU for AC power or to each other for DC power.
- Attach the system monitor ribbon cables. J1 goes down to the pedestal, J2 goes up the column.

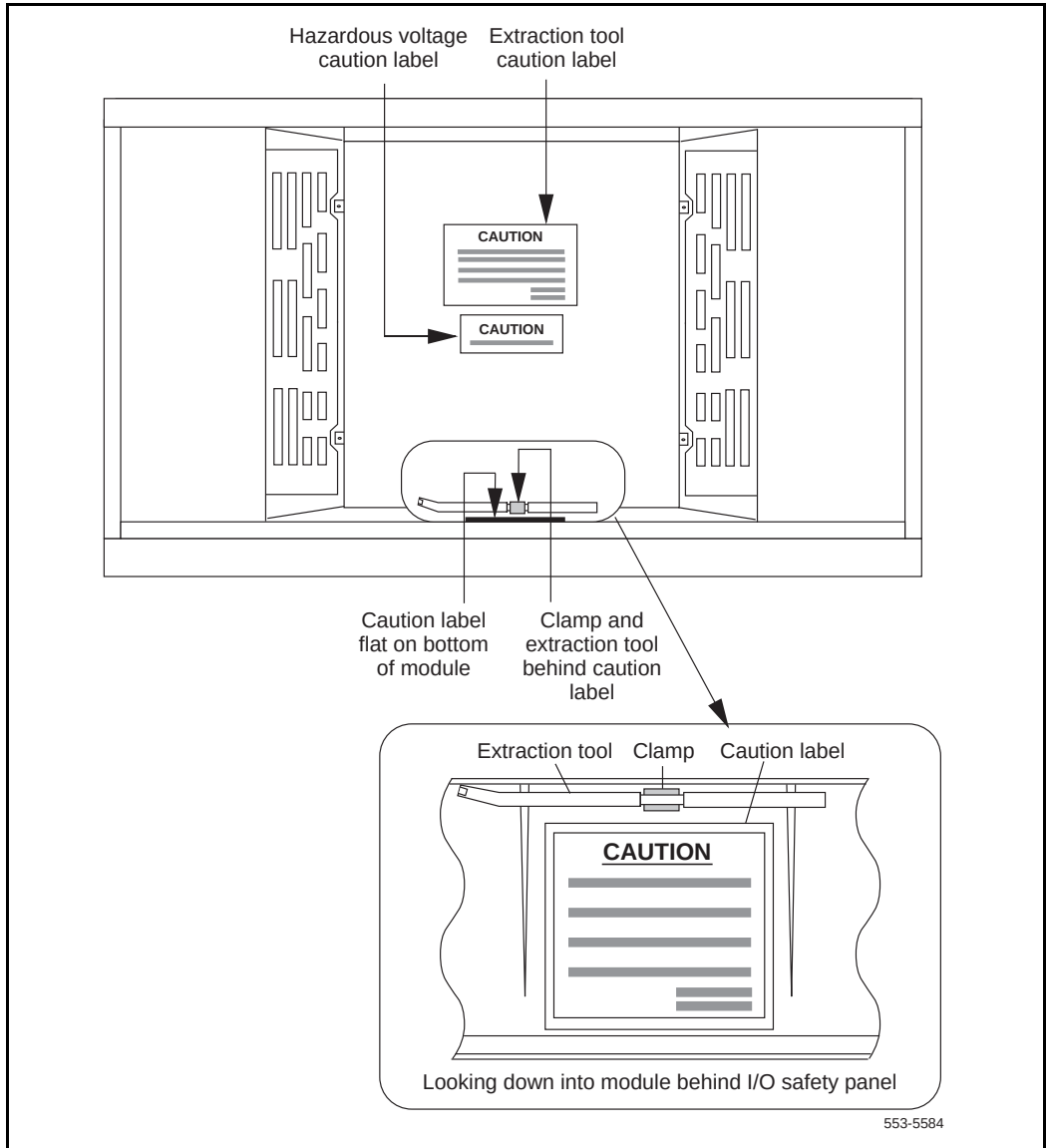
- 19 Repeat the previous step for the Core/Net 1 card cage.
- 20 Slide the card cage all the way into the Core/Network module.
- 21 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 22 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 23 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 46).
- 24 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.

Figure 45
Power connectors on the rear of the NT5D21 Core/Network module



- 25 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 26 Snap the P0741489 Extraction Tool into the clamp.
- 27 Attach the Core/Network module designation labels, provided in the upgrade package, at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.

Figure 46
Positioning the extraction tool and caution labels



- 28 Install the module power supply (reused from the CPU card cage) in the slot labeled “CE pwr sup” in the Core/Network card cage.
- 29 Turn on power to the module. With AC power, set the main circuit breaker to ON (up position) in the rear of the pedestal. With DC power, set the breaker to ON (up position) in the pedestal, then set the switch to ON (up position) on the power supply in the module.
- 30 Check the LED on the hybrid terminators located between slots 11 and 12. All LEDs must be off for Core/Net 0, and ON-OFF-OFF-OFF, from the top down, for Core/Net 1. The LED pattern matches the jumper settings on the backplanes. If either pattern is incorrect, check the jumper on that backplane (refer to Table 37).
- 31 Shut down power to the module again. With AC power, set the power supply breaker for the module to OFF (down position). With DC power, set the switch on the power supply for the module to OFF (down position).
- 32 Locate the round 1/2” diameter IODU/C security devices for each IODU/C card.

Note: The security device is used with a keycode to activate system software, features, and ISM limits.
- 33 Install a security device onto each IODU/C card:

With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 34 Place one IODU/C card in slot 17 (the card occupies two slots) in Core/Net 1 and the other card in slot 17 of Core/Net 0, but **leave the cards unseated.**
- 35 Set the NORM/MAINT switch on the CP cards to MAINT. Place the CP cards in slot 15 (the card occupies two slots) of Core/Net 1 and Core/Net 0, but **leave the card unseated.**
- 36 Place the NT6D65 CNI card in slot 12. Set the front panel ENB/DIS switch to DIS.

- 37 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to DIS. Set the option switches and jumper on the card (see Table 38). Place the card in slot 11.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

Table 38
QPC441F 3PE card—option settings

D20 switch: Core/Net 1								Core/Net 0							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	off	off	on	on	off	on	on	on	on
RN27 jumper at E35:															
NT5D21 Core/Network module								set to A							
All other modules								set to B							

- 38 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to DIS.
- 39 Set the option switches on the QPC471H Clock Controller card and set the front panel ENB/DIS switch to DIS. Refer to *Digital Clock Controllers installation and operation* (553-3001-111) for switch settings.
- 40 Install the clock controller card in slot 9, Group 0, Network shelf 1, but **leave the cards unseated**.
- 41 Remove the network cards from the CPU/Network module and reinstall them in the new Core/Network card cage. Install the cards in slot numbers indicated in Table 39. Notice that although the slot numbers have changed, the relative positions of the cards in the modules have not.
- 42 Reinstall all SDI Paddle boards and reconnect the cables.

43 Follow the steps below to install the NT7D89 RS-232 cable that connects the CPSI ports on the CP card to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 49).

Note: The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- On the inside of the I/O panel, connect port A (for modem connection) to J21.
- On the inside of the I/O panel, connect port B (for terminal connection) to J25.

44 Connect the single connector end of the cable to backplane connector position 15D.

45 Connect a terminal to the CPSI port on J25 Core/Net 1

Table 39
Slot number translation for network cards

NT6D39 CPU/Net Slot Number	NT5D21 Core/Net Slot Number
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 61 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

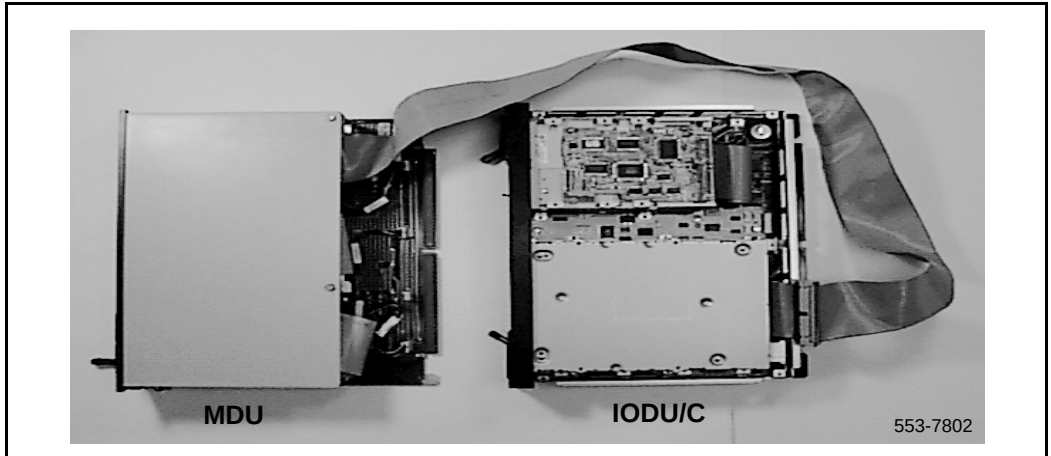
- 1 **Verify that the Core/Net module is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 47, on page 303). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).

Figure 47
Cabling the MDU to the IODU/C card



- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive .
- 9 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 10 When the NT logo appears, CP Install Program diskette press <CR> to continue.
- 11 Enter the date and time, when prompted.
- 12 When the Main Menu appears, select the following command from the menu:

<u> to Install menu

- 13 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation
<y> to confirm that the keycode matches the CD-ROM release and return to the Install Menu

- 14 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 1.

- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only
<f> to transfer the customer database from the MDU
<a> to continue the database transfer
<a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
<cr> to continue
The Installation Status Summary menu appears to confirm database transfer
<y> to start installation
<a> Yes, transfer the database
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
<cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

Remove any diskettes from the floppy drive.

<q> When the Install Menu appears, select <q> to quit.
<y> to confirm quit
<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal.

- 16 Shut down power to Core/Net 1 module.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
 - the CP Install Program diskette must be in the IODU/C floppy drive
 - the module must be powered on
- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

- 2 Enter the date and time when prompted.
- 3 When the Main Menu appears, select the following options in sequence:
 <u> to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette.
 Select the following when prompted:
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 5 When the Install Menu appears, select the following options in sequence:
 <a> to install software, CP-BOOTROM, and IOP-ROM
 <a> to verify that the CD-ROM is now in drive
 The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:
 <y> to start installation
 <a> to continue with upgrade
 The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:
 <a> to continue with ROM upgrade
 When all files were copied from the CD-ROM to the hard disk, press:
 <CR> to continue
 You are prompted to replace old CP-BOOTROM with the ROM image files. Select:
 <a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)
 The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:
 <y> to start installation
 <a> to continue with ROM upgrade (IOP-ROM is installed)
 The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:
 <CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload. Wait for "DONE" and "INI" messages to be displayed before continuing.

- 6 When the sysload is complete, log into the system.
- 7 Confirm that the X11 release 24 software is installed and functional on Core/Net 1:
 - LD 135** to load the program
 - STAT CPU** to display the CPU status
- 8 Remove the CD-ROM disk from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:
 - LD 43** to load the program
- 9 When "EDD000" appears on the terminal, enter:
 - EDD** to begin the data dump
- 10 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appears on the terminal, enter:
 - ****** to exit the program

CAUTION

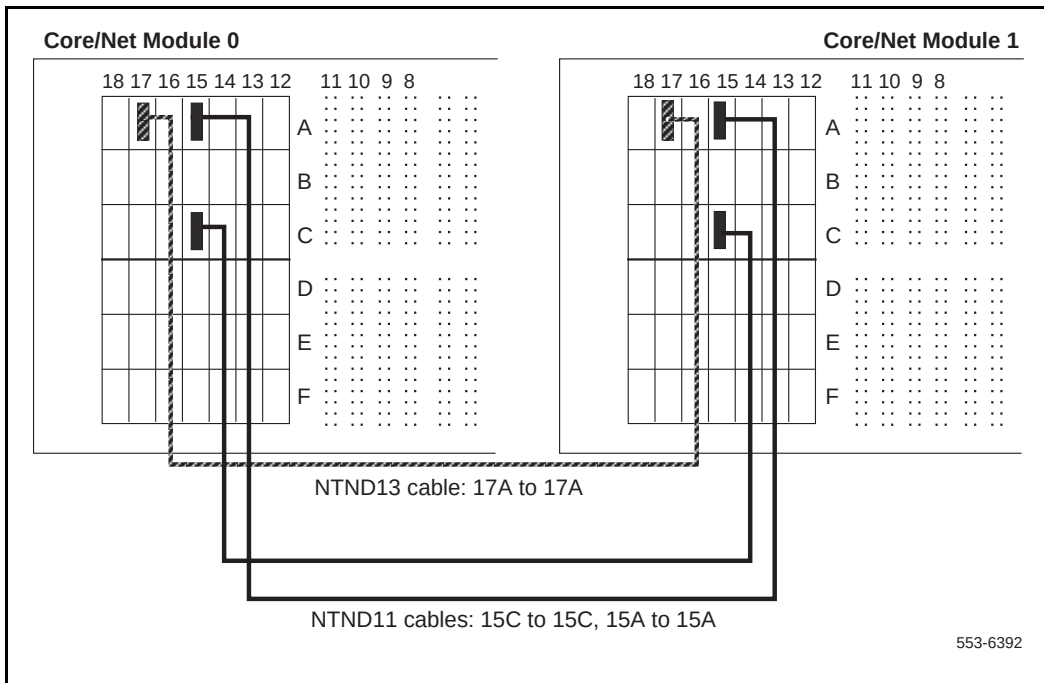
If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Power down the column containing Core/Net 1 and 0.

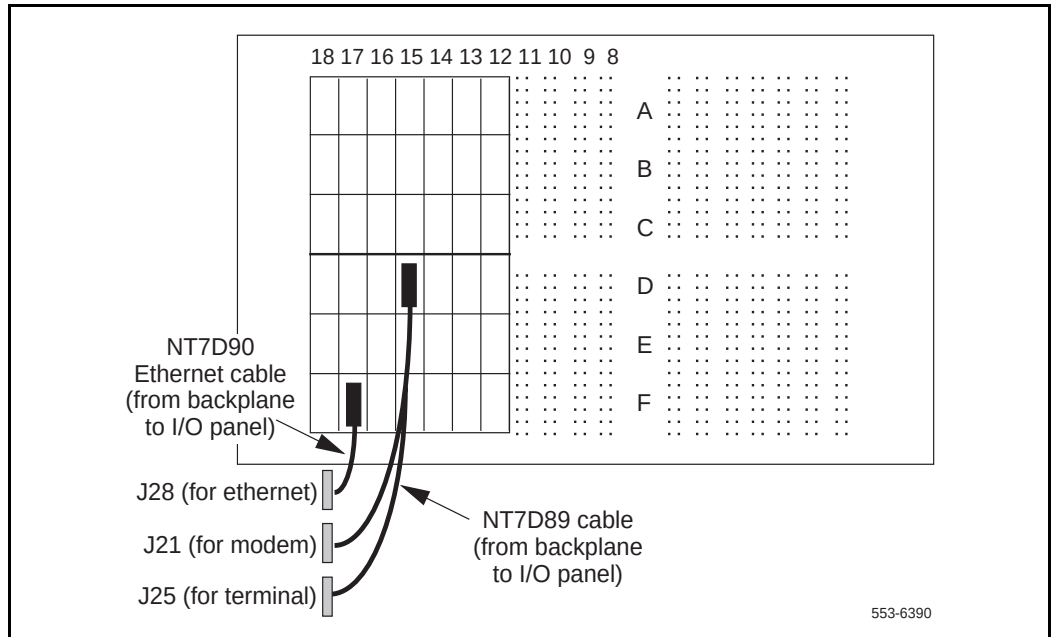
Installing intermodule cables

- 1 Install the NTND13 SCSI cable from backplane connector 17A in Core/Net 0 to connector 17A in Core/Net 1 (see Figure 48).
- 2 Install the first NTND11 CP-to-CP cable from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 (see Figure 48).
- 3 Install the second NTND11 CP-to-CP cable from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 48).
- 4 At the rear of each Core module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 49)

Figure 48
NT5D21 Core/Net module (rear)—NTND13 and NTND11 cables



- 5 Install the first NT8D99AB D and E cable from the backplane connector labeled D in Core/Net 0 to the backplane connector labeled D in Core/Net 1.
- 6 Install the second NT8D99AB D and E cable from the backplane connector labeled E in Core/Net 0 to the backplane connector labeled E in Core/Net 1.

Figure 49**NT5D21 Core/Network module (rear)—RS-232 cable connections for CPSI ports**

- 7 Follow the appropriate steps below to connect the clock controller cables:

- 8 For a QPC471 card, connect the NT8D75 cable from J3 (on the faceplate of the clock controller card) in Core/Net 0 to J3 of the clock controller card in Core/Net 1.
 - For QPC775 Clock Controller cards, connect the NT8D75 cables from J2 (on the faceplate of the clock controller card) in Core/Net 0 to J2 of the clock controller card in Core/Net 1.
 - Leave the ENB/DIS switch set to DIS on QPC471 or QPC775 cards.
- 9 Connect the 3PE module in Core/Net 0 to the 3PE module in Core/Net 1 using the two existing cables. Connector J4 on the faceplate of the 3PE module in Core/Net 0 is connected to connector J4 on the faceplate of the 3PE module in Core/Net 1. Connector J3 on the faceplate of the 3PE module in Core/Net 0 is connected to connector J3 on the faceplate of the 3PE module in Core/Net 1.
- 10 Connect any remaining network and serial cables to the network cards installed in slots 0 through 7. The cables should go to exactly the same connector that they were connected to on the old CPU module.

Note: You may have cables left over after completing this step. You should leave these cables installed until the new option 61C switch has been tested and is working correctly. They will be removed later in this procedure.
- 11 Connect a terminal to the J25 (DCE) port on the I/O panel in Core/Net 0. You must use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

Note: Refer to “Terminal and modem connections” on page 927 before connecting the terminal.
- 12 Perform the appropriate step to turn on power to the column:
 - For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker to ON (up position) in the pedestal.
- 13 Verify that the CNIs in Core/Net 0 are disabled.
- 14 Verify that all CNIs in Core/Net 1 are enabled.

- 15 Verify that the both CP cards are in MAINT.
- 16 Verify that the remaining cards in Core/Net 1 and 0 are enabled, but leave the CNIs in Core/Net 0 disabled.

Copying the software and database to Core/Net 0

You will now copy system software from Core/Net 1 to Core/Net 0, install CP-software on CP 0, install ROMS on CP 0, and transfer the database from Core/Net 1 to Core/Net 0.

- 1 **Verify that the MAINT/NORM switch on the CP card in Core/Net 0 is set to MAINT.**
- 2 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Program Install diskette corresponds to the CP card type installed in the system.
- 3 **Press the MAN RST button on the CP card in Core/Net 0** to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 4 When the NT logo appears, press <CR> to continue.
- 5 When the Main Menu appears, select the following options in sequence:
 <u> to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 7 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:
 <o> to copy system software from the other core
 <a> to copy /p partition from Core1 to Core 0
 <a> to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

<CR> press <CR> when you are ready to continue

<y> to start installation

<a> to continue with ROM upgrade

<y> to start installation

<a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

<f> to install IOP-ROM only

When the Installation Status Summary screen appears:

<y> to start installation

<y> to continue installing IOP-ROM

<a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 8 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Returning the system to redundant mode

- 1 Connect a terminal to CPSI J25 in Core/Net 1 or SDI port.
- 2 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.

- 3 In Core/Net 0, press and release the MAN RST button.

When SYS700 messages in Core/Net 0 appear on the LCD display, set the MAINT/NORM switch to NORM in Core/Net 0.

- 4 In 60 seconds, the LCD will display and confirm the process:

RUNNING ROM OS

ENTERING CP VOTE

An “HWI534” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an “HWI533” message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 5 In Core/Net 1, set the NORM/MAINT switch to NORM on the CP card.

6 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CNI c s	to test the CNI on the inactive side

Note: Testing the CNI cards may take up to 90 seconds for each test.

7 Test the inactive Core, then switch Cores and test the other side:

TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST IPB	to test the inactive Interprocessor Bus
SCPU	to switch to Core 0
TEST CNI c s	to test the CNIs (c = core, s = slot)
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST IPB	to test the inactive Interprocessor Bus

Note: Testing the CP can take up to 20 minutes.

8 Get the status of the CP cards and memory and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs
****	to exit LD 135

9 Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	to get the status of IODU/Cs, and redundancy (verify that IODU/C 1 is active)
SYNC	to synchronize the hard disks
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 30 minutes.

After synchronization is complete, exit the program:

****	to exit LD 137

10 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 11 Insert a backup database disk from the set of installation diskettes into the active IODU/C for backup. Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

- 12 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The upgrade is complete; the option 61C is running X11 release 24. Continue with “Completing the upgrade” to confirm system function.

Completing the upgrade

To complete the card cage upgrade, perform the following steps:

- 1 Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137 to load the program

TEST SCSI to check the IOP to IOP connection and access to the IODU/Cs

TEST CMDU to test the hard and floppy disk drives (a floppy disk must be installed)

******** to exit the program

- 2 Test core functions:

LD 135 to load the program

TEST CPU to test the inactive CP card and CP-to-CP cable

TEST IPB to test the backplane protocol on the inactive side
TEST CNI c s to test each configured CNI on the inactive side

Note: Testing the CP can take up to 20 minutes.

If all the tests pass, switch Cores and test the side that is now inactive:

SCPU to switch to the other Core
TEST CPU to test the inactive CP card and CP-to-CP cable
TEST IPB to test the backplane protocol on the inactive side
TEST CNI c s to test each configured CNI on the inactive side

3 Clear displays, major alarms, and minor alarms:

CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
SCPU to switch to the other Core
CDSP to clear the display
******** to exit LD 135

4 Load overlay 60 and software enable clock controller cards and any PRI/DTI cards in the Core/Network modules:

LD 60 to load the program
ENL CC x to enable clock controller card 0 or 1
TRCK aaa if necessary, to set tracking
ENLL loop to enable the specified network loop and associated PRI/DTI card
******** to exit the program

5 For both Core/Network modules, install the appropriate trim panels from the upgrade package.

6 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

Upgrading option 51C to option 61C

CAUTION

Read through the entire procedure before you begin this upgrade.

Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

To upgrade an option 51C system to an option 61C system, you must upgrade both the hardware and the software. Upgrading the hardware consists of:

- installing a Core/Network module next to the existing option 51C column
- installing an IPE module on top of the existing option 51C column
- installing new cables

Upgrading the software consists of:

- installing new system software
- for those customers who so choose, sending the customer database disks to Northern Telecom for conversion
- for those customers who choose to convert the database on-site, converting the customer database to X11 release 24 compatibility

Equipment required

Tables 30 and 29 list the minimum items required to upgrade an AC-powered or DC-powered system to an option 61C. Some configurations may require items not included in the tables. All required items must be identified and on hand before you begin the upgrade. Whenever a new column is installed, you must also provide NT8D49AA Column Spacer Kits and P0699724 Modular Side Covers.

Letters at the end of the part number may represent the minimum vintage of the upgrade equipment. Only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed. These cables are:

- NT8D88 cables that connect network cards to the Core/Network module I/O panels
- NT8D98 cables that connect the I/O panels in the Core/Network module to the IPE module I/O panels
- NT8D92 cables that connect the peripheral controller to the IPE module I/O panels

Refer to *Upgrade engineering* (553-3001-150) for additional information on cable requirements.

An NT8D01 Controller Card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one Ringing Generator must be installed.

Table 40
Hardware requirements for an AC-powered option 61C (Part 1 of 2)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61	Input-Output Disk Unit w/ CDROM (IODU/C)
1	NT5D21AA	Core/Network module, AC
1	NT6D65AA	Core to Network Interface Card (CNI)
2	NT9D19 or	Call Processor cards (CP) (see note 1)
2	NT5D10 or	
2	NT5D03	
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply, AC
1	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
1	NT8D29AB	Common Equipment Power Supply, AC
1	NT8D37BA	Intelligent Peripheral Equipment module, AC (see note 3)
1	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D52AB	Pedestal Blower Unit, AC
1	NT8D53BB	Power Distribution Unit, AC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
2	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)

Table 40
Hardware requirements for an AC-powered option 61C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
2	NTND21AA	Module Side Cover (see note 4)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC84S	Power Monitor
1	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H or	Clock Controller cards (see note 5)
2	QPC775E	
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: Two NT9D19AA/AB (48 MB), NT9D19CA/CB (64 MB), NT9D19DA/DB (96 MB), NT9D19EA/EB (112 MB); or NT5D10AA (48 MB), NT5D10CA (64 MB), NT5D10DA (96 MB), NT5D10EA (112 MB); or two NT5D03AA (48 MB), NT5D03CA (64 MB), NT9D03DA (96 MB); NT5D03EA (112 MB), NT5D03FA (128 MB) CP cards are required. Note 3: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 4: Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 5: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Table 41
Hardware requirements for a DC-powered option 61C (Part 1 of 3)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61	Input-Output Disk Unit w/ CDROM (IODU/C)
1	NT5D21DA	Core/Network module, DC
1	NT6D40AB	Peripheral Equipment Power Supply, DC
1	NT6D41AB	Common Equipment Power Supply, DC
1	NT6D65AA	Core to Network Interface Card (CNI)
2 2 2	NT9D19 or NT5D10 or NT5D03	Call Processor cards (CP) (see note 1)
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal, DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit, DC
1	NT8D01BC	Controller-Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D17FA	Conference/TDS Card

Table 41
Hardware requirements for a DC-powered option 61C (Part 2 of 3)

Qty	Part number	Description
1	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment module, DC (see note 3)
1	NT8D41AA	Dual-Port SDI Paddle Board
1	NT8D52DD	Pedestal Blower Unit, DC
2	NT8D80AZ	CPU Interface Cable (5 ft.)
2	NT8D84AA	SDI Paddle Board to I/O Cable (18 in.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI cable (6 ft.)
2	NTND21AA	Module Side Cover (see note 4)
1	QPC43R	Peripheral Signaling Card (PS)
1	QPC84S	Power Monitor
1	QPC441F	Three-Port Extender Card (3PE)
2	QPC471H	Clock Controller cards (see note 5)
2	QPC775E	

Table 41
Hardware requirements for a DC-powered option 61C (Part 3 of 3)

Qty	Part number	Description
Note 1: Two NT9D19 (68040), NT5D10 (68060) or two NT5D03 (68060E) CP cards are required. For X11 release 24 option 61C systems, the minimum memory requirement for a CP card is 64 MB. Note 2: Two NT9D19AA/AB (48 MB), NT9D19CA/CB (64 MB), NT9D19DA/DB (96 MB), NT9D19EA/EB (112 MB); or NT5D10AA (48 MB), NT5D10CA (64 MB), NT5D10DA (96 MB), NT5D10EA (112 MB); or two NT5D03AA (48 MB), NT5D03CA (64 MB), NT9D03DA (96 MB); NT5D03EA (112 MB), NT5D03FA (128 MB) CP cards are required. Note 3: One NT8D21AA Ringing Generator, AC, must be added for each IPE module in which analog-type peripheral cards are to be used. Note 4: Determine whether additional NTND21AA module side covers (to cover all exposed sides of modules) and NT8D49AA Column Spacer Kits (to connect modules side-to-side) are necessary and order separately. Note 5: If the option 61C will have PRI or DTI cards installed, you must have two QPC471 Clock Controller cards (vintage H) or two QPC775 (vintage E) Clock Controller cards to perform this upgrade. Order separately, as required.		

Upgrade preparation

Some preparation is required before the conversion of the option 51C hardware and software begins. You must first do the following:

- Inventory all equipment required for the upgrade.
- Provide appropriate power and ground for the increased electrical load of the option 61C.
- Back up the customer database to disk by doing a data dump.
- Convert the customer database to release 24 compatibility.
- Install the option 61C hardware.

Note: Obtain extra-high-density floppy disks containing system software from your Northern Telecom representative.

Power and ground

Clean power and a good ground are prerequisites to any switch upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Transferring the customer database to 2MB diskettes

Use this procedure to transfer the customer database to 2MB diskettes using the Transfer Utility.

Note: You can also transfer the customer database from a CMDU to a IODU/C using the CP Install Program method. This is possible only after Core 1 has been upgraded to Core/Net 1 with an IODU/C. This procedure is described in “Database transfer” on page 745 of this document.

To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1 The Cores are split and Core 0 is processing calls.
- 2 Install the Transfer Utility diskette into the floppy drive on the CMDU in Core 1.

- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

CAUTION

When using the Database Transfer Utility, only select options <t> *Tools Menu* and <s> *To archive existing database*. Selecting any other options can result in operating system corruption.

- 4 From the installation menu select:

<t>	to go to the Tools menu
<s>	to archive existing database
<cr> <a>	to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
<cr> <a>	diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

Installing option 61C hardware

Option 61C equipment is configured at the factory according to customer requirements. This equipment includes the pedestal, Core/Network module, IPE module, cards, and top cap. Some cards, such as the IODU/Cs and power supplies, are shipped in separate packages to prevent damage to the cards.

To install the option 61C, first follow the procedures in *Meridian 1 system installation procedures* (553-3001-210). This requires that you remove the new IPE module from on top of the new Core/Net module, as shipped. Remove the top cap from the existing option 51C column, and install the new IPE module on top of this column. Install the top cap on the new module. Install the new Core/Net module and top cap to the left of the column.

When you have installed the new modules and cables, return to this procedure and continue with “Performing a data dump” on page 326.

Note: When installing the new Core/Net module, verify the backplane jumpers in both Core/Net card cages to identify Core/Net 0 and Core/Net 1. The jumpers are located on the bottom, front side of the backplane near slot 14: Core/Net 0 = jumper plug installed, Core/Net 1 = jumper plug not installed.

Performing a data dump

Before converting your customer database to release 24, you must perform a data dump to your current disks using the Equipment Data Dump Program (LD 43).

- 1 Log into the option 51C.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media. Do not exit LD 43.
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 Exit the program. At the prompt, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Converting the database to release 24

Use the following procedures to install the software and convert the database to release 24.

- 1** Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2** Make sure that the Security Device is installed in the IODU/C.
- 3** Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4** Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5** Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6** Enter time and date, when prompted.
- 7** Initiate the installation by selecting the following prompt from the menu:

`<cr>` `>` `<u>` to Install menu
- 8** Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation

- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
- press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.
- ** to install software, database, CP-ROM, and IOP-ROM
 - <a>** to verify that the CD-ROM is now in drive
 - <y>** Yes, start the installation
 - <a>** continue with upgrade
- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:
- <a>** to install customer database
 - <a>** to continue with the database install
 - <a>** to transfer the database from floppy to hard disk
 - <y>** Yes, to start installation
 - <a>** Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:
- <cr> <a>** to install CP-ROM from hard disk
 - <cr> <a>** to continue with ROM upgrade
 - <a>** to install the IOP-ROM from hard disk
 - <y>** Yes, start installation
 - <a>** to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13 From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- Verify that the following message appears on the system terminal:

DATA CONVERSION
X11 RELEASE xx.xx TO release 24.xx

- 14 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135	to load the program
STAT CPU	to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

Installing intermodule cables

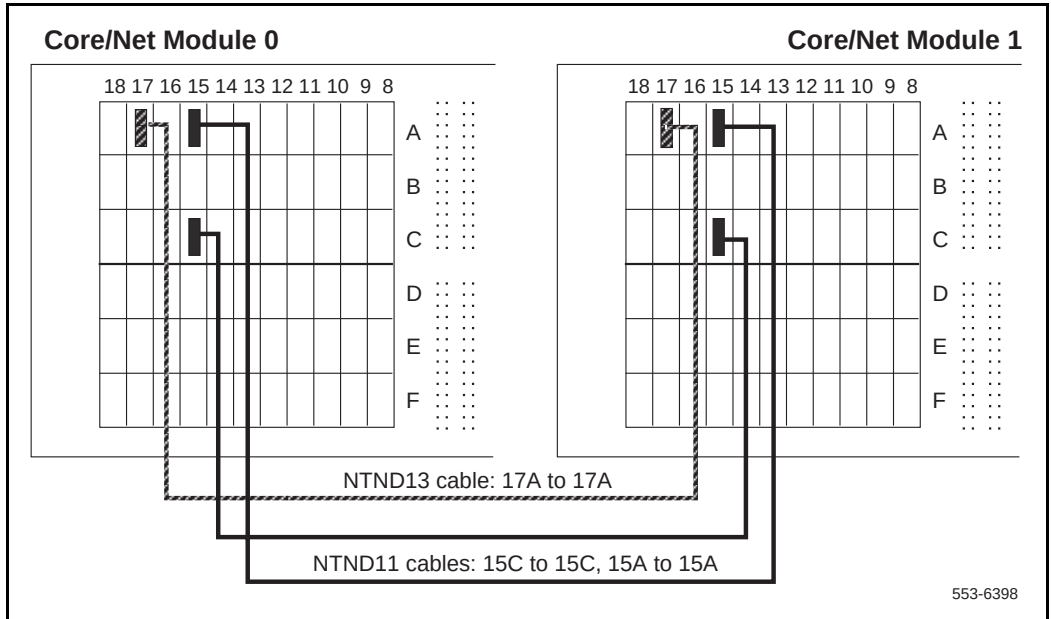
- 1 Install NT8D99AD cables between the D connectors on the backplane of each Core/Net module. Install another NT8D99AD cable between the E connectors on the backplane of each Core/Net module.
- 2 Install an NT8D80AZ cable between the J3 connector on the 3PE card in Core/Net 0 and the J3 connector on the 3PE card in Core/Net 1. Install another cable between the J4 connectors on the 3PE cards.
- 3 Set the ENB/DIS switch on the IODU/C card in Core/Net 0 to DIS.
- 4 Set the ENB/DIS switch on the CNI card in Core/Net 0 to DIS.
- 5 Set the ENB/DIS switch on the CNI card in Core/Net 1 to ENB.

- 6 Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process; INI messages will appear on the display. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.
- 7 Check for dial tone. If there is no dial tone (i.e., the system is inoperable) and you cannot afford downtime, switch the loops back to Core/Net 0.
 - Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS.
 - Set the ENB/DIS switch on each CNI card on Core/Net 0 to ENB.
 - Press the MAN INT button in Core/Net 0.
 - Troubleshoot Core/Net 1 offline.

If you can afford downtime, troubleshoot Core/Net 1 online:

- Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
 - Verify that all cables are properly and securely connected in the front and rear of the module.
 - Check the status of the CNI cards with LD 135 (“STAT CNI”) and ensure all configured CNIs are software enabled.
 - If any CNI cards are disabled, enable them using LD 135; perform a data dump using LD 43; and then press the MAN INT button.
 - Check the status of the CNI cards using LD 135 (“STAT CNI”) and ensure all configured CNIs are software enabled.
 - Check for dial tone.
- 8 Cable the NTND11 IOP and NTND13 CP cables as shown in Figure 50.

Figure 50
NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables



Upgrading the software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0 and synchronizes the IODU/C hard disks.

- 1 Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:
 <cr> <u>> to Install menu

- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 <a> continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:
 <o> to copy system software from the other Core
- 7 When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:
 <f> to install IOP-ROM only
 <cr> <a> to install the IOP-ROM from hard disk
 <y> Yes, start installation
 <cr> <a> to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:
 <d> to go to the Database menu
 <d> to copy the database from Core 1 to Core 0
 <y> to confirm the installation status summary
 <a> to confirm database copy
- 10 From the Main Menu, select the following options to quit and reload the system:
 <q> to quit
 <y> to confirm quit

- 11 Reboot the Core/Net 0 CPU:

<a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 15 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 16 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

Completing the upgrade

- 1 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST IPB	to test the backplane protocol on the inactive side
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds. Testing the CP can take up to 20 minutes.

- 2 Test the inactive Core, then switch Cores and test the other side:
- | | |
|-----------------|---|
| SCPU | to switch to Core/Net 0 |
| TEST CPU | to test the inactive CP card and CP-to-CP cable |
| TEST IPB | to test the backplane protocol on the inactive side |

- 3 Get the status of the CP cards and memory and of the CNIs:
- | | |
|-----------------|--|
| STAT CPU | to get the status of both Cores |
| STAT CNI | to get the status of all configured CNIs |
| **** | to exit LD 135 |

- 4 Synchronize the hard disks. To be sure the contents of IODU/C 1 are copied to IODU/C respectively, verify that IODU/C is disabled:
- | | |
|------------------|---|
| LD 137 | to load the program |
| STAT | to get the status of IOP/CMDUs or IODU/C and redundancy |
| SWAP | to switch IOP/CMDUs or IODU/C (if necessary) |
| SYNC | to synchronize the hard disks |
| TEST CMDU | Performs hard and floppy disk test. |

Note: Synchronization may take up to 30 minutes.

- 5 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:
- | | |
|-------------|---|
| STAT | to get the status of IOP/CMDUs or IODU/C s and redundancy |
| SWAP | to switch IOP/CMDUs or IODU/Cs (if necessary) |
| **** | to exit LD 137 |
- 6 In the Configuration Record (LD 17), verify that LD 37, LD 135, and LD 137 are included in the midnight routines. Add them if they are not.

- 7 Insert the B1 disk into the active IODU/C for backup. Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, the upgrade is complete.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Clear displays, major alarms, and minor alarms:

CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
SCPU to switch to the other Core
CDSP to clear the display
******** to exit LD 135

- 9 Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:

LD 60 to load the program
ENL CC x to load the program
TRCK aaa if necessary, to set tracking
ENLL loop to enable the specified network loop and associated PRI/DTI card
******** to exit the program

- 10 Software enable the associated SDI port:

LD 37	to load the program
ENL terminal x	to enable the device associated with the port
STAT XSM	to check the status of the system monitor
****	to exit the program
- 11 For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 12 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The upgrade is complete.

Upgrades to Meridian 1 option 81C

This chapter describes how to upgrade the following SL-1 and Meridian 1 systems running X11 release 19 or higher software to release 24 on the option 81C:

- Option 61 Core/Net module upgrade to Option 81C, page 341
- Option 61C (with NT9D11 card cages) Core/Net module upgrade to Option 81C, page 390
- Option 61C (with NT5D21 card cages) Core/Net module upgrade to Option 81C, page 442
- Option 71 (in modules) card cage upgrade to Option 81C, page 475
- Option 81 card cage upgrade to Option 81C, page 545
- XT and Option 71 (in cabinets) Core/Net module upgrade to Option 81C, page 608
- XT system Core/Net module and Network module upgrade to Option 81C, page 686.

CAUTION

Upgrading the customer database on-site requires some system down time. Schedule sufficient down time when planning the system upgrade.

CAUTION

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

Table 42
Database conversion requirements, option 61 upgrade to option 81C

X11 release		Software required	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx option 61	1111	NTND08
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
Note: Option 81C systems running release 24 support 80, and 112 MB NT9D19 memory configurations. The 96 MB card is not supported due to the 64 MB of flash memory and 32 MB of DRAM memory configuration. Option 81C systems require 48 MB of DRAM memory to support release 24.				

Table 43
Database conversion requirements, option 61C (with NT9D11/NT5D21 card cage) upgrade to option 81C

X11 release		Software required (see note)	Software generic	ROM/CP card required
From	To			
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
Note: Option 81C systems running release 24 support 80, and 112 MB NT9D19 memory configurations. The 96 MB card is not supported due to the 64 MB of flash memory and 32 MB of DRAM memory configuration. Option 81C systems require 48 MB of DRAM memory to support release 24.				

Table 44
Database conversion requirements, option 71 upgrade to option 81C

X11 release		Software required	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx option 71	1211	NTND08
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
Note: Option 81C systems running release 24 support 80, and 112 MB NT9D19 memory configurations. The 96 MB card is not supported due to the 64 MB of flash memory and 32 MB of DRAM memory configuration. Option 81C systems require 48 MB of DRAM memory to support release 24.				

Table 45
Database conversion requirements, option 81 upgrade to option 81C

X11 release		Software required	Software generic	ROM/CP card required
From	To			
For converting a release 18 customer database				
18	19	Release 19.xx option 81	1611	NTND66 (24 MB)
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
Note: Option 81C systems running release 24 support 80, and 112 MB NT9D19 memory configurations. The 96 MB card is not supported due to the 64 MB of flash memory and 32 MB of DRAM memory configuration. Option 81C systems require 48 MB of DRAM memory to support release 24.				

Table 46
Database conversion requirements, XT/71 upgrade to option 81C

X11 release		Software required	Software generic	ROM/CP card required
From	To			
For converting a release 19, 20, 21, 22, or 23 customer database				
19	24	Release 24.xx option 81C	1911 or 2611 or 3011	NT9D19 (see Note) NT5D10EA (80MB minimum) NT5D03EA (80MB minimum)
Note: Option 81C systems running release 24 support 80, and 112 MB NT9D19 memory configurations. The 96 MB card is not supported due to the 64 MB of flash memory and 32 MB of DRAM memory configuration. Option 81C systems require 48 MB of DRAM memory to support release 24.				

Upgrading option 61 to option 81C

This section describes upgrading a Meridian 1 Option 61 to an Option 81C. Upgrading requires powering down the Option 61, removing and replacing the NT6D39 CPU/Network card cages with the NT5D21 Core/Network card cages, installing additional modules, and installing the release 24 software.

CAUTION

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

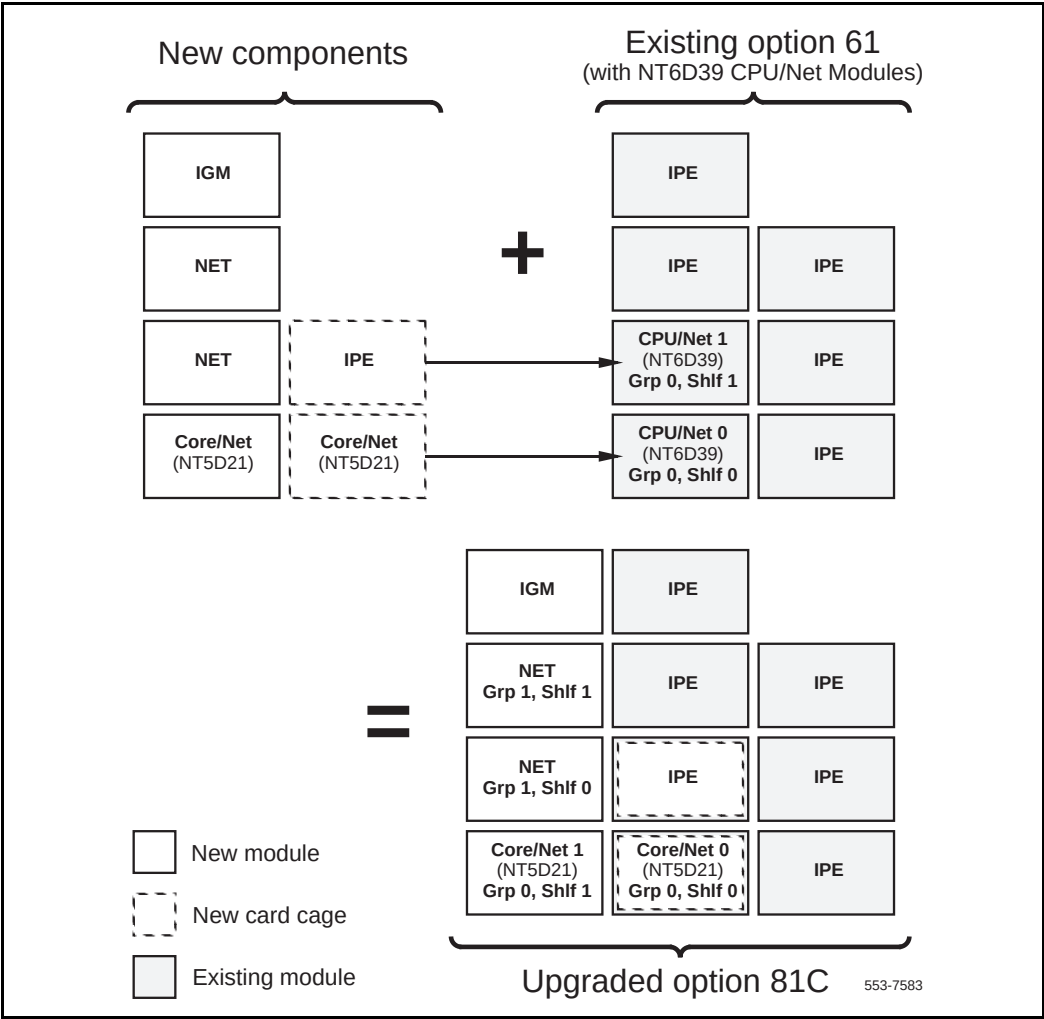
CAUTION

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an Option 61 has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. The upgrade must be planned for a time when the impact to the telephone users will be minimum.

Figure 51 shows the upgrade from Option 61 to Option 81C. Figure 52 shows an Option 81C as typically configured.

Figure 51
 Upgrade from Option 61 to Option 81C



Equipment required

Tables 47 and 48 list the items required to upgrade an AC- or DC-powered Option 61 system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed. The cables are:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Net module to the cabinet I/O panel

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 47
Hardware requirements for an AC-powered Option 81C (Part 1 of 3)

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89AA	IPE Card Cage Expansion Kit
1	NT5D2103	Core/Network Card Cage
2	NT5D61AA	IODU/C Card
1	NT5D21AA	Core/Network Module AC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00AA	Top Cap AC
2	NT7D06AA	Filler Panel

Table 47
Hardware requirements for an AC-powered Option 81C (Part 2 of 3)

Qty	Part number	Description
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	Superloop Network Card
1	NT8D06AA	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
4	NT8D49AA	Column Spacer Kit
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
1	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
1	NT8D74BF	Clock Controller to Junctor Cable (10 ft.)
4	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
2	NT8D76BE	Intergroup Switch to Intergroup Module Cable (6 Ft).
2	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)

Table 47
Hardware requirements for an AC-powered Option 81C (Part 3 of 3)

Qty	Part number	Description
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D82AD	SDI to I/O Cable (6 ft.)
1	NT8D90AF	SDI Multi-Port Extension Cable (10 ft.)
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable 2Ft.
2	NT8D99AD	CPU to Network Cable 6Ft.
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)
2	NTND14BD	CNI to 3PE Cable (12 ft.)
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
4	QPC441F	Three-Port Extender
2	QPC471H or	Clock Controller
2	QPC775E	
1	QPC841C	Four-port SDI
Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: The QPC775 Clock Controller card is used in Canadian and International applications. QPC775 and QPC471 cards cannot be combined in one system. QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.		

Table 48
Hardware requirements for a DC-powered Option 81C (Part 1 of 3)

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C Card
1	NT5D2103	Core/Network Card Cage
1	NT5D21DA	Core/Network Module DC
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage

Table 48
Hardware requirements for a DC-powered Option 81C (Part 2 of 3)

Qty	Part number	Description
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
4	NT8D49AA	Column Spacer Kit
2	NT8D52DD	Pedestal Blower Unit DC
1	A0643619	Meridian 1 Reference Library Release 21
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
1	NT5D2103	Core/Network Card Cage
1	NT5D21DA	Core/Network Module DC
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT7D89CA	CP to I/O Panel RS232 Cable
1	NT7D90CA	IOP to I/O Panel Ethernet Cable
1	NT8D01BC	Controller - Four Card

Table 48
Hardware requirements for a DC-powered Option 81C (Part 3 of 3)

Qty	Part number	Description
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: The QPC775 Clock Controller card is used in Canadian and International applications. QPC775 and QPC471 cards cannot be combined in one system. QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.		

Upgrade preparation

- 1 Separate the cables in the upgrade package. Label both ends of each cable.
- 2 If they are not already labeled, label both ends of the existing cables to the clock controller cards in both CPU 1 and CPU 0.
- 3 If QPC471 Clock Controller cards in the Option 61 are not minimum vintage H, you must replace them before the upgrade. (This requirement does not apply to QPC775 Clock Controller cards.)

Note: QPC775 and QPC471 cards cannot be combined in one system.

- 4 Customer databases release 19 and 20 will be converted to release 21 on the option 61 and then release 21 can be converted to release 24 on the option 81C. Customer databases prior to release 21 must first be converted to release 21 on the option 61. To convert the database on the option 61 to release 19, refer to *Software conversion procedures* (553-2001-320).
- 5 Follow Procedure 1: Pre-conversion procedure, *Software conversion procedures* (553-2001-320) and print configuration records:

Check the configuration record printouts to identify all configured I/O ports. When you switch service to Core/Network modules, one I/O address must be available for a CPSI port. Refer to “Terminal and modem connections” on page 927 for specific information regarding the terminal and modem settings.

Note: When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

Performing a data dump

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1 On the option 61, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter ******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, two network modules, one intergroup module (IGM), one Core/Network module, cards, and a top cap. Cards such as IODU/Cs and power supplies are shipped in separate packages to prevent damage.

- 1 Install the new modules. Follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) when installing them:
 - Install the new modules to the left of the existing column.
 - Place the IGM on the top of the new column.

- 2 Install the module power supply in each module:
 - Make sure the system is disconnected from any power source.
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
 - Insert the power supply and engage the lock latches.
- 3 Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.
- 4 Make changes at the MDF as specified in *Upgrade engineering* (553-3001-150) to accommodate equipment in the new columns and system monitor connections.
- 5 Install PFTUs (if required).
- 6 Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210).

Installing intermodule cables

- 1 Set the switches on Clock Controller 1 (see Table 49).

Table 49
Switch settings for clock controller card 1

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- 2 Install Clock Controller 1 in slot 13 of Group 1, Shelf 1 network module.
Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 3 Route an NT8D74 cable from connector J3 on Clock Controller 1 to connector J12 on the junctor module.
- 4 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 1 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 1, IGS 0).

- 5 Route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0).
- 6 Set the switches on Clock Controller 0 (see Table 50).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 50
Switch settings for clock controller card 0

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position 1234	SW2 position 1234	SW4 position 1234
0–4.3 m (0–14 ft)	on off off off	off off off off	on on off off
4.6–6.1 m (15–20 ft)	on off off off	off off off off	on on off on
6.4–10.1 m (21–33 ft)	on off off off	off off off off	on on on off
10.4–15.2 m (34–50 ft)	on off off off	off off off off	on on on on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.			

- 7 Install Clock Controller 0 in slot 13 of Group 1, Shelf 0 network module.
Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 8 Route an NT8D74 cable from connector J3 on Clock Controller 0 to connector J11 on the junctor module.
- 9 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 0 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the option 61 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).

- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:

- Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:

LD 37 to load the program

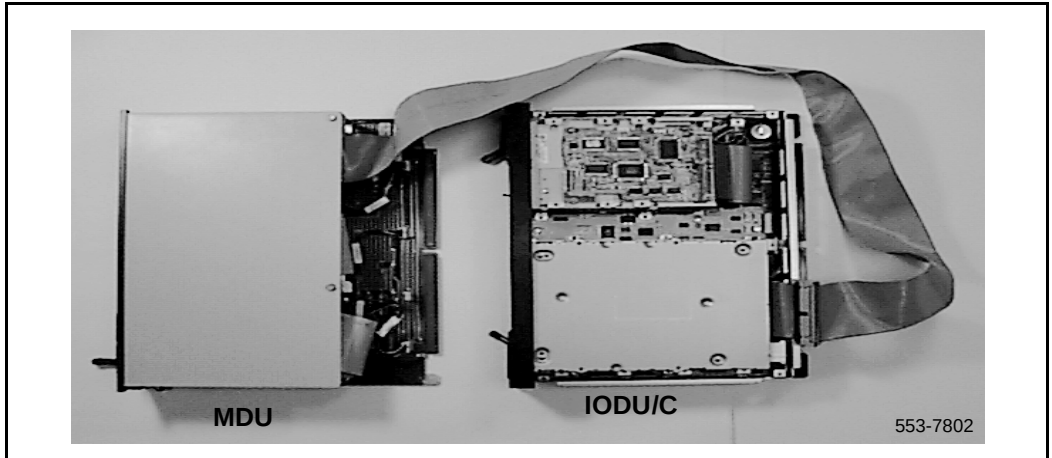
DIS MSI 0 to disable the card

- Remove the floppy diskettes from the disk drives.
- Label and disconnect cables from the faceplate of the MDU or SMDU.
- Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 53, on page 357). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 53
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
 <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
 <d> to install customer database only
 <f> to transfer the customer database from the MDU
 <a> to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database
Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit. Remove any
- <y> to confirm quit
- <a> to reboot the system
The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
 - the CP Install Program diskette must be in the IODU/C floppy drive
 - the module must be powered on
 - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
 - 2 When the NT logo appears, press <CR> to continue.
 - 3 Log into the system.
 - 4 Enter the date and time when prompted.

- 5 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

- 6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

- 7 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

8 When the sysload is complete, log into the system.

9 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program

STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

11 When "EDD000" appears on the terminal, enter:

EDD to begin the data dump

- 12** When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13** Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

Configuring the system

- 1** Configure networks as CNI groups, based on the number of CNI cards in the system. In a typical configuration, there are three CNI cards for five network groups (see Table 51). Refer to *X11 input/output guide* for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
CEQU	YES	
•		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		

Note: If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 input/output guide* (553-3001-400) for procedures describing adding and removing groups.

Table 51
Typical CNI configurations for an Option 81C

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 2 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Note: The History File requires a dedicated I/O port.

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
ADAN	CHG	x = terminal number (0–15)
•	terminal x	
GRP	g	g = network group (0–4)
•		

- 3 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.
- 4 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print Option

TYPE CFN to print the configuration
******** to exit the program

- 5 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

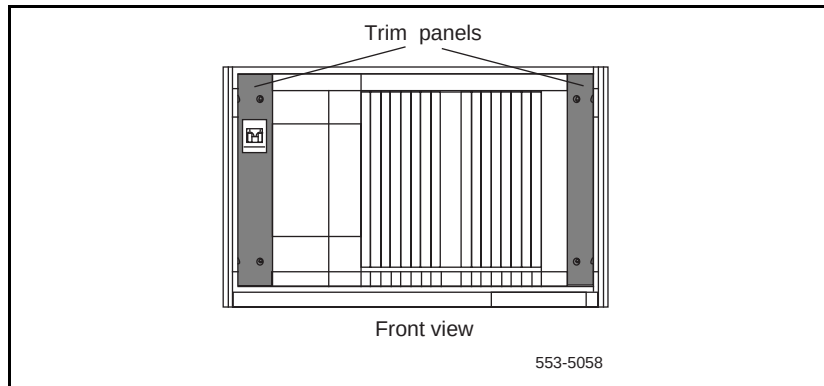
CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing Core/Net 0

- 1 Perform the appropriate step below to turn off power to the Option 61 column:
 - For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 2 Remove the trim panels on both sides of the CPU/Net 0 module (see Figure 54). Keep the screws for reuse.

Figure 54
Location of the trim panels



- 3 Tag and disconnect all cables connected to the front of each card in CPU/Net 0. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the module is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.

- 4 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

WARNING

It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.

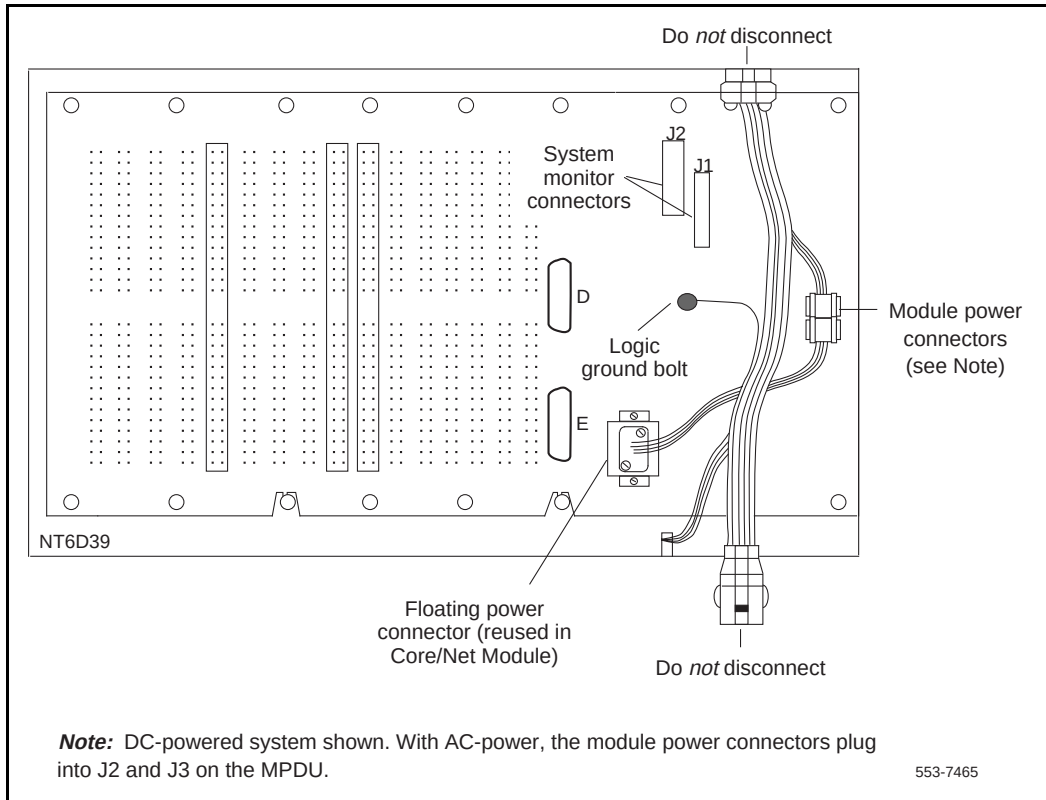
- 5 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 6 Tag and disconnect the system monitor ribbon cables from J1 and J2.
- 7 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

WARNING

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 8 Pull the card cage forward until it is half-way out of the module.
- 9 Working from the rear of the module, tag and disconnect the two cables that connect to the "D" and "E" connectors (see Figure 55) .
- 10 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 11 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.

Figure 55
Power connectors on the rear of the NT6D39 CPU/Network module backplanes

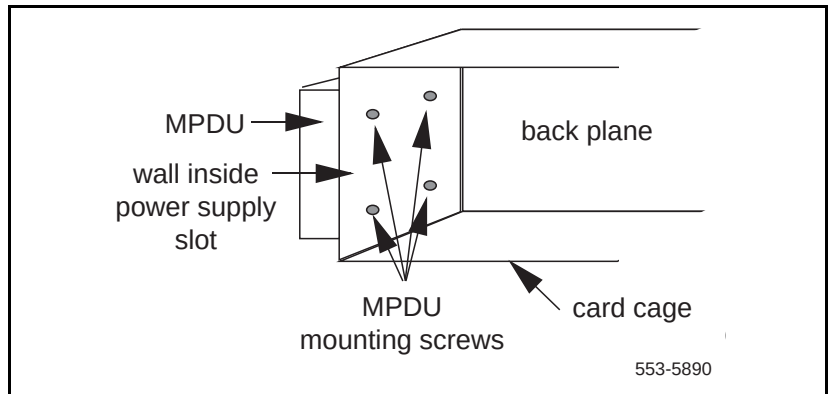


- 12 Remove the CPU/Net card cage from the module.

Note: In AC-powered systems, if the new Core/Network card cages do not come with a module Power Distribution Unit (MPDU), remove the MPDU from the CPU/Network card cage and install it on the new Core/Network card cage after the CPU/Network card cage is out of the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 56).

Figure 56

Location of the screws for the Module Power Distribution Unit (MPDU)



- 13 Remove the existing floating power connector (the black connector) from the rear of the CPU/Net card cage. Using the same mounting screws and nuts, attach the connector to the Core/Network card cage.

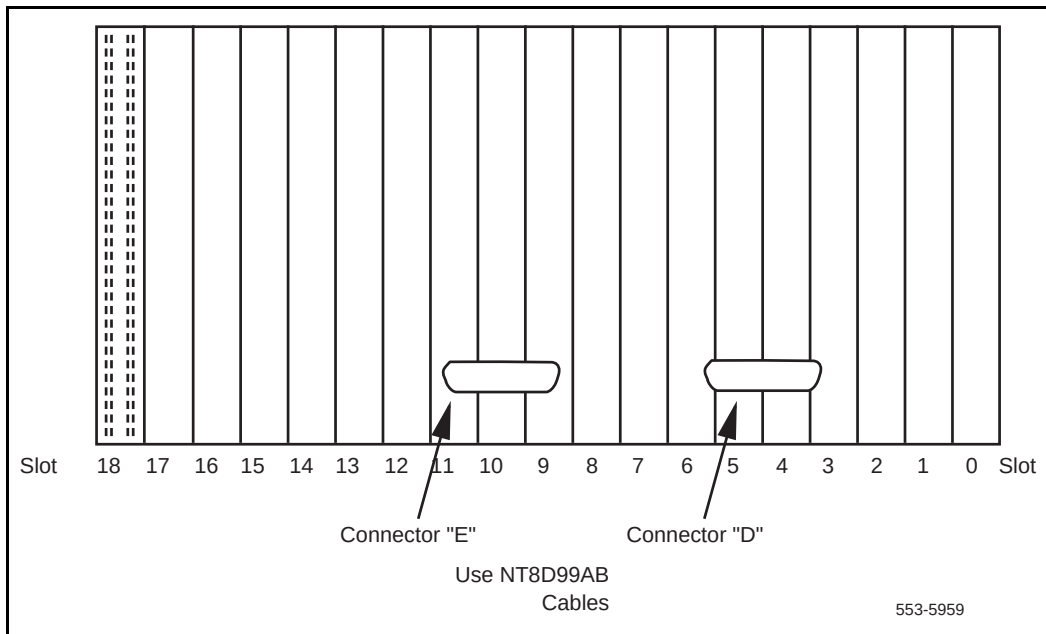
Note: Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 14 Verify that the backplane jumper in the Core/Network card cage is installed. The jumper is located on the bottom, front side of the backplane near slot 14 (see Figure 57).

CAUTION

If the Core/Net module jumper is set incorrectly, the system will not load or operate correctly.

Figure 57
Location of the jumper on the NT5D21 Core/Net backplane



- 15 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

- 16 Slide the Core/Net 0 card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module (see Figure 58):
 - Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

Note: For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

 - Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
 - Connect the module power connectors: in AC-powered systems, connect them to the MPDU; in DC-powered systems, connect them to each other.
 - Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 17 Slide the card cage all the way into the module.
- 18 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 19 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 20 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 59).
- 21 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 22 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.

Figure 58
Power connectors on the rear of the NT5D21 Core/Network module

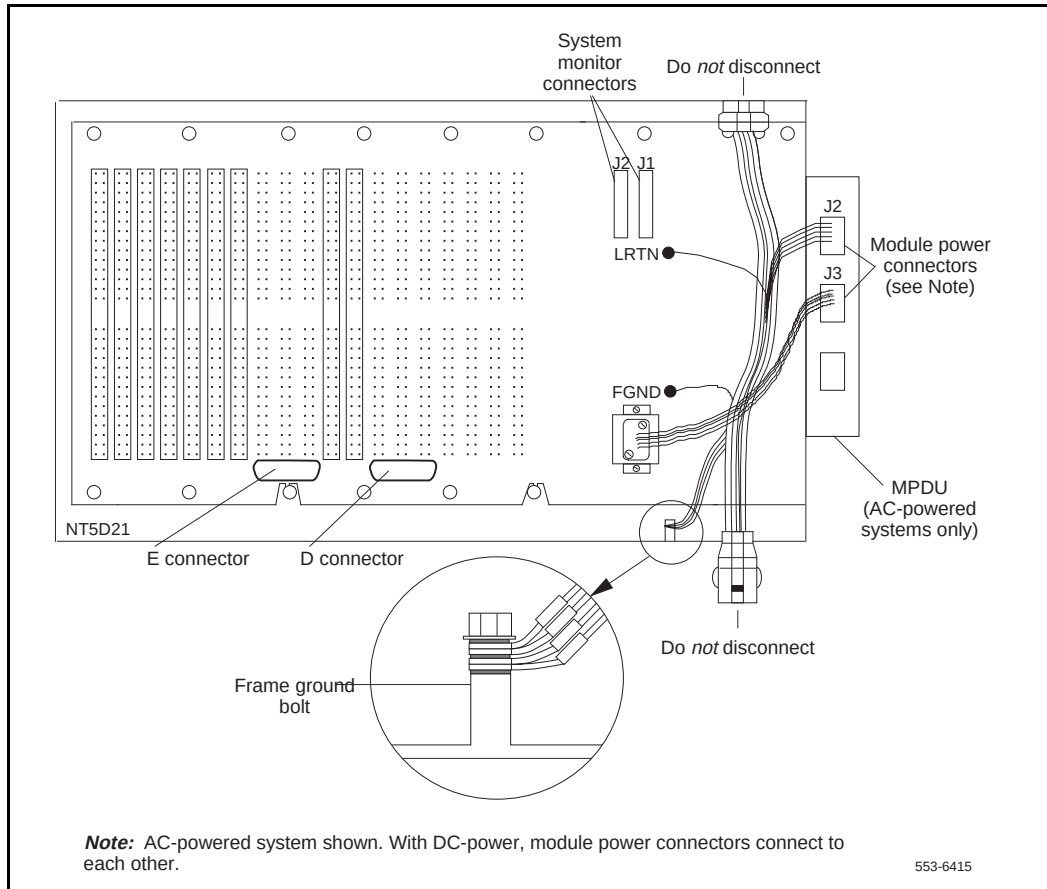
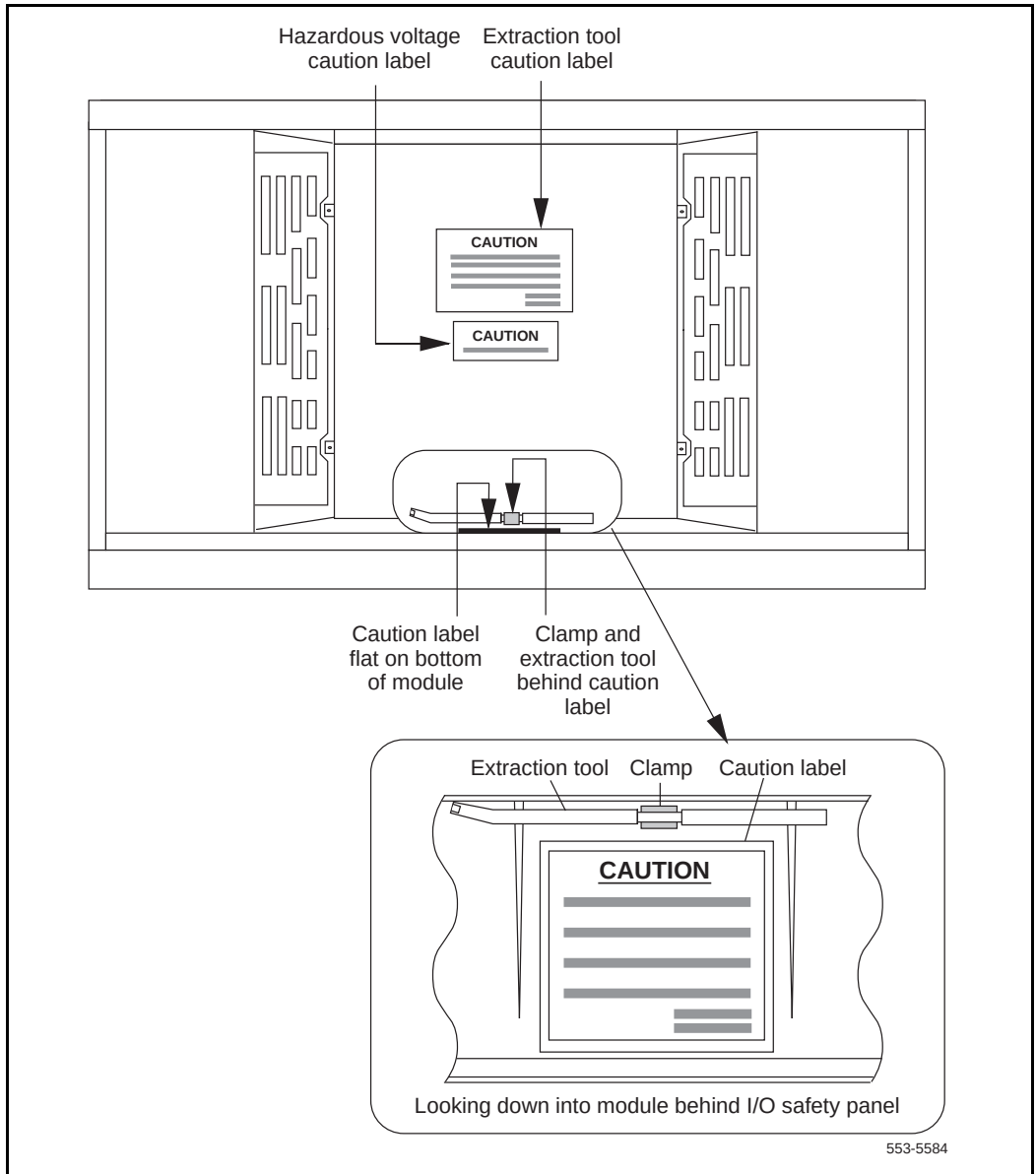


Figure 59
Positioning the extraction tool and caution labels



- 23 Snap the extraction tool into the clamp.
- 24 Attach the Core/Network module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.
- 25 Remove the QPC43 PS card from the CPU/Net card cage. Install it in slot 10 of Core/Net 0.
- 26 Check the vintage of the QPC441 3PE card—it must be minimum vintage F. Set the front panel ENB/DIS switch to DIS. Set the switches and jumper on the card (see Table 52). Place the card in slot 11.

Table 52
QPC441F 3PE card—switch settings

D20 switch: Core/Net 1								Core/Net 0							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	off	off	on	on	off	on	on	on	on
Note: RN27 jumper at E35: all modules, set to A															

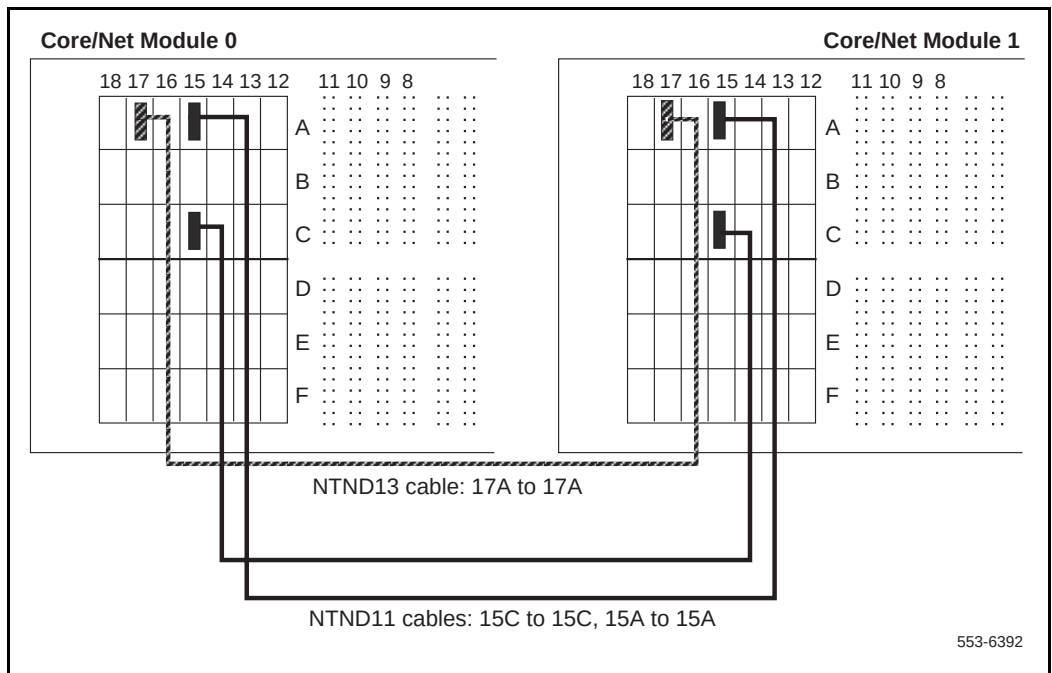
- 27 Remove the network cards from the CPU/Network module and install them in Core/Net 0. Install the cards in slot numbers indicated in Table 53. Note that although the slot numbers have changed, the relative positions of the cards in the modules have not.

Table 53
Slot number translation for network cards

Slot Number in NT6D39 CPU/Net	Slot Number in NT5D21 Core/Net
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

- 28** Install the NTND13 SCSI cable from backplane connector 17A in Core 0 to connector 17A in Core/Net 1 (see Figure 60).
- 29** Install the first NTND11 CP-to-CP cable from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 (see Figure 60).
- 30** Install the second NTND11 CP-to-CP cable from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 60).
- 31** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel.

Figure 60
NT5D21 Core/Net module (rear)—NT7D90, NTND13, and NTND11 cables

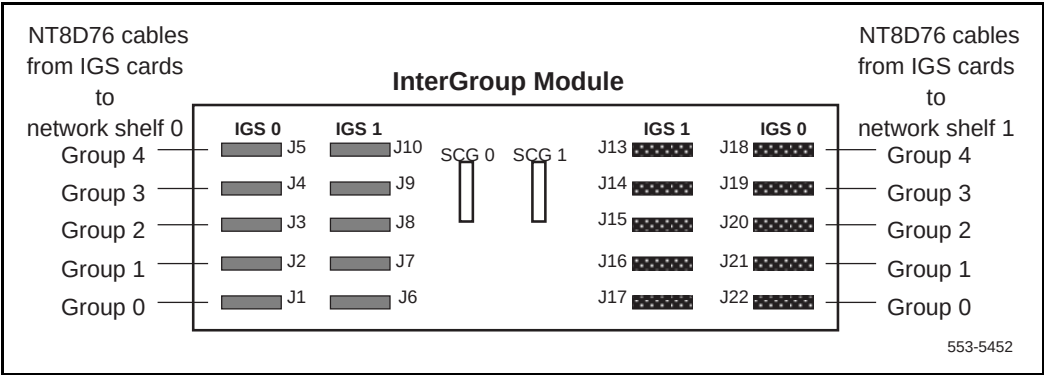


- 32
- On the faceplates of the QPC441 3PE cards in the Core/Net modules:
- connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1

•

connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1
- 33
- Install an NT8D99AB cable from backplane connector “D” in Core/Net 0 to backplane connector “D” in Core/Net 1.
- 34
- Install another NT8D99AB cable from backplane connector “E” in Core/Net 0 to backplane connector “E” in Core/Net 1.
- 35
- Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0). See Figure 61.

Figure 61
QPC412 IGS card cable assignments to the InterGroup module



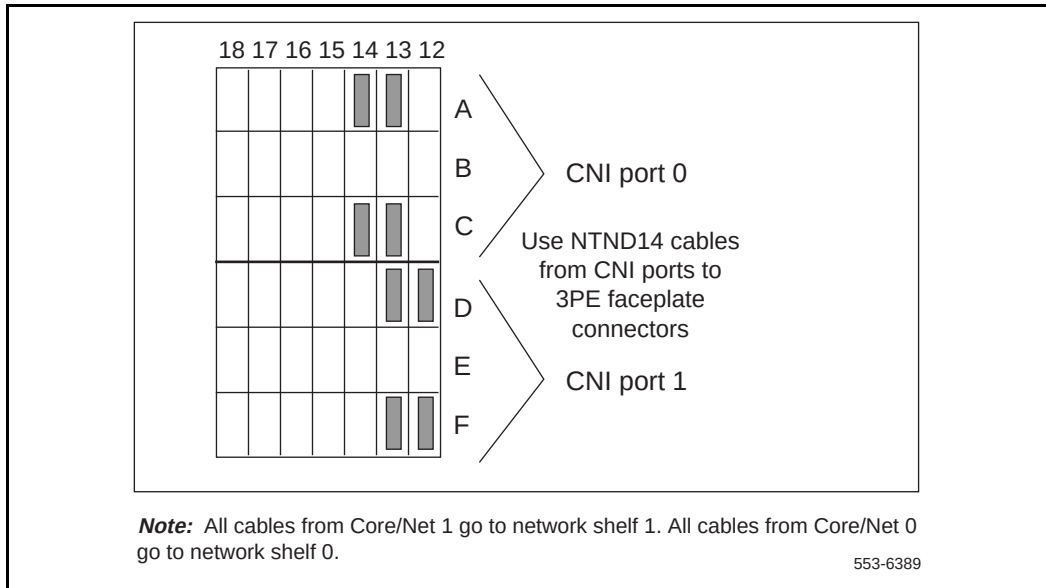
- 36 Route the two NTND14 cables from CNI cards in Core/Net 0 to 3PE cards (refer to Table 54 and Figure 62).

Table 54
CNI to 3PE NTND14 cable connections for Core/Net 1

Cable for Group		Backplane connector on Core/Net 1		3PE card connector in Net Shelf 1
0	connects from	12A	to	(see Note 1)
0		12C		(see Note 1)
1		12D		J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4
Note: Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).				
Note 1: Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.				

- 37 Perform the appropriate step to turn on power to both columns:
- For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
 - For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 38 Set the ENB/DIS switch on the NT5D61AA IODU/C card in Core/Net 0 to ENB. As the card performs card level power-up tests, watch the faceplate display for error codes. See *X11 input/output guide* for an explanation of the codes. If the IODU/C card fails the self-test, refer to "Troubleshooting" on page 955.

Figure 62
NT5D21 Core/Net module (rear)—backplane connections for CNI slots



- 39 Press the MAN RST button on the CP card in Core/Net 0. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages: If the CP card fails the self-test, refer to “Troubleshooting” on page 955.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.

- 40 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

- 41 Set the ENB/DIS switch on the NT5D61 IODU/C card in Core/Net 1 to ENB. As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 input/output guide* for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 955.

- 42 Press the MAN RST button on the CP card in Core/Net 1. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages. If the CP card fails the self-test, refer to “Troubleshooting” on page 955.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.

Installing the IPE card cage

- 1 Remove the trim panels on both sides of CPU/Net 1 (see Figure 54 on page 366). Keep the screws for reuse.
- 2 Tag and disconnect all cables connected to the front of each card in CPU/Net 1. Note the exact positions of the cables connected to cards on the network side of the card cage. They must connect to the same card when the new Core/Net module is installed. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 3 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.
- 4 Tag and disconnect cables from the I/O panels. Remove the I/O safety panel that covers the rear of the backplane.
- 5 Tag and disconnect the system monitor ribbon cables from J1 and J2.

- 6 Remove the two mounting screws that secure the rear of the card cage to the CPU/Net 1 module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

WARNING

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 7 Pull the card cage forward until it is half-way out of the module.
- 8 Working from the rear of the module, tag and disconnect the two cables that connect to the "D" and "E" connectors (see Figure 55, on page 368).
- 9 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 10 Tag and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 11 Remove the CPU/Net card cage from the module.
- 12 Install the new floating power connectors at the two locations on the NT8D37 IPE card cage. Using the same mounting screws and nuts, attach the connectors to the brackets. J5 mounts to the card cage chassis and J6 mounts to the backplane.

Note: Check the orientation of the connectors. Looking at each from the rear of the card cage, the upper left corner pin should be empty (no wire) and the green wire should be at the top right corner.

- 13 Slide the IPE card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module:
 - Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

Note: For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- Connect the module power connectors: In AC-powered systems, connect P2 of the main power harness to J2 of the MPDU, connect P3 and P4 of the card cage power harness to J3 and J4 of the MPDU. In DC-powered systems, connect P3 of the card cage power harness to P2 of the main power harness.
- Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

- 14 Slide the card cage all the way into the module.
- 15 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 16 Secure the card cage to the module with the three screws in the front and the two screws in the rear.

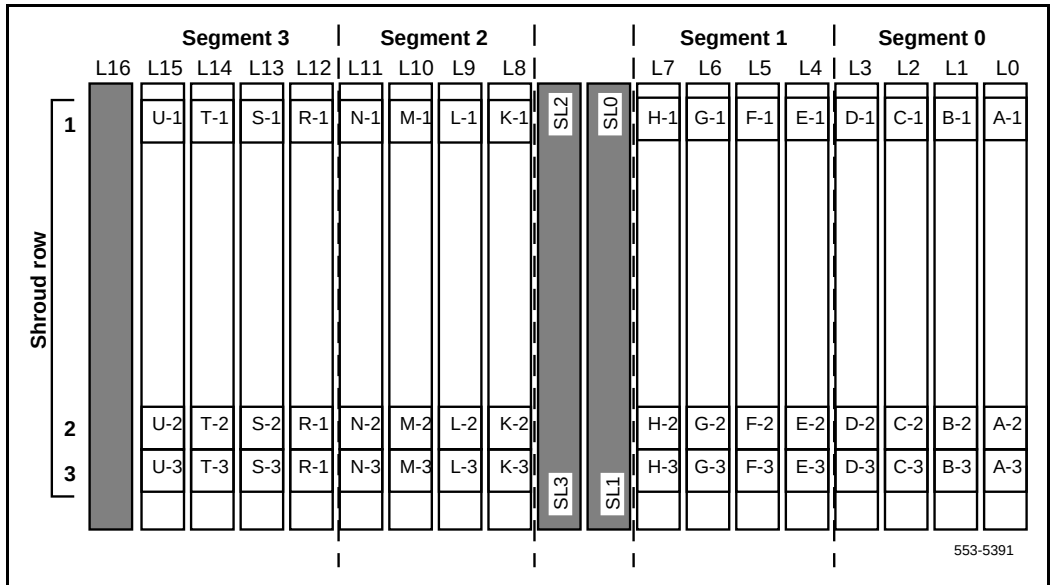
- 17 In the IPE module, install the NT8D81AA cables between the I/O panel and the backplane, as indicated in Table 55 and Figures 63 and 64.

Table 55
NT8D37 cable connections for 16-cable configuration

Backplane slots-shroud rows	I/O panel/cable designation
L0-1, 2, 3	A
L1-1, 2, 3	B
L2-1, 2, 3	C
L3-1, 2, 3	D
L4-1, 2, 3	E
L5-1, 2, 3	F
L6-1, 2, 3	G
L7-1, 2, 3	H
L8-1, 2, 3	K
L9-1, 2, 3	L
L10-1, 2, 3	M
L11-1, 2, 3	N
L12-1, 2, 3	R
L13-1, 2, 3	S
L14-1, 2, 3	T
L15-1, 2, 3	U

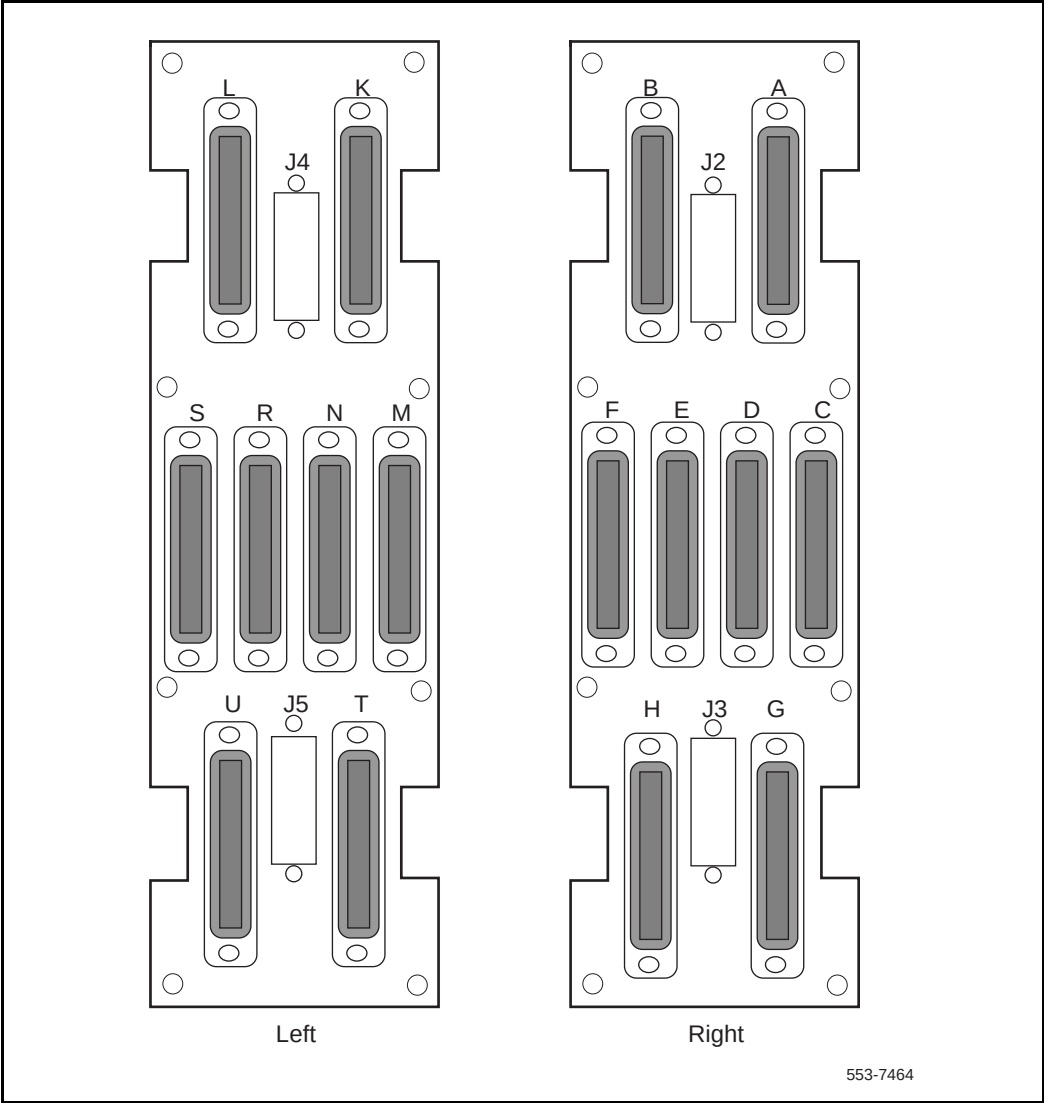
- 18 On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 59, on page 373).
- 19 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 20 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 21 Snap the extraction tool into the clamp.
- 22 Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.
- 23 On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 59, on page 373).

Figure 63
NT8D37 backplane cable designations for 12-cable configuration



- 24 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 25 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 26 Snap the extraction tool into the clamp.
- 27 Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.

Figure 64
NT8D37 IPE Module I/O panels for 12-cable configuration



Copying the software and database to Core/Net 0

- 1 Connect a terminal to the CPSI port in Core/Net 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.
- 3 Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 4 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 5 Initiate the installation by selecting the following prompt from the menu:

`<cr> <u>` to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation
`<y>` to confirm that keycode matches CD-ROM release
- 7 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.

- 8 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:

 <0> to copy system software from the other Core

 <a> to continue

 <a> to continue

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

 <CR> press <CR> when you are ready to continue

 <y> to start installation

 <a> to continue with ROM upgrade

 <y> to start installing CP-BOOT ROM

 <a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

 <CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

 <f> to install IOP-ROM only

When the Installation Status Summary screen appears:

 <y> to start installation

 <y> to continue installing IOP-ROM

 <a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

 <CR> to return to the Install Menu

When the Install Menu appears, install the database:

 <d> to install database only

When the Installation Status Summary screen appears:

 <y> to start installation

 <a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears:

 <CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

 <q> to quit

 <y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 9 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 10 In Core/Net 0, press and release the MAN RST button.
- 11 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 12 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS
ENTERING CP VOTE**

An "HW5134" message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

Completing the upgrade

- 1 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.
- 2 Perform a redundancy sanity test:

LD 135 to load the program

STAT CNI to get the status of all configured CNIs

STAT CPU to get the status of both Cores

TEST CPU to test the inactive CP card and CP-to-CP cable

TEST CNI c s to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 3 Switch Cores and test the other CPU:

SCPU to switch to Core/Net 0

TEST CPU to test the inactive CP card and CP-to-CP cable

- 4 Get the status of the CP cards, memories, and CNIs:
 - STAT CPU** to get the status of both Cores
 - STAT CNI** to get the status of all configured CNIs
 - ****** to exit LD 135

- 5 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:
 - LD 137** to load the program
 - STAT** to get the status of IODU/Cs and redundancy
 - SYNC** synchronize the hard disk drives
 - TEST CMDU** Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
 - LD 43** to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

******** to exit the program

- 7 Test the IOP to IOP SCSI connection and test the IODU/Cs:
 - LD 137** to load the program
 - TEST SCSI** to check the IOP to IOP connection and access to the IODU/Cs

TEST CMDU	to test the hard and floppy disk drives (a floppy diskette must be installed)
****	to exit the program
- 8** Clear displays, major alarms, and minor alarms:
- | | |
|-----------------|-----------------------------|
| LD 35 | to load the program |
| CDSP | to clear the display |
| CMAJ | to clear all major alarms |
| CMIN ALL | to clear all minor alarms |
| SCPU | to switch to the other Core |
| CDSP | to clear the display |
| **** | to exit the program |
- 9** Check the status of the clocks, swap clocks, and verify status:
- | | |
|---------------|------------------------------------|
| LD 60 | to load the program |
| SSCK 0 | to get the status of clock 0 |
| SSCK 1 | to get the status of clock 1 |
| SWCK | to swap active clocks |
| SSCK 0 | to verify that clock 0 is active |
| SSCK 1 | to verify that clock 1 is inactive |
| **** | to exit the program |
- 10** Reinstall the system monitor in column 1. Reconnect the cables.
- 11** Reinstall the system monitor in column 0: first reconnect the cable to J6, then the cable to J3, then install the system monitor.
- 12** Software enable the associated SDI port:
- | | |
|-----------------------|---|
| LD 37 | to load the program |
| ENL terminal x | to enable the device associated with the port |
| STAT XSM | to check the status of the system monitor |
| **** | to exit the program |
- 13** On both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 14** Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The upgrade is complete.

Upgrading option 61C (NT9D11 card cage) to option 81C

This section describes upgrading a Meridian 1 option 61C (with NT9D11 card cages) to an option 81C. Upgrading requires powering down the option 61C, removing and replacing the NT9D11 CPU/Network card cages with the NT5D21 Core/Network card cages, installing additional modules, and installing X11 release 24 software.

CAUTION

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

Before any upgrade, we strongly recommend that you perform a thorough audit of the existing system:

- Verify the suitability of the upgrade package you are considering.
- Resolve any existing operational problems, error messages, or other problems.
- Check for minimum vintage requirements on all circuit cards that will remain in the system.
- Verify that all equipment needed for the upgrade has been identified.

CAUTION

Performing this upgrade will require system downtime. Schedule for this when planning the system upgrade.

Because an option 61C has both CPU/Network modules in the same column, power to the entire column must be shut off to accomplish the upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to telephone users will be minimal.

Equipment required

The following upgrade procedures assume that your existing system is a standard Option 61C configuration and that you are upgrading to an option 81C as illustrated in Figure 66, on page 401. If you are deviating from this configuration, your system may require additional equipment.

Tables 56 and 57 list the items required to upgrade an AC- or DC-powered 61C system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment to network cards in the new network modules. The number of cables required depends on the number of network cards installed.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 56
Hardware requirements for an AC-powered Option 81C (Part 1 of 2)

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
1	NT1R89AA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C Card (replaces IOP/CMDU)
1	NT5D21AA	Core/Network Module AC
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 in).
1	NT8D52AB	Pedestal Blower Unit AC

Table 56
Hardware requirements for an AC-powered Option 81C (Part 2 of 2)

Qty	Part number	Description
1	NT8D53BB	Power Distribution Unit AC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable 10Ft.
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT8D99AD	CPU to Network Cable (6 Ft)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender
Note: QPC471 Clock controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: Two CP cards are required. Refer to Table 42, " Database conversion requirements, option 61 upgrade to option 81C," on page -338 for release 24 memory requirements..		

Table 57
Hardware requirements for a DC-powered Option 81C (Part 1 of 2)

Qty	Part number	Description
1	NT1R90BA	Field Upgrade Kit
1	NT1R89BA	IPE Card Cage Expansion Kit
2	NT5D61AA	IODU/C (replaces IOP/CMDU)
1	NT5D21DA	Core/Network Module DC
1	NT5D2103	Core/Network Card Cage (AC/DC)
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D3703	Intelligent Peripheral Equipment Card Cage
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable 30in.
1	NT8D52DD	Pedestal Blower Unit DC

Table 57
Hardware requirements for a DC-powered Option 81C (Part 2 of 2)

Qty	Part number	Description
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable 10Ft.
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
2	NT8D99AD	CPU to Network Cable 6Ft.
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender
Note: QPC471 Clock controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: Two CP cards are required. Refer to Table 42, " Database conversion requirements, option 61 upgrade to option 81C," on page -338 for release 24 memory requirements.		

Upgrade preparation

Some preparation is required before the conversion of the 61C hardware and software begins:

- inventory all equipment required for the upgrade
- provide appropriate power and ground for the increased electrical load of the new equipment

Power and ground

Clean power and a good ground are prerequisites to any system upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Relocating the clock controller cards

Note: The QPC471 Clock Controller cards must be vintage H or later. If QPC775 Clock Controller Cards are used, they must be vintage E, or later. Order replacement cards if existing cards do not meet this vintage requirement.

This option 81C upgrade requires you to relocate the clock controller cards from the option 61C NT9D11 Core/Net Modules to the new NT8D35 Network Modules in the option 81C. Clock controller cards cannot be placed in the NT5D21 Core/Net modules.

When relocating the clock controller cards, clock reference cabling and InterGroup Module (IGM) cabling may be affected. Order replacement cables if new cables are required.

Replacing 3PE cards

The QPC441 3PE cards must be vintage "F" or later. Replacement cards must be ordered if existing cards do not meet this vintage requirement. Refer to *Meridian 1 hardware replacement* (553-3001-520) for card replacement procedures.

Increasing CP card memory

To determine whether your system will operate on release 24 software using the NT6D66 CP card, refer to the *Meridian 1 capacity engineering* (553-3001-149) NTP. For memory upgrade procedures, refer to *Software conversion procedures* (553-2001-320).

CAUTION

Increasing the on-board CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

Installing new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, one core/net module, two network modules, one intergroup module (IGM), cards, and a top cap. Cards such as IOP/CMDUs and power supplies are shipped in separate packages to prevent damage to the cards. Figure 65, on page 400 shows an upgrade from Option 61C to Option 81C. Figure 66, on page 401 shows the Option 81C as typically configured after the upgrade.

- 1 Install the new column of modules next to the existing option 61C. Follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) when installing them:
 - Prepare equipment for installation.
 - Place the fourth module on the column.
- 2 Install the module power supply in each module of the new column:
 - Make sure the system is disconnected from any power source.
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
 - Insert the power supply and engage the lock latches.
- 3 Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.

- 4 Make changes at the MDF as specified in *Upgrade engineering* (553-3001-150) to accommodate equipment in the new columns and system monitor connections.
- 5 Install PFTUs (if required).
- 6 Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210).
- 7 Make sure power to the new column is OFF.
- 8 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 1 modules (see Table 69). Make sure Jumper RN27 is set to "A".

Table 58
QPC441 3PE card switch settings for Network shelf 1 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off
Note: Jumper RN27 at location E35: set to A								

- 9 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 0 modules (see Table 70). Make sure Jumper RN27 is set to “A”.

Table 59
QPC441 3PE card switch settings for Network shelf 0 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on
Note: Jumper RN27 at location E35: set to A								

Figure 65
Upgrade from Option 61C (NT9D11) to Option 81C

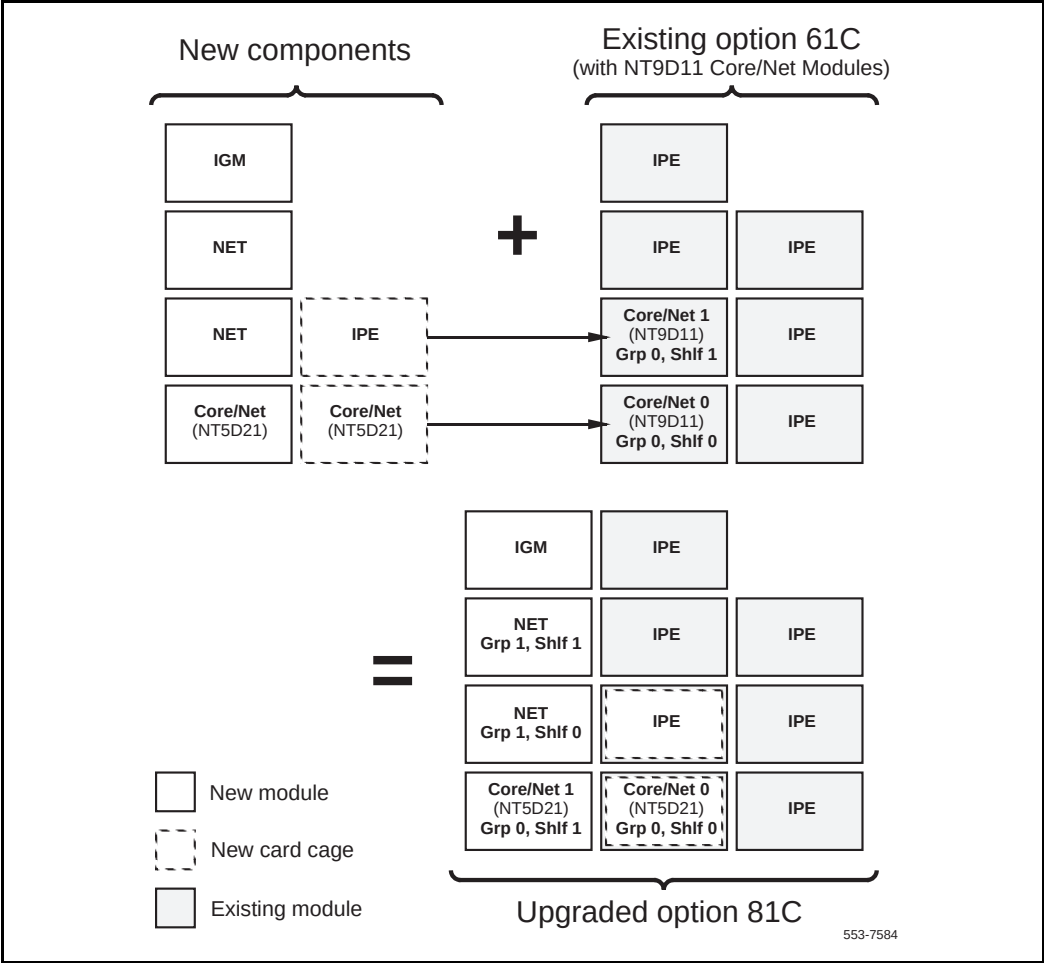
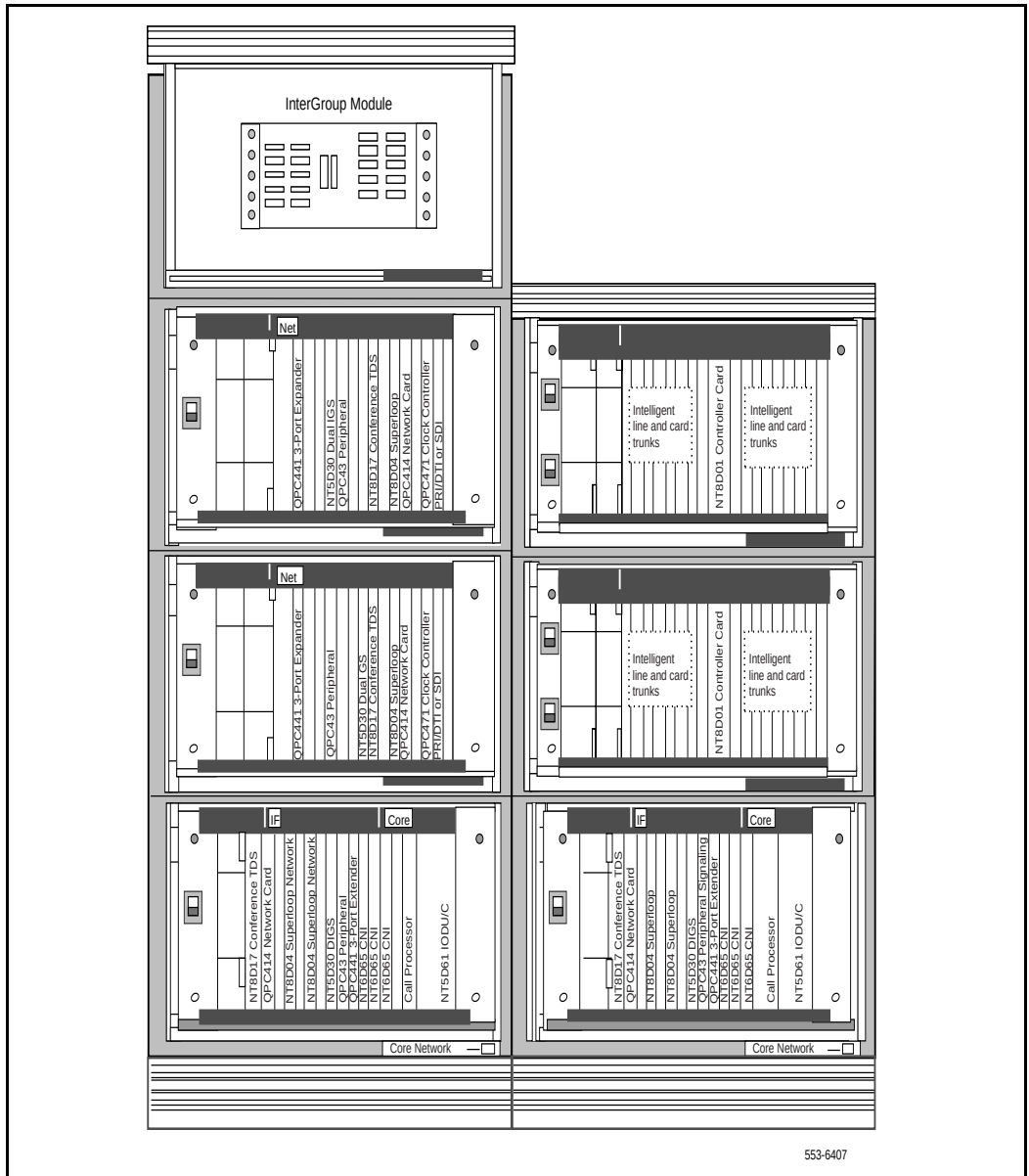


Figure 66
Meridian 1 Option 81C



Performing a data dump

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1 On the 61C system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Splitting the Cores

Before beginning the upgrade, disable Core/Net 1. To do this, perform these steps:

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

- 2 In the Option 61C, verify that Core/Net 0 is active. Switch cores if it is not:

LD 135	to load the program
STAT CPU	to get the status of the CPUs (cores)
SCPU	to switch CPUs (if required)
****	to exit the program
- 3 In Core/Net 0, set the NORM/MAINT switch on the CP card to MAINT.
- 4 In Core/Net 1, set the ENB/DIS switch on all CNI cards to DIS.
- 5 In the Core/Net 1, set the NORM/MAINT switch on the CP card to MAINT.
- 6 Press the MAN RST button on the CP card in Core/Net 1.

Installing intermodule cables

- 1 Software disable clock controller 1:

LD 60	to load the program
DIS CC 1	to disable clock controller 1
****	to exit the program
- 2 Set the front panel ENB/DIS switch on the clock controller 1 card in the existing option 61C to DIS and then remove the card from its slot.

3 Set the switches on Clock Controller 1 (see Table 60).

Table 60
Switch settings for clock controller card 1

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

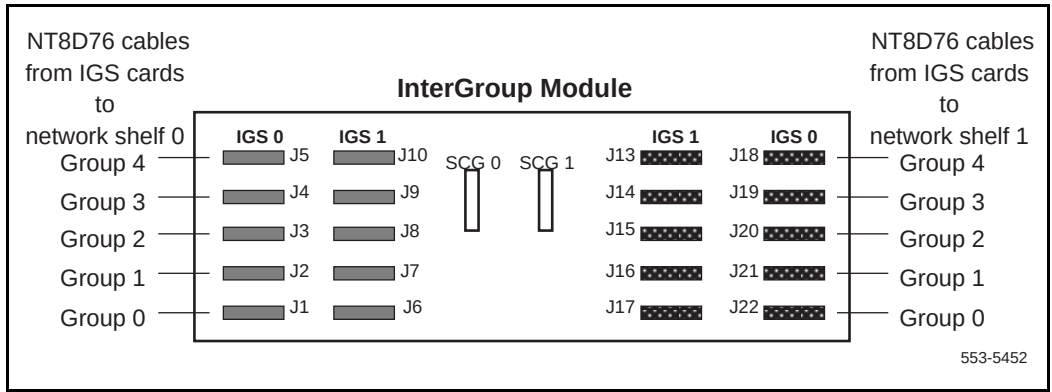
4 Install clock controller 1 in slot 13 of Group 1, Shelf 1 network module.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

5 Route an NT8D74 cable from connector J3 on clock controller 1 to connector J12 on the junctor module.

6 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 1 Network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 1, IGS 0). See Figure 67.

Figure 67
QPC412 IGS card cable assignments to the InterGroup module



- 7 If not already installed, route two NTND14 cables from CNI port backplane connector in the new Core/Net 1 (NT5D21) module to the faceplate of the 3PE card in the Group 1, Shelf 1 Network module. (Refer to Table 61 and Figure 68.)
- 8 Route NT8D76 cables from the IGS cards in the new Core/Net 1 module (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0). See Figure 67.
- 9 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in the Group 1, Shelf 0 Network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).
- 10 Remove the CP card from the existing option 61C NT9D11 Core/Net 1 Module and install it in slots 15/16 of the new NT5D21 Core/Net 1 Module. Leave the NORM/MAINT switch set to the MAINT position.
- 11 Set the ENB/DIS switch on the CNI card in the NT9D11 Core/Net 1 Module to DIS and then remove it from the module. Install it in slot 12 of the new NT5D21 Core/Net (1) Module.
- 12 Install the NT5D61AA IODU/C or NT5D20 IOP/CMDU Card from the upgrade package into slot 17 of the new Core/Net 1 module (or move it from the existing Core/Net 1 module if it is already equipped with an IOP/CMDU card).

Table 61
CNI port to 3PE NTND14 cable connections for Core/Net 1

Cable for Group		CNI port backplane connector on Core/Net 0	3PE card connector in Net Shelf 0
0	connects from	12A	to (see Note 1)
0		12C	(see Note 1)
1		12D	J3
1		12F	J4
2		13A	J3
2		13C	J4
3		13D	J3
3		13F	J4
4		14A	J3
4		14C	J4

Note: Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

Note 1: Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

Note: Separate IOP and CMDU cards are not used in NT5D21 Core/Net Modules in an option 81C.

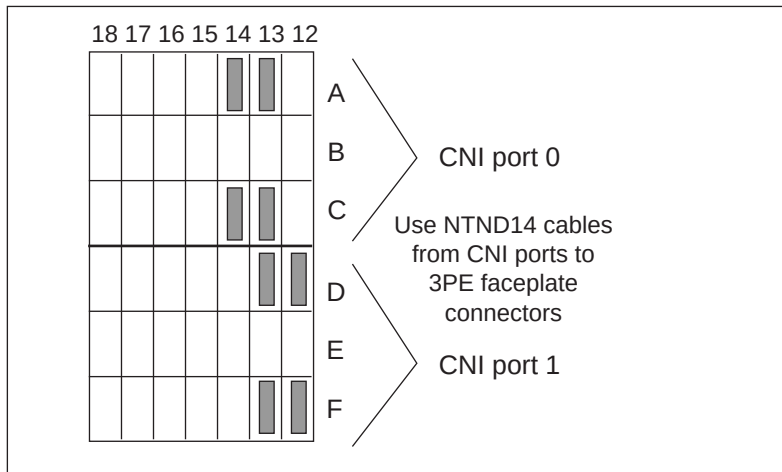
- 13** Turn on power to the new column. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.

Transferring the customer database to 2MB diskettes

Use this procedure to transfer the customer database to 2MB diskettes using the Database Transfer Utility.

Note: You can also transfer the customer database from a CMDU to a IODU/C using the CP Install Program method. This procedure is described in "Database transfer" on page 745 of this document.

Figure 68
NT5D21 Core/Net module (rear) - backplane connections for CNI slots



Note: All cables from Core/Net 1 go to network shelf 1. All cables from Core/Net 0 go to network shelf 0.

553-6389

To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

CAUTION

When using the Database Transfer Utility, only select options <t> Tools Menu and <s> To archive existing database. Selecting any other options can result in operating system corruption.

- 4 From the installation menu select:

<code><t></code>	to go to the Tools menu
<code><s></code>	to archive existing database
<code><cr> <a></code>	to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
<code><cr> <a></code>	diskette is now in floppy drive in side 1

The message "Database backup complete!" is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

Converting the database to release 24

Use the following procedures to install software and convert the database to release 24.

- 1 Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Make sure that the Security Device is installed in the IODU/C.
- 3 Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4 Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).

- 5 Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 Enter time and date, when prompted.
- 7 Initiate the installation by selecting the following prompt from the menu:
`<cr> <u>` to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
`<a>` continue with keycode validation
- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.
 - `<b>` to install software, database, CP-ROM, and IOP-ROM
 - `<a>` to verify that the CD-ROM is now in drive
 - `<y>` Yes, start the installation
 - `<a>` continue with upgrade

- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:

<a>	to install customer database
<a>	to continue with the database install
<a>	to transfer the database from floppy to hard disk
<y>	Yes, to start installation
<a>	Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:

<cr> <a>	to install CP-ROM from hard disk
<cr> <a>	to continue with ROM upgrade
<a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<a>	to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13 From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- Verify that the following message appears on the system terminal:

DATA CONVERSION
X11 RELEASE xx.xx TO release 24.xx

- 14** Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

Configuring the new system

- 1** Perform this step only if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 2.

- Configure the system with the new memory configuration:

LD 17 to load the overlay

- For each prompt, type the following response:

REQ CHG
TYPE CEQU

- Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DA CP card:

MCFN 4 4 4 4 16 16

or,

- Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DB CP card:

MCFN 8 8 16 16

Note: Be sure to insert one space between the values when typing.

- 2 Configure networks as CNI groups, based on the number of CNI cards in the system.

CNI ports are configured in LD 17 and can be assigned to support any network group from 0 to 4. See Table 62 for a typical option 81C five group configuration. Refer to *X11 input/output guide* for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
CEQU	YES	
•		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
MCFN	4 4 4 4 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DA cards)
		or,
MCFN	8 8 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DB cards)
REQ	****	to exit the program

Note: If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 input/output guide* (553-3001-400) for procedures describing adding and removing groups.

Table 62
Typical CNI configurations for an Option 81C

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Note: The History File requires a dedicated I/O port.

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
ADAN	CHG	x = terminal number (0–15)
•	terminal x	
GRP	g	g = network group (0–4)
•		

- Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.

- Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print Option

TYPE CFN to print the configuration
******** to exit the program

- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

WARNING

From this point on until the completion of the Core/Net 0 card cage upgrade, only partial telephone service will be available.

- 7 On the active processor (Core/Net 0), software disable all common equipment cards (i.e. network, 3PE, peripheral signaling) that are in the Group 0, Shelf 1 side of the existing NT9D11 Core/Net (1) Module (loops 16 through 31).
- 8 Label and disconnect cables from the network cards in the existing NT9D11 Core/Net (1) Module.
- 9 Remove all common equipment cards from the NET portion of the existing NT9D11 Core/Net (1) Module and install them in the new NT5D21 Core/Net (1) Module. Install the cards in the same numbered slots from which they were removed.

- 10** Reroute the cables that were disconnected in step 8 to the new NT9D21 Core/Net (1) Module and reconnect them to the common equipment cards in the NET portion of the module.

- 11** Set the switches on clock controller 0 (see Table 63).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 63
Switch settings for clock controller card 0

Combined Length of NT8D74 Clock Controller to junctor Cables (see note)	SW1 position 1234	SW2 position 1234	SW4 position 1234
0–4.3 m (0–14 ft)	on off off off	off off off off	on on off off
4.6–6.1 m (15–20 ft)	on off off off	off off off off	on on off on
6.4–10.1 m (21–33 ft)	on off off off	off off off off	on on on off
10.4–15.2 m (34–50 ft)	on off off off	off off off off	on on on on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.			

- 12** Install clock controller 0 in slot 13 of Group 1, Shelf 0 network module.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 13 Route an NT8D74 cable from connector J3 on clock controller 0 to connector J11 on the junctor module.
- 14 Perform the next four steps in succession. Call processing will be switched from Core 0 to Core 1:
 - set the ENB/DIS switch on the IOP card in Core/Net 0 to DIS.
 - set the ENB/DIS switch on all CNI cards in Core/Net 1 to ENB.
 - set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS.
 - press the MAN INT button on the CP card in Core/Net 1. When the initialization is complete, check for dial tone.

If you experience problems, refer to “Troubleshooting” on page 955.

Installing the card cage in Core/Net 0

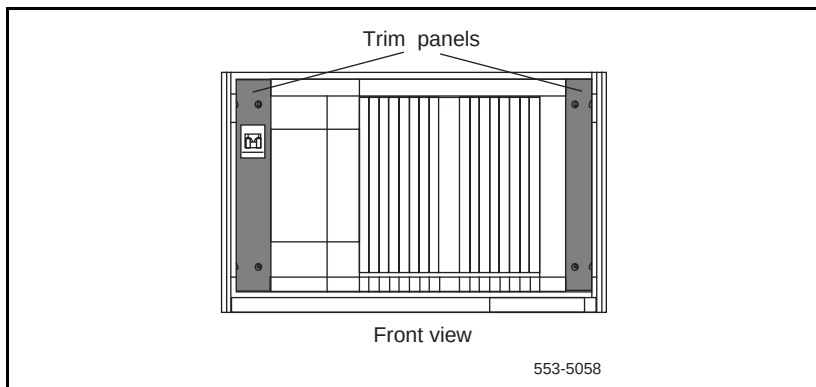
- 1 On the system monitor, disconnect the cable from J3, then the cable from J6. Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down later in the upgrade.

- 2 Perform the appropriate step below to turn off power to the column:
 - For AC-powered systems, set the main circuit breaker for the column to OFF (down position) in the rear of the pedestal.
 - For DC-powered systems, set the circuit breaker for the module to OFF (down position) in the rear of the pedestal.
- 3 Remove the trim panels on both sides of Core/Net 0 (see Figure 69). Keep the screws for reuse.

Figure 69
Location of the trim panels



- 4 Label and disconnect all cables connected to the front of each card in Core/Net 0. Note the exact positions of the cables connected to cards on the network side of the module. They must connect to the same card when the module is reassembled. Tape over the contacts to avoid grounding. Tape or tie all cables out of the way so that the working area in front of the module is clear.
- 5 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 6 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.
Note: It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.
- 7 Remove the I/O safety panel that covers the rear of the backplane. Label and disconnect from the backplane all cables that terminate at the I/O panels.
- 8 Label and disconnect from the backplane the three intermodule cables. One NTND13 cable connects to location 16A, and two NTND11 cables connect to locations 14A and 14C.
- 9 Label and disconnect the system monitor ribbon cables connecting to J1 and J2.

- 10 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

CAUTION

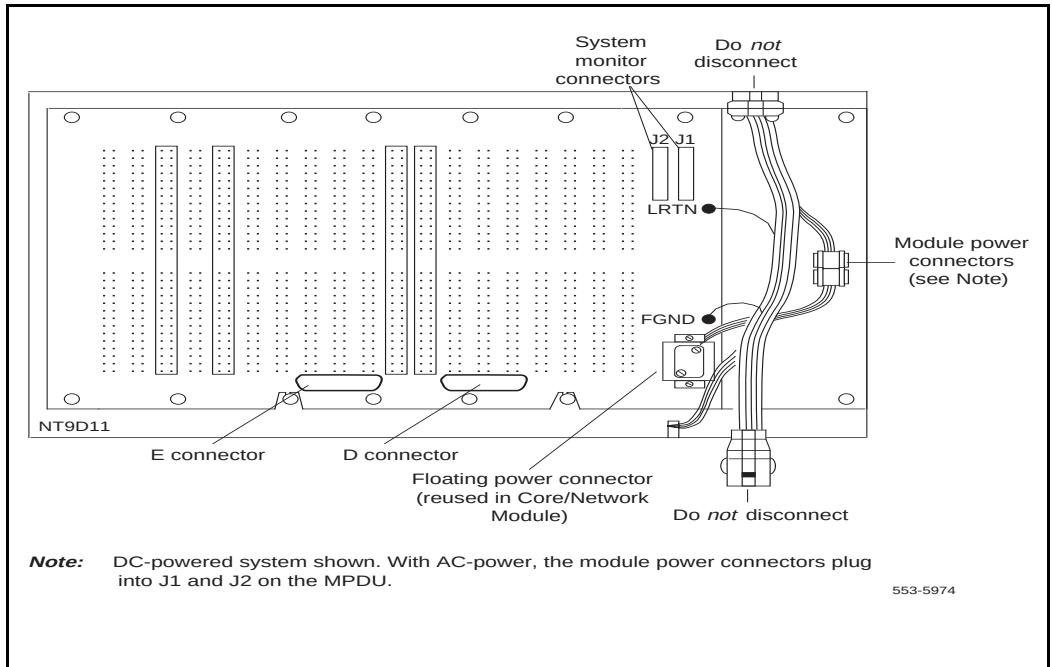
Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

- 11 Working from the rear of the module, tag and disconnect the two cables that connect the "D" and "E" connectors on the backplane of each Core/Net module (see Figure 70). Retain these cables; they will be reused.
- 12 Pull the card cage forward until it is half-way out of the module.
- 13 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 14 Label and disconnect the module power connectors. These are small orange connectors plugged into the rear of the MPDU (in AC-powered systems), or connected to each other (in DC-powered systems.)

CAUTION

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module (see Figure 70).

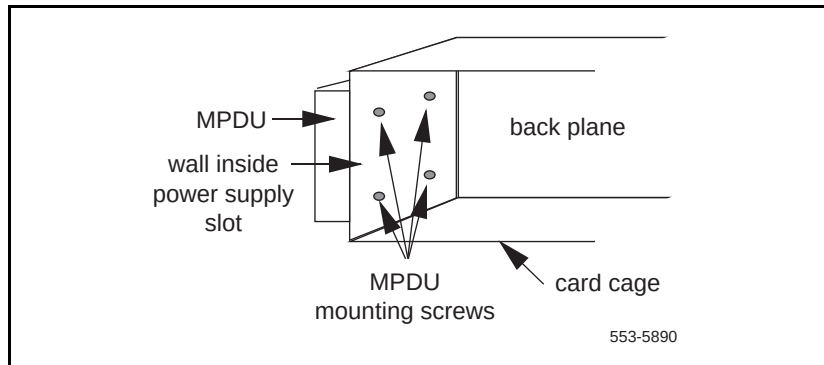
Figure 70
Power connectors on the rear of the NT9D11 Core/Net module backplane



- 15 Remove the card cage from the module.

Note: In AC-powered systems, if the new NT5D21 Core/Net card cage did not come with a module Power Distribution Unit (MPDU), remove the MPDU from the Core/Net card cage and install it on the new Core/Net card cage after the existing card cage has been removed from the module. The screw-heads for the MPDU are in the wall of the power supply slot (see Figure 71).

Figure 71
Location of the screws for the Module Power Distribution Unit (MPDU)



- 16 Remove the existing floating power connector (the black connector) from the rear of the old card cage. Using the same mounting screws and nuts, attach the connectors to the Core/Net card cages.

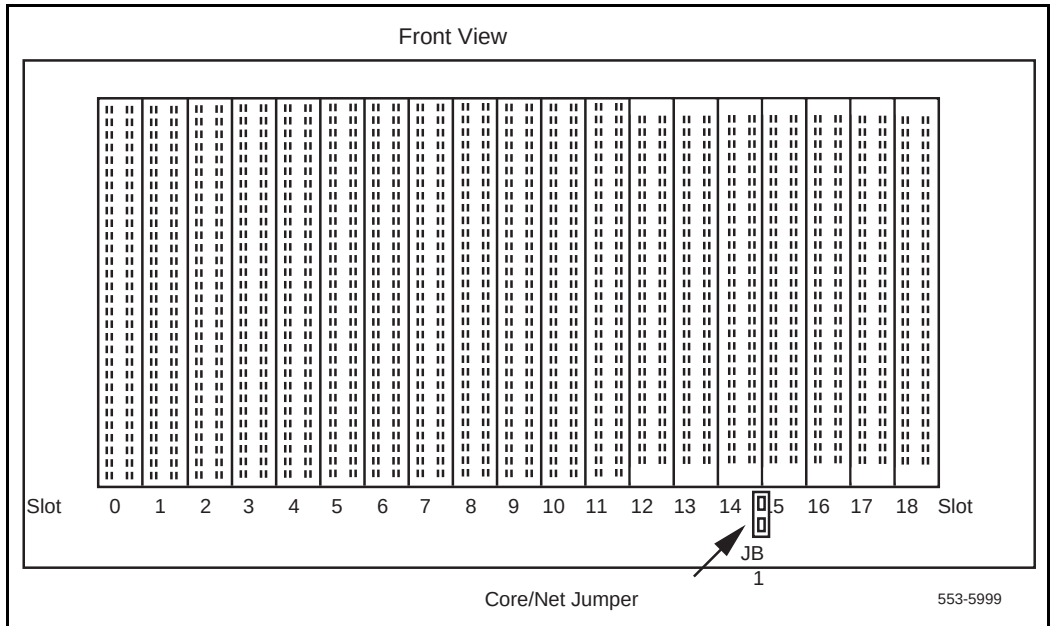
Note: Check the orientation of the connector when installing it. Looking from the rear of the card cage, the upper left corner pin of the connector should be empty (no wire), and the lower right corner pin should have a wire installed. The green wire should be at the top.

- 17 Verify that the jumper on the backplane of Core/Net 0 card cage is installed. The jumper is located on the front side of the backplane at the bottom of slot 14 (see Figure 72).

CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

Figure 72
Location of the jumper on the NT5D21 backplane



- 18** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 19** Slide the new card cage about half-way into the module. Hold the card cage firmly while attaching the power system connectors to the rear of the module (see Figure 70, on page 419):
 - Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

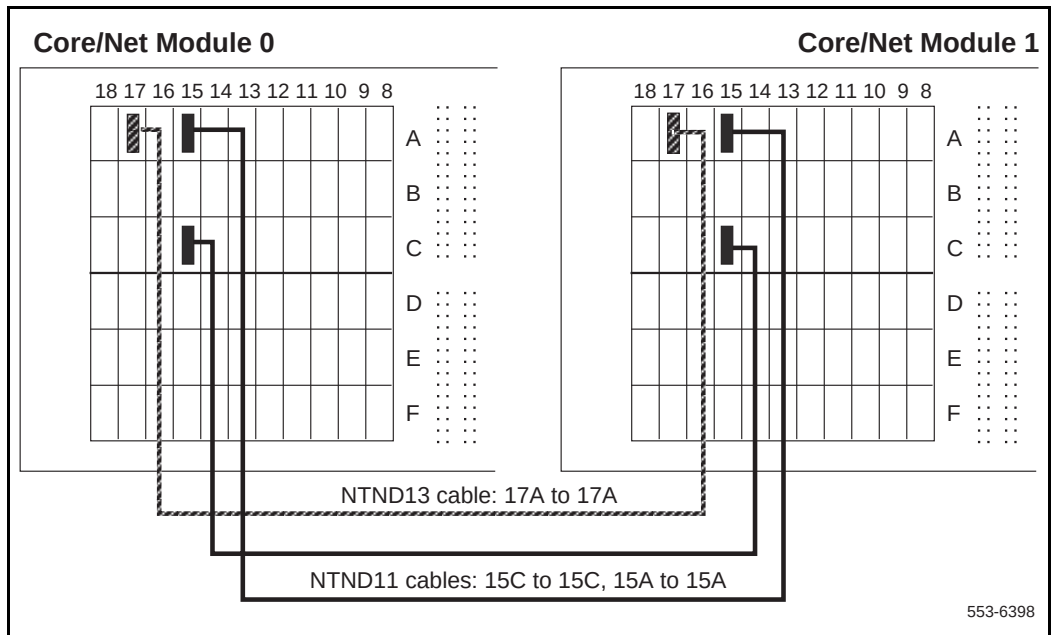
Note: For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and one at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.

- Attach the logic ground (orange) wire to the logic ground bolt on the backplane. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- Connect the module power connectors to the MPDU (in AC powered systems) or to each other (in DC powered systems).
- Attach the system monitor ribbon cables. Connect the ribbon cable (NT8D46) that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

- 20 Slide the card cage all the way into the module.
- 21 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 22 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 23 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 24 Install the module power supply (reused from the old card cage) in the slot labeled "CE PWR SUP".
- 25 Turn on power to the module. With AC power, set the main circuit breaker to ON (up position) in the rear of the pedestal. With DC power, set the breaker to ON (up position) in the pedestal, then set the switch to ON (up position) on the power supply in the module.
- 26 Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs should be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper (see Figure 72 on page 421).

- 27 Shut down power to the module again. For AC-powered systems, set the power supply breaker for the module to OFF (down position) and set the breakers in all of the shelves to OFF (down position). For DC-powered systems, set the circuit breaker to OFF (down position).
- 28 Install the NTND13 SCSI cable from backplane connector 17A in Core/Net 0 to connector 17A in Core/Net 1 (see Figure 73).
- 29 Install NTND11 CP-to-CP cables from backplane connector 15A in Core/Net 0 to connector 15A in Core/Net 1 and from backplane connector 15C in Core/Net 0 to connector 15C in Core/Net 1 (see Figure 73).

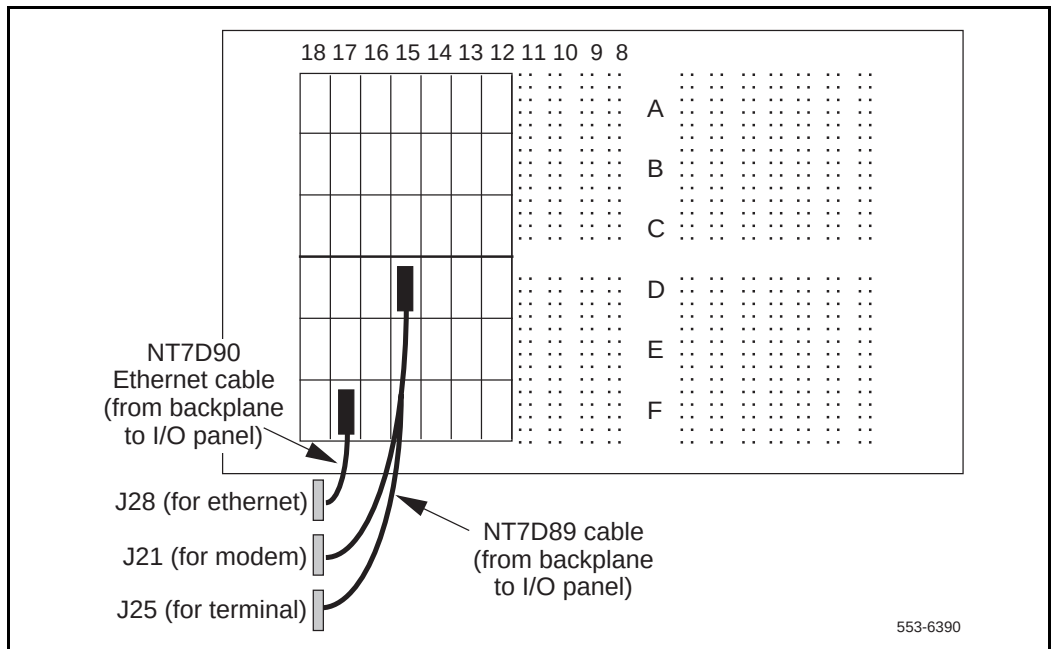
Figure 73
NT5D21 Core/Net module (rear)—IOP to IOP and CP to CP cables



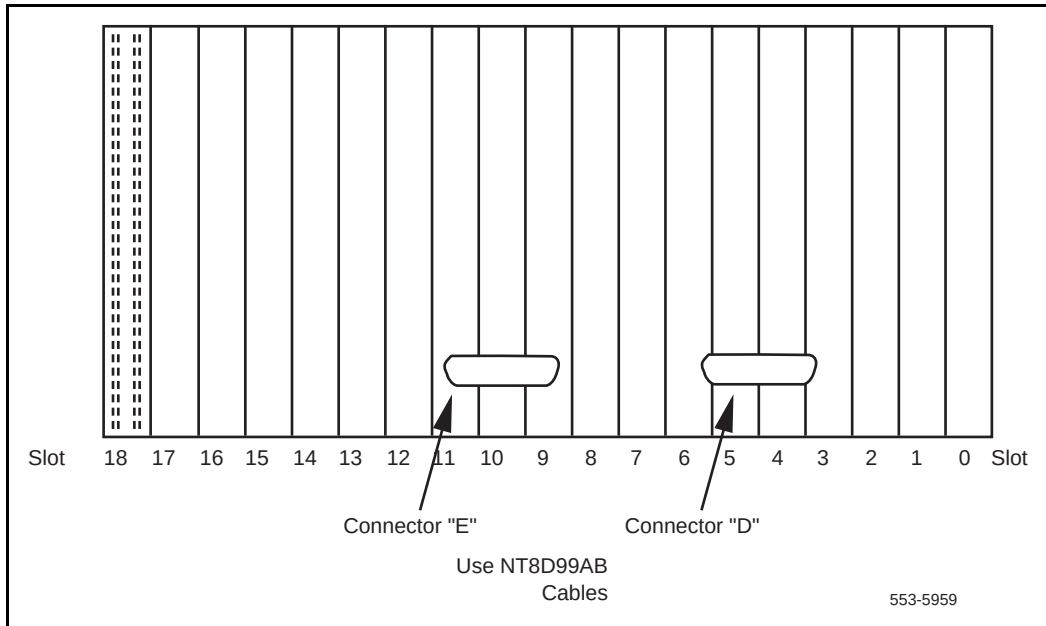
- 30 At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 74).
- 31 At the rear of each Core/Net module, install the NT7D89 RS-232 cable that connects the CPSI ports to the left I/O panel. The Y-cable connects one backplane connector to two connectors on the I/O panel (see Figure 74).
 - Connect the single-connector end of the cable to backplane connector position 15D. The other end connects to locations J21 and J25 on the left I/O panel.

Figure 74

NT5D21 Core/Net module (rear)—RS-232 cable connections for CPSI ports



- 32 Install the first NT8D99AB cable from the backplane connector labeled “D” in Core/Net 0 to the backplane connector labeled “D” in Core/Net 1 (see Figure 75).
- 33 Install the second NT8D99AB cable from the backplane connector labeled “E” in Core/Net 0 to the backplane connector labeled “E” in Core/Net 1 (see Figure 75).

Figure 75**NT5D21 Core/Network Module location of D and E connectors (rear view)**

- 34 Route the two NTND14 cables from CNI port backplane connectors in the new NT5D21 Core/Net (1) Module to the faceplate of the 3PE card in the Group 1, Shelf 0 Network module. (refer to Table 64 and Figure 68, on page 404).

Note: Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 accomplished through the backplane.

Table 64
CNI port to 3PE NTND14 cable connections for Core/Net 0

Cable for Group		CNI port backplane connector on Core/Net 0	3PE card connector in Net Shelf 0
0	connects from	12A	(see Note 1)
0		12C	(see Note 1)
1		12D	J3
1		12F	J4
2		13A	J3
2		13C	J4
3		13D	J3
3		13F	J4
4		14A	J3
4		14C	J4
Note: Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom). Note 1: Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.			

- 35 Using the two existing cables, connect J4 on the faceplate of the 3PE card in Core/Net 0, Group 0 to connector J4 on the faceplate of the 3PE card in Core/Net 1, Group 0. Connect J3 on the faceplate of the 3PE card in Core/Net 0, Group 0 to J3 on the faceplate of the 3PE card in Core/Net 1, Group 0.

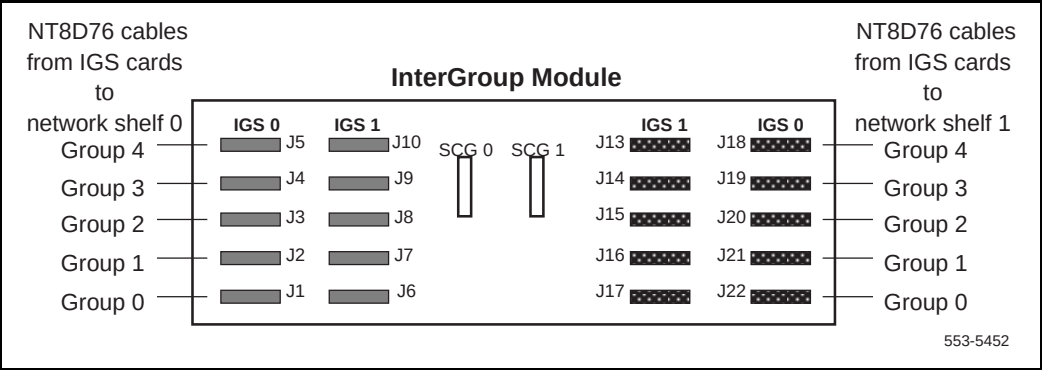
- 36 For systems using IODU/C, locate the round 1/2" diameter IODU/C security device. With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 37 Place the IOP/CMDU or IODU/C card in slot 17 (the card occupies two slots). Set the front panel ENB/DIS switch to DIS.
- 38 Verify that the NORM/MAINT switch on the CP card is set to MAINT. Place the CP card in slot 15 of the NT5D21 Core/Net 0 module (the card occupies two slots).
- 39 Remove the CNI card from the NT9D11 Core/Net 0 card cage and set the front panel ENB/DIS switch to DIS. Place the card in slot 12 of the NT5D21 Core/Net 0 module.
- 40 Remove the QPC441F 3PE card from the NT9D11 Core/Net 0 card cage and set the front panel ENB/DIS switch to DIS. Verify the switch and jumper settings on the card (see Table 65). Place the card in slot 11 of the NT5D21 Core/Net 0 module.

Table 65
QPC441F 3PE card switch settings for Group 0, Core/Net 0

D20 switch							
1	2	3	4	5	6	7	8
off	on	on	off	on	on	on	on
Note: RN27 jumper at E35: set to "A" for all modules							

- 41 Place the QPC43 PS card in slot 10. Set the front panel ENB/DIS switch to DIS.
- 42 Install two QPC412 IGS cards in slots 8 and 9 of Core/Net 0. Set the front panel ENB/DIS switch to DIS.
- 43 Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 76). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0).

Figure 76
QPC412 IGS card cable assignments to the InterGroup module



- 44 Remove the network cards from the NT9D11 Core/Net 0 card cage and install them in the new NT5D21 Core/Net 0 module. Install the cards in the same numbered slots from which they were removed.
- 45 Use any remaining network and serial cables to connect the network cards installed in slots 0 through 7 on Core/Net 0. Connect the cables to the same connector to which they were connected in the old card cage.

Note: You may have cables left over after completing this step. Leave these cables installed until the new Option 81C has been tested and is working correctly. You can remove them later.
- 46 Remove the trim panels on both sides of the existing NT9D11 Core/Net (1) Module (see Figure 69, on page 417).
- 47 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse.

Note: It may be necessary to temporarily remove some of the cards to get to the three mounting screws. Be sure to replace these cards in exactly the same slots after the screws have been removed.
- 48 Remove the I/O safety panel that covers the rear of the backplane. Label and disconnect from the backplane all cables that terminate at the I/O panels.
- 49 Label and disconnect the system monitor ribbon cables connecting to J1 and J2.

- 50 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

CAUTION

Be careful not to drop any of the screws, nuts, or washers that you remove. Parts that fall down into the blower assembly are difficult to retrieve, and could cause premature failure of the blower assembly.

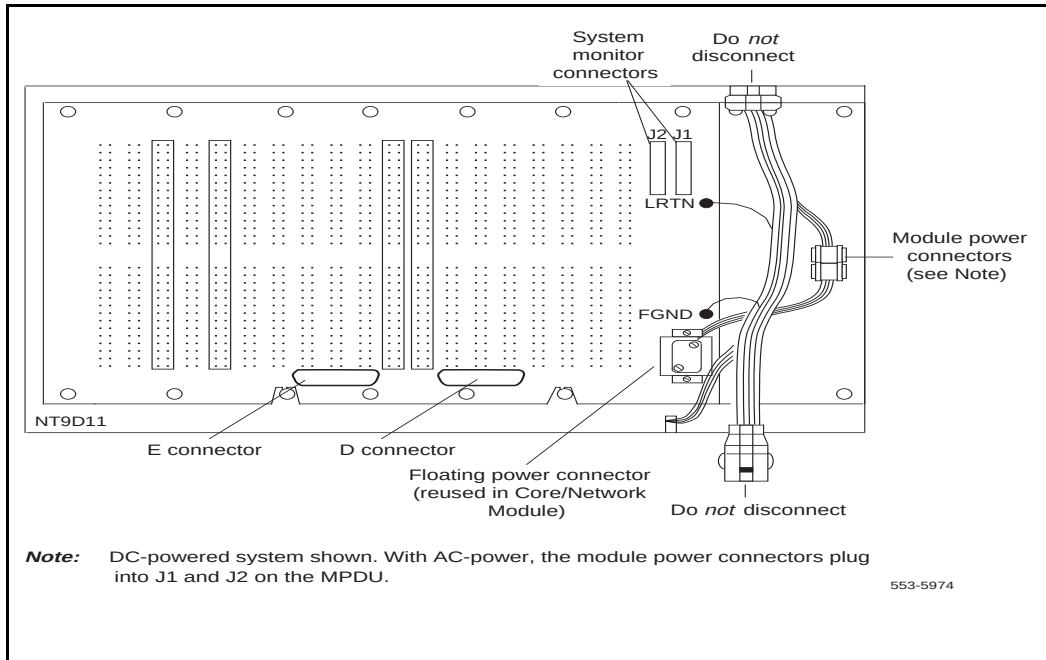
- 51 Pull the card cage forward until it is half-way out of the module.
- 52 Remove the logic ground (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal.
- 53 Label and disconnect the module power connectors. There are small orange connectors plugged into the rear of the MPDU (in AC-powered systems), or connected to each other (in DC-powered systems).
- 54 Remove the card cage from the module.

CAUTION

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module (see Figure 77).

- 55 Install the new floating power connectors at the two locations on the NT8D37 IPE card cage. Using the same mounting screws and nuts, attach the connectors to the brackets.
- Note:** Check the orientation of the connectors. Looking at each from the rear of the card cage, the upper left corner pin should be empty (no wire) and the green wire should be at the top right corner.

Figure 77
Power connections on the rear of the NT9D11 Core/Net module backplane



- 56** Slide the IPE card cage about half-way into the module. Hold the card cage firmly while attaching the power connectors at the rear of the module:
- Attach the new frame ground (green) wire to the frame ground bolt in each module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

Note: For all of the wire terminals to fit on the post, you must remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- Attach the logic ground (orange) wires. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- Connect the module power connectors: in AC-powered systems, connect them to the MPDU; in DC-powered systems, connect them to each other.
- Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.

57 Slide the card cage all the way into the module.

58 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.

59 Secure the card cage to the module with the three screws in the front and the two screws in the rear.

60 In the IPE module, install the NT8D81AA cables between the I/O panel and the backplane, as indicated in Table 66 and Figures 78 and 79.

Table 66
NT8D37 cable connections for 16-cable configuration

Backplane slots-shroud rows	I/O panel/cable designation
L0-1, 2, 3	A
L1-1, 2, 3	B
L2-1, 2, 3	C
L3-1, 2, 3	D
L4-1, 2, 3	E
L5-1, 2, 3	F
L6-1, 2, 3	G
L7-1, 2, 3	H
L8-1, 2, 3	K
L9-1, 2, 3	L
L10-1, 2, 3	M
L11-1, 2, 3	N
L12-1, 2, 3	R
L13-1, 2, 3	S
L14-1, 2, 3	T
L15-1, 2, 3	U

Figure 78
NT8D37 backplane cable designations for 12-cable configuration

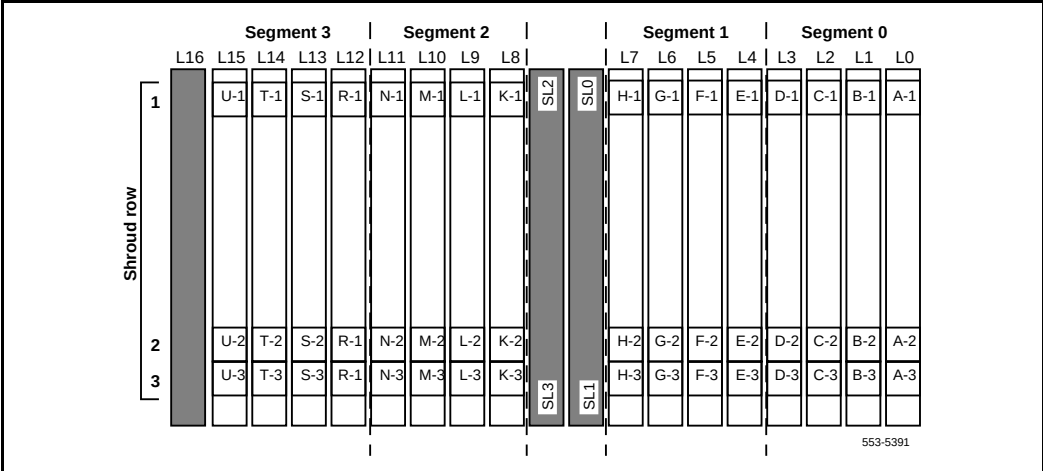


Figure 79
NT8D37 IPE Module I/O panels for 12-cable configuration

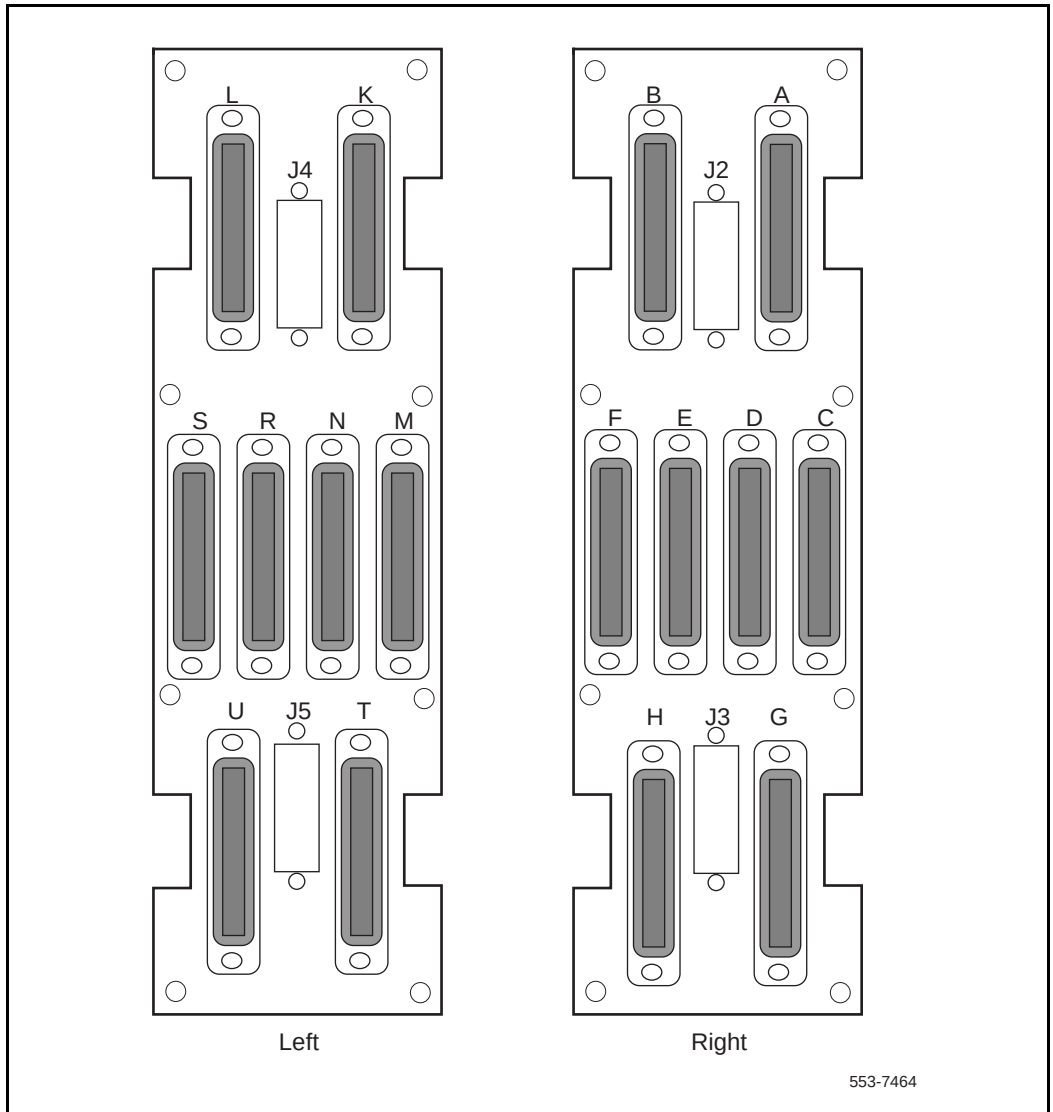
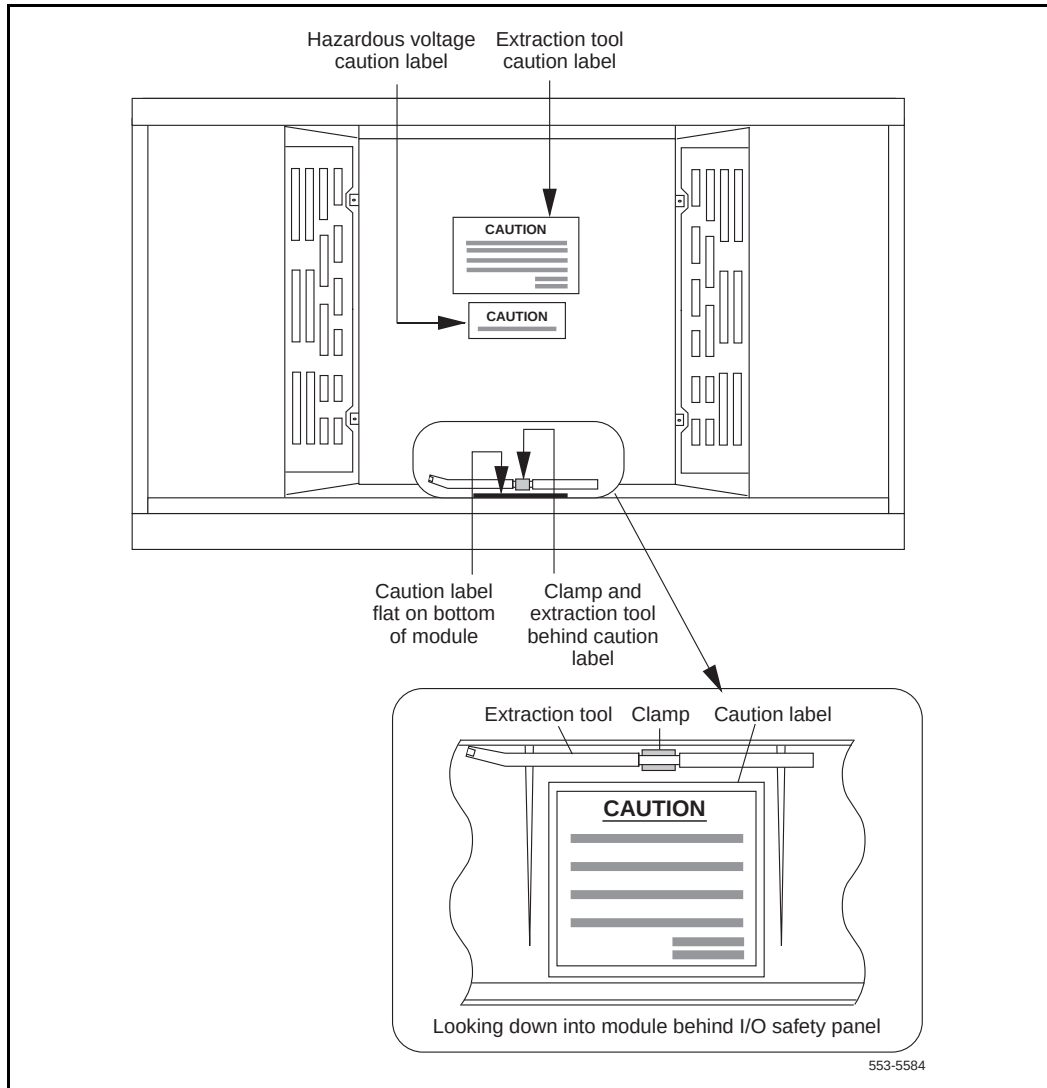


Figure 80
Positioning the extraction tool and caution labels



- 61 On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label (see Figure 80, on page 434)
- 62 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 63 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 64 Snap the extraction tool into the clamp.
- 65 Attach the IPE module designation labels at the front and rear of the modules. These labels can go on top of the existing labels. The smaller label goes at the rear of the module.
- 66 Connect a terminal to the DCE port (J25) on the I/O panel in Core/Net 0. Use the following settings on the terminal:
9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol
Note: Refer to “Terminal and modem connections” on page 927 before connecting the terminal.
- 67 Perform the appropriate step to turn on power to the column containing Core/Net 0:
 - For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal.
 - For DC-powered systems, set the breaker to ON (up position) in the pedestal.

- 68 On the active processor (Core/Net 1) enable all common equipment cards that are in the Group 0, Shelf 0 side of the Core/Net 0 module (loops 0 through 15).
- 69 Press the MAN RST button on the CP card in Core/Net 0. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages: If the CP card fails the self-test, refer to “Troubleshooting” on page 955.

Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.
- 70 Seat the system monitor in the pedestal and secure the thumbscrews.

Copying software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:

`<cr> <u>>` to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

`<a>` continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:

`<0>` to copy system software from the other Core

- 7 When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

<f>	to install IOP-ROM only
<cr> <a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<cr> <a>	to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0:

<d>	to go to the Database menu
<d>	to copy the database from Core 1 to Core 0
<y>	to confirm the installation status summary
<a>	to confirm database copy

- 10 From the Main Menu, select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit

- 11 Reboot the Core/Net 0 CPU:

<a>	to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**

- 15 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 16 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

Completing the upgrade

These steps describe how to perform tests on the CPUs and how to synchronize the hard disk drives:

- 1 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2 Synchronize the hard disk drives. To be sure the content of CMDU 1 is copied to CMDU 0, verify that CMDU 0 is software disabled:

LD 137	to load the program
STAT	get the status of CMDUs, IOPs, and redundancy
SYNC	synchronize the hard disk drives
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes. Wait until the hard disk synchronization is complete before continuing.

- 3 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:
STAT to get the status of IODU/Cs
SWAP to switch IODU/Cs (if necessary)
******** to exit LD 137
- 4 Switch Cores and test the other CPU:
SCPU to switch to Core/Net 0
TEST CPU to test the inactive CP card and CP-to-CP cable
- 5 Get the status of the CP cards and memories and of the CNIs:
STAT CPU to get the status of both Cores
STAT CNI to get the status of all configured CNIs
******** to exit LD 135
- 6 Insert the database diskette into IODU/C 0.
- 7 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

******** to exit the program

- 8** Test the IOP to IOP SCSI connection and test the IODU/C or IOP/CMDUs:
- LD 137** to load the program
- TEST SCSI** to check the IOP to IOP connection and access to the IODU/C s
- TEST CMDU** to test the hard and floppy disk drives (a floppy diskette must be installed)
- ****** to exit the program
- 9** Clear displays, major alarms, and minor alarms:
- LD 135** to load the program
- CDSP** to clear the display
- CMAJ** to clear all major alarms
- CMIN ALL** to clear all minor alarms
- SCPU** to switch to the other Core
- CDSP** to clear the display
- ****** to exit the program
- 10** Set the front panel ENB/DIS switch on clock controller cards 0 and 1 to ENB.
- 11** Software enable the clock controller cards and any PRI/DTI cards in the Core/Net modules:
- LD 60** to load the program
- ENL CC 0** to enable clock controller 0
- ENL CC 1** to enable clock controller 1
- TRCK aaa** if necessary, to set tracking
- ****** to exit the program
- 12** Reinstall the system monitor: first reconnect the cable to J6, then the cable to J3, then seat the system monitor and secure the thumbscrews.
- 13** Software enable the associated SDI port:
- LD 37** to load the program
- ENL TTY** to enable the device associated with the port
- STAT XSM** to check the status of the system monitor
- ****** to exit the program

- 14** Remove any cables that may have been temporarily left in the system during the upgrade.
- 15** For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 16** Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The upgrade is complete.

Upgrading option 61C (NT5D21 card cage) to option 81C

This section describes how to upgrade an option 61C, that has NT5D21 card cages installed in the Core/Net modules, to an option 81C.

To upgrade an option 61C, you must upgrade both the hardware and the software. Upgrading the hardware consists of the following:

- installing additional modules
- upgrading CP card memory, if required
- installing new network cables
- transferring clock controller cards from the Option 61C to the new modules
- verifying that the phones are working

Upgrading the software consists of the following:

- installing X11 release 24 software

CAUTION

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

Figures 81 and 82 show the upgrades from option 61C to option 81C. The side-by-side Core/Net configuration (Figure 81) is covered in this procedure. The over-and-under Core/Net configuration (Figure 82) is an optional configuration, not covered in this procedure.

Figure 83 shows an option 81C as typically configured.

Upgrading your system may require that you install an IPE card cage or a Core/Net card cage into a UEM. These two installations are covered in the procedures that come in the upgrade package.

Figure 81
Upgrade from Option 61C to Option 81C

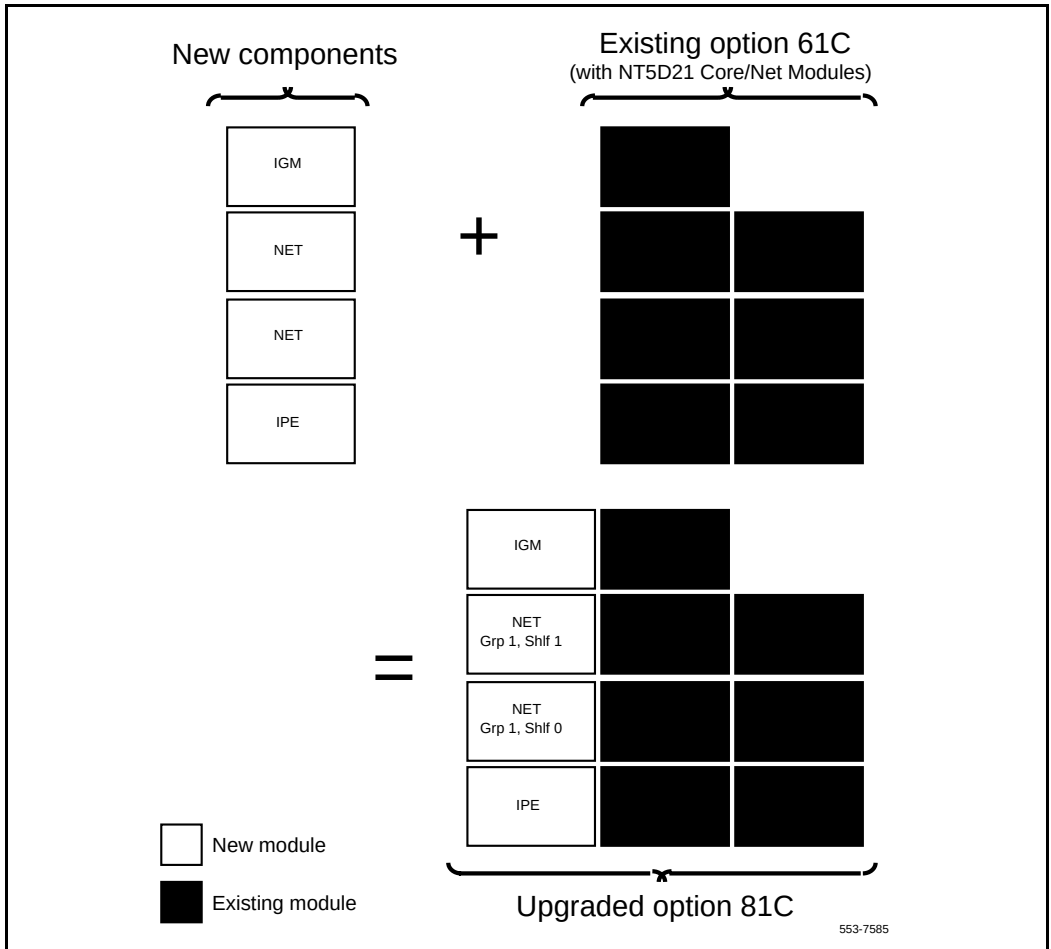


Figure 82
Alternate upgrade from Option 61C to Option 81C

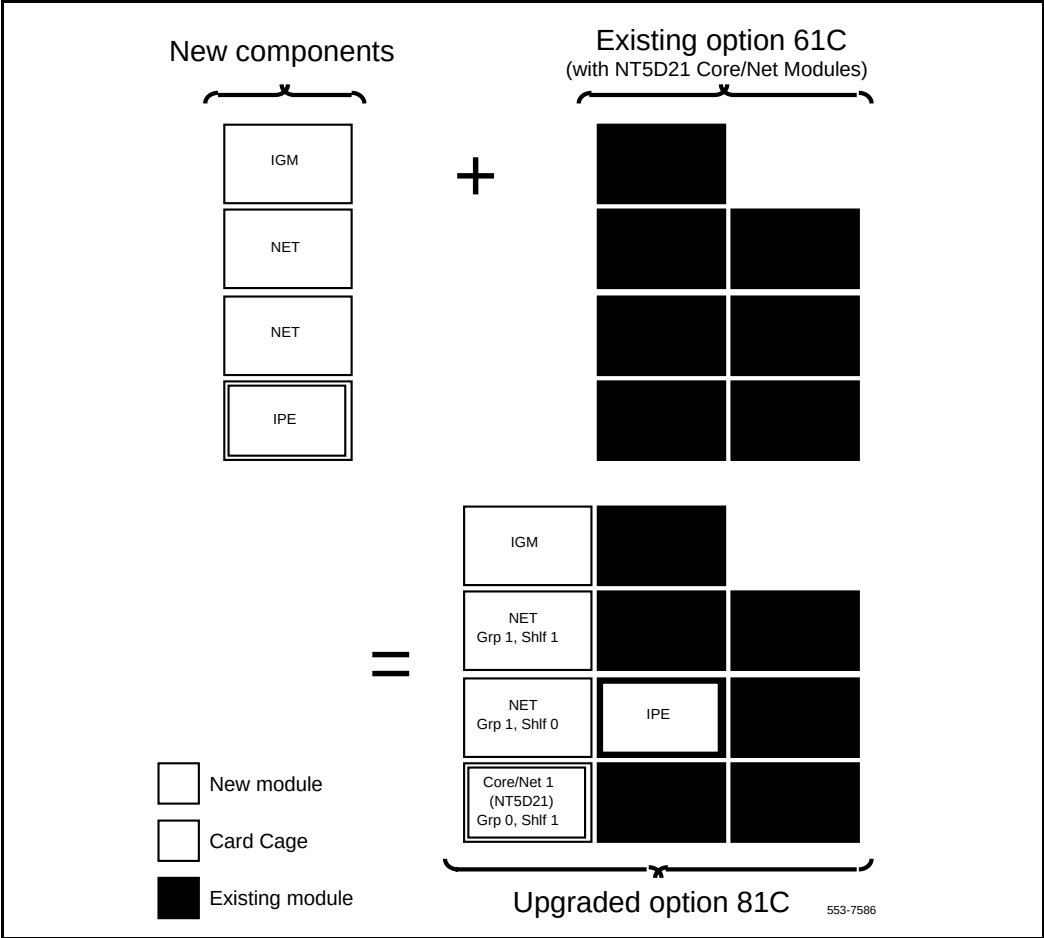
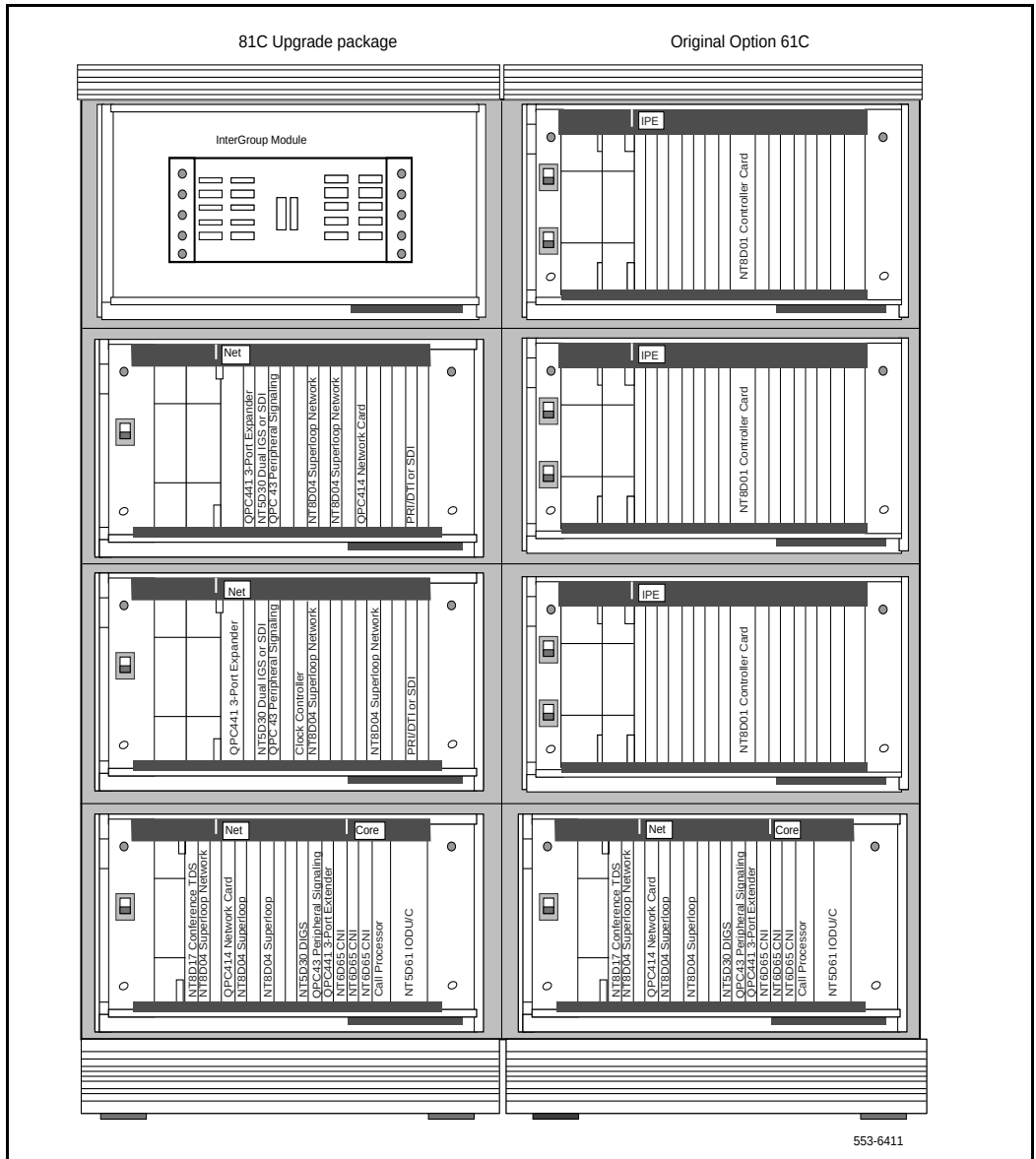


Figure 83
Meridian 1 Option 61C upgraded to Option 81C



Equipment required

Tables 67 and 68 list the items required to upgrade an AC- or DC-powered 61C system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

New network cables are required to connect peripheral equipment in the cabinet to network cards in the new network modules. The number of cables required depends on the number of network cards installed. These are:

- NT8D86AC cables that connect the network card and the peripheral buffer card to the I/O panel
- NT9J96 cables that connect the I/O panel in the Core/Net module to the cabinet I/O panel

An NT8D01 controller card is provided to support the intelligent peripheral cards in the new IPE module. If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 67
Hardware requirements for an AC-powered Option 81C (Part 1 of 2)

Qty	Part number	Description
2	NT5D61AA	IODU/C Card (replaces IOP/CMDU)
1	NT7D00AA	Top Cap AC
1	NT7D06AA	Filler Panel
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
1	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
2	NT8D35BA	Network Module AC
1	NT8D36AA	Inter Group Module
1	NT8D37BA	Intelligent Peripheral Equipment Module AC
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D52AB	Pedestal Blower Unit AC
1	NT8D53BB	Power Distribution Unit AC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)

Table 67
Hardware requirements for an AC-powered Option 81C (Part 2 of 2)

Qty	Part number	Description
1	NT8D91AE	Network to Controller Cable (8 ft.)
5	NT8D99AB	CPU to Network Cable (2 ft.)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender
Note: QPC471 Clock controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: Two CP cards are required. Refer to Table 42, " Database conversion requirements, option 61 upgrade to option 81C," on page -338 for release 24 memory requirements.		

Table 68
Hardware requirements for a DC-powered Option 81C (Part 1 of 2)

Qty	Part number	Description
2	NT5D61AA	IOU/C Card (replaces IOP/CMDU)
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
1	NT7D00BA	Top Cap DC
1	NT7D06AA	Filler Panel
1	NT7D09CA	Pedestal DC
1	NT7D10CA	System Monitor Panel
1	NT7D67CB	Power Distribution Unit DC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D17FA	Conference/TDS Card
1	NT8D22AC	System Monitor
2	NT8D35EA	Network Module DC
1	NT8D36AA	Inter Group Module
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D52DD	Pedestal Blower Unit DC
2	NT8D74BE	Clock Controller to Junctor Cable (8 ft.)
6	NT8D76BF	Intergroup Switch to Intergroup Module Cable (8 ft.)
2	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
1	NT8D91AE	Network to Controller Cable (8 ft.)

Table 68
Hardware requirements for a DC-powered Option 81C (Part 2 of 2)

Qty	Part number	Description
5	NT8D99AB	CPU to Network Cable (2 ft.)
4	NTND14BB	CNI to 3PE Cable (8 ft.)
8	QPC412C	Intergroup Switch
1	QPC417	Junctor Board
2	QPC43R	Peripheral Signaling
2	QPC441F	Three-Port Extender

Note: QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E or later. QPC 471 and QPC775 cards cannot be combined in one system. Order replacement cards if existing cards do not meet this vintage requirement.

Note: QPC441 3-Port extender cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement.

Note: Two CP cards are required. Refer to Table 42, " Database conversion requirements, option 61 upgrade to option 81C," on page -338 for release 24 memory requirements.

Upgrade preparation

Some preparation is required before you begin converting the Option 61C hardware and software:

- inventory all equipment required for the upgrade
- provide appropriate power and ground for the increased electrical load of the new modules

Power and ground

Clean power and a good ground are prerequisites to any system upgrade. Refer to *Upgrade engineering* (553-3001-150) to verify that sufficient power is available for the new equipment. Follow the procedures outlined in *Meridian 1 system installation procedures* (553-3001-210) when installing new power equipment and to provide a good ground for the equipment.

Relocating the clock controller cards

Note: The QPC471 Clock Controller cards must be vintage H or later. If QPC775 Clock Controller Cards are used, they must be vintage E, or later. Order replacement cards if existing cards do not meet this vintage requirement. QPC471 and QPC775 cards cannot be combined in one system.

This option 81C upgrade requires you to relocate the clock controller cards from the option 61C NT5D21 Core/Net Modules to the new NT8D35 Network Modules in the option 81C. Clock controller cards cannot be placed in the option 81C NT5D21 Core/Net modules.

When relocating the clock controller cards, clock reference cabling and InterGroup Module (IGM) cabling may be affected. Order replacement cables if new cables are required.

Replacing 3PE cards

The QPC441 3PE cards must be vintage "F" or later. Replacement cards must be ordered if existing cards do not meet this vintage requirement. Refer to *Meridian 1 hardware replacement* (553-3001-520) for card replacement procedures.

Increasing CP card memory

To determine whether your system will operate on release 24 software using the NT6D66 CP card, refer to the *Meridian 1 capacity engineering* (553-3001-149) NTP. For memory upgrade procedures, refer to *Software conversion procedures* (553-2001-320). .

CAUTION

Increasing the on-board CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

Installing the new modules

The new modules are pre-configured at the factory according to your requirements. The equipment consists of one column containing a pedestal, two network modules, one intergroup module (IGM), one universal equipment module (UEM), cards, and top cap. Cards such as IOP/CMDUs and power supplies are shipped in separate packages to prevent damage to the cards.

- 1 Install the new modules. Follow the procedures in *Meridian 1 system installation procedures* (553-3001-210) when installing the system:
 - Prepare equipment for installation.
 - Place a fourth module on a column.
- 2 Install the module power supply in each module:
 - Make sure the system is disconnected from any power source.
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
 - Insert the power supply and engage the lock latches.
- 3 Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.
- 4 Make changes at the MDF as required by the *Upgrade engineering* (553-3001-150) to accommodate equipment in the new columns.
- 5 Install PFTUs (if required).

- 6 Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210).
- 7 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 1 modules (see Table 69). Make sure Jumper RN27 is set to "A".

Table 69
QPC441 3PE card switch settings for Network shelf 1 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off
Note: Jumper RN27 at location E35: set to A								

- 8 Verify the switch and jumper settings on the QPC441 3PE cards in the Network shelf 0 modules (see Table 70). Make sure Jumper RN27 is set to “A”.

Table 70
QPC441 3PE card switch settings for Network shelf 0 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on
Note: Jumper RN27 at location E35: set to A								

Performing a data dump

To provide a safety backup of the customer database, perform a data dump to your current disks:

- 1 On the 61C system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program
- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter ******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Splitting the CPUs on the Option 61C

Before beginning the upgrade, disable CPU 1. To do this, perform these steps:

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 In the Option 61C, verify that CPU 0 is the active CPU, and switch CPUs if it is not:

LD 135	to load the program
STAT CPU	to get the status of the CPUs
SCPU	to switch CPUs (if required)
****	to exit the program
- 3 Set the NORM/MAINT switch on the CP card in CPU 0 to MAINT.
- 4 Set the ENB/DIS switch on all CNI cards in Core/Net 1 to DIS.
- 5 Set the NORM/MAINT switch on the CP card in CPU 1 to MAINT.
- 6 Press the MAN INT button on the CP card in CPU 1.

Transferring the customer database to 2MB diskettes

Use this procedure to transfer the customer database to 2MB diskettes using the Database Transfer Utility.

To be compatible with the IODU/C, you must transfer the customer database from 4MB diskettes used in IOP/CMDUs to 2MB diskettes used in IODU/Cs.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

CAUTION

When using the Database Transfer Utility, only select options <t> *Tools Menu* and <s> *To archive existing database*. Selecting any other options can result in operating system corruption.

- 4 From the installation menu select:
 - <t> to go to the Tools menu
 - <s> to archive existing database
 - <cr> <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
 - <cr> <a> diskette is now in floppy drive in side 1
- The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.
- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

Converting the database to release 24

Use the following procedures to install the software and convert the database to release 24.

- 1 Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Make sure that the Security Device is installed in the IODU/C.
- 3 Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4 Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5 Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 Enter time and date, when prompted.
- 7 Initiate the installation by selecting the following prompt from the menu:

<cr> <u> to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> continue with keycode validation

- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.
 - ** to install software, database, CP-ROM, and IOP-ROM
 - <a>** to verify that the CD-ROM is now in drive
 - <y>** Yes, start the installation
 - <a>** continue with upgrade
- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:
 - <a>** to install customer database
 - <a>** to continue with the database install
 - <a>** to transfer the database from floppy to hard disk
 - <y>** Yes, to start installation
 - <a>** Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:
 - <cr> <a>** to install CP-ROM from hard disk
 - <cr> <a>** to continue with ROM upgrade
 - <a>** to install the IOP-ROM from hard disk
 - <y>** Yes, start installation
 - <a>** to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13** From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- Verify that the following message appears on the system terminal:

DATA CONVERSION
X11 RELEASE XX.xx TO release 24.xx

- 14** Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135	to load the program
STAT CPU	to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

Configuring the system

- Perform this step *only* if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 2.
 - Configure the system with the new memory configuration:
LD 17 to load the overlay
 - For each prompt, type the following response:
REQ CHG
TYPE CEQU
 - Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DA CP card:
MCFN 4 4 4 4 16 16
 - or,
 - Press the RETURN key until the “MCFN” prompt appear and enter on a NT6D66DB CP card:
MCFN 8 8 16 16

Note: Be sure to insert one space between the values when typing.

- Configure networks as CNI groups, based on the number of CNI cards in the system.

CNI ports are configured in LD 17 and can be assigned to support any network group from 0 to 4. See Table 71 for a typical option 81C five group configuration. Refer to *X11 input/output guide* for a complete description of the Configuration Record (LD 17):

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
...		
CEQU	YES	
...		
EXT0	3PE	Core/Net 0 extended to 3PE

_CNI	s p xg	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
...		
_CNI	s p g	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
...		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p xg	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
...		
_CNI	s p g	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
•		
MCFN	4 4 4 4 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DA CP cards)
		or,
MCFN	8 8 16 16	to set the memory configuration (this prompt appears only in systems equipped with NT6D66DB CP cards)
REQ	****	to exit the program

Note: If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See *X11 input/output guide* (553-3001-400) for procedures describing adding and removing groups.

Table 71

Typical CNI configurations for Option 61C upgrade to Option 81C

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 3 Press the RETURN key until the “REQ” prompt appears and then enter:
- REQ** ****

- 4 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print option
TYPE CFN	to print the configuration

After verifying the changes, enter

******** to exit the program

- 5 Insert an unused B1 database diskette from the software upgrade package into the IODU/C drive.
- 6 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
- | | |
|--------------|---------------------|
| LD 43 | to load the program |
|--------------|---------------------|

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Moving the clock controller cards

These steps describe how to move the clock controller cards from the Core/Net modules to the network modules and how to transfer call processing.

- 1 If clock controller 1 is active, switch to clock controller 0:

LD 60	to load the program
SSCK 1	to get the status of clock controller 1
SWCK	to switch to clock controller 0, if necessary
- 2 Make sure clock controller 0 is active, and if it is, disable clock controller 1:

SSCK 0	to get the status of clock controller 0
DIS CC 1	to disable clock controller 1
- 3 Set the ENB/DIS switch on Clock Controller 1 to DIS. Label and disconnect all cables to the card, and remove the card from the module.
- 4 Set the switches on Clock Controller 1 (see Table 72).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text ("21,51,61,71") next to the switches.
- 5 Install Clock Controller 1 in slot 13 of Group 1, Shelf 1 Network module.

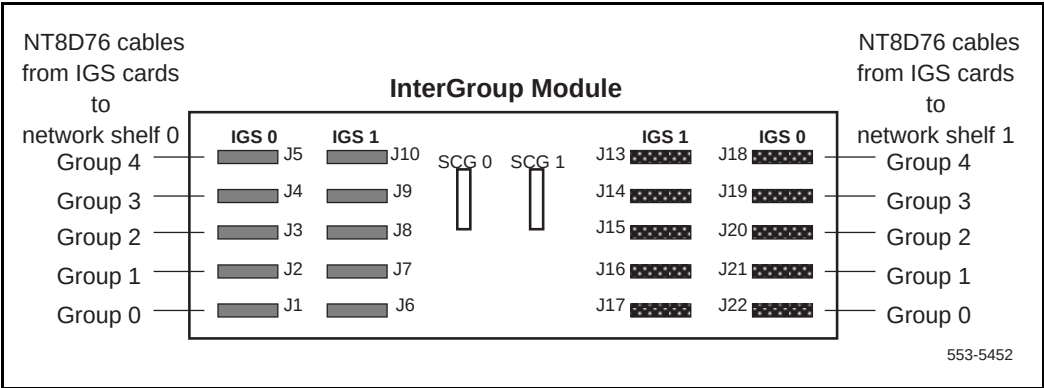
Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.
- 6 Route an NT8D74 cable from connector J3 on Clock Controller 1 to connector J12 on the Junctor module.
- 7 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in Shelves 0 and 1 of the Group 1 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0).
- 8 If slot 8 is not empty, relocate the card in slot 8 to a vacant network slot.

Table 72
Switch settings for Option 81C clock controller card 1

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 9 Install, but do not seat, two QPC412 IGS cards in slots 8 and 9 of Core/Net 1 (IGS 0 in slot 8 and IGS 1 in slot 9).
- 10 Route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors on the junctor module (i.e. Group 1, Shelf 0, IGS 0). See Figure 84.

Figure 84
QPC412 IGS card cable assignments to the InterGroup module



- 11 Route an NT8D74 cable from connector J4 in Clock Controller 1 in Core/Net 1 to connector J12 on the Junctor module.
- 12 Route the two NTND14 cables from CNI cards to 3PE cards (refer to Table 73 and Figure 85).

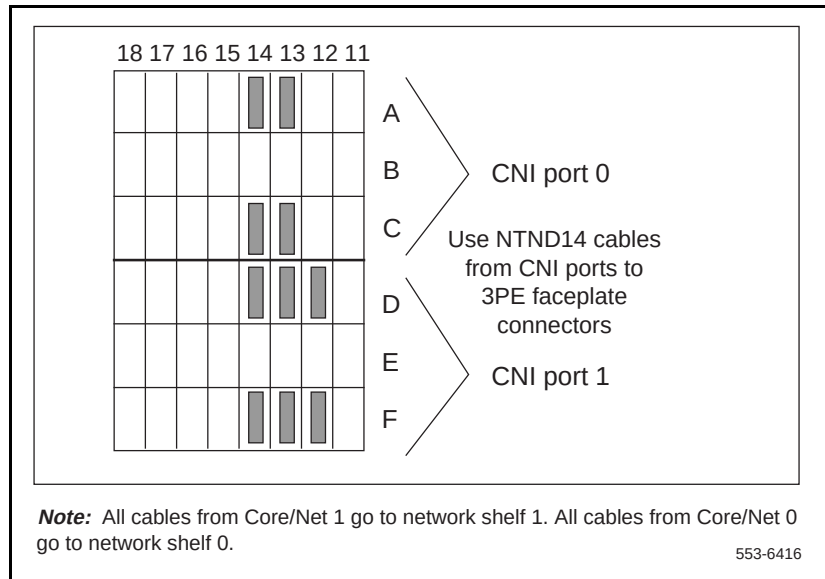
Table 73
CNI to 3PE NTND14 cable connections for Core/Net 1

Cable for Group		Backplane connector on Core/Net 1	3PE card connector in Net Shelf 1
1	connects from	12D	J3
1		12F	J4
2		13A	J3
2		13C	J4
3		13D	J3
3		13F	J4
4		14A	J3
4		14C	J4
Note: Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).			

- 13 Seat the QPC412 IGS cards in Core/Net 1 and engage the lock latches.
- 14 Verify that the NORM/MAINT switch on the CP card in Core 1 is set to MAINT.
- 15 Perform the next 4 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from Core/Net 0 to Core/Net 1:
 - Set the ENB/DIS switch to DIS on the IODU/C or IOP/CMDU card in Core/Net 0
 - Set the ENB/DIS switch on all CNI cards in Core/Net 0 to DIS.
 - Set the ENB/DIS switch on all CNI cards in Core/Net 1 to ENB.
 - Press the MAN INT button on the CP card in Core/Net 1.

After the initialization message ("INI") appears on the display, check for dial tone.

Figure 85
NT5D21 Core/Net 1 (rear)—backplane connections for CNI slots



16 Check the status of all configured CNI cards:

LD 135 to load the program
STAT CNI to get the status of all configured CNIs
******** to exit the program

17 Check the status of the clock controllers:

LD 60 to load the program
SSCK 1 to check the status of clock controller 1
ENL CC 1 to enable clock controller 1 (if necessary)
SSCK 0 to check the status of clock controller 0; should be in Standby mode
SWCK to switch to clock controller 1 (if necessary)
SSCK 0 to check the status of clock controller 0; should be in Standby mode
DIS CC 0 to disable clock controller 0

18 Set the ENB/DIS switch on Clock Controller 0 to DIS. Label and disconnect all cables to the card, and remove the card.

- 19 Set the switches on Clock Controller 0 (see Table 74).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 74
Switch settings for Option 81C clock controller card 0

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

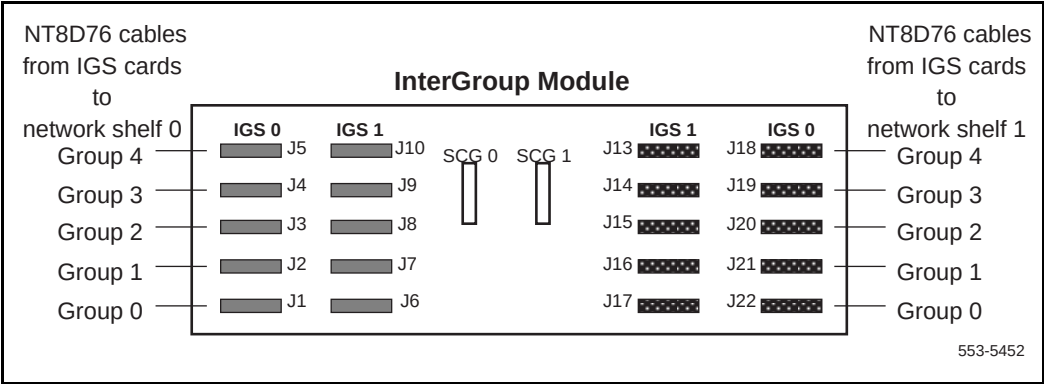
- 20 Install Clock Controller 0 in slot 13 of Group 1, Shelf 0 Network module.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 21 Route NT8D74 cable(s) to Clock Controller 0 and reconnect.
- 22 If not already installed, route the NT8D76 cables from the QPC412 IGS cards in Shelves 0 and 1 of the Group 0 network module to the junctor module. Connect the cables to the matching connectors on the junctor module (see Figure 86, on page 468).
- 23 If slot 8 is not empty, relocate the card in slot 8 to a vacant network slot.
- 24 Install, but do not seat, two QPC412 IGS cards in slots 8 and 9 of Core/Net 0 (IGS 0 in slot 8 and IGS 1 in slot 9).

- 25 Route NT8D76 cables for IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module. Connect the cables to the matching connectors in the junctor module (i.e. Group 0, Network Shelf 0, IGS 0). See Figure 86.
- 26 Route an NT8D74 cable from connector J4 in Clock Controller 0 in Core/Net 0 to connector J11 on the junctor module.
- 27 Seat the QPC412 IGS cards in Core/Net 1 and engage the lock latches.

Figure 86
QPC412 IGS card cable assignments to the InterGroup module



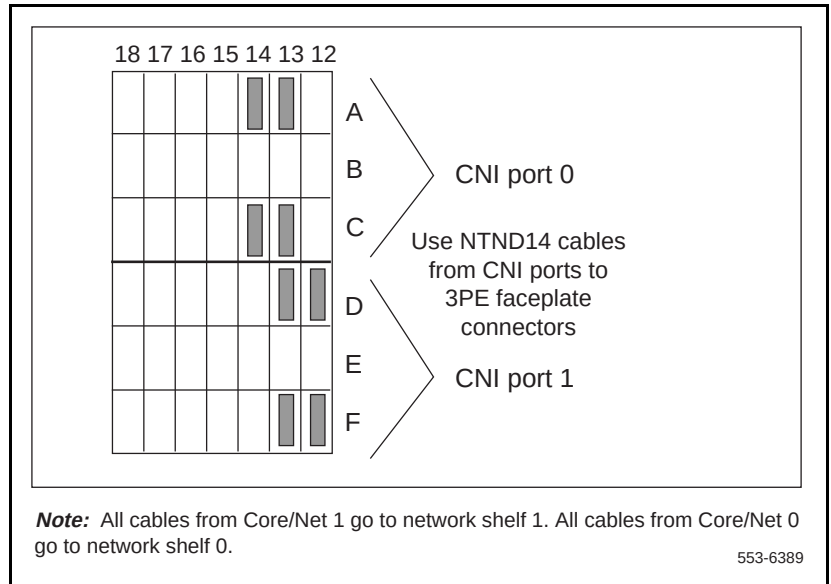
- 28** Route the two NTND14 cables from CNI cards to 3PE cards (refer to Table 75 and Figure 87)

Table 75
CNI to 3PE NTND14 cable connections for Core/Net 0

Cable for Group		Backplane connector on Core/Net 0		3PE card connector in Net Shelf 0
1	connects from	12D	to	J3
1		12F		J4
2		13A		J3
2		13C		J4
3		13D		J3
3		13F		J4
4		14A		J3
4		14C		J4

Note: Backplane connections are designated 18 through 12 (from left to right viewed from the back of the module) and A through "F" (from top to bottom).

Figure 87
NT5D21 Core/Net 0 (rear)—backplane connections for CNI slots



Copying software in Core/Net 0

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:
 <cr> <u>> to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 <a> continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:
 <o> to copy system software from the other Core
- 7 When the software is installed successfully, press <CR> to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.
- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:
 <f> to install IOP-ROM only
 <cr> <a> to install the IOP-ROM from hard disk
 <y> Yes, start installation
 <cr> <a> to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:

<d>	to go to the Database menu
<d>	to copy the database from Core 1 to Core 0
<y>	to confirm the installation status summary
<a>	to confirm database copy

- 10 From the Main Menu, select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit

- 11 Reboot the Core/Net 0 CPU:

<a>	to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 13 In Core/Net 0, press and release the MAN RST button.
- 14 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 15 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS
ENTERING CP VOTE**

An “HW5134” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 16 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

Completing the upgrade

These steps describe how to perform tests on the CPUs and how to synchronize the hard disk drives:

- 1 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2 Synchronize the hard disk drives. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is software disabled:

LD 137	to load the program
STAT	get the status of IODU/Cs, IOPs, and redundancy
SYNC	synchronize the hard disk drives
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes. Wait until the hard disk synchronization is complete before continuing.

- 3 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

STAT	to get the status of IOPs, IODU/C and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit LD 137

- 4 Switch Cores and test the other CPU:

SCPU	to switch to Core/Net 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

- 5 Get the status of the CP cards and memories and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs

SCPU to swap to Core/Net 1 active
******** to exit LD 135

6 Check the status of the clocks, swap clocks and verify status:

LD 60 to load the program
SSCK 0 if get the status of clock 0
SSCK 1 to get the status of clock 1
SWCK to swap active clocks
SSCK 0 to verify that clock 0 is active
SSCK 1 to verify that clock 1 is inactive
******** to exit the program

7 Insert the B database diskette into IODU/C 0.

8 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

******** to exit the program

9 Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137 to load the program
TEST SCSI to check the IOP to IOP connection and access to the IODU/Cs

TEST CMDU to test the hard and floppy disk drives (a floppy diskette must be installed)
******** to exit the program

10 Clear displays, major alarms, and minor alarms:

CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
SCPU to switch to the other Core
CDSP to clear the display
******** to exit LD 135

11 Reinstall the system monitor in column 1. Reconnect the cables.

12 On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.

13 Software enable the associated SDI port:

LD 37 to load the program
ENL terminal x to enable the device associated with the port
STAT XSM to check the status of the system monitor
******** to exit the program

14 For both Core/Net modules, install the appropriate trim panels from the upgrade package.

15 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The upgrade is complete.

Option 71 card cage upgrade to option 81C

CAUTION

Do not begin a system upgrade until you are thoroughly familiar with the upgrade process. Read through the procedure you will use before you begin the upgrade.

This procedure applies to Option 71 systems housed in modules. For Option 71 systems housed in QCA55 and QCA108 cabinets, use the upgrade procedure “XT and Option 71 Core/Net module upgrade to Option 81C” on page 608.

Upgrading the Option 71 to Option 81C (see Figure 88) consists of:

- Removing the card cage in each NT8D34 CPU module.
- Installing card cages to create NT5D21 Core/Net modules.

The hardware required for this upgrade is provided in the Core/Net card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 release 24. Order replacements for all equipment that does not comply.

Verify the vintages of the QPC441 3PE, QPC471 and QPC775 Clock Controller cards. If any existing card in the system is not the minimum vintage or later, replace it with a new card.

Table 76
Option 81C card vintages

Card	Minimum vintage
QPC441	F
QPC471	H
QPC775	E

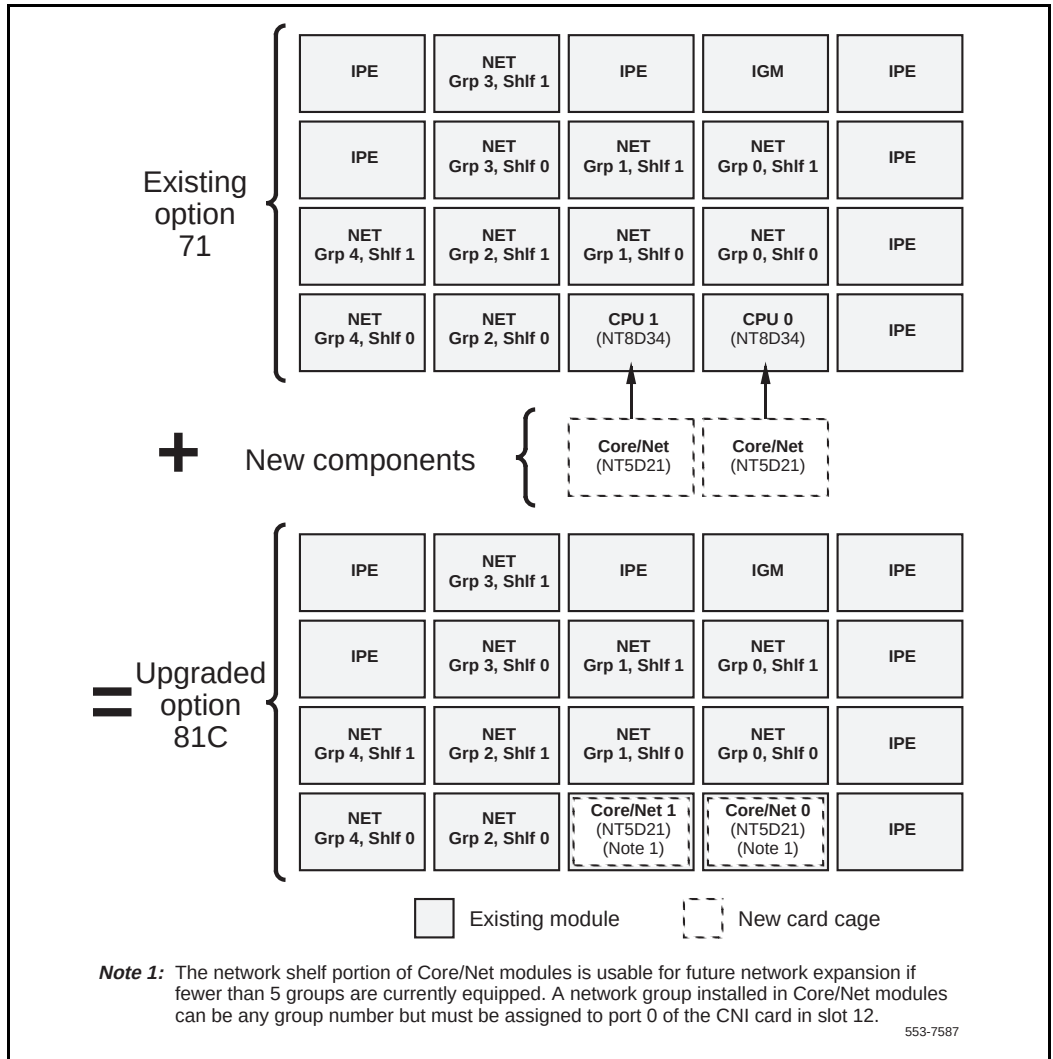
Note: QPC471 and QPC775 Clock Controller cards cannot be combined in one system. All 3PE cards in the system must be of the same vintage.

During the upgrade procedures, the following service interruptions may occur:

- For AC-powered systems, power to the entire column being upgraded must be turned off for safety reasons. This causes loss of service to any network, I/O, or service cards located in that column.
- Transient calls, CDR information, PRI service, and traffic report information may be lost.
- If the peripheral software download feature is activated during system initialization, calls carried by superloop cards will be dropped.

Figure 88 shows the upgrade from Option 71 to Option 81C.

Figure 88
Upgrade from Option 71 to Option 81C



Equipment required

Table 77 lists the items required to upgrade an AC- or DC-powered Option 71 to an Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start. Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.

Letters at the end of a part number may represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Check the tool list in “Tools” on page 8. Make sure all the equipment is on hand.

Table 77
Hardware requirements for an AC- or DC-powered Option 81C
(Part 1 of 2)

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
1	NT1R91AA	UDS FastTalk Modem Kit
2	NT5D61AA	IODU/C Card

Table 77
Hardware requirements for an AC- or DC-powered Option 81C
(Part 2 of 2)

Qty	Part number	Description
2	NT5D2103	Core/Network Card Cage AC/DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D89CA	CP to I/O Panel RS232 Cable
2	NT7D90CA	IOP to I/O Panel Ethernet Cable
2	NT8D80BZ	CPU Interface Cable (5 ft.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
2	NTND14BA	CNI to 3PE Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)
Note: QPC471 Clock Controller cards must be vintage H or later. QPC775 Clock Controller cards must be vintage E. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-PE cards must be vintage "F" or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.		

Upgrade preparation

CAUTION

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Cable routing access in the system becomes extremely limited when new network group cables are added during the card cage upgrade. Before you begin the upgrade, consider the following options and plan well ahead for network cabling:

- This procedure provides a back-out contingency as a safety factor; by disconnecting the network cables to CPU 1, you can leave them in place until the upgrade is complete. To do this, however, you may have to temporarily route the new network cables externally or along the front cable trays. This temporary routing requires that you disconnect and reroute the cables at the end of the upgrade.
- Alternative methods can be used, but since this provides no back-out contingency, the advantages and disadvantages should be carefully evaluated beforehand.

Labeling cables

Before beginning the upgrade, it is important to label all cables in the upgrade kit so you can have the correct cable available when you need it.

To label the cables:

- 1 Remove the NTND14 cables from the upgrade package and sort them into separate piles according to part number and vintage (e.g. NTND14BA cables in one pile, NTND14BC cables in another, etc.).
- 2 Remove each label from the sheet of adhesive cable labels provided in the upgrade kit and attach a pair of identical labels to the appropriate cable (one label at each end of the cable). Refer to Tables 78 and 79 for correct label assignments when labeling NTND14 cables.

Note: You may have unneeded labels left over when you finish labeling the cables.

Table 78
NTND14 Core/Net 1-to-CNI cable label assignments

Cable number	Label both ends
NTND14BC	CPU1-CNI-12D to 3PE-GRP0/1-J3
NTND14BC	CPU1-CNI-12F to 3PE-GRP0/1-J4
NTND14BD	CPU1-CNI-13A to 3PE-GRP1/1-J3
NTND14BD	CPU1-CNI-13C to 3PE-GRP1/1-J4
NTND14BA	CPU1-CNI-13F to 3PE-GRP2/1-J4
NTND14BA	CPU1-CNI-13D to 3PE-GRP2/1-J3
NTND14BB	CPU1-CNI-14A to 3PE-GRP3/1-J3
NTND14BB	CPU1-CNI-14C to 3PE-GRP3/1-J4
NTND14BB	CPU1-CNI-14D to 3PE-GRP4/1-J3
NTND14BB	CPU1-CNI-14F to 3PE-GRP4/1-J4
Note: The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.	

Table 79
NTND14 Core/Net 0-to-CNI cable label assignments

Cable number	Label both ends
NTND14BA	CPU0-CNI-12D to 3PE-GRP0/0-J3
NTND14BA	CPU0-CNI-12F to 3PE-GRP0/0-J4
NTND14BA	CPU0-CNI-13A to 3PE-GRP1/0-J3
NTND14BA	CPU0-CNI-13C to 3PE-GRP1/0-J4
NTND14BB	CPU0-CNI-13D to 3PE-GRP2/0-J3
NTND14BB	CPU0-CNI-13F to 3PE-GRP2/0-J4
NTND14BC	CPU0-CNI-14A to 3PE-GRP3/0-J3
NTND14BC	CPU0-CNI-14C to 3PE-GRP3/0-J4
NTND14BD	CPU0-CNI-14D to 3PE-GRP4/0-J3
NTND14BD	CPU0-CNI-14F to 3PE-GRP4/0-J4
Note: The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.	

Performing a data dump

Before you proceed, backup the customer database by performing a data dump:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Replacing clock controller cards

If QPC471 Clock controller cards in the Option 71 are not minimum vintage H, or if QPC775 Clock controller cards are not minimum vintage E, replace them with minimum vintage cards (as directed in step 1 through step 3) before beginning the upgrade. If both clock controller cards are already minimum vintage, proceed page 486.

Note: QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

- 1 If the clock controller card in CPU 1 is not of the minimum vintage or later, install a new one:

Note: Use the clock controller cards provided in the upgrade package.

- Determine which CPU is active:

LD 35	to load the program
STAT CPU	to get the status of the CPUs
- If CPU 1 is active, switch to CPU 0:

TCPU	to test the CPUs
SCPU	to switch to CPU 0 (if necessary)
****	to exit the program
- If clock controller 1 is active, switch to clock controller 0:

LD 60	to load the program
SSCK 1	to get the status of clock controller 1
SWCK	to switch to clock controller 0 (if necessary)

- Make sure clock controller 0 is active, and if it is, disable clock controller 1:

SSCK 0

DIS CC 1

SSCK 1

to get the status of clock controller 0

to disable clock controller 1

to verify clock controller 1 is disabled
- Set the ENB/DIS switch on clock controller 1 to DIS. Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from the faceplate connector on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last. Note which slot you remove the card from; you will install the new card in this same slot.
- Set the ENB/DIS switch on the replacement clock controller card to DIS, and set the switches on the replacement card (see Table 80).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card back into the slot from which you previously removed the clock controller card. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 80
Clock controller card switch settings for Option 71

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1				SW2				SW4			
	position				position				position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	off	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	off	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	off	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	off	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of both clock controller cables (no single cable can exceed 25 ft). All switches must be set the same on both clock controller cards.												

- Install the replacement card and reconnect the cables. Set the ENB/DIS switch to ENB.
- Software enable the card:

ENL CC 1 to enable clock controller 1
******** to exit LD 60

Note: Do not issue the tracking (TRCK) or status (SSCK) commands at this time. If you do issue these commands, the system may respond with an inaccurate error condition.

- 2 If the clock controller card in CPU 0 is not of the minimum vintage or later, install a new one:

- Determine which CPU is active:

LD 35 to load the program
STAT CPU to get the status of the CPUs

- If CPU 0 is active, switch to CPU 1:

TCPU to test the CPUs
SCPU to switch to CPU 1 (if necessary)
******** to exit the program

- If clock controller 0 is active, switch to clock controller 1:

LD 60 to load the program
SSCK 0 to get the status of clock controller 0
SWCK to switch to clock controller 1 (if necessary)

- Make sure clock controller 1 is active, and if it is, disable clock controller 0:

SSCK 1 to get the status of clock controller 1
DIS CC 0 to disable clock controller 0
SSCK 0 to verify clock controller 0 is disabled

- Set the ENB/DIS switch on clock controller 0 to DIS.

Perform the following four steps in exact order.

- Label and disconnect the cable from the J11 connector in the NT8D36 InterGroup module at the junctor board.
- Disconnect the cable from the faceplate connector on the clock controller card.
- If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last. Note which slot you remove the card from; you will install the new card in this same slot.
- Set the ENB/DIS switch on the replacement clock controller card to DIS and set the switches on the replacement card (see Table 80 on page 484).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card back into the slot from which you previously removed the clock controller card. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- Install the replacement card and reconnect the cables. Set the ENB/DIS switch to ENB.
- Software enable the card:

ENL CC 0 to enable clock controller 0

- 3 Issue the tracking command to enable clock controller tracking to the primary reference loop:

TRCK PCK to enable tracking
******** to exit the program

Replacing 3PE cards

Check the vintage of the QPC441 3PE cards in all shelves in all network groups; they must be minimum vintage "F" or later. If the 3PE cards are not vintage "F" or later, refer to *Meridian 1 hardware replacement* (553-3001-520) for card replacement procedures.

4 .

Upgrading the CPU 1 cardcage

- 1 Print the configuration record:

LD 22	to load the program
PRT	to activate the print command
CFN	to print the configuration record

- 2 Check the configuration record to identify all configured I/O ports.

Note: When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

- 3 Inspect the Option 71 system to determine the group location of each I/O port. Mark the group number on the configuration record printout next to the device number address of each I/O port.

- 4 If the NTND16 MDU or NTND15 FDU is located in CPU 1, move the unit to CPU 0 or to a network module.

Note: Perform this step **only** if the MDU is installed in CPU 1.

- Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.
- Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
- Remove the floppy diskettes from the disk drives.
- Label and disconnect cables from the faceplate of the MDU or FDU.
- Unhook the lock latches on the MDU or FDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- Move the MDU or FDU to the new slot. Seat it and engage the lock latches.
 - Reroute and reconnect cables to the faceplate of the MDU or FDU.
 - Reinstall the floppy disks.
 - Set the ENB/DIS switch on the MSI or EMSI card in the active CPU to ENB.
- 5 If the Option 71 is AC-powered, and you cannot afford extended downtime, disable the PRI/DTI cards and move them to any Network module (if available) in a column that does not have a CPU module in it. Label and disconnect all cables, move the cards, and then reroute and reconnect all cables.
- Disable the cards using LD 32.
 - Remove the cards and install them in the Network module.
 - Enable the cards using LD 32.
- 6 Get the status of the CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled:
- | | |
|-----------------|--------------------------------|
| LD 35 | to load the program |
| STAT CPU | to get the status of both CPUs |
| STAT CMA | to get CMA or OCMA status |
| STAT EXT | to get the extender status |
| STAT MEM | to get the memory status |
- 7 Test and switch CPUs:
- | | |
|-------------|--------------------|
| TCPU | to test the CPUs |
| SCPU | to switch the CPUs |

- 8 Get the status of the other CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled:
 - STAT CPU** to get the status of both CPUs. Verify that one CPU is enabled and the other CPU is idle
 - STAT CMA** to get CMA or OCMA status
 - STAT EXT** to get the extender status
 - STAT MEM** to get the memory status
- 9 If CPU 1 is active, switch CPUs:
 - STAT CPU** to get the status of the CPUs
 - SCPU** to switch to CPU 0 (if necessary)
- 10 Place CPU 0 into maintenance by setting the NORM/MAINT faceplate switch on the QPC580 card in CPU 0 to MAINT.
- 11 List the enabled memories, then disable the memories and the CMA or OCMA card in CPU 1:
 - LENL** to list enabled memories
 - DIS 10** to disable CPU 1 memory 10
 - DIS 11** to disable CPU 1 memory 11 (if equipped)
 - DIS CMA 1** to disable CMA or OCMA 1
 - ****** to exit the program
- 12 Set the ENB/DIS switch on each QPC215 SBE card in CPU 1 to DIS.
- 13 Software disable clock controller 1:
 - LD 60** to load the program
 - SSCK 0** to get the status of clock 0
 - SSCK 1** to get the status of clock 1
 - SWCK** if necessary, to switch to clock controller 0
 - DIS CC 1** to disable clock controller 1
 - ****** to exit the program
- 14 Set the ENB/DIS switch on the clock controller card in CPU 1 to DIS.

15 Perform the following steps in exact order:

- Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board.
- Then disconnect the cable from faceplate connector J3 on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.

16 Set the ENB/DIS switch on the FDI, MSI, or EMSI card in CPU 1 to DIS.

17 Set the NORM/MAINT switch on the QPC580 Omega I/F card in CPU 1 to MAINT to split the CPUs.

18 Verify the status of both CPUs:

LD 35	to load the program
STAT CPU	to get CPU status. Verify that CPU 0 is enabled, and CPU 1 is disabled.
****	to exit the program

19 Software disable the associated SDI port:

LD 37	to load the program
DIS TTY x	to disable the device associated with the port
STAT XSM	to check the status of the system monitor (an "IOD300" message appears indicating no response from the system monitor)
****	to exit the program

CAUTION

Exercise caution when performing the next two steps to avoid inadvertently tripping circuit breakers on the rear of the power distribution units.

20 On the master system monitor (the one associated with CPU 0), disconnect the cable from J3, then the cable from J6.

21 Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.

- 22 On the slave system monitor (the one associated with CPU 1), disconnect the cables from connectors J5 and J6.
- 23 Remove the screws and pull the system monitor out of its slot. Do not turn off the blower unit in the front of the pedestal.

CAUTION

If the system monitors are not removed, the system may shut down later in the upgrade.

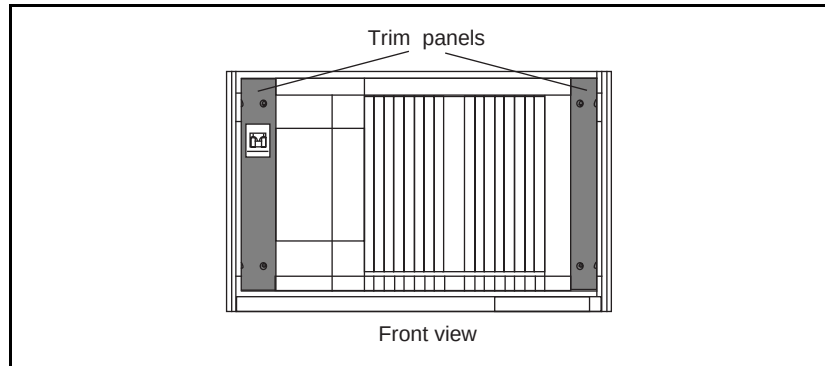
- 24 Follow the appropriate step below to turn off power to CPU 1:

WARNING

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- For AC-powered systems, set the main circuit breaker in the column that contains CPU 1 (located at the rear of the pedestal) to OFF (down position).
 - For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) only for the module that contains CPU 1 to OFF (down position). Power to all other modules in the column can safely remain on.
- 25 Remove the trim panels on both sides of the module (see Figure 89). Keep the screws for reuse.
 - 26 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
 - 27 On all cards in CPU 1 with an ENB/DIS switch on the faceplate, set the switch to DIS.

Figure 89
Location of the trim panels



- 28** Remove all cards and the power supply from the module. Keep the clock controller card and the power supply on hand. The power supply will be reused in the new Core/Net card cage. The clock controller card will be installed in slot 13 of the NT8D35 Network module.

Note: Only QPC471H (or later vintage) or QPC775E (or later vintage) Clock controller cards can be reused with Option 81C.

- 29** Remove the I/O safety panel that covers the rear of the backplane.

Note: Perform the next step only if the module is not already equipped with universal I/O panels (P0745713). Otherwise, skip the step.

- 30** Label and disconnect cables from both sides of the I/O panels at the back of the module. Remove both I/O panels. Keep the screws for reuse.

CAUTION

Use extreme caution when removing module screws; do not drop them into the pedestal. Damage, equipment failure, or injury could result.

- 31** Remove the two mounting screws at the bottom rear of the card cage that secure the card cage to the module casting. Keep the screws for reuse. (A 1/4" nut driver is needed for this operation.)

- 32 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 33 Remove the logic return (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal (see Figure 90).

WARNING

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 34 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 35 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 36 Remove the CPU card cage from the module.
- 37 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the Core/Net card cage. The screws that secure the MPDU are accessible from the power supply slot (see Figure 91).
- 38 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the CPU card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Note: Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

Figure 90
Power connectors on the rear of the NT8D34 CPU module backplane

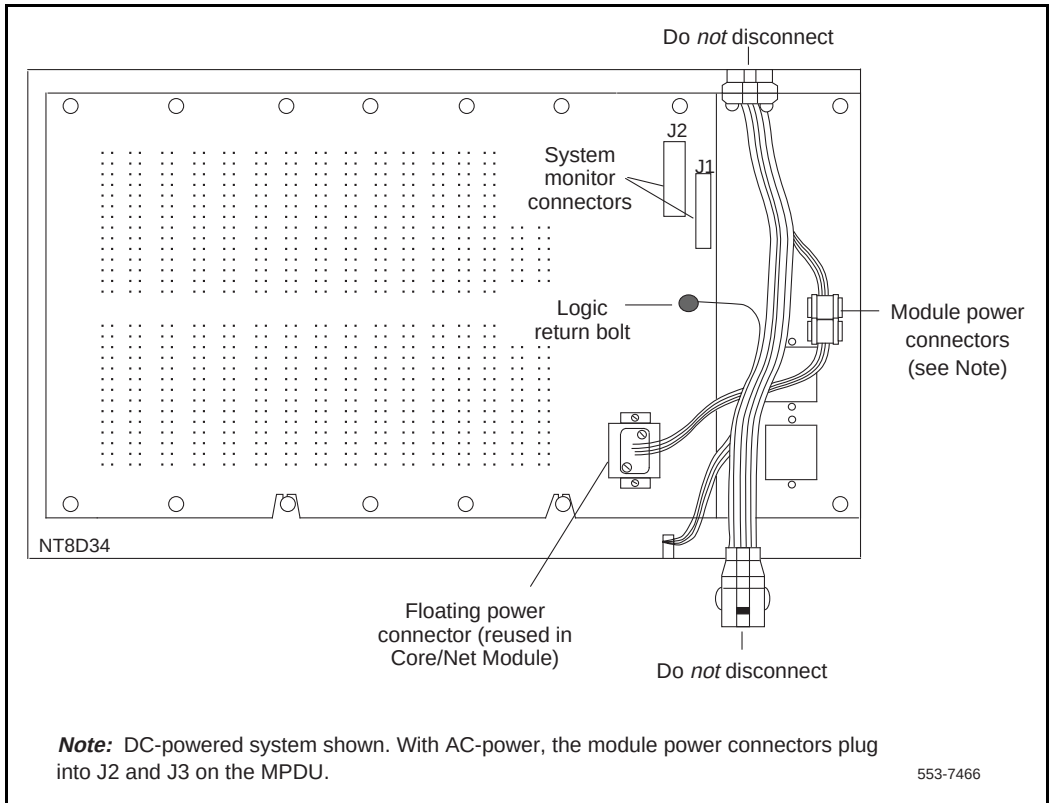
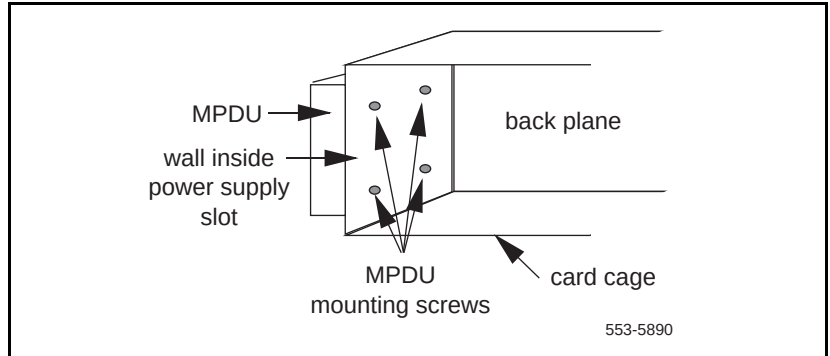


Figure 91
Location of the screws for the MPDU



- 39** Remove the backplane jumper (if installed) from the backplane jumper pins at JB1 on the Core/Net 1 card cage. The jumper is located on the backplane along the bottom of the front side between slots 14 and 15 (see Table 81). To store the jumper for future use, place the jumper onto only one of the pins; do not install it on both pins.

CAUTION

If the Core/Net module jumpers are not set correctly, the system will not operate correctly.

Table 81
Backplane jumper settings for NT5D21 Core/Network module

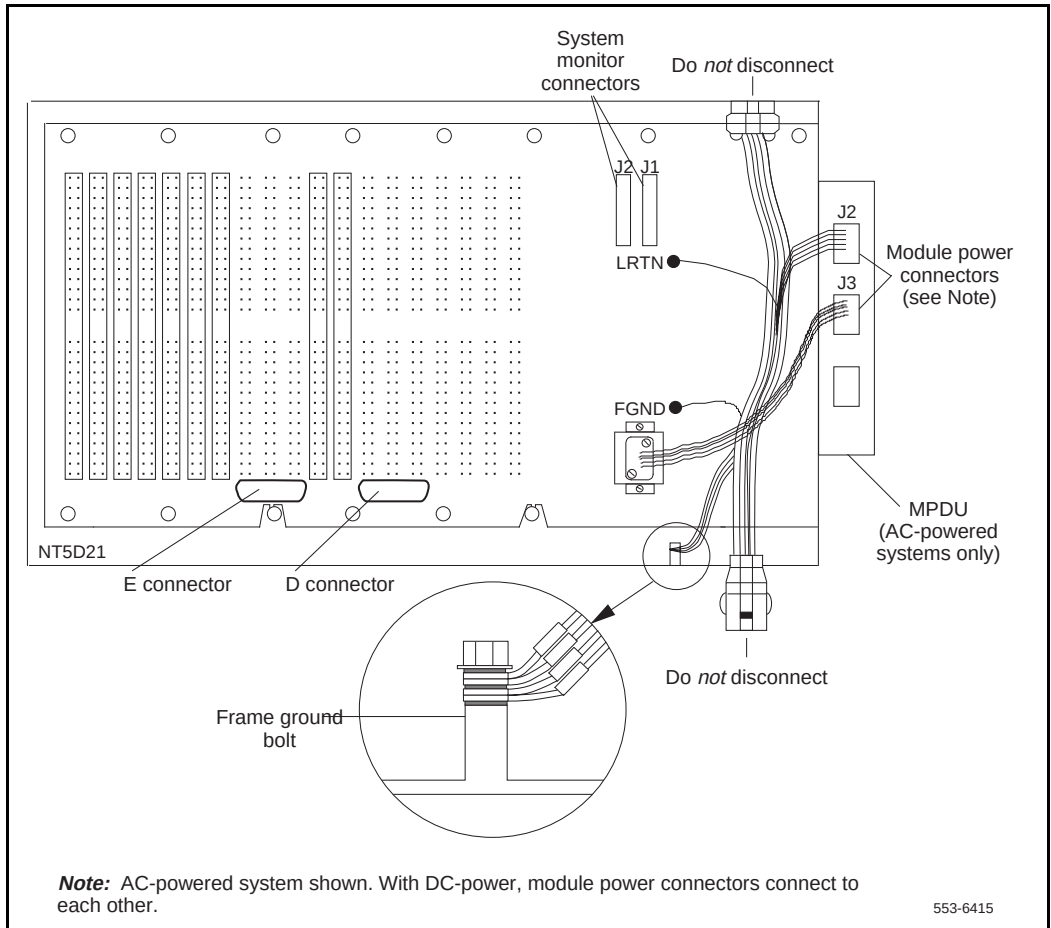
Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

- 40** Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.

- 41 In AC-powered systems only, plug the module power cable (the short harness attached to the module power connector) into connector J3 on the MPDU (attached to the side of the card cage).
- 42 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while making the following connections at the rear of the module (see Figure 92):
 - Connect the remaining module power connectors to J2 and J3 on the MPDU, in AC-powered systems, or to each other, in DC-powered systems.
 - Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
 - Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

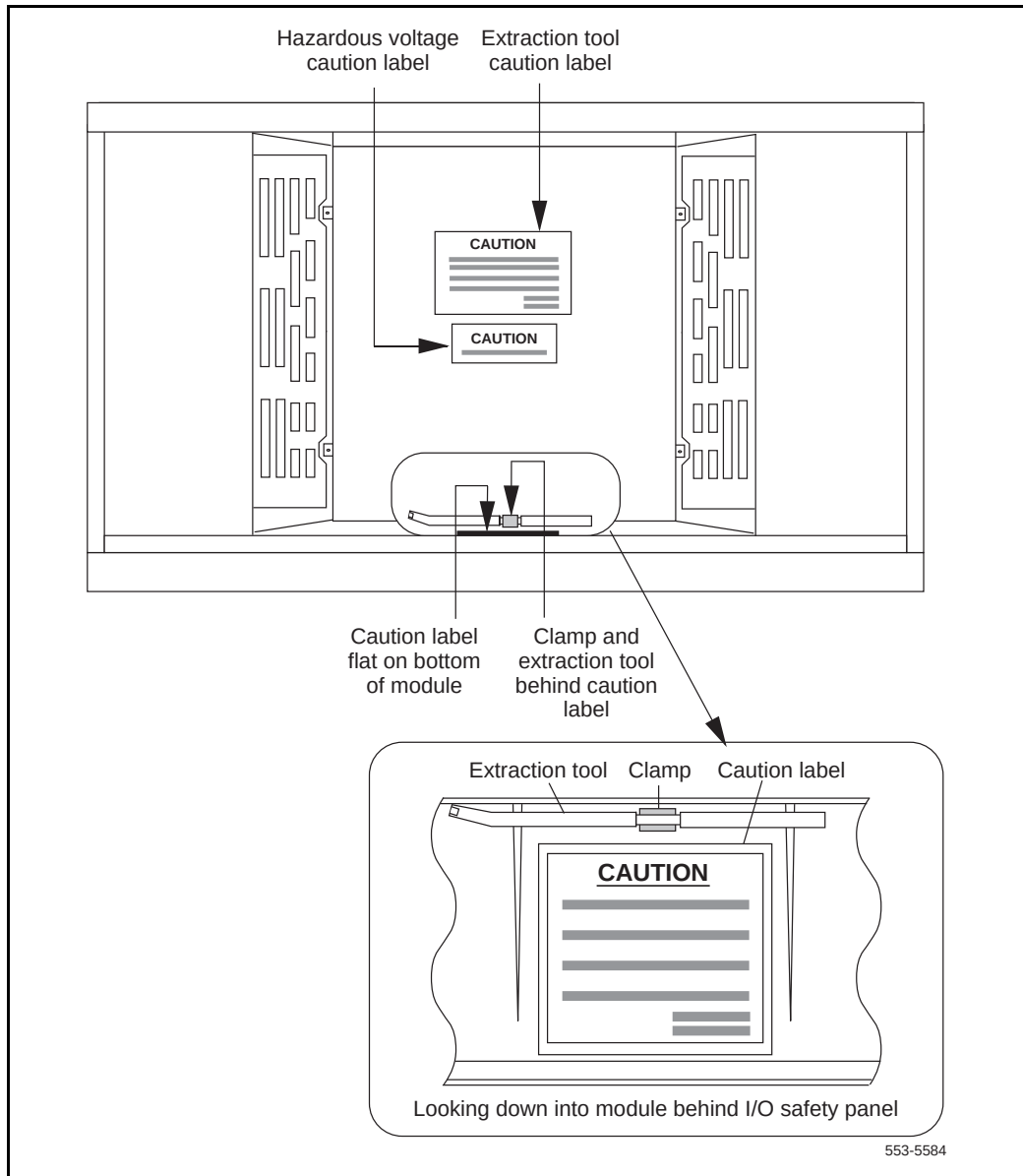
Note: For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

 - Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN bolt at the rear of the card cage. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 43 Slide the card cage all the way into the module.
- 44 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 45 Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.
- 46 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 93).
- 47 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.

Figure 92**Power connections on the rear of the NT5D21 Core/Net module backplane**

- 48 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 49 Snap the extraction tool into the clamp.
- 50 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.

Figure 93
Positioning the extraction tool and caution labels



- 51 Install the module power supply (reused from the CPU card cage) in the slot labeled “CE Pwr Sup” in the Core/Net card cage.
- 52 Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (up position). For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 53 For AC-powered systems, enable all network cards located in the network modules located in the column containing CPU 1. You can do this in either of two ways:
 - Press the MAN INT button on the QPC580 interface card in CPU 0. Initializing the system in this manner will result in temporary interruption of call processing.
 - Enable each card located in the network modules located in the column containing CPU 1 using software overlays. Enabling the cards in this manner avoids interruption of call processing.
- 54 Check the LEDs on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be ON-OFF-OFF-OFF (from top to bottom) for Core/Net 1. The LED pattern matches the setting of the jumper JB1 on the backplane; if the pattern is incorrect, verify that the jumper is not installed over both pins.
- 55 Shut down power to Core/Net 1 module again. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 56 Locate the round 1/2” diameter IODU/C security device.
- 57 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 58 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**

- 59 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 60 Set the ENB/DIS switch on an NT6D65 CNI card to DIS. Place the card in slot 12, **but leave the card unseated.**
- 61 Place other CNI cards in slots 13 and 14 (starting with slot 13) as required for the network group configuration, **but leave the cards unseated.**
- 62 Set the switches on clock controller 1 according to Table 82.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 82
Switch settings for Option 81C clock controller card 1

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 63** Set the ENB/DIS switch on clock controller 1 to DIS and place the clock controller card in slot 13, Shelf 1, network Group 1 module, but leave the card unseated.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 64** Configure the switch and jumper settings on the QPC441F or later 3PE card in **Core/Net 1** (see Table 83). Make sure Jumper RN27 is set to "A".

Table 83
QPC441F 3PE card switch settings for Core/Net 1

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
Note: RN27 jumper at E35: set to "A" for all modules								

- 65** Faceplate disable the 3PE card and install the card into slot 11, **but leave the card unseated.**
- 66** On the QPC441 3PE cards in the Shelf 1, Network modules of all groups, tag and disconnect both cables.

Note: Disconnect the cables, but do not remove them yet (as a back-out contingency).

- 67** Check the vintage of the 3PE cards in the Shelf 1 Network modules. They must be minimum vintage F. See Table 84 for the QPC441F 3PE card switch and jumper settings.

Table 84
QPC441 3PE card switch settings for Network shelf 1 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off
Note: Jumper RN27 at location E35: set to A								

- 68** Install NTND14 cables to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Shelf 1 Network modules (see Table 85 and Figure 94). The cables connect to backplane connectors (secondary shroud connectors) in the Core/Net module and to faceplate connectors on the 3PE cards in the network shelves.

Note: If the cables do not fit in the module cable troughs, temporarily route them externally or along the front cable trays.

Table 85
CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 71 to 81C

Cable for Group		Backplane connector on Core/Net 1		3PE card connector in each Shelf 1 Network module	Use cable length vintage
0	connects from	12D	to	J3	BC
0		12F		J4	BC
1		13A		J3	BD
1		13C		J4	BD
2		13D		J3	BA
2		13F		J4	BA
3		14A		J3	BB
3		14C		J4	BB
4		14D		J3	BB
4		14F		J4	BB

Note: Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through "F" from top to bottom.

Note: Cables are not required for a group being added in a Core/Net module.

Note: The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

Figure 94
NT5D21 Core/Net module (rear)—backplane connections for CNI slots
when upgrading an Option 71 to 81C

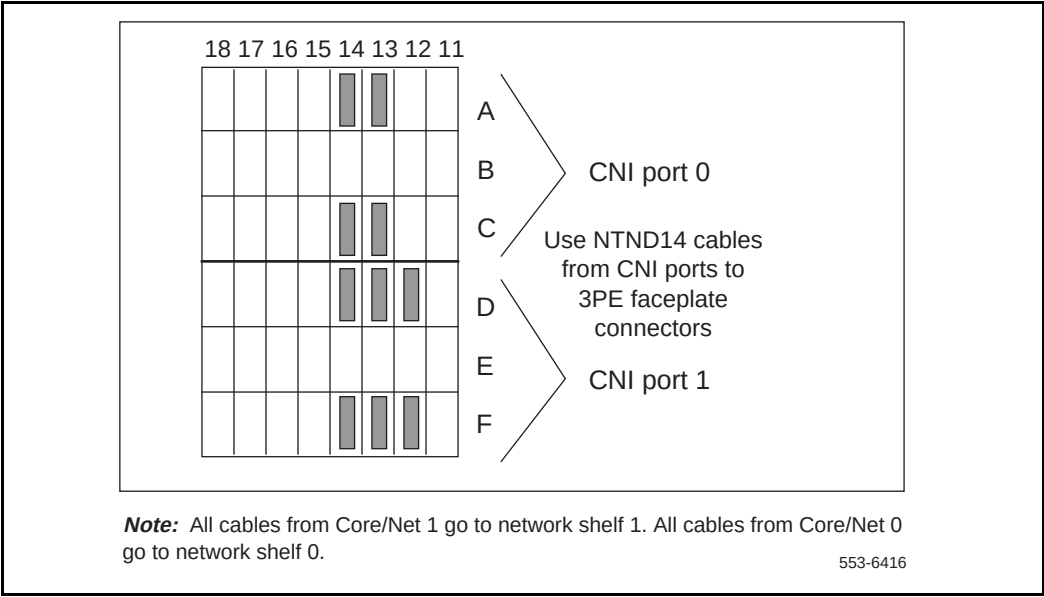
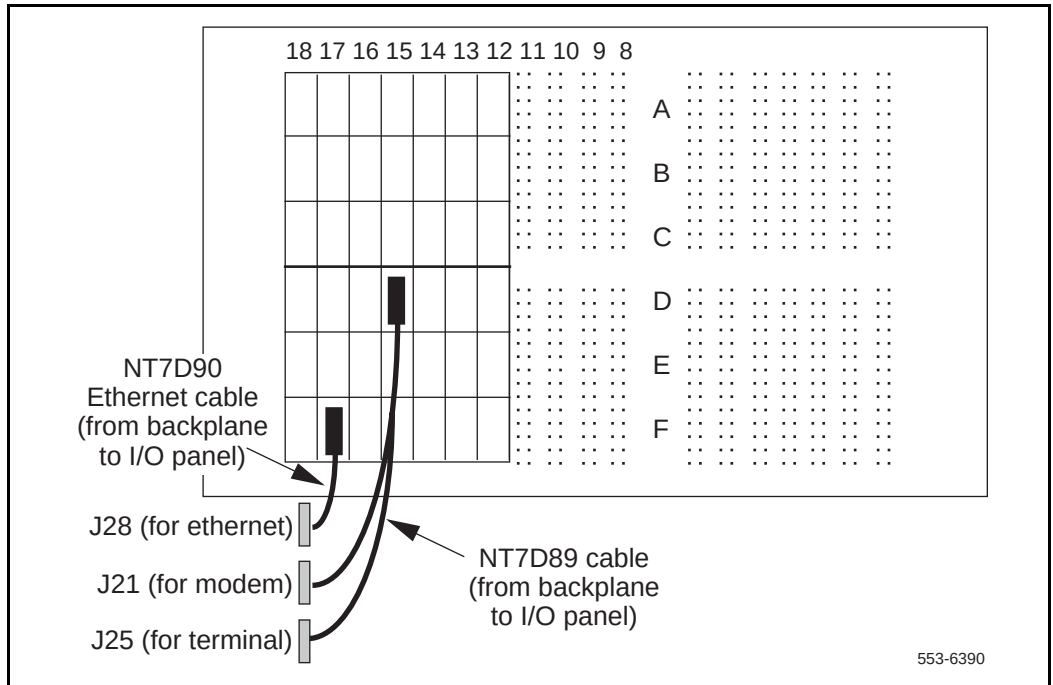


Figure 95
NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections

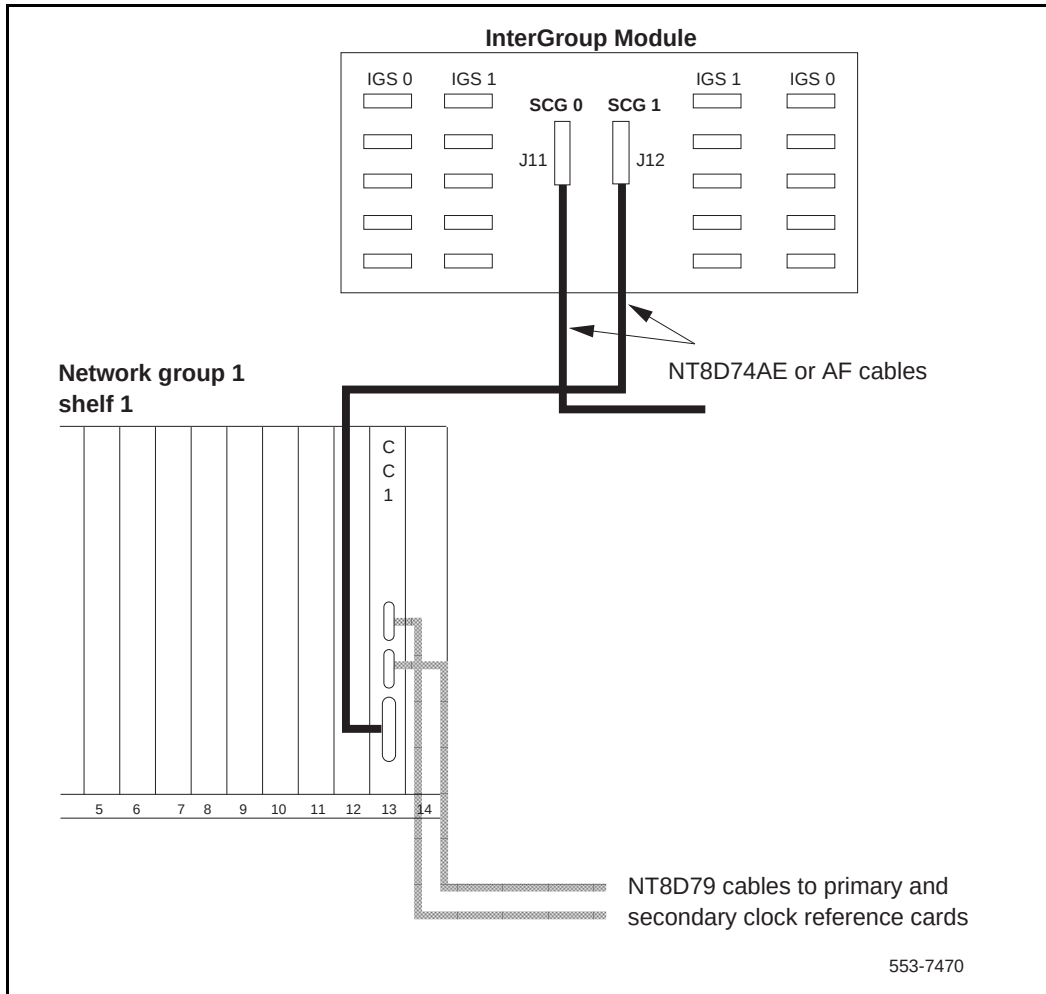


- 69** Obtain a P0745713 I/O panel from the upgrade package. You will install this panel later on the left I/O panel opening.

Note: The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed above the slot match the designations on the outside of the panel.

- 70** On the inside of the I/O panel, connect the NT7D89 cable port A (DCE) connector to the panel at location J21.
- 71** On the inside of the I/O panel, connect the port B (DTE) connector at J25.
- 72** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable to location J28 on the I/O panel.
- 73** Connect the other end of the NT7D90 Ethernet cable to backplane at location 17F.
- 74** Connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 95, on page 505)
- 75** Loosely attach the I/O panel to the left I/O panel opening of the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 76** Set the ENB/DIS switch on the clock controller card in the Group 1, Shelf 1 module to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables, yet.
- 77** Connect the clock controller cables by performing the following steps in exact order:
- For a **QPC471** Clock controller card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card (see Figure 96, on page 507). Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
 - For a **QPC775** Clock controller card, connect the NT8D74 cable from the J12 connector on the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
 - Leave the ENB/DIS switch set to DIS on the clock controller card.

Figure 96
Clock controller card connections for network group x, shelf 1



- 78** If you removed the I/O panels previously, install a new universal right I/O panel (P0745713) so the side with the two indents fits into the module casting. Secure the I/O panel with the screws from the former panel.

Note: The word RIGHT on the I/O panel faces the outside of the module. The J10 slot matches the designation on the outside of the panel.

- 79 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

Transferring the database to IODU/C

In this procedure you will transfer the option 71 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

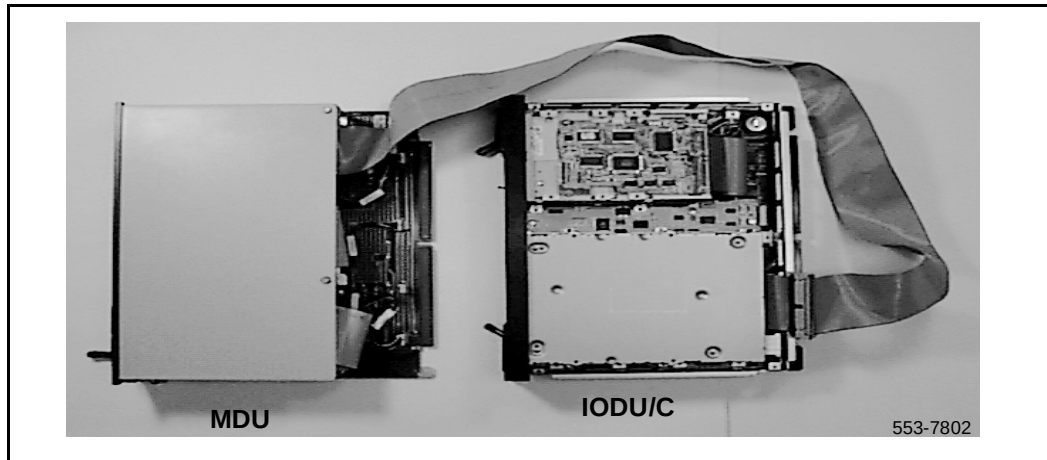
- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 97, on page 510). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 97
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive.
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation
<y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only
<f> to transfer the customer database from the MDU
<a> to continue the database transfer

- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <cr> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit. Remove any
- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
 - the CP Install Program diskette must be in the IODU/C floppy drive
 - the module must be powered on
 - a terminal must be connected to the J25 CPSI port on Core/Net 1
- 1 Install the CD-ROM into the CD drive:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
 - 2 When the NT logo appears, press <CR> to continue.
 - 3 Log into the system.
 - 4 Enter the date and time when prompted.

- 5 When the Main Menu appears, select the following options in sequence:

 <u> to Install menu

- 6 Remove the CP Install Program diskette and insert the Keycode diskette.
 Select the following when prompted:

 <a> to continue with keycode validation

 <y> to confirm that the keycode matches the CD-ROM
 release

- 7 When the Install Menu appears, select the following options in sequence:

 <a> to install software, CP-BOOTROM, and IOP-ROM

 <a> to verify that the CD-ROM is now in drive

 The Installation Status Summary screen appears to confirm that
 you are installing CD to disk, disk to ROM, CP-BOOTROM, and
 IOP-ROM. Select the following to continue:

 <y> to start installation

 <a> to continue with upgrade

 The software installation begins. The CD-ROM files are copied to
 the system hard disk. When you are prompted to replace the
 previous CP-software with ROM image files, select:

 <a> to continue with ROM upgrade

 When all files were copied from the CD-ROM to the hard disk,
 press:

 <CR> to continue

 You are prompted to replace old CP-BOOTROM with the ROM
 image files. Select:

 <a> to continue with ROM upgrade (this installs CP flash ROM
 on the Call Processor card)

 The system confirms that the release and issue of IOP-ROM is the
 same release and issue of the ROM image file. Select the following
 options in sequence:

 <y> to start installation

 <a> to continue with ROM upgrade (IOP-ROM is installed)

 The Installation Status Summary screen appears to confirm that
 CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were
 installed successfully. Press:

 <CR> to continue

 When the Install Menu appears, select the following options in
 sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

8 When the sysload is complete, log into the system.

9 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program

STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

11 When "EDD000" appears on the terminal, enter:

EDD to begin the data dump

- 12
When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13
Set date and time:

LD 2

to load the overlay

STAD

DD MM YY HR MN SC

Configuring the system

In the option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the option 81C assigns a default configuration to the CNI network groups. The option 81C default CNI configuration is listed in Table 86.

Table 86
Option 81C CNI network group default configuration

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

If the option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.

Use the worksheet in Table 87 to assist you in configuring the CNI network groups.

Table 87
Option 81C CNI network group configuration worksheet

CNI card slot	Port	Network group <i>(enter your option 81C configuration in this column)</i>
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	
Note: CNI card slot 12, port 0 is the network group with the Core/Net module.		

- 1 To reconfigure the option 81C network groups, first disable all CNI cards in Core/Net 0 and Core/Net 1 using LD 135:

LD 135 to load the program
STAT CNI to get the status of all CNI cards
DIS CNI c s p c = core (0 or 1)
s = card slot (12-14)
p = port (0 or 1)
STAT CNI to confirm that CNI cards are disabled
******** to exit the program

- 2 When the CNI cards are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
CEQU	YES	
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p xg <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g <i>to "add" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p xg <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g <i>to "add the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
REQ	****	to exit the program

- 3 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 4 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
.	****	to exit the program

- 5 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print Option
TYPE CFN	to print the configuration
****	to exit the program

- 6 Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 7 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 8 Exit the program. Enter
******** to exit the program
- 9 Verify that all CNI cards in Core/Net 1 are seated and disabled.
- 10 Check the status of all configured CNI cards:
LD 135 to load the program
STAT CNI to get the status of all configured CNIs

Note: The status will indicate that the CNI cards are not responding. Verify that an entry exists for each CNI card in the system. There may be extra entries for CNI cards that were previously removed from the database; ignore these entries for now.

******** to exit the program
- 11 Set the ENB/DIS switch to ENB on the clock controller card in network Group 1, Shelf 1.

- 12** Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.

CAUTION

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 13** Perform the next 3 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from CPU 0 to Core/Net 1.
- In CPU 0, set the ENB/DIS switch to DIS on all SBE cards.
 - Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
 - Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.

- 14** Check for dial tone. If there is no dial tone (the system is inoperable) and you cannot afford downtime, switch the loops back to CPU 0 (which still has the CPU card cage):

- Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS. Set the ENB/DIS switch on each SBE card on CPU 0 to ENB.
- Initialize CPU 0 by pressing the MAN INT button.
- Troubleshoot the option 81C off-line.

If you can afford downtime, troubleshoot the option 81C on-line:

- Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
- Verify that all cables are properly and securely connected in the front and rear of the module.
- Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step 16.
- Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- Check for dial tone.

- 15** Verify the status of clock controller 1:

LD 60	to load the program
SSCK 1	verify that clock 1 is active (The status may show that clock controller 1 is “standby”. The status of clock controller 1 will change when clock controller 0 is removed later in the procedure.)
****	to exit the program

- Check for dial tone.

16 Following a successful dial tone test, perform the following basic sanity tests:

- Make sure intra-group and inter-group calls can be placed.
- Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of CPU 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

Upgrading CPU 0

Before you upgrade CPU 0 to the Option 81C Core/Net card cage, perform the following steps.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment for the upgrade and for troubleshooting, if needed.

1 Perform these steps to disable the clock controller card:

LD 60	to load the program
SSCK1	to get the status of clock 1. Verify it is active. (The status may show that clock controller 1 is “standby”. The status of clock controller 1 will change when clock controller 0 is removed later in the procedure.)
SSCK0	to get the status of clock 0
SWCK	if necessary, to switch to clock 1

2 Perform the following steps in exact order:

- Set the ENB/DIS switch on the clock controller card in CPU 0 to DIS.
- At the NT8D36 InterGroup module, disconnect the J11 cable that is routed from the clock controller card in CPU 0.
- Disconnect the cable at the faceplate of the clock controller card in CPU 0.
- If primary and secondary clock reference cables are equipped, label and disconnect them at this time.

- 3 Perform the appropriate step to turn off power to CPU 0:
 - For AC-powered systems, set the main circuit breaker for column 0 to OFF (down position) in the rear of the pedestal.

WARNING

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- For DC-powered systems, set the circuit breaker for CPU 0 module only (located at the rear of the pedestal) to OFF (down position). All other modules in the column can safely remain on.
- 4 Remove the trim panels on both sides of the module (refer to Figure 89 on page 492). Keep the screws for reuse.
 - 5 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
 - 6 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
 - 7 Remove the cards, including the power supply, from the front of the module. Keep the clock controller card and the power supply on hand. The power supply will be reused in the Core/Net card cage. The clock controller card will be installed in slot 13 of the NT8D35 Network module.

Note: QPC471 (H or later vintage) or QPC775 (E or later vintage) clock controller cards must be used with Option 81C.
 - 8 Label and disconnect cables from the I/O panels. Remove both I/O panels. Keep the screws for reuse. Remove the I/O safety panel that covers the rear of the backplane.
 - 9 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)

- 10 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.
- 11 Remove the logic ground (orange) wire from the backplane ground bolt (refer to Figure 90 on page 494). Be careful; do not drop the nut or lock washer into the pedestal.

WARNING

Do *not* disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 12 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.
- 13 Label and disconnect the system monitor ribbon cables from J1 and J2.
- 14 Remove the CPU card cage from the module.

For AC-powered systems, after the card cage is out of the module remove the MPDU and reinstall it on the Core/Net card cage. The screw-heads for the MPDU are in the wall of the power supply slot (refer to Figure 91 on page 495).

- 15 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the CPU card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 16 Install the backplane jumper on the Core/Net card cage. The jumper is located along the bottom of the front side of the backplane between slots 14 and 15 (refer to Table 88).

CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

Table 88
Backplane jumper settings for NT5D21 Core/Network module

Module	Jumper configuration
Core/Net 0	Jumper plug installed
Core/Net 1	Jumper plug not installed

- 17 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 18 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while you attach the power connectors at the rear of the module (refer to Figure 92 on page 497).
- 19 Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 20 Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

Note: For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.

- 21 Attach the logic ground (orange) wire. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 22 Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
- 23 Slide the card cage the remainder of the way into the module.
- 24 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 25 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 26 Position the I/O panel so that the two cutouts match with the castings on the module. Secure the I/O panel with the screws from the previous panel.
- 27 Set the finger end over the lower edge of the J10 opening. The finger rests against the outside of the I/O panel.
- 28 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label.
- 29 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 30 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 31 Snap the extraction tool into the clamp.
- 32 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 33 Install the module power supply (reused from the CPU card cage) in the slot labeled "CE Pwr Sup" in the Core/Net card cage. Faceplate enable the power supply.
- 34 Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.

- 35 Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper.
- 36 Shut down power to the Core/Net 0 module again. For AC-powered systems, set the main breaker for the column to OFF (down position). For DC-powered systems, set the switch on the pedestal breaker for the module to OFF (down position).
- 37 Locate the round 1/2" diameter IODU/C security device.
- 38 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 39 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 40 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 41 Place an NT6D65 CNI card in slot 12, **but leave the card unseated.**
- 42 Place other CNI cards in slots 13 and 14 as required for the network group configuration, **but leave the cards unseated.**

- 43** Faceplate disable the 3PE card and install the card in slot 11, **but leave the card unseated.**
- 44** Configure the switch and jumper settings on the QPC441F 3PE card in **Core/Net 0** (see Table 89). Make sure Jumper RN27 is set to “A”.

Table 89
QPC441F 3PE card switch settings for Core/Net 0

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
Note: RN27 jumper at E35: set to “A” for all modules								

- 45** Check the vintage of the QPC441 3PE cards in **network shelf 0 of groups 0 and 1**; they must be minimum vintage F. See Table 90 for switch and jumper settings.

WARNING

I/O devices will be disrupted when removing circuit cards.

- 46** Set switches on clock controller 0 as shown in Table 91.

Table 90
Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on
Note: Jumper RN27 at location E35: set to A								

Table 91
Clock controller card 0 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 47** Place the clock controller card in slot 13, Group 0, Network Shelf 0 module but leave the card unseated.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 48** On the QPC441 3PE cards in Network module 0 of all groups, disconnect and remove the cables that were connected to the QPC215 SBE cards in CPU 0.
- 49** Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network modules as shown in Table 92 (see Figure 94 on page 504). The cables connect to backplane connectors in the Core/Net module and to faceplate connectors on the 3PE cards.

Note: This step does not apply to the QPC441 3PE card in the Core/Net module.

Table 92

CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 71 to 81C

Cable for Group	Backplane connector on Core/Net 0	3PE card connector in each Shelf 0 Network module	Use cable length vintage
0	connects from 12D	to J3	BA
0	12F	J4	BA
1	13A	J3	BA
1	13C	J4	BA
2	13D	J3	BB
2	13F	J4	BB
3	14A	J3	BC
3	14C	J4	BC
4	14D	J3	BD
4	14F	J4	BD

Note: Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through F from top to bottom.

Note: Cables are not required for a group being added in a Core/Net module.

Note: The upgrade package provides cables for only two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.

- 50 At the rear of the module, connect the single connector end of the J21/J25 NT7D89 RS-232 cable to backplane connector position 15D (see Figure 95 on page 505).
- 51 Connect port A (DCE) to J21 of the left I/O panel.
- 52 Connect port B (DTE) to J25 of the left I/O panel.
- 53 At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 95 on page 505).

54 On the faceplates of the 3PE cards in the Core/Net modules:

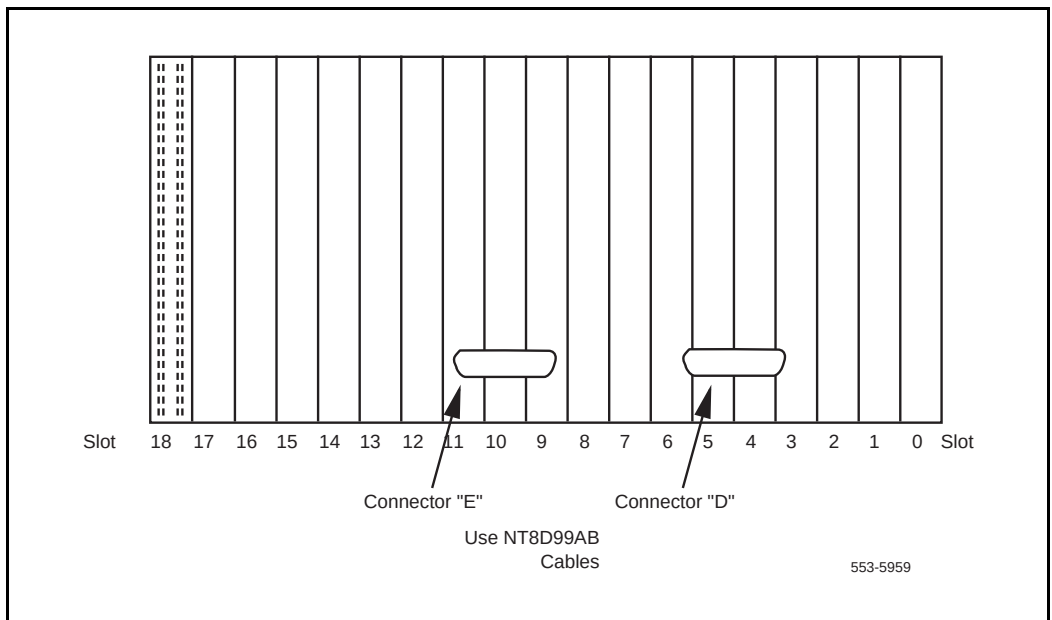
- connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1
- connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1

Note: Leave the 3PE card unseated.

- 55** In the rear of the Core/Net modules, install an NT8D99BD cable from the backplane connector labeled “D” in Core/Net 0 to the backplane connector labeled “D” in Core/Net 1 (see Figure 98).
- 56** Install the second NT8D99BD cable from the backplane connector labeled “E” in Core/Net 0 to the backplane connector labeled “E” in Core/Net 1 (see Figure 98).

Figure 98

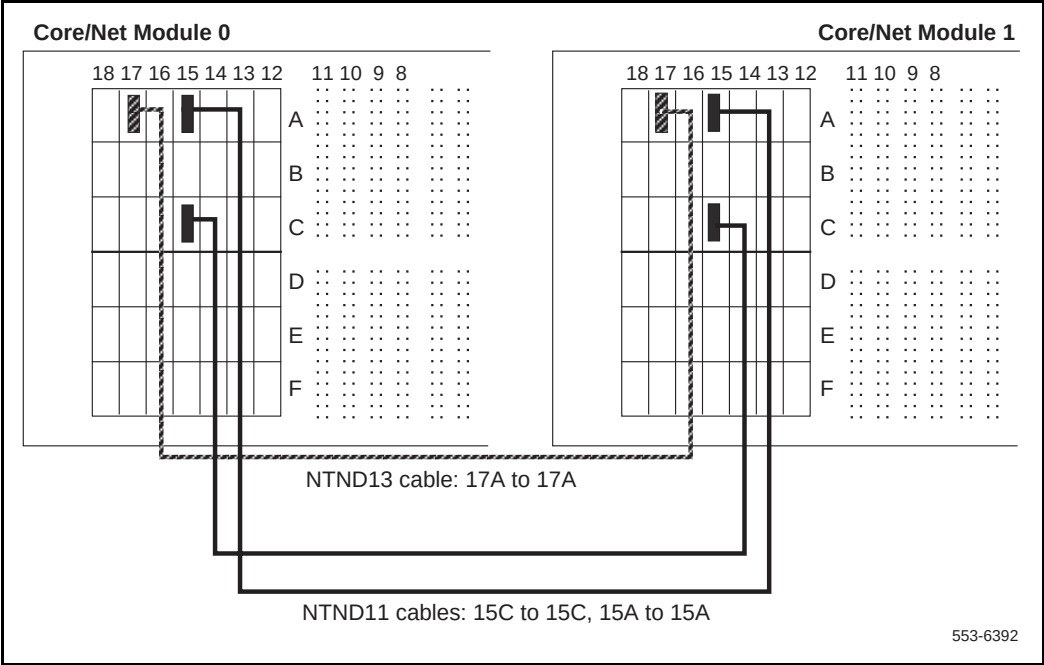
NT5D21 Core/Network module; location of D and E connectors (rear view)



- 57** Temporarily remove the left I/O panels.

- 58 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to 17A in Core/Net 1 (see Figure 99).
- 59 Connect one NTND11 cable from backplane connector position 15A in Core/Net 0 to 15A in Core/Net 1 (see Figure 99).
- 60 Connect another NTND11 cable from backplane connector position 15C in Core/Net 0 to 15C in Core/Net 1 (see Figure 99).

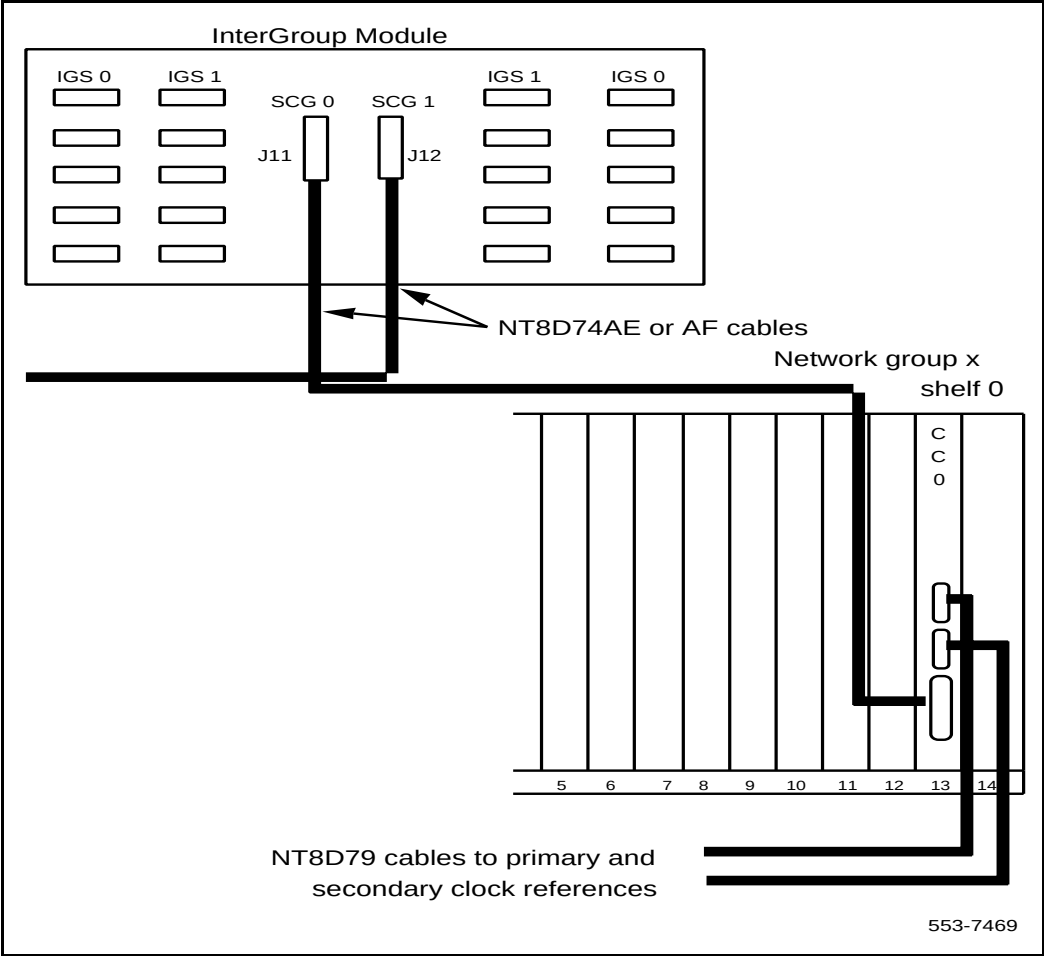
Figure 99
NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables



- 61 Loosely attach the I/O panel to the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 62 Set the ENB/DIS switch on the clock controller card to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables.

- 63** Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 64** Perform the following steps in exact order to connect the clock controller cables (refer to Figure 100):
- For a QPC471 card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card. Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
 - For QPC775 Clock controller cards, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
 - Set the ENB/DIS switch to ENB on the Clock controller 0.

Figure 100
Controller card connections for network group x, shelf 0



- 65** Seat the IODU/C card, and then, set the ENB/DIS switch to ENB.

As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 input/output guide* for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 955.

- 66** Connect a terminal to the J25 port on the I/O panel in Core/Net 0. Use the following settings on the terminal:

9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 67** On the CP card, **set the NORM/MAINT switch to MAINT** and then seat the card into the backplane and secure the lock latches. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:

- If the CP card fails the self-test, go to “Troubleshooting” on page 955.
- Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.
- Watch the LCD for the message “Loading Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If error messages indicate file corruption (such as “Error in file disk OS” type messages), refer to “Troubleshooting” on page 955.
- Watch the LCD for system reload (SYS) and initialization (INI) messages. Following this, Core/Net 0 is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 955.

Copying software and database to Core/Net 0

- 1** Insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 2** Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)

- 3 When the NT logo appears, press <CR> to continue.
- 4 When the Main Menu appears, select the following options in sequence:
 <u> to Install menu
- 5 Remove the CP Install Program diskette and insert the Keycode diskette.
 Select the following when prompted:
 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 6 When the Install Menu appears, select the following options in sequence
 to copy the software from Core/Net 1 to Core/Net 0, install CP-software,
 ROMs, and transfer the database to the redundant disk:
 <o> to copy system software from the other core
 <a> to copy /p partition from Core1 to Core 0
 <a> to continue with upgrade
 When the software has copied successfully, you must install
 CP-software from the hard disk to Flash EEPROM, and install
 CP-BOOT ROM.
 <CR> press <CR> when you are ready to continue
 <y> to start installation
 <a> to continue with ROM upgrade
 <y> to start installation
 <a> to continue with ROM upgrade.
 When the installation is complete, the Installation Status Summary
 screen appears.
 <CR> to return to the Install Menu
 When the Install Menu appears, install IOP-ROM:
 <f> to install IOP-ROM only
 When the Installation Status Summary screen appears:
 <y> to start installation
 <y> to continue installing IOP-ROM
 <a> to continue with ROM upgrade
 When the installation is complete, the Installation Status Summary
 screen appears.
 <CR> to return to the Install Menu
 When the Install Menu appears, install the database:

<d> to install database only
<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation
<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit
<y> to confirm quit
<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

- 7 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

Completing the upgrade

- 1 Seat all CNI cards with ENB/DIS switches set to DIS.
- 2 Faceplate disable the 3PE card in Core/Net 0 and seat the card.
- 3 Set the ENB/DIS switch on all CNI cards and the 3PE card in Core/Net 0 to ENB.

- 4 Check the status of all configured CNI cards:

LD 135 to load the program

STAT CNI to get the status of all configured CNIs

Note: If you get error messages stating that CNIs are disabled, verify that an entry exists for each CNI card in the system.

******** to exit the program

- 5 Connect a terminal to the CPSI port J25 on Core/Net 1 or an SDI port.
- 6 Verify that the CP card in Core/Net 1 is set to MAINT.
- 7 Verify that the CP card in Core/Net 0 is set to MAINT and **unseat the card.**
- 8 In Core/Net 0, verify that the NORM/MAINT switch on the CP card is set to MAINT and then seat the card and secure the lock latches; the card will perform a self-test. When SYS700 messages appear on the LCD display, **set the NORM/MAINT switch to NORM.**

A “HWI534” message from the CPSI (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 15 minutes, an HWI533 message from the CPSI or SDI port will display indicating the Core/Net 1 memory is shadowed to the Core/Net 0 memory.

- 9 **In Core/Net 1, set the NORM/MAINT switch to NORM** on the CP card.

10 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST IPB	to test the backplane protocol on the inactive side
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

11 Switch Cores and test the other side:

SCPU	to switch to Core/Net 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

12 Get the status of the CP cards and memories and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs
****	to exit LD 135

13 Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	get the status of IODU/Cs, and redundancy
SYNC	to synchronize the hard disks
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

14 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs, if necessary:

STAT	to get the status of IODU/Cs, and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit the program

15 Check the status of the clocks, swap clocks, and verify status:

LD 60	to load the program
SSCK 0	to get the status of clock 0

SSCK 1	to get the status of clock 1
SWCK	to swap active clocks
SSCK 0	to verify that clock 0 is enabled
SSCK 1	to verify that clock 1 is standby
****	to exit the program

- 16** In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

Note: Make sure that the J1 to J2 ribbon cable on the new Core/Net modules are connected. Loose cabling may inadvertently cause the system monitor to power down.

- 17** Reinsert the system monitor and reconnect the associated cabling.

- 18** Insert a B1 backup database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The system is operating in dual CPU mode with redundant disk drives.

- 19** Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137 to load the program

TEST SCSI to check the IOP to IOP connection and access to the IODU/Cs

-
TEST CMDU	to test the hard and floppy disk drives (a floppy diskette must be installed)
****	to exit the program
- 20 Clear displays, major alarms, and minor alarms:
- | | |
|-----------------|-----------------------------|
| LD 135 | to load the program |
| CDSP | to clear the display |
| CMAJ | to clear all major alarms |
| CMIN ALL | to clear all minor alarms |
| SCPU | to switch to the other Core |
| CDSP | to clear the display |
| **** | to exit the program |
- 21 Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:
- | | |
|------------------|--|
| LD 60 | to load the program |
| ENL CC x | to enable clock controller 1 or 0 |
| TRCK aaa | if necessary, to set tracking |
| ENLL loop | to enable the specified network loop and associated PRI/DTI card |
| **** | to exit the program |
- 22 Reinstall the system monitor in column 1. Reconnect the cables.
- 23 On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.
- 24 Software enable the associated SDI port:
- | | |
|-----------------------|---|
| LD 37 | to load the program |
| ENL terminal x | to enable the device associated with the port |
| STAT XSM | to check the status of the system monitor |
| **** | to exit the program |
- 25 Remove any remaining NT8D80 cables that connected the 3PE cards to SBE cards. If cables were routed externally or along the front cable trays, reroute them to their permanent positions.

- 26 For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 27 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The option 71 to option 81C upgrade is complete.

Option 81 card cage upgrade to Option 81C

CAUTION

Do not begin a system upgrade unless you are thoroughly familiar with the process for performing the upgrade. You must read through the procedure you will use before you begin the upgrade.

This procedure describes how to upgrade an Option 81 system to an Option 81C.

Upgrading an Option 81 to an Option 81C (see Figure 101) consists of:

- removing the card cage in each NT6D60 Core module
- upgrading the CP card or CP memory (if required)
- installing card cages to create NT5D21 Core/Net modules

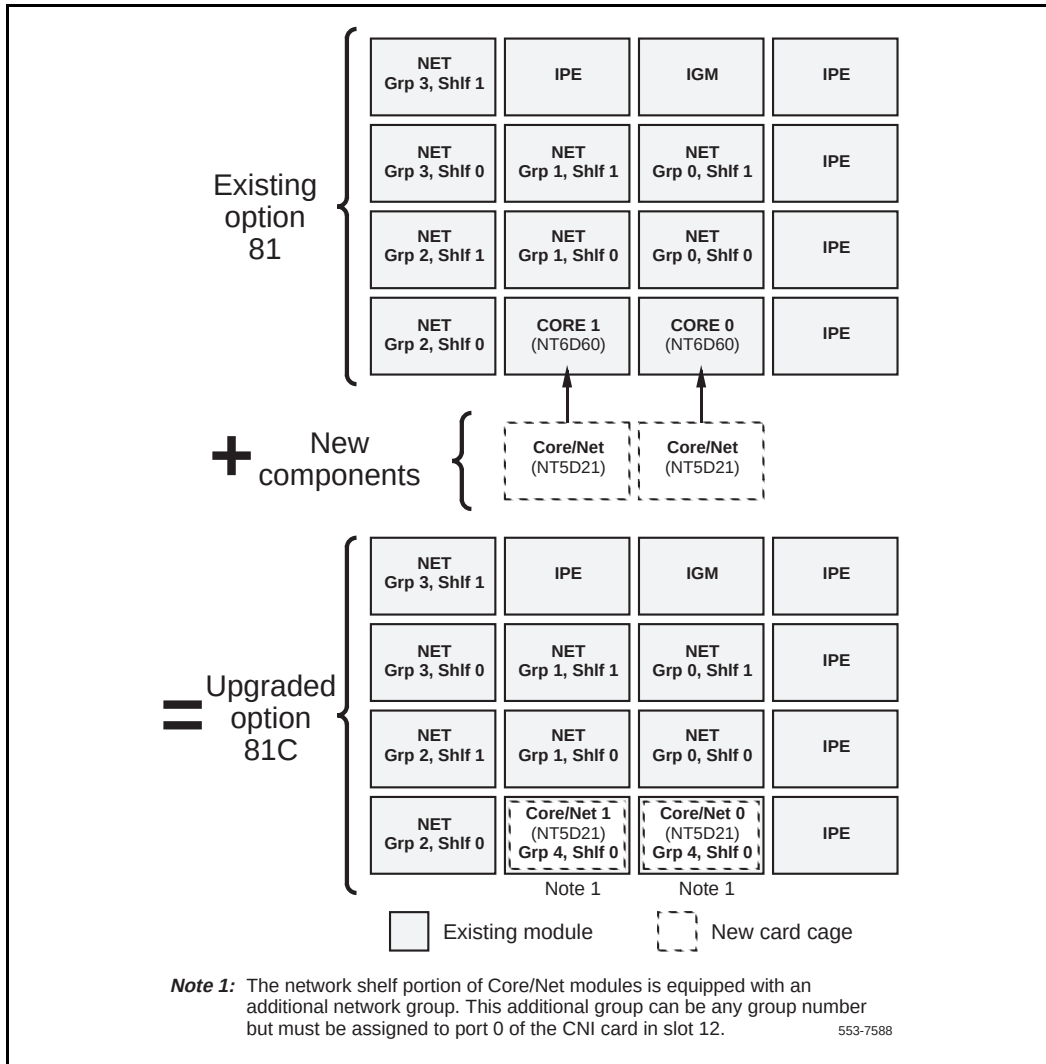
The hardware required for this upgrade is provided in the Core/Net card Cage Upgrade Package. All existing equipment that will be retained must be compatible with X11 release 24. Order replacements for all equipment that does not comply.

During the upgrade procedures, the following service interruptions may occur:

- For AC-powered systems, power to the entire column being upgraded must be turned off for safety reasons. This causes loss of service to any network, I/O, or service cards located in that column.
- Transient calls, CDR information, PRI service, and traffic report information may be lost.
- If the peripheral software download feature is activated during system initialization, calls carried by superloop cards will be dropped.

Figure 101 shows the upgrade from Option 81 to Option 81C.

Figure 101
Upgrade from Option 81 to Option 81C



Equipment required

The following upgrade procedures assume that your existing system is a standard option 81 configuration and that you are upgrading to an option 81C. If you are deviating from the standard configuration, your system may require additional equipment.

Table 93 lists the items required to upgrade an AC- or DC-powered Option 81 to an Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start. Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment.

Letters at the end of a part number may represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

Verify that any existing QPC441 3-Port Extender cards in the system are vintage F. If any existing 3PE card in the system is not vintage F, replace it with a new card. All 3PE cards in the system must be of the same vintage. Refer to *Meridian 1 hardware replacement* (553-3001-520) for 3-PE card replacement procedures.

Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Meridian 1 hardware replacement* (553-3001-520) for Clock Controller card replacement procedures.

Note: QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

See the tool list in “Tools” on page 8. Verify all the equipment is on hand.

Table 93
Hardware requirements for an AC- or DC-powered Option 81C

Qty	Part number	Description
2	NT1R90BA	Field Upgrade Kit
2	NT5D61AA	IODU/C Card
2	NT5D2103	Core/Network Card Cage AC/DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT8D17FA	Conference/TDS Card
4	NT8D76BG	Intergroup Switch to Intergroup Module Cable (10 ft.)
2	NT8D99AD	CPU to Network Cable (6 ft.)
2	NTND14BA	CNI to 3PE Cable (6 ft.)
2	NTND14BC	CNI to 3PE Cable (10 ft.)
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	P0738866	Label Kit for Inter-Cabinet Cables
4	QPC412C	Intergroup Switch
2	QPC441F	Three Port Extender
2	QPC43R	Peripheral Signaling
Note: QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extended cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: Two NT9D19 (68040), NT5D10 (68060) or NT5D03 (68060E) CP cards are required. For X11 release 24 option 81C systems, the minimum memory requirement for a CP card is 80 MB.		

Upgrade preparation

CAUTION

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Cable routing access in the system becomes extremely limited when new network group cables are added during the card cage upgrade. Before you begin the upgrade, consider the following options and plan well ahead for network cabling:

- This procedure provides a back-out contingency as a safety factor; by disconnecting the network cables to Core 1, you can leave them in place until the upgrade is complete. To do this, however, you may have to temporarily route the new network cables externally or along the front cable trays. This temporary routing requires that you disconnect and reroute the cables at the end of the upgrade.
- Alternative methods can be used, but since this provides no back-out contingency, the advantages and disadvantages should be carefully evaluated beforehand.

Labeling cables

Before beginning the upgrade, it is important to label all cables in the upgrade kit so you can have the correct cable available when you need it.

To label the cables:

- 1 Remove the NTND14 cables from the upgrade package and sort them into separate piles according to part number and vintage (e.g. NTND14BA cables in one pile, NTND14BC cables in another, etc.).

- 2 Remove each label from the sheet of adhesive cable labels provided in the upgrade kit and attach a pair of identical labels to the appropriate cable (one label at each end of the cable). Refer to Tables 94 and 95 for correct label assignments when labeling NTND14 cables.

Note: You may have unneeded labels left over when you finish labeling the cables.

Table 94

NTND14 Core/Net 1-to-CNI cable label assignments

Cable number	Label both ends
NTND14BC	CPU1-CNI-12D to 3PE-GRP0/1-J3
NTND14BC	CPU1-CNI-12F to 3PE-GRP0/1-J4
NTND14BD	CPU1-CNI-13A to 3PE-GRP1/1-J3
NTND14BD	CPU1-CNI-13C to 3PE-GRP1/1-J4
NTND14BA	CPU1-CNI-13F to 3PE-GRP2/1-J3
NTND14BA	CPU1-CNI-13D to 3PE-GRP2/1-J4
NTND14BB	CPU1-CNI-14A to 3PE-GRP3/1-J3
NTND14BB	CPU1-CNI-14C to 3PE-GRP3/1-J4
NTND14BB	CPU1-CNI-14D to 3PE-GRP4/1-J3
NTND14BB	CPU1-CNI-14F to 3PE-GRP4/1-J4
Note: The upgrade package provides cables for two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.	

Table 95
NTND14 Core/Net 0-to-CNI cable label assignments

Cable number	Label both ends
NTND14BA	CPU0-CNI-12D to 3PE-GRP0/0-J3
NTND14BA	CPU0-CNI-12F to 3PE-GRP0/0-J4
NTND14BA	CPU0-CNI-13A to 3PE-GRP1/0-J3
NTND14BA	CPU0-CNI-13C to 3PE-GRP1/0-J4
NTND14BB	CPU0-CNI-13D to 3PE-GRP2/0-J3
NTND14BB	CPU0-CNI-13F to 3PE-GRP2/0-J4
NTND14BC	CPU0-CNI-14A to 3PE-GRP3/0-J3
NTND14BC	CPU0-CNI-14C to 3PE-GRP3/0-J4
NTND14BD	CPU0-CNI-14D to 3PE-GRP4/0-J3
NTND14BD	CPU0-CNI-14F to 3PE-GRP4/0-J4
Note: The upgrade package provides cables for two network groups. Additional NTND14 cables of appropriate length must be ordered separately for any additional groups.	

Relocating the clock controller cards

Note: The option 81C requires QPC471 clock controller cards that are vintage H or later, or QPC4775 clock controller cards that are vintage E or later. Order replacement cards if existing cards do not meet this vintage requirement.

The option 81C upgrade requires you to relocate the QPC471H Clock controller cards from the option 81 NT6D60 Core module to NT8D35 Network modules in the option 81C. The QPC471H Clock controller card cannot be placed in the option 81C NT5D21 Core/Net module.

The clock controller cards may be relocated in any network shelf or network module, provided that one clock is located in shelf 0 and one clock is located in shelf 1.

Replacing the clock controller cards consists of:

- disconnecting all cables to the clock controller cards
- removing clock controller cards 0 and 1 from the option 81 NT6D60 Core module
- verifying the clock controller switch and jumper settings
- installing one clock controller card in slot 13, Network shelf 0
- installing the second clock controller card in slot 13, Network shelf 1
- reconnecting the clock controller card cables

Relocating the clock controller cards to Network modules may affect clock reference cabling and Intergroup Module (IGM) cabling. If existing cabling cannot support the relocated clocks, new clock controller cables (NT8D74 Clock controller to IGM and NT8D79 PRI/DTI to Clock controller) must be ordered separately.

Upgrading 24 MB CP cards to 48 MB

For memory requirements and upgrade procedures, refer to *Software conversion procedures* (553-2001-320).

CAUTION

Increasing the on-board NT6D66CP card memory from 24 MB to 48 MB will disrupt some telephone service. Plan this for a time when the impact on customers will be minimal.

Performing a data dump

Before you proceed, backup the customer database by performing a data dump:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Transferring release 21 database to 2MB diskettes

To upgrade the system to X11 release 24, you must first transfer the database to 2MB diskettes to be compatible with the IODU/C floppy drive.

- 1 Split the Cores and transfer call processing to Core 0.
- 2 Install the Database Transfer Utility diskette into the floppy drive on the CMDU in Core 1.
- 3 Press the MAN RST button on the CP card in Core 1 to reboot the system and start the Database Transfer Utility Tool.

CAUTION

When using the Database Transfer Utility, only select options <t> *Tools Menu* and <s> *To archive existing database*. Selecting any other options can result in operating system corruption.

- 4 From the installation menu select:

<t>	to go to the Tools menu
<s>	to archive existing database
<cr> <a>	to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
<cr> <a>	diskette is now in floppy drive in side 1
- The message "Database backup complete!" is displayed and the Tool menu reappears after the backup is successfully completed.
- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

Splitting the Cores

Before beginning the upgrade, split the Cores and transfer call processing to Core 0.

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core.
- 2 Get the status of the CP (Core Processor) and the memory. Verify that all common equipment is enabled:

LD 135	to load the program
STAT CPU	to get the status of both Cores
STAT MEM	to get the memory status
- 3 Test and switch CPUs:

TEST CPU	to test the inactive Core
SCPU	to switch the Cores
- 4 Get the status of the other CP and the memory. Verify that all common equipment is enabled:

STAT CPU	to get the status of both Cores. Verify that one CP is enabled and the other CP is idle
STAT MEM	to get the memory status
- 5 If Core 1 is active, switch Cores:

STAT CPU	to get the status of the Cores
SCPU	to switch to Core 0 (if necessary)
****	to exit the program
- 6 In Core 0, set the NORM/MAINT faceplate switch on the CP card to MAINT.
- 7 In Core 1, set the ENB/DIS switch on all NT6D65 CNI cards to DIS.
- 8 In Core 1, set the NORM/MAINT faceplate switch on the CP card to MAINT.
- 9 Press the MAN RST button on the CP card in Core 1.

The system is now operating in split mode.

Upgrading Core 1

- 1 Verify that Core 0 is the active Core, and switch Cores if it is not:

LD 135	to load the program
STAT CPU	to get the status of both Cores. Verify that Core 0 is enabled, and Core 1 is disabled.
SCPU	to switch Cores (if necessary)
****	to exit the program

CAUTION

Exercise caution when performing the next two steps to avoid inadvertently tripping circuit breakers on the rear of the power distribution units.

- 2 Software disable clock controller 1:

LD 60	to load the program
SSCK 0	to get the status of clock 0
SSCK 1	to get the status of clock 1
SWCK	if necessary, to switch to clock controller 0
DIS CC 1	to disable clock controller 1
****	to exit the program

- 3 Set the ENB/DIS switch on the clock controller card in Core 1 to DIS.
- 4 Label and disconnect the cable from connector J12 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from the faceplate connector on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.
- 5 Disable the system monitor:

LD 37	to load the program
DIS TTY x	to disable the system monitor and TTY port
****	to exit the program
- 6 On the master system monitor (the one associated with Core 0), disconnect the cable from J3, then the cable from J6.

- 7 Remove the screws and pull the system monitor out of its slot. Do not disconnect the cable connected to J4, and do not turn off the blower unit in the front of the pedestal.
- 8 On the slave system monitor (the one associated with Core 1), disconnect the cables from connectors J5 and J6.
- 9 Remove the screws and pull the system monitor out of its slot. Do not turn off the blower unit in the front of the pedestal.

CAUTION

If the system monitors are not removed, the system may shut down later in the upgrade.

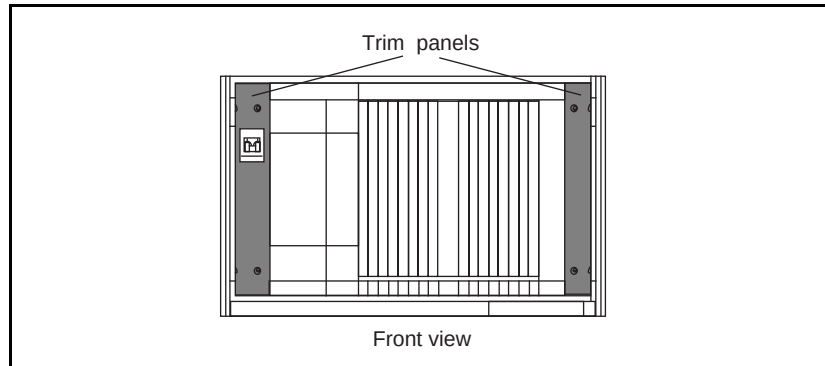
- 10 Follow the appropriate step below to turn off power to Core 1:

WARNING

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- For AC-powered systems, set the main circuit breaker in the column that contains Core 1 (located at the rear of the pedestal) to OFF (down position).
 - For DC-powered systems, set the circuit breaker (located at the rear of the pedestal) only for the module that contains Core 1 to OFF (down position). Power to all other modules in the column can safely remain on.
- 11 Remove the trim panels on both sides of the module (see Figure 102). Keep the screws for reuse.

Figure 102
Location of the trim panels



- 12 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
- 13 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
- 14 Remove the power supply and all cards from Core 1.
- 15 Remove the I/O safety panel that covers the rear of the backplane.
- 16 Label and disconnect all cables from the backplane of Core 1.

CAUTION

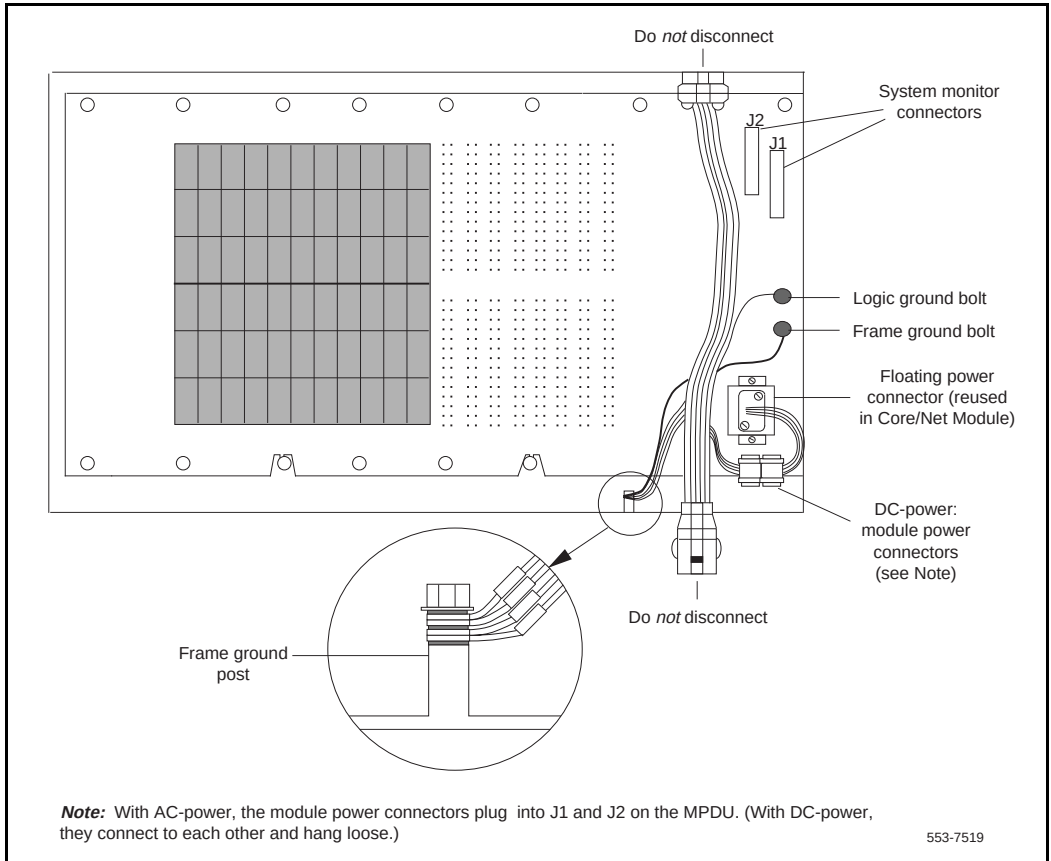
Use extreme caution when removing module screws; do not drop them into the pedestal. Damage, equipment failure, or injury could result.

- 17 Remove the two mounting screws at the bottom rear of the card cage that secure the card cage to the module casting. Keep the screws for reuse. (A 1/4" nut driver is needed for this operation.)
- 18 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.

- 19 Remove the logic return (orange) wire from the backplane bolt. Be careful; do not drop the nut or lock washer into the pedestal (see Figure 103).

Figure 103

Power connectors on the rear of the NT6D60 Core module backplane



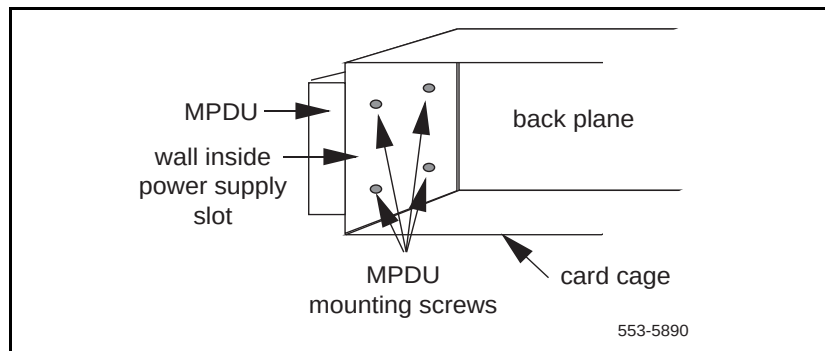
- 20 Remove the frame ground (green) wire from the frame ground bolt on the module.

WARNING

Do not disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 21 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) in an AC-powered system, or connected to each other in a DC-powered system.
- 22 Label and disconnect the system monitor ribbon cables to J1 and J2.
- 23 Remove the Core card cage from the module.
- 24 For AC-powered systems only, after the card cage is out of the module, remove the MPDU and reinstall it on the Core/Net card cage. The screws that secure the MPDU are accessible from the power supply slot (see Figure 104).

Figure 104
Location of the screws for the MPDU



- 25 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the Core card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Note: Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

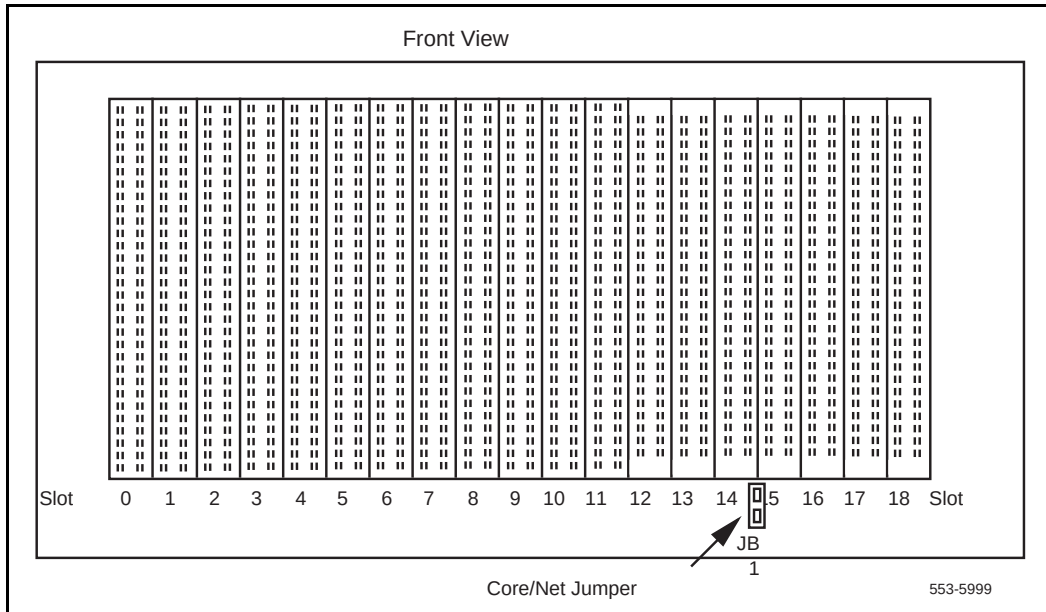
- 26 Remove the backplane jumper (if installed) from the backplane jumper pins at JB1 on the Core/Net 1 card cage. The jumper is located on the backplane along the bottom of the front side between slots 14 and 15 (see Figure 105). To store the jumper for future use, place the jumper onto only one of the pins; do not install it on both pins.
- Core/Net 0: Jumper plug installed
 - Core/Net 1: Jumper plug not installed

CAUTION

If the Core/Net module jumpers are not set correctly, the system will not operate correctly.

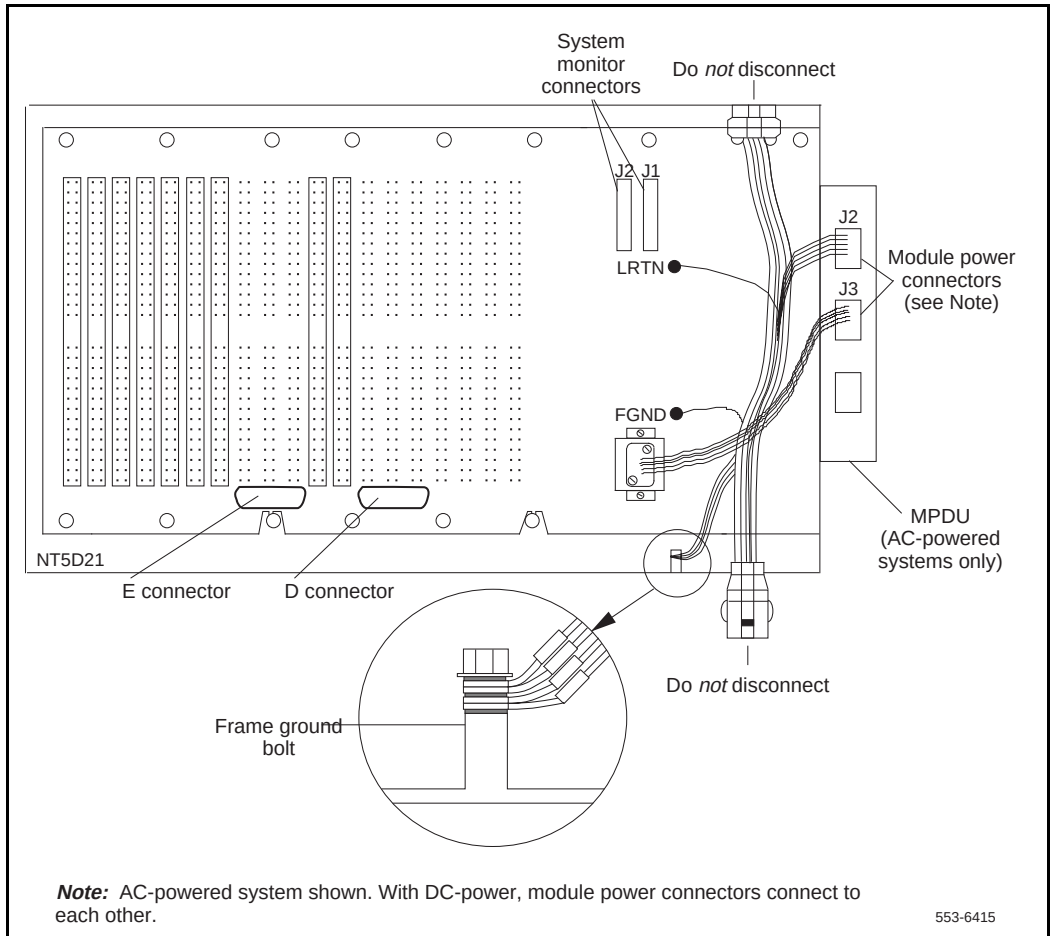
- 27 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 28 In AC-powered systems only, plug the module power cable (the short harness attached to the module power connector) into connector J3 on the MPDU (attached to the side of the card cage).

Figure 105
Location of the backplane jumper



29 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while making the following connections at the rear of the module (see Figure 106):

- Connect the remaining module power connectors to J2 on the MPDU, in AC-powered systems, or to each other, in DC-powered systems.
- Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

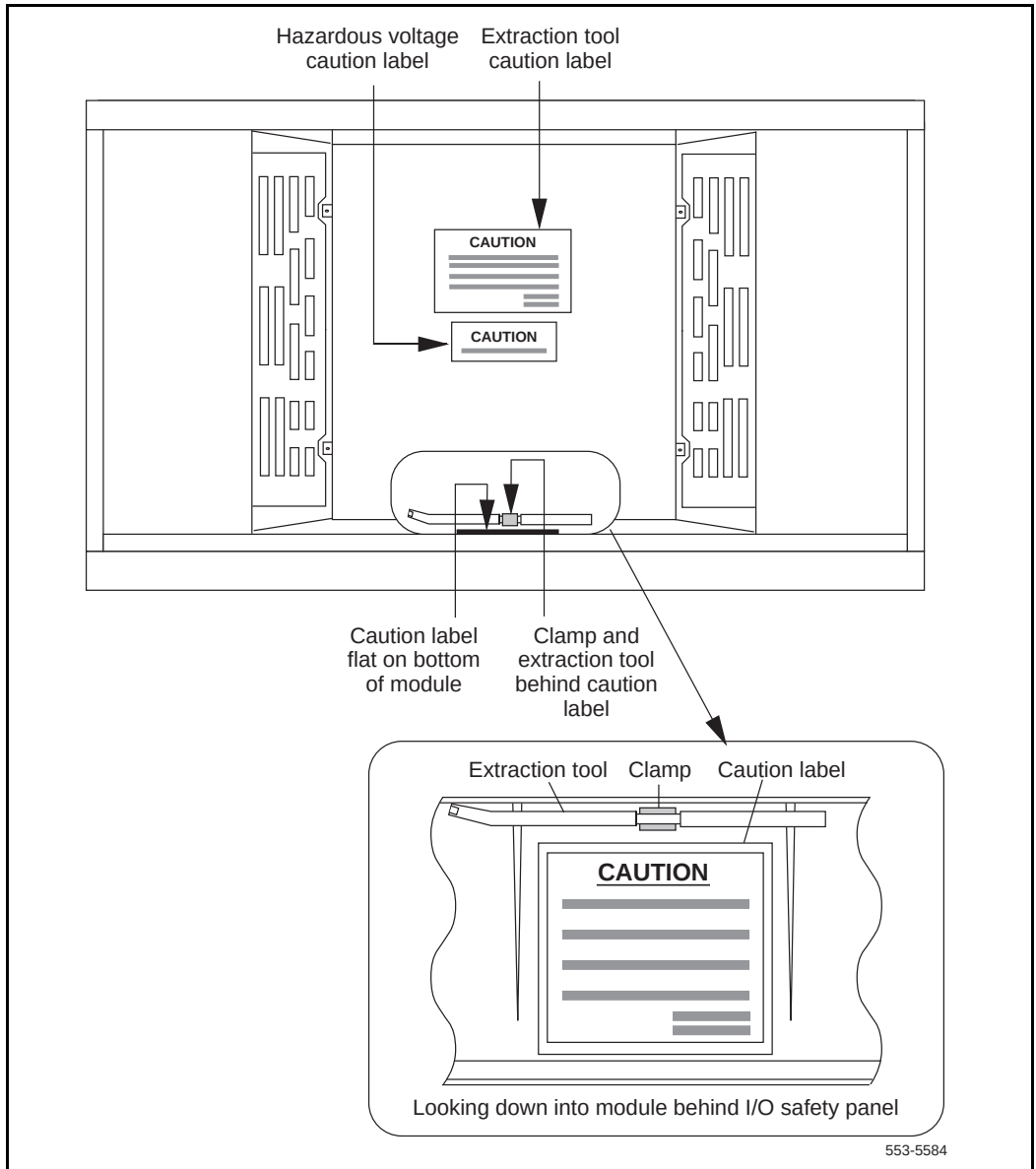
Figure 106**Power connections on the rear of the NT5D21 Core/Net module backplane**

Note: For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth, wire terminals.

- Attach the orange logic return wire. Remove one nut and the lock washer from the LRTN bolt at the rear of the card cage. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)

- 30 Slide the card cage all the way into the module.
- 31 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 32 Secure the card cage to the module with the three short screws in the front and the two long screws in the rear.
- 33 On the outside of the I/O safety panel, attach one extraction tool caution label above the "CAUTION hazardous voltage" label (see Figure 107).
- 34 In the bottom of the module, attach the other extraction tool caution label directly behind the I/O safety panel.
- 35 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label.
- 36 Snap the extraction tool into the clamp.
- 37 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 38 Install the module power supply (reused from the Core card cage) in the slot labeled "CE Pwr Sup" in the Core/Net 1 module.
- 39 Turn on power to the module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal, then set the MPDU circuit breaker located at the left end of the module to ON (up position). For DC-powered systems, set the breaker to ON (up position) in the pedestal.

Figure 107
Positioning the extraction tool and caution labels



- 40 Enable all network cards located in the network modules located in the column containing Core/Net 1. You can do this in either of two ways:
 - Press the MAN INT button on the CP card in Core 0. Initializing the system in this manner will result in temporary interruption of call processing.
 - Enable each card located in the network modules located in the column containing Core/Net 1 using software overlays. Enabling the cards in this manner avoids interruption of call processing.
- 41 Check the LEDs on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be ON-OFF-OFF-OFF (from top to bottom) for Core/Net 1. The LED pattern matches the setting of the jumper JB1 on the backplane; if the pattern is incorrect, verify that the jumper is not installed over both pins.
- 42 Shut down power to Core/Net 1 module again. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 43 Locate the round 1/2" diameter IODU/C security device.
- 44 With the Nortel side facing upward, slide the security device between the black round security device holder on the top right corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the security device. Ensure the security device is securely in place.
- 45 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 46 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 47 Set the ENB/DIS switch on the NT6D65 CNI card to DIS. Place the card in slot 12, but leave the card unseated.
- 48 Remove the CNI cards from the old card cage. Place the CNI cards in slots 13 and 14 (starting with slot 13) of Core/Net 1 as required for the network group configuration, but leave the cards unseated.

- 49** Remove the QPC441F 3PE card from the old card cage and set the front panel ENB/DIS switch to DIS. Verify the switch and jumper settings on the 3PE card for Core/Net 1 (see Table 96). Make sure Jumper RN27 is set to “A”.

Table 96
QPC441F 3PE card switch settings for Core/Net 1

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
Note: RN27 jumper at E35: set to “A” for all modules								

- 50** Place the 3PE card in slot 11 of Core/Net, 1 but leave the card unseated.

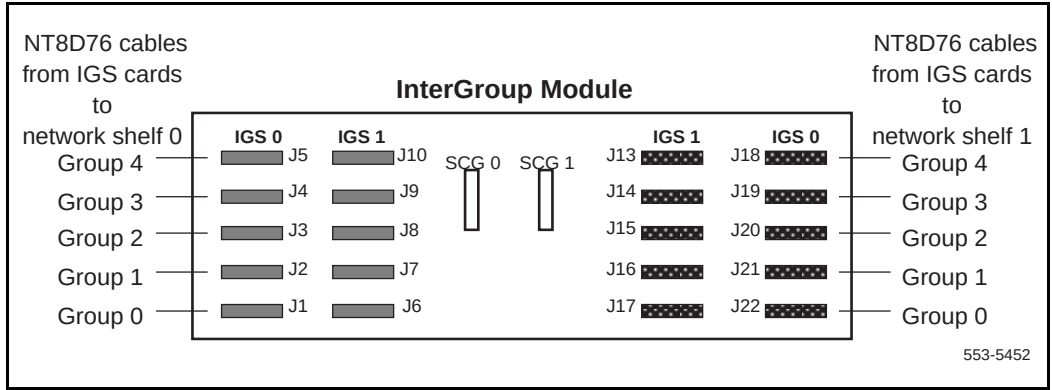
- 51 Verify the switch and jumper settings on the existing QPC441F 3PE cards in Network shelf 1 modules. Make sure Jumper RN27 is set to “A”.

Table 97
QPC441 3PE card switch settings for Network shelf 1 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off
Note: Jumper RN27 at location E35: set to A								

- 52 Place the QPC43PS card in slot 10 of Core/Net 1. Set the front panel ENB/DIS to DIS.
- 53 In Core/Net 1, install IGS 0 in slot 8 and IGS 1 in slot 9. Set the front panel ENB/DIS switch to DIS.
- 54 Attach and route NT8D76 cables from the IGS cards in Core/Net 1 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 108, on page 569). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 1, IGS 0).

Figure 108
QPC412 IGS card cable assignments to the InterGroup module



- 55 Set the switches on Clock controller 1 according to Table 98.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 98
Switch settings for Option 81C clock controller card 1

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 56** Set the ENB/DIS switch on Clock controller 1 to DIS. Install Clock controller 1 in Network shelf 1, slot 13, but leave the card unseated.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 57** Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network Shelf 1 modules (see Table 99 and Figure 109). The cables connect to backplane connectors (secondary shroud connectors) in the Core/Net module and to faceplate connectors on the 3PE cards in the network shelves.

Note: Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 is accomplished through the backplane.

- 58** On the inside of the I/O panel, connect the port A (DTE) connector to the panel at location J21 (see Figure 110, on page 573).
- 59** On the inside of the I/O panel, connect the port B (DCE) connector at J25 (see Figure 110, on page 573).
- 60** At the rear of each Core/Net module, connect an NT7D90 Ethernet Cable to location J28 on the I/O panel (see Figure 110, on page 573).
- 61** Connect the other end of the NT7D90 Ethernet cable to backplane at location 17F (see Figure 110, on page 573).
- 62** Connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 110, on page 573).
- 63** Loosely attach the I/O panel to the left I/O panel opening of the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 64** Verify that the ENB/DIS switch on Clock controller 1 is set to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables, yet.

Table 99

CNI to 3PE NTND14 cable connections for Core/Net 1 when upgrading an Option 81 to 81C

Cable for Group		Backplane connector on Core/Net 1	3PE card connector in each Shelf 1 Network module	Use cable length vintage
0	connects from	12D	to J3	BC
0		12F	J4	BC
1		13A	J3	BD
1		13C	J4	BD
2		13D	J3	BA
2		13F	J4	BA
3		14A	J3	BB
3		14C	J4	BB
4		12A	(see Note 1)	(see Note 1)
4		12C	(see Note 1)	(see Note 1)

Note: Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through 'F' from top to bottom.

Note 1: Cables are not required for the network group in the Core/Net module. Communication between the CNI and 3PE cards is accomplished through the backplane.

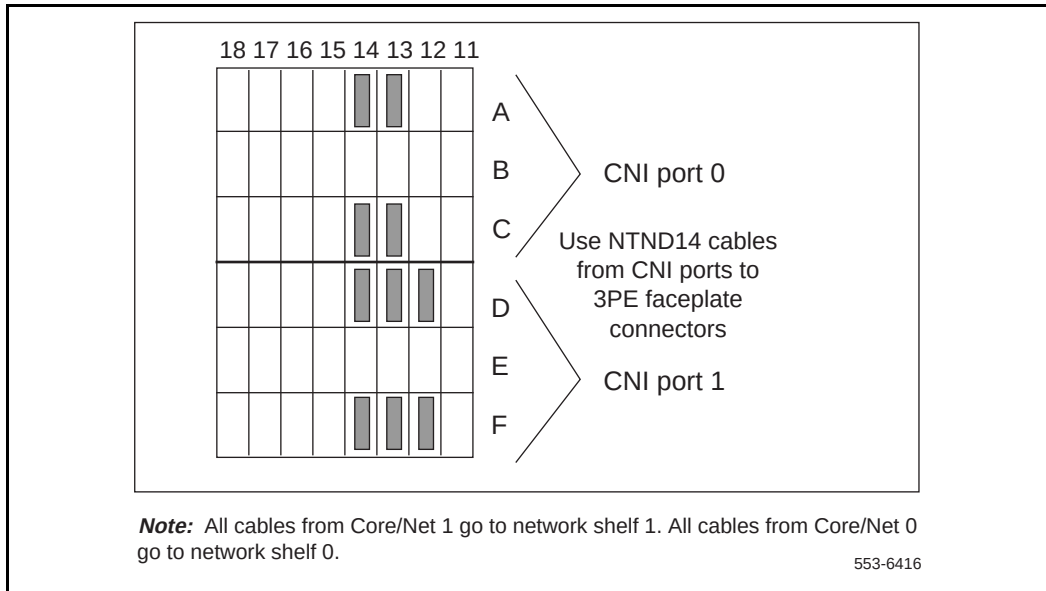
65 Follow the appropriate step below to turn on power to the module:

- For AC-powered systems, set the breaker on the MPDU to ON (up position).
- For DC-powered systems, set the switch on the pedestal in the module to ON (up position).

66 Route an NT8D74 cable from connector J3 on Clock controller 1 to connector J12 on the Junctor module.

Figure 109

NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C



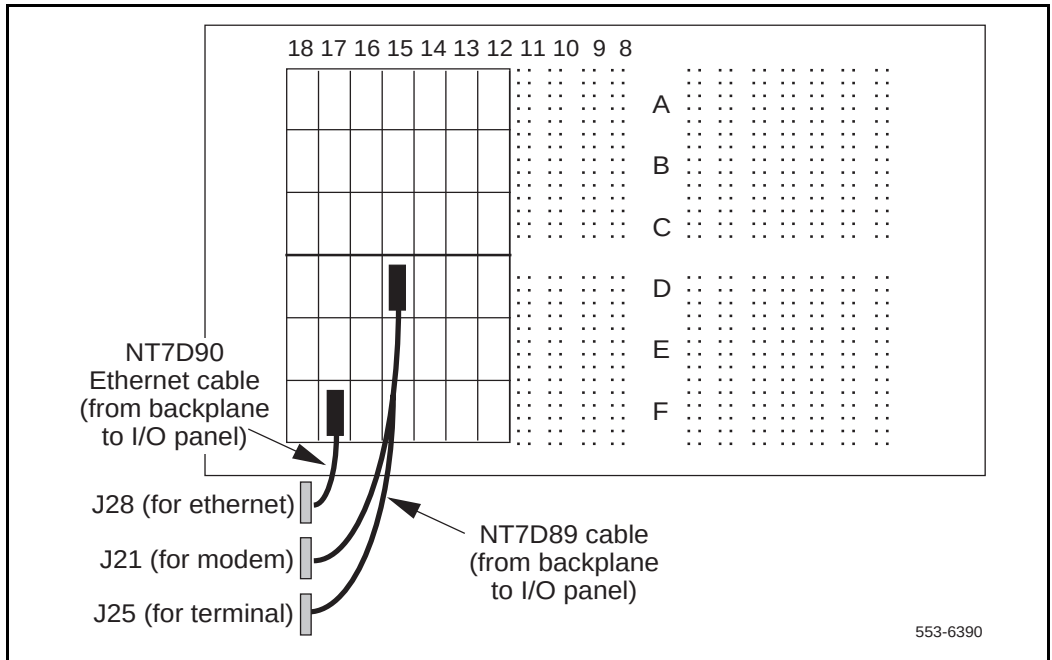
67 Connect the clock controller cables:

For a QPC471 Clock controller card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card (see Figure 111). Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.

For a QPC775 Clock controller card, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.

Leave the ENB/DIS switch set to DIS on the clock controller card.

Figure 110
NT5D21 Core/Net module (rear)—RS-232 cable and Ethernet cable connections



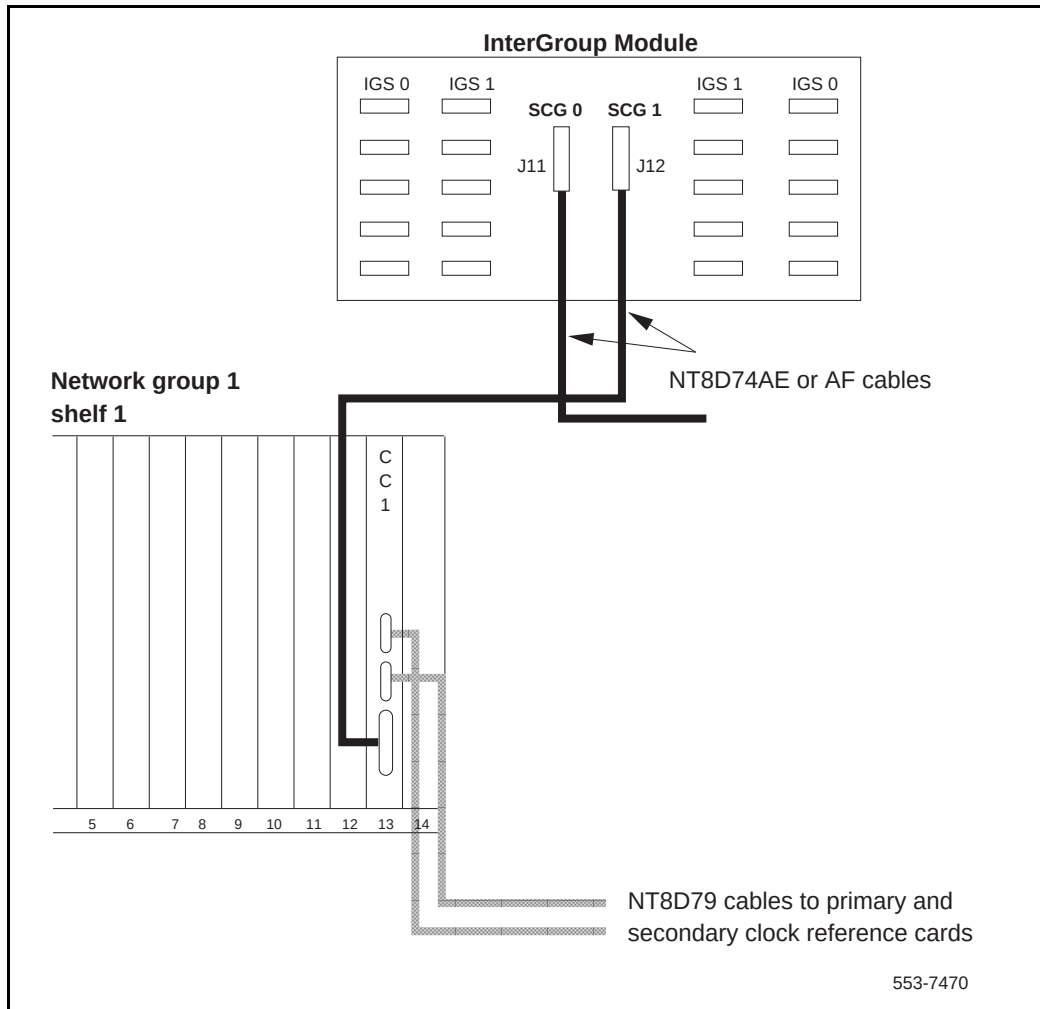
- 68** If you removed the I/O panels previously, install the universal right I/O panel (P0745713) so the side with the two indents fits into the module casting. Secure the I/O panel with the screws from the former panel.

Note: The word *RIGHT* on the I/O panel faces the outside of the module. The J10 slot matches the designation on the outside of the panel.

- 69** Seat the NT5D61 IODU/C card and set the ENB/DIS switch to ENB.

As the card performs card level power-up tests, watch the faceplate HEX display and the single LED on the faceplate of the IODU/C. See *X11 input/output guide* for an explanation of the codes. When the initialization completes successfully, the LED on the IODU/C faceplate will flash three times.

Figure 111
Clock controller card connections for network group x, shelf 1



- 70 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:
- 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol
- 71 Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
- 72 Seat the CP card. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:
- If the CP card fails the self-test, refer to “Troubleshooting” on page 955.
- Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.
- Watch the LCD on the IODU/C for the message “Running Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If the system points to file corruption (such as “Error in file diskos” type messages), go to “Troubleshooting” on page 955.
- Watch the terminal for system reload (SYS) and initialization (INI) messages. If the sysload or initialization fails, go to “Troubleshooting” on page 955.
- Note:** It will take at least 70 seconds between the “DONE” and “INI” messages.

Core/Net 1 is operational.

Converting the customer database to release 24

Before beginning the database conversion procedure, obtain all of the system software disks required.

Note: Obtain extra-high-density floppy disks containing system software from your Northern Telecom representative.

CAUTION

Performing this database conversion procedure will result in disruption of call processing. Plan to perform the conversion when impact on your customers will be minimal.

- 1 Connect a terminal to the CPSI port in Core/Net 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Make sure that the Security Device is installed in the IODU/C.
- 3 Install the NT5D61 IODU/C into the Core/Net 1 slot 17, if not already installed. Set the ENB/DIS switch on the IODU/C card to ENB.
- 4 Insert the CP Install Program diskette into the IODU/C floppy drive (make sure that you select the correct CP Install Program diskette for the CP card type installed in the system).
- 5 Press the MAN RST button on the CP card in Core/Net 1 to start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 Enter time and date, when prompted.

- 7 Initiate the installation by selecting the following prompt from the menu:
`<cr> <u>` to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
`<a>` continue with keycode validation
- 9 Install the CD-ROM disk in to CD-ROM drive, when prompted. To install the CD-ROM disk:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - use the four tabs to secure the CD-ROM in the disk holder
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 10 When the install screen appears, select the following options in sequence when you are prompted to do so.
 - `<b>` to install software, database, CP-ROM, and IOP-ROM
 - `<a>` to verify that the CD-ROM is now in drive
 - `<y>` Yes, start the installation
 - `<a>` continue with upgrade
- 11 When the database installation screen appears, insert the 2MB database diskette and select the following:
 - `<a>` to install customer database
 - `<a>` to continue with the database install
 - `<a>` to transfer the database from floppy to hard disk
 - `<y>` Yes, to start installation
 - `<a>` Yes, transfer the database

When the installation is complete, the Installation Status Summary table appears.

- 12 When the ROM installation screen appears, select the prompts in the following sequence:

<cr> <a>	to install CP-ROM from hard disk
<cr> <a>	to continue with ROM upgrade
<a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<a>	to continue with ROM upgrade

When the installation is complete, the Installation Status Summary table appears.

- 13 From the main menu select prompts in the following sequence to quit and sysload the system:

<q>	to quit
<y>	Yes, to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Several HWI 202 messages may appear on the hex display. This error code indicates that the CNI cards are not enabled. Ignore these messages for the time being; you will enable the CNI cards in later steps.

While the sysload is being performed, database conversion occurs.

- Verify that the following message appears on the system terminal:

DATA CONVERSION
X11 RELEASE XX.xx TO release 24.xx

- 14 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135	to load the program
STAT CPU	to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 15 Log into the system, and continue with “Configuring the system”.

Configuring the system

- 1 Perform this step only if you upgraded the memory on the NT6D66DA/DB CP cards to 48 MB as part of this system upgrade. If you did not perform the memory upgrade procedure, skip to step 4.

- Configure the system with the new memory configuration:

LD 17 to load the overlay

- For each prompt, type the following response:

```
REQ      CHG
TYPE     CEQU
```

- Press the RETURN key until the “MCFN” prompt appears for a NT6D66DA card and enter:

```
MCFN      4 4 4 4 16 16
```

Or,

- Press the RETURN key until the “MCFN” prompt appears for a NT6D66DB card and enter:

```
MCFN      8 8 16 16
```

Note: Be sure to insert one space between the values when typing.

- 2 In the option 81, CNI cards resided in slots 8, 9, and 10 (see Table 100). In the option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the default network group databases differ between option 81 and 81C because of the difference in CNI card locations. The option 81C default CNI configuration is listed in Table 101

Table 100
Typical option 81 CNI network group configuration

CNI card slot	Port	Network group
8	0	5
8	1	0
9	0	1
9	1	2
10	0	3
10	1	4

Note: CNI card slot 8, port 0 is not used in the option 81.

Table 101
Option 81C CNI network group default configuration

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

If the option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.

Use the worksheet in Table 102 to assist you in configuring the CNI network groups.

Table 102
Option 81C CNI network group configuration worksheet

CNI card slot	Port	Network group (enter your option 81C configuration in this column)
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	
Note: CNI card slot 12, port 0 is the network group with the Core/Net module.		

- 3** To reconfigure the option 81C network groups, first disable all CNI cards in Core/Net 1 using LD 135:

LD 135 to load the program
STAT CNI to get the status of all CNI cards
DIS CNI x s p x = extender number (0 or 1)
s = card slot (12-14)
p = port (0 or 1)
STAT CNI to confirm that CNI cards are disabled
******** to exit the program

- 4 When the CNI cards in Core/Net 1 are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
CEQU	YES	
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p xg to "out" the CNI card	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g to "add" the CNI card	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p xg to "out" the CNI card	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g to "add the CNI card	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
MCFN	4 4 4 4 16 16 or, 8 8 16 16 (this prompt appears only in systems equipped with NT6D66 DA/DB CP cards)	to set the "DA" memory card configuration to set the "DB" memory card configuration
REQ	****	to exit the program

- 5 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
.LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
.LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
.	****	to exit the program

- 7 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print Option
TYPE CFN	to print the configuration
****	to exit the program

- 8 Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 10 Exit the program. Enter
******** to exit the program
- 11 Seat all CNI cards, but leave the ENB/DIS switches set to DIS.
- 12 Check the status of all configured CNI cards:
LD 135 to load the program
STAT CNI to get the status of all configured CNIs

Note: The status will indicate that the CNI cards are disabled. Verify that an entry exists for each CNI card in the system. There may be extra entries for CNI cards that were previously removed from the database; ignore these entries for now.

******** to exit the program
- 13 Set the ENB/DIS switch to ENB on the clock controller card in network Group 1, Shelf 1.
- 14 Seat and enable the QPC441 3PE card in Core/Net 1.

- 15 Enable the faceplate switch on the QPC412 IGS card in Core/Net 1.
- 16 Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.

CAUTION

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 17 Perform the next 4 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from Core 0 to Core/Net 1.
 - In Core 0, set the ENB/DIS switch to DIS on the IODU/C card.
 - In Core 0, set the ENB/DIS switch on all CNI cards to DIS.
 - Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
 - Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs on CNI, 3PE, and IGS cards go out.

18 Check for dial tone. If there is no dial tone (the system is inoperable) and you cannot afford downtime, switch the loops back to Core 0 (which still has the Core card cage):

- Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS
- Set the ENB/DIS switch on each CBI card on Core 0 to ENB.
- Initialize Core 0 by pressing the MAN INT button.
- Troubleshoot the Option 81C off-line.

If you can afford downtime, troubleshoot the Option 81C on-line:

- Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
- Verify that all cables are properly and securely connected in the front and rear of the module.
- Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step 19.
- Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- Check for dial tone.

19 Enable clock controller 1:

LD 60	to load the program
SSCK 1	verify that the response is DISABLE
ENL CC 1	to enable clock 1
SSCK 1	verify that clock 1 is active
****	to exit the program

- Check for dial tone.

20 Following a successful dial tone test, perform the following basic sanity tests:

- Make sure intra-group and inter-group calls can be placed.
- Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of Core 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

Upgrading Core 0

Before you upgrade Core 0 to the Option 81C Core/Net card cage, perform the following steps.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment for the upgrade and for troubleshooting, if needed.

1 Perform these steps to disable the clock controller card:

LD 60	to load the program
SSCK 1	to get the status of clock 1. Verify it is active.
SSCK 0	to get the status of clock 0
SWCK	if necessary, to switch to clock 1
DIS CC 0	to disable clock 0
****	to exit the program

- 2** Set the ENB/DIS switch on the clock controller card in Core 0 to DIS.
- 3** Label and disconnect the cable from connector J11 in the NT8D36 InterGroup module at the junctor board. Then disconnect the cable from faceplate connector J3 on the clock controller card. If primary and secondary clock reference cables are connected to the faceplate of the clock controller card, disconnect them last.

- 4 Perform the appropriate step to turn off power to Core 0:
 - For AC-powered systems, set the main circuit breaker for column 0 to OFF (down position) in the rear of the pedestal.

WARNING

Because of hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column including the network group in that column. Relocate essential services from this group before proceeding.

- For DC-powered systems, set the circuit breaker for Core 0 only (located at the rear of the pedestal) to OFF (down position). All other modules in the column can safely remain on.
- 5 Remove the trim panels on both sides of the module (refer to Figure 102, on page 558). Keep the screws for reuse.
 - 6 Label and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.
 - 7 On all cards with an ENB/DIS switch on the faceplate, set the switch to DIS.
 - 8 Remove the power supply and all cards from Core 0.
 - 9 Label and disconnect cables from the I/O panels. Remove both I/O panels. Keep the screws for reuse. Remove the I/O safety panel that covers the rear of the backplane.
 - 10 Label and disconnect all cables from the backplane of Core 0.
 - 11 Remove the two mounting screws that secure the rear of the card cage to the module. Keep the screws for reuse. (A 1/4" socket wrench is needed for this operation.)
 - 12 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Keep the screws for reuse. Pull the card cage forward until it is half-way out of the module.

- 13 Remove the logic ground (orange) wire from the backplane ground bolt (refer to Figure 103 on page 559). Be careful; do not drop the nut or lock washer into the pedestal. (A 1/4" socket wrench is needed for this operation.)
- 14 Remove the frame ground (green) wire from the frame ground bolt on the module.

WARNING

Do *not* disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

- 15 Label and disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) with AC power or connected to each other with DC power.
- 16 Label and disconnect the system monitor ribbon cables from J1 and J2.
- 17 Remove the Core card cage from the module.

For AC-powered systems, after the card cage is out of the module remove the MPDU and reinstall it on the Core/Net card cage. The screw-heads for the MPDU are in the wall of the power supply slot (refer to Figure 104 on page 560).

- 18 Remove the floating power connector (the black connector) and its mounting bracket from the rear of the Core card cage by removing the two screws that secure it to the backplane. Do not remove the connector from its bracket. Using the same mounting screws and nuts, attach the connector and bracket to the Core/Net card cage.

Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

- 19 Install the backplane jumper on the Core/Net module. The jumper is located along the bottom of the front side of the backplane between slots 14 and 15 (refer to Figure 105 on page 562).

CAUTION

If the Core/Net module jumpers are set incorrectly, the system will not load or will not operate correctly.

- 20 Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. You will remove the tape later.
- 21 Slide the Core/Net card cage about half-way into the module. Hold the card cage firmly while you attach the power connectors at the rear of the module (refer to Figure 106 on page 563).
- 22 Attach the system monitor ribbon cables. Connect the ribbon cable that goes down to the pedestal to connector J1; connect the ribbon cable that goes up the column to J2.
- 23 Attach the frame ground (green) wire to the frame ground bolt on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lock washer at the top of the bolt. Put the frame ground wire terminal over the bolt. Reinstall the top lock washer and the nut, then tighten down the nut.

Note: For all of the wire terminals to fit on the bolt, remove one of the lock washers. Leave a lock washer at the bottom of the bolt and at the top of the bolt. Leave a third lock washer between the second and third, or the third and fourth wire terminals.
- 24 Attach the logic ground (orange) wire. Remove one nut and the lock washer. Put the wire terminal over the bolt, reinstall the lock washer and nut, then tighten down the nut. (A 3/8" socket wrench is needed for this operation.)
- 25 Connect the module power connectors to the MPDU for AC power, or to each other for DC power.
- 26 Slide the card cage the remainder of the way into the module.

- 27 Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.
- 28 Secure the card cage to the module with the three screws in the front and the two screws in the rear.
- 29 Position the I/O panel so that the two cutouts match with the castings on the module. Secure the I/O panel with the screws from the previous panel.
- 30 Set the finger end over the lower edge of the J10 opening. The finger rests against the outside of the I/O panel.
- 31 On the outside of the I/O safety panel, attach one extraction tool caution label above the “CAUTION hazardous voltage” label.
- 32 In the bottom of the module, attach the other extraction tool caution label directly behind the position of the I/O safety panel.
- 33 In the bottom of the module, attach the clamp that holds the extraction tool directly behind the extraction tool caution label you just installed.
- 34 Snap the extraction tool into the clamp.
- 35 Attach the Core/Net module designation labels, provided in the upgrade package, at the front and rear of the module. These labels can go on top of the existing labels. The smaller label goes on the rear of the module.
- 36 Install the module power supply (reused from the Core card cage) in the slot labeled “CE Pwr Sup” in the Core/Net card cage.
- 37 Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.
- 38 Check the LED on the hybrid terminators located between slots 11 and 12. The pattern of the LEDs must be OFF-OFF-OFF-OFF for Core/Net 0. The LED pattern matches the setting of the jumper on the backplane; if the pattern is incorrect, check the jumper.
- 39 Shut down power to the Core/Net 0 module again. For AC-powered systems, set the main breaker for the column to OFF (down position). For DC-powered systems, set the switch on the pedestal breaker for the module to OFF (down position).

- 40 Place the IODU/C card in slot 17 (the card occupies two slots), **but leave the card unseated.**
- 41 Set the NORM/MAINT switch on the new CP card to MAINT. Place the CP card in slot 15 (the card occupies two slots), **but leave the card unseated.**
- 42 Set the ENB/DIS switch on an NT6D65 CNI card to DIS. Place the card in slot 12, but leave the card unseated.
- 43 Remove the other CNI cards from the old card cage and set the front panel ENB/DIS switches to DIS. Place the CNI cards in slots 13 and 14 as required for the network group configuration, but leave the cards unseated.
- 44 Configure the switch and jumper settings on the QPC441F 3PE card for Core/Net 0 (see Table 103). Make sure Jumper RN27 is set to "A".

Table 103
QPC441F 3PE card switch settings for Core/Net 0

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
Note: RN27 jumper at E35: set to "A" for all modules								

- 45 Place the 3PE card in slot 11 of Core/Net 0, but leave the card unseated.
- 46 Verify the switch and jumper settings on the existing QPC441F 3PE cards in the Network shelf 0 modules (see Table 104). Make sure Jumper RN27 is set to “A”.

Table 104
QPC441 3PE card switch settings for Network shelf 0 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on

Note: Jumper RN27 at location E35: set to A

- 47 Place the QPC43PS card in slot 10 of Core/Net 0. Set the front panel ENB/DIS switch to DIS.
- 48 In Core/Net 0, install the two QPC412 IGS cards (IGS 0 in slot 8 and IGS 1 in slot 9). Set the front panel ENB/DIS switch to DIS.
- 49 Route NT8D76 cables from the IGS cards in Core/Net 0 (IGS 0 is in slot 8; IGS 1 is in slot 9) to the junctor module (see Figure 112). Connect the cables to the matching connectors on the junctor module (i.e. Group 0, Shelf 0, IGS 0).
- 50 Set switches on Clock controller 0 as shown in Table 105 on page 594.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21, 51, 61, 71”) next to the switches.

Figure 112
QPC412 IGS card cable assignments to the InterGroup module

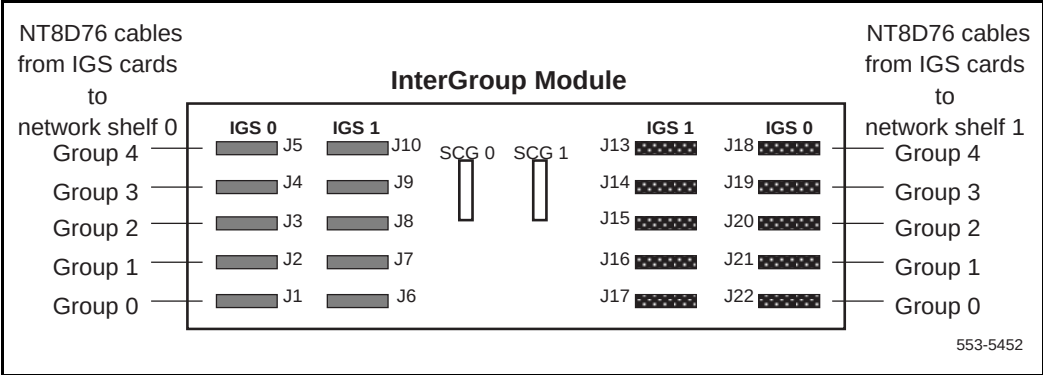


Table 105
Clock controller card 0 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 51 Place the Clock controller card in Network shelf 0, slot 13, but leave the card unseated.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

- 52 Route an NT8D74 cable from connector J3 on Clock Controller 0 to connector J11 on the Junctor module.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 53 Install NTND14 cable pairs to connect the NT6D65 CNI cards to the QPC441 3PE cards in the Network modules as indicated in Table 106 (see Figure 113 on page 597). The cables connect to backplane connectors in the Core/Net module and to faceplate connectors on the 3PE cards.

Note: Cables are not required for the network group in the Core/Net module. Communication between port 0 on the CNI card in slot 12 and the 3PE card in slot 11 is accomplished through the backplane.

- 54 At the rear of each Core/Net module, connect the single connector end of the NT7D89 RS-232 cable to backplane connector position 15D (see Figure 110 on page 573).
- 55 Connect port A (DTE) to J21 of the left I/O panel (see Figure 113).
- 56 Connect port B (DCE) to J25 of the left I/O panel (see Figure 113).
- 57 Connect an NT7D90 Ethernet Cable from backplane connector position 17F to J28 on the I/O panel (see Figure 113).
- 58 On the faceplates of the 3PE cards in the Core/Net modules:
- connect an NT8D80BZ cable from J4 in Core/Net 0 to J4 in Core/Net 1
 - connect another NT8D80BZ cable from J3 in Core/Net 0 to J3 in Core/Net 1

Table 106

CNI to 3PE NTND14 cable connections for Core/Net 0 when upgrading an Option 81 to 81C

Cable for Group	Backplane connector on Core/Net 0	3PE card connector in each Shelf 0 Network module	Use cable length vintage
0	connects from 12D	to J3	BA
0	12F	J4	BA
1	13A	J3	BA
1	13C	J4	BA
2	13D	J3	BB
2	13F	J4	BB
3	14A	J3	BC
3	14C	J4	BC
4	12A	(see Note 1)	(see Note 1)
4	12C	(see Note 1)	(see Note 1)

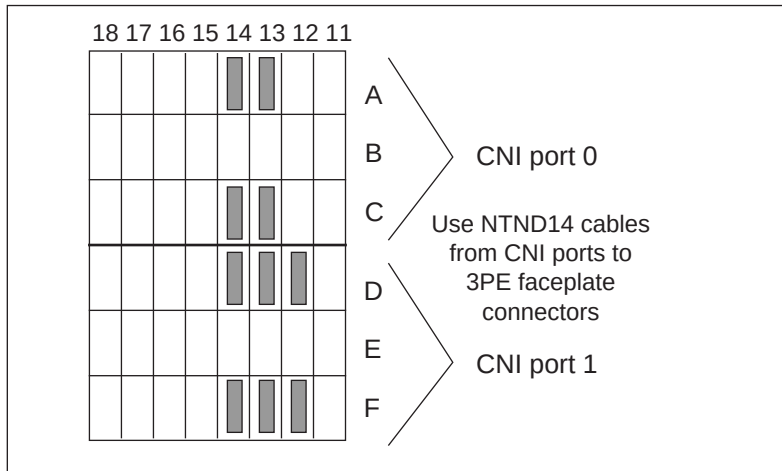
Note: Backplane connections are designated 18 through 12 from left to right (viewed from the back of the module) and A through 'F' from top to bottom.

Note 1: Cables are not required for a group being added in a Core/Net module.

- 59 In the rear of the Core/Net modules, install an NT8D99BD cable from the backplane connector labeled "D" in Core/Net 0 to the backplane connector labeled "D" in Core/Net 1 (see Figure 114).
- 60 Install the second NT8D99BD cable from the backplane connector labeled "E" in Core/Net 0 to the backplane connector labeled "E" in Core/Net 1 (see Figure 114).
- 61 Loosely attach the I/O panel to the module (later in the upgrade you will need to remove the panel to install Core/Net to Core/Net cables), using the screws from the former panel.
- 62 Verify that the ENB/DIS switch on Clock controller 0 is set to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables.

Figure 113

NT5D21 Core/Net module (rear)—backplane connections for CNI slots when upgrading an Option 81 to 81C

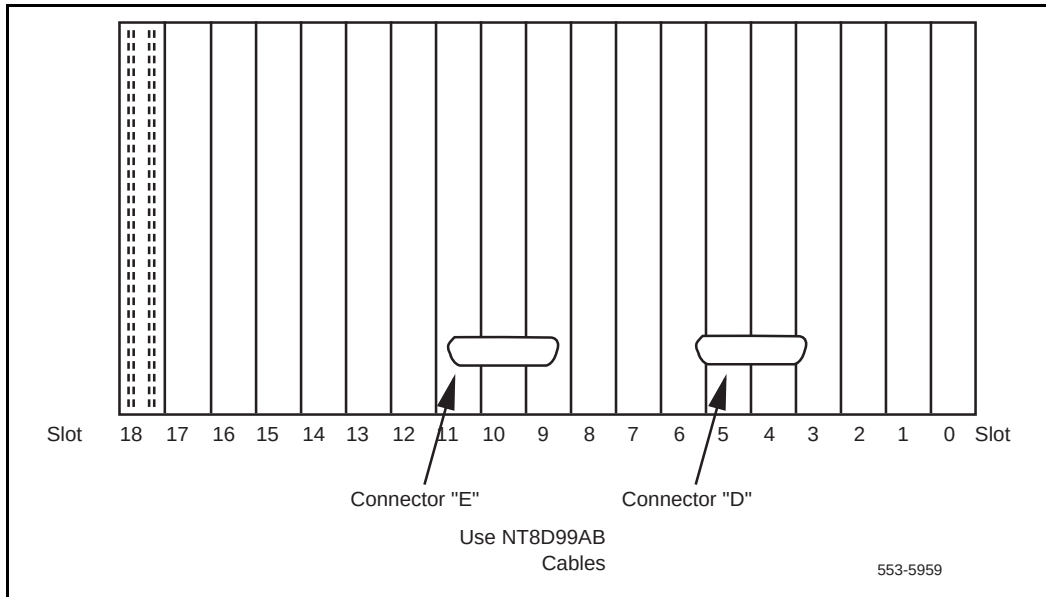


Note: All cables from Core/Net 1 go to network shelf 1. All cables from Core/Net 0 go to network shelf 0.

553-6416

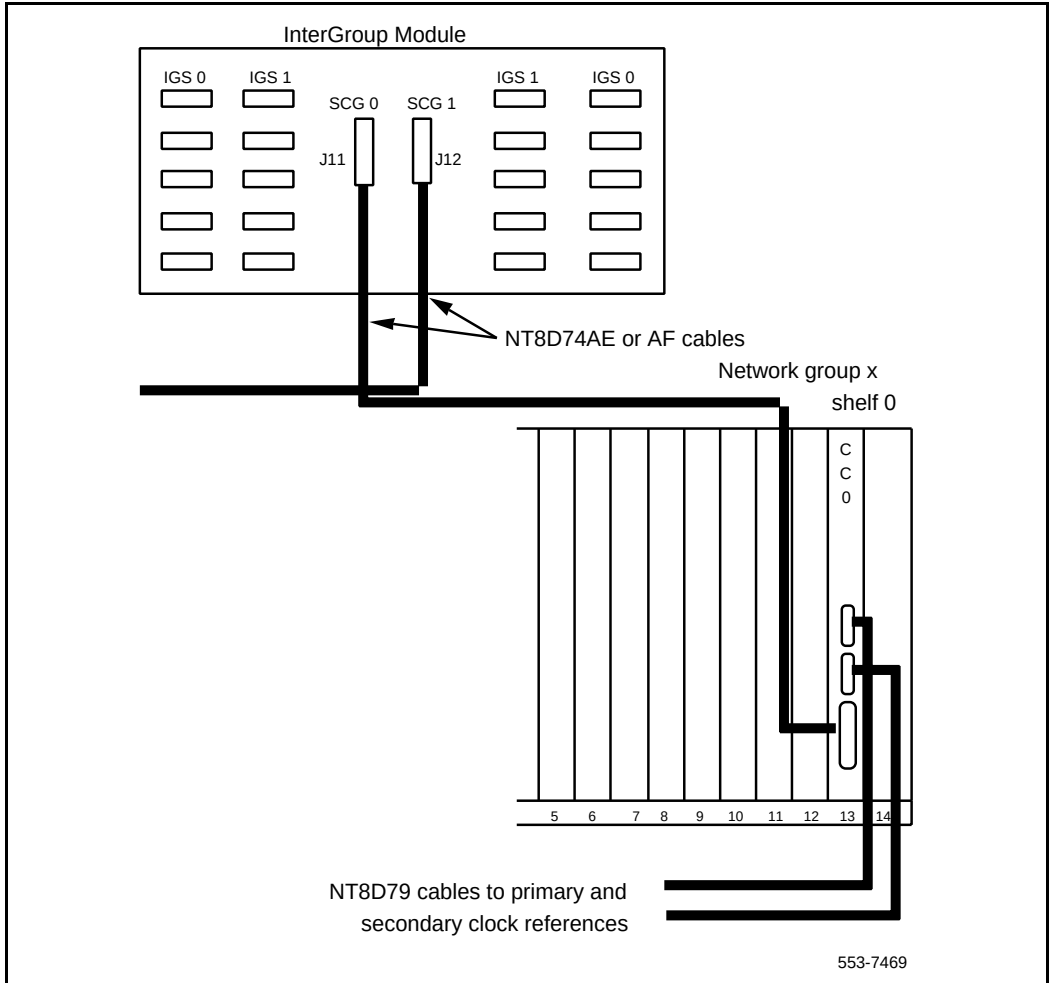
- 63** Turn on power to the Core/Net 0 module. For AC-powered systems, set the main circuit breaker to ON (up position) in the rear of the pedestal. For DC-powered systems, set the breaker to ON (up position) in the pedestal.

Figure 114
NT5D21 Core/Network module; location of D and E connectors (rear view)



- 64** Perform the appropriate steps to connect the clock controller cables (refer to Figure 115):
 - For a QPC471 card, connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card. Then connect the NT8D74 cable from the NT8D36 InterGroup module to the clock controller card.
 - For QPC775 Clock controller cards, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.
 - Leave the ENB/DIS switch set to DIS on QPC471 and QPC775 cards.
- 65** Seat the NT5D61 IODU/C card, and then, set the ENB/DIS switch to ENB.

Figure 115
Clock Controller card connections for network group x, shelf 0



As the card performs card level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 input/output guide* for an explanation of the codes.

If the IODU/C card fails the self-test, refer to “Troubleshooting” on page 955.

- 66** Connect a terminal to the J25 port on the I/O panel in Core/Net 0. Use the following settings on the terminal:
- 9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol
- 67** On the CP card, set the NORM/MAINT switch to MAINT and then seat the card into the backplane and secure the lock latches. As the card performs card level power-up tests, watch the LCD display and output from the CPSI port for error messages:
- If the CP card fails the self-test, go to “Troubleshooting” on page 955.
 - Following the “Self-test Complete” message, watch the LCD on the CP card for the message “IOP in Slot 17.” If the message does not appear, refer to “Troubleshooting” on page 955.
 - Watch the LCD for the message “Loading Disk OS.” As the system attempts to access the hard disk, watch the LCD for error messages. If error messages indicate file corruption (such as “Error in file disk OS” type messages), refer to “Troubleshooting” on page 955.
 - Watch the LCD for system reload (SYS) and initialization (INI) messages. Following this, Core/Net 0 is operational. If the sysload or initialization fails, refer to “Troubleshooting” on page 955.

Copying software in Core/Net 0 with IODU/C

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1** Insert the CP Install Program diskette into IODU/C floppy drive in Core/Net 0.
- 2** Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3** Initiate the installation by selecting the following prompt from the menu:
`<cr> <u>>` to Install menu

- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> continue with keycode validation

- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.

- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:

<o> to copy system software from the other Core

- 7 When the software is installed successfully, press **<CR>** to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.

- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

<f> to install IOP-ROM only

<cr> <a> to install the IOP-ROM from hard disk

<y> Yes, start installation

<cr> <a> to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:

<d> to go to the Database menu

<d> to copy the database from Core 1 to Core 0

<y> to confirm the installation status summary

<a> to confirm database copy

- 10 From the Main Menu, select the following options to quit and reload the system:

<q> to quit

<y> to confirm quit

11 Reboot the Core/Net 0 CPU:

<a> to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

Completing the upgrade

- 1 Seat and enable the QPC441 3PE card in Core/Net 1.
- 2 Enable the faceplate switch on the QPC412 IGS card in Core/Net 1.
- 3 Seat all CNI cards, but leave their ENB/DIS switches set to DIS.
- 4 Check the status of all configured CNI cards:

LD 135 to load the program

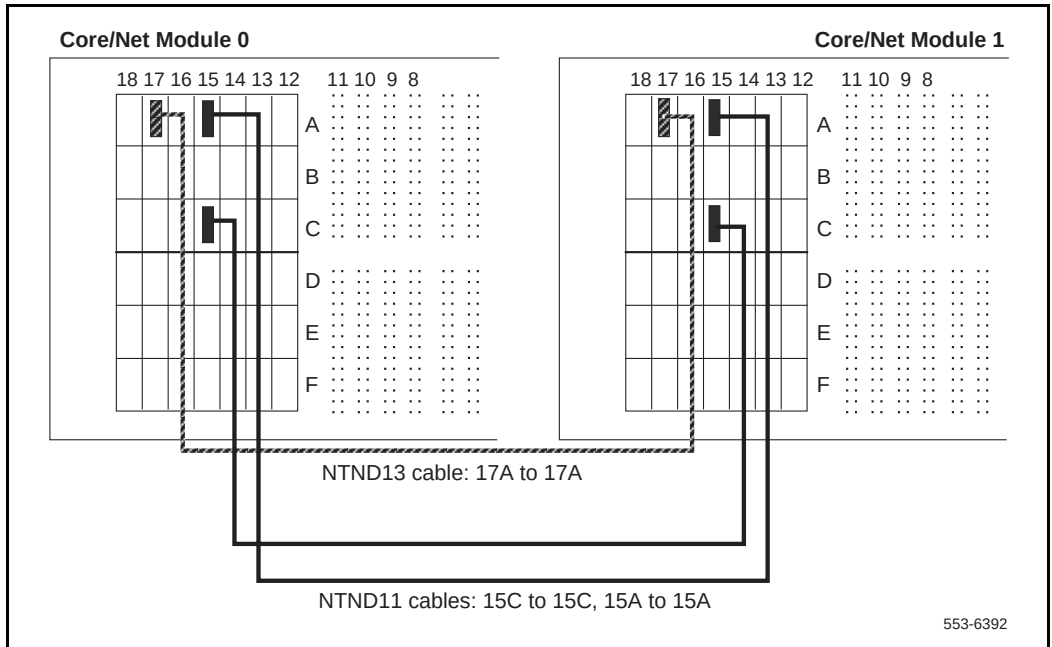
STAT CNI to get the status of all configured CNIs

Note: If you get error messages stating that CNIs are disabled, verify that an entry exists for each CNI card in the system.

******** to exit the program

- 5 Verify the NORM/MAINT switch on both CP cards is still set to MAINT.
- 6 In Core/Net 0 (the inactive side), set the ENB/DIS switch on the IODU/C or IOP/CMDU card to DIS, and then unseat the card.
- 7 In Core/Net 0, unseat the CP card.
- 8 Temporarily remove the left I/O panels.
- 9 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to 17A in Core/Net 1 (see Figure 116).
- 10 Connect one NTND11 cable from backplane connector position 15A in Core/Net 0 to 15A in Core/Net 1 (see Figure 116).
- 11 Connect another NTND11 cable from backplane connector position 15C in Core/Net 0 to 15C in Core/Net 1 (see Figure 116).
- 12 Reinstall the I/O panels in both Core/Net modules. Install and tighten all screws.

Figure 116
NT5D21 Core/Net module (rear)—NTND13, and NTND11 cables



- 13** Reseat the IODU/C or IOP/CMDU card in Core/Net 0, and then set the ENB/DIS switch to ENB.
- 14** Set the ENB/DIS switch on the Clock controller card 0 in Network shelf 0, slot 13 to ENB.
- 15** Set the ENB/DIS switch on all CNI cards in Core/Net 0 to ENB.
- 16** In Core/Net 0, verify that the NORM/MAINT switch on the CP card is set to MAINT and then seat the card and secure the lock latches; the card will perform a self-test. When SYS700 messages appear on the LCD display, **set the NORM/MAINT switch to NORM.**

A "HWI534" message from the CPSI (Core 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an "HWI533" message indicates that the contents of Core 1 memory is copied to Core 0 memory. Wait until the memory synchronization is complete before continuing.

- 17 **Set the NORM/MAINT switch to NORM** on the CP card in Core/Net 1 and perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST IPB	to test the backplane protocol on the inactive side
TEST CNI c s	to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 18 Switch Cores and test the other side:

SCPU	to switch to Core/Net 0
TEST CPU	to test the inactive CP card and CP-to-CP cable

- 19 Get the status of the CP cards and memories and of the CNIs:

STAT CPU	to get the status of both Cores
STAT CNI	to get the status of all configured CNIs
****	to exit LD 135

CAUTION

Call processing will be interrupted when you perform the following step.

- 20** Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0 respectively, verify that IOCU/C 0 is disabled:

LD 137	to load the program
STAT	get the status of IODU/Cs, and redundancy. Verify that the IODU/C 0 is disabled.
SYNC	to synchronize the hard disks
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 21** Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs or CMDUs, if necessary:

STAT	to get the status of IODU/Cs, and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit the program

- 22** In Core/Net 0, press the MAN INT button to execute clock hunt software and locate clock controller 0.

- 23** Check the status of the clocks, swap clocks, and verify status:

LD 60	to load the program
SSCK 0	to get the status of clock 0
SSCK 1	to get the status of clock 1
SWCK	to swap active clocks
SSCK 0	to verify that clock 0 is enabled
SSCK 1	to verify that clock 1 is disabled
****	to exit the program

- 24** Insert a B1 backup database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

The system is operating in dual CPU mode with redundant disk drives.

- 25** Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137 to load the program

TEST SCSI to check the IOP to IOP connection and access to the IODU/Cs

TEST CMDU to test the hard and floppy disk drives (a floppy diskette must be installed)

******** to exit the program

- 26** Clear displays, major alarms, and minor alarms:

LD 135 to load the program

CDSP to clear the display

CMAJ to clear all major alarms

CMIN ALL to clear all minor alarms

SCPU to switch to the other Core

CDSP to clear the display

******** to exit the program

- 27 Software enable clock controller cards and any PRI/DTI cards in the Core/Net modules:

LD 60	to load the program
ENL CC x	to enable clock controller 1 or 0
TRCK aaa	if necessary, to set tracking
ENLL loop	to enable the specified network loop and associated PRI/DTI card
****	to exit the program
- 28 Reinstall the system monitor in column 1. Reconnect the cables.
- 29 On the master system monitor (column 0), reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.
- 30 Software enable the associated SDI port:

LD 37	to load the program
ENL terminal x	to enable the device associated with the port
STAT XSM	to check the status of the system monitor
****	to exit the program
- 31 For both Core/Net modules, install the appropriate trim panels from the upgrade package.
- 32 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The option 81 to option 81C upgrade is complete.

XT and Option 71 Core/Net module upgrade to Option 81C

This section describes how to upgrade an XT/71 system, housed in QCA55 and QCA108 cabinets, to an Option 81C. This procedure also applies to Option 71 systems housed in QCA55 and QCA108 cabinets. For Option 71 systems housed in modules, use the upgrade procedure “Option 71 card cage upgrade to option 81C” on page 475.

The Core/Net module upgrade is a “CPU only” upgrade. The network equipment and junctor remain in the cabinets, and existing peripheral equipment cabinets remain cabled to the network shelves in QCA55 and QCA108 common equipment cabinets. The Core/Net modules, which are installed in the Meridian 1 column(s) next to the QCA55 cabinet, functionally replace the CPU shelves in the QCA55.

The upgrade can take the form of one of two basic configurations. Each Core/Net module may be installed in its own column (see Figure 117), or for customers with limited space, both Core/Net modules may be installed in one column (see Figure 118). This single-column configuration still provides the redundancy of two CPUs, but not the redundancy of two power distribution units; failure of the PDU will bring down the entire system.

This upgrade consists of:

- 1 Installing two NT5D21 Core/Net modules in one or two columns.
 - Additional columns may be installed optionally.
 - One or more columns may contain NT8D37 Intelligent Peripheral Equipment (IPE) modules.
- 2 Installing Core/Net to Network module cabling.

Note: During the upgrade procedures, transient calls, CDR information, PRI service, and traffic report information may be lost.

The hardware required for this upgrade is provided in the Core/Net module Upgrade Package. All existing equipment that will be retained must be compatible with X11 release 24. Order replacements for all equipment that does not comply.

Verify that any existing QPC441 3-Port Extender cards in the system are 'F' or later, for release 24. If any 3PE card in the system is not one of these vintages, replace it with a card of acceptable vintage. All 3PE cards in the system must be of the same vintage.

Note: Refer to *Product compatibility* (553-3001-156) for vintage requirements.

Before you begin the upgrade, perform an inventory to ensure that all required equipment is available on site.

Figure 117 shows the upgrade from XT/Option 71 to Option 81C in a multi-column installation. Figure 118 shows the upgrade in a single-column installation.

Figure 117
Core/Net module upgrade, multi-column installation

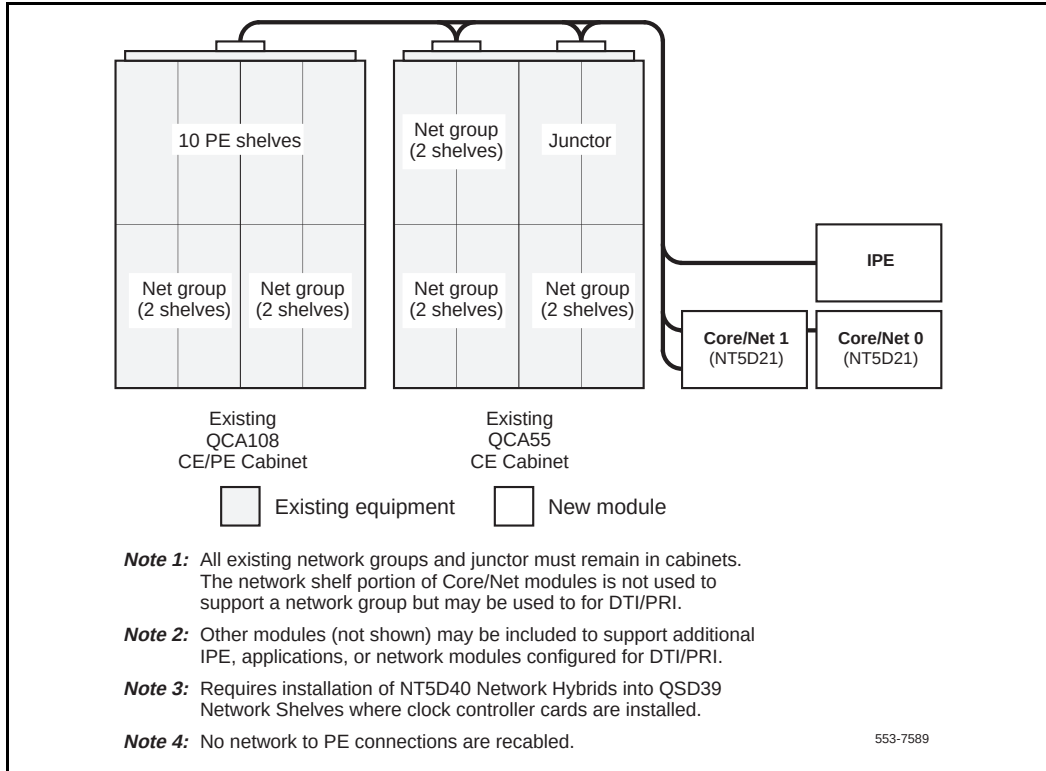
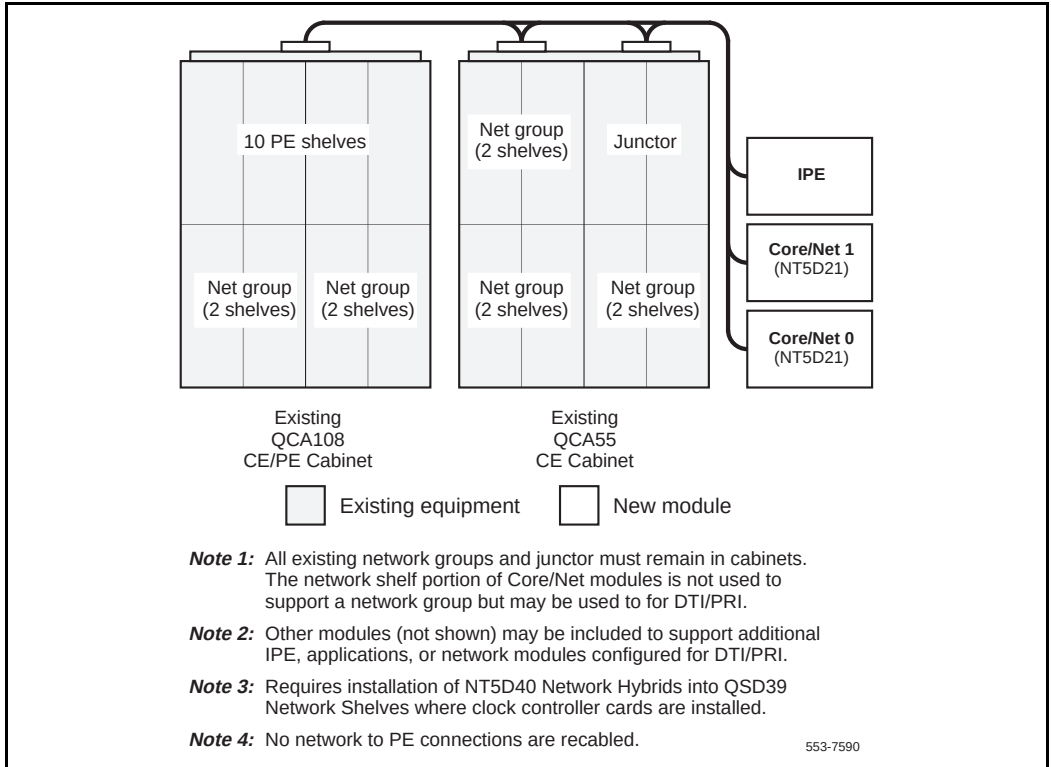


Figure 118
Core/Net module upgrade, single-column installation



Equipment required

Tables 107 and 108 list the items required to upgrade an AC- or DC-powered XT system or Option 71 to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 107
Hardware requirements for an AC-powered Option 81C (Part 1 of 3)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21AA	Core/Network Module AC
1	NT5D40AA	Hybrids Kit
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00AA	Top Cap AC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D22AC	System Monitor
2	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
1	NT8D37BA	Intelligent Peripheral Equipment Module AC

Table 107**Hardware requirements for an AC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core Cabinet Upgrade Cable Kit, Group 0
1	NTND33CC	Core Cabinet Upgrade Cable Kit, Groups 1–4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

Table 107
Hardware requirements for an AC-powered Option 81C (Part 3 of 3)

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841C	Four-port SDI
Note: QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement. Note 1: This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.		

Table 108
Hardware requirements for a DC-powered Option 81C (Part 1 of 3)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21DA	Core/Network Module DC
1	NT5D40AA	Hybrids Kit
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00BA	Top Cap DC
2	NT7D09CA	Pedestal DC
2	NT7D10CA	System Monitor Panel
2	NT7D67CB	Power Distribution Unit DC

Table 108**Hardware requirements for a DC-powered Option 81C (Part 2 of 3)**

Qty	Part number	Description
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52DD	Pedestal Blower Unit DC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core-Cabinet Upgrade Kit, Group 0
1	NTND33CC	Core-Cabinet Upgrade Cable Kit 1-4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

Table 108
Hardware requirements for a DC-powered Option 81C (Part 3 of 3)

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841	Four-port SDI
Note: QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement. Note 1: This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.		

Upgrade planning

Before beginning an upgrade, make sure there is sufficient room to position the new Meridian 1 column(s). Make sure the floor can handle the additional weight of the new column(s), and make sure a sufficient power source is available and can be accessed by the new column(s).

Note: Specifications for Meridian 1 column(s) are provided in *Meridian 1 installation planning* (553-3001-120). Specifications for Meridian 1 power requirements are provided in *Meridian 1 power engineering* (553-3001-152).

Check the contents of the upgrade package, including all circuit cards and cables. Make sure all of the items on the order form are on the packing slip that comes with the equipment. Check the tool list in this document. Check that all the tools you will need are on hand.

- 1 The Core/Net module upgrade is physically compatible with QCA55 and QCA108 cabinets only. Systems with other cabinet types must install Meridian 1 Core/Net and Network module columns to upgrade to Option 81C.
- 2 Install all ground packages prior to the upgrade. All older vintage cabinets required ground isolation packages installed.
- 3 There must be one or more mounting locations available on the top of the QCA55 and QCA108 cabinets for the connector housings used for Core/Net to network cabling:
 - For a one-group system, one mounting location is required on top of the QCA55.
 - For a two or three group system, two mounting locations are required on top of the QCA55.
 - For a four or five group system, one more mounting location is required on top of the QCA108, for a total of three connector housings (two on the QCA55 and one on the QCA108).

- 4 If the XT/71 customer database is release 18 or earlier, it must be converted to release 24 compatibility before continuing. You can convert it on-site, or send it to Northern Telecom for conversion. If you convert it on-site, use the instructions in “Procedure 3: Convert from one X11 release to a later release” located in *Software conversion procedures* (553-2001-320). If the database is release 17 or earlier, additional equipment is required for the conversion and must be ordered separately.
- 5 Cable path length from the I/O panel at the rear of each Core/Net module to any connector housing on either XT/71 cabinet must be no more than 6.7 m (22 ft).

Installing NTND33CC cable kits

The equipment in the cable kits provides the intercabinet cabling between the Core/Net modules and the existing common equipment cabinets. The intercabinet cabling provides clock controller to junctor connections, CNI to 3PE connections, and PRI to clock controller reference connections (when present).

The NTND33CC cable kit is provided in the Core/Net module upgrade package and contains cables for 2 network groups. One additional cable kit is required for every additional 2 groups.

A label kit is also provided in the upgrade package. This kit contains a pair of preprinted labels for each cable in the cable kit(s).

Note: There are also labels that do not apply to this upgrade. There are labels in the kit that you will not use at all.

There are detailed instructions for labeling the cables as you separate them by kit and by function. (For example, as you label them, keep the cables for Core/Net 0 separate from the intercabinet cables.) Using the label kit, label and install cables for only the groups equipped.

The cable labels indicate the “from” and “to” ends of the entire cabling path, not the ends of the individual cables. For example, the three following cables will each be labeled CPU0-CNI-12A to 3PE-GRP0/0-J3 (see the example in Figure 119):

- An NTND94DA cable (from CPU0-CNI-12A) in Core/Net 0 connects to the following:
 - a CNI port at backplane position 12A
 - the inside of the I/O panel at connector J26
- An NTND28BB cable connects to the following:
 - the outside of the I/O panel at connector J26
 - position H4 on the connector housing on the QCA55 cabinet
- An NTND95AA cable (to 3PE-GRP0/0-J3) connects to the following:
 - position H4 on the connector housing
 - faceplate connector J3 on the 3PE card for Group 0, Network Shelfp0

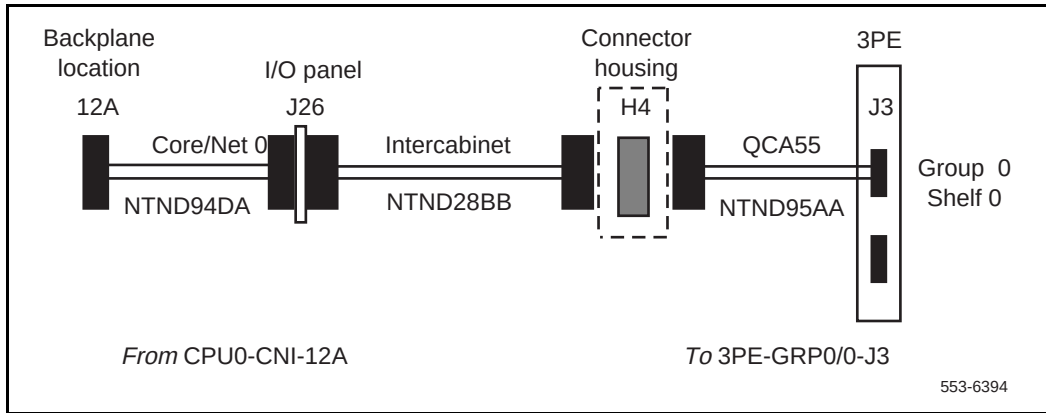
CAUTION

Read through all of the procedures for this upgrade before you begin. Also, before you begin, perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

Installing network hybrids

The XT to option 81C upgrade procedures will also require you to replace the QPC477 BTUs in the QSD39 Network shelf with network hybrids while upgrading the hardware. This consists of removing the two BTUs in Network shelf 0, Group 0, and installing four network hybrids to provide mechanical clearance in the network shelf. The installation of network hybrids is performed in QSD39 Network shelves only.

Figure 119
Cabling path for cables labeled CPU0-CNI-12A to 3PE-GRP0/0-J3



Most XT systems contain one QSD39 Network shelf (left side) and one QSD40 Network shelf (right side), and will require the installation of network hybrids in Network shelf 0, Group 0 only. However, a few XT systems contain two QSD39 Network shelves (right side and left side) and will require the installation of network hybrids in both network shelves for Group 0.

CAUTION

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

Upgrade preparation

Before proceeding with the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter **LD 43** to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter **EDD** to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter ******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 In the tape shelf of the XT system CE cabinet, set the ENB/DIS switch on the QPC173 Power Monitor card to DIS.
- 6 Unplug the Power Monitor card but do not remove it from the slot.

Note: If QPC471 Clock controller cards in the XT/71 system are not minimum vintage H, or if the QPC775 Clock controller cards are not minimum vintage E, replace them before the upgrade.

- 7 If necessary, install a new clock controller card in CPU 1 (if your system is equipped with Clock controller cards of the minimum vintage, go to step 10 on page 626):

Note: Use the new clock controller cards provided in the upgrade kit.

- If CPU 1 is active, switch to CPU 0:

LD 35	to load the program
TEST CPU	to test the CPUs
SCPU	to switch to CPU 0 (if necessary)
****	to exit the program
- If clock controller 1 is active, switch to clock controller 0:

LD 60	to load the program
SSCK 1	to get the status of clock controller 1
SWCK	to switch to clock controller 0
- Make sure clock controller 0 is active, and if it is, disable clock controller 1:

SSCK 0	to get the status of clock controller 0
DIS CC 1	to disable clock controller 1
- Set the ENB/DIS switch on clock controller 1 to DIS.
- Disconnect the NT1R04AA clock controller to junctor cable from connector J12 on the junctor panel.
- Label all the cables to the clock controller card, disconnect them, and remove the card.
- Set the ENB/DIS switch to DIS on the replacement clock controller card. Set the switches on the replacement card. Add together the lengths of the two clock controller to junctor cables. Set SW4 on the replacement card according to this total length (see Table 109).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- Install the replacement clock controller card and reconnect the cables to the card.
- Connect the NT1R04AA clock controller to junctor cable to connector J12 on the junctor panel.
- Set the ENB/DIS switch on the Clock controller card to ENB.
- Software enable the card.

ENL CC 1 to enable clock controller 1
******* to exit LD 60

Note: Do not issue the tracking (TRCK) or status (SSCK) commands at this time. If you do issue these commands, the system may respond with an inaccurate error condition.

Table 109
Clock controller card switch settings for XT/71

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	off	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	off	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	off	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	off	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Switches must be set the same on both clock controller cards.												

8 If necessary, install a new clock controller card in CPU 0:

- If CPU 0 is active, switch to CPU 1:
 - LD 35** to load the program
 - TEST CPU** to test the CPUs
 - SCPU** to switch to CPU 1 (if necessary)
 - ****** to exit the program
- Make clock controller 1 active:
 - LD 60** to load the program
 - SSCK 0** to get the status of clock controller 0
- If clock controller 0 is active, switch clocks:
 - SWCK** to switch to clock controller 1
- Make sure clock controller 1 is active:
 - SSCK 1** to get the status of clock controller 1
- Disable clock controller 0:
 - DIS CC 0** to disable clock controller 0
- Set the ENB/DIS switch on clock controller 0 to DIS.
- Disconnect the NT1R04AA clock controller to junctor cable from connector J11 on the junctor panel.
- Label all the cables to the clock controller card, disconnect them, and remove the card.
- Set the ENB/DIS switch to DIS on the replacement clock controller card. Set the switches on the replacement card. Add together the lengths of the two clock controller to junctor cables. Set SW4 on the replacement card according to this total length (see Table 109).

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

- Install the replacement clock controller card, and reconnect the cables to the card.
- Connect the NT1R04AA clock controller to junctor cable to connector J11 on the junctor panel.
- Set the ENB/DIS switch on the Clock controller card to ENB.
- Software enable the card.

ENL CC 0 to enable clock controller 0
******* to exit LD 60

9 Verify clock switchover and tracking for each CPU (issue tracking commands if required):

- Check the status of clock controller 1:

SSCK 1 to get the status of clock controller 1
******** to exit LD 60

- Switch CPUs:

LD 35 to load the program
TEST CPU to test CPU 0
SCPU to switch to CPU 0
******** to exit LD 35

- Check the status of clock controller 0:

LD 60 to load the program
SWCK to switch to clock controller 0
SSCK 0 to get the status of clock controller 0
******** to exit the program

- 10 Check the vintage of the QPC441 3PE cards in network shelf 1 of groups 0 and 1; they must be minimum vintage F. Replace any that are not vintage F. (Refer to *Meridian 1 hardware replacement* (553-3001-520) for card replacement procedures.) Set the switches and jumper on each card (see Table 110). **Make sure Jumper RN27 at location E35 is set to A.**

Table 110
Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 1 modules

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	off
1	off	on	on	on	on	on	off	off
2	off	on	on	on	on	off	on	off
3	off	on	on	on	on	off	off	off
4	off	on	on	on	off	on	on	off
Note: Jumper RN27 at location E35: set to A								

- 11** Check the vintage of the QPC441 3PE cards in shelf 0 of groups 0 and 1; they must be minimum vintage F. Replace any that are not vintage F. (Refer to *Meridian 1 hardware replacement* (553-3001-520) for card replacement procedures.) Set the switches and jumper on each card (see Table 111). **Make sure Jumper RN27 at location E35 is set to A.**

Table 111**Settings for switch D20 on QPC441 3PE card in Option 81C network shelf 0 modules**

Group	Switch position							
	1	2	3	4	5	6	7	8
0	off	on	on	on	on	on	on	on
1	off	on	on	on	on	on	off	on
2	off	on	on	on	on	off	on	on
3	off	on	on	on	on	off	off	on
4	off	on	on	on	off	on	on	on
Note: Jumper RN27 at location E35: set to A								

- 12** Follow Procedure 1: “Pre-conversion procedure,” *Software conversion procedures* (553-2001-320) and print configuration records. Check the configuration record printouts to identify all configured I/O ports.

Note: When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

- 13** If the XT/71 database is release 18 or lower, upgrade the database to release 21. For conversion instructions, refer to “Procedure 3: Convert from one X11 release to a later release” in *Software conversion procedures* (553-2001-320). You will complete converting the software to release 24 later in this upgrade.

Installing intermodule cables and connector housings

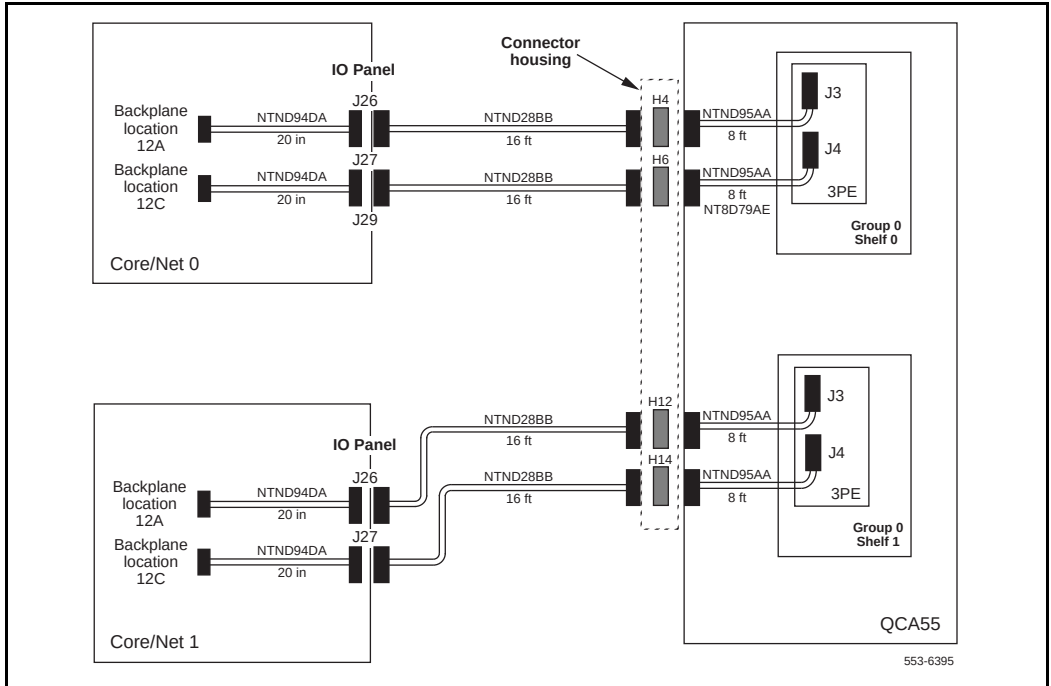
New cables must be installed to connect the new modules to the cabinets. The first step is to organize the cables by type and label each cable.

- 1 For Group 0, label cables in the NTND33CD cable kit (see Figure 120 for cable paths):
 - Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 112).
 - Label each cable as listed in Table 112. For each cable, label both ends the same.

Table 112
NTND33CD Group 0 cable labels

Core/Net 0 cable:	Label both ends:
NTND94DA	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND94DA	CPU0-CNI-12C to 3PE-GRP0/0-J4
Core/Net 1 cable:	Label both ends:
NTND94DA	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND94DA	CPU1-CNI-12C to 3PE-GRP0/1-J4
Intercabinet cable:	Label both ends:
NTND28BB	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND28BB	CPU0-CNI-12C to 3PE-GRP0/0-J4
NTND28BB	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND28BB	CPU1-CNI-12C to 3PE-GRP0/1-J4
QCA55 cabinet cable:	Label both ends:
NTND95AA	CPU0-CNI-12A to 3PE-GRP0/0-J3
NTND95AA	CPU0-CNI-12C to 3PE-GRP0/0-J4
NTND95AA	CPU1-CNI-12A to 3PE-GRP0/1-J3
NTND95AA	CPU1-CNI-12C to 3PE-GRP0/1-J4

Figure 120
NTND33CD Group 0 cable paths



- 2 For Groups 1 and 2 (if equipped), label cables in the NTND33CC cable kit (see Figure 121 for cable paths):
 - Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA55 cabinet cables (see Table 113).
 - Label each cable as listed in Table 113. For each cable, label both ends the same.

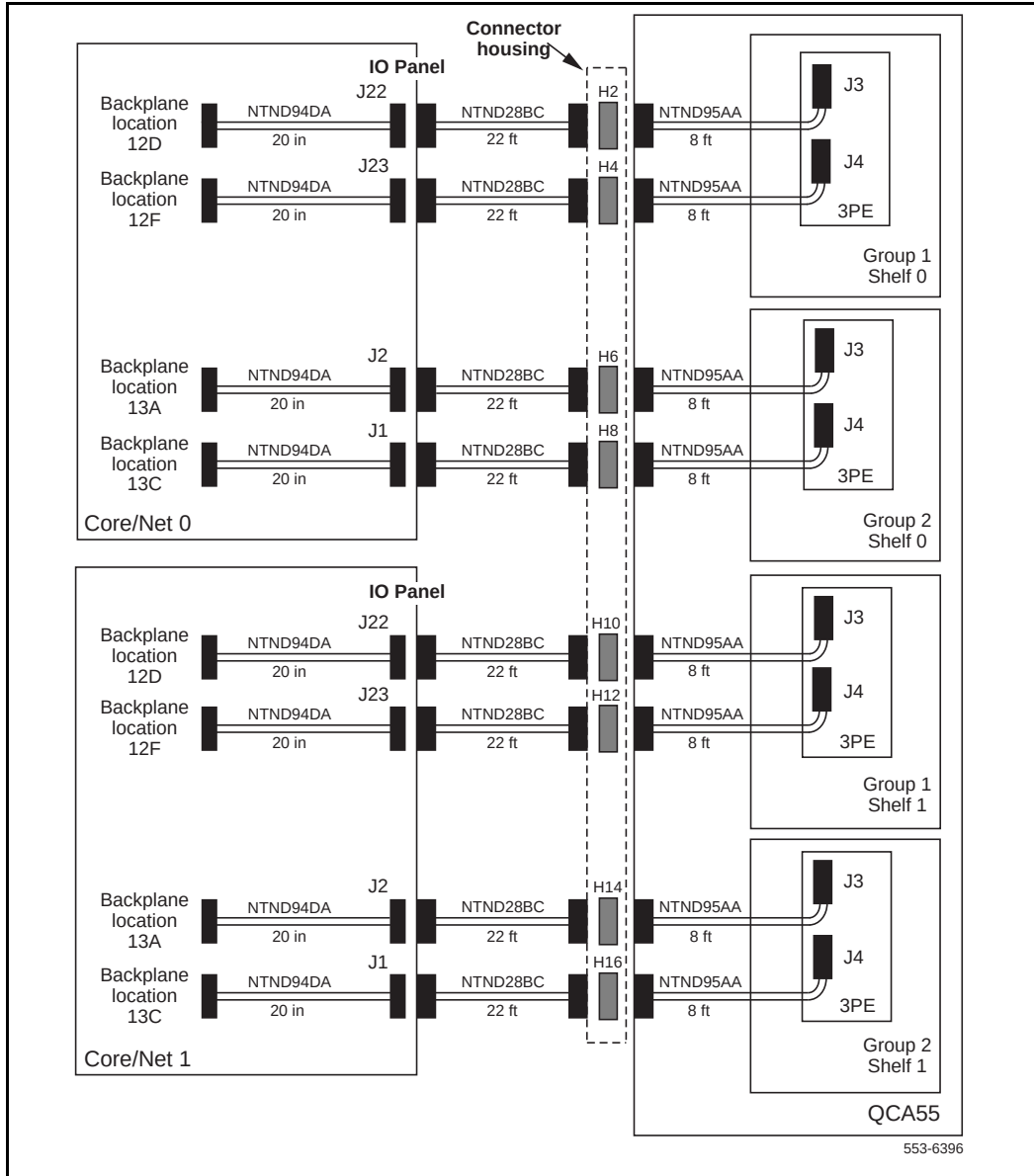
Table 113
NTND33CC Groups 1 and 2 cable labels (Part 1 of 2)

Core/Net 0 cable		Label both end:
NTND94DA	CPU0-CNI-12D to 3PE-GRP1/0-J3	
NTND94DA	CPU0-CNI-12F to 3PE-GRP1/0-J4	
NTND94DA	CPU0-CNI-13A to 3PE-GRP2/0-J3	
NTND94DA	CPU0-CNI-13C to 3PE-GRP2/0-J4	
Core/Net 1 cable		Label both end:
NTND94DA	CPU1-CNI-12D to 3PE-GRP1/1-J3	
NTND94DA	CPU1-CNI-12F to 3PE-GRP1/1-J4	
NTND94DA	CPU1-CNI-13A to 3PE-GRP2/1-J3	
NTND94DA	CPU1-CNI-13C to 3PE-GRP2/1-J4	
Intercabinet cable		Label both end:
NTND28BC	CPU0-CNI-12D to 3PE-GRP1/0-J3	
NTND28BC	CPU0-CNI-12F to 3PE-GRP1/0-J4	
NTND28BC	CPU0-CNI-13A to 3PE-GRP2/0-J3	
NTND28BC	CPU0-CNI-13C to 3PE-GRP2/0-J4	
NTND28BC	CPU1-CNI-12D to 3PE-GRP1/1-J3	
NTND28BC	CPU1-CNI-12F to 3PE-GRP1/1-J4	
NTND28BC	CPU1-CNI-13A to 3PE-GRP2/1-J3	
NTND28BC	CPU1-CNI-13C to 3PE-GRP2/1-J4	

Table 113
NTND33CC Groups 1 and 2 cable labels (Part 2 of 2)

QCA55 cabinet cable	Label both ends:
NTND95AA	CPU0-CNI-12D to 3PE-GRP1/0-J3
NTND95AA	CPU0-CNI-12F to 3PE-GRP1/0-J4
NTND95AA	CPU0-CNI-13A to 3PE-GRP2/0-J3
NTND95AA	CPU0-CNI-13C to 3PE-GRP2/0-J4
NTND95AA	CPU1-CNI-12D to 3PE-GRP1/1-J3
NTND95AA	CPU1-CNI-12F to 3PE-GRP1/1-J4
NTND95AA	CPU1-CNI-13A to 3PE-GRP2/1-J3
NTND95AA	CPU1-CNI-13C to 3PE-GRP2/1-J4

Figure 121
NTND33CC Group 1 and Group 2 cable paths



- 3 For Groups 3 and 4 (if equipped), label cables in the NTND33CC cable kit (see Figure 122 for cable paths):
- Separate the Core/Net 0, Core/Net 1, intercabinet, and QCA108 cabinet cables (see Table 114).
 - Label each cable as listed in Table 114. For each cable, label both ends the same.

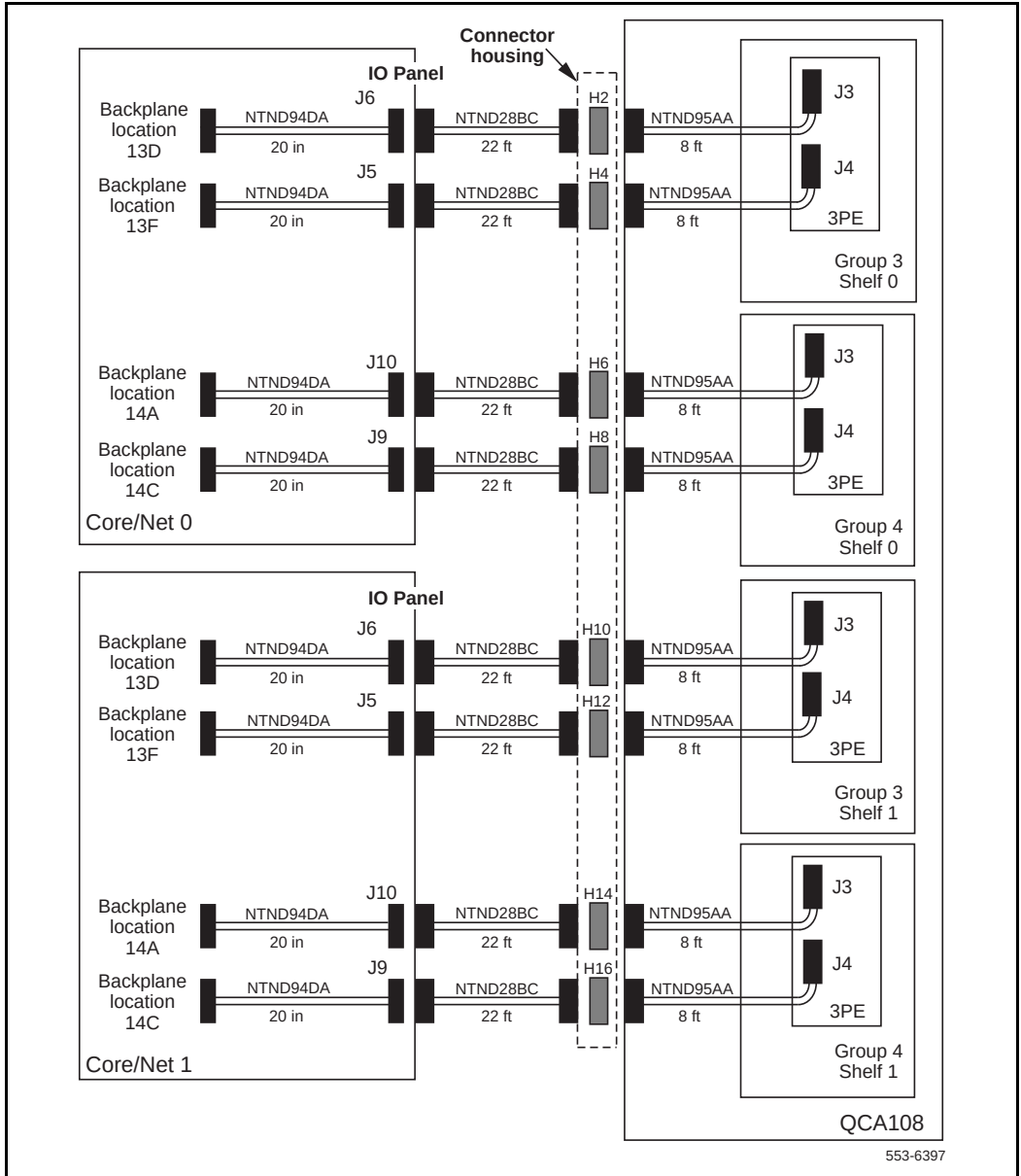
Table 114
NTND33CC Groups 3 and 4 cable labels (Part 1 of 2)

Core/Net 0 cable	Label both ends:
NTND94DA	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND94DA	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND94DA	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND94DA	CPU0-CNI-14C to 3PE-GRP4/0-J4
Core/Net 1 cable	Label both ends:
NTND94DA	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND94DA	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND94DA	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND94DA	CPU1-CNI-14C to 3PE-GRP4/1-J4
Intercabinet cable	Label both ends:
NTND28BC	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND28BC	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND28BC	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND28BC	CPU0-CNI-14C to 3PE-GRP4/0-J4
NTND28BC	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND28BC	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND28BC	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND28BC	CPU1-CNI-14C to 3PE-GRP4/1-J4

Table 114
NTND33CC Groups 3 and 4 cable labels (Part 2 of 2)

QCA108 cabinet cable	Label both ends:
NTND95AA	CPU0-CNI-13D to 3PE-GRP3/0-J3
NTND95AA	CPU0-CNI-13F to 3PE-GRP3/0-J4
NTND95AA	CPU0-CNI-14A to 3PE-GRP4/0-J3
NTND95AA	CPU0-CNI-14C to 3PE-GRP4/0-J4
NTND95AA	CPU1-CNI-13D to 3PE-GRP3/1-J3
NTND95AA	CPU1-CNI-13F to 3PE-GRP3/1-J4
NTND95AA	CPU1-CNI-14A to 3PE-GRP4/1-J3
NTND95AA	CPU1-CNI-14C to 3PE-GRP4/1-J4

Figure 122
NTND33CC Groups 3 and 4 cable paths



Installing the connector housing

In this step, you will choose a mounting location for the connector housing on the QCA108 and QCA55 cabinets, install the connector housing and bracket, and route cables from within the cabinets to the connector housing.

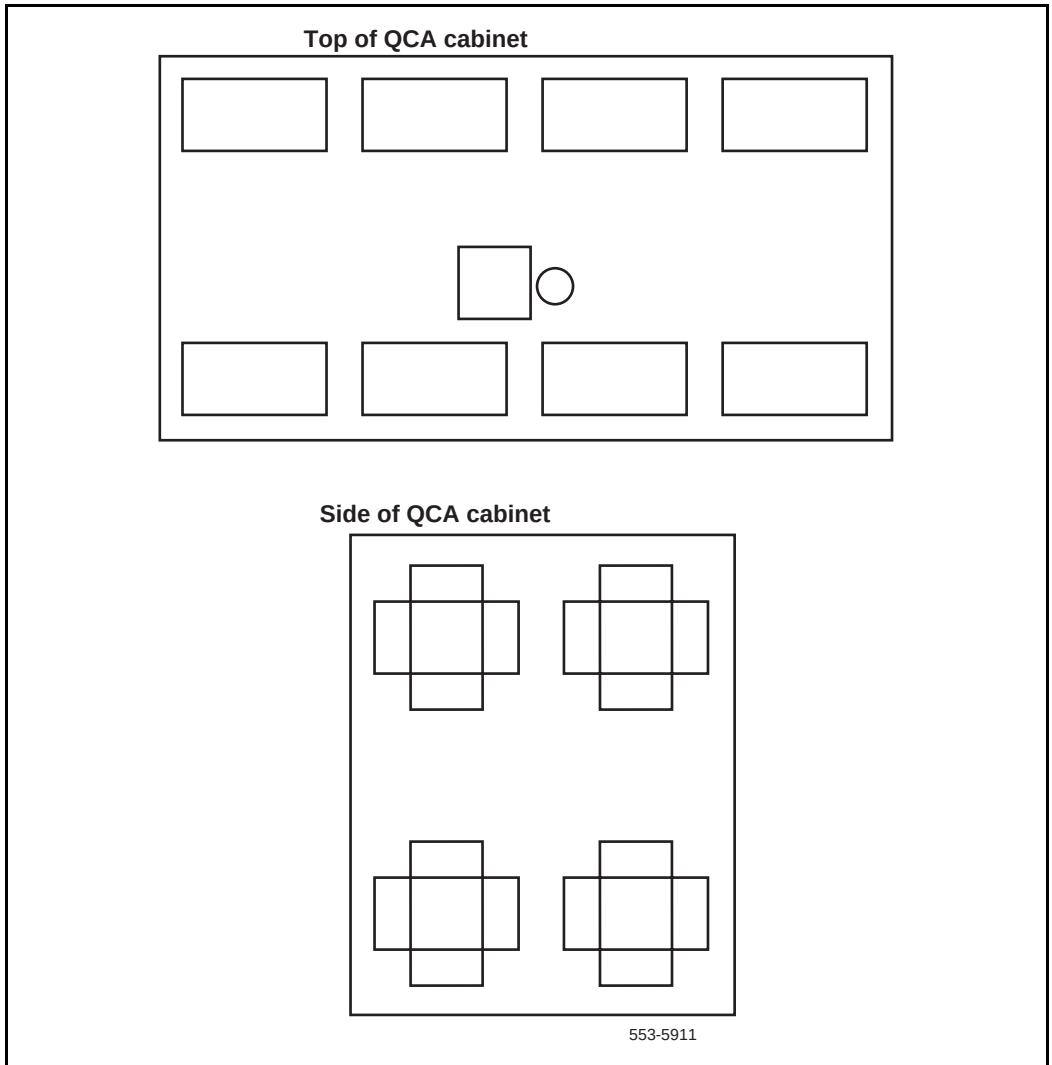
There are several possible mounting locations (see Figure 123) for the housings. The housing may be mounted at one of nine locations on the top of the cabinet:

- horizontally, with the bracket mounted on either the top or front of the housing
- vertically (on its end), with the bracket mounted on one side of the housing

The housing may also be mounted at one of four locations on either side of the cabinet:

- parallel to the floor, with the bracket mounted on one of the sides of the housing
- perpendicular to the floor, with the bracket mounted on one of the sides of the housing

Figure 123
Possible mounting locations for connector housing



- 4 For each group, assemble the connector bracket and the connector housing from the NTND33CC cable kit, mount the connector housing to the cabinet, and route the cables from within the cabinet to the connector housing.

- Locate and remove an available access cover from the cabinet.

If you are installing the connector housing horizontally on the top of the cabinet, remove the four screws and the access cover from the cabinet.

If you are installing the connector housing vertically on the top of the cabinet, remove the eight nuts and the small access cover from the cabinet, and remove the four screws and the cover plate from the end of the housing.

If you are installing the connector housing on the side of the cabinet, remove the two screws and the access cover from the cabinet.

- Mount the connector housing to the cabinet.

If you are installing the connector housing horizontally on the top of the cabinet, reuse the four screws to secure the housing to the cabinet.

If you are installing the connector housing vertically on the top of the cabinet, reuse six of the eight nuts to secure the housing to the cabinet—there is insufficient room to use two of the nuts. If there is another housing already installed adjacent to this position, first install the cover plate with the connector designations label on the front of the housing—there will be insufficient room to do this after the housing is mounted to the cabinet.

If you are installing the connector housing on the side of the cabinet, center the housing over the opening, and mark and drill four holes in the cabinet corresponding to four holes in the housing. You may either use four machine screws from the inside of the cabinet mating with the four pem nuts on the housing, or use four self-tapping screws securing to the cabinet from the inside of the housing.

CAUTION

Use caution when drilling holes in the cabinet. Do not drill into cables or equipment located directly inside the cabinet.

- Mount the connector bracket to the connector housing using the screws provided.

If you are installing the connector housing horizontally on the top of the cabinet, mount the bracket to either the top (connector designation label facing up) or the front of the housing (label facing away from the center of the cabinet), whichever is appropriate for your installation.

If you are installing the connector housing vertically on the top of the cabinet, mount the bracket on the side of the housing that will be opposite the conduit access hole in the top of the cabinet.

If you are installing the connector housing on the side of the cabinet, mount the bracket on whichever side of the housing that is appropriate for your installation.

- Route the cables for Group 0 (listed in Table 115) from within the QCA55 cabinet to the connector housing (as shown in Figure 124). Secure all NTND95 cables with bail locks.
- Route the cables for Groups 1 and 2 (listed in Table 116) and for Groups 3 and 4 (listed in Table 117) from within the QCA55 cabinet to the connector housing (as shown in Figure 124). Secure all cables with bail locks.
- Mount the remaining cover plates to the connector housing.

If you are installing the bracket on the top of the connector housing (cables entering from above), mount the cover plate with the connector designations label on the side of the housing nearest the edge of the cabinet so that it is visible from the floor.

If you are installing the bracket on the front of the connector housing (cables entering from the front), mount the cover plate with the connector designations label to the top of the housing.

Note: Mount the connector housing and bracket so that only one of the connector designation labels is visible.

Table 115
Group 0 internal cabinet cables

Cable	Cable label	Connector housing position
NTND95AA	CPU0-CNI-12A to 3PE-GRP0/0-J3	H4
NTND95AA	CPU0-CNI-12C to 3PE-GRP0/0-J4	H6
NTND95AA	CPU1-CNI-12A to 3PE-GRP0/1-J3	H12
NTND95AA	CPU1-CNI-12C to 3PE-GRP0/1-J4	H14

Figure 124
Connector positions on the connector bracket

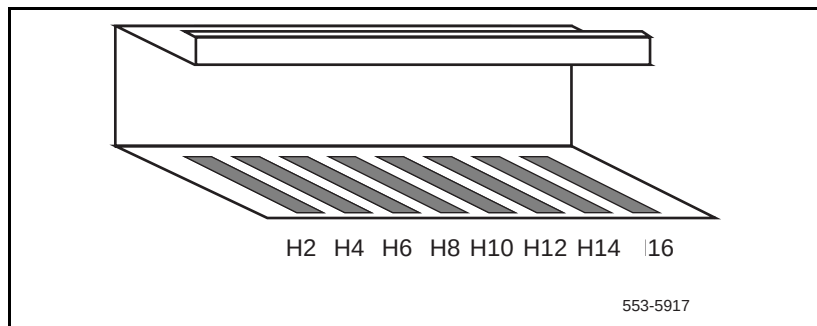


Table 116
Group 1 and Group 2 internal cabinet cables

Cable	Cable label	Connector housing position
NTND95AA	CPU0-CNI-12D to 3PE-GRP1/0-J3	H2
NTND95AA	CPU0-CNI-12F to 3PE-GRP1/0-J4	H4
NTND95AA	CPU0-CNI-13A to 3PE-GRP2/0-J3	H6
NTND95AA	CPU0-CNI-13C to 3PE-GRP2/0-J4	H8
NTND95AA	CPU1-CNI-12D to 3PE-GRP1/1-J3	H10
NTND95AA	CPU1-CNI-12F to 3PE-GRP1/1-J4	H12
NTND95AA	CPU1-CNI-13A to 3PE-GRP2/1-J3	H14
NTND95AA	CPU1-CNI-13C to 3PE-GRP2/1-J4	H16

Preparing the new column(s)

This section contains instructions for connecting the XT/71 cabinets to the system monitor and for cabling the Core/Net modules. Network loops are already cabled in the XT/71 cabinets and are not covered here. Procedures for powering up the system are provided later in the chapter, after the Core/Net module cables are installed.

Note: Leave one SDI port and system terminal configured on a network shelf in the XT/71.

- 1 Install the new column(s). Refer to *Meridian 1 system installation procedures* (553-3001-210) as needed for procedures covering installation of column equipment.
 - Prepare equipment for installation.
 - Place a fourth module on a column (if needed).
 - Position and level equipment.
 - Install overhead cable tray kits (if needed).
- 2 Install the module power supply in each module:
 - Make sure the system is disconnected from any power source.
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
 - Insert the power supply and hook the lock latches.
- 3 Set the ENB/DIS switch on the NT5D61AA IODU/C card to DIS and remove the card. Verify that the Security Device is installed onto the card, if not installed, install it now. Reinstall the card and set the ENB/DIS switch to ENB.
- 4 Install an IODU/C in slot 17 of each Core/Net module, but do not seat the card.
- 5 Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.
- 6 Make changes at the MDF to accommodate equipment in the new column(s) and system monitor connections.

- 7 Install PFTUs (if needed).
- 8 Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210) with these exceptions:
 - For the master, set SW1 positions 1, 2, and 8 to ON.
 - For slaves, set SW1 positions 1 and 8 to ON.
- 9 If IPE cards are added in the column(s), cable the lines and trunks.
- 10 Remove the eight screws that secure the right and left I/O panels. Keep the screws for reuse.

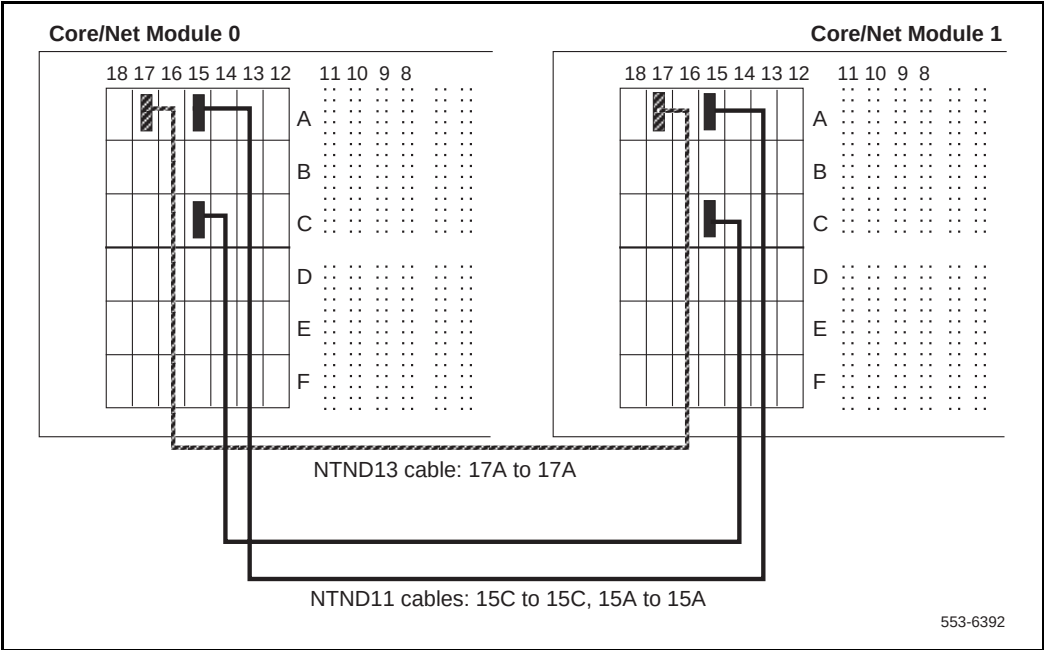
Note: If only Group 0 and Group 1 are equipped, you do not need to remove the right I/O panel. If you remove the right I/O panel, replace it with a P0745713 I/O panel from the upgrade package.
- 11 Remove the I/O panels.
- 12 Connect system monitor cables with the following exception in Core/Net 0:
 - Attach a P0369107 Filter Adapter to the inside of location J11 on the right I/O panel.
 - Connect the narrow ribbon on the NT8D46AD cable from connector J2 to location J11 on the right I/O panel.

Note: Use the extraction tool to disconnect cables from the connectors on the rear of the backplane.
- 13 Using the extraction tool, temporarily disconnect the NT7D90 Ethernet and NT7D89 RS-232 cables from backplane connector positions 17F and 15D, respectively.
- 14 In the rear of the Core/Net modules, install the following cables between Core/Net 0 and Core/Net 1 (see Figure 125).

Note: The following cables may already be connected in one of the modules. If so, leave them connected and attach the loose end.
- 15 Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 17A in Core/Net 0 to backplane connector position 17A in Core/Net 1.

- 16 Connect one NTND11 CP-to-CP Cable from backplane connector position 15C in Core/Net 0 to backplane connector position 15C in Core/Net 1.
- 17 Connect another NTND11 cable from backplane connector position 15A in Core/Net 0 to backplane connector position 15A in Core/Net 1.

Figure 125
NT5D21 Core/Net module (rear)—connections for NTND13 and NTND11 cables



- 18 For Group 0, attach adapters and cables from the NTND33CC cable kit to the inside of the left I/O panel for each Core/Net module.
Note: When installing the left I/O panel, make sure the word LEFT faces the outside of the module. The connector locations listed below correspond to the designations on the outside of the panel.
- 19 Connect the NTND94DA CNI cables to the inside of the left I/O panel (as viewed from the rear) as listed in Table 118.

- 20** For Group 1 (if equipped), connect the NTND94DA cables from the NTND33CC cable kit to the inside of the left I/O panel for each Core/Net module as listed in Table 118.

Table 118
NTND94DA cable connections on the Core/Net I/O panels

Group	Core/Net 0 cable labels	Core/Net 1 cable labels	I/O panel location	Backplane location
0	CPU0-CNI-12A to 3PE-GRP0/0-J3	CPU1-CNI-12A to 3PE-GRP0/1-J3	J26 on left panel	12A
0	CPU0-CNI-12C to 3PE-GRP0/0-J4	CPU1-CNI-12C to 3PE-GRP0/1-J4	J27 on left panel	12C
1	CPU0-CNI-12D to 3PE-GRP1/0-J3	CPU1-CNI-12D to 3PE-GRP1/1-J3	J22 on left panel	12D
1	CPU0-CNI-12F to 3PE-GRP1/0-J4	CPU1-CNI-12F to 3PE-GRP1/1-J4	J23 on left panel	12F
2	CPU0-CNI-13A to 3PE-GRP2/0-J3	CPU1-CNI-13A to 3PE-GRP2/1-J3	J2 on right panel	13A
2	CPU0-CNI-13C to 3PE-GRP2/0-J4	CPU1-CNI-13C to 3PE-GRP2/1-J4	J1 on right panel	13C
3	CPU0-CNI-13D to 3PE-GRP3/0-J3	CPU1-CNI-13D to 3PE-GRP3/1-J3	J6 on right panel	13D
3	CPU0-CNI-13F to 3PE-GRP3/0-J4	CPU1-CNI-13F to 3PE-GRP3/1-J4	J5 on right panel	13F
4	CPU0-CNI-14A to 3PE-GRP4/0-J3	CPU1-CNI-14A to 3PE-GRP4/1-J3	J10 on right panel	14A
4	CPU0-CNI-14C to 3PE-GRP4/0-J4	CPU1-CNI-14C to 3PE-GRP4/1-J4	J9 on right panel	14C

- 21** Install the left I/O panel in each of the Core/Net modules and route the cables:
- Feed the cables attached to the I/O panel through the panel opening.
 - While holding the panel in place, connect the NT7D90 and NT7D89 cables to backplane connectors 17F and 15D, respectively.

- 22 Install the eight I/O panel screws removed earlier.
- 23 Connect the cables to the backplane connector locations indicated on the cable label (refer to Table 118).
- 24 For Group 2, Group 3, and Group 4 (if equipped), attach adapters and cables from the NTND33CC cable kits to the inside of the right I/O panel for each Core/Net module.

Note: When installing the right I/O panel, use a P0745713 panel from the upgrade package. Make sure the word RIGHT faces the outside of the module. The connector locations listed below correspond to the designations on the outside of the panel.
- 25 For each group, connect the NTND94DA cables to the right I/O panel as indicated by Table 118.
- 26 Install the right I/O panel in each of the Core/Net modules and route the cables:
 - Feed the cables attached to the I/O panel through the panel opening.
 - While holding the panel in place, connect the NT7D90 and NT7D89 cables to backplane connectors as indicated by the label on the cable, and Table 118.
- 27 Install the eight I/O panel screws removed earlier.
- 28 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal:

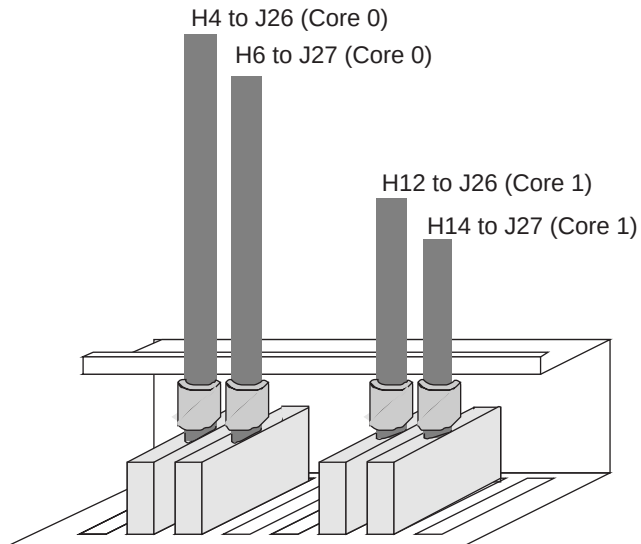
9600 baud, 7 data bits, 1 stop bit, space parity, full duplex, XON protocol

- 29** For Group 0, connect the intercabinet cables from the NTND33CC cable kit:
- Mount and screw-lock the intercabinet cables listed in Table 119 to the Group 0 connector housing on the top of the QCA55 cabinet (see Figure 126). Using a screwdriver, you can access the rear screw locks through the access hole in the strain relief bracket.
 - Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the left I/O panels as listed in Table 119, and secure the cables with the screw-locks.

Table 119
Group 0 intercabinet cables

Cable	Cable label	Connector housing location	I/O panel location
NTND28BB	CPU0-CNI-12A to 3PE-GRP0/0-J3	H4	Core/Net 0—J26
NTND28BB	CPU0-CNI-12C to 3PE-GRP0/0-J4	H6	Core/Net 0—J27
NTND28BB	CPU1-CNI-12A to 3PE-GRP0/1-J3	H12	Core/Net 1—J26
NTND28BB	CPU1-CNI-12C to 3PE-GRP0/1-J4	H14	Core/Net 1—J27

Figure 126
Group 0 cables connecting to the connector bracket



Note: For clarity, the connector housing is not shown in the illustration.

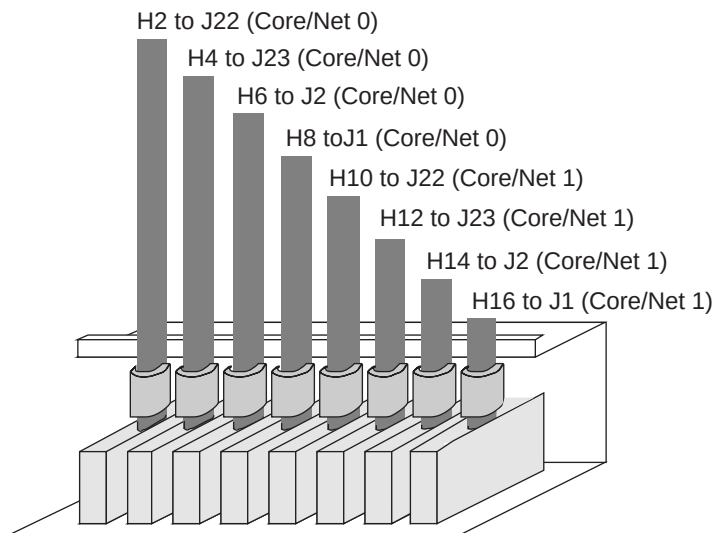
553-6399

- 30** For Group 1 and Group 2 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
- Mount and screw-lock the intercabinet cables listed in Table 120 to the connector housing on the top of the QCA55 cabinet (see Figure 127).
 - Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the I/O panels as listed in Table 120, and secure the cables with the screw-locks.

Table 120
Groups 1 and 2 intercabinet cables

Cable	Cable label	Connector housing location	I/O panel location
NTND28BC	CPU0-CNI-12D to 3PE-GRP1/0-J3	H2	Core/Net 0—J22
NTND28BC	CPU0-CNI-12F to 3PE-GRP1/0-J4	H4	Core/Net 0—J23
NTND28BC	CPU0-CNI-13A to 3PE-GRP2/0-J3	H6	Core/Net 0—J2
NTND28BC	CPU0-CNI-13C to 3PE-GRP2/0-J4	H8	Core/Net 0—J1
NTND28BC	CPU1-CNI-12D to 3PE-GRP1/1-J3	H10	Core/Net 1—J22
NTND28BC	CPU1-CNI-12F to 3PE-GRP1/1-J4	H12	Core/Net 1—J23
NTND28BC	CPU1-CNI-13A to 3PE-GRP2/1-J3	H14	Core/Net 1—J2
NTND28BC	CPU1-CNI-13C to 3PE-GRP2/1-J4	H16	Core/Net 1—J1

Figure 127
Group 1 and 2 cables connecting to the connector bracket



Note: For clarity, the connector housing is not shown in the illustration.

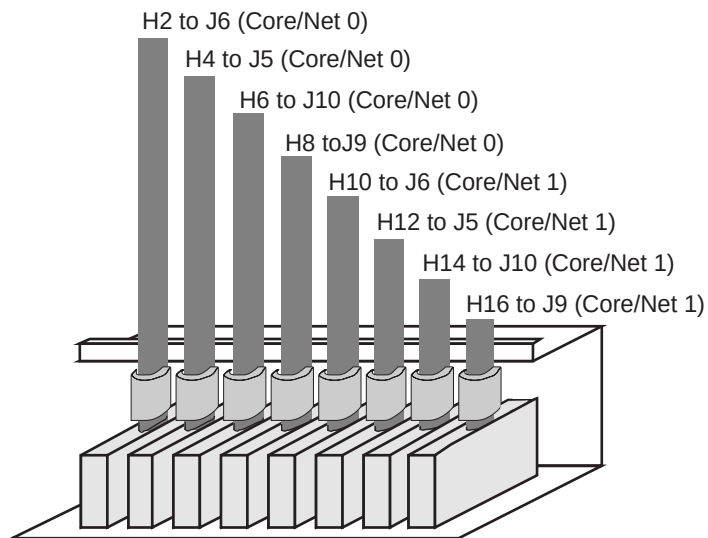
553-6400

- 31** For Group 3 and Group 4 (if equipped), connect the intercabinet cables from the NTND33CC cable kit:
- Mount and screw-lock the intercabinet cables listed in Table 121 to the connector housing on the top of the QCA108 cabinet (see Figure 128).
 - Route the cables along the overhead cable racks to the Core/Net modules. Connect the cables to the outside of the right I/O panels as listed in Table 121, and secure the cables with the screw-locks.

Table 121
Group 3 and Group 4 intercabinet cables

Cable	Cable label	Connector housing position	I/O panel connector
NTND28BC	CPU0-CNI-13D to 3PE-GRP3/0-J3	H2	Core/Net 0—J6
NTND28BC	CPU0-CNI-13F to 3PE-GRP3/0-J4	H4	Core/Net 0—J5
NTND28BC	CPU0-CNI-14A to 3PE-GRP4/0-J3	H6	Core/Net 0—J10
NTND28BC	CPU0-CNI-14C to 3PE-GRP4/0-J4	H8	Core/Net 0—J9
NTND28BC	CPU1-CNI-13D to 3PE-GRP3/1-J3	H10	Core/Net 1—J6
NTND28BC	CPU1-CNI-13F to 3PE-GRP3/1-J4	H12	Core/Net 1—J5
NTND28BC	CPU1-CNI-14A to 3PE-GRP4/1-J3	H14	Core/Net 1—J10
NTND28BC	CPU1-CNI-14C to 3PE-GRP4/1-J4	H16	Core/Net 1—J9

Figure 128
Groups 3 and 4 cables connecting to the connector bracket



Note: For clarity, the connector housing is not shown in the illustration.
All connections are to the right I/O panel.

553-7456

Transferring call processing to CPU 0 in XT and option 71

Before proceeding with the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 On the XT/71 system, log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

Always enter LD 43 from the source (current) media.

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Verify system operation in the XT/71, then split the system so CPU 1 is inactive and all call processing is handled by CPU 0:

- 5 Get the status of the CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled.

LD 35	to load the program
STAT CPU	to get the status of both CPUs
STAT CMA	to get CMA or OCMA status
STAT EXT	to get the extender status
STAT MEM	to get the memory status
- 6 Test and switch CPUs:

TEST CPU	to test the CPUs
SCPU	to switch the CPUs

7 Disable clock controller 1:

LD 60	to load the program
SSCK 0	to get the status of clock 0
SSCK 1	to get the status of clock 1
SWCK	if necessary, to switch to clock controller 0
DIS CC 1	to disable clock controller 1
****	to exit the program

Set the ENB/DIS switch to DIS on the clock controller card in CPU 1. Label and disconnect the cable at the junctor board. Then label and disconnect the cable at the faceplate of the clock controller card. If primary and secondary clock reference cables are equipped, label and disconnect them last.

8 Get the status of the other CPU, CMA or OCMA, extenders, and memory. Verify that all common equipment is enabled.

STAT CPU	to get the status of both CPUs
STAT CMA	to get CMA or OCMA status
STAT EXT	to get the extender status
STAT MEM	to get the memory status

9 Verify that CPU 0 is enabled (CPU 1 is idle).

10 Set the NORM/MAINT switch on the CMA or OCMA card in CPU 0 to MAINT.

11 List the enabled memories. Then disable the memories and CMA or OCMA in CPU 1:

LENL	to list enabled memories
DIS 10	to disable CPU 1 memory (10, 11, 12 if equipped)
DIS CMA 1	to disable CMA or OCMA 1
****	to exit LD 35

12 Set the QPC215 Segmented Bus Extenders (SBE) ENB/DIS switch to DIS in CPU 1.

13 Software disable the QPC742 FDI, QPC584 MSI, or NT9D34 EMSI card in CPU 0.

DIST	to disable the card

- 14 Set the ENB/DIS switch to DIS on the QPC584 or QPC742 card in CPU 0.
- 15 Set the NORM/MAINT switch in CPU 1 to MAINT. This splits the CPUs and will cause a sysload. If the sysload does not begin, press the RLD button on CMA 1 only. Wait for the sysload to complete to verify the sanity of CPU 1 before proceeding with the upgrade.

The CMA and SDI lights will go out and the disk drives will run. The following messages will print out (they may differ slightly depending on the X11 release). Check for dial tone following the DONE and INI000 messages:

```
SYS000
SYS092
SYS093
SYS511
SYS091
SYS090
SYSLOAD RLS: xx
ISSUE: x
DONE

INI000
```

Note 1: When the sysload is complete, midnight routines will begin. You can log into the system, which will interrupt the midnight routines, and continue with the upgrade.

Note 2: If the system fails to load or messages indicate data corruption, do not proceed with the upgrade until all problems have been cleared.

The new column(s) are installed and powered on. The XT/71 system is operating in split-mode with call processing on CPU 0.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the XT/71 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

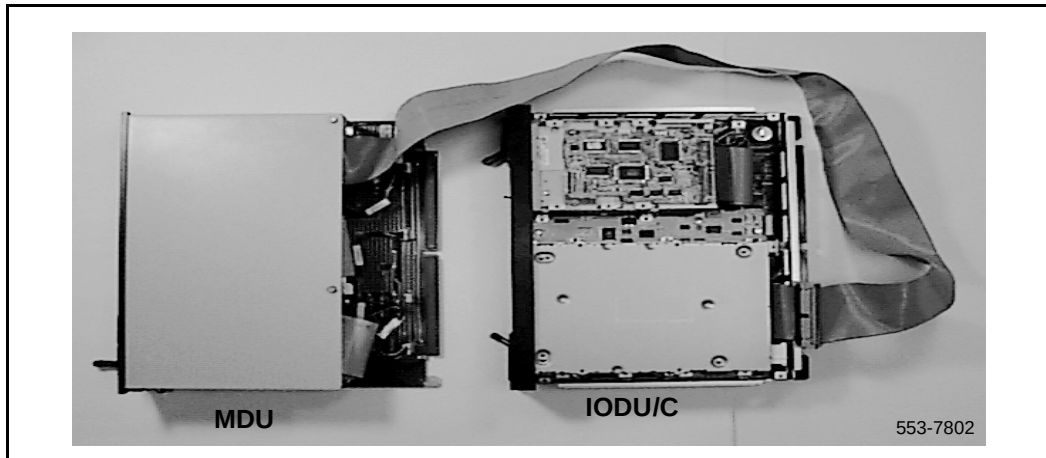
- 1 **Verify that Core/Net 1 is powered down.**
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 129, on page 658). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 6 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).

Figure 129
Cabling the MDU to the IODU/C card



- 7 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 8 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive (68030, 68040, 68060 or 68060E).
- 9 Connect a terminal to the J25 CPSI port on Core/Net 0.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.
- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu

- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release

- 15 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only
 <f> to transfer the customer database from the MDU
 <a> to continue the database transfer
 <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
 <cr> to continue
 the Installation Status Summary menu appears to confirm database transfer
 <y> to start installation
 <a> yes, transfer the database
 Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
 <cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
 <cr> Press return to return to the Install Menu.
 Remove any diskettes from the floppy drive.
 <q> When the Install Menu appears, select <q> to quit. Remove any
 <y> to confirm quit
 <a> to reboot the system
 The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

- 16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.
- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 22 Verify that the CP card faceplate switch is set to MAINT.
- 23 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 When the NT logo appears, press <CR> to continue.

3 Log into the system.

4 Enter the date and time when prompted.

5 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

6 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

7 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for "DONE" and then "INI" messages to be displayed before continuing.

8 When the sysload is complete, log into the system.

- 9 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 10 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 11 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 12 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 13 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

Continue with “Configuring the system” on page 664.

Configuring the system

- 1 Configure networks as CNI groups, based on the number of CNI cards in the system. In a typical configuration, there are three CNI cards for five network groups (see Table 122). See *X11 input/output guide* for a complete description of the Configuration Record (LD 17).

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
CEQU	YES	
•		
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p g	s = card slot (12–14) p = port (0 or 1) g = network group (0–4)
•		

Note: If the number of network groups configured in the system does not match the number of network groups equipped, you must add or remove groups. See the *X11 input/output guide* (553-3001-400) for procedures describing adding and removing groups.

Table 122
Typical CNI configurations

CNI card slot	Port	Network group
12	0	Group 0
12	1	Group 1
13	0	Group 2
13	1	Group 3
14	0	Group 4

- 2 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Note: The History File requires a dedicated I/O port.

Prompt	Response	Comments
REQ	CHG	
TYPE	CFN	
•		
ADAN	CHG	x = terminal number (0–15)
•	terminal x	
GRP	g	g = network group (0–4)
•		

- 3 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17.

- 4 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to select the print option
TYPE CFN	to print the configuration
****	to exit the program

- 5 Verify the changes, and then load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD	to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 If slot 13 in Group 0, Network Shelf 1 and slot 2 in Group 0, Network Shelf 0 are not empty, remove the cards currently in these slots and move them to any available slot of other groups.

Note: If the XT system is equipped with two QSD39 Network shelves for Group 0 (left side and right side), ensure that slot 2 is empty in both Group 0, Network Shelf 1, and Group 0, Network Shelf 0.

- 7 If you are installing clock controller 1 in a QSD40 Network shelf, skip this step and continue with step 8. However, if you are installing clock controller 1 in a QSD39 Network shelf, you must replace the QPC477 BTUs with network hybrids before continuing with the upgrade. Refer to “Network hybrid installation” on page 889 for installation procedures.

CAUTION

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

When the network hybrids are installed, continue with step 8.

- 8 Set the switches on clock controller 1 (see Table 123). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 1 module. Leave the ENB/DIS switch set to DIS.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

Table 123
Clock controller card 1 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 9 Reroute the cables from the primary and secondary clock reference cards and connect them to the faceplate of clock controller card 1 in its new location.
- 10 Reroute the cable from the junctor board and connect them to the faceplate of clock controller card 1.
- 11 Connect the NT1R04AA cable first to the connector on the controller card, then to the connector on the junctor panel.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 12 On the QPC441 3PE cards in network Shelf 1 of all groups, tag and disconnect the cables connected to QPC215 SBE cards.
- 13 As listed in Table 124, connect NTND95AA cables to the 3PE faceplates in network Shelf 1 of all equipped network groups.

- 14 Set the ENB/DIS switch to ENB on the clock controller card in slot 13 of Group 1, Shelf 1.

Table 124
Network Shelf 1: NTND95AA cable connections to 3PE cards

Network group	Cable label	Connector housing	Connector position	3PE connector
0	CPU1-CNI-12A to 3PE-GRP0/1-J3	Group 0	H12	J3
0	CPU1-CNI-12C to 3PE-GRP0/1-J4	Group 0	H14	J4
1	CPU1-CNI-12D to 3PE-GRP1/1-J3	Groups 1 & 2	H10	J3
1	CPU1-CNI-12F to 3PE-GRP1/1-J4	Groups 1 & 2	H12	J4
2	CPU1-CNI-13A to 3PE-GRP2/1-J3	Groups 1 & 2	H14	J3
2	CPU1-CNI-13C to 3PE-GRP2/1-J4	Groups 1 & 2	H16	J4
3	CPU1-CNI-13D to 3PE-GRP3/1-J3	Groups 3 & 4	H10	J3
3	CPU1-CNI-13F to 3PE-GRP3/1-J4	Groups 3 & 4	H12	J4
4	CPU1-CNI-14A to 3PE-GRP4/1-J3	Groups 3 & 4	H14	J3
4	CPU1-CNI-14C to 3PE-GRP4/1-J4	Groups 3 & 4	H16	J4

Transferring call processing to Core/Net 1

- 1 Set the ENB/DIS switch to ENB on all CNI cards in Core/Net 1.
- 2 Enable each CNI card in Core/Net 1:
LD 135 to load the program
ENL CNI 1 slot to enable the CNI card (repeat for each CNI card)
(12, 13 or 14)
******** to exit the program

CAUTION

Call processing will be interrupted. Perform the next steps carefully. This is the point at which your service will be interrupted. Calls in process will be interrupted.

- 3 Perform the next 3 steps in rapid succession to avoid prolonged interruption of call processing. Call processing will switch from CPU 0 to Core/Net 1.
 - Set the ENB/DIS switch to DIS on all SBE cards in CPU 0.
 - Verify that the NORM/MAINT switch on the CP card in Core/Net 1 is set to MAINT.
 - Press the MAN INT button on the CP card in Core/Net 1. Watch the initialization process. Make sure the faceplate LEDs go out on the CNI, 3PE, and IGS cards.

4 Check for dial tone. If there is no dial tone, the system is inoperable. If you cannot afford downtime, switch the loops back to CPU 0 in the XT/71:

- Set the ENB/DIS switch on each CNI card on Core/Net 1 to DIS. Set the ENB/DIS switch on each SBE card on CPU 0 to ENB.
- Initialize CPU 0 by pressing the MAN INT button.
- Troubleshoot the new modules off-line.

If you can afford downtime, troubleshoot the new modules on-line:

- Perform a visual check of the Core/Net module. Verify that each card is in the correct slot. Verify that all cards are seated, all ENB/DIS switches are set to ENB, and all red LEDs are off.
- Verify that all cables are properly and securely connected in the front and rear of the module.
- Check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- If any CNI cards are disabled, enable them in LD 135, perform a data dump with LD 43, and initialize the system by pressing the MAN INT button. Otherwise, proceed directly to step 5.
- Again, check the status of the CNI cards with LD 135 “STAT CNI” and ensure all configured CNIs are software enabled.
- Check for dial tone.

5 Following a successful dial tone test, perform the following basic sanity tests:

- Make sure intra-group and inter-group calls can be placed.
- Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

The upgrade of CPU 1 is complete. The system is operating in split-mode with call processing on Core/Net 1.

Check the remaining equipment from the upgrade package. Make sure you have enough equipment to upgrade CPU 0 and for troubleshooting, if needed.

Upgrading the software and ROMs on Core/Net 0

Note: Connect the terminal (or set the switch on the switch box) to J25 on Core/Net 0.

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Insert the CP Install Program diskette into active IODU/C floppy drive in Core/Net 0. Make sure that the CP Install Program corresponds to the CP card type installed in the system.
- 2 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 3 Initiate the installation by selecting the following prompt from the menu:
`<cr> <u>>` to Install menu
- 4 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
`<a>` continue with keycode validation
- 5 Remove the Keycode diskette and re-insert the CP Install Program diskette into the IODU/C floppy drive in Core/Net 0.
- 6 When the main menu appears, select the following option to copy the software from Core/Net 1 to Core/Net 0 and exit the Main Menu:
`<o>` to copy system software from the other Core
- 7 When the software is installed successfully, press `<CR>` to install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM. Follow the screen directions until the Main Menu returns.

- 8 From the Main Menu, select the prompts in the following sequence to install the IOP-ROM:

<f>	to install IOP-ROM only
<cr> <a>	to install the IOP-ROM from hard disk
<y>	Yes, start installation
<cr> <a>	to continue with ROM upgrade

Follow the screen directions until the Main Menu returns.

- 9 From the Main Menu, select the following options in sequence to copy the customer database from Core/Net 1 to Core/Net 0.:

<d>	to go to the Database menu
<d>	to copy the database from Core 1 to Core 0
<y>	to confirm the installation status summary
<a>	to confirm database copy

- 10 From the Main Menu, select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit

- 11 Reboot the Core/Net 0 CPU:

<a>	to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

- 12 Set the ENB/DIS switch to DIS on the clock controller card in CPU 0. Label and disconnect the cable at the junctor board. Then label and disconnect the cable at the faceplate of the clock controller card. If primary and secondary clock reference cables are equipped, label and disconnect them last.
- 13 Remove the clock controller in CPU 0.

- 14** Replace the QPC477 BTUs in the QCA39 Network shelf with the network hybrids provided in the Network Hybrid Installation Kit before continuing with the upgrade. Refer to “Network hybrid installation” on page 889 for installation procedures.

CAUTION

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

When the network hybrids are installed, continue with step 15.

- 15** Set switches on clock controller 0 as shown in Table 125.
- 16** Set the ENB/DIS switch on the clock controller card to DIS and install the card in slot 2 of the Group 0, Network Shelf 0 module.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

Table 125
Clock controller card 0 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 17** Connect the cables from the primary and secondary clock reference cards to the faceplate of the clock controller card.

- 18 Route the cable from the junctor board to the clock controller card. Connect the cable first to the controller card, then to the connector on the junctor panel.
- 19 Verify that the ENB/DIS switch on the clock controller cards is set to DIS.

CAUTION

Leave the ENB/DIS switch on the 3PE cards set to ENB. If the cards are disabled, the system will initialize.

- 20 On the QPC441 3PE cards in network Shelf 0 of all groups, label and disconnect the cables connected to QPC215 SBE cards.
- 21 As listed in Table 126, connect NTND95AA cables to the 3PE faceplates in network Shelf 0 of all equipped network groups.

Table 126
Network Shelf 0: NTND95AA cable connections to 3PE cards

Network group	Cable label	Connector housing	Connector location	3PE card connector
0	CPU0-CNI-12A to 3PE-GRP0/0-J3	Group 0	H4	J3
0	CPU0-CNI-12C to 3PE-GRP0/0-J4	Group 0	H6	J4
1	CPU0-CNI-12D to 3PE-GRP1/0-J3	Groups 1 & 2	H2	J3
1	CPU0-CNI-12F to 3PE-GRP1/0-J4	Groups 1 & 2	H4	J4
2	CPU0-CNI-13A to 3PE-GRP2/0-J3	Groups 1 & 2	H6	J3
2	CPU0-CNI-13C to 3PE-GRP2/0-J4	Groups 1 & 2	H8	J4
3	CPU0-CNI-13D to 3PE-GRP3/0-J3	Groups 3 & 4	H2	J3
3	CPU0-CNI-13F to 3PE-GRP3/0-J4	Groups 3 & 4	H4	J4
4	CPU0-CNI-14A to 3PE-GRP4/0-J3	Groups 3 & 4	H6	J3
4	CPU0-CNI-14C to 3PE-GRP4/0-J4	Groups 3 & 4	H8	J4

- 22 Check the status of all configured CNI cards:

LD 135 to load the program
STAT CNI to get the status of all configured CNIs
******** to exit the program

- 23 Set the ENB/DIS switch on all CNI cards in Core/Net 0 to ENB.

- 24 **Set the MAINT/NORM switch on the CP card in Core/Net 0 to NORM.**

An “HW1534” message from the CPSI (Core/Net 1) or SDI port indicates the start of memory synchronization. After 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized.

- 25 **Set the NORM/MAINT switch to NORM on the CP card in Core/Net 1.**

- 26 Perform a redundancy sanity test:

LD 135 to load the program
STAT CNI to get the status of all configured CNIs
STAT CPU to get the status of both Cores
TEST CPU to test the inactive CP card and CP-to-CP cable
TEST IPB to test the backplane protocol on the inactive side
TEST CNI c s to test each configured CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 27 Test the inactive Core, then switch Cores and test the other side:

SCPU to switch to Core/Net 0
TEST CPU to test the inactive CP card and CP-to-CP cable
TEST IPB to test the backplane protocol on the inactive side

- 28 Get the status of the CP cards and memories and of the CNIs:

STAT CPU to get the status of both Cores
STAT CNI to get the status of all configured CNIs
******** to exit LD 135

- 29 Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:

LD 137	to load the program
STAT	to get the status of IODU/Cs, and redundancy
SWAP	to switch IODU/Cs (if necessary)
SYNC	to synchronize the hard disks
TEST CMDU	Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 30 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:

STAT	to get the status of IODU/Cs, and redundancy
SWAP	to switch IODU/Cs (if necessary)
****	to exit LD 137

- 31 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected

- 32 Check the status of the clocks, swap clocks, and verify status:

LD 60	to load the program
SSCK 0	to get the status of clock 0
SSCK 1	to get the status of clock 1
SWCK	to swap active clocks
SSCK 0	to verify that clock 0 is active
SSCK 1	to verify that clock 1 is inactive
****	to exit the program

- 33** Insert a B1 database diskette into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C:

Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

At this stage, the system is operating in dual CPU mode with redundant hard disks. To confirm system operation, continue with the final upgrade steps.

Completing the upgrade

- 1 Install two alarm termination plugs (P0623569) in the QCA55 cabinet:
 - Install one plug at a convenient location on the cabinet frame near each CPU.
 - Disconnect the power monitor cable from each CPU shelf and plug it into a termination plug.
- 2 Power down the CPU shelves in the XT/71 cabinet by turning the CPU shelf input breaker to OFF.
- 3 In the XT/71 cabinets, verify that the following connections are in place, or install the equipment required (see Figure 130):
 - Connect the power monitor in the cabinet to a P0360683 Filter Adapter on the top of the cabinet. Use a new NT1R04AA cable or an existing QCAD117A, QCAD193A, or QCAD199A cable.
 - Connect the P0360683 Filter Adapter to the MDF with a P10 cable.
 - Connect an SDI card in a network shelf to an A0369107 Filter Adapter on the top of the cabinet. Use a new NT8D82AC or NT8D82AD cable, or an existing QCAD120A cable.
- 4 For Core/Net 0 (see Figures 131 and 132):
 - Verify that an NT8D46 cable from J3 on the master system monitor is connected to the MDF.
 - Verify that the narrow ribbon on the NT8D46AD cable from connector J2 is connected to location J11 on the right I/O panel.
- 5 Connect an NT8D95BJ cable to the A0369107 Filter Adapter on the XT/71 cabinet (see Figures 133 and 134).
- 6 Connect the NT8D95BJ cable to location J11 on the right I/O panel in Core/Net 0.

Figure 130
Power monitor and SDI connections in the QCA55 cabinet

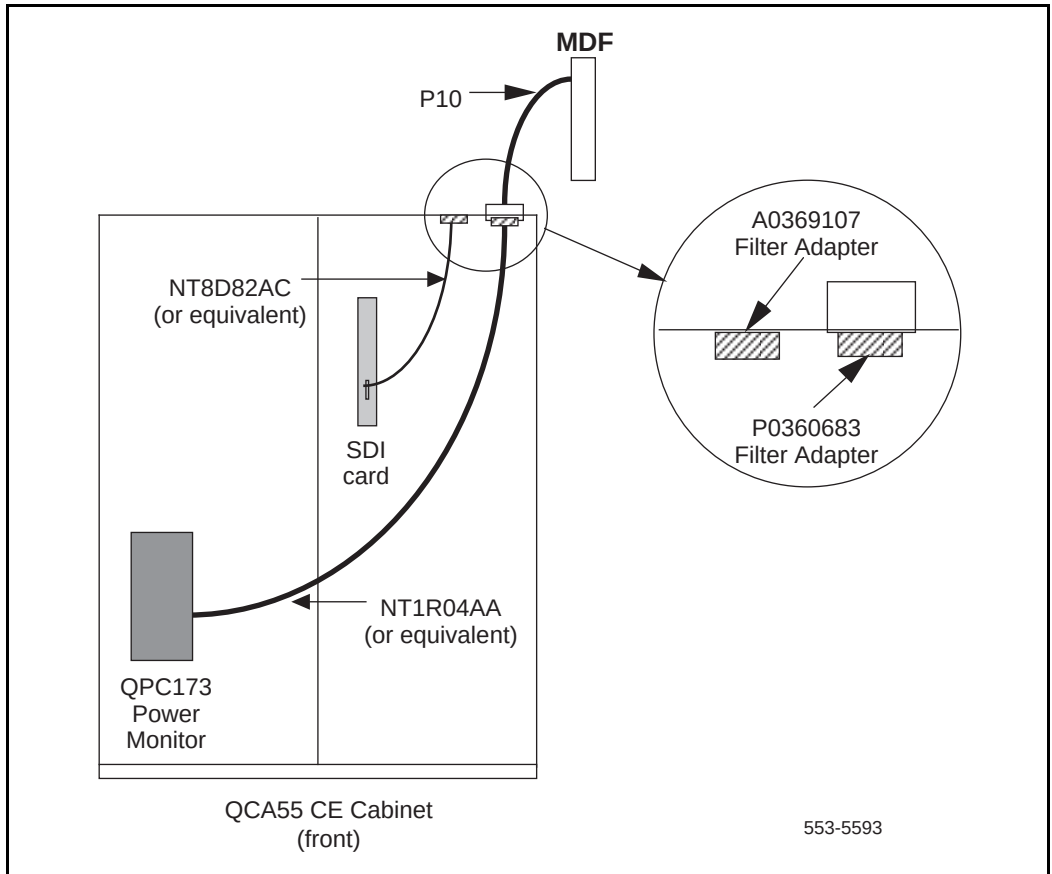


Figure 131
System monitor and SDI filter adapter connections in dual-column installations

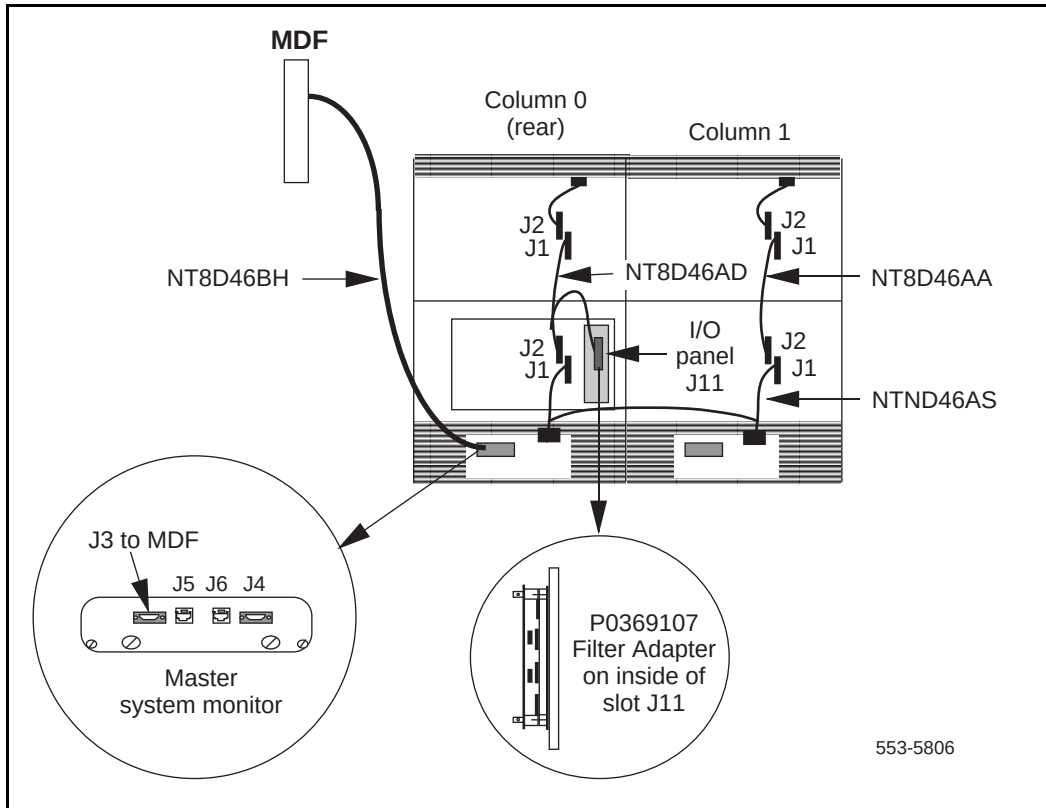


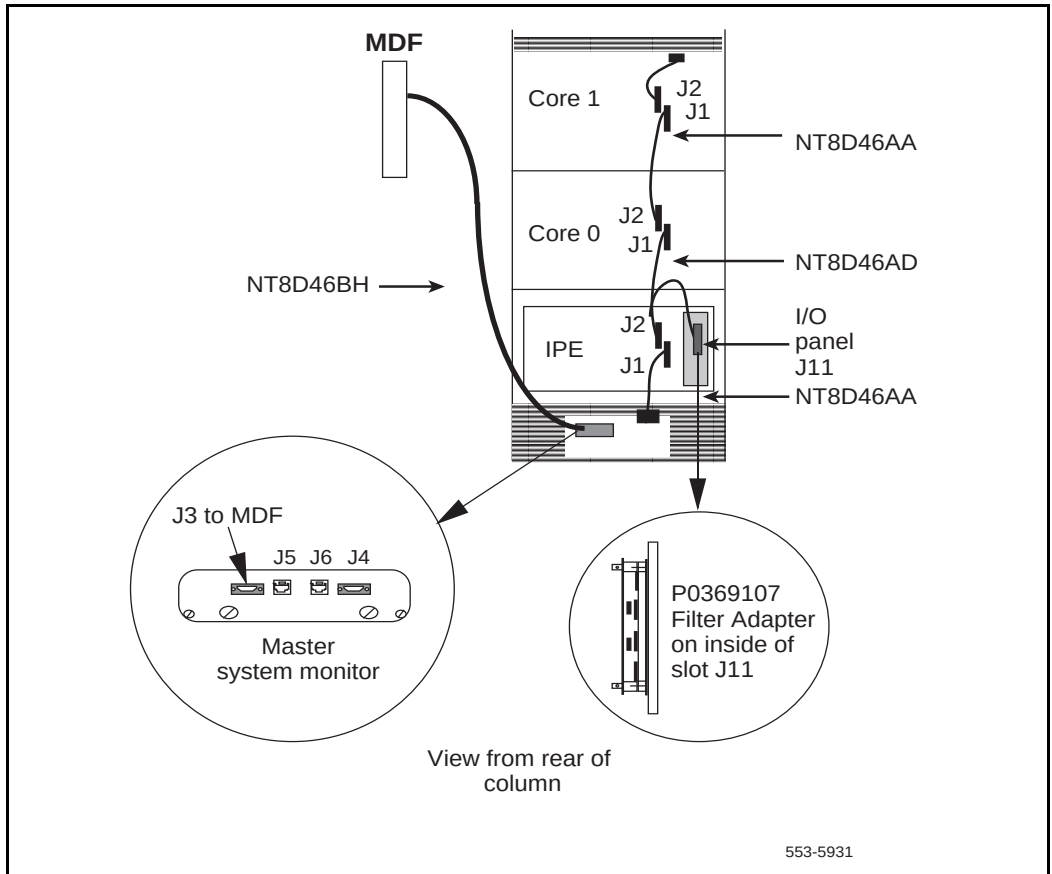
Figure 132**System monitor and SDI filter adapter connections in single-column installations**

Figure 133
System monitor and SDI connections between XT/71 and Core/Net modules
in dual-column installations

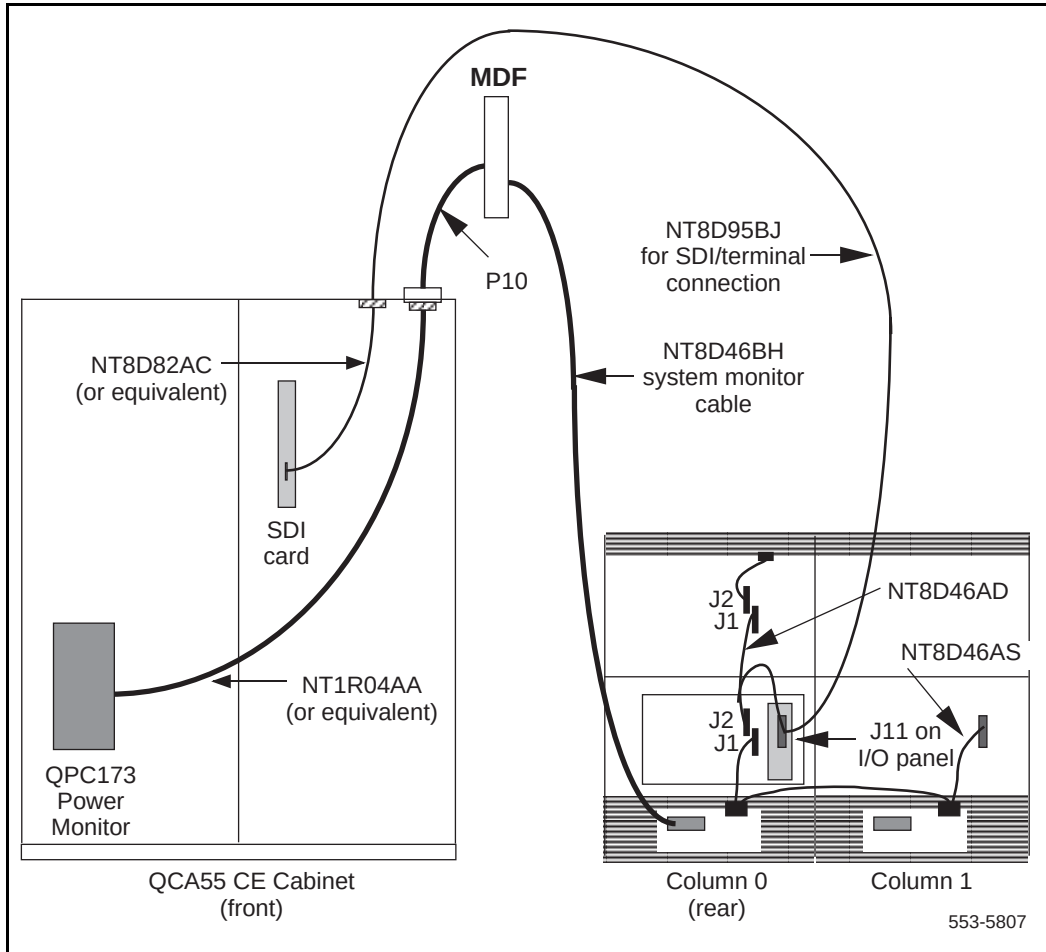
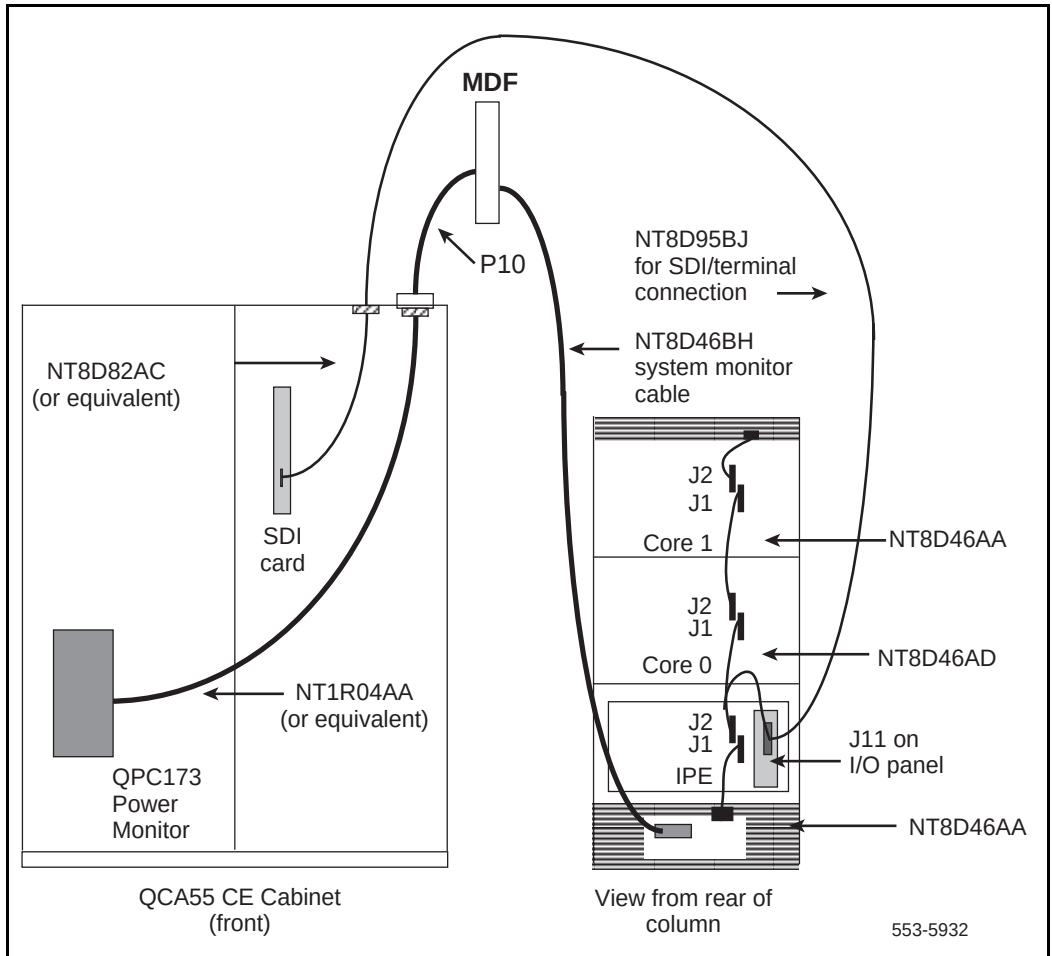


Figure 134

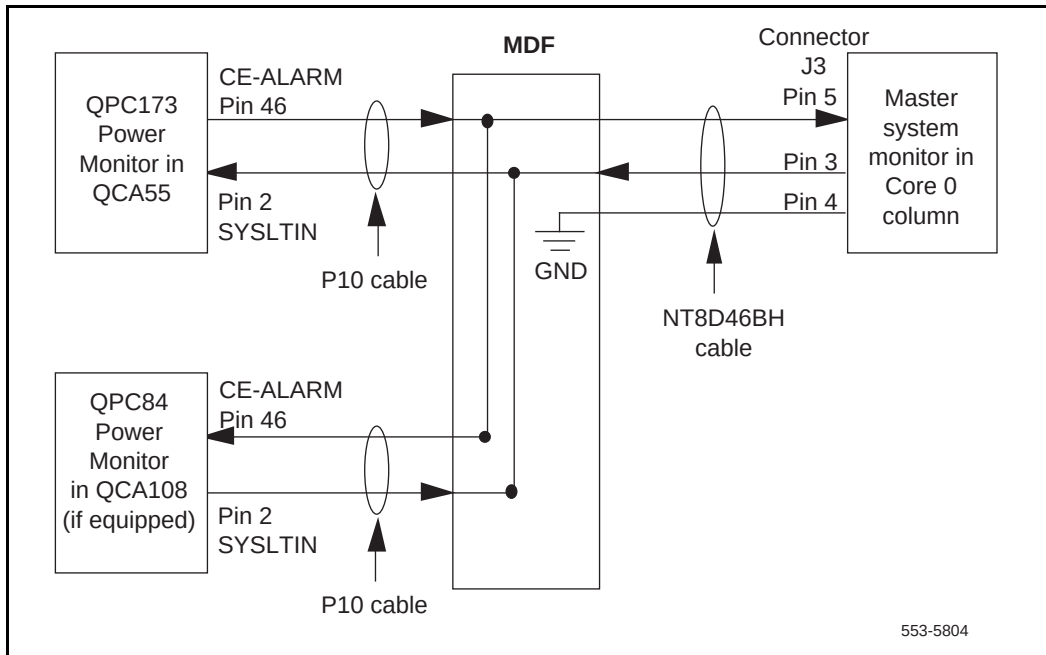
System monitor and SDI connections between XT/71 and Core/Net modules in single-column installations



- 7 To enable a system monitor connection between the cabinets and column(s), cross-connect the NT8D46BH (or DH, or EH) cable from J3 on the master system monitor to the P10 cable from the XT/71 cabinets (see Figures 133, 134, and 135):

- Pin 5 (slate/white wire) of the NT8D46BH cable must terminate to Pin 46 (violet/blue wire) of the P10 cable.
- Pin 3 (green/white wire) of the NT8D46BH cable must terminate to Pin 2 (orange/white wire) of the P10 cable.
- Pin 4 (brown/white wire) of the NT8D46BH cable must terminate to MDF0/GND.

Figure 135
System monitor cross-connections at the MDF



- 8 In the tape shelf of the XT system CE cabinet, verify that the ENB/DIS switch on the QPC173 Power Monitor card is set to DIS and seat the card in the slot.

- 9 Using the terminal connected to the network SDI port, confirm the SDI and system monitor connections by checking the system monitor status:

LD 37 to load the program
STAT XSM to check the system monitors
******** to exit the program

- 10 Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137 to load the program
TEST SCSI to check the IOP to IOP connection and access to the IODU/Cs
TEST CMDU to test the hard and floppy disk drives (a floppy diskette must be installed)
******** to exit the program

- 11 Clear displays, major alarms, and minor alarms:

CDSP to clear the display
CMAJ to clear all major alarms
CMIN ALL to clear all minor alarms
SCPU to switch to the other Core
CDSP to clear the display
CDSP to clear the display
******** to exit LD 135

- 12 Perform all applicable acceptance test procedures in *Meridian 1 system installation procedures* (553-3001-210).

The XT/71 Core/Net module upgrade to Option 81C is complete.

XT Core/Net and Network module upgrade to Option 81C

This section covers Core/Net and Network module upgrades from XT systems to Option 81C. The Core/Net and Network module upgrade consists of:

- 1 Installing two Core/Net module columns.
 - One column will contain an NT8D36 InterGroup module.
 - At least one column will contain NT8D35 Network modules.
 - Additional columns may be installed optionally.
 - One or more columns may contain NT8D37 Intelligent Peripheral Equipment (IPE) modules for new, expanded IPE.
- 2 Installing network to peripheral equipment cabling.
- 3 Moving network components into Network modules.

The hardware required for this upgrade is provided in the Core/Net and Network module upgrade package. All existing equipment that will be retained must meet minimum vintage requirements and be compatible with X11 release 24. Order replacements for equipment that does not comply. Refer to *Product compatibility* (553-3001-156) for vintage requirements.

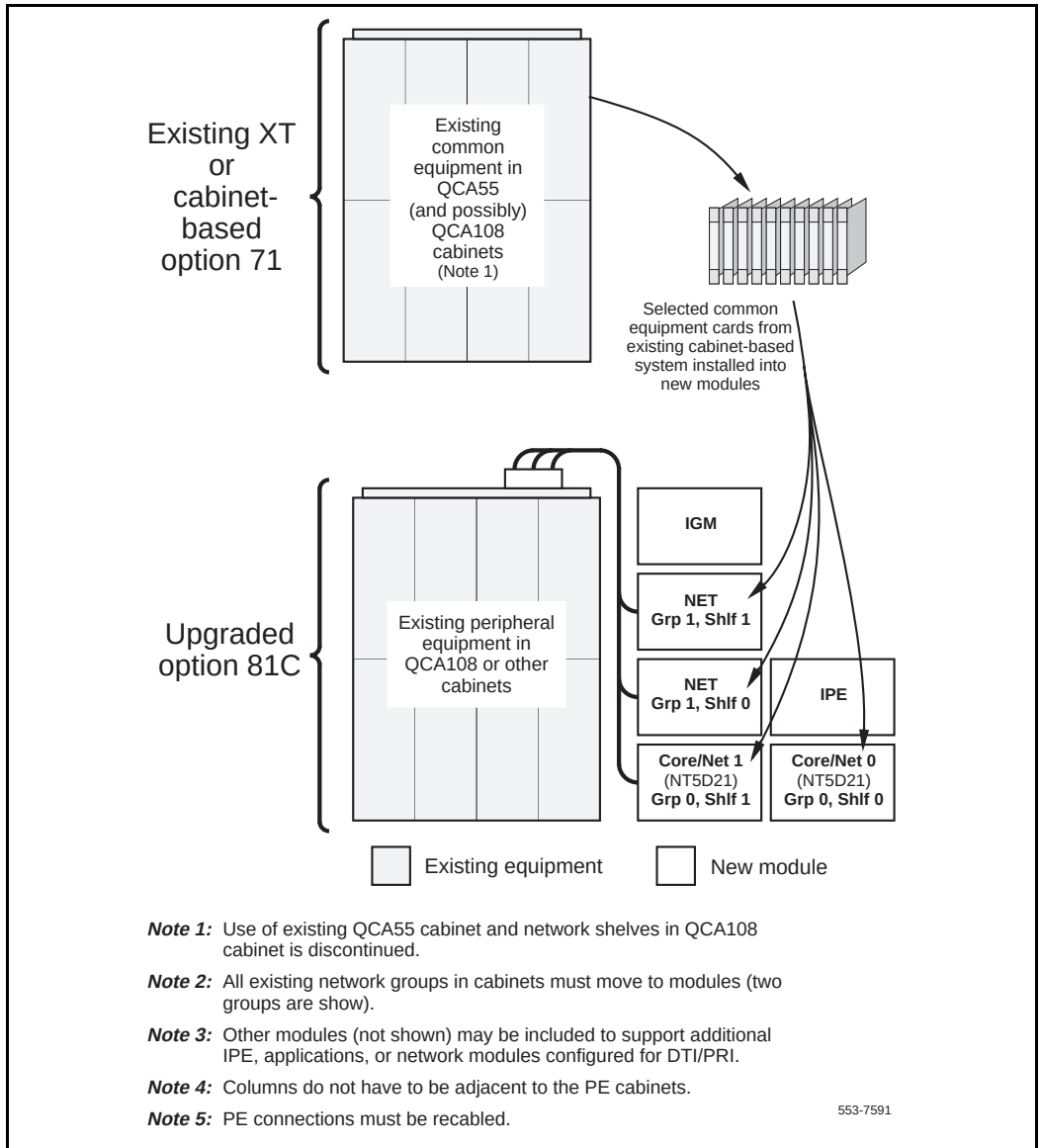
Verify that any existing QPC441 3-Port Extender cards in the system are vintage 'F' or later and that all 3PE cards in the system are the same vintage. Replace any 3PE card that is not vintage 'F' or later.

Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Meridian 1 hardware replacement* (553-3001-520) for Clock Controller card replacement procedures.

Note: QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

Figure 136 shows the upgrade from an XT system to Option 81C.

Figure 136
Upgrade from an XT system to an Option 81C



Before you switch call processing from the XT system to the Option 81C, the columns should be powered up and all cables that can be pre-routed should be in place. At this point, there are two methods for performing the upgrade:

- If the system can be out of service for the time it will take to move the cards, you can shut down the existing system and move all of the network cards at one time. (If existing cabinets are being removed and replaced by the columns, this method will take longer, but this extra time may be unavoidable.)
- If the system must remain in operation, you can move one network card at a time. This will take longer than moving all of the cards at one time, but will cause limited, localized interruptions in service rather than taking the system completely out of service. Note that even with this phased transfer of service, there will be no telephone connections between the old and new systems.

When the upgrade is complete, all CPU and network functionality will reside in the Meridian 1 columns. Existing peripheral equipment is retained and cabled to the network cards now located in the modules in the Option 81C.

Equipment required

Tables 108 and 128 list the items required to upgrade an AC- or DC-powered XT system to a Meridian 1 Option 81C. Some configurations may require items not included in the tables. All required items must be identified and on hand before the upgrade can start.

Letters at the end of a part number represent the minimum vintage equipment that can be used in the upgrade; only equipment of that vintage or later can be used. Refer to *Product compatibility* (553-3001-156) for equipment compatibility information.

If analog peripheral cards are used in the IPE module, one NT8D21 Ringing Generator must be installed.

Table 127

Hardware requirements for a AC-powered Option 81C (Part 1 of 3)

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21AA	Core/Network Module AC
1	NT5D40AA	Hybrids Kit
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00AA	Top Cap AC
1	NT8D01BC	Controller—Four Card
1	NT8D04BA	SuperLoop Network Card
1	NT8D06AB	Peripheral Equipment Power Supply AC
2	NT8D22AC	System Monitor
2	NT8D27BB	Pedestal AC
2	NT8D29AB	Common Equipment Power Supply AC
1	NT8D37BA	Intelligent Peripheral Equipment Module AC

Table 127
Hardware requirements for a AC-powered Option 81C (Part 2 of 3)

Qty	Part number	Description
1	NT8D46AD	System Monitor to SDI Cable (60 in.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 in.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 in.)
2	NT8D52AB	Pedestal Blower Unit AC
2	NT8D53BB	Power Distribution Unit AC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 in.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core Cabinet Upgrade Cable Kit, Group 0
1	NTND33CC	Core Cabinet Upgrade Cable Kit, Groups 1–4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

Table 127**Hardware requirements for a AC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841C	Four-port SDI
Note: QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement. Note: QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement. Note 1: This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.		

Table 128**Hardware requirements for an DC-powered Option 81C (Part 1 of 3)**

Qty	Part number	Description
1	NT1R91AA	Modem Kit
2	NT5D61AA	IODU/C Card
2	NT5D21DA	Core/Network Module DC
1	NT5D40AA	Hybrids Kit
1	NT6D40AB	Peripheral Equipment Power Supply DC
2	NT6D41AB	Common Equipment Power Supply DC
2	NT6D65AA	Core-to-Network Interface Card (CNI)
2	NT7D00BA	Top Cap DC
2	NT7D09CA	Pedestal DC
2	NT7D10CA	System Monitor Panel
2	NT7D67CB	Power Distribution Unit DC

Table 128
Hardware requirements for an DC-powered Option 81C (Part 2 of 3)

Qty	Part number	Description
1	NT8D01BC	Controller - Four Card
1	NT8D04BA	SuperLoop Network Card
2	NT8D22AC	System Monitor
1	NT8D37EC	Intelligent Peripheral Equipment Module DC
1	NT8D46AD	System Monitor to SDI Cable (60 In.)
1	NT8D46AL	System Monitor Serial Link Cable (7 ft.)
1	NT8D46AS	System Monitor Inter-CPU Cable (30 In.)
1	NT8D46BH	System Monitor to MDF Cable (32 ft.)
1	NT8D49AA	Column Spacer Kit (2.75 In.)
2	NT8D52DD	Pedestal Blower Unit DC
2	NT8D80BZ	CPU Interface Cable (5 ft.)
1	NT8D92AB	Controller to I/O Cable (20 In.)
1	NT8D95BJ	SDI I/O to DTE/DCE Cable (16 ft.) (Male/Female)
1	NT8D98AS	Inter-Cabinet Network Cable (30 ft.)
4	NT9D18AA	Module Side Cover
1	NT9J97AE	Intra-Cabinet Network Cable (85 In.)
2	NTND11BA	CP to CP Cable (6 ft.)
1	NTND13BC	IOP to IOP SCSI Cable (6 ft.)
1	NTND33DA	Option 81C Core-Cabinet Upgrade Kit, Group 0
1	NTND33CC	Core-Cabinet Upgrade Cable Kit 1-4
2	P0623569	Alarm Terminating Plug
2	P0699851	Top Cap Cable Egress Panel

Table 128**Hardware requirements for an DC-powered Option 81C (Part 3 of 3)**

Qty	Part number	Description
1	P0712003	Instruction Package
1	P0738686	Meridian 1 Pallet Ramp Set
2	QPC471H	Clock Controller
1	QPC841	Four-port SDI
Note: QPC471 Clock Controller cards must be vintage H or later. Order replacement cards if existing cards do not meet this vintage requirement.		
Note: QPC441 3-Port extender cards must be vintage 'F' or later. Order replacement cards if existing cards do not meet this vintage requirement.		
Note 1: This upgrade supports two network groups and includes two NT6D65 CNI cards. Additional NT6D65 CNI cards and NTND14 cables of appropriate length must be ordered separately for any additional network groups.		

Upgrade planning

- 1 Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Meridian 1 hardware replacement* (553-3001-520) for Clock Controller card replacement procedures.

Note: QPC471 and QPC775 Clock Controller cards cannot be combined in one system.

- 2 Install the new module-based common equipment. This equipment can be installed, powered up, and tested before the upgrade activities.
- 3 Install new network-to-PE intercabinet cabling to connect the network equipment in modules to the existing peripheral equipment in cabinets:
 - The cables needed must be identified and obtained before the upgrade. This cabling generally consists of sets of NT8D86, NT8D73, and NT9J96 cables, along with an appropriate number of connector housings that mount to the tops or sides of the existing PE cabinets. See *Upgrade engineering* (553-3001-150) for additional information on engineering these cables.
 - There must be available mounting locations for all required connector housings on PE cabinets. Modifications to the existing equipment may be necessary.
 - If any PRI or DTI cards will remain in the cabinets, they must be recabled to the corresponding QPC414 Network cards that are moved to the modules. The cables required for the connections must be identified and ordered separately.
 - If any PRI or DTI cards are to be transferred to the Core/Net modules, the cables required for the connections must be identified and ordered separately.

- 4 The XT upgrade procedures to option 81C also include steps for performing the automatic inline conversion procedure supported by X11 release 19 to release 24. If the database is release 18 or earlier, the database can be sent to Northern Telecom for conversion, or converted on-site. If you choose to convert the database on-site, the database conversion requires intermediate steps during which hardware and software are upgraded incrementally. Additional hardware and software is not included in the upgrade package, and must be ordered separately.
- 5 Transfer the network cards from the network shelves in the cabinets to new Core/Net or Network modules. In the new modules, the first network group is always equipped as a functional network group, so it already contains IGS, 3PE, and PS cards and is ready to accept network cards. Additional groups may be engineered in several ways:
 - Additional network groups may be ordered as pairs of empty Network modules. With this option, all necessary cards from the existing network shelves are transferred to the network modules. This method reuses the greatest number of existing cards, but may result in a lengthier upgrade process and greater downtime.
 - Additional network groups may be ordered as pairs of Network modules already equipped with the network common cards (such as IGS, 3PE, PS). With this option, only the actual network cards need to be transferred. This method is recommended due to its minimal impact on system performance, and is the option documented in this procedure.

Upgrade preparation

Read through the entire procedure before you begin this upgrade. Perform a thorough audit on the existing system to verify the suitability of the upgrade package and to resolve any existing operational problems, error messages, or other problems.

- 1 Make sure there is room to position all the Meridian 1 columns. Check the cabling requirements. All columns must be positioned to accommodate the cable lengths provided.
- 2 Make sure the floor can handle the additional weight of the new columns.
- 3 Make sure a sufficient power source is available and can be accessed by the new columns.

Note: Specifications for Meridian 1 columns are provided in *Meridian 1 installation planning* (553-3001-120). Specifications for Meridian 1 power requirements are provided in *Meridian 1 power engineering* (553-3001-152).

- 4 Make sure there are open connector positions on existing connector housings, or available positions for installing new connector housings on the PE cabinets.
- 5 Verify that QPC471 Clock Controller cards in the system are vintage H or later and QPC775 Clock Controller cards are vintage E or later. If any existing Clock controller cards in the system are not the minimum vintage, replace it with a new card. Refer to *Meridian 1 hardware replacement* (553-3001-520) for Clock Controller card replacement procedures.
- 6 Check the contents of the upgrade package. Make sure all of the items on the order form are on the packing slip that comes with the equipment.
- 7 Label both ends of all network-to-PE cables with its loop number. Label one of each cable (NT8D86, NT8D73, and NT9J96) with the same loop number.
- 8 Log into the system.

- 9 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 10 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 11 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 12 On the XT system, print the configuration records. Refer to Procedure 1: “Pre-conversion procedure,” *Software conversion procedures* (553-2001-320) for instructions. Check the configuration record printouts to identify all configured I/O ports.

Note: When transferring call processing to a Core/Net module during an upgrade, one I/O address is required for a CPSI port. If there is no address available, an SYS 4532 error is displayed. You must make available one port assignment for a CPSI port.

Core/Net and Network module installation

This section contains procedures to install the Meridian 1 columns that contain the Core/Net and Network modules and any other Optional columns that are to be installed, and to transfer the customer database to the Option 81C CPU. Existing lines and trunks in the PE shelves are already cabled to the MDF. You will connect the XT cabinets to the system monitor during the final upgrade steps. These are covered later in this chapter.

- 1 Install the Core/Net and Network module columns. Use the procedures (as required for the system configuration) in *Meridian 1 system installation procedures* (553-3001-210), as needed.
 - Prepare equipment for installation.
 - Place a fourth module on a column (if required).
 - Position and level equipment.
- 2 Install the module power supply in each module:
 - Make sure the system is disconnected from any power source.
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.
 - Insert the power supply and engage the lock latches.
- 3 Install an IODU/C in each Core/Net module, **but leave the cards unseated.**
- 4 Install a CP card in each Core/Net module, **but leave the cards unseated.**
- 5 Configure the switch and jumper settings on the QPC441F 3PE card for Core/Net 1 and 0 (refer to Tables 129 and 130).

- 6** Install a QPC441F 3PE card in slot 11 of each Core/Net module, **but leave the cards unseated.**

Table 129
QPC441F 3PE card switch settings for Core/Net 1

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	off
Group 1					on	on	off	off
Group 2					on	off	on	off
Group 3					on	off	off	off
Group 4					off	on	on	off
Note: RN27 jumper at E35: set to "A" for all modules								

Table 130
QPC441F 3PE card switch settings for Core/Net 0

D20 switch position	1	2	3	4	5	6	7	8
	off	on	on	off				
Group 0					on	on	on	on
Group 1					on	on	off	on
Group 2					on	off	on	on
Group 3					on	off	off	on
Group 4					off	on	on	on
Note: RN27 jumper at E35: set to "A" for all modules								

- 7** Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.

- 8** Make changes at the MDF as required to accommodate equipment in the new columns and system monitor connections.
- 9** Install PFTUs (if required).
- 10** Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210) with these exceptions:
 - For the master, set SW1 positions 1, 2, and 8 to ON.
 - For slaves, set SW1 positions 1 and 8 to ON.
- 11** Configure an SDI port on a QSDI card in the option 81C. Refer to *Circuit card installation and testing* (553-3001-211) for appropriate switch settings. Connect a terminal to the J25 CPSI port on the I/O panel of Core/Net 1.
- 12** Install common equipment cabling (refer to *Meridian 1 system installation procedures* (553-3001-210) for instructions):
 - Cable all Core/Net module equipment.
 - Cable Network modules.
- 13** If IPE cards are added in the columns, cable the lines and trunks.
- 14** Set switches in all MPDUs to ON (up position) in all UEM and Network modules in both columns.

Transferring the database from 4 MB to IODU/C

In this procedure you will transfer the XT 4MB database to the IODUC. This is accomplished using the direct cabling method (described below).

Note: The database can also be transferred using the Database Transfer Utility (included in the Software Kit) which requires an interim IOP/CMDU card to be used during the database transfer procedure (refer to the “Database Transfer” section in this book for instructions).

CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

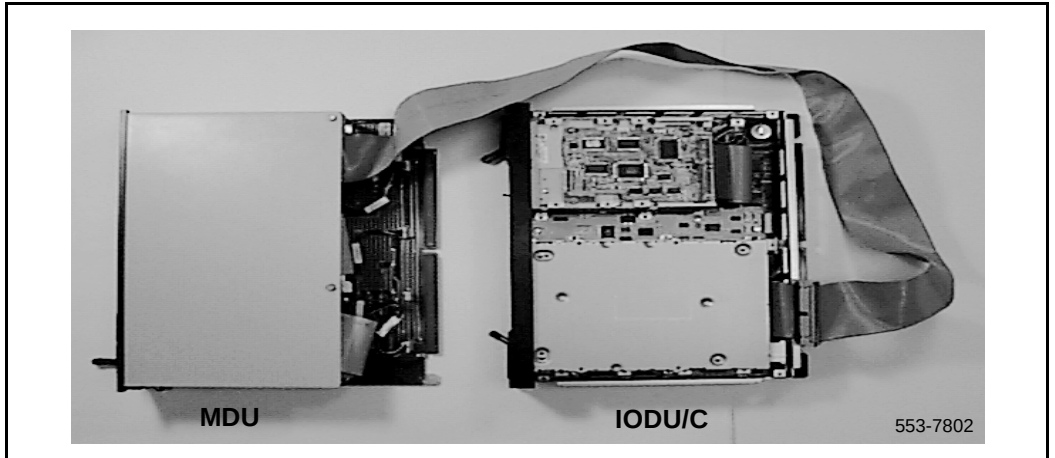
- 1 Verify that Core/Net 1 is powered down.
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector. **Do not** disconnect the cable from the IODU/C circuit board.
- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU:
LD 37 to load the program
DIS MSI 0 to disable the card
 - Set the ENB/DIS switch on the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU to DIS.
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.
- 3 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 137). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.

Figure 137
Cabling the MDU to the IODU/C card



- 4 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module. If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 5 Connect a terminal to the J25 port on the I/O panel in Core/Net 1. Use the following settings on the terminal: 9600 baud, 7 data bits, space parity, full duplex, 1 stop bit, XON protocol.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and seat the card.
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).
- 9 Insert the CP Install Program diskette that corresponds with the installed CP card into IODU/C floppy drive.
- 10 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 11 When the NT logo appears, press <CR> to continue.
- 12 Log into the system and enter the time and date, when prompted.
- 13 Initiate the database installation by selecting the following command from the menu:
 - <u> to Install menu
- 14 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.
 - <a> to continue with keycode validation
 - <y> to confirm that the keycode matches the CD-ROM release
- 15 When the Install Menu appears, select the following options in sequence:
 - <d> to install customer database only
 - <f> to transfer the customer database from the MDU

- <a> to continue the database transfer
- <a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)
- <cr> to continue
the Installation Status Summary menu appears to confirm database transfer
- <y> to start installation
- <a> yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".
- <CR> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.
- <CR> Press return to return to the Install Menu.
Remove any diskettes from the floppy drive.
- <q> When the Install Menu appears, select <q> to quit.
- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

16 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 17 Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 18 Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 19 Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive.

- 20 Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 21 Reinstall the MDU/SMDU into CPU 0:
 - Connect the cable(s) to the faceplate of the MDU.
 - Install the floppy diskette in the MDU
 - Set the ENB/DIS switch to ENB on both MSI or EMSI cards.
 - Software enable the MSI, EMSI, or FDI card:
LD 37 to load the program
ENB MSI 0 to enable the card
- 22 Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23 Verify that the 3PE to 3PE cabling in the Core/Net 0 and Core/Net 1 modules are cabled (J3 to J3 and J4 to J4).
- 24 Verify that the CP card faceplate switch is set to MAINT.
- 25 Apply power to the module.

The database transfer procedure is complete and you are ready to install release 24 software in Core/Net 1.

Installing release 24 software in Core/Net 1

Before you begin:

- all cards must be installed in Core/Net 1
- the CP Install Program diskette must be in the IODU/C floppy drive
- the module must be powered on
- a terminal must be connected to the J25 CPSI port on Core/Net 1

1 Install the CD-ROM into the CD drive:

- press the button on the CD-ROM drive to open the CD-ROM disk holder
- place the CD-ROM disk into the holder with the disk label showing
- use the four tabs to secure the CD-ROM in the disk holder
- press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

2 Enter the date and time when prompted.

3 When the Main Menu appears, select the following options in sequence:

<u> to Install menu

4 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

5 When the Install Menu appears, select the following options in sequence:

<a> to install software, CP-BOOTROM, and IOP-ROM

<a> to verify that the CD-ROM is now in drive

The Installation Status Summary screen appears to confirm that you are installing CD to disk, disk to ROM, CP-BOOTROM, and IOP-ROM. Select the following to continue:

<y> to start installation

<a> to continue with upgrade

The software installation begins. The CD-ROM files are copied to the system hard disk. When you are prompted to replace the previous CP-software with ROM image files, select:

<a> to continue with ROM upgrade

When all files were copied from the CD-ROM to the hard disk, press:

<CR> to continue

You are prompted to replace old CP-BOOTROM with the ROM image files. Select:

<a> to continue with ROM upgrade (this installs CP flash ROM on the Call Processor card)

The system confirms that the release and issue of IOP-ROM is the same release and issue of the ROM image file. Select the following options in sequence:

<y> to start installation

<a> to continue with ROM upgrade (IOP-ROM is installed)

The Installation Status Summary screen appears to confirm that CD to disk, disk to CD, CP-BOOTROM and IOP-ROM were installed successfully. Press:

<CR> to continue

When the Install Menu appears, select the following options in sequence to quit and reboot the system:

<q> to quit

<y> to confirm quit

Remove the diskette from the floppy drive.

<a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait for the "DONE" and then "INI" messages to be displayed before continuing.

6 When the sysload is complete, log into the system.

- 7 Confirm that the X11 release 24 software is installed and is functional on Core/Net 1:

LD 135 to load the program
STAT CPU to display the CPU status

Note: This concludes the X11 release 24 software installation into the IODU/C in Core/Net 1.

- 8 Verify that the CD-ROM disk is removed from the IODU/C. Make sure that the 2MB diskettes are installed in the IODU/C floppy drive to data dump the customer database:

LD 43 to load the program

- 9 When “EDD000” appears on the terminal, enter:

EDD to begin the data dump

- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter:

******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 11 Set date and time:

LD 2 to load the overlay
STAD DD MM YY HR MN SC

- 12 Continue with “Configuring the system” on page 710.

Configuring the system

In the option 81C, CNI cards reside in slots 12, 13, and 14 of the Core/Net module. Following database conversion, the option 81C assigns a default configuration to the CNI network groups. The option 81C default CNI configuration is listed in Table 131.

Table 131
Option 81C CNI network group default configuration

CNI card slot	Port	Network group
12	0	0
12	1	1
13	0	2
13	1	3
14	0	4

If the option 81C CNI default configuration does not match your network group configuration, you must remove and add network groups to match your desired configuration.

Use the worksheet in Table 132 to assist you in configuring the CNI network groups.

Table 132
Option 81C CNI network group configuration worksheet

CNI card slot	Port	Network group (enter your option 81C configuration in this column)
12	0	
12	1	
13	0	
13	1	
14	0	
14	1	
Note: CNI card slot 12, port 0 is the network group with the Core/Net module.		

- To reconfigure the option 81C network groups, first disable all CNI cards in Core/Net 0 and Core/Net 1 using LD 135:

```
LD 135          to load the program
STAT CNI       to get the status of all CNI cards
DIS CNI c s p  c = core (0 or 1)
                s = card slot (12-14)
                p = port (0 or 1)
STAT CNI       to confirm that CNI cards are disabled
****          to exit the program
```

- 2 When the CNI cards are disabled, use LD 17 to remove the CNI cards, and then enter the desired CNI configuration:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
CEQU	YES	
EXT0	3PE	Core/Net 0 extended to 3PE
_CNI	s p xg <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g <i>to "add" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
EXT1	3PE	Core/Net 1 extended to 3PE
_CNI	s p xg <i>to "out" the CNI card</i>	s = card slot (12-14) p = port (0 or 1) xg = out network group (x0-x4)
_CNI	s p g <i>to "add the CNI card</i>	s = card slot (12-14) p = port (0 or 1) g = network group (0-4)
MCFN	4 4 4 4 16 16 <i>(this prompt appears only in systems equipped with NT6D66 CP cards)</i>	to set the memory configuration
REQ	****	to exit the program

- 3 Re-map all I/O ports (except CPSI ports) to the proper groups. The group number of these ports is determined by the physical location of the card. The configuration information must match the CNI configuration.

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
ADAN	CHG aaa x	aaa = terminal type (tty, aml, etc.) x = terminal number (0-15)
...		
GRP	g	g = network group (0-4)
...		

- 4 Evaluate the number of call registers and telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000, respectively). Refer to *Meridian 1 capacity engineering* (553-3001-149). If changes are required, reconfigure the values in LD 17:

Prompt	Response	Comments
LD 17		to load the program
REQ	CHG	
TYPE	CFN	
...		
PARM	YES	
...		
500 B	1000	use 1000 as a minimum value
...		
NCR	2000	use 2000 as a minimum value
...		
.	****	to exit the program

- 5 Print the Configuration Record to verify the above changes:

LD 22	to load the program
REQ PRT	to set the print Option
TYPE CFN	to print the configuration
****	to exit the program

- 6 Insert an unused B1 database diskette from the target software upgrade package into the IODU/C drive.
- 7 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

When “EDD000” appears on the terminal, perform the data dump. At the prompt, enter

EDD to begin the data dump

When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, proceed to the next step.

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Upgrading the software and ROMs in Core/Net 0

Note: Connect the terminal (or set the switch on the switch box) to J25 on Core/Net 0.

This procedure copies the customer database from IODU/C in Core/Net 1 to the IODU/C in Core/Net 0, synchronizes the CPUs, and tests all the elements of each Core.

- 1 Install the remaining circuit cards in Core/Net 0 and faceplate enable all cards except the CNI cards. **Leave the CNI cards disabled.**
- 2 Verify that the CP card is in MAINT.
- 3 Insert the CP Install Program that corresponds with the installed CP card diskette (68030, 68040, 68060 or 68060E) into active IODU/C floppy drive in Core/Net 0.
- 4 Apply power to the module.

- 5 Press the MAN RST button on the CP card in Core/Net 0 to reboot the system and start the Software Installation Tool. (The terminal displays SYSLOAD messages during file loading. When SYSLOAD is completed, the NT logo appears.)
- 6 When the NT logo appears, press <CR> to continue.
- 7 When the Main Menu appears, select the following options in sequence:
 - <u> to Install menu
- 8 Remove the CP Install Program diskette and insert the Keycode diskette. Select the following when prompted:
 - <a> to continue with keycode validation
 - <y> to confirm that the keycode matches the CD-ROM release
- 9 When the Install Menu appears, select the following options in sequence to copy the software from Core/Net 1 to Core/Net 0, install CP-software, ROMs, and transfer the database to the redundant disk:
 - <o> to copy system software from the other core
 - <a> to copy /p partition from Core1 to Core 0
 - <a> to continue with upgrade

When the software has copied successfully, you must install CP-software from the hard disk to Flash EEPROM, and install CP-BOOT ROM.

 - <CR> press <CR> when you are ready to continue
 - <y> to start installation
 - <a> to continue with ROM upgrade
 - <y> to start installation
 - <a> to continue with ROM upgrade.

When the installation is complete, the Installation Status Summary screen appears.

 - <CR> to return to the Install Menu

When the Install Menu appears, install IOP-ROM:

 - <f> to install IOP-ROM only

When the Installation Status Summary screen appears:

 - <y> to start installation
 - <y> to continue installing IOP-ROM
 - <a> to continue with ROM upgrade

When the installation is complete, the Installation Status Summary screen appears.

<CR> to return to the Install Menu

When the Install Menu appears, install the database:

<d> to install database only

<d> to copy database from the redundant disk

When the Installation Status Summary screen appears:

<y> to start installation

<a> to continue transferring the database from the redundant disk

When the Installation Status Summary screen appears, press:

<CR> to return to the Install Menu

When the Install Menu appears, remove any diskettes in the floppy before rebooting the system:

<q> to quit

<y> to confirm quit

<a> to reboot the system

Wait for "DONE" and then "INI" messages to be displayed before continuing.

10 Load LD 43 and perform a data dump. This creates a backup on the floppy disk in the active IODU/C.

11 Power down Core/Net 0.

12 Connect a terminal to the J25 port CPSI on Core/Net 1.

13 Verify that Core/Net 1 is set to MAINT.

14 Enable the CNIs in Core/Net 1.

15 Verify that the 3PE card in Core/Net 1 is enabled (if installed).

16 Press MAN RST on the CP card in Core/Net 1.

Wait for the "DONE" and "INI" messages to be displayed before continuing.

17 Verify that the CP card in Core/Net 0 is set to MAINT.

18 Verify that the CNI and 3PE cards are set to disable in Core/Net 0.

19 Connect a terminal to the J25 port on Core/Net 0.

- 20 Apply power to Core/Net 0.
Wait for the “DONE” and “INI” messages to be displayed before continuing.
- 21 Connect a terminal to the J25 CPSI on Core/Net 1.
- 22 In Core/Net 0, enable the NT6D65 CNI cards by setting the ENB/DIS switch to ENB.
- 23 In Core/Net 0, faceplate enable the 3PE card.
- 24 In Core/Net 0, press and release the MAN RST button.
- 25 When SYS700 messages appear on the CP 0 LCD, **set the MAINT/NORM switch to NORM.**
- 26 In 60 seconds, the LCD will display and confirm the process:

**RUNNING ROM OS
ENTERING CP VOTE**

An “HWI534” message from the CPSI port (Core/Net 1) or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message from the Core/Net 1 CPSI port indicates that Core/Net 1 memory and Core/Net 0 memory are synchronized. Wait until the memory synchronization is complete before continuing.

- 27 In Core/Net 1, **set the NORM/MAINT switch to NORM** on the CP card.

Testing the Cores

- 1 Perform a redundancy sanity test:

LD 135	to load the program
STAT CNI	to get the status of all configured CNIs
STAT CPU	to get the status of both Cores
TEST CPU	to test the inactive CP card and CP-to-CP cable
TEST CNI c s	to test the CNI on the inactive side

Note: Testing the CNI cards can take up to 90 seconds each. Testing the CP card can take up to 20 minutes.

- 2 Test the inactive Core, then switch Cores and test the other side:
 - SCPU** to switch to Core 0
 - TEST CPU** to test the inactive CP card and CP-to-CP cable

- 3 Get the status of the CP cards and memories and of the CNIs:
 - STAT CPU** to get the status of both Cores
 - STAT CNI** to get the status of all configured CNIs
 - ****** to exit LD 135

- 4 Synchronize the hard disks. To be sure the content of IODU/C 1 is copied to IODU/C 0, verify that IODU/C 0 is disabled:
 - LD 137** to load the program
 - STAT** to get the status of IODU/Cs, and redundancy. Verify that IODU/C 1 is active
 - SYNC** to synchronize the hard disks
 - TEST CMDU** Performs hard and floppy disk test.

Note: Synchronization may take up to 50 minutes.

- 5 Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch IODU/Cs if necessary:
 - STAT** to get the status of IODU/Cs, and redundancy
 - SWAP** to switch IODU/Cs (if necessary)
 - ****** to exit LD 137

- 6 Check the status of the clocks, swap clocks, and verify status:
 - LD 60** to load the program
 - SSCK 0** to get the status of clock 0
 - SSCK 1** to get the status of clock 1
 - SWCK** to swap active clocks
 - SSCK 0** to verify that clock 0 is active
 - SSCK 1** to verify that clock 1 is inactive
 - ****** to exit the program

- 7 In the Configuration Record (LD 17), add LD 135 and LD 137 to the midnight routines. Remove LD 35, but leave LD 37 selected.

- 8 Insert a B1 database disk into the active IODU/C and perform a data dump. This creates a backup on the disk in the active IODU/C.

Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 9 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 10 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

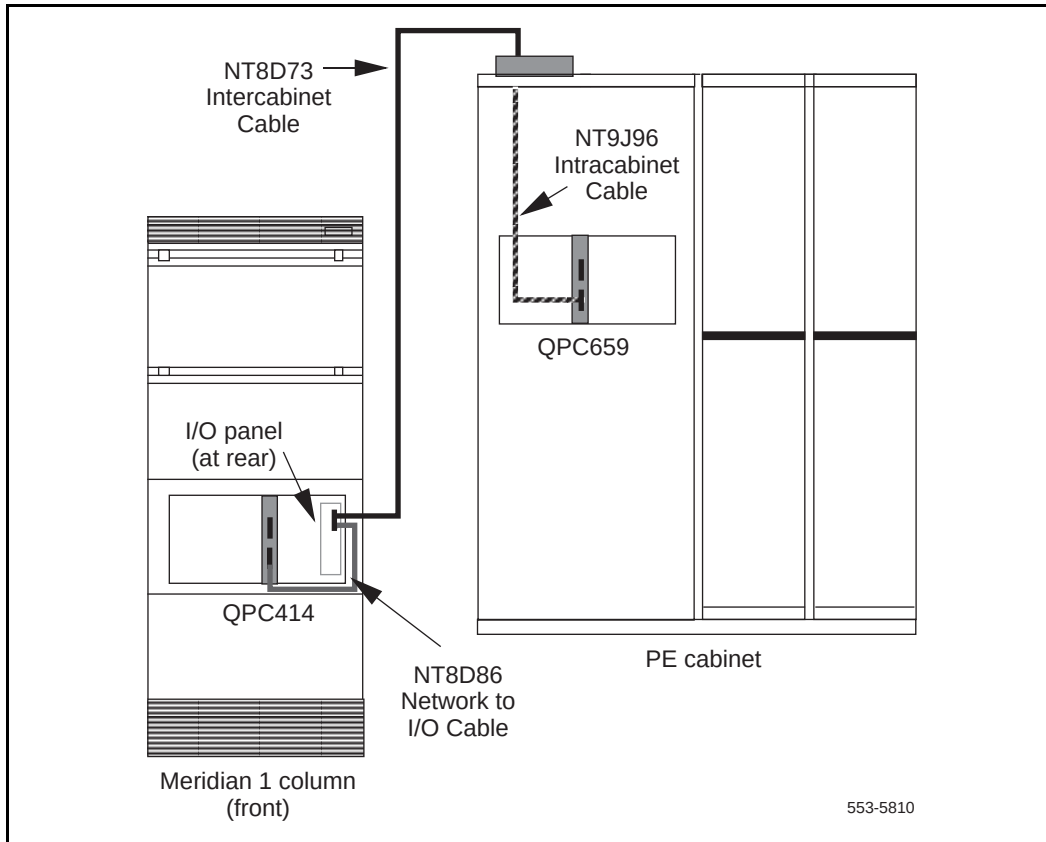
Installing network-to-PE cabling and connector housings

There are three cables for each network-to-PE connection (see Figure 138):

- Cables from the QPC414 Network cards in the Network modules are routed internally from the faceplate of the cards to the I/O panels in the rear of the module.
- Cables from the I/O panels are routed externally to connector housings on the PE cabinets.
- Cables from the connector housings are routed internally to the faceplate of the QPC659 Dual Loop Peripheral Buffer card in the PE cabinets.

If connector housings for network-to-PE cabling are already installed on the cabinets, the same housings can be used for the new cables from the Network modules when the existing cables are disconnected.

Figure 138
Cabling path for network-to-PE connections



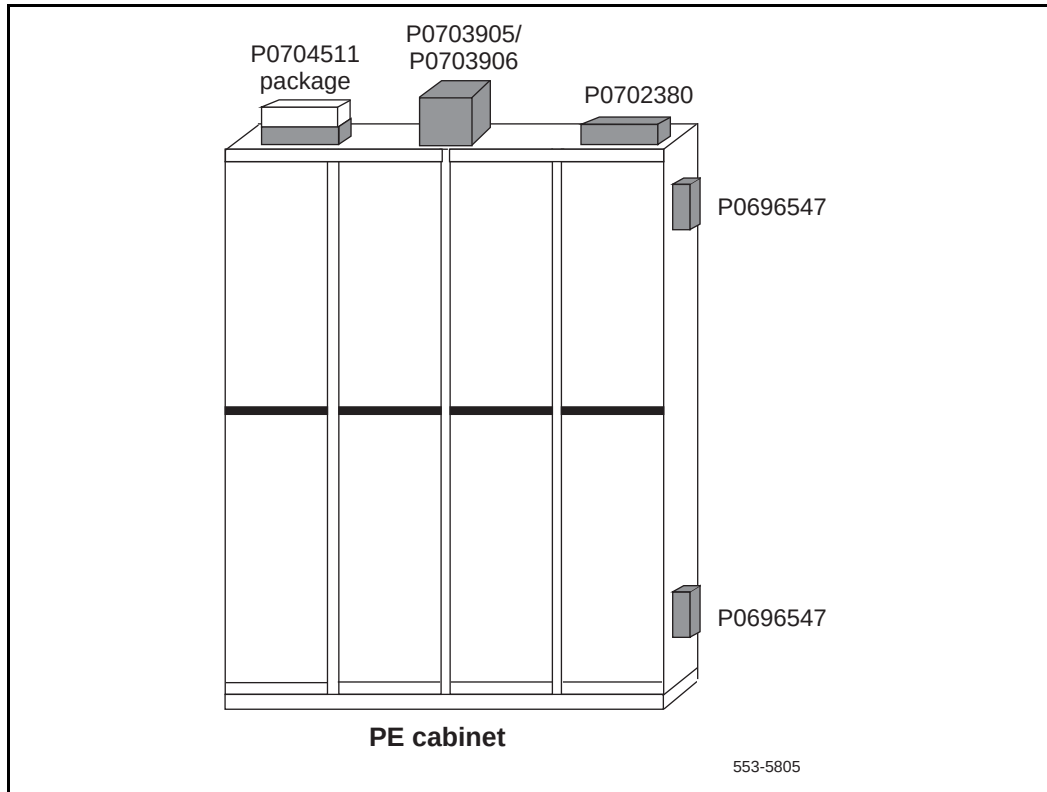
If connector housings are not already installed on the cabinets, you will need to install them now. The following connector housings are available (see Figure 139):

1 P0696547 Connector Housing

- mounts on the side of the cabinet
- provides six connectors
- covers a rectangular opening (up to two housings per opening) and round opening (one housing per opening)

-
- 2 P0702380 Connector Housing
 - mounts on the top of the cabinet
 - provides six connectors
 - covers a rectangular opening
 - 3 P0703905 Adapter Panel and P0703906 Connector Housing unit
 - mounts on the top of the cabinet
 - provides ten connectors
 - covers a square opening
 - 4 P0704511 Connector Housing Package includes P0703846 Connector Housing and P0703847 Adapter Panel
 - mounts on the top of the cabinet under another housing
 - provides three connectors
 - covers a rectangular opening

Figure 139
Connector housing positions



Installing external cables and connector housings

- 1 Label both ends of all network-to-PE cables.
- 2 In the rear of the modules, remove the eight screws that secure the I/O panels in the Core/Net or Network modules. Keep the screws for reuse. Remove the I/O panels but keep them on hand for immediate reuse.
- 3 Connect NT8D86 cables, one per loop, to the inside of any opening on the I/O panel (the inside of the panel faces the backplane).
- 4 Route the NT8D86 cables to the front of the module. If the QPC414 Network cards are installed, connect the faceplate connectors. If the network cards are not installed, leave the cables in position to be connected later in the upgrade.

Because of the MPDUs in AC-powered systems, the cables can route through only the right side (as viewed from the front) of the module. For easier access, first route the cables from the right I/O panel to the front of the module, then route the cables from the left I/O panel.

In DC-powered systems, you can route the cables around both sides of the module.

- 5 Reinstall all I/O panels and screws.
- 6 Connect the NT8D73 intercabinet cables to the outside of the I/O panel.
- 7 Route the NT8D73 cables to the PE cabinets (stow any excess cable length at the cabinet end:
- 8 If connector housings are already installed on the cabinets and cables currently connecting the network and PE cards together, leave those cables in place. Route the NT8D73 cables to the PE cabinets, but leave them disconnected at this point.

- 9 If all connector housings are already installed on the XT PE cabinet(s), skip this entire section and proceed to “Transferring service to the Option 81C” on page 734. If connector housings are not installed, perform the steps in the appropriate procedure(s) below to connect NT9J96 cables to the inside of the housings, install the housings, and connect the NT8D73 cables to the outside of the housings:
- P0696547 Connector Housing: refer to “Mounting the P0696547 Connector Housing,” below.
 - P0702380 Connector Housing: refer to “Mounting the P0702380 Connector Housing” on page 728
 - P0703905 / P0703906 Connector Housing unit: refer to “Mounting the P0703905/P0703906 Connector Housing” on page 730
 - P0704511 Connector Housing Package: refer to “Mounting the P0704511 Connector Housing Package” on page 732

CAUTION

While mounting connector housings, do not drop screws or other hardware through the openings in the top panel.

Mounting the P0696547 Connector Housing

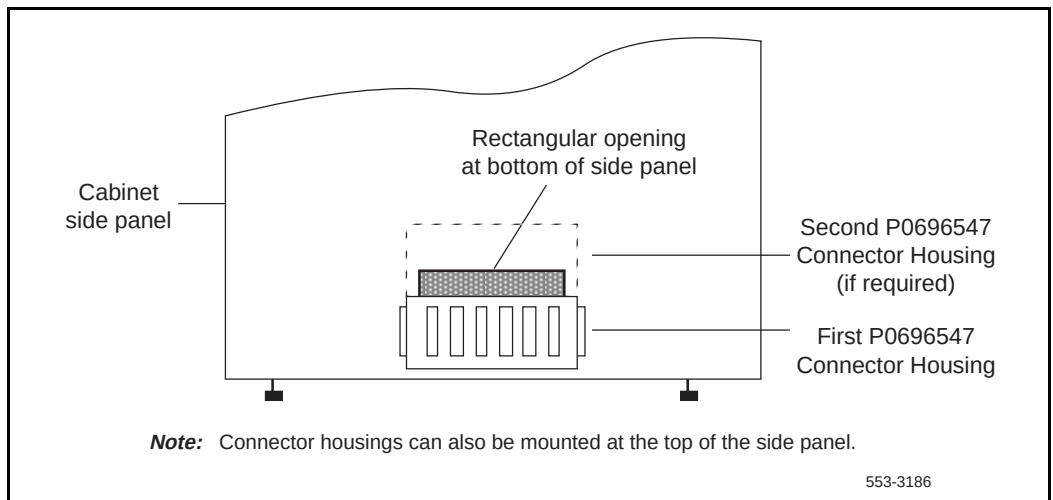
The following tools are required for drilling holes in the side panels when mounting the P0696547 Connector Housing:

- a drill with a #31 (.120 in.) bit capable of piercing sheet metal
- a center punch and hammer

Refer to Figures 140 and 141 when installing the housings.

- 1 Remove the sliding cover or square cover (whichever is equipped) over the cable opening on the side panel of the cabinet.
- 2 Perform this step only if the opening is rectangular:
 - Center the P0696547 Connector Housing over the cutout area on the side panel.
 - If the opening is to be equipped with two housings, lower the housing until its upper edge falls in the horizontal center of the cutout. One inch of the upper part of the cutout should be visible (see Figure 140).
 - Mark the hole centers using the housing holes as a pattern. Center punch and drill the holes.
 - If the opening is to be equipped with two housings, temporarily mount the first housing and rest the second one on top of the first.
 - Center punch and drill the holes for the second housing.
 - Remove the housings from the cabinet.

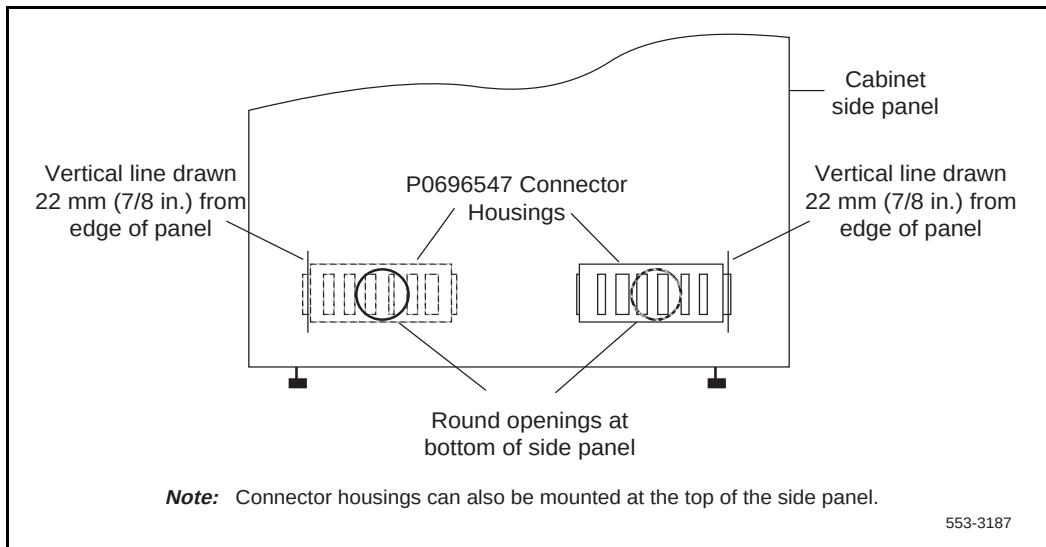
Figure 140
P0696547 Connector Housing—rectangular access opening



3 Perform this step only if the opening is round:

- Measure a point 22 mm (7/8 in.) from the edge of the panel at the front and rear ends of the side panel.
- Mark a vertical line 64 mm (2 1/2 in.) long starting at 75 mm (3 in.) from the bottom edge of the panel.
- Center the P0696547 Connector Housing over the cable access opening. Gently move the housing until the pencil line is located in the center of one set of the housing mounting holes.
- Level the housing and mark the hole centers using the housing mounting holes as a pattern. Center punch and drill the holes (see Figure 141).

Figure 141
P0696547 Connector Housing—round access openings



- 4 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0696547 Connector Housing.
- 5 Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.

Note: Leave the cables disconnected inside the cabinet. They will be connected later in the upgrade.

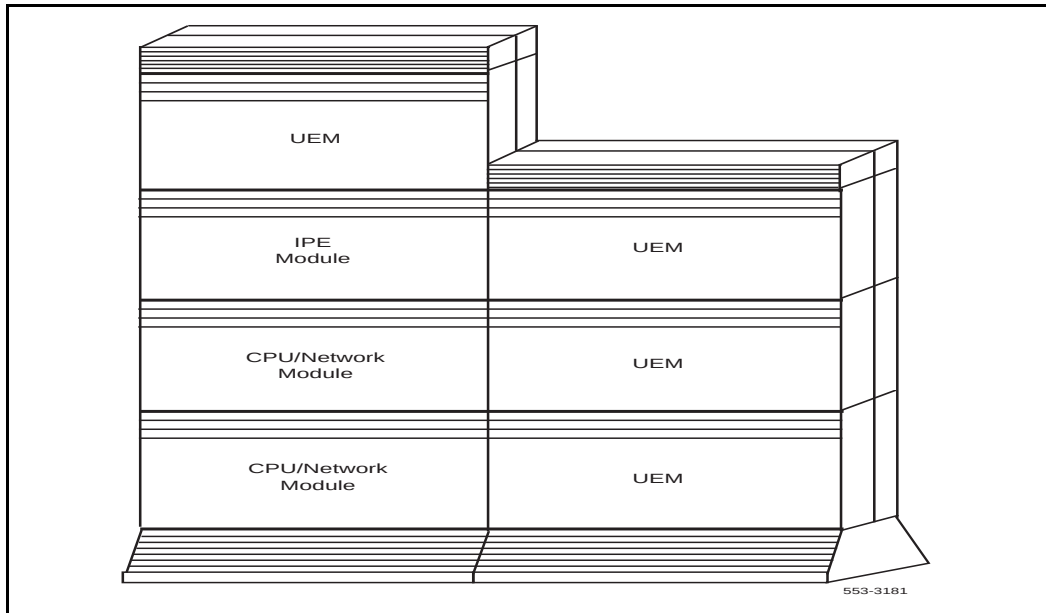
- 6 Mount the housing(s) and secure it to the side panel with four #6 sheet metal screws.
- 7 Connect the NT8D73 cables from the Network modules to the outside of the P0696547 Connector Housing.

Mounting the P0702380 Connector Housing

Refer to Figure 142 and Figure 143 while performing these steps:

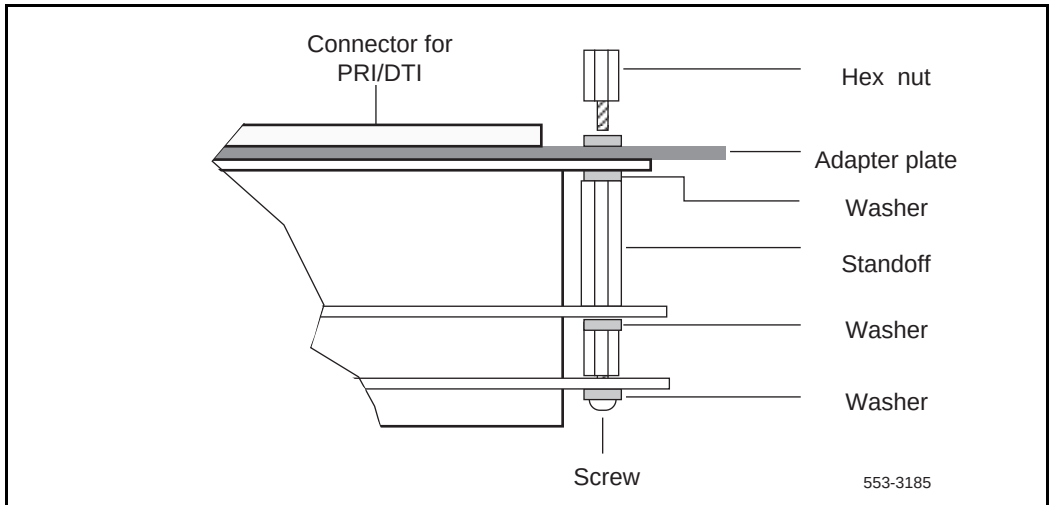
- 1 On the top of the PE cabinet, remove the cover from the selected opening on the I/O panel. Keep the four screws for reuse.

Figure 142
P0702380 Connector Housing



- 2 Perform this step only if there are PRI/DTI cables connected to the cover:
 - If possible, move the PRI/DTI cables to another connector housing on the top panel.
 - If the PRI/DTI cables cannot be relocated and so must be connected to the housing you are installing, install a P0703960 adapter plate kit on the cable and mount it in the new housing (see Figure 143).
- 3 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0702380 Connector Housing.

Figure 143
Adapter plate mounting bracket for PRI/DTI connectors



- 4 Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.
Note: Leave the cables hanging. They will be connected later in the upgrade.
- 5 Using the screws you removed from the opening cover, secure the P0702380 Connector Housing to the top of the cabinet.
- 6 Connect the NT8D73 cables from the Network modules to the outside of the P0702380 Connector Housing.

Mounting the P0703905/P0703906 Connector Housing

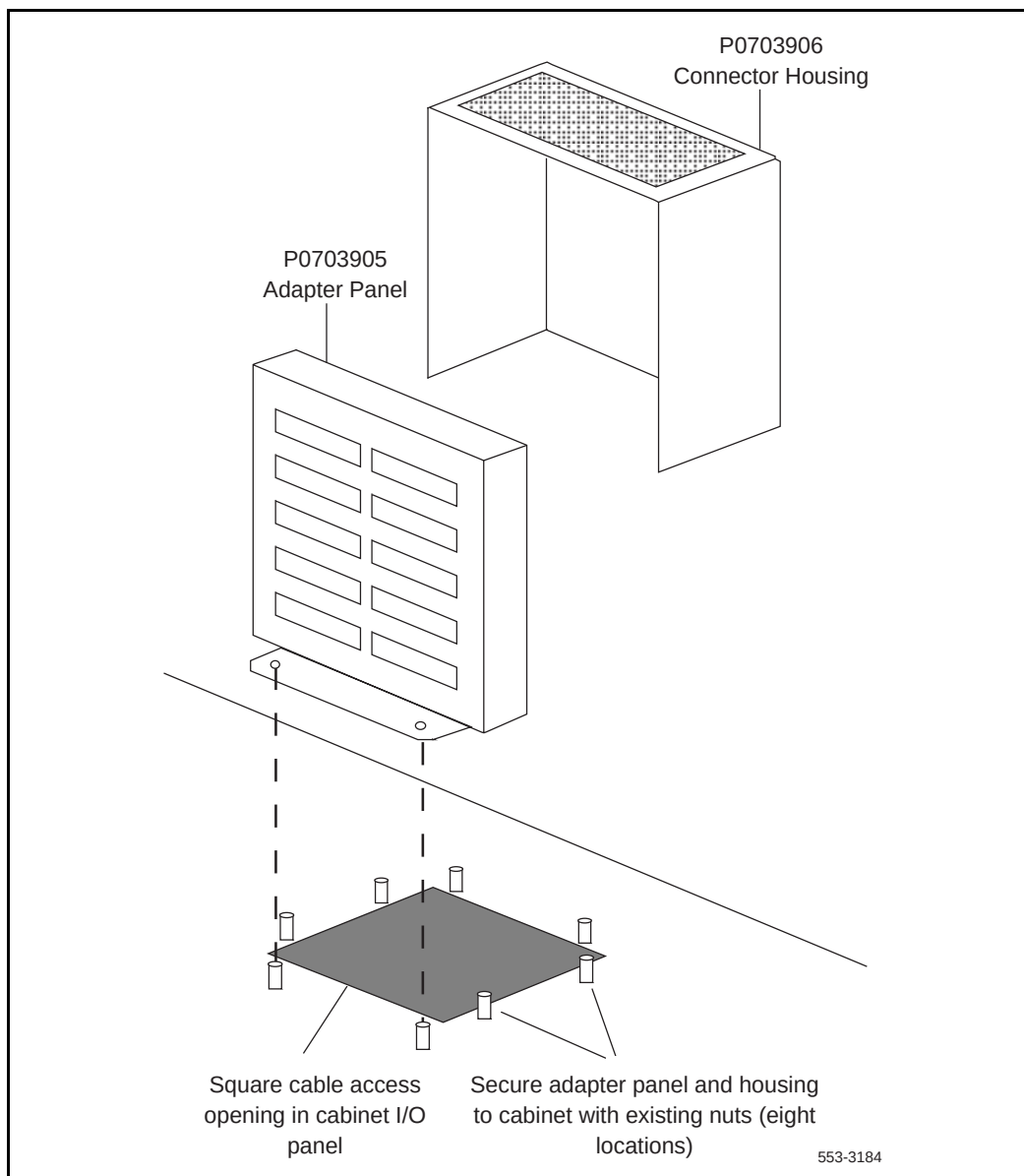
This unit is composed of the P0703905 Adapter Panel and P0703906 Connector Housing. Refer to Figure 144.

- 1 On the top of the PE cabinet, remove the cover from the square opening on the I/O panel. Keep the nuts and washers for reuse.
- 2 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0703905 Adapter Panel.
- 3 Route the NT9J96 cables through the cabinet opening to the inside of the cabinet.

Note: Leave the cables hanging. They will be connected later in the upgrade.

- 4 Secure the P0703905 Adapter Panel to the two studs closest to the center of the cabinet top panel.
- 5 Slide the P0703906 Connector Housing into place and secure it with two nuts and washers.
- 6 Connect the NT8D73 cables from the Network modules to the outside of the P0703905 Adapter Panel.

Figure 144
P0703905/P0703906 Connector Housing Unit



Mounting the P0704511 Connector Housing Package

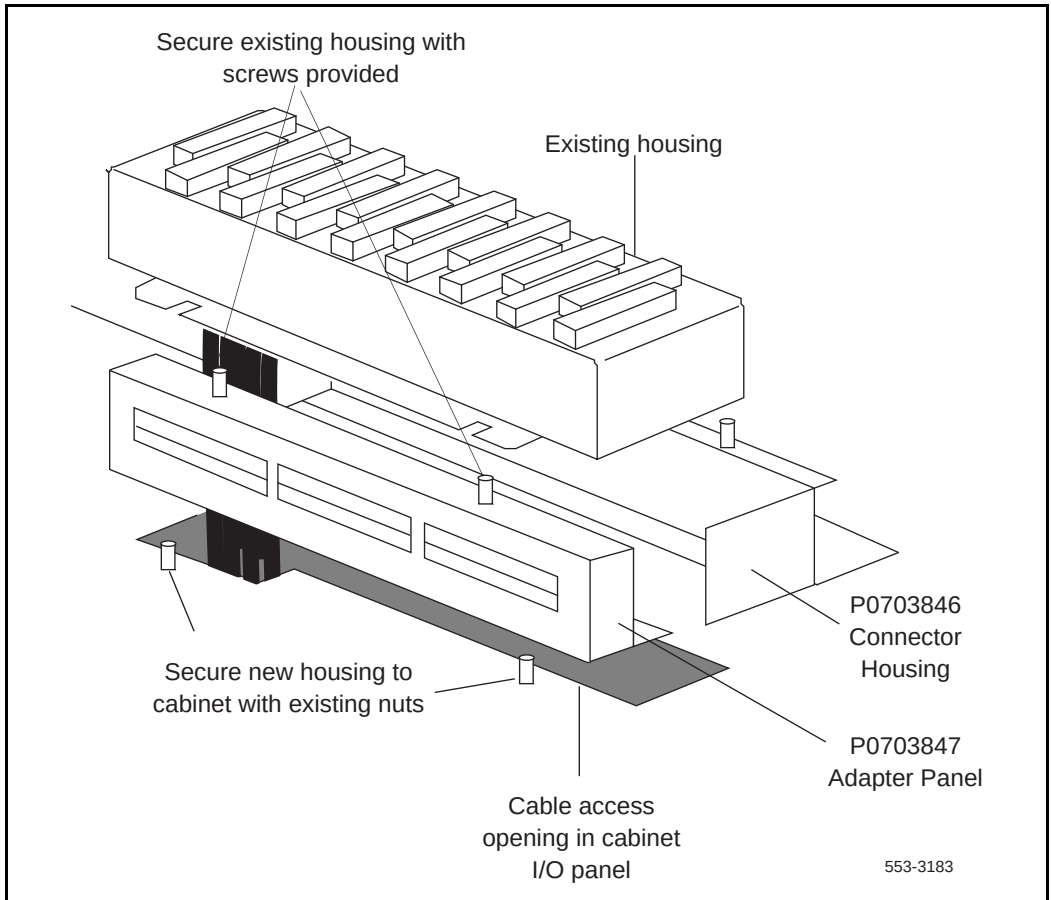
This package is composed of the P0703846 Connector Housing and P0703847 Adapter Panel. The P0704511 Connector Housing Package is placed underneath an existing connector housing. Refer to Figure 145 while performing these steps.

- 1 The existing connector housing will be raised approximately 75 mm (3 in.) to install the P0704511 Connector Housing Package. Make sure there is sufficient slack in the cables to the existing housing. If necessary, remove the tie wraps securing the cables.
- 2 Remove the screws that secure the existing connector housing. Keep the screws for reuse.
- 3 Using the hardware provided with the housing, secure the NT9J96 cables to the inside of the P0703847 Adapter Panel.
- 4 Raise the existing connector housing and place the P0703847 Adapter Panel under it. Along with the cables from the existing housing, route the NT9J96 cables through the cabinet opening to the inside of the cabinet.

Note: Leave the cables hanging. They will be connected later in the upgrade.

- 5 Using the screws for the original housing, secure the P0703847 Adapter Panel to the top of the cabinet.
- 6 Slide the P0703846 Connector Housing into place. Using screws for the original housing, secure the housing to the top of the cabinet.
- 7 Place the original connector housing on the studs on the tops of the P0703846 housing and P0703847 panel and secure it with the nuts and washers provided.
- 8 Connect the NT8D73 cables from the Network modules to the outside of the P0703847 Adapter Panel.

Figure 145
P0704511 Connector Housing Package



Transferring service to the Option 81C

There are two options of moving the network cards to the Option 81C. If the system can be out of service for the time it will take to move the cards, shut down the XT system and move all of the network cards at one time. If you choose to move all network cards at one time, follow the instructions in “Moving all network cards”, located below. If the system must remain in operation, move one network card at a time. Note that even with this phased transfer of service, there will be some service interruption, and there will be no telephone connections between the old and new systems. If you choose to move only one network shelf at a time, proceed to “Moving network cards one network shelf at a time” on page 738.

Moving all network cards

Even though the system will not be operating, we recommend that you move the cards one network shelf at a time to limit confusion. If any cards are moved to a different group, or any other configuration change is made, be sure to check the switch and jumper settings on all affected cards.

- 1 Perform the appropriate step to turn off power in each Core/Net module:
 - For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position).
 - For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 2 Set the ENB/DIS switch on clock controller 1 in the XT system to DIS. Label and remove all cables from the faceplate of the card and remove the card.
- 3 Set the switches on clock controller 1 (see Table 133). Set the ENB/DIS switch set to DIS and install the card:
 - in systems with 2 groups, place the clock controller in slot 13 of Group 1, Shelf 1.
 - in systems with 3 or more groups, place the clock controller in slot 13 of Group 2, Shelf 1.

Leave the ENB/DIS switch on the clock controller card set to DIS.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 133
Clock controller card 1 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 4 In the XT system, remove the NT1R04 cables from the junctor board. Install them in the Option 81C between Junctor module connector J12 and the faceplate of clock controller card 1.
- 5 Set the ENB/DIS switch on clock controller 0 in the XT system to DIS. Label and remove all cables from the faceplate of the card and remove the card.
- 6 Set the switches on clock controller 0 (see Table 134). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 0. Leave the ENB/DIS switch on the clock controller card set to DIS.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 134
Clock controller card 0 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 7 In the XT system, remove the NT1R04 cables from the junctor board. Install them in the Option 81C between Junctor module connector J11 and the faceplate of clock controller card 0.
- 8 Label each card that is being transferred to a Core/Net or Network module with the group (0–4), shelf (0 or 1), and loop (0–159) of the card. Disable the faceplate switch, disconnect all cables, and remove the card.

- 9 Transfer all of the cards that are being moved to the new Network module(s). Verify that the cards are installed in the correct slots (check group, shelf, and loop numbers as well as the slot location) according to Table 135.

Table 135
Card placement in Option 81C

Card	Card location	
	Group 0	All other groups
QPC441 3PE card	Slot 11	Slot 1
QPC412 IGS cards	8–9	2–3
QPC43 PS card	10	4
QPC414 Network card	0–7	5–12
NT8D17 Conference/TDS card	0–7	5–12
SDI-type cards	0–7	5–12
MSDL card	0–7	5–12
MISP card	0–7	5–12
PRI/DTI cards	0–6	5–11
PRI/DTI cards	see note	13–14
SDI-type cards	see note	slot 13
Note: Cards moved from slots 13 and 14 of XT Group 0 must be relocated to a group other than Group 0 in the Option 81C.		

- 10 Connect all cables to the cards (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Set the ENB/DIS switch on each network card to ENB.
- 11 Switch the cables at the PE end:
- If cables from network cabinets are still connected to the connector housings, disconnect those cables and replace them with the NT8D73 cables from the Network modules.
 - If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.

12 Restore power in each Core/Net module:

Note: To maintain synchronization between the IODU/Cs, set the power switches simultaneously.

- For AC-powered systems, simultaneously set the power switch in the MPDU in both Core/Net modules to ON (up position).
- For DC-powered systems, set the switch on the pedestal in both Core/Net modules to ON (up position).

Proceed with “Completing the upgrade” on page 743.

Moving network cards one network shelf at a time

This procedure will cause limited, localized interruptions in service. You will move two loops at a time. To expedite the changeover, before you start, make sure you will have the ability to check for dial tone on each loop.

If any cards are moved to a different group, or any other configuration change is made, be sure to check the switch and jumper settings on all affected cards.

CAUTION

To minimize service interruptions, disable and move only one QPC414 Network card (and associated cards) at a time.

- 1 Set the ENB/DIS switch on clock controller 1 in the XT system to DIS.** Label and remove all cables from the faceplate of the card and remove the card.

- 2 Set the switches on a new clock controller 1 (see Table 136). Set the ENB/DIS switch set to DIS and install the card:
 - in systems with 2 groups, place the clock controller in slot 13 of Group 1, Shelf 1.
 - in systems with 3 or more groups, place the clock controller in slot 13 of Group 2, Shelf 1.

Leave the ENB/DIS switch on the clock controller card set to DIS.

Note: Install a new clock controller card; do not use one of the clock controller cards from the XT system.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text ("21,51,61,71") next to the switches.

Table 136
Clock controller card 1 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	off	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	off	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	off	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	off	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 3 Install new NT1R04 cables between Junctor module connector J12 and the faceplate of clock controller card 1.

- 4 Set the ENB/DIS switch on a new clock controller 0 to DIS.
- 5 Set the switches on a new clock controller 0 (see Table 137). Set the ENB/DIS switch set to DIS and install the card in slot 13 of Group 1, Shelf 0. Leave the ENB/DIS switch on the clock controller card set to DIS.

Note: Install a new clock controller card; do not use one of the clock controller cards from the XT system.

Note: Do not install clock controllers in the network slots of the Core/Net module; install them in network modules only.

Note: When configuring clock controller cards, be sure to set the switches correctly and install the card in the slot and module indicated. Incorrect settings or location of the card will allow the system to operate, but may result in unreliable or unpredictable system function. Disregard silkscreened text (“21,51,61,71”) next to the switches.

Table 137
Clock controller card 0 switch settings

Combined Length of NT8D74 Clock Controller to Junctor Cables (see note)	SW1 position				SW2 position				SW4 position			
	1	2	3	4	1	2	3	4	1	2	3	4
0–4.3 m (0–14 ft)	on	off	off	off	off	off	off	off	on	on	off	off
4.6–6.1 m (15–20 ft)	on	off	off	off	off	off	off	off	on	on	off	on
6.4–10.1 m (21–33 ft)	on	off	off	off	off	off	off	off	on	on	on	off
10.4–15.2 m (34–50 ft)	on	off	off	off	off	off	off	off	on	on	on	on
Note: Add the length of the two cables (no cable can exceed 25 ft). Positions 3 and 4 of SW4 must be set the same on both clock controller cards.												

- 6 Install new NT1R04 cables between Junctor module connector J11 and the faceplate of clock controller card 0.
- 7 In the Network module that will house the transferred cards, verify that network common cards (IGS, 3PE, and PS cards) are properly installed and cabled (see Table 138).

Table 138
Card placement in Option 81C

Card	Card location	
	Group 0	All other groups
QPC441 3PE card	Slot 11	Slot 1
QPC412 IGS cards	8–9	2–3
QPC43 PS card	10	4
QPC414 Network card	0–7	5–12
NT8D17 Conference/TDS card	0–7	5–12
SDI-type cards	0–7	5–12
MSDL card	0–7	5–12
MISP card	0–7	5–12
PRI/DTI cards	0–6	5–11
PRI/DTI cards	see note	13–14
SDI-type cards	see note	slot 13
Note: cards moved from slots 13 and 14 of XT Group 0 must be relocated to a group other than Group 0 in the Option 81C.		

- 8 Label each card that is being transferred to the Network module with the group (0–4), shelf (0 or 1), and loop (0–159) for the card.
- 9 Disable the QPC414 Network card (two loops):

LD 32 to load the program

DISN loop even or odd loop number disables the card

******** to exit the program

- 10 On each card that is being transferred to the Core/Net or Network module, disable the faceplate switch, disconnect all cables, and remove the card.
- 11 Install the card in the destination module. Verify that the cards are installed in the correct slots as indicated in Table 138. Check group, shelf, and loop numbers as well as the slot location.
- 12 Connect all cables to the card (including the NT8D86 cables from the I/O panels to the QPC414 Network cards). Set the ENB/DIS switch to ENB.
- 13 Switch the cables at the PE end:
 - If cables from network cabinets are still connected to the connector housings, disconnect those cables and replace them with the NT8D73 cables from the Network modules.
 - If NT9J96 cables inside the PE cabinets are not connected, connect them to the faceplates of the appropriate QPC659 cards.
- 14 On the Option 81C, enable the network card:

LD 32	to load the program
ENLN loop	even or odd loop number enables the card
****	to exit LD 32
- 15 Test for dial tone on both loops.
- 16 Repeat step 8 through step 15 for all network shelves.

Completing the upgrade

- 1 Install alarm termination plugs (P0623569):
 - Install one plug at a convenient location on the cabinet frame near each CPU.
 - Disconnect the power monitor cable from each CPU shelf and plug it into a termination plug.
- 2 Turn off power to the CPU shelves in the cabinet:
 - Set the ENB/DIS switch on the power monitor to DIS.
 - Power down the CPU shelf input breaker.
- 3 Clear all shelf alarms in the cabinets.
- 4 Connect the cabinets to the system monitor. See “System monitor upgrade installation” on page 797.
- 5 Test the IOP to IOP SCSI connection and test the IODU/Cs:

LD 137	to load the program
TEST SCSI	to check the IOP to IOP connection and access to the IODU/Cs
TEST CMDU	to test the hard and floppy disk drives (a floppy diskette must be installed)
****	to exit the program
- 6 Clear displays, major alarms, and minor alarms:

LD 135	to load the program
CDSP	to clear the display
CMAJ	to clear all major alarms
CMIN ALL	to clear all minor alarms
SCPU	to switch to the other Core
CDSP	to clear the display
****	to exit LD 135

- 7 Remove any remaining cables that are no longer used.
- 8 Verify the system by using test procedures described in *Meridian 1 system installation procedures* (553-3001-210) and *X11 input/output guide*. Clear any faults discovered during testing.
- 9 Perform the post-conversion procedure as outlined in *Software conversion procedures* (553-2001-320).

The XT Core/Net and Network module upgrade to Option 81C is complete.

Database transfer

This section describes database transfer for systems upgrading to options 51C, 61C, or 81C with the IODU/C card(s). Typically, database transfer is performed in conjunction with a system upgrade. When using this procedure, also refer to the appropriate upgrade section in this document.

Database transfer is a process of transferring an existing system database to a 2 MB format that is compatible with the IODU/C card.

For systems equipped with MDU or SMDU cards running X11 release 21 or 18H (Phase 8), the database can be transferred using **two different methods**:

- Transfer the database using the Database Transfer Utility (this requires an “interim” IOP/CMDU card during the database transfer). Refer to “Using the Database Transfer Utility” on page 746.
- Cable the SMDU or MDU to the IODU/C card and downloading the database (refer to “Using the direct cabling method” on page 748).

For systems equipped with IOP/CMDU or separate IOP and CMDU cards running X11 release 21, the database is converted from a 4 MB format to a 2 MB format that is compatible with the IODU/C card using the Database Transfer Utility diskette (refer to “Using the Database Transfer Utility” on page 755). The Database Transfer Utility diskette is included in the upgrade package and is installed in the IOP/CMDU card.

Note: Both the Database Transfer Utility and direct cabling methods are described as part of the upgrade procedures in “Upgrading to the Meridian 1 option 51C”, “Upgrading to the option 61C”, and Upgrading to the option 81C”. The following sections are included for reference only.

For systems running X11 16G (Phase 7) and equipped with NT8D69 MDU cards with 2 MB floppy drives, the Database Transfer Utility diskette is also used to convert the database to a 2 MB format that is compatible with the IODU/C (refer to “Databases on X11 release 16 G (Phase 7)” on page 758).

Database transfer for option 21E, 51, 61, 71, STE, NT, and XT systems

For systems equipped with MDU or SMDU cards, the database can be transferred using **two different methods**:

- transfer the database using the Database Transfer Utility (this requires an “interim” IOP/CMDU card during the database transfer)
- cable the SMDU or MDU to the IODU/C card and downloading the database

Using the Database Transfer Utility

To perform this procedure, an interim NT5D20 IOP/CMDU and QMM42 security cartridge are required.

Before beginning this procedure:

- The system must be running X11 release 21 or 18H (Phase 8)
- For dual-CPU systems, the system must be in split mode with **Core 0 processing calls**.
- The target system must be installed and powered up.

- 1 Perform a data dump in LD 43 on the existing system.
- 2 In Core/Net 1 (Core/Net 0 for single CPU systems) of the target system, install the NT5D20 IOP/CMDU card into slot 17.
- 3 In Core/Net 1, install the Database Transfer Utility diskette, which corresponds to the existing (source) CP card, into the floppy drive on the IOP/CMDU card.
- 4 Press the MAN RST button on the CP card in Core/Net 1.

- 5 When the NT Logo Screen appears on the terminal, the Database Transfer Utility has loaded. Press <CR> to continue.

CAUTION

When using the Database Transfer Utility, do not select options other than those specified by this procedure. Selecting any other options can result in operating system corruption.

- 6 When the Main Menu appears, select <d> *To install Database only.*
- 7 Select <c> *to transfer the previous system database (DBMT).* Follow all on-screen instructions. When DBMT is complete, press <CR> to return to the Main Menu.
- 8 Select <t> to go to the Tools Menu
 - <s> to archive existing database
 - <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
 - <a> diskette is now in floppy drive in side 1

The message "Database backup complete!" is displayed and the Tool menu reappears after the backup is successfully completed.

- 9 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive.
- 10 When the database is converted to 2 MB, place it in a safe place for use after the IOP/CMDU card is replaced with an IODU/C card, and continue with the system upgrade.

The database transfer procedure is complete. You are now ready to install release 24 software.

Using the direct cabling method

Typically, database transfer is performed in conjunction with a system upgrade. Refer to the appropriate upgrade section in this document for complete system upgrade procedures.

Before beginning this procedure:

- The system being upgraded must be running X11 release 21 or 18H (Phase 8)
- The target system must be configured with a Core/Net module, Call Processor (CP) card, and Common Equipment Power Supply.
- For redundant systems, the system must be in split mode with **CPU 0 processing calls**.

CAUTION

For redundant systems, the direct cabling procedure must begin on CPU 0. For single CPU systems, a jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

Note: To transfer the database using the direct cabling method, you will place the MDU (or SMDU and EMSI cards) into an empty network slot in the Core/Net 1 module. For redundant systems, the MDU (or SMDU and EMSI cards) is used in Core/Net 1 only. The database is copied from Core/Net 1 to Core/Net 0 using the Software Installation Tool.

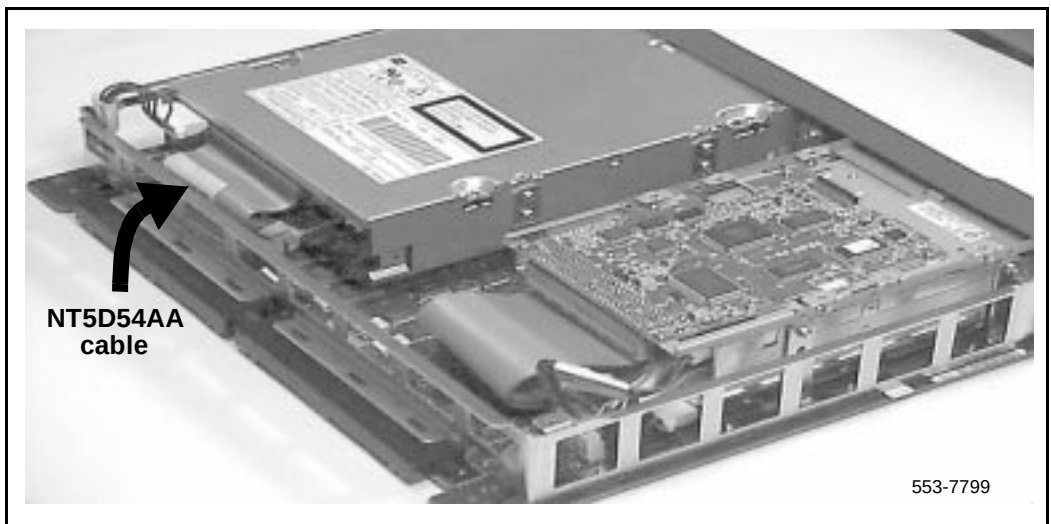
CAUTION

Ensure that Core/Net 1 is powered down when installing the IODU/C and MDU/SMDU into the Core/Net backplane. Failure to power down the module may cause damage to the MDU or SMDU cards.

IODU/C cabling

- 1 Shut down power to the Core/Net 1 module. For AC-powered systems, set the circuit breaker on the MPDU in the module to OFF (down position). For DC-powered systems, set the switch on the pedestal to OFF (down position).
- 2 Remove the IODU/C card from Core/Net 1.
- 3 Disconnect the NT5D54AA ribbon cable from the CD-ROM drive SCSI connector (see Figure 146). **Do not** disconnect the cable from the IODU/C circuit board.

Figure 146
Location of NT5D54 cable on IODU/C card



- 4 Plug the male connector of the NT5D50AA ribbon cable into the NT5D54AA SCSI ribbon cable that was just disconnected. Make sure that the colored edges of both ribbon cables are lined up when connecting the cables (P1 to P1).
- 5 Route the other end of the NT5D50AA ribbon cable over the CD-ROM drive, past the IODU/C faceplate, to the empty network card slots where the MDU will be temporarily installed.
- 6 Install the IODU/C card into slot 17 of Core/Net 1.

MDU cabling

- 1 If the MDU or SMDU was stored in CPU 0 or network module, use the following steps to remove the MDU/SMDU:
 - Software disable the QPC584 MSI card, NT9D34 EMSI card, or QPC742 FDI card in the active CPU.:

LD 37 to load the program
DIS MSI 0 to disable the card
 - Remove the floppy diskettes from the disk drives.
 - Label and disconnect cables from the faceplate of the MDU or SMDU.
 - Unhook the lock latches on the MDU/SMDU and gently pull the unit forward two or three inches.

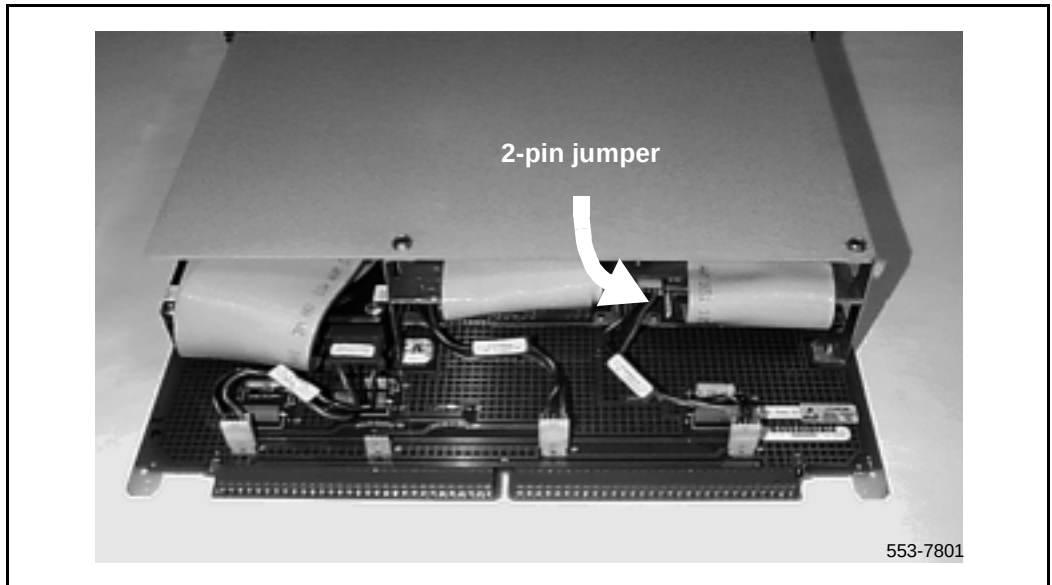
Note: When removing an MDU, wait at least 30 seconds after unplugging the unit from the card slot before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.
- 2 Unplug the NTND1602 SCSI ribbon connector from the MDU/SMDU floppy drive A. Floppy drive A is at the top of the MDU/SMDU card.

CAUTION

Perform step 3 for option 51C systems only. The jumper change is required to change the SCSI bus address of the floppy drive on the MDU as it conflicts with the SCSI bus addresses of the drives on the IODU/C where the IODU/C resides on Core 0. The jumper change is not required on redundant systems where the IODU/C resides in Core 1. This is because the SCSI addressing on the IODU/C, which is dependent on the Core in which it resides, does not conflict with the MDU floppy drive SCSI address.

- 3 **For option 51C systems only:** Remove the 2-pin jumper located closest to the ribbon connector on floppy drive A (see Figure 147). The jumper block has 6 pins and three jumpers.

Figure 147
Option 51C 2-pin jumper location on MDU card



- 4 Plug the NT5D50AA ribbon cable P2 female connector into the floppy drive A connector on the MDU/SMDU (see Figure 148). Make sure that the colored edge of the ribbon cable is towards the floppy drive power connector. This connects the IODU/C to the MDU/SMDU floppy drive A.
- 5 Install the MDU/SMDU into an empty network card slot in the Core/Net 1 module (see Figure 149). If the SMDU is used, you must also install the NT9D34 EMSI card next to the SMDU in a network slot of Core/Net 1. Connect the NT9D66 faceplate cable (J1) between the SMDU and EMSI cards.
- 6 Insert the B1 (4MB) customer database diskette previously archived, into the floppy drive A (top drive) of the MDU/SMDU.
- 7 Verify that the CP card is set to MAINT and install the card in slot 15 (the card occupies two slots).
- 8 Set the ENB/DIS switch on the IODU/C card to ENB (and EMSI if installed).

Figure 148
Cabling the MDU to the IODU/C card

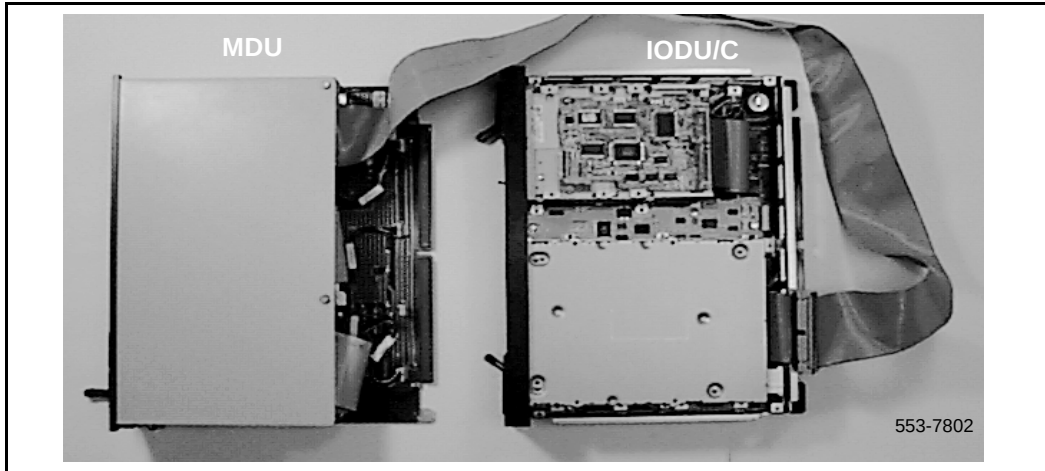
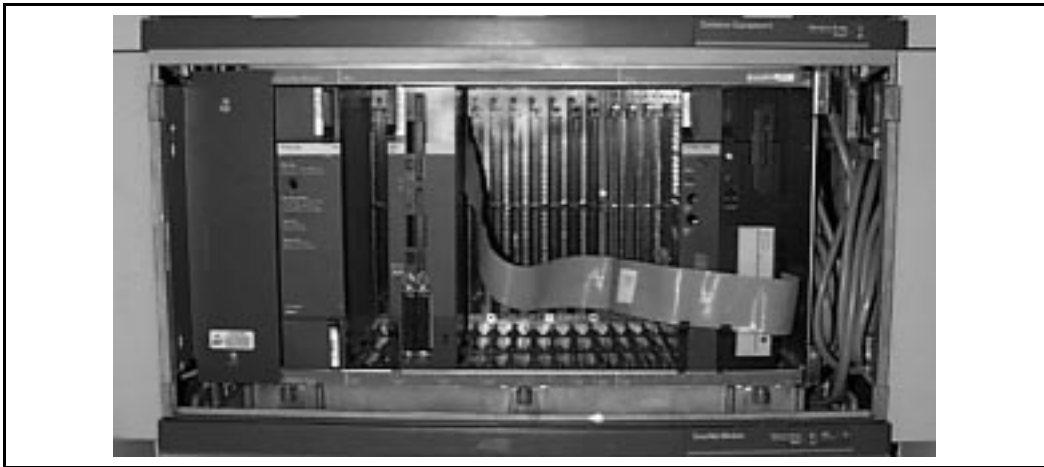


Figure 149
IODU/C and MDU cabled in Core/Net 1



- 9 Insert the CP Install Program diskette that corresponds with the installed CP card type into IODU/C floppy drive (68060 or 68060E).
- 10 Connect a terminal to the J25 CPSI port on Core/Net 0.

- 11 Apply power to the module.

The system is now loading software from the floppy diskette and the terminal will display SYSLOAD messages during file loading. Wait for the NT logo to appear after SYSLOAD has been completed.

- 12 When the NT logo appears, press <CR> to continue.

- 13 Log into the system and enter the time and date, when prompted.

- 14 Initiate the database installation by selecting the following command from the menu:

<u> to Install menu

- 15 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

<a> to continue with keycode validation

<y> to confirm that the keycode matches the CD-ROM release

- 16 When the Install Menu appears, select the following options in sequence:

<d> to install customer database only

<f> to transfer the customer database from the MDU

<a> to continue the database transfer

<a> to transfer the database from the floppy to the hard disk (make sure customer database B1 diskette is installed in the floppy drive A on the MDU)

<cr> to continue
the Installation Status Summary menu appears to confirm database transfer

<y> to start installation

<a> Yes, transfer the database

Database transfer begins. After the customer database is successfully transferred, the system displays "Success! Database Transferring complete".

<cr> Press Return to display the Installation Status Summary, which shows that the database was successfully transferred.

<cr> Press return to return to the Install Menu.

Remove any diskettes from the floppy drive.

<q> When the Install Menu appears, select <q> to quit.
Remove any

- <y> to confirm quit
- <a> to reboot the system

The system will automatically perform a sysload during which several messages will appear on the system terminal. Wait until the system initializes before continuing.

17 Shut down power to Core/Net 1 module.

Note: When removing the IODU/C card, wait at least 30 seconds before you remove it from the card cage. This allows the hard disk drive to stop spinning, and reduces the risk of damage to the drive.

- 18** Remove the IODU/C card and disconnect the ribbon cable NT5D50AA from the CD-ROM drive connector. Reinstall the NT5D54AA SCSI ribbon cable between the CD-ROM drive and the J9 motherboard connectors.
- 19** Reinstall the IODU/C into the card slot 17 and ensure that the ENB/DIS switch is set to ENB.
- 20** Insert the CP Install Program diskette that corresponds with the installed CP card into the IODU/C floppy drive (68030, 68040, 68060 or 68060E).
- 21** Unplug and remove the MDU/SMDU from the network card slot of Core/Net and disconnect the NT5D50AA ribbon cable from the floppy disk drive A and reconnect the NTND1602 SCSI ribbon cable to the disk drive A. Unplug and remove the EMSI card from Core/Net module, if equipped.
- 22** Install the remaining Core/Net circuit cards and faceplate enable them. **Leave the CNI cards disabled** to ensure call processing is not disrupted on the active CPU.
- 23** Verify that the CP card faceplate switch is set to MAINT.
- 24** Apply power to the module.

The database transfer procedure is complete. You are now ready to install software.

Database transfer for option 51C, 61C, 81, and 81C systems

For systems equipped with IOP/CMDU or separate IOP and CMDU cards, the database is transferred using:

- the Database Transfer Utility diskette
- the Software Installation Tool *Copy database* command (this method is supported for dual CPU systems only)

Using the Database Transfer Utility

Before beginning this procedure:

- The system must be running release 21 or later
- For redundant systems, the system must be in split mode with Core 0 processing calls.
- The target system must be installed and powered up.

- 1 Perform a data dump in LD 43.
- 2 Insert the Database Transfer Utility diskette which corresponds to your Call Processor type (68060, 68040, 68030) into the floppy drive.
- 3 Press the MAN RST button on the CP card in Core 1 (Core 0 for single CPU systems) to reboot the system and start the Transfer Utility Tool.

CAUTION

When using the Database Transfer Utility, only select options <d> To install Database only, <t> Tools Menu, and <s> To archive existing database. Selecting any other options can result in operating system corruption.

- 4 When the Transfer Utility Main Menu appears, select the following options in sequence:

- <t> to go to the Tools menu
- <s> to archive existing database
- <a> to continue with archive (insert 2MB diskette into the floppy drive in Core 1)
- <a> diskette is now in floppy drive in side 1

The message “Database backup complete!” is displayed and the Tool menu reappears after the backup is successfully completed.

- 5 Remove the 2MB diskette containing the customer database from the IOP/CMDU floppy drive and place it in a safe place for use after Core 1 is converted to Core/Net 1 with an IODU/C. Do not reboot the system at this point.

The database transfer procedure is complete. Continue with the system upgrade.

Using the *Copy database* command

This procedure is supported on **dual Commercial Processor systems only**.

Before beginning this procedure:

- The existing system must be running release 21 or later.
 - The system must be in split mode with Core 0 processing calls.
 - The IODU/C and Call Processor cards must be installed in the target system.
 - The NTND13 IOP SCSI cable must be connected to the IOP/CMDU card in Core 0 and the IODU/C card in Core 1.
 - Core 1 is powered up.
- 1 Place the Install Program diskette that corresponds with your CP type into the IODU/C in Core 1.
 - 2 Install the CD-ROM into the CD drive.
 - 3 Press and release the MAN RST button in Core 1. This will reboot the system.

A sysload will begin (cold start). Wait for the NT Logo to appear on the terminal before proceeding. Press <CR> to continue.

The Install Main Menu is displayed after the system-check passes. The next menu prompts you to continue with the Install or go to the Tools Menu.

- 4 Select option <u> to go to the Install menu.
- 5 Insert the Keycode diskette into the disk drive and select option <a>.
- 6 When the Install Main Menu appears, select the following options in sequence to copy the customer database from the IOP/CMDU in Core 0 to the IODU/C in Core 1.

<d>	to install database only
<d>	to copy the database
<y>	to confirm installation status summary
<a>	to confirm database copy
- 7 Select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

Wait for “DONE” and then “INI” messages to be displayed before continuing.

The database transfer procedure is complete. You are now ready to install software.

Databases on X11 release 16 G (Phase 7)

Use the following procedure if your system is equipped with NT8D69 MDU cards running X11 release 16G (Phase 7) software.

Before beginning this procedure:

- Perform a data dump in LD 43 on the existing system.
- Upgrade the existing system to Meridian option 51C, 61C, or 81C using the procedures in *Upgrade system installation to X11 release 24* (553-3001-258).
- Install X11 release 24 software.

- 1 Insert the Database Transfer Utility diskette into the IODU/C floppy drive.
- 2 Press the MAN RST button on the CP card to reboot the system and start the Software Installation Tool. When the sysload is complete, the NT logo appears.
- 3 When the NT logo appears, press <CR> to continue.
- 4 Log in the system and enter the time and date, when prompted.
- 5 Initiate the database installation by selecting the following command from the menu:

 <u> to Install menu
- 6 Remove the CP Install Program diskette and insert the Keycode diskette, when prompted.

 <a> to continue with keycode validation
 <y> to confirm that the keycode matches the CD-ROM release
- 7 When the Install Menu appears, select the following options in sequence:

 <d> to install customer database only
 <c> to transfer the previous system database (DBMT)
 When DBMT is complete, press <CR> to transfer the database from 2 MB floppy to hard disk.
 Insert the source database 2 MB disk (B1) into the floppy drive.
 The Installation Status Summary table appears.

<a> to start installation

<a> to transfer the database

The system transfers the database to hard disk and the Installation Status Summary table re-appears.

<cr> to return to the Install Menu

<q> to quit

<y> to confirm quit

Remove the 2 MB database diskette from the floppy drive.

<a> to reboot the system

The system will reboot and that database is converted from release 16G (Phase 7) to release 24.

The database transfer procedure is complete.

Upgrading to a new Call Processor card

CAUTION

Personnel performing this upgrade do so at their own risk. Personnel should have spare CP cards on hand or risk installation delay and/or system down time. Northern Telecom assumes no responsibility for any damage incurred, system down time, or loss due to damage or down time.

This section contains procedures for performing NT6D66 or NT9D19 CP card upgrades on Options 51C, 61C, 81, or 81C systems running X11 release 23 or later software.

- NT6D66 CP cards support upgrades to NT9D19, NT5D10 or NT5D03 CP cards
- NT9D19 CP cards support upgrades to NT5D10 or NT5D03 CP cards

Note: The procedures in the section can be used for all NT9D19, NT5D10 or NT5D03 CP card memory configurations.

X11 release 24 supports Automatic Inline Conversion from X11 release 21, 22 and 23. If your system is running on a release earlier than release 21, the database must be converted to X11 release 21 compatibility before continuing with this upgrade. The customer database can be sent to Northern Telecom for conversion or converted on-site.

This procedure differs for systems equipped with NT5D20 IOP/CMDU or NT5D61 IODU/C cards.

There should be an SDI TTY connection at J30, which should remain connected at all times to monitor system status.

Upgrading to a new CP card in Options 61C, 81, or 81C

Use the following instructions if you are upgrading a system to release 24 and are installing NT9D19, NT5D10 or NT5D03 CP cards.

Installing a new CP card in an Option 61C, 81, or 81C consists of:

- splitting the CPUs
- installing a new CP card in Core 1
- upgrading the system software and CP ROMs on Core 1
- swapping CPUs
- installing a new CP card in Core 0
- upgrading the system software and CP ROMs on Core 0
- synchronizing the hard disks

Performing a data dump

Before starting the upgrade, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump

- 4 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter
**** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Splitting the cores

- 1 Verify that the disk drives are synchronized:

LD 137 to load the program
STAT to get the status of the disk drives

If the disks are synchronized, proceed with step 2. If they are not synchronized, execute the SYNC command:

SYNC to synchronize the drives
**** to exit the program

- 2 Verify that clock controller 0 is active. If it is not, switch to clock controller 0:

LD 60 to load the program
SSCK 0 to get the status of clock controller 0
SWCK to switch to clock controller 0 (if necessary)
**** to exit the program

3 Verify that Core 0 is the active Core:

LD 135	to load the program
STAT CPU	to check CPU status
TEST CPU	to test the CPU

If Core 0 is active, proceed with step 5. If Core 0 is not the active CPU, swap Cores and verify again:

SCPU	to swap CPUs
STAT CPU	to check CPU status

4 Verify that CMDU 0 is active. You may need to switch CMDUs.

LD 137	
STAT	Get the status of CMDU and IOP.
SWAP	Switch CMDUs (if necessary).

5 Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.

6 Set the ENB/DIS switch on all CNI cards in Core 1 to DIS.

7 Perform the following three steps in uninterrupted sequence:

- press and hold the MAN RST button on the CP card in Core 1
- set the MAINT/NORM switch on the CP card in Core 1 to MAINT
- release the MAN RST button

Upgrading Core 1

At this time you will install the new CP card and X11 release 24 system software on Core 1 if it is not already installed on the hard drive.

1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.

- 7 data bits
- 1 stop bit
- Space parity
- Full duplex
- XON protocol

- 2 Disengage the lock latches and remove the CP card from Core 1.
- 3 Set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU card to DIS and remove the card. Replace the current QMM42 cartridge with the target QMM42 cartridge. Reinstall and enable the card.
- 4 Insert disk A1 from the software upgrade package into CMDU 1 or IOP/CMDU 1.
- 5 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 6 Insert the new CP card in the same slot in Core 1 and secure the lock latches.

The system will automatically load the software install program.

- 7 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

```
dd mm yyyy
hh mm ss
or
dd-mm-yyyy
hh-mm-ss
```

- 8 When the Main Menu appears, select the following options in sequence when you are prompted to do so:

```
<a>          to install software, CP-BOOT ROM and IOP-ROM
<y>          to start installation
<a>          to continue with the upgrade
```

- 9 Insert disk 2 from the software upgrade package into CMDU 1 or IOP/CMDU 1. Follow all screen directions requiring disk insertion. A number of disks will be requested.

- 10 Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

```
<a>          to continue with ROM upgrade
<a>          to continue with ROM upgrade (CP-BOOT ROM)
<y>          to start installation
<a>          to continue with ROM upgrade (IOP-ROM)
```

- 11 Remove any diskettes from CMDU 1 or IOP/CMDU 1.
- 12 Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will perform a sysload and system initialization during which several messages will appear on the system terminal.

Note: SYS4695 is not an error message. This message is cleared when you perform a data dump.

If you are converting from a software release prior to X11 release 24, the following message appears on the system terminal:

DATA CONVERSION

X11 RELEASE 21.xx TO RELEASE 24.xx

- 13 Verify that the “DONE” message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to appear.

- 14 Set the ENB/DIS switches on all CNI cards in Core 1 to ENB.

CAUTION

Disabling CNI cards in Core 0 will momentarily interrupt call processing. Calls established or in process will be dropped. Call processing will resume after the “SYSTEM INI” messages appear on the system terminal (approximately 1 minute).

15 Perform the following three steps in uninterrupted sequence:

- set the DIS/ENB faceplate switch on the IOP/CMDU card in Core 0 to DIS
- set the ENB/DIS switch on all CNI cards in Core 0 to DIS
- press and release the MAN INT button on the CP card in Core 1

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

If the system fails to load, or system messages indicate data corruption, back out of the procedure by performing the steps in “Backing out of the CP card upgrade” on page 771.

16 Following a successful dial tone test, perform the following basic sanity tests:

- Make sure calls can be placed.
- Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

Upgrading Core 0

Once the CP card in Core 1 is upgraded, upgrade the CP card in Core 0 and install release 24 software:

- 1** Connect a terminal to the CPSI port in Core 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2** Verify that the MAINT/NORM switch on the CP card in Core 0 is set to MAINT.

- 3** In Core 0, remove the IOP/CMDU card. Replace the current QMM42 cartridge with the target QMM42 cartridge.
- 4** Reseat the IOP/CMDU card and set the faceplate switch to ENB.
- 5** Verify that the ENB/DIS switches on all CNI cards in Core 0 are set to DIS.
- 6** Disengage the lock latches and remove the CP card from Core 0.
- 7** Insert disk A1 from the software upgrade package into CMDU 0 or IOP/CMDU 0.
- 8** Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 9** Insert the new CP card in the same slot in Core 0 and secure the lock latches.

The system will perform a sysload and display the install menu.

- 10** When the Main Menu appears, select the following options in sequence when you are prompted to do so:
 - <a>** to install software, CP-BOOT ROM and IOP-ROM
 - <y>** to start installation
 - <a>** to continue with upgrade
- 11** Insert disk 2 from the software upgrade package into CMDU 0 or IOP/CMDU 0. Follow all screen directions requiring disk insertion. A number of disks will be requested.
- 12** Following the software installation, select the following options:
 - <a>** to continue with ROM upgrade
 - <a>** to continue with ROM upgrade (CP-BOOT ROM)
 - <y>** to start installation
 - <a>** to continue with ROM upgrade (IOP-ROM)
- 13** Remove any diskettes from CMDU 0 or IOP/CMDU 0.

- 14** Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

- 15** In Core 0, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.
- 16** Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel in the back of the core.
- 17** In Core 0, perform the following steps in uninterrupted sequence:
- press and release the MAN RST button
 - when SYS700 messages appear on CP 0 LCD display, **set the MAINT/NORM switch to NORM.**

Within 60 seconds, the LCD will display the following messages, confirming the process.

RUNNING ROM OS ENTERING CP VOTE

An “HWI534” message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message on Core 1 CPSI or SDI TTY indicates the memory synchronization is taking place. Wait until the memory synchronization is complete before continuing.

- 18** Set the MAINT/NORM switch on the CP card in Core 1 to NORM.
- 19** Synchronize the disk drives:
- | | |
|---------------|--|
| LD 137 | to load the overlay |
| STAT | to get the status of both CMDUs, IOPs and redundancy |
| SYNC | to synchronize the disk drives |
| **** | to exit the program |

Completing the upgrade

To complete the upgrade, synchronize the disk drives and verify CPU and CNI status.

- 1 Verify CPU redundancy and CNI function:

LD 135	to load the overlay
STAT CPU	to check the status of the CPU
STAT CNI	to verify function of the CNIs
TEST CPU	to test the CPU
SCPU	switch CPUs
STAT CPU	to check the status of the CPU
STAT CNI	to verify function of the CNIs
TEST CPU	to test the CPU
SCPU	switch to CPUs
****	to exit the program

- 2 Insert the release 24 software B1 diskette into both CMDUs or IOP/CMDUs.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 4 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 5 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The CP card upgrade is complete.

Backing out of the CP card upgrade

- 1 Place the original **Source** installation disk 1 in CMDU or IOP/CMDU in Core 1.
- 2 In Core 1, set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU to DIS. Remove the card and replace the data cartridge with the **Source** cartridge.
- 3 In Core 1, reseal the IOP or IOP/CMDU and set the faceplate switch to ENB.
- 4 Disengage the lock latches and remove the new NT9D19, NT5D10 or NT5D03 CP card from Core 1.
- 5 Verify that the MAINT/NORM switch on the original CP card is set to MAINT.
- 6 In Core 1, insert the original CP card and secure the lock latches.
- 7 In Core 1, press the MAN RST button.
- 8 When the install screen appears, select the following options in sequence, and insert the **source** B diskette containing the customer database when you are prompted to do so.
 - to install software, database, CP-ROM, and IOP-ROM
 - <a> to start installation
 - <a> continue with upgrade

Follow all screen direction requiring disk insertion. A number of disks will be requested.

- 9 When the ROM installation screen appears, select the following:
 - <a> to continue with the ROM upgrade

- 10 When the database installation screen appears, select the following:
 - <c> to transfer the previous system database (DBMT)
(choose this option if the database was converted on-site)
 - or
 - <a> to install customer database (choose this option if the
database was sent to Northern Telecom for conversion)
 - <a> to continue with the database install
 - <y> to delete the hardware infrastructure database files from
the hard disk
- 11 Following the database installation, upgrade the ROMs:
 - <a> to continue with ROM upgrade (CP-BOOT)
 - <y> to start installation
 - <a> to continue with ROM upgrade (IOP-ROM)
- 12 Remove the disk from the IOP/CMDU.
- 13 From the main menu, select the following options to quit and reload the
system:
 - <q> to quit
 - <y> to confirm quit
- 14 Remove any diskettes from the floppy drive, and type
 - <a> to reboot the system
- 15 In Core 1, enable the NT6D65 CNI cards by setting the ENB/DIS
faceplate switches to ENB.
- 16 On CP 1, press and release the MAN RST button. When SYS700
messages appear on the CP 1 LCD display, set CP 1 MAINT/NORM
switch to NORM. Within 60 seconds, the LCD will display the following
messages, confirming the process.

RUNNING ROM OS ENTERING CP VOTE

An "HWI534" message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an "HWI533" message on Core 0 CPSI or SDI TTY indicates the memory synchronization is complete. Wait until the memory synchronization is complete before continuing.

- 17 In Core 0, set the MAINT/NORM switch on the CP card to NORM.
- 18 Perform a redundancy sanity test.

LD 135	
TEST CPU	Test the CP.
SCPU	Switch the CPs.
CDSP	Clear display.
TEST CPU	Test the CP.
SCPU	Switch the CPs.

Note: Testing the CPs can take up to 20 minutes for each test. When the test is complete, the memories are automatically synchronized.

- 19 Load LD 137 and synchronize hard disks. Synchronization may take up to 50 minutes. To be sure the contents of CMDU 0 are copied to CMDU 1, use the STAT command to verify that CMDU 1 is disabled.

LD 137	
STAT CMDU	Get the status of both CMDUs.
SYNC	Synchronize disks.

You are now out of the CP card upgrade procedure, and have returned to the **Source** software.

Upgrading to a new CP card in an Option 51C

CAUTION

Installing the NT9D19 or NT5D10 CP card in the Option 51C will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

Installing an NT9D19, NT5D10 or NT5D03 CP card in an Option 51C system consists of:

- installing a new CP card in the Core module
- upgrading the system software and CP ROMs

Performing a data dump

Before starting the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
 LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
 EDD to begin the data dump
- 4 When “DATABASE BACKUP COMPLETE” and “DATADUMP
 COMPLETE” appears on the terminal, enter
 ******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing the new NT5D03 CP card and release 24 software

At this time you will install the new NT5D03 CP card and release 24 system software if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in the Core module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol

- 2 Disengage the lock latches and remove the CP card from the Core module.
- 3 Set the ENB/DIS switch on the NT6D63 IOP or NT5D20 IOP/CMDU card to DIS and remove the card.
- 4 Replace the current QMM42 cartridge with the target QMM42 cartridge. Reinstall and enable the card.
- 5 Insert disk 1 from the software upgrade package into the CMDU or IOP/CMDU.
- 6 Verify that the MAINT/NORM switch on the new NT9D19 or NT5D10 CP card is set to NORM.
- 7 Verify that the ENB/DIS switch on the CNI card is set to ENB.
- 8 Insert the new CP card in the same slot in the Core module and secure the lock latches.

The system will automatically load the software install program.

- 9 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yy
hh mm ss
or
dd-mm-yyyy
hh-mm-ss

- 10 When the Main Menu appears, select the following options in sequence when you are prompted to do so:

<a>	to install software, CP-BOOT ROM and IOP-ROM
<y>	to start installation
<a>	to continue with the upgrade

- 11 Insert disk 2 from the software upgrade package into the CMDU or IOP/CMDU card. Follow the screen directions requiring disk insertion.

- 12 Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:
 - <a> to continue with ROM upgrade
 - <a> to continue with ROM upgrade (CP-BOOT ROM)
 - <y> to start installation
 - <a> to continue with ROM upgrade (IOP-ROM)
- 13 Remove any diskettes from the CMDU or IOP/CMDU.
- 14 Select the following options to quit and reload the system:
 - <q> to quit
 - <yes> to confirm quit
 - <a> to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

Note: SYS4695 is not an error message. This message is cleared when you perform a data dump.

Note: If you are converting from a software release prior to release 24, the following message appears on the system terminal:

DATA CONVERSION

X11 RELEASE xx.xx TO RELEASE 24.xx

- 15 Verify that the “DONE” message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to appear.

Completing the upgrade

To complete the CP card upgrade, verify CPU and CNI status.

- 1 Verify CPU and CNI functionality:

LD 135	to load the overlay
STAT CPU	to check the CPU status
STAT CNI	to verify CNI functionality
****	to exit the program
- 2 Insert the release 24 software B1 diskette into the CMDU or IOP/CMDU.
- 3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program
- 4 When “EDD000” appears on the terminal, enter

EDD	to begin the data dump
- 5 When “DATABASE BACKUP COMPLETE” and “DATADUMP COMPLETE” appears on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 6 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The CP card upgrade is complete.

Upgrading to a new CP card in Options 61C, 81, or 81C with IODU/C

Note: This procedure is used for systems equipped with IODU/C cards only. If your system contains IOP/CMDU or separate IOP and CMDU cards, refer back to page 762.

Use the following instructions if you are converting a system to release 24 and are installing NT9D19, NT5D10 or NT5D03 CP cards.

Installing a new CP card in an Option 61C, 81, or 81C consists of:

- splitting the CPUs
- installing a new CP card in Core 1
- upgrading the system software and CP ROMs on Core 1
- swapping CPUs
- installing a new CP card in Core 0
- upgrading the system software and CP ROMs on Core 0
- synchronizing the hard disks

Performing a data dump

Before starting the upgrade, make a backup copy of the customer database on 2MB diskettes using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Splitting the cores

- 1 Verify that the disk drives are synchronized:

LD 137 to load the program
STAT to get the status of the disk drives

If the disks are synchronized, proceed with step 2. If they are not synchronized, execute the SYNC command:

SYNC to synchronize the drives
******** to exit the program

- 2 Verify that clock controller 0 is active. If it is not, switch to clock controller 0:

LD 60 to load the program
SSCK 0 to get the status of clock controller 0
SWCK to switch to clock controller 0 (if necessary)
******** to exit the program

- 3 Verify that Core 0 is the active Core:

LD 135 to load the program
STAT CPU to check CPU status
TEST CPU to test the CPU

If Core 0 is active, proceed with step 5. If Core 0 is not the active CPU, swap Cores and verify again:

SCPU to swap CPUs
STAT CPU to check CPU status

- 4 Verify that CMDU 0 is active. You may need to switch CMDUs.

LD 137

**STAT
SWAP**

Get the status of IODU/C
Switch IODU/Cs (if necessary).

- 5 Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.
- 6 Set the ENB/DIS switch on all CNI cards in Core 1 to DIS.
- 7 Perform the following three steps in uninterrupted sequence:
 - press and hold the MAN RST button on the CP card in Core 1
 - set the MAINT/NORM switch on the CP card in Core 1 to MAINT
 - release the MAN RST button

Upgrading Core 1

At this time you will install the new NT5D03 CP card and X11 release 24 system software on Core 1 if it is not already installed on the hard drive.

- 1 Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Disengage the lock latches and remove the CP card from Core 1.
- 3 Insert the Install diskette which corresponds to the CP card to which you are upgrading into IODU/C 1.
- 4 Install the CD-ROM disk into the CD-ROM drive on the IODU/C in Core 1. To install the CD-ROM:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

- 5 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 6 Insert the new CP card in the same slot in Core 1 and secure the lock latches.

The system will automatically load the IODU/C Software Installation Tool.
- 7 When the NT Logo Screen appears on the terminal, the Software Installation Tool has loaded. Press <CR> to go to the Install Main Menu.
- 8 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

```
dd mm yyyy
hh mm ss
or
dd-mm-yyyy
hh-mm-ss
```

- 9 At the Main menu select <u> to go to the Install menu.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
=====
```

MAIN MENU

The Software Installation Tool will install or upgrade Meridian-1 System Software, Database and the PE-ROM (both CP and IOP ROM). You will be prompted throughout the installation and given the opportunity to quit at any time.

Please enter:

```
<CR>--> <u> - To Install menu.
          <t> - To Tools menu.
          <q> - Quit.
```

Enter choice > **u**

553-7780

- 10** Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDRom INSTALL Tool (x11)

Please insert the diskette with the keycode file into the floppy drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation
(the keycode diskette is in the floppy drive).
<q> - Quit.

Enter Choice > a

553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 11** When the Install menu appears, select the following options in sequence when you are prompted to do so:

<a> to install software, CP-BOOT ROM and IOP-ROM
<y> to start installation
<a> to continue with the upgrade

- 12** Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

<a> to continue with ROM upgrade
<a> to continue with ROM upgrade (CP-BOOT ROM)
<y> to start installation
<a> to continue with ROM upgrade (IOP-ROM)

- 13** Remove the diskette from IODU/C 1.

- 14** Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will perform a sysload and system initialization during which several messages will appear on the system terminal.

Note: SYS4695 is not an error message. This message is cleared when you perform a data dump.

If you are converting from a software release prior to X11 release 24, the following message appears on the system terminal:

DATA CONVERSION

X11 RELEASE 21.xx TO RELEASE 23.xx

- 15** Verify that the “DONE” message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to appear.

- 16** Set the ENB/DIS switches on all CNI cards in Core 1 to ENB.

CAUTION

Disabling CNI cards in Core 0 will momentarily interrupt call processing. Calls established or in process will be dropped. Call processing will resume after the “SYSTEM INI” messages appear on the system terminal (approximately 1 minute).

- 17** Perform the following three steps in uninterrupted sequence:

- set the DIS/ENB faceplate switch on the IODU/C card in Core 0 to DIS
- set the ENB/DIS switch on all CNI cards in Core 0 to DIS
- press and release the MAN INT button on the CP card in Core 1

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

- 18 Following a successful dial tone test, perform the following basic sanity tests:
 - Make sure calls can be placed.
 - Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

Upgrading Core 0

Once the CP card in Core 1 is upgraded, upgrade the CP card in Core 0 and install release 24 software:

- 1 Connect a terminal to the CPSI port in Core 0 to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2 Verify that the MAINT/NORM switch on the CP card in Core 0 is set to MAINT.
- 3 Verify that the ENB/DIS switches on all CNI cards in Core 0 are set to DIS.
- 4 Disengage the lock latches and remove the CP card from Core 0.
- 5 Insert the Install diskette that corresponds with the CP card you will be installing into IODU/C 0.
- 6 Verify that the MAINT/NORM switch on the new NT9D19, NT5D10 or NT5D03 CP card is set to MAINT.
- 7 Insert the new CP card in the same slot in Core 0 and secure the lock latches.

The system will perform a sysload and load the IODU/C Software Installation Tool.

- 11 Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDRom INSTALL Tool (x11)

Please insert the diskette with the keycode file into the floppy drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation
(the keycode diskette is in the floppy drive).
<q> - Quit.

Enter Choice > a

553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 12 When the Install menu appears, select the following options in sequence when you are prompted to do so:

<o> to copy system software from Core 1 to Core 0.
<y> to start installation
<a> to continue with upgrade

- 13 At the Install menu, select the following options to install CP-BOOTROM:

<e> to install CP-BOOTROM
<y> to start the upgrade
<a> to upgrade CP-BOOTROM from the hard disk drive

- 14 At the Install menu, select the following options to install IOP-ROM:

<f> to install IOP-ROM
<y> to start the upgrade
<a> to upgrade IOP-ROM from the hard disk drive

- 15 **Remove the diskette** from IODU/C 0.

- 16** Select the following options to quit and reload the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

- 17** In Core 0, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.
- 18** Connect a terminal to the CPSI port in Core 1 to J25 of the I/O panel in the back of the core.
- 19** In Core 0, perform the following steps in uninterrupted sequence:
- press and release the MAN RST button
 - when SYS700 messages appear on CP 0 LCD display, **set the MAINT/NORM switch to NORM.**

Within 60 seconds, the LCD will display the following messages, confirming the process.

RUNNING ROM OS ENTERING CP VOTE

An “HWI534” message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message on Core 1 CPSI or SDI TTY indicates the memory synchronization is taking place. Wait until the memory synchronization is complete before continuing.

- 20** Set the MAINT/NORM switch on the CP card in Core 1 to NORM.
- 21** Synchronize the disk drives:
- | | |
|---------------|--|
| LD 137 | to load the overlay |
| STAT | to get the status of both CMDUs, IOPs and redundancy |
| SYNC | to synchronize the disk drives |
| **** | to exit the program |

Completing the upgrade

To complete the upgrade, verify CPU and CNI status and perform a data dump.

- 1 Verify CPU redundancy and CNI function:

LD 135	to load the overlay
STAT CPU	to check the status of the CPU
STAT CNI	to verify function of the CNIs
TEST CPU	to test the CPU
SCPU	switch CPUs
STAT CPU	to check the status of the CPU
STAT CNI	to verify function of the CNIs
TEST CPU	to test the CPU
SCPU	switch to CPUs
****	to exit the program

Backup the customer database on 2MB diskettes.

- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	to load the program

- 3 When “EDD000” appears on the terminal, enter

EDD	to begin the data dump

- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter

****	to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The CP card upgrade is complete.

Upgrading to a new CP card in an Option 51C with IODU/C

This procedure is for systems equipped with IODU/C cards only. If your system is equipped with an IOP/CMDU or IOP and CMDU cards, refer to page 773

CAUTION

Installing the NT9D19 or NT5D10 CP card in the Option 51C will require system downtime. Schedule for this when planning the system upgrade.

Power to the entire column must be shut off to perform this upgrade. This will cause loss of service to the whole telephone system. Plan the upgrade for a time when the impact to the telephone users will be minimal.

Installing an NT9D19, NT5D10 or NT5D03 CP card in an Option 51C system consists of:

- installing a new CP card in the Core module
- upgrading the system software and CP ROMs

Performing a data dump

Before starting the upgrade procedure, make a backup copy of the customer database using the data dump routine:

- 1 Log into the system.
- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program
- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

Installing the new CP card and release 24 software

At this time you will install the new CP card and release 24 system software if it is not already installed on the hard drive.

- 1** Connect a terminal to the CPSI port in the Core module to J25 of the I/O panel at the back of the core. Be sure it is configured as follows. The recommended baud rate is 9600, to be the same as the CPSI port.
 - 7 data bits
 - 1 stop bit
 - Space parity
 - Full duplex
 - XON protocol
- 2** Set the NORM/MAINT switch to MAINT, disengage the lock latches and remove the CP card from the Core module.
- 3** Insert the Install diskette that corresponds to the CP card you will be installing into the IODU/C.
- 4** Install the CD-ROM disk into the CD-ROM drive. To install the CD-ROM:
 - press the button on the CD-ROM drive to open the CD-ROM disk holder
 - place the CD-ROM disk into the holder with the disk label showing
 - press the button again to close the CD-ROM disk holder (don't push the holder in by hand)
- 5** Verify that the MAINT/NORM switch on the new NT9D19 or NT5D10 CP card is set to NORM.
- 6** Verify that the ENB/DIS switch on the CNI card is set to ENB.

- 7 Insert the new CP card in the same slot in the Core module and secure the lock latches.

The system will automatically load the software install program.

- 8 When the NT Logo Screen appears on the terminal, the Software Installation Tool has loaded. Press <CR> to go to the Install Main Menu.
- 9 Set the system date and time. When prompted to enter the time and date, enter it in the following format. A space or dash can be used to separate the items.

dd mm yyyy
hh mm ss
or
dd-mm-yyyy
hh-mm-ss

- 10 At the Main menu select <u> to go to the Install menu.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
=====
```

MAIN MENU

The Software Installation Tool will install or upgrade Meridian-1 System Software, Database and the PE-ROM (both CP and IOP ROM). You will be prompted throughout the installation and given the opportunity to quit at any time.

Please enter:

<CR>--> <u> - To Install menu.

<t> - To Tools menu.

<q> - Quit.

Enter choice > u

553-7780

- 11** Insert the Keycode diskette when prompted and select <a> to continue with the keycode validation.

```
Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
```

```

Please insert the diskette with the keycode file into the floppy
drive.
```

```
Please enter:
```

```
<CR>--> <a> - Continue with the keycode validation
          (the keycode diskette is in the floppy drive).
```

```
<q> - Quit.
```

```
Enter Choice > a
```

```
553-7729
```

Once the keycode is validated against the Security Device, the Install menu is displayed.

- 12** When the Install menu appears, select the following options in sequence when you are prompted to do so:

```

<a>          to install software, CP-BOOT ROM and IOP-ROM
<y>          to start installation
<a>          to continue with the upgrade
```

- 13** Following the software installation, install the CP-BOOT and IOP-ROMs. From the menu select the following:

```

<a>          to continue with ROM upgrade
<a>          to continue with ROM upgrade (CP-BOOT ROM)
<y>          to start installation
<a>          to continue with ROM upgrade (IOP-ROM)
```

- 14** Remove the diskette from the IODU/C.

- 15 Select the following options to quit and reload the system:

<q>	to quit
<yes>	to confirm quit
<a>	to reboot the system

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

Note: SYS4695 is not an error message. This message is cleared when you perform a data dump.

Note: If you are converting from a software release prior to release 24, the following message appears on the system terminal:

DATA CONVERSION

X11 RELEASE xx.xx TO RELEASE 23.xx

- 16 Verify that the “DONE” message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to appear.

Completing the upgrade

To complete the CP card upgrade, verify CPU and CNI status.

- 1 Verify CPU and CNI functionality:

LD 135	to load the overlay
STAT CPU	to check the CPU status
STAT CNI	to verify CNI functionality
****	to exit the program

Backup the customer database to 2MB diskettes:

- 2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter
LD 43 to load the program

- 3 When “EDD000” appears on the terminal, enter
EDD to begin the data dump
- 4 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter
******** to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

- 5 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The CP card upgrade is complete.

System monitor upgrade installation

This chapter describes how to connect the system monitors in the modules to the power monitors in the existing system.

Table 139 provides the SW1 switch settings for the system monitor in upgraded systems.

Table 139
SW1 system monitor switch settings for system upgrades (Part 1 of 2)

SW1	Setting	Function
1	ON	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor.
	OFF	Is not co-located with an existing system.
2	ON	This is the master system monitor and is located in a column containing a CPU and is connected to an existing system containing a QPC84, QPC173, or QPC704 Power Monitor.
	OFF	Set to OFF on all slave system monitors.
	OFF	Switch 1 is set to ON and modules contain only peripheral equipment (PE).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
3	ON	The entire system is DC powered.
	OFF	The modules are AC powered.
4	ON	The Power Fail Transfer Unit (PFTU) activates when overheating occurs.
	OFF	The PFTU will not be activated if overheating occurs.

Table 139
SW1 system monitor switch settings for system upgrades (Part 2 of 2)

SW1	Setting	Function
5	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).
	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
6	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system).
	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system).
	OFF	Is not co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor (switch is set to OFF).
7	ON	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system), and the modules contain only PE (the CE is in an existing cabinet).
	OFF	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.
	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.
	OFF	The PE and CE are located in modules only. There are no existing cabinets associated with this system.
8	OFF	Is co-located with a system containing a QPC84 or a QPC173 Power Monitor (such as an NT or XT system), and the modules contain only PE (the CE is in an existing cabinet).
	ON	Is co-located with an existing system containing a QPC84, QPC173, or QPC704 Power Monitor, and the CPU is in a module.
	ON	Is co-located with a system containing a QPC704 Power Monitor (such as an ST or RT system), and the modules contain only PE.
	OFF	The PE and CE are located in modules only. There are no existing cabinets associated with this system.

System monitoring in NT/XT systems and QCA60-type cabinets

Procedure 1 gives steps for connecting system monitors when existing common equipment (CE) and cabinets equipped with QPC84 or QPC173 Power Monitors are used in the upgrade.

Procedure 2 gives steps for connecting system monitors when the CE is located in a column and the existing cabinets are equipped with QPC84 Power Monitors.

Procedure 1

Connecting system monitor—CE remains in a cabinet equipped with a QPC84 or QPC173 Power Monitor

Note: During this procedure, use Figure 150 if the CE cabinet is equipped with a QPC84 Power Monitor (typically in an NT system). Use Figure 151 if the CE cabinet is equipped with a QPC173 Power Monitor (typically in an XT system).

- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the main distribution frame (MDF). The column containing CPU 0 contains the master system monitor. See *Meridian 1 system installation procedures* (553-3001-210).
- 2 At the MDF, locate the P10 cable from each existing cabinet:
 - Make sure that the SYSLTIN connections (OR/W wire) in all P10 cables are connected together and to the SYSLTOUT connection (W/OR wire) on the P10 cable from the CE cabinet.
 - Make sure that the CE-ALARM connections (V/BL wire) in all P10 cables are connected together.
- 3 Locate a ground at the MDF. Connect it to the MDF 0/gnd connection (BR/W wire) on the NT8D46BH cable from the master column.

- 4 At the MDF, locate the SYSLTIN (BL/R wire) and CE-SYSLT (GR/W wire) connections in the NT8D46BH cable from the master column:
 - Connect the SYSLTIN connection (BL/R wire) on the NT8D46BH alarm cable to the SYSLTOUT (W/OR wire) connection on the P10 cable from the CE cabinet.
 - Connect the CE-SYSLT connection (GR/W wire) on the NT8D46BH alarm cable to the CE-ALARM connection (V/BL wire) on the P10 cable from the CE cabinet.
- 5 Refer to the installation manual for the existing system and install an SDI port. This port connects to the column containing the master system monitor and must be set for 1200 baud operation.
- 6 Check the switch settings on the system monitors in each column. Make sure that switch SW1 on all system monitors is set according to Table 139. See *Circuit card installation and testing* (553-3001-211) to set switches SW2 and SW3.

Note: Install and connect system monitors as described in *Meridian 1 system installation procedures* (553-3001-210). The column containing CPU 0 contains the master system monitor. Other columns contain slave system monitors. A master system monitor is always required.
- 7 Install an NT8D46AD cable from connector P1 in the pedestal containing the master system monitor to J1 on the backplane. Mount the SDI connector on the cable in an available opening in the I/O panel. See Figure 152 and *Meridian 1 system installation procedures* (553-3001-210).
- 8 Install an SDI cable from the SDI port on the existing CE cabinet to the SDI connector on the NT8D46AD cable in the I/O panel on the module.

Figure 150
Common equipment in existing cabinet equipped with a QPC84 Power Monitor

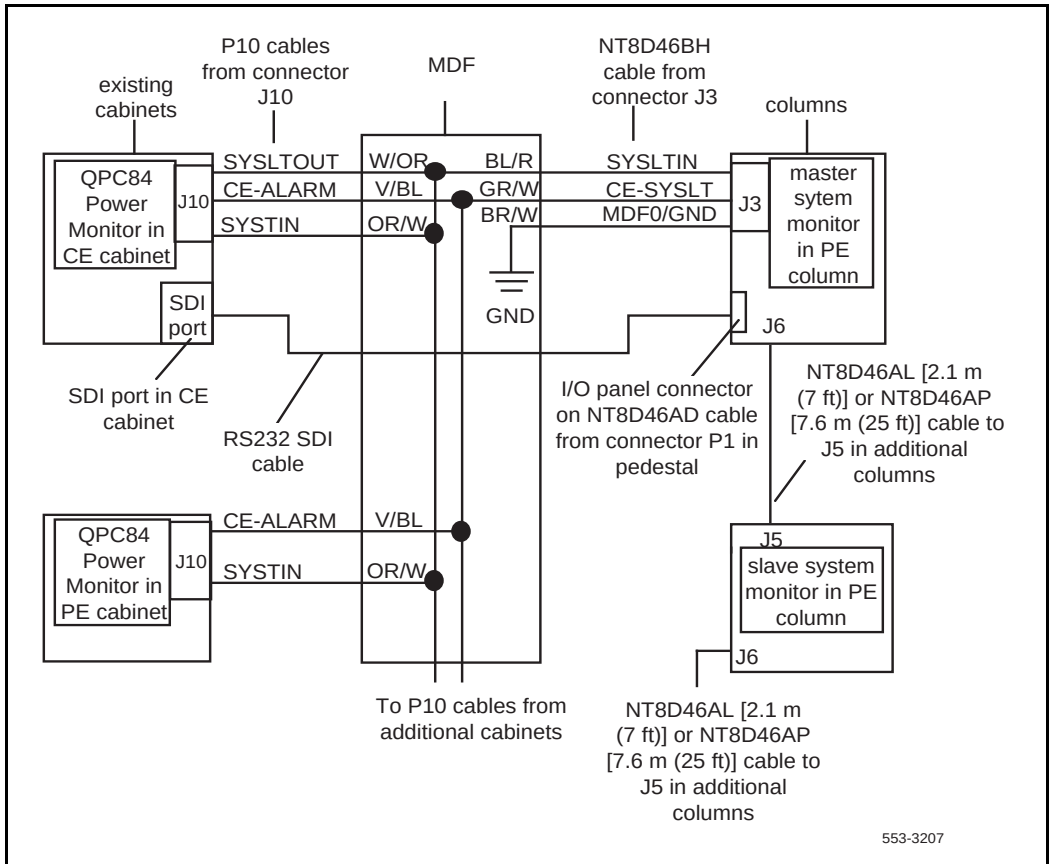


Figure 151
Common equipment in existing cabinet equipped with a QPC173 Power Monitor

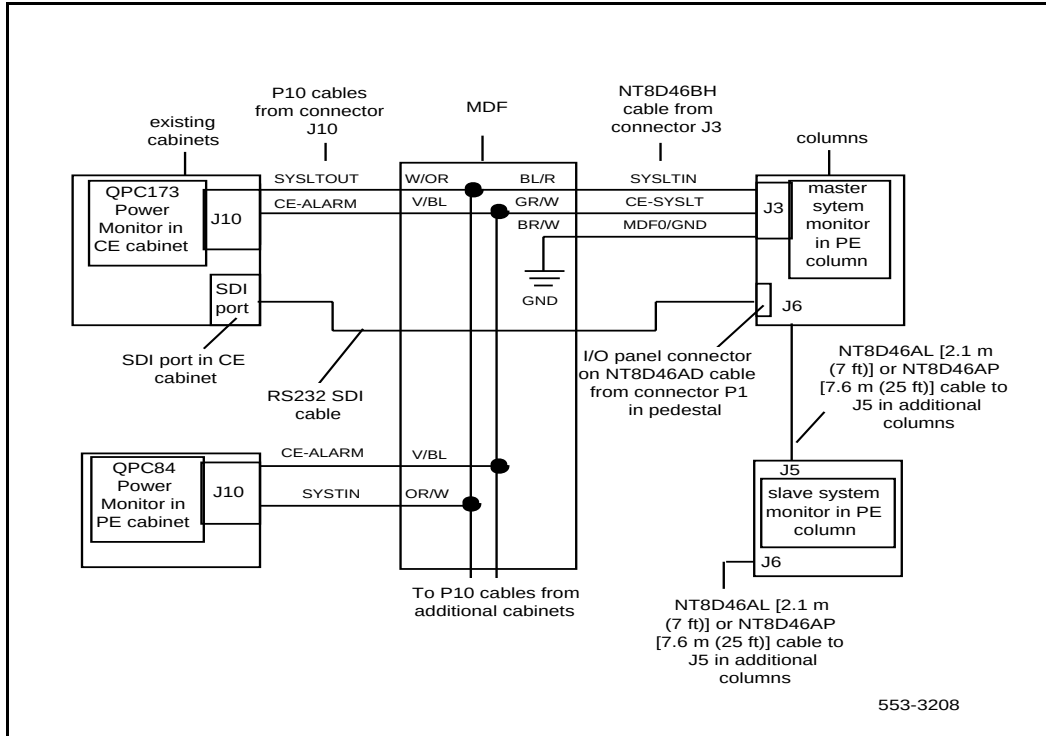
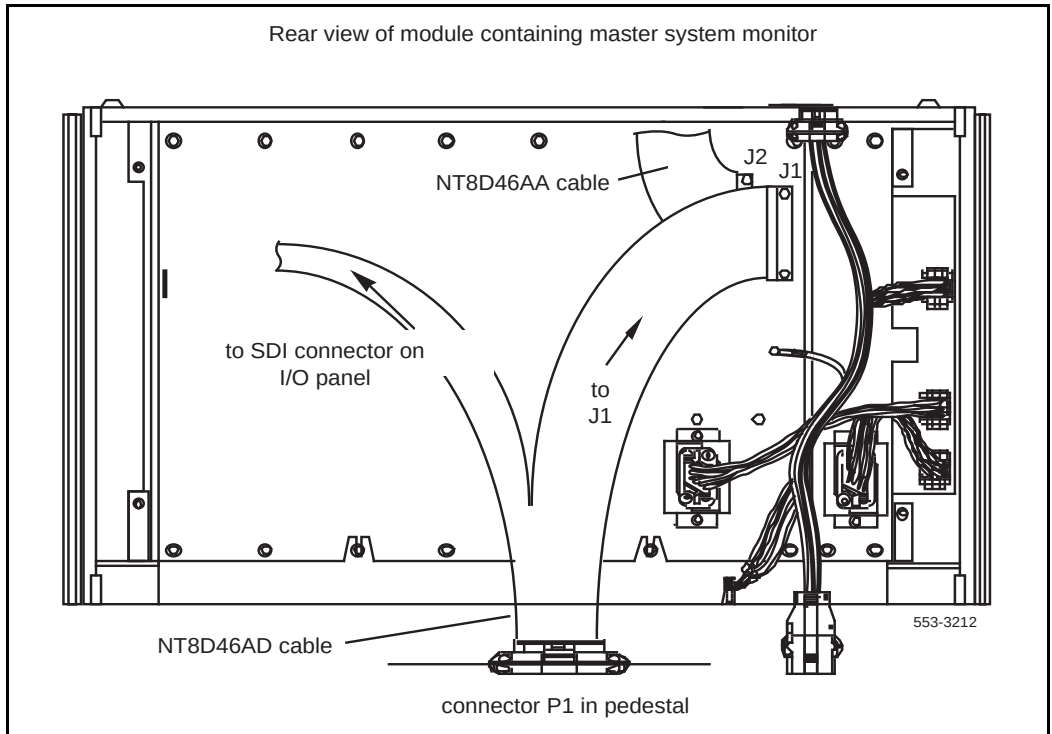


Figure 152
NT8D46AD cable connections

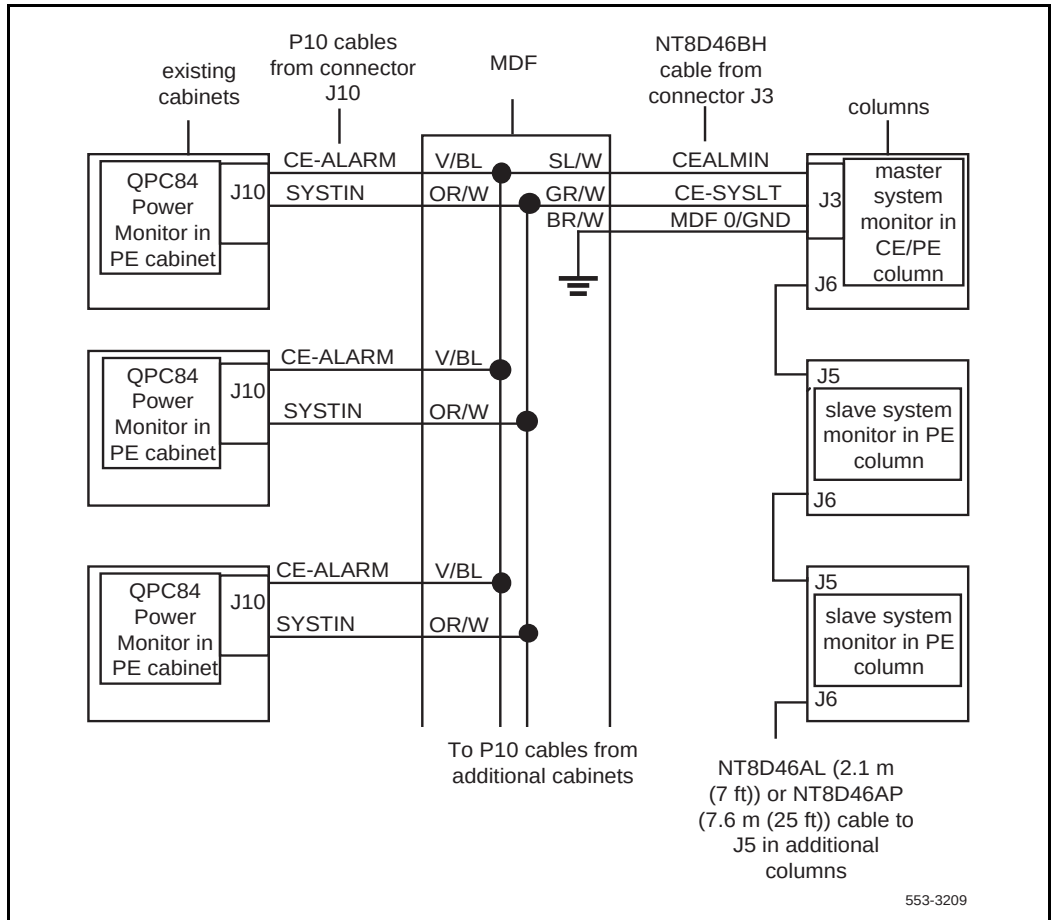


Procedure 2

Connecting system monitor—CE in a column and existing cabinets are equipped with QPC84 Power Monitors

- 1 Make sure that the NT8D46BH alarm cable from connector J3 at the rear of the pedestal housing the master system monitor is terminated at the MDF. The column containing CPU 0 contains the master system monitor. See *Meridian 1 system installation procedures* (553-3001-210).
- 2 At the MDF, locate the P10 cable from each existing cabinet:
 - Make sure that the SYSLTIN connections (OR/W wire) in all P10 cables are connected together. See Figure 153.
 - Make sure that the CE-ALARM connections (V/BL wire) in all P10 cables are connected together. See Figure 153.
- 3 Locate a ground source at the MDF. Connect it to the MDF 0/gnd connection (BR/W wire) on the NT8D46BH cable from the master column. See Figure 153.
- 4 At the MDF, locate the CEALMIN (SL/W wire) and CE-SYSLT (GR/W wire) connections in the NT8D46BH cable from the master column:
 - Connect the CEALMIN connection (SL/W wire) on the NT8D46BH alarm cable to the CE-ALARM (V/BL wire) connection on the P10 cable from the CE cabinet. See Figure 153.
 - Connect the CE-SYSLT connection (GR/W wire) on the NT8D46BH alarm cable to the SYSLTIN connection (OR/W wire) on the P10 cable from the CE cabinet. See Figure 153.
- 5 Check the switch settings on the system monitor in each column. Make sure that switch SW1 on all system monitors is set according to Table 139. See *Circuit card installation and testing* (553-3001-211) to set switches SW2 and SW3.

Note: Install and connect system monitors as described in *Meridian 1 system installation procedures* (553-3001-210). The column containing CPU 0 contains the master system monitor. Other columns contain slave system monitors. A master system monitor is always required.

Figure 153**Common equipment in module and existing cabinets equipped with QPC84 Power Monitors**

System monitoring in ST and RT systems

The system monitoring hardware requirements for ST and RT systems depend on the various combinations of cabinet types and whether the CPU is located in the cabinet or in the Meridian 1 module. See Table 140.

Table 140
Hardware requirements (Part 1 of 3)

Cabinet type	CPU location	Hardware required (one of each)
QCA136 and Meridian 1 Module(s)	QCA136	NT8D46AY System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD309 Alarm Adapter Cable (Note 2) P0678258 Filter Connector (Note 2)
	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BA System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) NT6D81AA Power Regulator (Note 3) NT8D22AC System Monitor (Note 4)
QCA137 and Meridian 1 Module(s)	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
QCA136, QCA137, and Meridian 1 Module(s)	QCA136	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BM System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BB System Monitor Cable NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT6D81AA Power Regulator (Note 3) NT8D22AC System Monitor (Note 4)

Table 140
Hardware requirements (Part 2 of 3)

Cabinet type	CPU location	Hardware required (one of each)
QCA147 and Meridian 1 Module(s)	QCA147	NT8D46AY System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1)
	Meridian 1 Module	NT8D46AX System Monitor Cable NT8D46BG System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) NT8D22AC System Monitor (Note 4)
QCA147, QCA137, and Meridian 1 Module(s)	QCA147	NT8D46CH System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BJ System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT8D22AC System Monitor (Note 4)
Two QCA137s and Meridian 1 Module(s)	Meridian 1 Module	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BK System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)

Table 140
Hardware requirements (Part 3 of 3)

Cabinet type	CPU location	Hardware required (one of each)
QCA147, two QCA137s, and Meridian 1 Module(s)	QCA147	NT8D46BC System Monitor Cable NT8D46BE System Monitor Cable NT8D46BL System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5)
	Meridian 1 Module	NT8D46BJ System Monitor Cable NT8D46BC System Monitor Cable NT8D46BD System Monitor Cable NT8D46BE System Monitor Cable NT8D46BF System Monitor Cable (Note 1) NT8D46BH System Monitor Cable (Note 1) QCAD310 Ground Cable (Note 5) NT8D22AC System Monitor (Note 4)
Note 1: The NT8D46BF and NT8D46BH cables are only required when extending the alarm connections to the main distribution frame (MDF). Note 2: ST systems consisting of a single QCA136 cabinet require the installation of a QCAD309 Alarm Adapter cable and one P0678258 Filter Connector. Note 3: The NT6D81AA Power Regulator Card is required when a QCA136 cabinet is retained as part of the upgraded system. Each cabinet requires one card that resides in any network or SDI card slot. Note 4: The NT8D22AC System Monitor is required when a QCA136, QCA137, or QCA147 cabinet is retained as part of the upgraded system. Note 5: The QCAD310 Ground Cable must be installed in ST or RT systems using one or more QCA137 cabinets.		

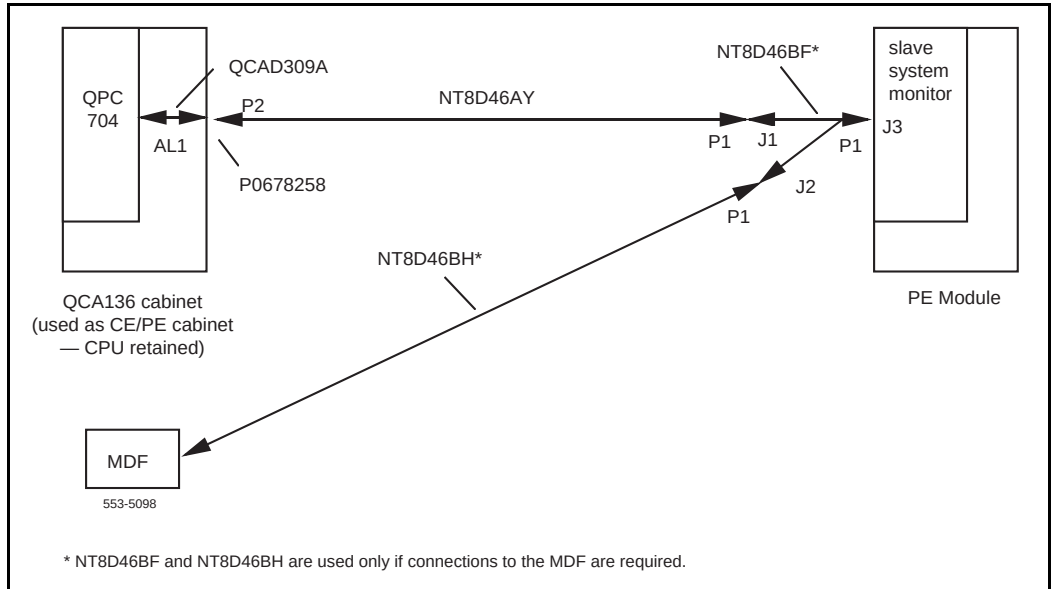
Configuration 1—ST system with QCA136 and PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet and a PE Module (see Figure 154). The CPU is located in the cabinet.

Figure 154

Connecting system monitor—Configuration 1



Procedure 3

Connecting system monitor—Configuration 1

Note: This procedure requires powering down the QCA136 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AY cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.

Note: When configuring the system monitor, use the switch settings for a *slave* unit.

- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap light emitting diode (LED) flashes three times then stays off.
- 4 Install connector P1 of the NT8D46AY cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Power down the QCA136 cabinet.
- 10 Remove the QCA136 rear panels.
- 11 Remove the QCA136 EMI back panel.
- 12 Install the QCAD309 cable and the filter connector (P0678258) according to the instructions, "Installing and Connecting Alarm and Transfer Wiring" in the ST System Installation procedures located in *Meridian SL-1 ST installation procedures* (553-2431-210).
- 13 Connect P2 of the NT8D46AY cable into the filter connector at the bottom rear of the QCA136 cabinet. Ensure the connection with a screwdriver.

- 14** Reinstall the QCA136 EMI back panel.
- 15** Reinstall the QCA136 rear panels.
- 16** Power up the QCA136 cabinet.

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All ringing generators are enabled.
- 3** All LEDs on the QUAA3 Power Unit stay on. If not, verify that step 12 of the installation procedure has been completed.
- 4** The LED on the top cap of the PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.

To verify the installation, perform the following optional procedure on the PE Module:

- 1** Locate the blower unit inside the pedestal of the PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 2-5 LED on the QUAA3 Power Unit is off.
- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off, and the PE 2-5 LED on the QUAA3 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit is off and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card, and verify that the PE 2-5 LED is on.

- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
 - the CE/PE 1 LED is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - the ringing generator is off

- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
 - the CE/PE 1 LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - the ringing generator is on

- 4** Perform a data dump using LD 43.

- 5** Perform a sysload on the QCA136 cabinet. Verify the following:
 - the CE/PE 1 LED is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - the ringing generator is off

- 6** Wait 90 seconds after the sysload; then verify the following:
 - the CE/PE 1 LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - the ringing generator is on

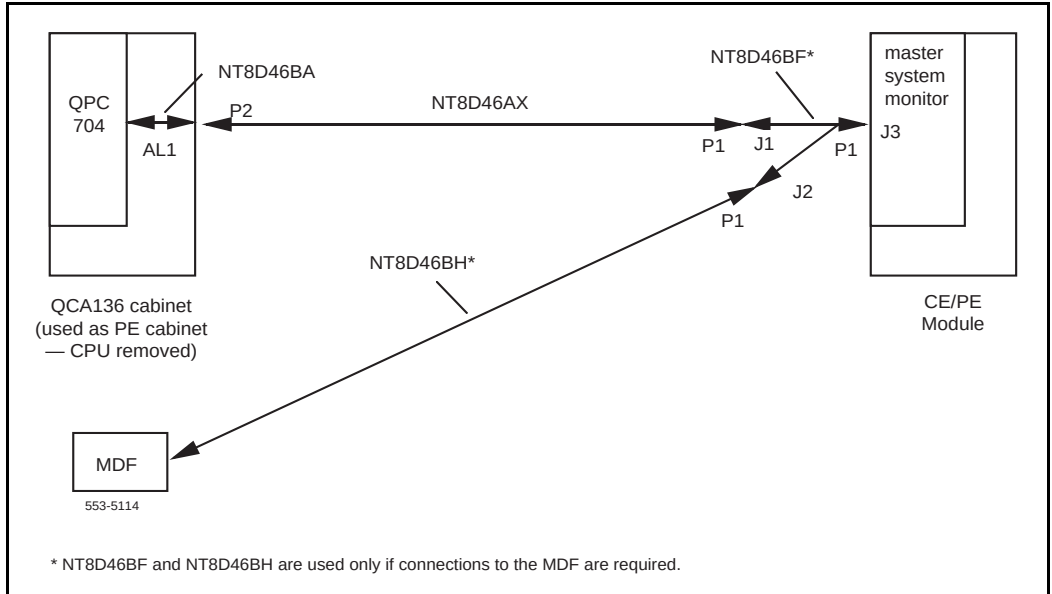
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

Configuration 2—ST system with QCA136 and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet and a CE/PE Module (see Figure 155). The CPU is located in the module.

Figure 155
Connecting system monitor—Configuration 2



Procedure 4

Connecting system monitor—Configuration 2

Note: This procedure requires powering down the QCA136 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.

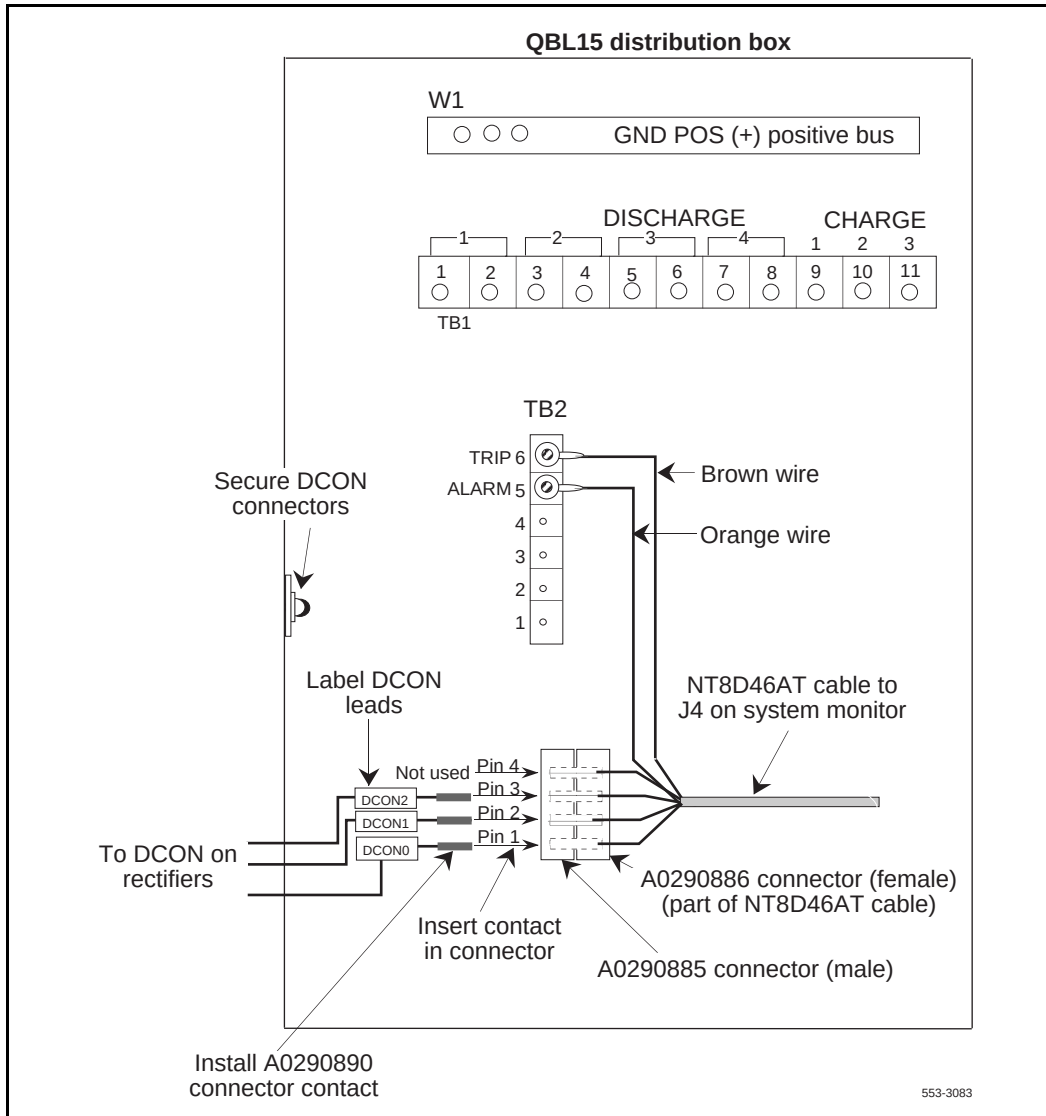
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 9 Remove all circuit cards from the CE shelf.
- 10 Install the NT6D81AA Power Regulator Board in any of slots 2 through 11 of the CE shelf.
- 11 Remove the QCA136 rear panels.
- 12 Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.

- 13** On DC-powered ST systems using a QBL15 Battery Distribution Box, perform these steps:
- On the ST system, remove the wire between terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier and terminal 3 on terminal board TB2 of the QUX19 breaker assembly.
 - Install the NT8D46AT cable from J4 of the system monitor to the terminal area in the QBL15.
 - Connect the brown wire of the NT8D46AT cable to terminal 6 (TRIP) on terminal board TB2 in the QBL15. Connect the orange wire to terminal 5 (ALARM). Refer to Figure 156.
- Note:** The QCA136 cabinet does not require a TRIP wire to be connected to the QBL15.
- Run an AWG 22 wire from terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier to the QBL15.
 - Install an A0290890 connector contact on the end of the AWG 22 wire inside the QBL15. Insert the contact into pin 1, 2, or 3 of the NT8D86 system monitor cable.
 - Attach the DCON label to the AWG 22 wire.
 - Attach the strain-relief clip to a clean surface inside the QBL15 near the terminal boards. Secure the NT8D46AT cable under the strain-relief clip.
- 14** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA3 Power Unit.
- 15** Install connector P5 of the NT8D46BA cable into connector J5 on the rear of the QUAA3 Power Unit.
- 16** Install connector J5 of the NT8D46BA cable into connector P5 of the existing harness.
- 17** Install connector ALM1 into the filter connector (P0678258) located in one of the three horizontal cutouts located at the bottom rear of the QCA136 cabinet.
- 18** Loosen screws REMA and REMB on terminal block TB2 of the QUX19 Power Distribution Unit.

Figure 156
NT8D46AT cable field wiring connections



- 19 Connect lug REMA (yellow wire) from the NT8D46BA cable to screw REMA on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMA.
- 20 Connect lug REMB (black wire) from the NT8D46BA cable to screw REMB on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMB.
- 21 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA3 Power Unit with a 7/16 inch socket driver.
- 22 Connect the GND ring lug (2 black wires) to the loosened ground lug on the rear of the QUAA3 Power Unit and tighten with the socket driver.
- 23 Install connector P2 of the NT8D46AX cable into connector ALM1 (filter connector P0678258). Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:
PWR0015 XSMC 00 0 0
- 24 Reinstall the EMI back panel.
- 25 Reinstall the QCA136 rear panels.
- 26 Power up the QCA136 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on, except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:
PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify that steps 13 through 22 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA3 Power Unit stay on
 - the maintenance console displays the following message:
PWR0006 FANU 00 0 0
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:
PWR0046 FANU 00 0 0
- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
 - the CE/PE 1 LED on the QUAA3 Power Unit is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the CE/PE Module is on
 - the LEDs on all ringing generators are off
- 6 Wait 90 seconds after the sysload, then verify the following:
 - the CE/PE 1 LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the CE/PE Module is off
 - the LEDs on all ringing generators are on
 - the maintenance console displays the following messages:
PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
 (for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
 - the PE 2-5 LED on the QUAA3 Power Unit is off
 - the LED on the top cap of the CE/PE Module is off
 - the maintenance console displays the following message:
PWR0015 XSMC 00 0 0
- 2 Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED is on and the maintenance console displays the following message:
PWR0055 XSMC 00 0 0

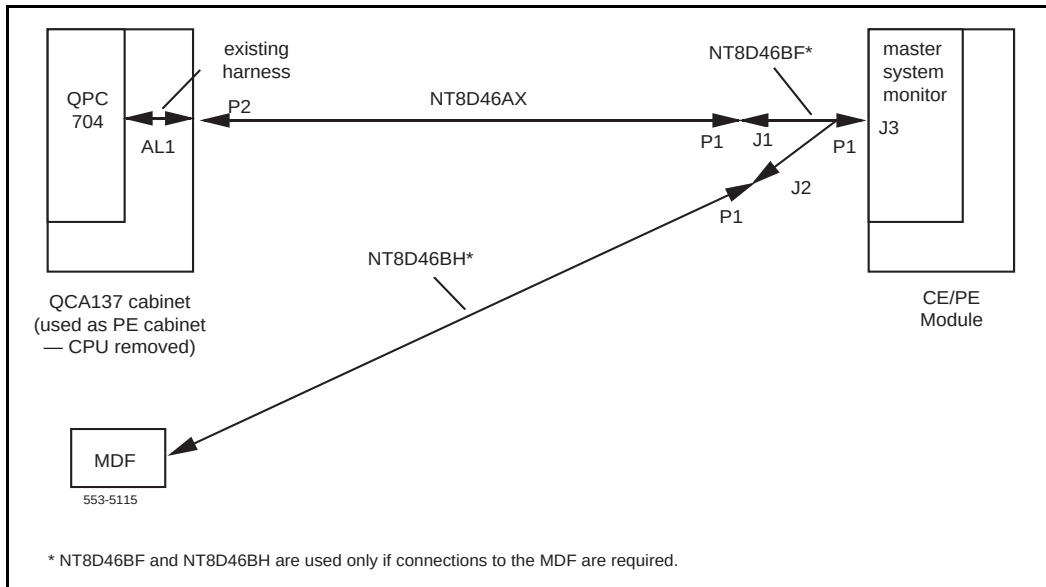
If any test fails, verify that the QCAD309A and NT8D46AY cables are installed properly, and the switch settings on the system monitor are correct for this configuration.

Configuration 3—ST/RT system with QCA137 and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST or RT system equipped with a QCA137 cabinet and a CE/PE Module (see Figure 157). The CPU is located in the module.

Figure 157
Connecting system monitor—Configuration 3



Procedure 5**Connecting system monitor—Configuration 3**

Note: This procedure requires powering down the QCA137 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel on the module.
- 9 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA137 cabinet.
- 10 Remove the QCA137 rear panels.
- 11 Remove the QCA137 EMI back panel. Install a customer-provided #6 or #10 AWG wire between terminal lugs GND1 and GND2 on the ground bar at the back of the QUAA3 Power Unit.

- 12 Install connector P2 of the NT8D46AX cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

- 13 Reinstall the EMI back panel.
- 14 Reinstall the QCA137 rear panels.
- 15 Power up the QCA137 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify cable connections.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA3 Power Unit stay on
 - the maintenance console displays the following message:

PWR0006 FANU 00 0 0

- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

PWR0046 FANU 00 0 0

- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
 - the CE/PE 1 LED on the QUAA3 Power Unit is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the CE/PE Module is on
 - the LEDs on all ringing generators are off

- 6 Wait 90 seconds after the sysload, then verify the following:

- the CE/PE 1 LED is on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the CE/PE Module is off
- the LEDs on all ringing generators are on
- the maintenance console displays the following messages:

PWR0056 PFTU XX X X

PWR0055 XSMC 00 0 0

PWR0000 PWSP XX X X

(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
 - the PE 2-5 LED on the QUAA3 Power Unit is off
 - the LED on the top cap of the CE/PE Module is off
 - the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED is on, and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

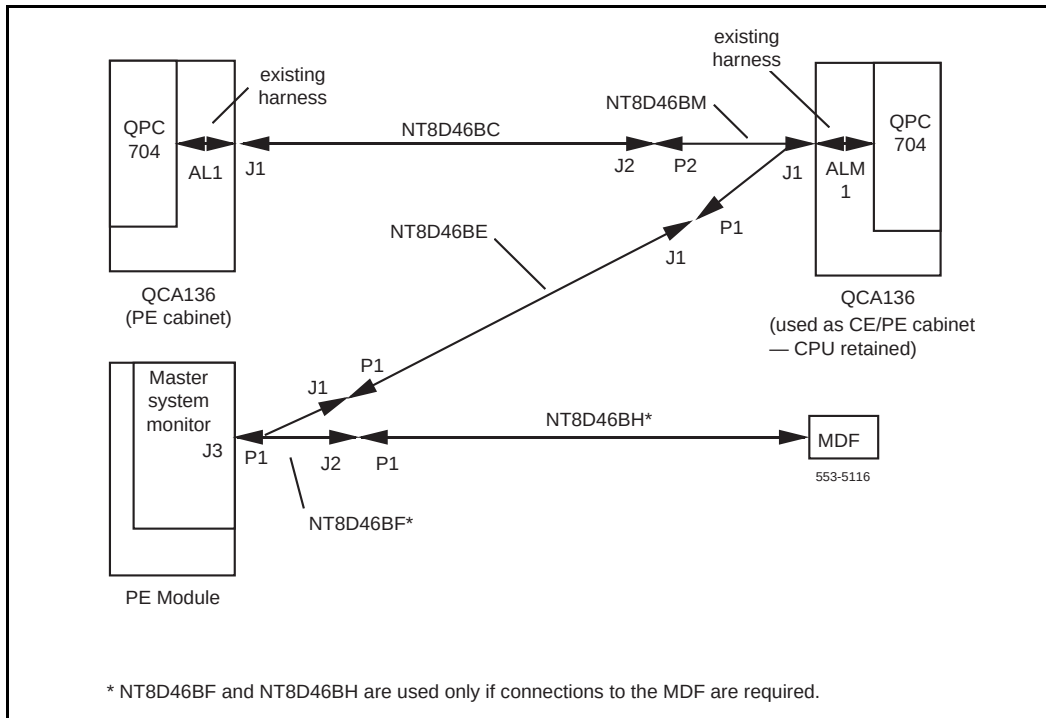
If any test fails, verify that the NT8D46AX cable is installed properly, and the switch settings on the system monitor are correct for this configuration.

Configuration 4—ST system with QCA136, QCA137, and PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet, a QCA137 cabinet, and a PE Module (see Figure 158). The CPU is located in the QCA136 cabinet.

Figure 158
Connecting system monitor—Configuration 4



Procedure 6**Connecting system monitor—Configuration 4**

Note: This procedure requires powering down the QCA136 and QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.
Note: This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 10 Remove the QCA136 rear panels.
- 11 Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 12 Install connector J1 of the NT8D46BM cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA136 cabinet. Ensure the connection with a screwdriver.
- 13 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BM cable. Ensure the connection with a screwdriver.

- 14 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BM cable. Ensure the connection with a screwdriver.
- 15 Reinstall the QCA136 EMI back panel.
- 16 Reinstall the QCA136 rear panels.
- 17 Remove the QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA136 and QCA137 cabinets.
- 18 Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 19 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver.
- 20 Reinstall the QCA137 EMI back panel.
- 21 Reinstall the QCA137 rear panels.
- 22 Power up the QCA136 and QCA137 cabinets. Ninety seconds after sysload, verify the following:
 - all LEDs on the QUAA3 Power Unit are on
 - the ringing generators are back on
 - the LED on the top cap of the PE Module is off

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.
- 3 All LEDs on the QUAA3 Power Units in the QCA136 and QCA137 cabinets stay on. If not, verify that steps 12 through 19 of the installation procedure have been completed.
- 4 The LED on the top cap of the PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the PE Module:

- 1** Locate the blower unit inside the pedestal of the PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 2-5 LED on the QUAA3 Power Unit is off.
- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off, and the PE 2-5 LED on the QUAA3 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit is off, and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card, and verify that the PE 2-5 LED is on.
- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
 - all CE/PE 1 LEDs are off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
 - all CE/PE 1 LEDs are on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on
- 4** Perform a data dump using LD 43.

- 5** Perform a sysload on the QCA136 cabinet. Verify the following:
 - all CE/PE 1 LEDs are off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - the ringing generator is off

- 6** Wait 90 seconds after the sysload, then verify the following:
 - all CE/PE 1 LEDs are on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 2-5 LEDs on the QCA136 and QCA137 cabinets and the LED on the top cap of the PE Module are off.

Hardware enable the QPC659 DLB card and verify that all PE 2-5 LEDs are on.

- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
 - all CE/PE 1 LEDs are off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off

- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
 - all CE/PE 1 LEDs are on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on

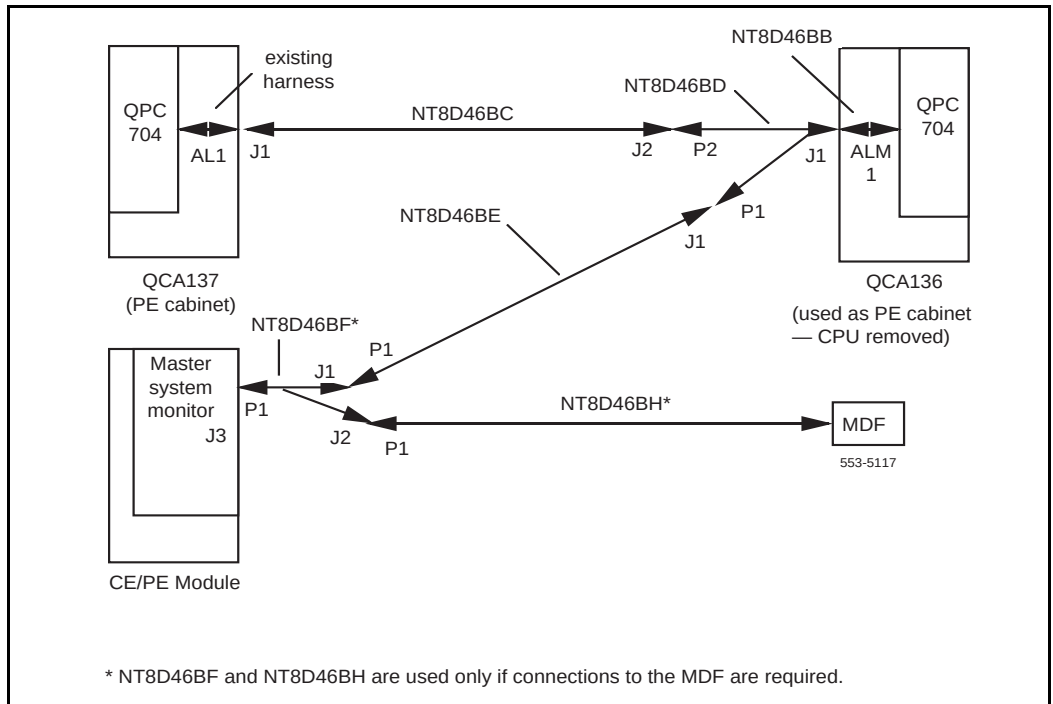
If any test fails, verify that the NT8D46BE and NT8D46BM cables are installed properly, and the switch settings on the system monitor are correct for this configuration. For the QCA137 cabinet, verify that the NT8D46BC and QCAD310 cables are installed properly.

Configuration 5—ST system with QCA136, QCA137, and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an ST system equipped with a QCA136 cabinet, a QCA137 cabinet, and a CE/PE Module (see Figure 159). The CPU is located in the module.

Figure 159
Connecting system monitor—Configuration 5



Procedure 7

Connecting system monitor—Configuration 5

Note: This procedure requires powering down the QCA136 and QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.

- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

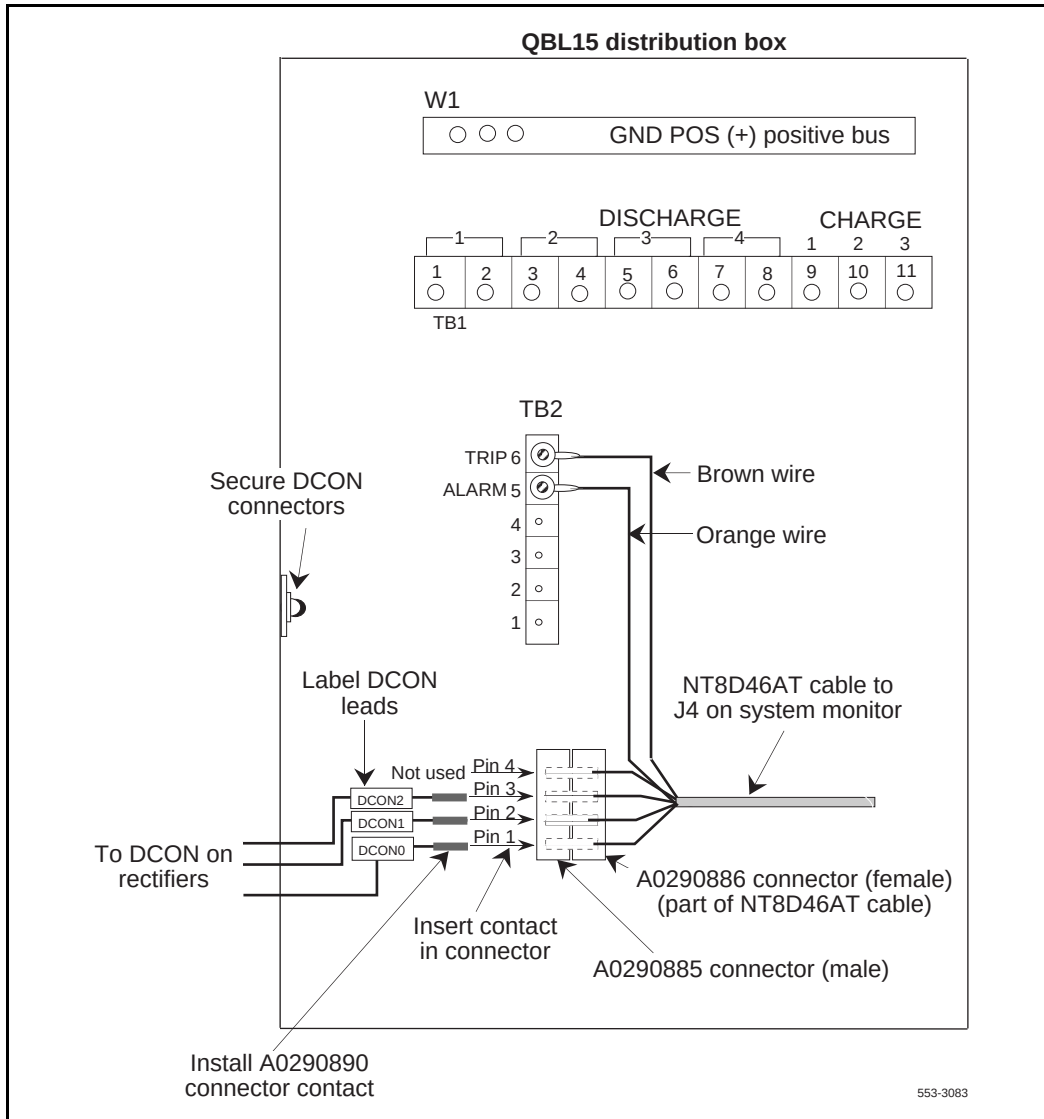
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA136 cabinet.
- 10 Remove all circuit cards from the CE shelf.
- 11 Install the NT6D81AA Power Regulator Board in any slots 2 through 11 of the CE shelf.
- 12 Remove the QCA136 rear panels.
- 13 Remove the QCA136 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.

- 14** On DC-powered ST systems using a QBL15 Battery Distribution Box, perform these steps:
- On the ST system, remove the wire between terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier and terminal 3 on terminal board TB2 of the QUX19 breaker assembly.
 - Install the NT8D46AT cable from J4 of the system monitor to the terminal area in the QBL15.
 - Connect the brown wire of the NT8D46AT cable to terminal 6 (TRIP) on terminal board TB2 in the QBL15. Connect the orange wire to terminal 5 (ALARM). Refer to Figure 160.

Note: The QCA136 cabinet does not require a TRIP wire to be connected to the QBL15.

- Run an AWG 22 wire from terminal 5 (DC ON) on terminal board TB4 of the QRF12 rectifier to the QBL15.
 - Install an A0290890 connector contact on the end of the AWG 22 wire inside the QBL15. Insert the contact into pin 1, 2, or 3 of the NT8D86 system monitor cable.
 - Attach the DCON label to the AWG 22 wire.
 - Attach the strain-relief clip to a clean surface inside the QBL15 near the terminal boards. Secure the NT8D46AT cable under the strain-relief clip.
- 15** Unplug connector P6 of the existing harness from connector J6 of the QCAD309 Alarm Cable.
- 16** Unplug connector P6 of the QCAD309 Alarm Cable from connector J6 of the QUAA3 Power Unit.
- 17** Unplug connector P4 of the existing harness from connector J4 of the QCAD309 Alarm Cable.
- 18** Unplug connector P4 of the QCAD309 Alarm Cable from connector J4 of the QUAA3 Power Unit.

Figure 160
NT8D46AT cable field wiring connections



- 19** Remove connector AL1 of the QCAD309 Alarm Cable from the P0678258 Filter Connector located in one of the three horizontal cutouts at the bottom rear of the QCA136 cabinet.
- 20** Remove the QCA309 Alarm Cable.
- 21** Remove the NE-25MQA1 Alarm Cable connecting the QCA136 and QCA137 cabinets.
- 22** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA3 Power Unit.
- 23** Install connector P5 of the NT8D46BB cable into connector J5 on the rear of the QUAA3 Power Unit.
- 24** Install connector J5 of the NT8D46BB cable into connector P5 of the existing harness.
- 25** Install connector P4 of the existing harness into connector J4 on the rear of the QUAA3 Power Unit.
- 26** Unplug connector P6 of the existing harness from connector J6 on the QUAA3 Power Unit.
- 27** Install connector P6 of the NT8D46BB cable into connector J6 on the QUAA3 Power Unit.
- 28** Install connector J6 of the NT8D46BB cable into connector P6 of the existing harness.
- 29** Loosen screws XCE, REMA, and REMB on terminal block TB2 of the QUX19 Power Distribution Unit.
- 30** Connect lug XCE (white wire) from the NT8D46BB cable to screw XCE on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw XCE.
- 31** Connect lug REMA (yellow wire) from the NT8D46BB cable to screw REMA on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMA.
- 32** Connect lug REMB (black wire) from the NT8D46BB cable to screw REMB on terminal block TB2 of the QUX19 Power Distribution Unit. Tighten screw REMB.
- 33** Loosen one of the ground lugs located on the ground bar on the rear of the QUAA3 Power Unit with a 7/16 inch socket driver.

- 34 Connect the GND ring lug (four black wires) to the loosened ground lug on the rear of the QUAA3 Power Unit and tighten with the socket driver.
- 35 Install connector ALM1 of the NT8D46BB cable into one of the three horizontal cutouts using the existing P0678258 Filter Connector.
- 36 Install connector J1 of the NT8D46BD cable into the P0678258 Filter Connector. Ensure the connection with a screwdriver.
- 37 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:
PWR0015 XSMC 00 0 0
- 38 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.
- 39 Reinstall the QCA136 EMI back panel.
- 40 Reinstall the QCA136 rear panels.
- 41 Verify that the RECT/BATT, PE 2-5, CE/PE 1, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the QCA137 cabinet.
- 42 Remove the QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA136 and QCA137 cabinets.
- 43 Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 44 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA137 cabinet. Ensure the connection with a screwdriver.
- 45 Reinstall the QCA137 EMI back panel.
- 46 Reinstall the QCA137 rear panels.
- 47 Power up the QCA136 and QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Unit are on except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Units in the QCA136 and QCA137 cabinets stay on. If not, verify that steps 10, 11, and 14 through 33 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets stay on
 - the maintenance console displays the following message:
PWR0006 FANU 00 0 0
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:
PWR0046 FANU 00 0 0
- 4 Perform a data dump using LD 43.

5 Perform a sysload on the CE/PE Module. Verify the following:

- all CE/PE 1 LEDs are off
- the PFTU (if installed) is activated
- the LED on the top cap of the CE/PE Module is on
- the LEDs on all ringing generators are off

6 Wait 90 seconds after the sysload, then verify the following:

- all CE/PE 1 LEDs are on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the CE/PE Module is off
- the LEDs on all ringing generators are on
- the maintenance console displays the following messages:

PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA136 cabinet:

1 Hardware disable the QPC659 DLB card and verify the following:

- the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets stay on
- the LED on the top cap of the PE Module stays off
- the maintenance console displays message:

PWR0015 XSMC 00 0 0

2 Hardware enable the QPC659 DLB card and verify that the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets are on. Verify that the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
 - the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
 - the PE 2-5 LED on the QUAA3 Power Unit of the QCA136 cabinet stays on
 - the LED on the top cap of the CE/PE Module stays off
 - the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

- 2 Hardware enable the QPC659 DLB card and verify that the PE 2-5 LEDs on the QUAA3 Power Units of the QCA136 and QCA137 cabinets are on. Verify that the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

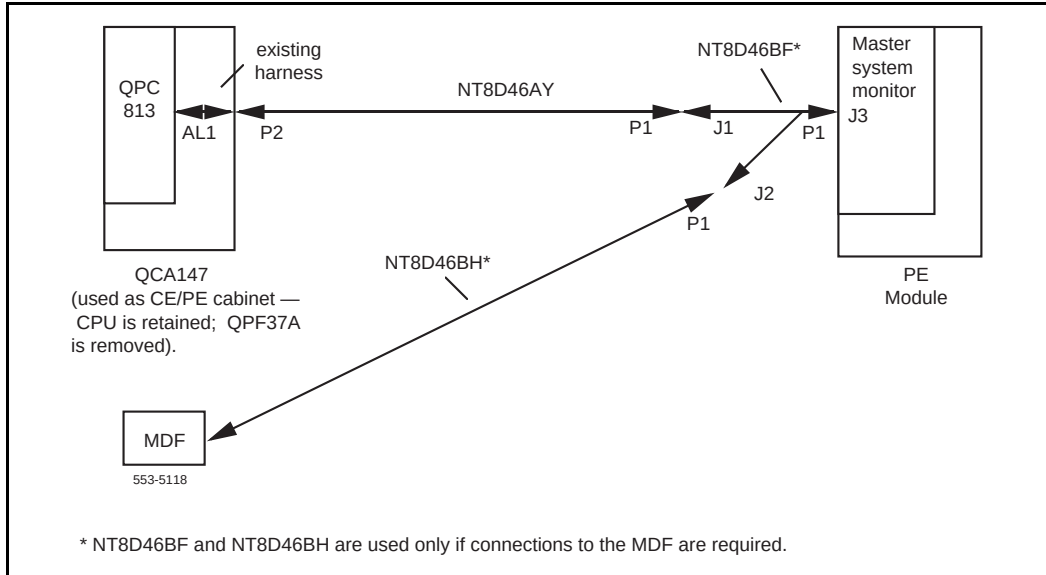
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. On the QCA137 cabinet, verify the installation of the QCAD310 cable.

Configuration 6—RT system with QCA147 and PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet and a PE Module (see Figure 161). The CPU is located in the QCA147 cabinet.

Figure 161
Connecting system monitor—Configuration 6



Procedure 8**Connecting system monitor—Configuration 6**

Note: This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AY cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.
Note: This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46AY cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Install connector P2 of the NT8D46AY cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 13 Remove the QPF37A Alarm Adapter Plug.
- 14 Reinstall the QCA147 EMI back panel.
- 15 Reinstall the QCA147 rear panels.

- 16 Power up the QCA147 cabinet. Ninety seconds after sysload, verify the following:
 - all LEDs on the QUAA3 Power Unit are on
 - the ringing generators are back on
 - the LED on the top cap of the PE Module is off

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.
- 3 All LEDs on the QUAA5 Power Unit stay on.
- 4 The LED on the top cap of the PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the PE Module:

- 1 Locate the blower unit inside the pedestal of the PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on, and the PE 1-2 LED on the QUAA5 Power Unit is off.
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LED on the QUAA5 Power Unit is off, and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card and verify that the PE 1-2 LED is on.

- 2** Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:
 - the CPU/NWK/MSU LED is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
 - the CPU/NWK/MSU LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on
- 4** Perform a data dump using LD 43.
- 5** Perform a sysload on the QCA147 cabinet. Verify the following:
 - the CPU/NWK/MSU LED is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off
- 6** Wait 90 seconds after the sysload, then verify the following:
 - the CPU/NWK/MSU LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on

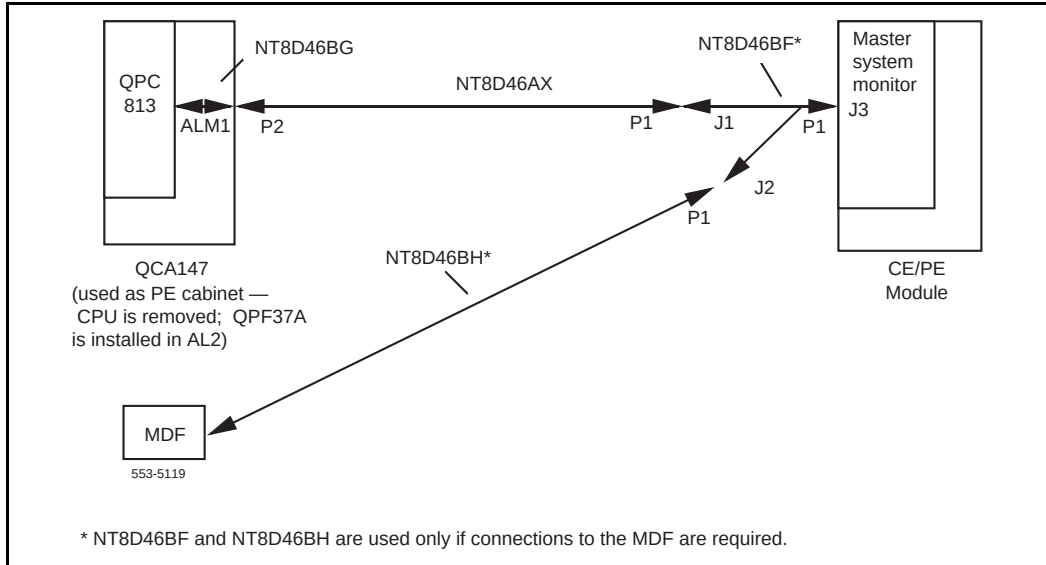
If any test fails, verify that the NT8D46AY cable and the QPF37A Alarm Adapter Plug are installed properly.

Configuration 7—RT system with QCA147 and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet and a CE/PE Module (see Figure 162). The CPU is located in the module.

Figure 162
Connecting system monitor—Configuration 7



Procedure 9

Connecting system monitor—Configuration 7

Note: This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46AX cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:
PWR0054 XSMC 00 0 0
- 4 Install connector P1 of the NT8D46AX cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 6 Install connector P1 of the NT8D46BH cable into connector J2 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 9 Remove the QCA147 rear panels.
- 10 Remove the QCA147 EMI back panel.
- 11 Unplug connector P2 of the existing harness from connector J2 of the QUAA5 Power Unit.
- 12 Install connector J2 of the NT8D46BG cable into connector P2 of the existing harness.
- 13 Install connector P2 of the NT8D46BG cable into connector J2 of the QUAA5 Power Unit.
- 14 Unplug connector P3 of the existing harness from connector J3 of the QUAA5 Power Unit.
- 15 Install connector J3 of the NT8D46BG cable into connector P3 of the existing harness.
- 16 Install connector P3 of the NT8D46BG cable into connector J3 of the QUAA5 Power Unit.
- 17 Unplug connector P5 of the existing harness from connector J5 of the QUAA5 Power Unit.

- 18 Install connector J5 of the NT8D46BG cable into connector P5 of the existing harness.
- 19 Install connector P5 of the NT8D46BG cable into connector J5 of the QUAA5 Power Unit.
- 20 Unplug connector P6 of the existing harness from connector J6 on the rear of the QUAA5 Power Unit.
- 21 Install connector J6 of the NT8D46BG cable into connector P6 of the existing harness.
- 22 Install connector P6 of the NT8D46BG cable into connector J6 on the rear of the QUAA5 Power Unit.
- 23 Unplug connector P8 of the existing harness from connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 24 Install connector J8 of the NT8D46BG cable into connector P8 of the existing harness.
- 25 Install connector P8 of the NT8D46BG cable into connector J8 on the rear of the QUAA5 Power Unit.
- 26 Install connector ALM1 into the AL1 cutout at the bottom rear of the QCA147 cabinet using the existing P0678258 Filter Connector.
- 27 Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.
- 28 Connect the GND ring lug (two white wires) to the loosened ground lug on the rear of the QUAA5 Power Unit and tighten with the socket driver.
- 29 Ensure that the QPF37A Alarm Adapter Plug is inserted into connector AL2.
- 30 Install connector P2 of the NT8D46AX cable into connector ALM1 (P0678258 Filter Connector). Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:

PWR0015 XSMC 00 0 0
- 31 Reinstall the QCA147 EMI back panel.
- 32 Reinstall the QCA147 rear panels.

- 33 Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA5 Power Unit stay on. If not, verify that steps 12 through 30 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
 - 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA5 Power Unit stay on
 - the maintenance console displays the following message:

PWR0006 FANU 00 0 0
 - 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:
- PWR0046 FANU 00 0 0**
- 4 Perform a data dump using LD 43.
 - 5 Perform a sysload on the CE/PE Module. Verify the following:
 - the CPU/NWK/MSU LED is off

- the PFTU (if installed) is activated
- the LED on the top cap of the CE/PE Module is on
- all ringing generators are off

6 Wait 90 seconds after the sysload, then verify the following:

- the CPU/NWK/MSU LED is on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the CE/PE Module is off
- all ringing generators are on
- the maintenance console displays the following messages:

PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

1 Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LEDs on the QUAA5 Power Unit and the LED on the top cap of the CE/PE Module are off. Verify that the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

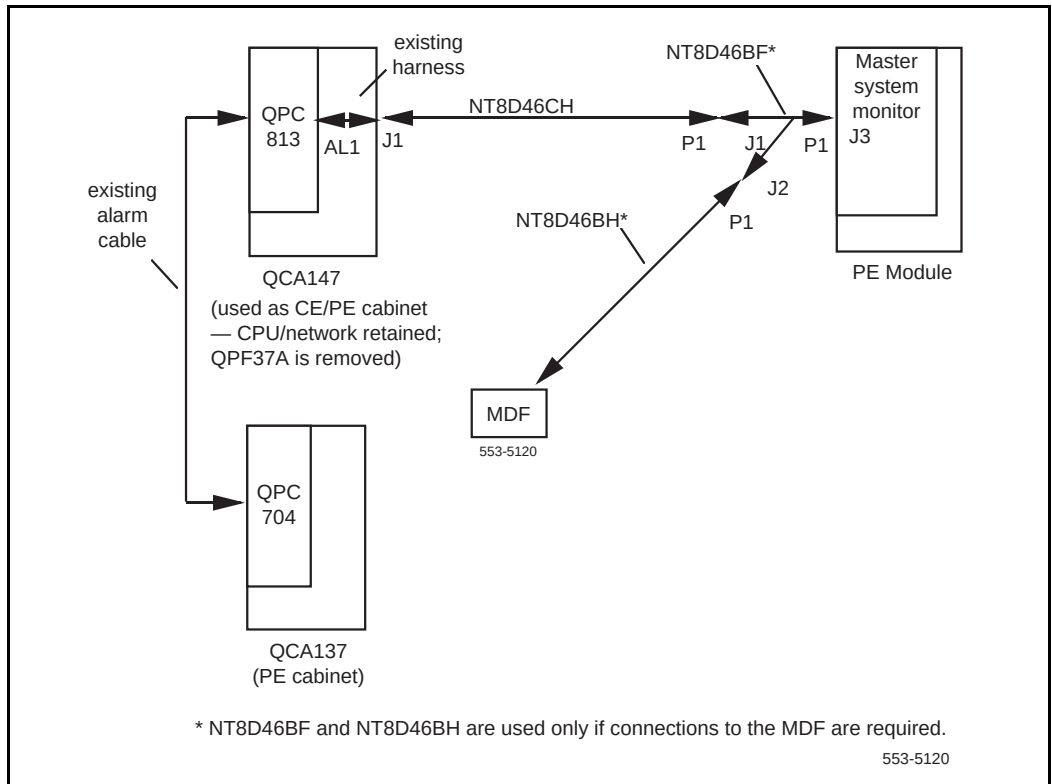
If any test fails, verify that the NT8D46BG and NT8D46AX cables are installed properly, the switch settings on the system monitor are correct for this configuration, and the QPF37A Alarm Adapter Plug is installed in AL2 of the existing harness.

Configuration 8—RT system with QCA147, QCA137, and PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, a QCA137 cabinet, and a PE Module (see Figure 163). The CPU is located in the QCA147 cabinet.

Figure 163
Connecting system monitor—Configuration 8



Procedure 10

Connecting system monitor—Configuration 8

Note: This procedure requires powering down the QCA147 cabinet and removing the EMI back panel from the cabinet. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46CH cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46CH cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Verify that the existing alarm cable (NE25MQ1A) between the QCA147 and QCA137 cabinets is installed.
- 12 Remove the QCA147 EMI back panel. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 13 Remove the QPF37A Alarm Adapter Plug from the QCA147 cabinet.

- 14** Install connector J1 of the NT8D46CH cable into connector AL1 (P0678258 Filter Connector) at the bottom rear of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 15** Reinstall the QCA147 EMI back panel.
- 16** Reinstall the QCA147 rear panels.
- 17** Power up the QCA147 cabinet. Ninety seconds after sysload, verify the following:
 - all LEDs on the QUAA3 and QUAA5 Power Units are on
 - the ringing generators are back on
 - the LED on the top cap of the PE Module is off

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All ringing generators are enabled.
- 3** All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 11 and 13 of the installation procedure have been completed.
- 4** The LED on the top cap of the PE Module is off. If not, unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.

To verify the installation, perform the following optional procedure on the PE Module:

- 1** Locate the blower unit inside the pedestal of the PE Module.
- 2** Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on and the PE 1-2 LED on the QUAA5 Power Unit is off.
- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1** Hardware disable the QPC659 DLB card. Verify that the PE 1-2 LED on the QUAA5 Power Unit is off and the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card, and verify that the PE 1-2 LED is on.
- 2** Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:

 - the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is off
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off
- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:

 - the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is on
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on
- 4** Perform a data dump using LD 43.
- 5** Perform a sysload on the QCA147 cabinet. Verify the following:

 - the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is off
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off

- 6** Wait 90 seconds after the sysload, then verify the following:
- the CPU/NWK/MSU LED on the QUAA5 Power Unit of the QCA147 cabinet is on
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

- 1** Hardware disable the QPC659 DLB card and verify the following:
- the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
 - the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
 - the LED on the top cap of the PE Module stays off
- Hardware enable the QPC659 DLB card and verify that the PE 1-2 and PE 2-5 LEDs are on.
- 2** Set the LN XFR switch on the QUAA3 Power Unit to 1. Verify the following:
- the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the PE Module is on
 - all ringing generators are off

- 3** Set the LN XFR switch to 0. After 90 seconds, verify the following:
- the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is on
 - the CE/PE 1 LED on the QUAA3 Power Unit of the QCA137 cabinet is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the PE Module is off
 - all ringing generators are on

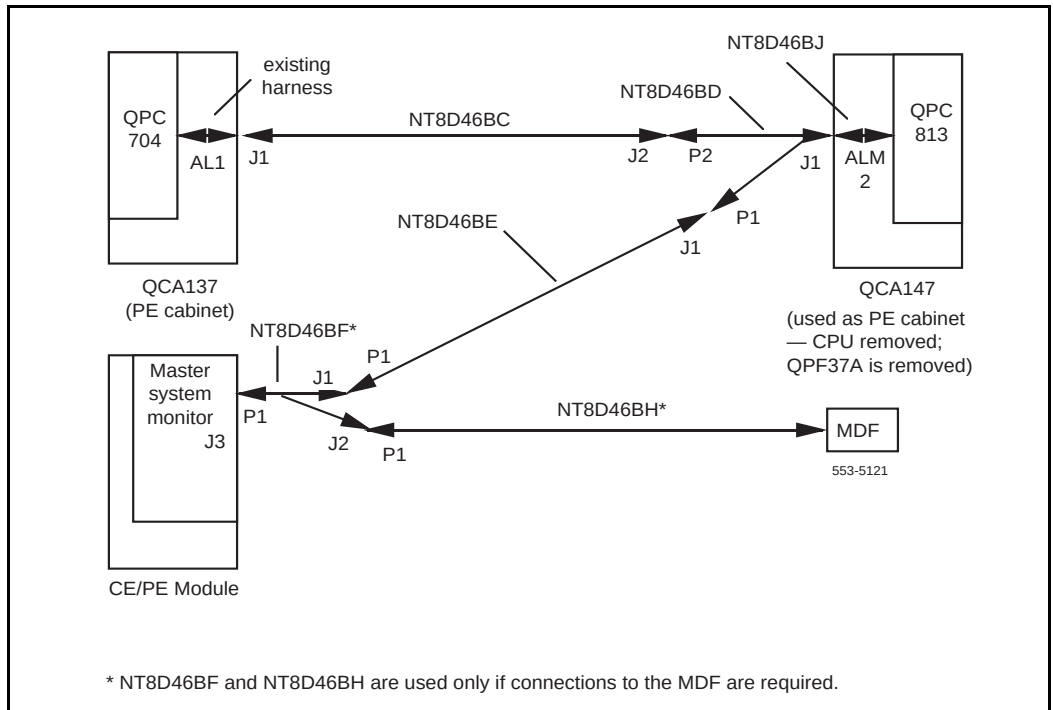
If any test fails, verify that the NT8D46CH cable is installed properly, and the switch settings on the system monitor are correct for this configuration. Verify the N5-25MQ1A cable installation on the QCA137 cabinet.

Configuration 9—RT system with QCA147, QCA137, and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, a QCA137 cabinet, and a CE/PE Module (see Figure 164). The CPU is located in the module.

Figure 164
Connecting system monitor—Configuration 9



Procedure 11

Connecting system monitor—Configuration 9

Note: This procedure requires powering down the QCA137 and QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.

- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Remove the QPF37A Alarm Adapter Plug. Verify that the QCAD310 cable is installed between the ground bars of the QCA137 and QCA147 cabinets.

- 13** Unplug connector P2 of the existing harness from connector J2 on the rear of the QUAA5 Power Unit.
- 14** Install connector P2 of the NT8D46BJ cable into connector J2 on the rear of the QUAA5 Power Unit.
- 15** Install connector J2 of the NT8D46BJ cable into connector P2 of the existing harness.
- 16** Unplug connector P3 of the existing harness from connector J3 on the rear of the QUAA5 Power Unit.
- 17** Install connector P3 of the NT8D46BJ cable into connector J3 on the rear of the QUAA5 Power Unit.
- 18** Install connector J3 of the NT8D46BJ cable into connector P3 of the existing harness.
- 19** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA5 Power Unit.
- 20** Install connector P5 of the NT8D46BJ cable into connector J5 on the rear of the QUAA5 Power Unit.
- 21** Install connector J5 of the NT8D46BJ cable into connector P5 of the existing harness.
- 22** Unplug connector P6 of the existing harness from connector J6 on the QUAA5 Power Unit.
- 23** Install connector P6 of the NT8D46BJ cable into connector J6 on the QUAA5 Power Unit.
- 24** Install connector J6 of the NT8D46BJ cable into connector P6 of the existing harness.
- 25** Unplug connector P8 from the existing harness on the rear of the QUAA5 Power Unit.
- 26** Install connector P8 of the NT8D46BJ cable into connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 27** Install connector J8 of the NT8D46BJ cable into connector P8 of the existing harness.
- 28** Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.
- 29** Insert the GND ring lug (three wires) into the ground lug and tighten with the socket driver.

- 30 Install connector ALM1 into one of the horizontal cutouts using the existing P0678258 Filter Connector.
- 31 Install connector J1 of the NT8D46BD cable into connector ALM1 (P0678258 Filter Connector) of the NT8D46BJ cable. Ensure the connection with a screwdriver.
- 32 Install connector ALM2 of the NT8D46BJ cable into connector AL1 of the existing harness.
- 33 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:
PWR0015 XSMC 00 0 0
- 34 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.
- 35 Reinstall the QCA147 EMI back panel.
- 36 Reinstall the QCA147 rear panels.
- 37 Remove the QCA137 rear panels.
- 38 Remove the QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 39 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) in the QCA137 cabinet. Ensure the connection with a screwdriver.
- 40 Reinstall the QCA137 EMI back panel.
- 41 Reinstall the QCA137 rear panels.
- 42 Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED, which is on after approximately 90 seconds.
- 43 Power up the QCA137 cabinet. Verify that all alarm LEDs on the QUAA3 Power Unit are on, except the CE/PE 1 LED, which is on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 12 through 33 of the installation procedure have been completed.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA3 and QUAA5 Power Units stay on
 - the maintenance console displays the following message:
PWR0006 FANU 00 0 0
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:
PWR0046 FANU 00 0 0
- 4 Perform a data dump using LD 43.

- 5 Perform a sysload on the CE/PE Module. Verify the following:
 - the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
 - the CE/PE 1 LED on the QUAA3 Power Unit is off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the CE/PE Module is on
 - all ringing generators are off

- 6 Wait 90 seconds after the sysload, then verify the following:
 - the CPU/NWK/MSU LED is on
 - the CE/PE 1 LED is on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the CE/PE Module is off
 - all ringing generators are on
 - the maintenance console displays the following messages:

PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
 (for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
 - the PE 1-2 LED on the QUAA5 Power Unit is off
 - the PE 2-5 LED on the QUAA3 Power Unit stays on
 - the LED on the top cap of the CE/PE Module stays off
 - the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

- 2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

To verify the installation, perform the following optional procedure on the QCA137 cabinet:

1 Hardware disable the QPC659 DLB card and verify the following:

- the PE 2-5 LED on the QUAA3 Power Unit is off
- all LEDs on the QUAA5 Power Unit stay on,
- the LED on the top cap of the CE/PE Module stays off
- the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

2 Hardware enable the QPC659 DLB card. Verify that all LEDs on the QUAA5 and QUAA3 Power Units are on and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

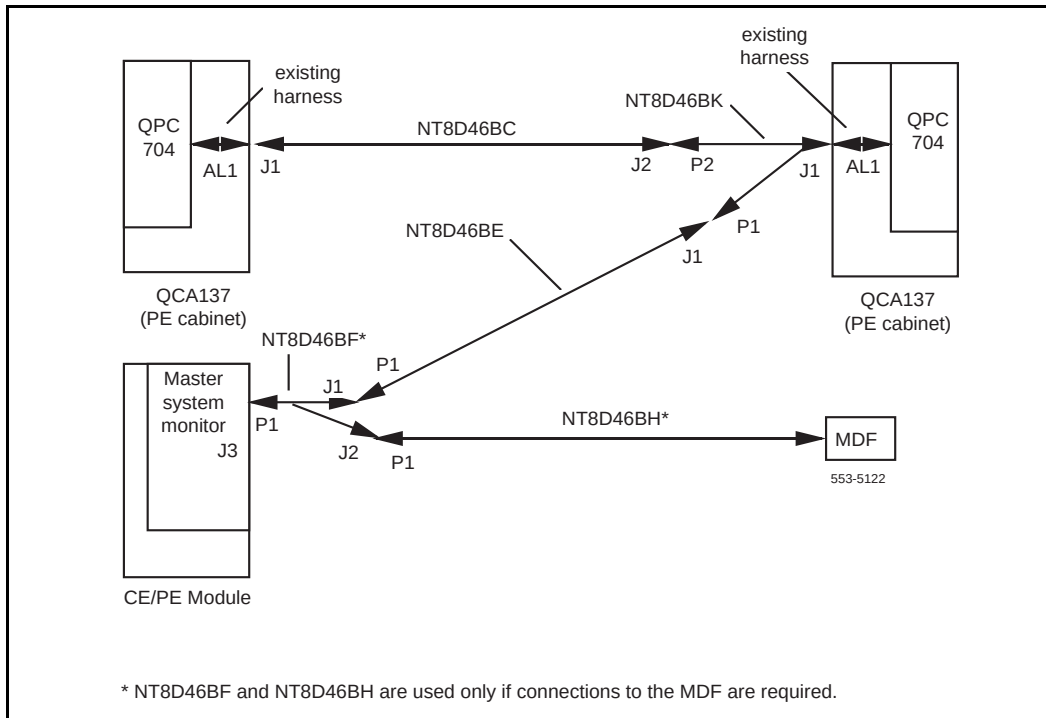
If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the QCAD310 cable installation on the QCA137 cabinet.

Configuration 10—RT system with two QCA137s and CE/PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with two QCA137 cabinets and a CE/PE Module (see Figure 165). The CPU is located in the module.

Figure 165
Connecting system monitor—Configuration 10



Procedure 12**Connecting system monitor—Configuration 10**

Note: This procedure requires powering down the QCA137 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down either QCA137 cabinet, which is hereafter referred to as the first QCA137 cabinet.
- 10 Remove the first QCA137 rear panels.
- 11 Remove the first QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit, and the QCAD310 cable is installed between the two QCA137 cabinets.

- 12 Install connector J1 of the NT8D46BK cable into connector AL1 (P0678258 Filter Connector) of the first QCA137 cabinet. Ensure the connection with a screwdriver.
- 13 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BK cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:

PWR0015 XSMC 00 0 0
- 14 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BK cable. Ensure the connection with a screwdriver.
- 15 Reinstall the first QCA137 EMI back panel.
- 16 Reinstall the first QCA137 rear panels.
- 17 Verify that the RECT/BATT, PE 2-5, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the second QCA137 cabinet.
- 18 Remove the second QCA137 rear panels.
- 19 Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 20 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) of the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 21 Reinstall the second QCA137 EMI back panel.
- 22 Reinstall the second QCA137 rear panels.
- 23 Power up both QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Units are on, except the CE/PE 1 LEDs, which are on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All LEDs on the QUAA3 Power Unit stay on. If not, verify all cable connections.
- 3 The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1 Locate the blower unit inside the pedestal of the CE/PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify that the LED on the top cap is on and all LEDs on the QUAA3 Power Unit stay on. Verify that the maintenance console displays the following message:
PWR0006 FANU 00 0 0
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:
PWR0046 FANU 00 0 0
- 4 Perform a data dump using LD 43.
- 5 Perform a sysload on the CE/PE Module. Verify the following:
 - the CE/PE 1 LEDs on the QUAA3 Power Units are off
 - the PFTU (if installed) is activated
 - the LED on the top cap of the CE/PE Module is on
 - all ringing generators are off

- 6 Wait 90 seconds after the sysload, then verify the following:
- the CE/PE 1 LEDs are on
 - the PFTU (if installed) is deactivated
 - the LED on the top cap of the CE/PE Module is off
 - all ringing generators are on
 - the maintenance console displays the following messages:

PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
(for each ringing generator)

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
- the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is off
 - the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet not under test is on
 - the LED on the top cap of the CE/PE Module is off
 - the maintenance console displays the following message:

PWR0015 XSMC 00 0 0
- 2 Hardware enable the QPC659 DLB card and verify that the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is on and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

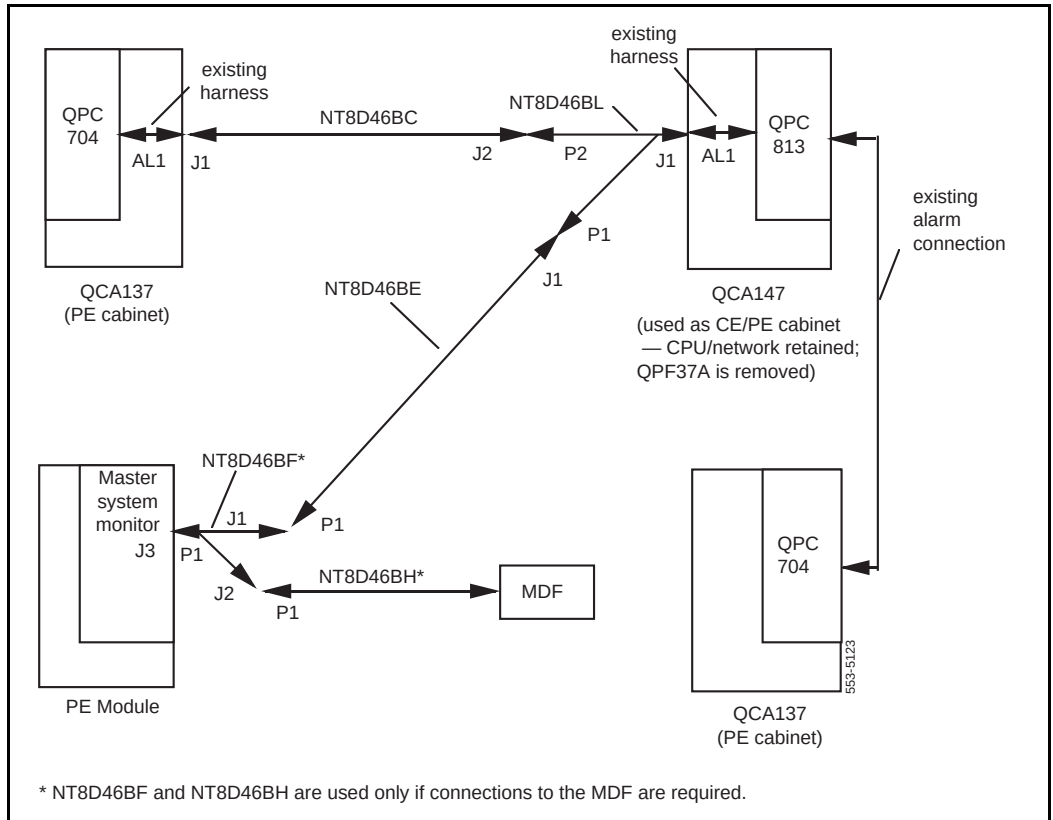
If any test fails, verify that all cables are installed properly, and the switch settings on the system monitor are correct for this configuration. Also verify the QCAD310 cable connections.

Configuration 11—RT system with QCA147, two QCA137s, and PE Module

Hardware installation procedure

The following procedure describes how to connect the system monitor in an RT system equipped with a QCA147 cabinet, two QCA137 cabinets, and a PE Module (see Figure 166). The CPU is located in the QCA147 cabinet.

Figure 166
Connecting system monitor—Configuration 11



Procedure 13

Connecting system monitor—Configuration 11

Note: This procedure requires powering down one QCA137 and the QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.
- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off.
- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel.
- 12 Remove the QPF37A Alarm Adapter Plug in the QCA147 cabinet.
- 13 Verify that the alarm cable (NE25MQ1A) is installed between the QCA147 and the first QCA137 cabinets.

- 14** Install connector J1 of the NT8D46BL cable into connector AL1 (P0678258 Filter Connector) of the QCA147 cabinet. Ensure the connection with a screwdriver.
- 15** Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BL cable. Ensure the connection with a screwdriver.
- 16** Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BL cable. Ensure the connection with a screwdriver.
- 17** Reinstall the QCA147 EMI back panel.
- 18** Reinstall the QCA147 rear panels.
- 19** Verify that the RECT/BATT, PE 1-2, and FN alarm LEDs on the QUAA3 Power Unit are on. Power down the second QCA137 cabinet.
- 20** Remove the second QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the two QCA137 cabinets.
- 21** Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 22** Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) of the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 23** Reinstall the second QCA137 EMI back panel.
- 24** Reinstall the second QCA137 rear panel.
- 25** Power up the QCA147 and QCA137 cabinets. Ninety seconds after sysload, verify the following:
 - all LEDs on the QUAA3 and QUAA5 Power Units are on
 - the ringing generators are back on
 - the LED on the top cap of the PE Module is off

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1 The PFTU (if installed) is not activated.
- 2 All ringing generators are enabled.
- 3 All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 12 through 16 and 22 of the installation procedure have been completed.
- 4 The LED on the top cap of the PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the PE Module:

- 1 Locate the blower unit inside the pedestal of the PE Module.
- 2 Set the circuit breaker on the blower unit to off. Verify the following:
 - the LED on the top cap is on
 - the PE 1-2 LED on the QUAA5 Power Unit of the QCA147 cabinet is off
 - all LEDs on the two QUAA3 Power Units of the QCA137 cabinets stay on
- 3 Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the PE 1-2 LED on the QUAA5 Power Unit is on.

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

1 Hardware disable the QPC659 DLB card and verify the following:

- the PE 1-2 LED on the QUAA5 Power Unit is off
- the CE/PE 1 LEDs on both QUAA3 Power Units are off
- the LED on the top cap of the PE Module stays off.

Hardware enable the QPC659 DLB card and verify that the PE 1-2 LED and the CE/PE 1 LEDs are on.

2 Set the LN XFR switch on the QUAA5 Power Unit to 1. Verify the following:

- the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
- the CE/PE 1 LEDs on both QUAA3 Power Units are off
- the PFTU (if installed) is activated
- the LED on the top cap of the PE Module is on
- all ringing generators are off

3 Set the LN XFR switch to 0. After 90 seconds, verify the following:

- the CPU/NWK/MSU LED is on
- the CE/PE 1 LEDs are on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the PE Module is off
- all ringing generators are on

4 Perform a data dump using LD 43.

5 Perform a sysload on the QCA147 cabinet. Verify the following:

- the CPU/NWK/MSU LED on the QUAA5 Power Unit is off
- the CE/PE 1 LEDs on both QUAA3 Power Units are off
- the PFTU (if installed) is activated
- the LED on the top cap of the PE Module is on
- all ringing generators are off

6 Wait 90 seconds after the sysload, then verify the following:

- the CPU/NWK/MSU LED is on
- the CE/PE 1 LEDs are on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the PE Module is off
- all ringing generators are on

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

1 Hardware disable the QPC659 DLB card and verify the following:

- the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet under test is off
- the PE 2-5 LED on the QUAA3 Power Unit of the QCA137 cabinet not under test is on
- the LED on the top cap of the PE Module is off

2 Hardware enable the QPC659 DLB card. Verify that the PE 2-5 LED on the QUAA3 Power Unit and the PE 1-2 LED on the QUAA5 Power Unit are on.

If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the NE-25MQ1A and QCAD310 cable installation for the QCA137 cabinets.

Procedure 14

Connecting system monitor—Configuration 12

Note: This procedure requires powering down one QCA137 and the QCA147 cabinets and removing the EMI back panels from both cabinets. If alarm monitor connections to the MDF are not required, skip steps 4 through 7 and directly install connector P1 of the NT8D46BE cable into connector J3 of the system monitor, ensuring the connections with a screwdriver.

- 1 Remove the existing system monitor in the module.

Note: This step is not applicable to new installations.

- 2 Before installing the NT8D22AC System Monitor, set switch SW2-2 to ON. Verify the other switch settings using Table 139.
- 3 Install the system monitor in the pedestal. Ensure the installation with a screwdriver. Verify that the top cap LED flashes three times then stays off, and the maintenance console displays the following message:

PWR0054 XSMC 00 0 0

- 4 Install connector P1 of the NT8D46BF cable into connector J3 of the system monitor. Ensure the connection with a screwdriver.
- 5 Install connector P1 of the NT8D46BE cable into connector J1 of the NT8D46BF cable. Ensure the connection with a screwdriver.
- 6 Install connector J2 of the NT8D46BF cable into connector P1 of the NT8D46BH cable. Ensure the connection with a screwdriver.
- 7 Terminate the other end of the NT8D46BH cable.
- 8 Reinstall the pedestal back panel.
- 9 Verify that the RECT/BATT, PE 1-2, CCPU/NWK/MSU, and FN alarm LEDs on the QUAA5 Power Unit are on. Power down the QCA147 cabinet.
- 10 Remove the QCA147 rear panels.
- 11 Remove the QCA147 EMI back panel. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 12 Remove the QPF37A Alarm Adapter Plug.

- 13** Verify that the alarm cable is installed between the QCA147 cabinet and the first QCA137 cabinet. The alarm cable is connected to AL2 in the QCA147 cabinet and AL1 in the QCA137 cabinet.
- 14** Unplug connector P2 of the existing harness from connector J2 on the rear of the QUAA5 Power Unit.
- 15** Install connector P2 of the NT8D46BJ cable into connector J2 on the rear of the QUAA5 Power Unit.
- 16** Install connector J2 of the NT8D46BJ cable into connector P2 of the existing harness.
- 17** Unplug connector P3 of the existing harness from connector J3 on the rear of the QUAA5 Power Unit.
- 18** Install connector P3 of the NT8D46BJ cable into connector J3 on the rear of the QUAA5 Power Unit.
- 19** Install connector J3 of the NT8D46BJ cable into connector P3 of the existing harness.
- 20** Unplug connector P5 of the existing harness from connector J5 on the rear of the QUAA5 Power Unit.
- 21** Install connector P5 of the NT8D46BJ cable into connector J5 on the rear of the QUAA5 Power Unit.
- 22** Install connector J5 of the NT8D46BJ cable into connector P5 of the existing harness.
- 23** Unplug connector P6 of the existing harness from connector J6 on the QUAA5 Power Unit.
- 24** Install connector P6 of the NT8D46BJ cable into connector J6 on the rear of the QUAA5 Power Unit.
- 25** Install connector J6 of the NT8D46BJ cable into connector P6 of the existing harness.
- 26** Unplug connector P8 of the existing harness from connector J8 (horizontally oriented) near the top of the QUAA5 Power Unit.
- 27** Install connector P8 of the NT8D46BJ cable into connector J8 on the rear of the QUAA5 Power Unit.
- 28** Install connector J8 of the NT8D46BJ cable into connector P8 of the existing harness.
- 29** Loosen one of the ground lugs located on the ground bar on the rear of the QUAA5 Power Unit with a 7/16 inch socket driver.

- 30 Insert the GND ring lug (three wires) into the ground lug and tighten with the socket driver.
- 31 Install connector ALM2 of the NT8D46BJ cable into connector AL1 of the existing harness.
- 32 Install connector ALM1 of the NT8D46BJ cable into the P0678258 Filter Connector.
- 33 Install connector J1 of the NT8D46BD cable into connector ALM1 (P0678258 Filter Connector) of the NT8D46BJ cable. Ensure the connection with a screwdriver.
- 34 Install connector J1 of the NT8D46BE cable into connector P1 of the NT8D46BD cable. Ensure the connection with a screwdriver. Verify that the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

- 35 Install connector J2 of the NT8D46BC cable into connector P2 of the NT8D46BD cable. Ensure the connection with a screwdriver.
- 36 Reinstall the QCA147 EMI back panel.
- 37 Reinstall the QCA147 rear panels.
- 38 Remove the second QCA137 rear panels. Verify that the QCAD310 cable is installed between the ground bars of the QCA147 and QCA137 cabinets.
- 39 Remove the second QCA137 EMI back panel. Verify that the GND1 and GND2 cables are tied together on the ground bar at the back of the QUAA3 Power Unit.
- 40 Install connector J1 of the NT8D46BC cable into connector AL1 (P0678258 Filter Connector) in the second QCA137 cabinet. Ensure the connection with a screwdriver.
- 41 Reinstall the second QCA137 EMI back panel.
- 42 Reinstall the second QCA137 rear panels.
- 43 Power up the QCA147 cabinet. Verify that all alarm LEDs on the QUAA5 Power Unit are on, except the CPU/NWK/MSU LED, which is on after approximately 90 seconds.

- 44** Power up the QCA137 cabinets. Verify that all alarm LEDs on the QUAA3 Power Units are on, except the CE/PE 1 LEDs, which are on after approximately 90 seconds. Verify that the maintenance console displays the following message:

PWR0055 00 0 0

Fault clearing

After powering up the system and sysloading is complete, wait 90 seconds then verify the following:

- 1** The PFTU (if installed) is not activated.
- 2** All LEDs on the QUAA3 and QUAA5 Power Units stay on. If not, verify that steps 11 through 34 and 39 of the installation procedure have been completed.
- 3** The LED on the top cap of the CE/PE Module is off. If not, perform one of the following:
 - Unseat the system monitor, verify the switch settings (Table 139), and reinstall it into the pedestal.
 - Use LD 37, Input/Output Diagnostic, and issue the command "STAT XSM" to identify the fault. See *X11 input/output guide*.

To verify the installation, perform the following optional procedure on the CE/PE Module:

- 1** Locate the blower unit inside the pedestal of the CE/PE Module.
- 2** Set the circuit breaker on the blower unit to off and verify the following:
 - the LED on the top cap is on
 - all LEDs on the QUAA3 and QUAA5 Power Units stay on
 - the maintenance console displays the following message:

PWR0006 FANU 00 0 0

- 3** Set the circuit breaker on the blower unit back on. Verify that the LED on the top cap is off and the maintenance console displays the following message:

PWR0046 FANU 00 0 0

- 4** Perform a data dump using LD 43.
- 5** Perform a sysload on the CE/PE Module. Verify the following:
 - the CPU/NWK/MSU LED on the QUAA5 Power Unit is off

- the CE/PE 1 LEDs on the QUAA3 Power Units are off
- the PFTU (if installed) is activated
- the LED on the top cap of the CE/PE Module is on
- all ringing generators are off

6 Wait 90 seconds after the sysload, then verify the following:

- the CPU/NWK/MSU LED is on
- the CE/PE 1 LEDs are on
- the PFTU (if installed) is deactivated
- the LED on the top cap of the CE/PE Module is off
- all ringing generators are on
- the maintenance console displays the following messages:

PWR0056 PFTU XX X X
PWR0055 XSMC 00 0 0
PWR0000 PWSP XX X X
(for each ringing generator)

To verify the installation, perform the following optional procedure on the QCA147 cabinet:

1 Hardware disable the QPC659 DLB card and verify the following:

- the PE 1-2 LED on the QUAA5 Power Unit is off
- the PE 2-5 LEDs on the QUAA3 Power Units stay on
- the LED on the top cap of the CE/PE Module stays off
- the maintenance console displays the following message:

PWR0015 XSMC 00 0 0

2 Hardware enable the QPC659 DLB card. Verify that the PE 1-2 LED is on and the maintenance console displays the following message:

PWR0055 XSMC 00 0 0

To verify the installation, perform the following optional procedure on each QCA137 cabinet:

- 1 Hardware disable the QPC659 DLB card and verify the following:
 - the PE 2-5 LED on the QUAA3 Power Unit is off
 - all LEDs on the QUAA5 Power Unit stay on
 - the LED on the top cap of the CE/PE Module stays off
 - the maintenance console displays the following message:
PWR0015 XSMC 00 0 0
- 2 Hardware enable the QPC659 DLB card. Verify that all LEDs on the QUAA5 and QUAA3 Power Units are on and the maintenance console displays the following message:
PWR0055 XSMC 00 0 0

If any test fails, verify that all cables are installed properly and the switch settings on the system monitor are correct for this configuration. Verify the NE-25MQ1A and QCAD310 cable installation on the QCA137 cabinets.

Ground package installation

This chapter describes how to install Ground Packages P0677580, P0677587, and P0677588.

Installing Ground Package P0677580

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

If additional assistance is required to complete the installation procedure, please contact your customer service representative.

To modify those systems that are affected, Northern Telecom has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

Note: For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

The following are step-by-step instructions required to modify the ground on systems that do not have a ground mini-bus bar but have conduit for the ground wire.

To install Ground Package P0677580:

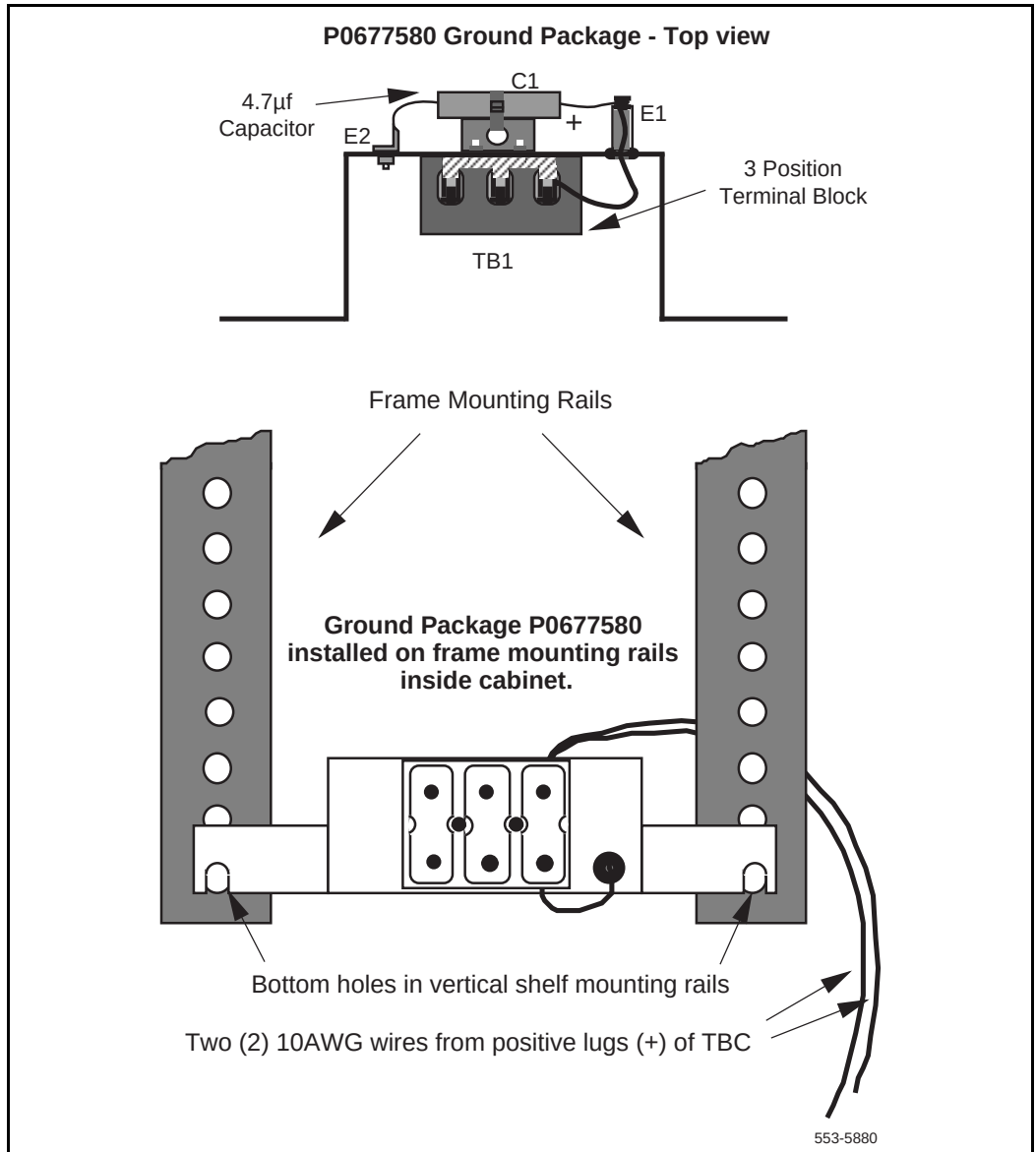
Note: Before modifying the ground, a temporary bypass ground wire must be added to avoid interrupting call processing.

- 1 Locate the supplied ground lugs and a 1/4-20 hex nut. Place the ground lug over one of the 1/4-20 threaded studs on the analog ground bar and secure it using the 1/4-20 hex nut.
- 2 Insert one end of the #6 AWG wire, which is not supplied, into the ground lug and tighten securely. Connect the other end of the wire to the ground window, the positive bus bar in the power distribution box, or the I.G. of the AC panel depending on the system.
- 3 Disconnect existing +48 volt return wires from the frame. These wires are terminated in ground lugs located at the bottom of the cabinet near the end of the 3/4-in. ground conduit.
- 4 Install the terminal block bracket using the bottom holes in the two center vertical shelf mounting rails. Assemble to rails using two of the supplied No.12-24 x.50 screws.

Note: The bracket should be oriented so that when installed between the rails, the capacitor assembly is facing toward the rear of the cabinet and the two rail mounting slots are facing down. See Figure 168.

- 5 Connect the wires previously disconnected in step 2 to the terminal block.
- 6 Connect the two #10 AWG wires from the TBC into the third position of the terminal bracket.
- 7 This completes the ground modification. Remove the bypass ground wire, ground lug, and 1/4-20 hex nut from the analog ground bar previously installed in step 1.

Figure 168
Ground Package P0677580



Installing Ground Package P0677587

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

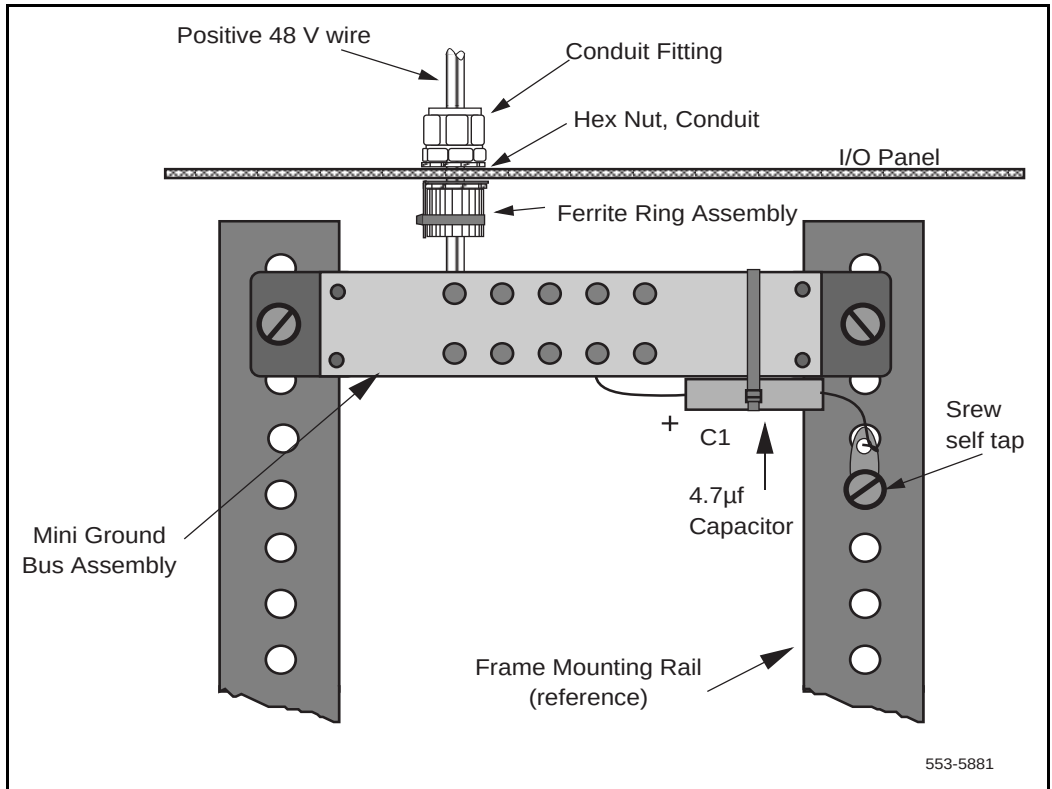
To install those systems that are affected, Northern Telecom has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

Note: For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

To install Ground Package P0677587:

- 1 Disconnect the small jumper between the isolated mini ground bus bar and the frame. See Figure 169.
- 2 To jumper the system ground, connect one end of the # 6 AWG wire to the isolated mini ground bus bar and connect the other end of the wire to the ground window, positive bus bar of the QBL-15, or to I.G. of the AC panel depending on the system.

Figure 169
Installing Ground Package P0677587



- 3 Disconnect the +48V return wire from the isolated mini ground bus bar. See Figure 169. Install the supplied ferrite ring assembly (P0677577) as shown in Figure 169. To install the ferrite ring assembly, do the following:
 - Remove the locknut and lockwasher from the ground conduit fitting. These are located on the shelf side of the I/O panel.
 - Remove the conduit fitting from the hole in the I/O panel and attach the supplied locknut. Hand tighten until the nut rests against the base of the fitting.
 - To insert the conduit fitting into the hole in the I/O panel, reassemble the lockwasher and locknut that were previously removed. (The lockwasher may be discarded because of an insufficient number of threads for the bottom locknut.) While these are still loose, slip the two prongs of the ferrite ring assembly on either side of the conduit fitting and between the lockwasher and the I/O panel. Tighten the locknut until the ferrite assembly is securely in place.
- 4 Reinstall the +48V return wire from the isolated ferrite ring and connect it to the isolated mini ground bus bar.
- 5 Connect the 4.7 μ F 200V capacitor (A0275046) as shown in Figure 169.
- 6 Disconnect the #6 AWG wire that was previously installed in step 2.

Installing Ground Package P0677588

The installation procedure is simple to follow and can be accomplished within one hour. For those systems already in service, call processing can continue without disruption during the installation procedure. It is recommended that this procedure be accomplished before the cutover of the upgraded system.

In order to install those systems that are affected, Northern Telecom has prepared the following field installation package. This package contains all the necessary materials and installation instructions required for field installation.

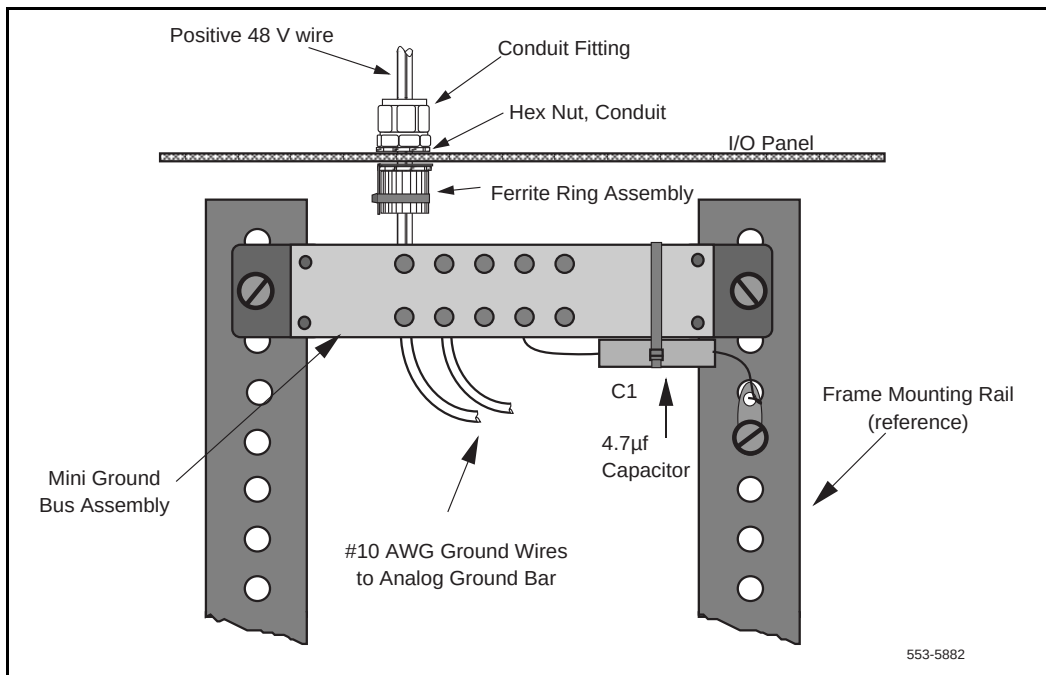
Note: For those systems that are already in service, it is necessary to have available approximately 25 feet of #6 AWG wire to jumper the system ground during the installation procedure. This wire is not provided in the installation package and must be purchased before modifying the ground.

To install Ground Package P0677588:

- 1 Locate the supplied ground lugs and a 1/4-20 hex nut. Place the ground lug over one of the 1/4-20 threaded studs on the analog ground bar and secure it using the 1/4-20 hex nut.
- 2 Insert one end of the #6 AWG wire, which is not supplied, into the ground lug and tighten securely. Connect the other end of the wire to the ground window, the positive bus bar in the power distribution box, or the I.G. of the AC panel depending on the system.
- 3 Disconnect the existing +48 volt return wire from the frame.
- 4 Locate the two wires between the analog bus bar and the frame ground near the top of the cabinet. Disconnect the two wires at the frame ground end and remove the ground lugs.

- 5 Install the supplied ferrite ring assembly as shown in Figure 170. To install the ferrite ring assembly do the following:
 - Remove the locknut and lockwasher from the ground conduit fitting. These are located on the shelf side of the I/O panel.
 - Remove the conduit fitting from the hole in the I/O panel and attach the supplied locknut. Hand tighten until the nut rests against the base of the fitting.
 - To insert the conduit fitting into the hole in the I/O panel, reassemble the lockwasher and locknut that were previously removed. (The lockwasher may be discarded because of an insufficient number of threads for the bottom locknut.) While these are still loose, slip the two prongs of the ferrite ring assembly on either side of the conduit fitting and between the lockwasher and the I/O panel. Tighten the locknut until the ferrite assembly is securely in place.

Figure 170
Installing Ground Package P0677588



553-5882

- 6 Install the supplied mini-bus bar assembly using the two supplied .214-24 X .75 screws as shown in Figure 170. Attach the ground lug from the capacitor to the mounting rail, as shown, using the third screw.
- 7 Shorten the two wires that were removed in step 3 (as required) and reconnect the ground ends to the lower side of the mini bus bar.
- 8 Install the +48 volt return wire through the ferrite ring and connect it to the upper side of the mini bus bar as shown in Figure 170.
- 9 This completes the ground modification. Remove the bypass ground wire, the ground lug, and the 1/4-20 hex nut from the analog ground bar that was previously installed.

Network hybrid installation

This procedure includes instructions on how to remove two QPC477 BTUs from a QSD39 Network shelf and install four network hybrids (NT4D19AA, NT4D20AA, NT4D22AA, and NT4D23AA). Typically this procedure is done in conjunction with other procedures, such as system upgrades.

CAUTION

Call processing will be interrupted while performing the network hybrid installation procedures. Plan the installation for a time when the impact on customers will be minimal.

Network hybrids must be installed in all QSD39 network shelves in which clock controller cards are to be installed. Most systems contain one QSD39 network shelf (left side) and one QSD40 network shelf (right side) and will require the installation of network hybrids in the QSD39 network shelf 0, group 0 only. However, a few systems contain two QSD39 network shelves (right and left sides), and will require the installation of network hybrids in both network shelf 0, group 0 and network shelf 1, group 0.

Installing the network hybrids consists of

- powering down the QSD39 Network shelf
- removing the power supply and required network cards
- removing two QPC477 BTUs from the shelf
- installing four network hybrids into the shelf
- installing the power supply and network cards
- powering up the QSD39 Network shelf

During this procedure you may need the following tools:

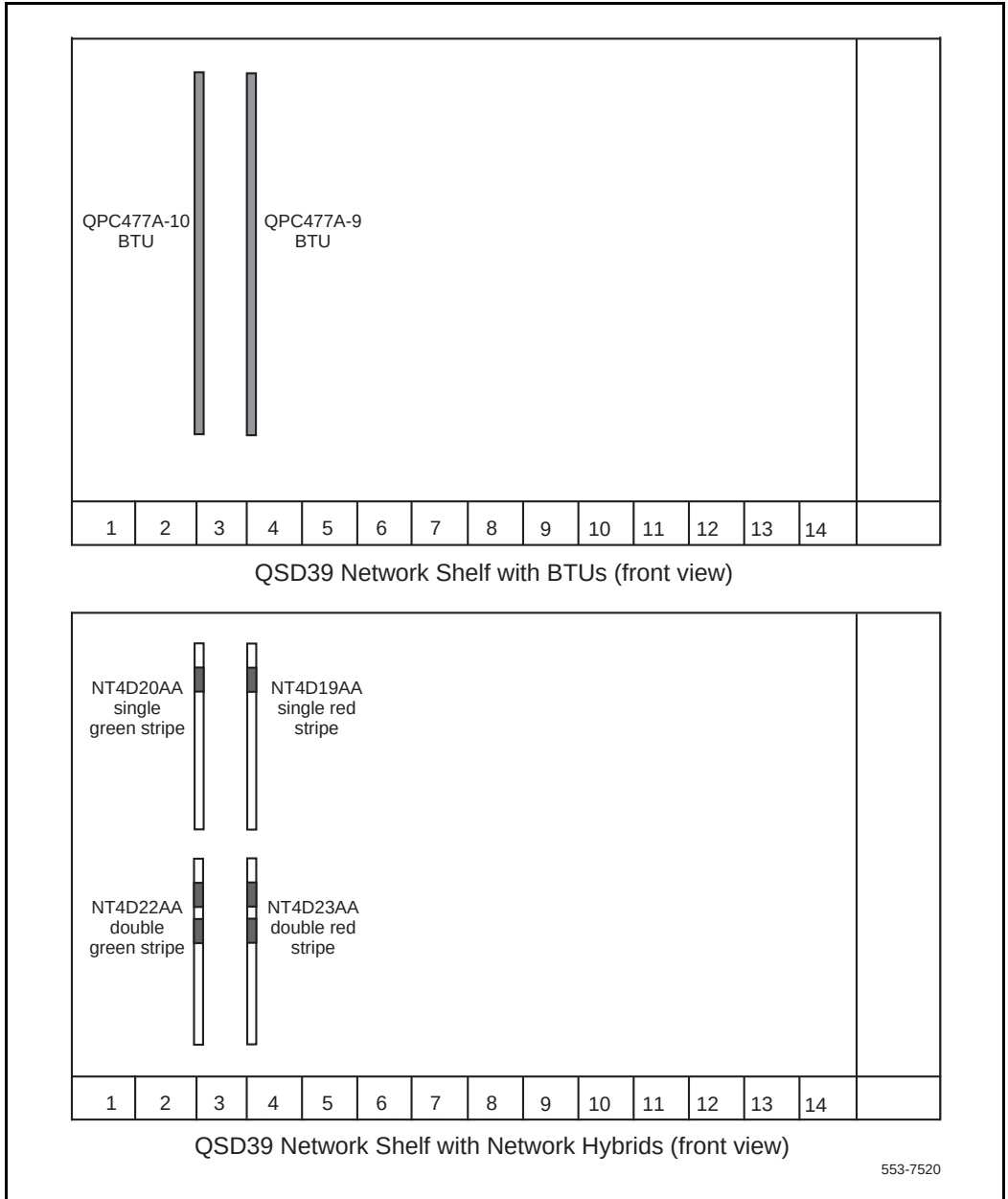
- extraction tool (provided in the installation kit)
- flashlight

Removing the BTUs

To remove the QPC477 BTUs from the QSD39 Network shelf:

- 1 Log into the system.
- 2 In Group 0, software disable the cards in slots 2, 3, and 4.
- 3 In Group 0, software disable the extender cards.
- 4 Shut down power to the network shelf by switching the circuit breaker to OFF.
- 5 Set the ENB/DIS faceplate switch to DIS on the network cards in slots 2, 3 and 4. Tag and disconnect all cables.
- 6 Remove the power supply in slot 1, and the network cards in slots 2, 3, and 4.
- 7 Gently remove each BTU from the shelf (see Figure 171).

Figure 171
BTU and Network Hybrid Locations



Installing the Network Hybrids

Follow the procedure below to install the network hybrids on the QSD39 Network shelf. Use extreme caution to avoid bending or breaking backplane pins.

Note: During the network hybrid installation, refer to Figure 171 for hybrid locations.

- 1 Locate the NT4D20AA Network Hybrid.
- 2 Orient the network hybrid so that the single green stripe is on top and the hybrid connector faces the backplane.
- 3 Align the network hybrid with the top connector in the network shelf between slots 2 and 3. The lower edge of the hybrid should be closest to the metal screw in the middle of the backplane.

CAUTION

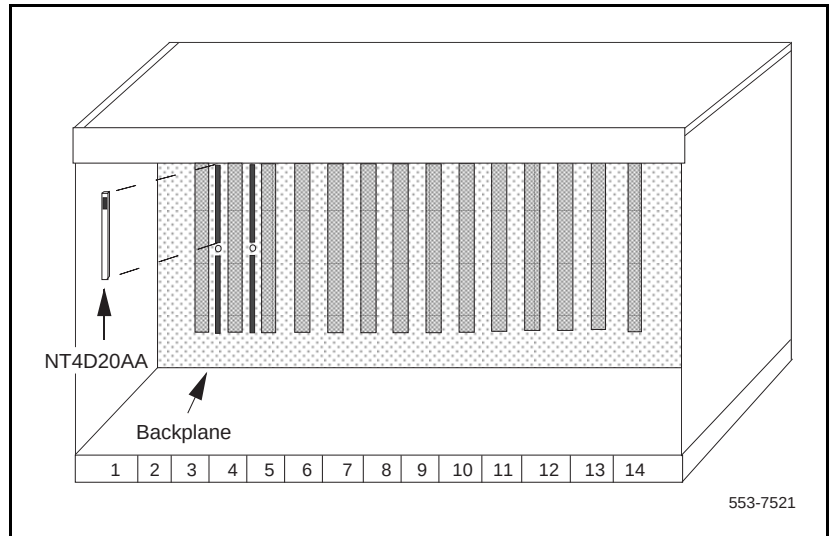
Do not force the network hybrids into the QSD39 Network backplane connectors. Any damage caused to the connector pins will require replacement of the QSD39 Network shelf.

- 4 Carefully insert the network hybrid into the backplane connector (see Figure 172).
- 5 Inspect the network hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 6.

Note: If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page 895 for instructions on removing the hybrid. Do not use a tool other than the extraction tool included in the installation kit to remove the hybrid. Any damage caused to the backplane connector pins will require replacement of the QSD39 shelf.

- 6 Locate the NT4D19AA Network Hybrid.
- 7 Orient the network hybrid so that the single red stripe is on top and the hybrid connector faces the backplane.

Figure 172
Installing the Network Hybrids



- 8** Align the network hybrid with the top connector between slots 3 and 4. The lower edge of the hybrid should be closest to the metal screw in the middle of the backplane.
- 9** Gently insert the network hybrid into the backplane connector.
- 10** Inspect the network hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 11.

Note: If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page page 895 for instructions on removing the hybrid.

- 11** Locate the NT4D22AA Network Hybrid.
- 12** Orient the network hybrid so that the double green stripe is on top and the hybrid connector faces the backplane.
- 13** Align the network hybrid with the bottom connector between slots 2 and 3. The top edge of the hybrid should be closest to the metal screw in the middle of the backplane.

- 14 Carefully insert the network hybrid into the backplane connector.
- 15 Inspect the hybrid and ensure that there are no empty pins below or above the hybrid. When the hybrid is inserted correctly, continue with step 16.

Note: If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page 895 for instructions on removing the hybrid.

- 16 Locate the NT4D23AA Network Hybrid.
- 17 Orient the hybrid so that the double red stripe is on top and the hybrid connector faces the backplane.
- 18 Align the hybrid with the bottom connector between slots 3 and 4 (see Figure 2). The top edge of the hybrid should be close to the metal screw in the middle of the backplane.
- 19 Carefully insert the network hybrid into the backplane connector.
- 20 Inspect the hybrid and ensure that there are no empty pins below or above the hybrid.

Note: If the network hybrid was inserted incorrectly, refer to “Using the Extraction Tool” on page 895 for instructions on removing the hybrid.

When the four network hybrids are installed, use the following instructions to complete the installation.

- 1 Reinstall the power supply in slot 1 and the network cards in slots 2, 3, and 4.
- 2 Reconnect all card cables.
- 3 Set the ENB/DIS faceplate switch on all disabled cards to ENB.
- 4 Turn on power to the shelf by switching the circuit breaker for the network shelf to ON.
- 5 As necessary, software enable the cards in the Network shelf.

The network hybrid installation is complete.

Using the Extraction Tool

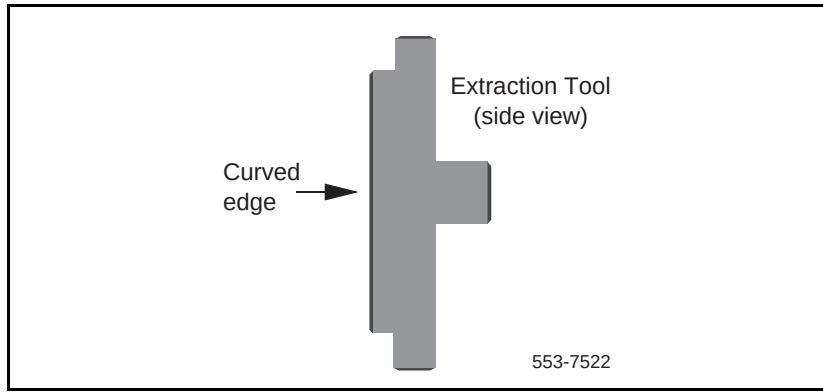
CAUTION

You must use the extraction tool provided in the installation kit to remove the network hybrids from the backplane to avoid bending or breaking backplane pins. Do not improvise with common hand tools.

The following procedure describes how to remove a network hybrid from the QSD39 backplane. If a network hybrid is inserted incorrectly, it must be removed using this tool.

- 1 Hold the extraction tool so that the long flat edge faces the network backplane and the curved edge faces inward toward the network hybrid (see Figure 173).
- 2 Align the extraction tool to the left of the hybrid and gently position the curved edge between the hybrid and backplane connector.
- 3 Gradually apply pressure to the extraction tool toward the backplane while gently pulling the network hybrid away from the backplane. A gentle side-to-side rocking motion may be used on the network hybrid if needed.
- 4 Stop applying pressure as soon as the network hybrid comes loose from the backplane.
- 5 Slowly remove the extraction tool and the network hybrid.
- 6 Reinstall the network hybrid.

Figure 173
Extraction Tool



Core Module upgrades using NTND33BB/BC/BD cable kits

The Core Module upgrade currently ships with NTND33Cx cable kits. If you have NTND33Bx cable kits, you are instructed in the option 81C upgrade procedures to refer to certain procedures in this appendix. After completing the appropriate procedures, you are instructed to return to the option 81C upgrade procedure and resume with the next step.

Installing NTND33Bx cable kits

The NTND33Cx upgrade cable kits supersede the NTND33Bx cable kits. There are three cable kits in the NTND33Bx series:

- NTND33BB Cable Kit (Group 0) is the only kit needed for single group systems.
- NTND33BC Cable Kit (Groups 1–2) is used with the NTND33BB kit for two and three group systems.
- NTND33BD Cable Kit (Groups 3–4) is used with the NTND33BB and NTND33BC kits for four and five group systems.

The equipment in the cable kits provides the intercabinet cabling between the Core Modules and the existing common equipment cabinet. The intercabinet cabling provides clock controller to junctor connections, CNI to 3PE connections, and PRI to clock controller reference connections (when present).

A P0738866 Label Kit is provided in the upgrade package. The packet contains a pair of preprinted labels for each cable in the three kits.

Note: There are also labels that do not apply to this upgrade. You will not use all of the labels that are provided.

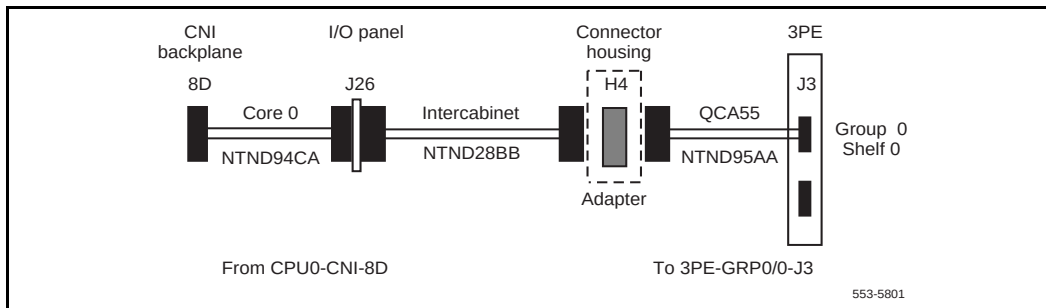
During preparation for the upgrade, there are detailed instructions for labeling the cables as you separate them by kit and by function. (For example, as you label them, keep cables in the NTND33BB kit separate from cables in the NTND33BC kit, and the cables for Core 0 separate from the intercabinet cables.) Using the P0738866 Label Kit, label and install cables for only the groups equipped.

The cable labels indicate the from-to terminations for the cabling path, not the connections for the individual cable. For example, the three following cables will each be labeled CPU0-CNI-8D to 3PE-GRP0/0-J3 (see the example in Figure 174):

- 1 An NTND94CA cable (from CPU0-CNI-8D) in Core 0 connects to the following:
 - a CNI port at backplane position 8D
 - the inside of the I/O panel at connector J26
- 2 An NTND28BB cable connects to the following:
 - the outside of the I/O panel at connector J26
 - position H4 on the outside of the connector housing at the QCA55 cabinet.
- 3 An NTND95AA cable (to 3PE-GRP0/0-J3) connects to the following:
 - position H4 on the inside of the connector housing
 - faceplate connector J3 on the 3PE card for network group 0, shelfp0

Note: Return to the option 81C upgrade procedures and resume with the next step.

Figure 174
Cabling path for cables labeled CPU0-CNI-8D to 3PE-GRP0/0-J3



Labelling cables

- 1 For Group 0, label cables from the NTND33BB kit (see Figure 175 for end-to-end cable paths):
 - Separate the Core 0, Core 1, intercabinet, and QCA55 cabinet cables (see Table 141).
 - Label each cable as listed in Table 141. The labels should be identical on both ends of each cable.

Table 141
NTND33BB Group 0 cable labels (Part 1 of 2)

Core 0 cables	Label both ends
NT1R04AA	CPU0-CC-J3 to JCTR-J11
NT8D79AD	CPU0-CC-J2 to PRIM PRI-J1
NT8D79AD	CPU0-CC-J1 to SEC PRI-J1
NTND94CA	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND94CA	CPU0-CNI-8F to 3PE-GRP0/0-J4
Core 1 cables	Label both ends
NT1R04AA	CPU1-CC-J3 to JCTR-J12
NT8D79AD	CPU1-CC-J2 to PRIM PRI-J2
NT8D79AD	CPU1-CC-J1 to SEC PRI-J2
NTND94CA	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND94CA	CPU1-CNI-8F to 3PE-GRP0/1-J4

Table 141
NTND33BB Group 0 cable labels (Part 2 of 2)

Intercabinet cables	Label both ends
NTND28BB	CPU0-CC-J3 to JCTR-J11
NTND28BB	CPU1-CC-J3 to JCTR-J12
NTND28BB	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND28BB	CPU0-CNI-8F to 3PE-GRP0/0-J4
NTND28BB	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND28BB	CPU1-CNI-8F to 3PE-GRP0/1-J4
NT1R05AA	CPU0-CC-J2 to PRIM PRI-J1
NT1R05AA	CPU0-CC-J1 to SEC PRI-J1
NT1R05AA	CPU1-CC-J2 to PRIM PRI-J2
NT1R05AA	CPU1-CC-J1 to SEC PRI-J2
QCA55 cabinet cables	Label both ends
NT1R04AA	CPU0-CC-J3 to JCTR-J11
NT1R04AA	CPU1-CC-J3 to JCTR-J12
NTND95AA	CPU0-CNI-8D to 3PE-GRP0/0-J3
NTND95AA	CPU0-CNI-8F to 3PE-GRP0/0-J4
NTND95AA	CPU1-CNI-8D to 3PE-GRP0/1-J3
NTND95AA	CPU1-CNI-8F to 3PE-GRP0/1-J4
NT8D79AE	CPU0-CC-J2 to PRIM PRI-J1
NT8D79AE	CPU0-CC-J1 to SEC PRI-J1
NT8D79AE	CPU1-CC-J2 to PRIM PRI-J2
NT8D79AE	CPU1-CC-J1 to SEC PRI-J2

- 2 For Group 1 and Group 2 (as equipped), label cables from the NTND33BC kit (see Figure 176 for end to end cable paths):
 - Separate the Core 0, Core 1, intercabinet, and QCA55 cabinet cables (see Table 142).
 - Label each cable as listed in Table 142. The labels should be identical on both ends of each cable.

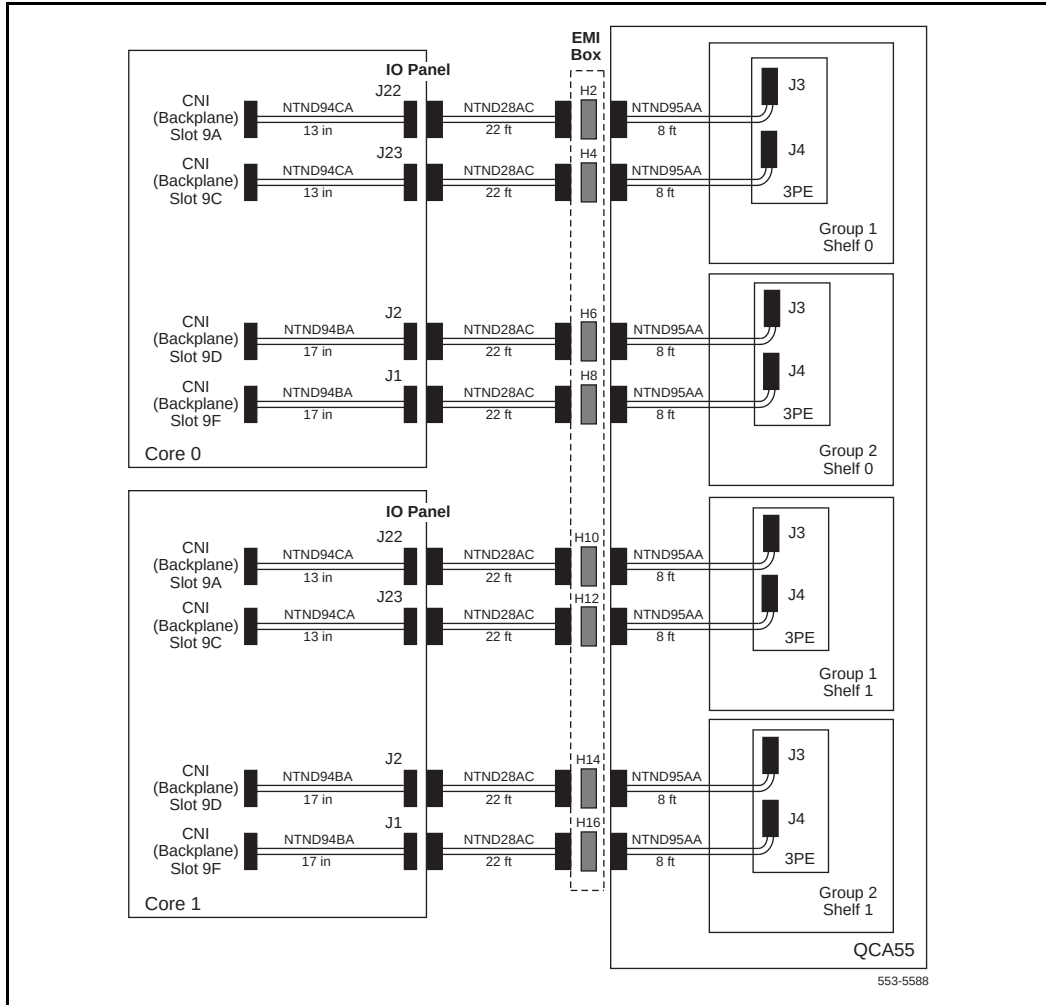
Table 142
NTND33BC Group 1 and Group 2 cable labels (Part 1 of 2)

Core 0 cables	Label both ends
NTND94CA	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND94CA	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND94BA	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND94BA	CPU0-CNI-9F to 3PE-GRP2/0-J4
Core 1 cables	Label both ends
NTND94CA	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND94CA	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND94BA	CPU1-CNI-9D to 3PE-GRP2/1-J3
NTND94BA	CPU1-CNI-9F to 3PE-GRP2/1-J4
Intercabinet cables	Label both ends
NTND28BC	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND28BC	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND28BC	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND28BC	CPU0-CNI-9F to 3PE-GRP2/0-J4
NTND28BC	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND28BC	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND28BC	CPU1-CNI-9D to 3PE-GRP2/1-J3
NTND28BC	CPU1-CNI-9F to 3PE-GRP2/1-J4

Table 142
NTND33BC Group 1 and Group 2 cable labels (Part 2 of 2)

QCA55 cabinet cables	Label both ends
NTND95AA	CPU0-CNI-9A to 3PE-GRP1/0-J3
NTND95AA	CPU0-CNI-9C to 3PE-GRP1/0-J4
NTND95AA	CPU0-CNI-9D to 3PE-GRP2/0-J3
NTND95AA	CPU0-CNI-9F to 3PE-GRP2/0-J4
NTND95AA	CPU1-CNI-9A to 3PE-GRP1/1-J3
NTND95AA	CPU1-CNI-9C to 3PE-GRP1/1-J4
NTND95AA	CPU1-CNI-9D to 3PE-GRP2/1-J3
NTND95AA	CPU1-CNI-9F to 3PE-GRP2/1-J4

Figure 176
NTND33BC Group 1 and Group 2 cable paths



- 3** For Group 3 and Group 4 (as equipped), label cables from the NTND33BD kit (see Figure 177 for end-to-end cable paths):
- Separate the Core 0, Core 1, intercabinet, and QCA108 cabinet cables (see Table 143).
 - Label each cable as listed in Table 143. The labels should be identical on both ends of each cable.

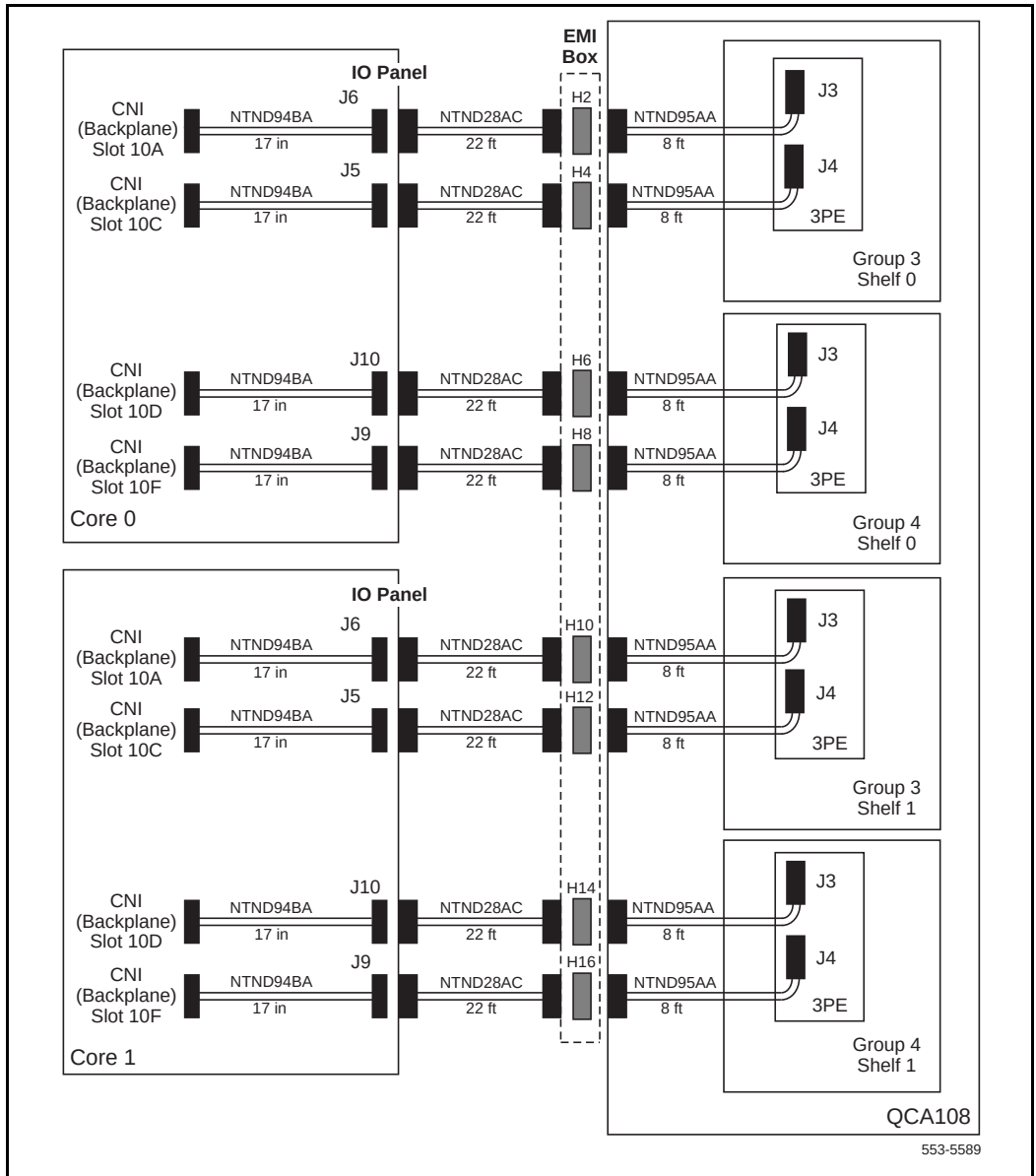
Table 143
NTND33BD Group 3 and Group 4 cable labels (Part 1 of 2)

Core 0 cables	Label both ends
NTND94BA	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND94BA	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND94BA	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND94BA	CPU0-CNI-10F to 3PE-GRP4/0-J4
Core 1 cables	Label both ends
NTND94BA	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND94BA	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND94BA	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND94BA	CPU1-CNI-10F to 3PE-GRP4/1-J4
Intercabinet cables	Label both ends
NTND28BC	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND28BC	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND28BC	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND28BC	CPU0-CNI-10F to 3PE-GRP4/0-J4
NTND28BC	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND28BC	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND28BC	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND28BC	CPU1-CNI-10F to 3PE-GRP4/1-J4

Table 143
NTND33BD Group 3 and Group 4 cable labels (Part 2 of 2)

QCA108 cabinet cables	Label both ends
NTND95AA	CPU0-CNI-10A to 3PE-GRP3/0-J3
NTND95AA	CPU0-CNI-10C to 3PE-GRP3/0-J4
NTND95AA	CPU0-CNI-10D to 3PE-GRP4/0-J3
NTND95AA	CPU0-CNI-10F to 3PE-GRP4/0-J4
NTND95AA	CPU1-CNI-10A to 3PE-GRP3/1-J3
NTND95AA	CPU1-CNI-10C to 3PE-GRP3/1-J4
NTND95AA	CPU1-CNI-10D to 3PE-GRP4/1-J3
NTND95AA	CPU1-CNI-10F to 3PE-GRP4/1-J4

Figure 177
NTND33BD Group 3 and Group 4 cable paths



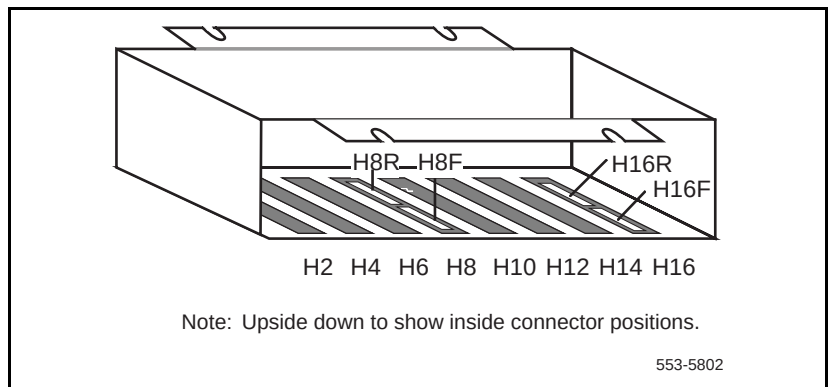
Assembling and mounting connector housings

- 1 For Group 0, assemble and mount the connector housing from the NTND33BB kit. Connect the cables listed in Table 144 to the inside of the connector housing (see Figure 178):
 - Attach the NT1R04AA and NTND95AA cables to the filter adapters on the housing. Secure the cables with the bail locks.
 - Attach the NT8D79AE cables to the filter adapters on the housing. With A0314862 screw lock kits and captive screws, secure the cables to the filter adapters on the housing.
 - Locate an available and accessible cover plate on top of the QCA55 cabinet closest to the junctor board.
 - Remove the connector housing cover and four screws. Keep the screws for reuse.
 - Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA55 cabinet, and mount the connector housing using the four retained screws.

Table 144**Group 0 cables to the inside of the connector housing**

Cable	Cable label	Position in housing
NT1R04AA	CPU0-CC-J3 to JCTR-J11	H2
NTND95AA	CPU0-CNI-8D to 3PE-GRP0/0-J3	H4
NTND95AA	CPU0-CNI-8F to 3PE-GRP0/0-J4	H6
NT1R04AA	CPU1-CC-J3 to JCTR-J12	H10
NTND95AA	CPU1-CNI-8D to 3PE-GRP0/1-J3	H12
NTND95AA	CPU1-CNI-8F to 3PE-GRP0/1-J4	H14
NT8D79AE	CPU0-CC-J1 to SEC PRI-J1	H8R
NT8D79AE	CPU0-CC-J2 to PRIM PRI-J1	H8F
NT8D79AE	CPU1-CC-J1 to SEC PRI-J2	H16R
NT8D79AE	CPU1-CC-J2 to PRIM PRI-J2	H16F

Note: The 8F and 16F locations are closest to the front of the connector housing, and the 8R and 16R locations are the locations in the center of the housing.

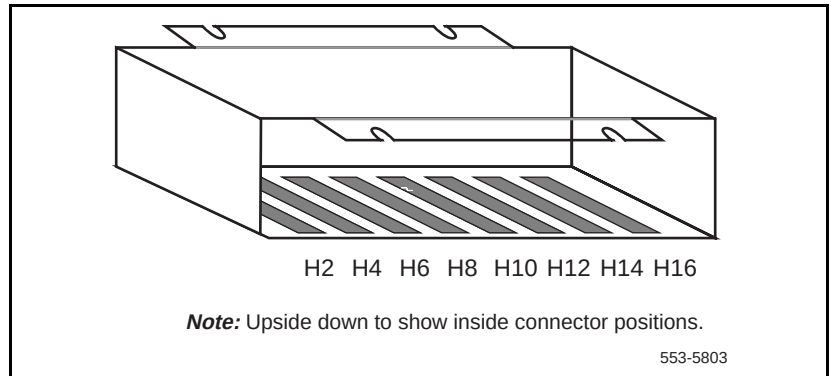
Figure 178**Group 0 connector housing positions—inside of housing**

- 2 For Group 1 and Group 2 (as equipped), assemble and mount the connector housing from the NTND33BC kit. Connect the cables listed in Table 145 to the inside of the connector housing and secure the cables with the bail locks (see Figure 179):
 - Locate an available and accessible cover plate on top of the QCA55 cabinet.
 - Remove the connector housing cover and four screws. Keep the screws for reuse.
 - Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA55 cabinet and mount the connector housing using the four retained screws.

Table 145
Group 1 and Group 2 cables to the inside of the connector housing

Cable	Cable label	Position in housing
NTND95AA	CPU0-CNI-9A to 3PE-GRP1/0-J3	H2
NTND95AA	CPU0-CNI-9C to 3PE-GRP1/0-J4	H4
NTND95AA	CPU0-CNI-9D to 3PE-GRP2/0-J3	H6
NTND95AA	CPU0-CNI-9F to 3PE-GRP2/0-J4	H8
NTND95AA	CPU1-CNI-9A to 3PE-GRP1/1-J3	H10
NTND95AA	CPU1-CNI-9C to 3PE-GRP1/1-J4	H12
NTND95AA	CPU1-CNI-9D to 3PE-GRP2/1-J3	H14
NTND95AA	CPU1-CNI-9F to 3PE-GRP2/1-J4	H16

Figure 179
Group 1 and Group 2 (or Group 3 and Group 4) connector housing positions—inside of housing



- 3** For Group 3 and Group 4 (as equipped), assemble and mount the connector housing from the NTND33BD kit. Connect the cables listed in Table 146 to the inside of the connector housing and secure the cables with the bail locks (refer to Figure 179):
- Locate an available and accessible cover plate on top of the QCA108 cabinet.
 - Remove the connector housing cover and four screws. Keep the screws for reuse.
 - Orient the connector housing so the strain relief bracket is toward the center of the cabinet. Route the cables through the access on the top of the QCA108 cabinet and mount the connector housing using the four retained screws.

Table 146
Group 3 and Group 4 cables to the inside of the connector housing

Cable	Cable label	Position in housing
NTND95AA	CPU0-CNI-10A to 3PE-GRP3/0-J3	H2
NTND95AA	CPU0-CNI-10C to 3PE-GRP3/0-J4	H4
NTND95AA	CPU0-CNI-10D to 3PE-GRP4/0-J3	H6
NTND95AA	CPU0-CNI-10F to 3PE-GRP4/0-J4	H8
NTND95AA	CPU1-CNI-10A to 3PE-GRP3/1-J3	H10
NTND95AA	CPU1-CNI-10C to 3PE-GRP3/1-J4	H12
NTND95AA	CPU1-CNI-10D to 3PE-GRP4/1-J3	H14
NTND95AA	CPU1-CNI-10F to 3PE-GRP4/1-J4	H16

Preparing the Core Module columns

- 1 Install the Core Module columns. Use the following procedures (as required for the system configuration) in *Meridian 1 system installation procedures* (553-3001-210).

Note 1: Instructions for connecting the XN/XT cabinets to the system monitor are provided in this document.

Note 2: Leave an SDI port and system terminal configured on a network shelf in the XN/XT.

Note 3: Instructions for cabling the Core Modules are provided in this document. Network loops should already be cabled in the XN/XT cabinets.

Note 4: Power-up procedures will be done after the Core Module cables are installed.

- Prepare equipment for installation.
- Place a fourth module on a column (if required).
- Position and level equipment.
- Install overhead cable tray kits (if required).
- Install the module power supply in each module.
- Make sure the system is disconnected from any power source:
 - Set the switch and breakers on all module power supplies or module power distribution units (MPDUs) to OFF.

- Insert the power supply and hook the locking devices.
- Install a CMDU in each Core Module.
- Install AC or DC power equipment. Refer to *Upgrade engineering* (553-3001-150) for ground wiring.
- Make changes at the MDF to accommodate equipment in the new columns and system monitor connections.
- Install PFTUs (if required).
- Configure the system monitor. Use the tables in *Meridian 1 system installation procedures* (553-3001-210) with the following exceptions:
 - For the master, set SW1 positions 1, 2, and 8 to ON.
 - For slaves, set SW1 positions 1 and 8 to ON.

Connect system monitor cables with the following exception in Core 0:

- Attach a P0369107 Filter Adapter to the inside of slot J11 on the right I/O panel.
 - Connect the narrow ribbon on the NT8D46AD cable from connector J2 to slot J11 on the right I/O panel.
 - Connect a terminal for the CPIO ports.
 - If IPE cards are added in the columns, cable the lines and trunks.
- 2** On the faceplates of the 3PE cards in the Core Modules do the following:
- Connect an NT8D80AZ cable from J4 in Core 0 to J4 in Core 1.
 - Connect another NT8D80AZ cable from J3 in Core 0 to J3 in Core 1.
- 3** In the rear of the Core Modules, remove the I/O panels.

Note: If only Group 0 and Group 1 are equipped, you do not need to remove the right I/O panel.

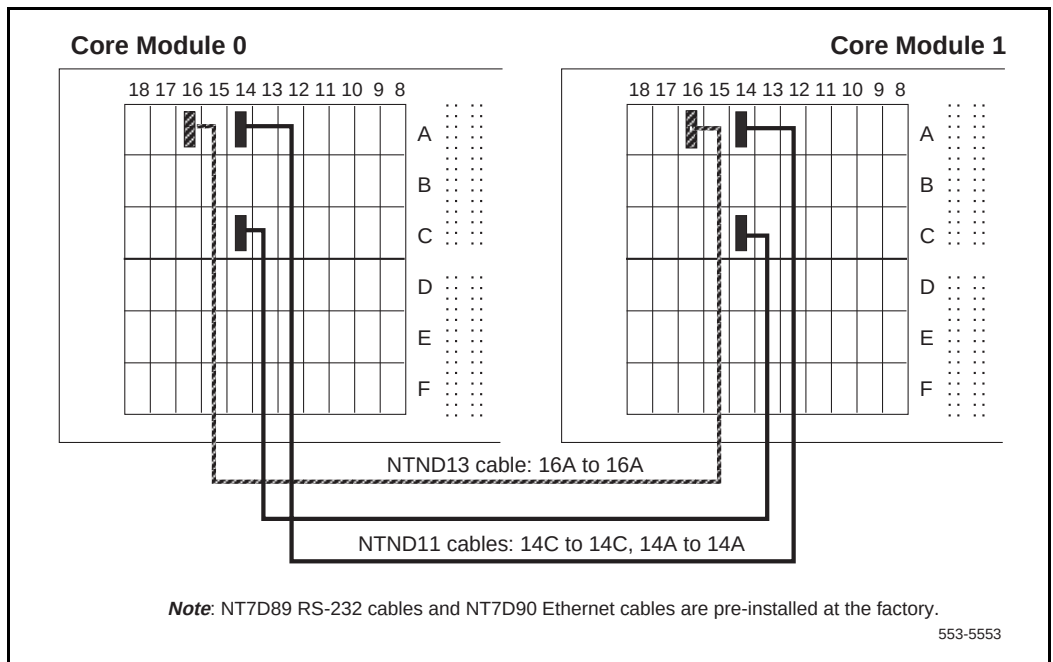
- Remove the eight screws that secure the I/O panels. Keep the screws for reuse.

Note: You must use the P0741489 Extraction Tool to disconnect cables from the connectors on the rear of the backplane.

- Using the extraction tool, temporarily disconnect the NT7D90 Ethernet and NT7D89 RS-232 cables from backplane connector positions 16F and 14D, respectively.
 - Remove the I/O panels but keep them on hand for immediate reuse.
- 4 In the rear of the Core Modules, install the following cables between Core 0 and Core 1 (see Figure 180).

Figure 180

NT6D60 Core Module (rear)—connections for NTND13 and NTND11 cables



Note: The following cables may already be connected in one of the modules. If so, leave them connected and attach the loose end.

- Connect the NTND13 IOP to IOP SCSI Cable from backplane connector position 16A in Core 0 to backplane connector position 16A in Core 1.
- Connect one NTND11 CP-to-CP Cable from backplane connector position 14C in Core 0 to backplane connector position 14C in Core 1.
- Connect another NTND11 cable from backplane connector position 14A in Core 0 to backplane connector position 14A in Core 1.

- 5 For Group 0, attach adapters and cables from the NTND33BB kit to the inside of the left I/O panel for each Core Module.
 - The inside of the I/O panel faces the backplane. The word LEFT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.
 - Mount an A0360683 50-pin adapter at slot J32, pin 1 to the top.
 - Mount an A0369106 9-pin filter adapter at slot J29, pin 1 to the bottom, using the A0314862 screw lock kit.
 - Mount an A0369106 9-pin filter adapter at slot J33, pin 1 to the bottom, using the A0314862 screw lock kit.
 - Connect the NTND94CA CNI cables to the inside of the I/O panels as listed in Table 147.

Table 147**Group 0 connections on the left I/O panel: NTND94CA cables**

Core 0 cable label	Core 1 cable label	I/O slot	Backplane connector
CPU0-CNI-8F to 3PE-GRP0/0-J4	CPU1-CNI-8F to 3PE-GRP0/1-J4	J27	8F
CPU0-CNI-8D to 3PE-GRP0/0-J3	CPU1-CNI-8D to 3PE-GRP0/1-J3	J26	8D

- Plug an NT1R04AA cable into the adapter on slot J32 and lock the cable in position:
 - In Core 0 the cable is labeled CPU0-CC-J3 to JCTR-J11.
 - In Core 1 the cable is labeled CPU1-CC-J3 to JCTR-J12.
- Attach an A0314862 screw lock kit to the filter adapter in slot J29. Plug an NT8D79AD cable into the adapter and secure it with the screws on the cable:
 - In Core 0 the cable is labeled CPU0-CC-J1 to SEC PRI-J1.

- In Core 1 the cable is labeled CPU1-CC-J1 to SEC PRI-J2.
 - Attach an A0314862 screw lock kit to the filter adapter in slot J33. Plug an NT8D79AD cable into the adapter and secure it with the screws on the cable:
 - In Core 0 the cable is labeled CPU0-CC-J2 to PRIM PRI-J1.
 - In Core 1 the cable is labeled CPU1-CC-J2 to PRIM PRI-J2.
- 6 For Group 1 (if equipped), connect the NTND94CA cables from the NTND33BC kit to the inside of the left I/O panel as listed in Table 148 for each Core Module.

Table 148
Group 1 connections on the left I/O panel: NTND94CA cables

Core 0 cable label	Core 1 cable label	I/O slot	Backplane connector
CPU0-CNI-9C to 3PE-GRP1/0-J4	CPU1-CNI-9C to 3PE-GRP1/1-J4	J23	9C
CPU0-CNI-9A to 3PE-GRP1/0-J3	CPU1-CNI-9A to 3PE-GRP1/1-J3	J22	9A

- 7 Install the left I/O panels in each Core Module and route the cables:
- Feed the cables from the I/O panel through the panel opening. Route the NT1R04AA and NT8D79AD cables to the left of the module. Route other cables to the right.
 - With the panel partly in place, reconnect the NT7D90 and NT7D89 cables to backplane connectors 16F and 14D, respectively.

Note: The Ethernet port is equipped for future use; it cannot currently be used. Attaching an external device to this port may cause service interruptions.

- Install the I/O panel with the eight retained screws.
- Route the following clock controller cables to the front of slot 6 (the cables will be connected to the clock controller cards later in the upgrade):
 - In both Core Modules: NT1R04AA cable

- In Core 0: NT8D79AD cable labeled CPU0-CC-J2 to PRIM PRI-J1 and NT8D79AD cable labeled CPU0-CC-J1 to SEC PRI-J1
 - In Core 1: NT8D79AD cable labeled CPU1-CC-J2 to PRIM PRI-J2 and NT8D79AD cable labeled CPU1-CC-J1 to SEC PRI-J2
- Connect the cables to the backplane connector positions indicated on the cable label (refer to Tables 147 and 148).

- 8** For Group 2, Group 3, and Group 4 (as equipped), attach adapters and cables from the NTND33BC and NTND33BD kits to the inside of the right I/O panel for each Core Module.

Note: The inside of the I/O panel faces the backplane. The word RIGHT faces the outside of the module. The slot numbers listed below match the designations on the outside of the panel.

- Permanently remove the cable restraint bracket on the inside of the I/O panel. Remove the pan-head screw and lift the bracket away from the lower edge of the J10 opening.
- Attach a filter adapter at slot J11.
- For all equipped groups, connect the NTND94CA cables to the I/O panel as listed in Table 149.
- Feed the cables from the I/O panel through the panel opening and secure the panel with the eight mounting screws.
- Connect the cables to the backplane connector positions indicated on the cable label and listed in Table 149.

- 9** To power up the Core Module columns, go to page 16-1 in *Meridian 1 system installation procedures* (553-3001-210). See the notes below for exceptions to the standard power-up procedure.

Note 1: If the clock controller cards were moved to the CPU shelves in the XN/XT, they will be moved to the Core Modules later in the upgrade.

Note 2: Set all faceplate switches to ENB except on the CNI cards. Make sure the CNI cards are set to DIS.

Note 3: After power-up, set the Norm/Maint switch to Maint in Core 1, then in Core 0.

Table 149**Group 2, 3, and 4 connections on the right I/O panel: NTND94CA cables**

Core 0 cable labels	Core 1 cable labels	I/O slot	Backplane connector
CPU0-CNI-9F to 3PE-GRP2/0-J4	CPU1-CNI-9F to 3PE-GRP2/1-J4	J1 (group 2)	9F (group 2)
CPU0-CNI-9D to 3PE-GRP2/0-J3	CPU1-CNI-9D to 3PE-GRP2/1-J3	J2 (group 2)	9D (group 2)
CPU0-CNI-10C to 3PE-GRP3/0-J4	CPU1-CNI-10C to 3PE-GRP3/1-J4	J5 (group 3)	10C (group 3)
CPU0-CNI-10A to 3PE-GRP3/0-J3	CPU1-CNI-10A to 3PE-GRP3/1-J3	J6 (group 3)	10A (group 3)
CPU0-CNI-10F to 3PE-GRP4/0-J4	CPU1-CNI-10F to 3PE-GRP4/1-J4	J9 (group 4)	10F (group 4)
CPU0-CNI-10D to 3PE-GRP4/0-J3	CPU1-CNI-10D to 3PE-GRP4/1-J3	J10 (group 4)	10D (group 4)

Connecting intercabinet cables

- 1 For Group 0, connect the intercabinet cables from the NTND33BB kit:
 - Mount and screw-lock the intercabinet cables listed in Table 150 to the Group 0 connector housing on the top of the QCA55 cabinet (see Figure 181). Using a screwdriver, you can access the rear screw locks through the access hole in the strain relief bracket.

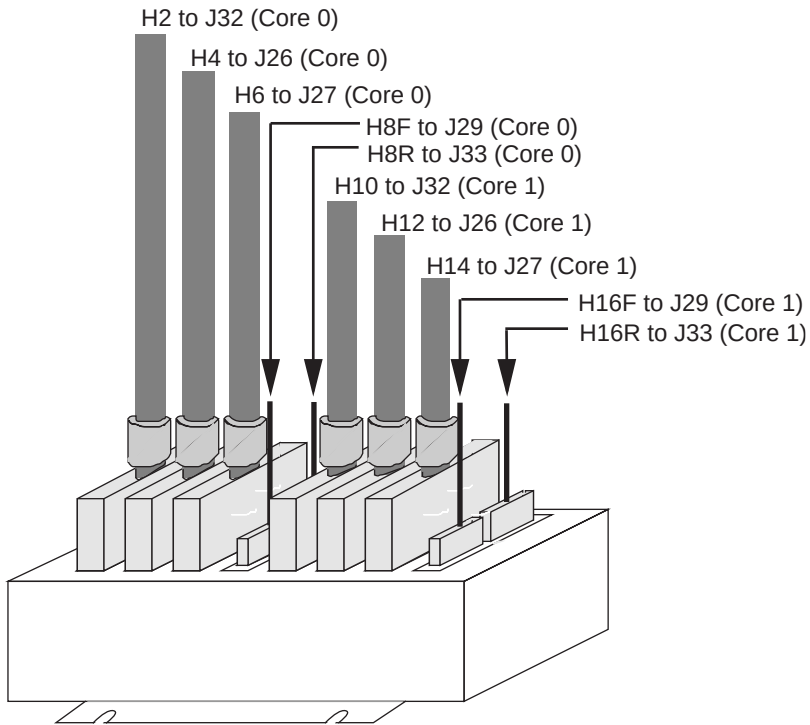
With one cable tie, secure the two cables from position H8 to the strain relief bracket. With another cable tie, secure the two cables from position H16 to the bracket. With one more cable tie, secure the remaining cables to the bracket.

 - Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the left I/O panels as listed in Table 150, and secure the cables with the screw-locks.

Table 150
Group 0 intercabinet cables

Cable	Cable label	Position on housing	I/O panel connector
NTND28BB	CPU0-CC-J3 to JCTR-J11	H2	Core 0—J32
NTND28BB	CPU0-CNI-8D to 3PE-GRP0/0-J3	H4	Core 0—J26
NTND28BB	CPU0-CNI-8F to 3PE-GRP0/0-J4	H6	Core 0—J27
NT1R05AA	CPU0-CC-J1 to SEC PRI-J1	H8	Core 0—J33
NT1R05AA	CPU0-CC-J2 to PRIM PRI-J1	H8	Core 0—J29
NTND28BB	CPU1-CC-J3 to JCTR-J12	H10	Core 1—J32
NTND28BB	CPU1-CNI-8D to 3PE-GRP0/1-J3	H12	Core 1—J26
NTND28BB	CPU1-CNI-8F to 3PE-GRP0/1-J4	H14	Core 1—J27
NT1R05AA	CPU1-CC-J1 to SEC PRI-J2	H16	Core 1—J33
NT1R05AA	CPU1-CC-J2 to PRIM PRI-J2	H16	Core 1—J29

Figure 181
Group 0 cables from the outside of the connector housing



Note: For clarity, the strain relief bracket is not shown in the illustration.

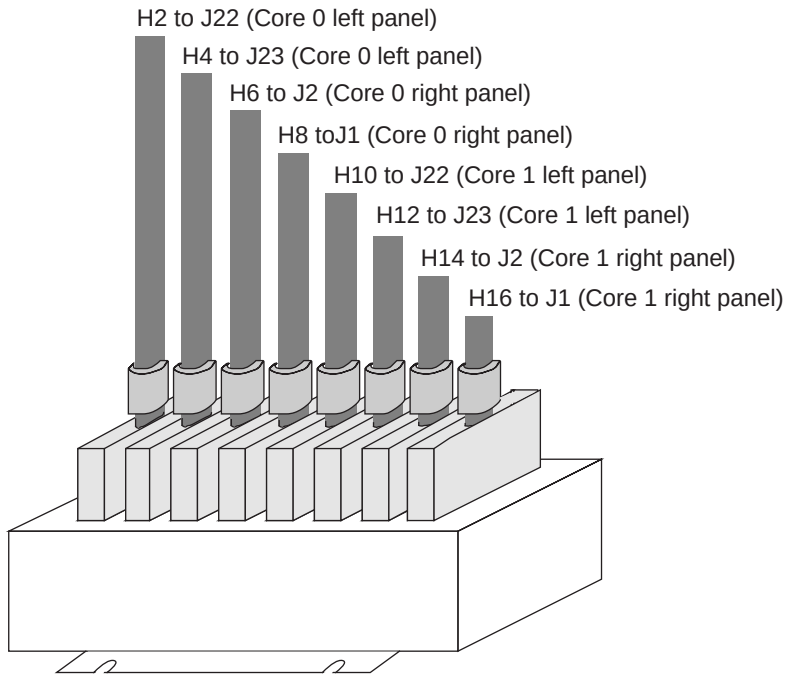
553-5590

- 2 For Group 1 and Group 2 (as equipped), connect the intercabinet cables from the NTND33BC kit:
 - Mount and screw-lock the intercabinet cables listed in Table 151 to the connector housing on the top of the QCA55 cabinet (see Figure 182).
 - Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the I/O panels, as listed in Table 151, and secure the cables with the screw-locks.

Table 151
Groups 1 and 2 intercabinet cables

Cable	Cable label	Position on housing	I/O panel connector
NTND28BC	CPU0-CNI-9A to 3PE-GRP1/0-J3	H2	Core 0—J22 (left panel)
NTND28BC	CPU0-CNI-9C to 3PE-GRP1/0-J4	H4	Core 0—J23 (left panel)
NTND28BC	CPU0-CNI-9D to 3PE-GRP2/0-J3	H6	Core 0—J2 (right panel)
NTND28BC	CPU0-CNI-9F to 3PE-GRP2/0-J4	H8	Core 0—J1 (right panel)
NTND28BC	CPU1-CNI-9A to 3PE-GRP1/1-J3	H10	Core 1—J22 (left panel)
NTND28BC	CPU1-CNI-9C to 3PE-GRP1/1-J4	H12	Core 1—J23 (left panel)
NTND28BC	CPU1-CNI-9D to 3PE-GRP2/1-J3	H14	Core 1—J2 (right panel)
NTND28BC	CPU1-CNI-9F to 3PE-GRP2/1-J4	H16	Core 1—J1 (right panel)

Figure 182
Groups 1 and 2 cables from the outside of the connector housing



Note: For clarity, the strain relief bracket is not shown in the illustration.

553-5591

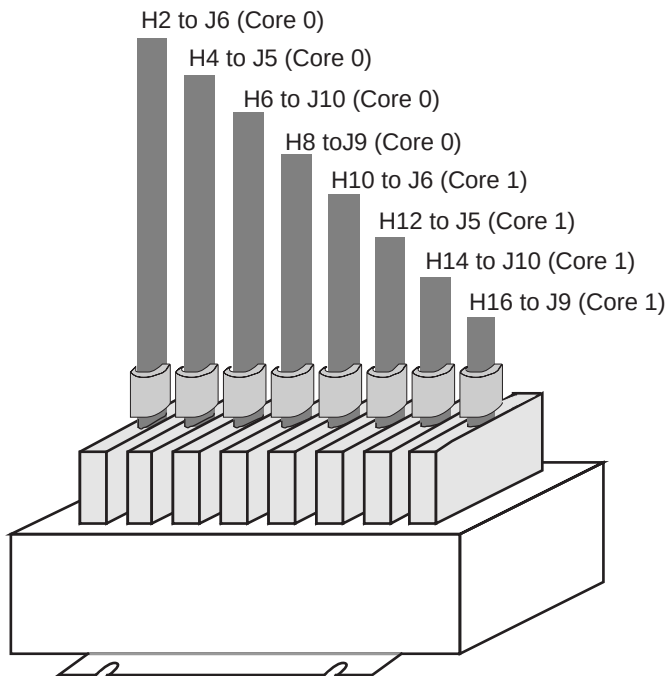
- 3 For Group 3 and Group 4 (as equipped), connect the intercabinet cables from the NTND33BD kit:
 - Mount and screw-lock the intercabinet cables listed in Table 152 to the connector housing on the top of the QCA108 cabinet (see Figure 183).
 - Route the cables along the overhead cable racks to the Core Modules. Connect the cables to the outside of the right I/O panels, as listed in Table 152, and secure the cables with the screw-locks.

Table 152
Group 3 and Group 4 intercabinet cables

Cable	Cable label	Position on housing	I/O panel connector
NTND28BC	CPU0-CNI-10A to 3PE-GRP3/0-J3	H2	Core 0—J6
NTND28BC	CPU0-CNI-10C to 3PE-GRP3/0-J4	H4	Core 0—J5
NTND28BC	CPU0-CNI-10D to 3PE-GRP4/0-J3	H6	Core 0—J10
NTND28BC	CPU0-CNI-10F to 3PE-GRP4/0-J4	H8	Core 0—J9
NTND28BC	CPU1-CNI-10A to 3PE-GRP3/1-J3	H10	Core 1—J6
NTND28BC	CPU1-CNI-10C to 3PE-GRP3/1-J4	H12	Core 1—J5
NTND28BC	CPU1-CNI-10D to 3PE-GRP4/1-J3	H14	Core 1—J10
NTND28BC	CPU1-CNI-10F to 3PE-GRP4/1-J4	H16	Core 1—J9

Note: Return to the option 81C upgrade procedures and resume with the next step.

Figure 183
Groups 3 and 4 cables from the outside of the connector housing



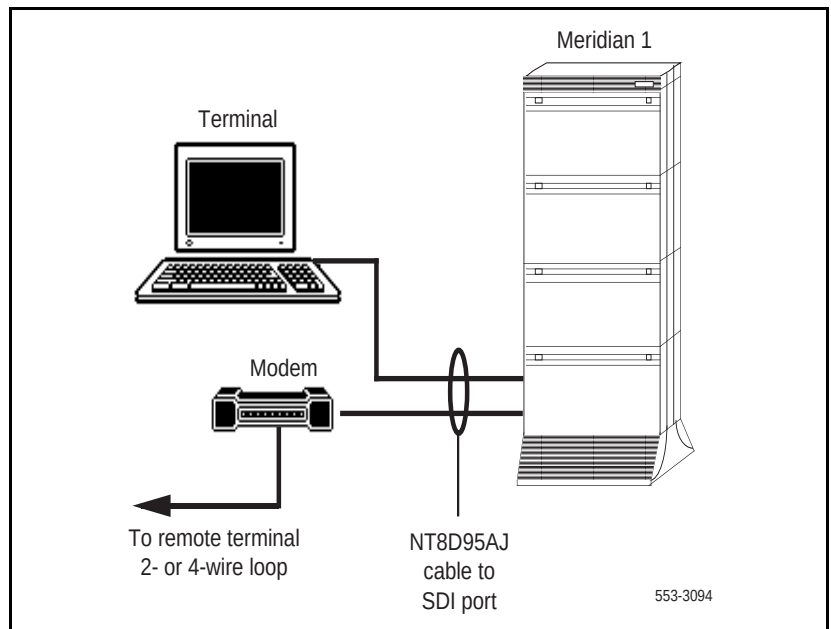
Note: For clarity, the strain relief bracket is not shown in the illustration.
All connections are to the right I/O panel.

553-5592

Terminal and modem connections

During the system upgrade, a terminal must be connected to a serial data interface (SDI) port to provide an I/O interface to the system. When the upgrade is complete, a terminal (for local access) or a modem (for remote access) must remain permanently connected to an SDI port to provide a constant I/O interface to the system (see Figure 184).

Figure 184
Terminal connection diagram



When upgrading a dual CPU system, you may want to temporarily install additional terminals for split mode monitoring, or programming, or both.

Note: In options 61 and 71, SDI cards can be temporarily installed in CPU slots during a software conversion. In options 51C, 61C, 81, and 81C, I/O ports on the call processing (CP) cards can be used to monitor CPU operations. These configurations should not be used as the permanent I/O connection for the system because the port is only active when the associated CPU, or CPU, is active.

For a modem connection to the Meridian 1, Bell 103/212 compatible dumb modems are recommended for all systems, except options 51C, 61C, 81, and 81C.

CAUTION

If a Hayes command-set compatible (smart) modem is used at the Meridian 1 end, you *must* select the dumb mode of operation, Command Recognition OFF and Command Echo OFF, before connecting the modem to the SDI port. Refer to the modem instructions to set the mode of operation.

If a printer is connected to an SDI port (locally or remotely), you must disable XON/XOFF flow control, so no characters or signals are sent to the port, to avoid a “ping-pong” effect.

Note: For information specific to options 51C, 61C, 81, and 81C, see “Options 51C, 61C, 81, and 81C terminal and modem connections” on page 934.

1 Install and cable a system terminal or a modem:

- Unpack the terminal/modem and place it in its assigned location.
- Install the terminal/modem according to the manufacturer’s instructions.
- Connect an NT8D95AJ cable to a matching connector on the terminal/modem.

Note: At a remote location, install and connect a compatible modem and terminal. Connect the NT8D95AJ cable to the modem.

2 Install and cable the SDI card:

- Set the Enb/Dis switch to Dis (down).
- See *Circuit card installation and testing* (553-3001-211) to set the option switches for each port.

See Figure 185 for switch locations on an NT8D41 SDI Paddle Board. (The paddle board cannot be used in options 71, 81, and 81C.)

See Figure 186 for switch locations on an NTND02 MSPS Card. (The MSPS card is used in option 21E only.)

- Insert the SDI card into its assigned slot.
- Cable the SDI card:

See Figure 187 to cable the NT8D41 SDI Paddle Board. (There is no faceplate on the paddle board; Figure 187 identifies the ports.)

See Figure 188 to cable an NTND02 MSPS Card.

See Figure 189 to cable a QPC841 Four-Port SDI Card.

- Set the Enb/Dis switch to Enb (up).

3 Software enable the SDI card:

- Define each SDI port in the Configuration Record (LD 17).
- Enable each SDI port using the appropriate software program for the port application. Typical SDI applications and associated programs include:

Terminal and printer ports LD 37

Call Detail Recording (CDR) ports LD 42

Automatic Call Distribution (ACD) ports LD 48

4 Connect an NT8D95AJ cable from the terminal, or modem, to the assigned SDI port.

Figure 185
Ports and switches on the NT8D41 SDI Paddle Board

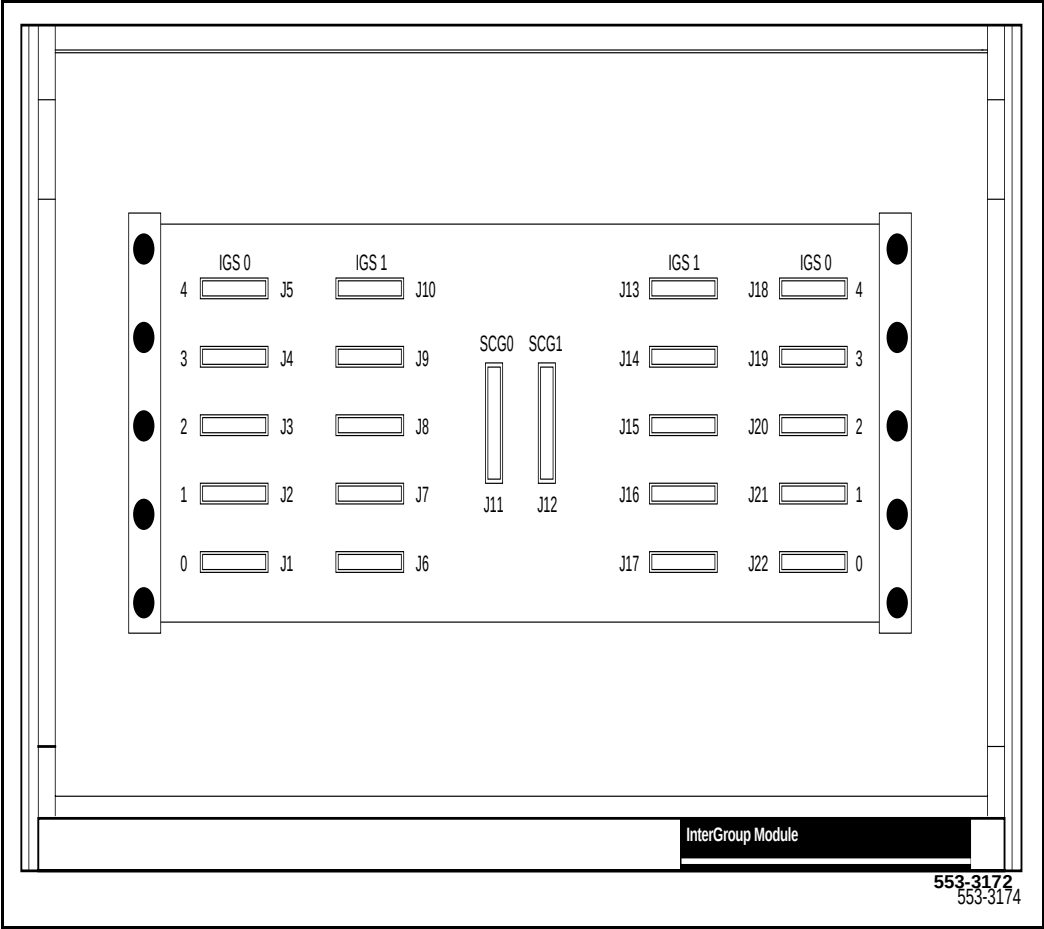


Figure 186
Switch locations on the NTND02 MSPS Card

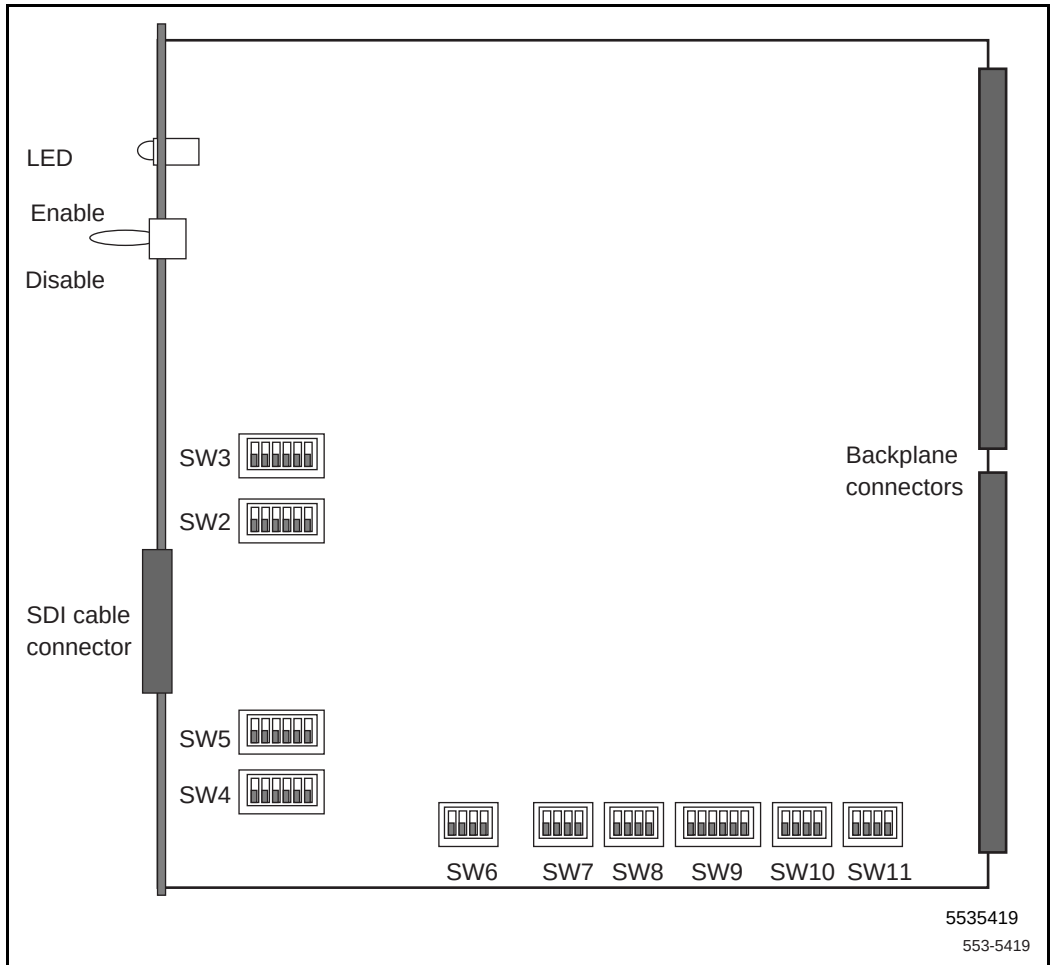


Figure 187
Cabling diagram for the NT8D41 SDI Paddle Board

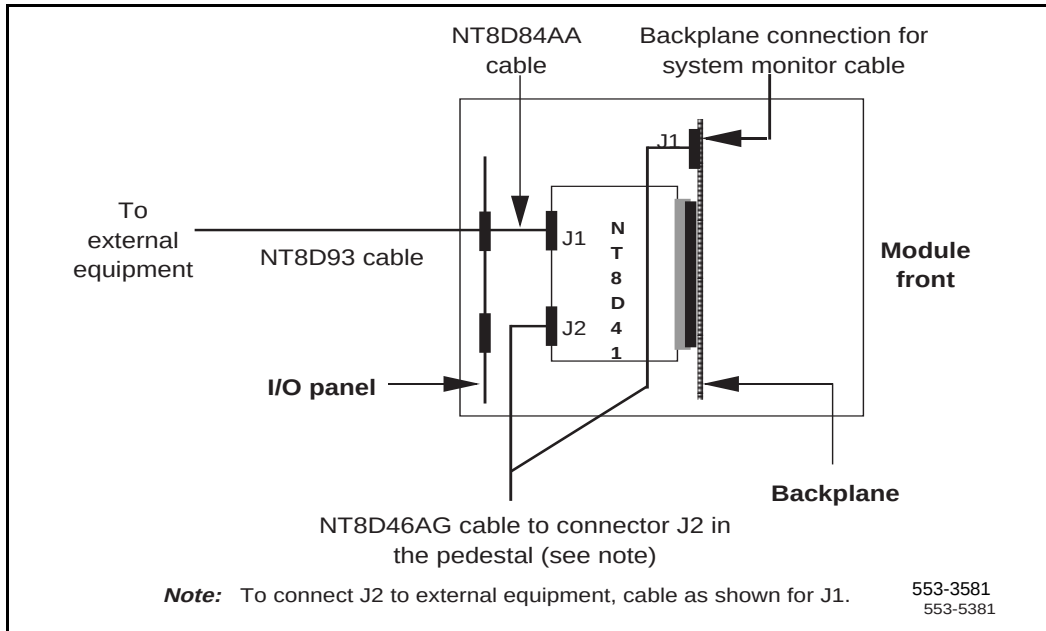


Figure 188
Cabling diagram for the NTND02 MSPS Card

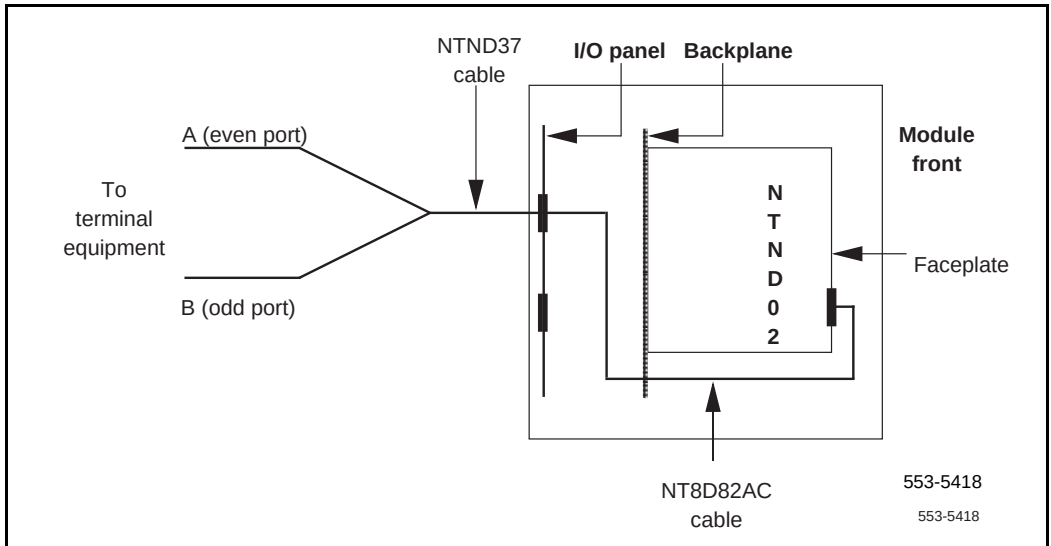
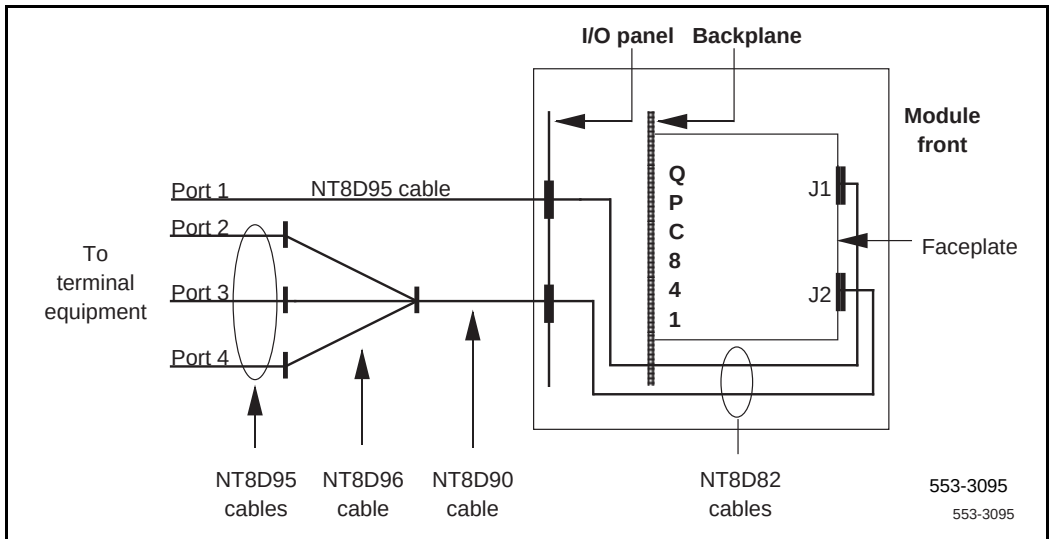


Figure 189
Cabling diagram for the QPC841 Four-Port SDI Card



Options 51C, 61C, 81, and 81C terminal and modem connections

During the system upgrade and for continuing system operation, a terminal must be connected to an SDI port in a network slot to provide an I/O interface to the active CPU in the system. In addition, a data terminal equipment (DTE) port and a data communication equipment (DCE) port on each NT6D66 or NT9D19 CP Card can be used for direct access to the Core or Core/Network Module that houses the card. The designations DTE and DCE refer to the function of the port, not the type of device that connects to the port. Therefore, a modem (which is DCE) connects to the DTE port at J21, and a terminal (which is DTE) connects to the DCE port at J25. Typically, the CPSI ports are preconfigured on I/O addresses four and five.

The CP card ports (CPSI ports) are active only when the CPU associated with the CP card is active. Therefore, the CPSI ports should not be used as the only I/O connection for the system.

When the upgrade is complete, you must leave a terminal or a modem connected to the system. One SDI port in a network slot must be permanently connected to a terminal or modem. On the CPSI ports you can

- disconnect the ports
- leave terminals connected for local monitoring
- connect modems for remote monitoring

The Black Box ABCDE-Switch, which provides up to four-to-one switching, is available from Northern Telecom as part number A0377992. The switch box can be used to connect the SDI and CPSI ports to a terminal or a modem. If used, one switch box must be used for terminals and one for modems.

Options 51C, 61C, 81, and 81C terminal guidelines

During an upgrade, you can connect terminals to the CPSI ports for split mode monitoring, or programming, or both. (Due to the speed of the system messages displayed, personal computers are useful for file capture and review.) Terminals connected to the CPSI ports can be installed as follows:

- one terminal connects to a CPSI port in one CPU (the cable is switched from module to module as needed); one terminal is required in addition to the terminal for the SDI port connection (see Figure 190)
- one terminal connects to a switch box that connects to a CPSI port in each CPU: one terminal and a switch box are required in addition to the terminal for the SDI port connection (see Figure 191)
- one terminal connects to a switch box that connects to an SDI port and to a CPSI port in each CPU: one terminal and a switch box are required (see Figure 192)

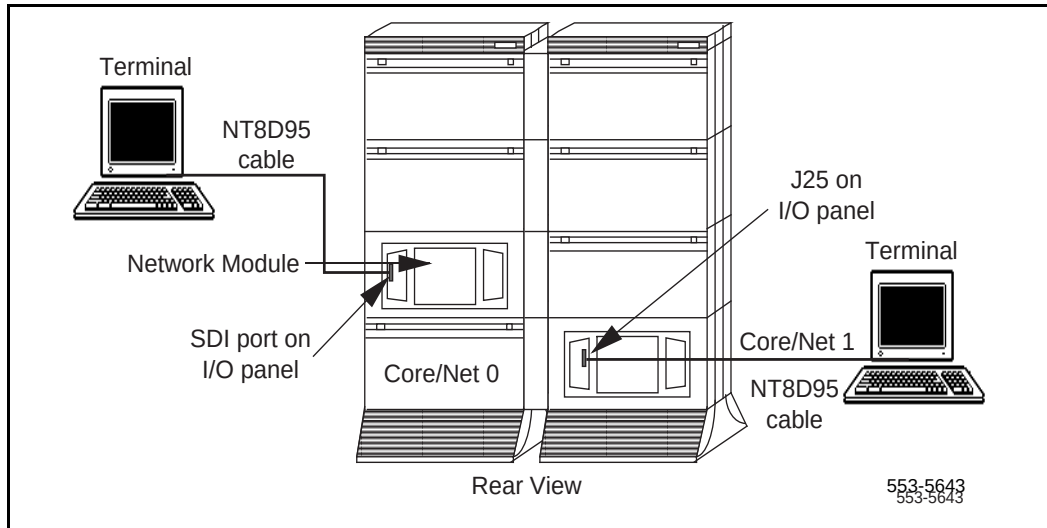
The Option 51C has only one CPU module and requires only one CPSI terminal connection and one SDI port connection. A single terminal with a switch box can be used.

Connecting a terminal to a CPSI port

Use the following procedure to connect a CPSI port directly (no switch box) to a terminal (see Figure 190):

- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- Connect an NT8D95 cable to a matching connector on the terminal.
- Connect the NT8D95 cable to J25 on the I/O panel in the rear of the Core or Core/Network Module.
- If you are using only one terminal for both CPSI ports, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

Figure 190
One terminal for the CPSI ports



Connecting a switch box and terminal to CPSI ports

Use the following procedure to connect CPSI ports to a switch box and a terminal (see Figure 191):

- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- Connect an NT8D95 cable to the terminal and to the switch box.
- Connect NT8D95 cables to a matching connector on the switch box.
If you are using an A0377992 ABCDE box, connect cables as follows:
 - Connect CPU 0 to connector A.
 - Connect CPU 1 to connector B.
- Connect the NT8D95 cables from the switch box to J25 on the I/O panel in the rear of the Core/Network Modules.
- To communicate directly with a CPSI port, switch the cable as needed. The terminal connected to the SDI port will always communicate with whichever CPU is active.

Figure 191

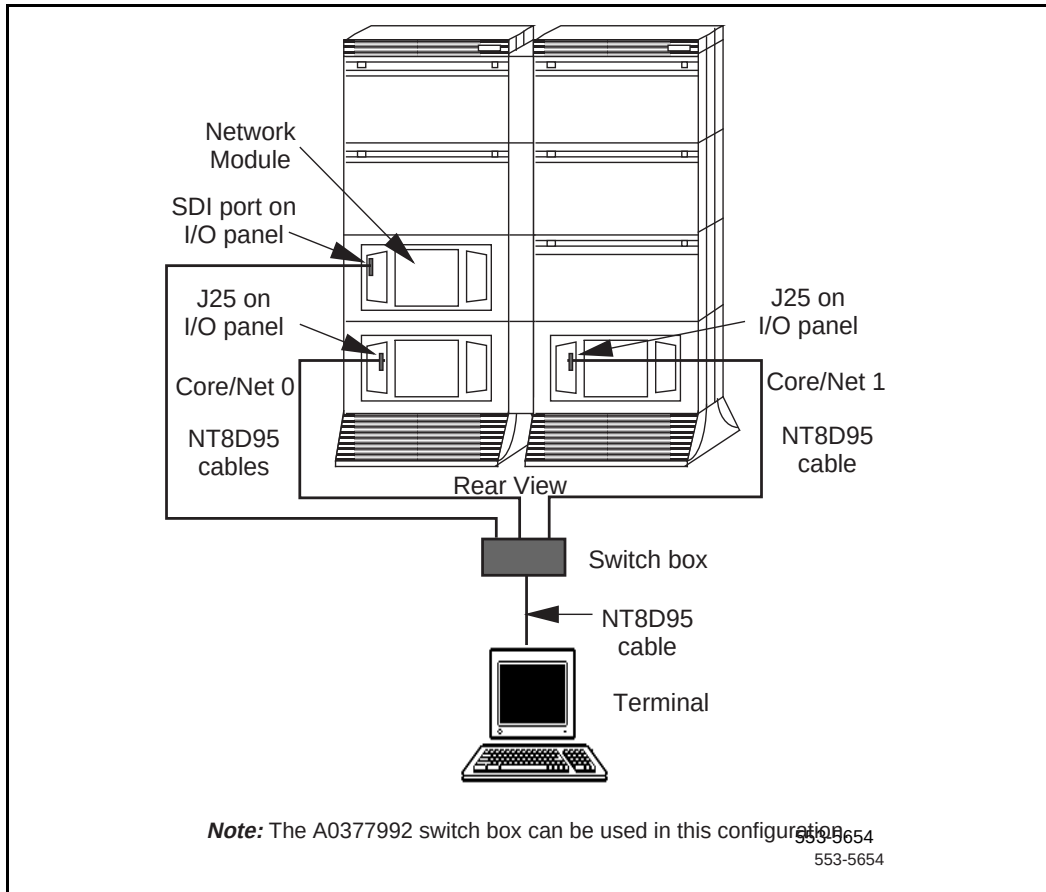


Connecting a switch box and terminal to the SDI and CPSI ports

Use the following procedure to connect CPSI ports to a switch box and a terminal (see Figures 191 and 192):

- Set the terminal to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.
- Connect an NT8D95 cable to the terminal and to the switch box.
- Connect NT8D95 cables to a matching connector on the switch box.
If you are using an A0377992 ABCDE box, connect cables as follows:
 - Connect CPU 0 to connector A.
 - Connect CPU 1 to connector B.
 - Connect the SDI port to connector D (connector C is common).
- Connect NT8D95 cables from the switch box to J25 on the I/O panel in the rear of each Core or Core/Network Module.
- Connect an NT8D95 cable from the switch box to the I/O panel slot for the SDI card.
- To communicate with the system in general, set the switch box to the SDI port. To communicate directly with a CPSI port, switch the cable as needed.

Figure 192
One terminal and a switch box to the SDI and CPSI ports



Options 51C, 61C, 81, and 81C modem guidelines

You can connect a modem to an SDI port to remotely monitor general system operation. Or you can connect a modem to the CPSI ports for debugging and patch downloading (through your Northern Telecom representative). Or you may want a remote connection to both the SDI and CPSI ports.

At the Meridian 1 end (the local end), modems must be set to dumb mode (command recognition OFF, command echo OFF). Modems at the local end can be connected as follows:

- one modem connects to the SDI port and the cable is switched to each CPSI port as needed (see Figure 193)
- one modem connects to a switch box that connects to the SDI and CPSI ports (see Figure 194)

Note: The second method listed here is preferred. Other configurations, such as a separate modem for each port, are possible.

At the remote end, at least one modem (which can be set to smart mode), one terminal, and one RS-232 cable are required in all modem configurations.

Modems at the local end must meet the following required specifications to be compatible with options 51C, 61C, 81, and 81C. Modems that meet the following recommended specifications must also meet the required specifications.

- *Required:* true, not buffered, 9600 baud support (required for remote Northern Telecom technical support)
- *Required:* CCITT V.32 or V.32bis compliance
- *Recommended:* the ability to adjust to lower and higher speeds, depending on line quality, while maintaining 9600 baud at local DTE
- *Recommended:* V.42 error correction
- *Recommended:* V.42 bis data compression

A dispatch or call back modem, normally connected to the SDI port, can be used if it meets the requirements. If you want to use a modem of this type that does not meet the requirements, the modem can only be used in addition to a modem that does meet specifications.

Any modem that meets the required specifications should be compatible with options 51C, 61C, 81, and 81C. The following models have been tested and verified as compatible:

- Hayes V-series ULTRA Smartmodem 9600
- UDS FastTalk V.32/42b
- US Robotics Courier HST Dual Standard V.32bis
- Motorola 28.8 Data/Fax

The UDS FastTalk modem is available through Northern Telecom as part number A0381391 and the Motorola 28.8 Data/Fax modem is available as part number A0638930. Each modem is equipped with a 6-ft power cord for a standard 110 V ac wall socket and a cable that connects to an RJ11C jack. (The A0377992 Black Box ABCDE-Switch can be used with the UDS FastTalk or Motorola 28.8 Data/Fax modem.)

Configuring an A0638930 Motorola 28.8 Data/Fax Modem

Use the following procedure to configure a Motorola 28.8 Data/Fax Model 3400 modem for operation with options 51C, 61C, 81, and 81C.

The modem can be configured:

- for local mode of operation
- for remote mode of operation

Note: After the modem is configured, power down of the modem will not result in loss of the configuration settings. However, by pushing the RESET button on the modem and holding it down until the “MR” light flashes 5 only, and by releasing the RESET button before the next 5 flashes start, will reset the modem to its factory default settings. It will then be necessary to reconfigure the modem to the settings required for operation with Meridian 1 systems.

Installation procedure

- 1 Unpack the modem and read the installation instructions included with the modem.
- 2 Position the modem in its designated space, install its power cord, and plug it into the power receptacle.
- 3 Connect a 25-pin RS-232 cable to the modem and to a terminal.

Local configuration procedure

- 1 Set the terminal with these parameters:
 - 9600 baud
 - 8 data bits
 - 1 stop bit
 - no parity
- 2 Install the communication utility program shipped with the modem or use an appropriate alternate communication utility program such as Procomm, Telix, SmartCom, Bitcom, or CrossTalk.

- 3 Enter the following command string in one line, followed by the carriage return <cr>:
`AT&F \Q0 &S1 S0=1 S7=60 S2=128 Q1 E0 &W &W1 <cr>`

After you press the carriage return <cr>, the modem will appear to have stopped functioning. This is normal.

- 4 Power off the modem and connect it to a Call Processor CPSI port in the Meridian 1 system. To do this:
 - Set the power switch to OFF.
 - Connect the NT8D95 cable between the modem and the J25 on the I/O panel at the rear of the Core/Network module.
 - Connect the modem to the telephone jack (RJ11) using the RJ11 telephone cord. If the cord is not supplied, use the NT8D46 cable.
 - Turn the power switch on the modem to ON.

The modem is now configured for local communication with the Meridian 1 system.

Remote configuration procedure

To configure a modem in the remote mode, connect the modem as described above in “Local configuration procedure” and proceed as follows:

- 1 To place the modem in the remote configuration mode:
 - Press and hold the RESET button until the “MR” light flashes 10 times. There is a 3 second pause before each set of five flashes are received. The “AA” lite comes on at the beginning of the last five flashes and remains on.
 - Do not release the RESET button until you receive all 10 flashes, the “MR”, and the “AA” lights are on. The modem is now placed in the remote mode.
- 2 Dial up the modem at 9600 bps.

Note: Dialing up the modem at a baud rate other than 9600 bps will result in configuration errors.

- 3 Enter five equal signs (= = = =) after you received the connection message.
- 4 Press carriage return <cr> after the PASSWORD prompt appears.
- 5 RC ESTABLISHED prompt will appear. Now you can enter the following commands, each followed by the carriage return <cr>:

AT\Q0	<cr>	Disable Computer Flow Control
AT&S1	<cr>	DSR on when ready to accept data
ATS0=1	<cr>	Answer on the first ring
ATS7=60	<cr>	How long to wait for carrier
ATS2=128	<cr>	Escape sequence character
AT*NT	<cr>	Turn AT command set OFF (very important)
ATQ1	<cr>	Response display OFF
AT&W	<cr>	Write to first profile
AT&W1	<cr>	Write to second profile
AT*RQ	<cr>	End remote configuration and save changes
- 6 The modem is now configured for remote communication with the Meridian 1 system.

Configuring an A0381391 UDS FastTalk modem

Use the following procedure to configure a UDS FastTalk modem for operation with options 51C, 61C, 81, and 81C.

Note: With the exception of the smart/dumb mode jumper setting, configuration changes to the modem are made through software. The modem must remain in smart mode (as shipped) until the software configuration is complete.

- ATE turn off local character echo
- ATSO=2 enable autoanswer on second ring
- ATDT set for tone dialing (default is pulse dialing)
- AT&W store changes in profile 0
- AT&Y use profile 0 at power up

- 1 Disconnect the power cord, RS-232 cable, and any other cables from the modem.
- 2 Remove the top cover on the modem:
 - Stand the unit on its side.
 - Using a medium-size flat screwdriver, lightly pry the four lock tabs off the locks (located on the bottom of the case) and pull the cover away from the modem as the locks release.
- 3 Set the modem to smart mode:
 - Locate the option jumper. The jumper is located just to the left of the speaker (when viewed from the front of the modem).
 - Place the jumper on the two pins farthest from the speaker.
- 4 Connect a 25-pin RS-232 cable to the modem and to a terminal.
- 5 Set the terminal with these parameters:
 - 9600 baud (no other speeds will work)
 - 8 data bits
 - 1 stop bit
 - no parity

Note: The modem will communicate at 9600 bps *only*; the terminal or computer must be set to 9600 bps also.

- 6 Enter the following commands to set compatible parameters. Follow each command with a carriage return (press the “Return” or “Enter” key):

AT&F	load active profile containing factory settings
ATV0	select normal mode, error control disabled
ATQ0	set serial port flow control
ATV3	form-of-response message = DTE
AT&D2	modem disconnects when DTR signal is lost
AT&S1	select DSR control
ATS0=1	answer after 1 ring
ATS2=128	escape character = ascii 128
ATS7=60	pause 1 second for carrier detection
ATQ1	

After you enter this last command (ATQ1), the modem no longer responds with “OK”. Enter the next command:

AT&W	store active profile

The modem should respond to every command (except the last two commands) with “OK”. If you do not get this response, turn the modem off and on and try again.

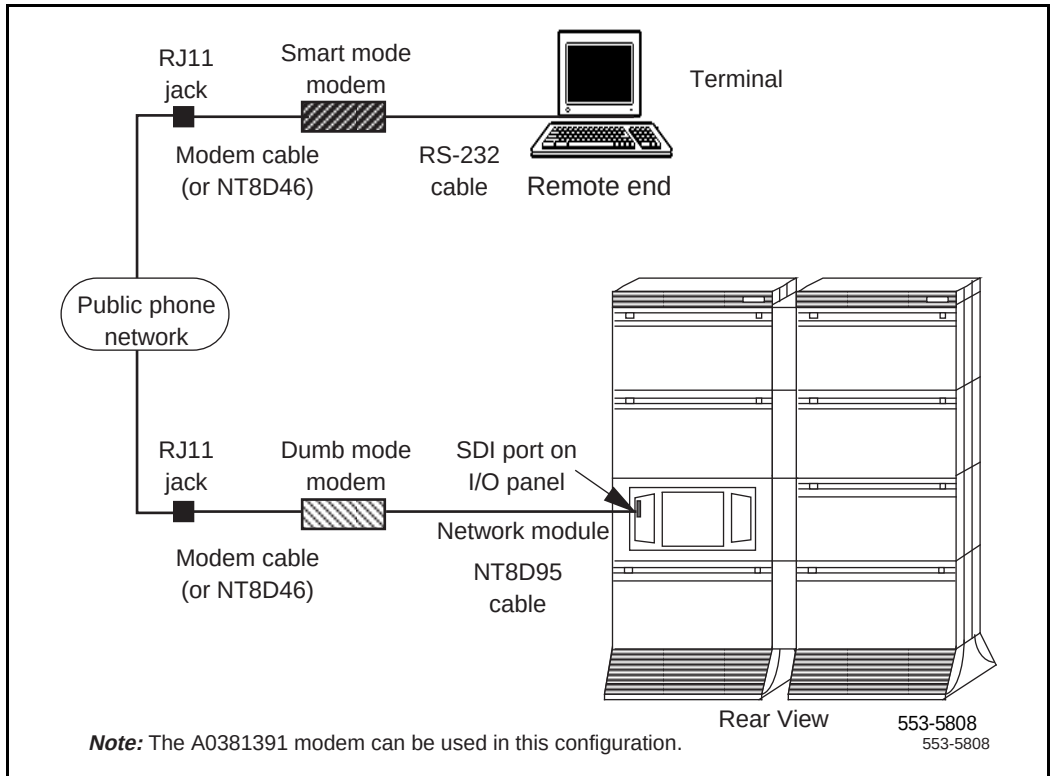
- 7 Disconnect the power cord and serial cable.
- 8 Set the modem to dumb mode:
- Locate the option jumper. The jumper is located just to the left of the speaker (when viewed from the front of the modem).
 - Place the jumper on the two pins closest to the speaker.
- 9 Replace the cover on the modem:
- Align the tabs, locks, and rear guide grooves.
 - Press the cover into place until the locks and the tabs snap together.
- 10 Reconnect the power cord and any other cables that will be used.

Connecting a modem to an SDI port

Use the following procedure to connect an SDI port directly (no switch box) to a modem (see Figure 193):

- At the remote end, connect an RS-232 cable to the terminal and to the modem.
- At the remote end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, configure the modem:
 - If you are using a Motorola 28.8 Data/Fax modem, follow the instructions in this document. (See “Configuring an A0638930 Motorola 28.8 Data/Fax Modem” on page 943.)
 - If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page 946.)
 - If you are using a different type of modem, follow the manufacturer’s instructions to set the modem for 9600 baud, auto answer, dumb mode, command recognition OFF, command echo OFF.
- At the local end, connect an NT8D95 cable to the SDI port on the I/O panel in the rear of the module and to the modem.
- At the local end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- To communicate with a CPSI port, switch the cable from the modem to the port as needed:
 - For debugging or monitoring, connect the cable to the *active* CPU at J21 on the I/O panel in the rear of the Core/Network Module.
 - For patch downloading, connect the cable to the *inactive* CPU at J21 on the I/O panel in the rear of the Core or Core/Network Module.

Figure 193
Modem to SDI port



Connecting a modem to a switch box and CPSI and SDI ports

Use the following procedure to connect SDI and CPSI ports to a switch box and a modem (see Figures 194 and 195):

- At the remote end, connect an RS-232 cable to the terminal and to the modem.
- At the remote end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, configure the modem:
 - If you are using a Motorola 28.8 Data/Fax modem, follow the instructions in this document. (See “Configuring an A0638930 Motorola 28.8 Data/Fax Modem” on page 943.)
 - If you are using an UDS FastTalk modem, follow the instructions in this document. (See “Configuring an A0381391 UDS FastTalk modem” on page -946.)
 - If you are using a different modem, follow the manufacturer’s instructions to set the modem for 9600 baud, autoanswer, dumb mode, command recognition OFF, command echo OFF.
- At the local end, connect NT8D95 cables to
 - J21 on the I/O panel in the rear of the Core or Core/Network Modules
 - the SDI port on the I/O panel in the rear of the Network module
- At the local end, connect NT8D84 cables to
 - the SDI Paddle Board at the Core/Network backplane to the I/O panel in the rear of the Core/Network Module.
- At the local end, connect NT8D95 cables from the I/O panels to a matching connector on the switch box.

If you are using an A0377992 ABCDE box, connect cables as follows:

- Connect CPU 0 to connector A.
- Connect CPU 1 to connector B.
- Connect the SDI port to connector D (connector C is common).

- At the local end, connect an NT8D95 cable from the switch box to the modem.
- At the local end, connect the cable from the modem to an RJ11 telephone jack. (If a cable is required, connect an NT8D46 cable to the modem and to the RJ11 jack.)
- At the local end, set the switch box as needed to communicate with the CPSI ports:
 - During normal operation, set the switch to the SDI port.
 - For debugging, set the switch to the *active* CPU.
 - For patch downloading, set the switch to the *inactive* CPU.

Figure 194

Modem to a switch box and SDI and CPSI ports (dual-column systems)

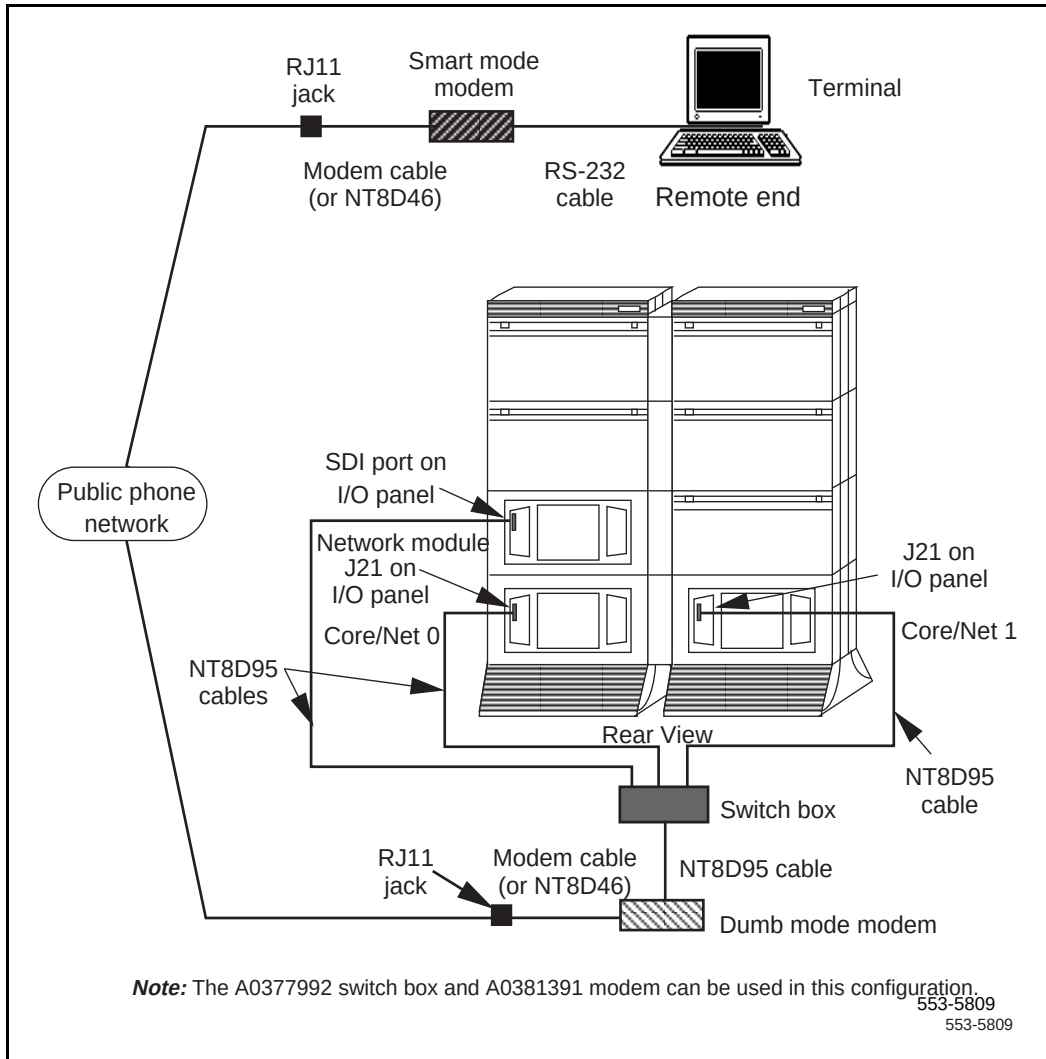


Figure 195
Modem to a switch box and SDI and CPSI ports (single-column systems)

Troubleshooting

This appendix contains procedures that you can perform if you experience trouble after upgrading a system to an option 51C, 61C, 81 or option 81C. Look up all messages displayed on the terminal in the *X11 input/output guide*. For further troubleshooting procedures for these and other systems, also refer to these documents:

- *Meridian 1 general maintenance information* (553-3001-500)
- *Meridian 1 fault clearing* (553-3001-510)

Troubleshooting procedures

Find the symptom listed below, and perform the appropriate corrective procedure.

- 1 If the NT5D20 IOP/CMDU or NT5D61 IODU/C card fails the self-test, do the following:
 - Replace the card with a spare IOP/CMDU or IODU/C card.
 - Look for bent pins on the backplane connectors.
 - Replace the card cage.
- 2 If the CP Card fails the self-test, do the following:
 - Replace the card with a spare CP card.
 - Look for bent pins on the backplane connectors.
 - Replace the card cage.

Note: Contact you Northern Telecom representative for card or card cage replacement information.

- 3 If “IOP Out of Service” appears on the CP card LCD, do the following:
 - Check the cable connections on the rear of the backplane. Make sure backplane connector positions are correct (and no connectors are in row B or E).
 - Look for bent pins on the backplane connectors.
 - Replace the IOP/CMDU or IODU/C card with a spare card and make sure it completes its power-up tests successfully. Reset the CP card to force it to rehunt the IOP or IOP/CMDU card.
 - If the CP card finds the IOP/CMDU or IODU/C card, the original IOP/CMDU or IODU/C card is defective.
 - If the CP card still fails to find the IOP/CMDU or IODU/C card, replace the card cage.
- 4 If the system points to file corruption (such as “Error in file diskos” type messages) while the software was loading, do the following:
 - Place the A1 disk (IOP/CMDU) or the Install Program disk (IODU/C) in the floppy drive and reload (sysload) the system. The system will boot from the floppy, which contains the operating system software, and invoke the installation program. When the program installs the software on the hard drive, file-level corruption problems should be eliminated.
 - If the failure persists, because of a hard drive failure for example, replace the IOP/CMDU or IODU/C card with a spare card and try to load the software.

Note: If the database conversion or the data dump failed, contact your Northern Telecom support representative.

Index

A

- A0377992 Black Box ABCDE-Switches
 - modem connections, 950
 - system terminal connections, 939
- A0377992 Black Box ABCD-Switches
 - system terminal connections, 934
- ACD (Automatic Call Distribution) ports, 929
- AC-powered system hardware requirements
 - option 51C systems
 - option 21 upgrades to, 45
 - option 21/21E card cage upgrades to, 74
 - option 21E upgrades to, 45
 - option 51 upgrades to, 110
 - SL-1 ST system upgrades to, 19
 - SL-1 STE system upgrades to, 19
 - option 61C systems
 - option 21/21E upgrades to, 230
 - option 51 upgrades to, 263
 - option 51C upgrades to, 319
 - option 61 upgrades to, 287
 - SL-1 NT system upgrades to, 201
 - SL-1 RT system upgrades to, 175
 - SL-1 ST system upgrades to, 144
 - SL-1 STE system upgrades to, 144
 - Option 81C systems
 - Option 61 upgrades to, 344
 - Option 61C upgrades to, 392, 447
 - Option 71 upgrades to, 478
 - Option 81 upgrades to, 548

B

- Bell 103/212 modems, 928

Black Box ABCDE-Switches

- modem connections, 950
- system terminal connections, 934, 939

C

- cable extraction tool
 - Option 61 to Option 81C upgrades, 11
- cables
 - installing SL-1 XN/XT system to Option 81C
 - Core module upgrades, 628
 - intercabinet, connecting, 920
 - labeling, 897, 899
- cables and cabling
 - system terminals, 928
- call back modems, 942
- card cage upgrades
 - option 21/21E to option 51C, 72
 - option 61 to option 61C, 290
 - Option 71 to Option 81C, 475
 - Option 81 to Option 81C, 545
- card cages
 - installing, 83, 114
 - removing, 83, 114
- cards, troubleshooting circuit, 955
- caution label positioning
 - option 21/21E to option 51C upgrades, 90
 - option 51 to option 51C upgrades, 121
 - option 61 to option 61C upgrades, 297
 - Option 61 to Option 81C upgrades, 373
 - Option 71 to Option 81C upgrades, 498
 - Option 81 to Option 81C upgrades, 565
- CDR (Call Detail Recording) ports, 929

CNI card configurations

- Option 61 to Option 81C, 364, 413
- Option 71 to Option 81C, 664
- Option 81 to Option 81C, 461

configurations, equipment

- option 51C systems
 - option 21/21E card cage upgrades to, 79
 - SL-1 ST system upgrades, 28
 - SL-1 STE system upgrades, 28
- option 61C systems
 - option 21/21E upgrades, 235
 - option 51 upgrades to, 268
 - SL-1 NT system upgrades to, 206
 - SL-1 RT system upgrades to, 180
 - SL-1 ST system upgrades to, 149
 - SL-1 STE system upgrades to, 149

Option 81C systems

- SL-1 XN/XT system Core module
 - upgrades to, 610, 611

Configuring an A0638930 Motorola 28.8 Data/Fax Modem, 943

connections

- CNI to 3PE (NTND14 cables), 377, 406, 426, 469, 532
- NT5D21 Core module/clock controller, 574, 599
- NT6D60 Core module backplane, 378, 407, 466, 469, 504, 572, 597
- NT6D60 Core module/clock controller, 507, 536
- NT8D46AD cable connections, 803

connector housing installation

- NTND33BB kit, 908
- P0696547 Connector Housing, 724
- P0702380 Connector Housing, 728
- P0703905/6 Connector Housing, 730
- P0703905/6 connector housing, 731
- P0704511 Connector Housing, 732
- P0704511 connector housing, 733
- SL-1 NT system to option 61C upgrades, 208
- SL-1 XN/XT system to Option 81C Core module upgrades, 636, 637
- SL-1 XN/XT system to Option 81C Core/Network Module upgrades, 719, 723

converting customer databases

conversion requirements

- option 51 to X11 release 21 upgrades, 16, 142, 338, 339, 340
- option 51C to option 61C upgrades, 142
- SL-1 NT system to option 61C upgrades, 141
- SL-1 RT system to X11 release 21 upgrades, 141
- SL-1 ST system to STE system upgrades, 14, 15, 140

failure in, 956

option 21/21E to option 51C (card cage) upgrades, 80

option 21/21E to option 51C upgrades, 50

option 21/21E to option 61C upgrades, 236

option 51 to option 61C upgrades, 269

XN/XT databases release 16 or lower to release 17 or higher

Core Module upgrades to Option 81C, 627

Core 0

installing for Option 81C, 366

Core module columns, preparing for cable installation, 913

Core/Net and Network module upgrade package, 897

Core/Network Module Upgrade Package, 686

Core/Network modules

- backplane connections
 - Option 61 to Option 81C upgrades, 10
- backplane jumper location/settings
 - option 21/21E to option 51C upgrades, 87
 - option 51 to option 51C upgrades, 118, 124
 - option 61 to option 61C upgrades, 294
 - Option 61 to Option 81C upgrades, 370
 - Option 61C to Option 81C upgrades, 421
- installation, 698
- RS-232 cable connections
 - option 21/21E to option 51C upgrades, 93
 - option 61 to option 61C upgrades, 309
 - Option 61C to Option 81C upgrades, 424
- CP (call processing) cards
 - system terminal connections, 928, 934
- CP card upgrade, 762, 773, 778, 790
- CPIO ports
 - modem connections, 941, 948, 950, 952, 953
 - system terminal connections, 934, 935, 937, 939
- CPU (central processing units)
 - splitting, 402
 - splitting on Option 61C, 455
- CPU (central processor units), upgrading, 523, 587
- CPU0-CNI-8D to 3PE-GRP0/0-J3 cable paths, 620
- CPU/Network modules
 - option 61C systems
 - backplane power connectors, 292
 - option 21/21E upgrades to, 235
 - SL-1 NT system upgrades to, 206
 - SL-1 ST system upgrades to, 149
 - SL-1 STE system upgrades to, 149
 - Option 81C systems
 - backplane power connectors, 368, 419

D

- data dumps, performing
 - failure in, 956
 - option 21/21E to option 51C (card cage) upgrades, 78
 - option 21/21E to option 51C upgrades, 49, 113
 - option 21/21E to option 61C upgrades, 236
 - option 51 to option 61C upgrades, 269
 - option 51C to option 61C upgrades, 326
 - Option 61 to Option 81C upgrades, 351
 - option 61 to X11 release 21 upgrades, 290
 - Option 61C to Option 81C upgrades, 402, 454
 - SL-1 NT system to option 61C upgrades, 207
 - SL-1 RT system to option 61C upgrades, 181
 - SL-1 ST system to option 51C upgrades, 23
 - SL-1 ST system to option 61C upgrades, 150
 - SL-1 STE system to option 51C upgrades, 23
 - SL-1 STE system to option 61C upgrades, 150
- database transfer, 29, 55, 95, 126, 158, 185, 213, 245, 272, 301, 355, 508, 656, 701
 - direct cabling method, 748
- Database Transfer Utility, 746
- DCE (data communication equipment), 934

DC-powered system hardware requirements

option 51C systems

- option 21 system upgrades to, 47
- option 21 upgrades to, 76
- option 21E system upgrades to, 47
- option 21E upgrades to, 76
- option 51 upgrades to, 110
- SL-1 ST system upgrades to, 21
- SL-1 STE system upgrades to, 21

option 61C systems

- option 21/21E upgrades to, 232
- option 51 upgrades to, 265
- option 51C upgrades to, 321
- option 61 upgrades to, 287
- SL-1 NT system upgrades to, 203
- SL-1 RT system upgrades to, 177
- SL-1 ST system upgrades to, 146

Option 81C systems

- Option 61 system upgrades to, 347, 614, 689
- Option 61C system upgrades to, 394, 449
- Option 71 upgrades to, 478
- Option 81 upgrades to, 548

dispatch modems, 942

DTE (data terminal equipment), 934

E

equipment required

- option 21/21E to option 51C (card cage), 72
- option 21/21E to option 51C upgrades, 43
- option 21/21E to option 61C upgrades, 229
- option 51 to option 51C upgrades, 110
- option 51 to option 61C upgrades, 261
- option 51C to option 61C upgrades, 317
- option 61 to option 61C upgrades, 287
- Option 61 to Option 81C upgrades, 344
- Option 61C to Option 81C upgrades, 391, 446
- Option 71 to Option 81C upgrades, 478
- Option 81 to Option 81C upgrades, 545
- SL-1 NT system to option 61C upgrades, 200
- SL-1 RT system to option 61C upgrades, 174
- SL-1 ST system to option 51C upgrades, 18
- SL-1 ST system to option 61C upgrades, 144
- SL-1 STE system to option 51C upgrades, 18
- SL-1 STE system to option 61C upgrades, 144

external cable installation

- option 21/21E to option 51C upgrades, 70
- option 21/21E to option 61C upgrades, 242
- option 51 to option 61C upgrades, 270
- SL-1 NT system to option 61C upgrades, 211
- SL-1 RT system to option 61C upgrades, 183
- SL-1 ST system to option 51C upgrades, 41
- SL-1 ST system to option 61C upgrades, 156
- SL-1 STE system to option 51C upgrades, 41
- SL-1 STE system to option 61C upgrades, 156
- SL-1 XN/XT system to Option 81C
Core/Network Module upgrades,
723

extraction tool positioning

- option 21/21E to option 51C upgrades, 90
- option 51 to option 51C upgrades, 121
- option 61 to option 61C upgrades, 297
- Option 61 to Option 81C upgrades, 373
- Option 71 to Option 81C upgrades, 498
- Option 81 to Option 81C upgrades, 565

F

four-port SDI card cabling, 933

G

- ground package P0677580 installation, 879
- ground package P0677587 installation, 882
- ground package P0677588 installation, 885
- grounding
 - option 21/21E to option 51C upgrades, 49
 - option 51 to option 61C upgrades, 267
 - SL-1 NT system to option 61C upgrades, 205
 - SL-1 RT system to option 61C upgrades, 179
 - SL-1 ST system to option 51C upgrades, 23
 - SL-1 ST system to option 61C upgrades, 148
 - SL-1 STE system to option 51C upgrades, 23
 - SL-1 STE system to option 61C upgrades, 148
- group 0 cables
 - assembling/mounting connector housings, 908
 - cable labels, 899
 - cable paths, 901
 - connector housing positions, 909, 922
 - intercabinet connections, 920
 - left I/O panel connections, 917
 - overview, 897
- group 1-2 cables
 - assembling/mounting connector housings, 910
 - cable labels, 902
 - cable paths, 904
 - connector housing positions, 910, 911, 923, 924
 - intercabinet connections, 923
 - left I/O panel connections (group 1), 918
 - overview, 897
 - right I/O panel connections (group 2), 920
- group 3-4 cables
 - assembling/mounting connector housings, 911
 - cable labels, 905
 - cable paths, 907
 - connector housing positions, 912, 925, 926
 - intercabinet connections, 925
 - overview, 897
 - right I/O panel connections, 920

H

- hardware
 - converting
 - option 21/21E to option 61C upgrades, 241
 - option 51 to option 61C upgrades, 269
 - SL-1 RT system to option 61C upgrades, 182
 - SL-1 ST system to option 51C upgrades, 38
 - SL-1 ST system to option 61C upgrades, 155
 - SL-1 STE system to option 51C upgrades, 38
 - SL-1 STE system to option 61C upgrades, 155
 - upgrading
 - option 21/21E to option 51C, 43
 - option 21/21E to option 51C (card cage), 72
 - option 21/21E to option 61C, 228
 - option 51 to option 61C, 261
 - option 51C to option 61C, 317
 - option 61 to option 61C, 286
 - SL-1 NT system to option 61C, 199
 - SL-1 RT system to option 61C, 173
 - SL-1 ST system to option 16C, 143
 - SL-1 ST system to option 51C, 17
 - SL-1 STE system to option 51C, 17
 - SL-1 STE system to option 61C, 143
- hardware installation
 - option 51C
 - option 21/21E upgrades to, 53
 - SL-1 ST/STE upgrades to, 27
 - option 61C
 - option 21/21E upgrades to, 234
 - option 51 upgrades to, 267
 - option 51C upgrades to, 325
 - option 61 upgrades to, 290
 - SL-1 NT upgrades to, 205
 - SL-1 RT upgrades to, 179
 - SL-1 ST upgrades to, 148
 - SL-1 STE upgrades to, 148

Hayes-compatible modems, 928

I

I/O panels

- IPE module connections, 383, 384, 432, 433
- system terminal connections, 927

IPE card cage

- installing, 379

IPE modules

- backplane cabling, 384, 433
- option 61C systems
 - option 21/21E upgrades to, 235
 - Option 51 upgrades, 268
 - SL-1 NT system upgrades to, 206
 - SL-1 RT system upgrades to, 180
 - SL-1 ST system upgrades to, 149
 - SL-1 STE system upgrades to, 149

L

labeling cables, 899

LD 17 program

- SDI ports, 929

LD 37 program

- printer ports, 929

LD 42 program, 929

LD 48 program, 929

M

modem connections

- Option 81C, upgrades to, 9

modems, 927

- cabling, 928
- connections, 928, 941, 948, 950, 952, 953
- Motorola 28.8 Data/Fax modem, 943
- system options 61C and 81, 934, 941
- USD FastTalk modem, 946

Motorola 28.8 Data/Fax modem, 943

MPDU (Module Power Distribution Unit) screw locations

- option 21 upgrades, 86
- option 51 upgrades, 117
- option 61 upgrades, 293
- Option 81C upgrades, 369, 420, 495, 560

MSPS cards

- cabling diagram, 933
- switches, 931

N

network cards, moving, 39, 68, 734, 738

network shelves

- shelf 0 NTND95AA cable connections to 3PE cards, 674
- shelf 1 NTND95AA cable connections to 3PE cards, 668

network-to-PE cabling

- cabling path, 720
- connector housing locations, 722
- installation, 719

NT5D10 and NT5D03 Call Processor card, 5

NT5D21 Core module

- backplane connections, 572, 597
- cable connections (rear panel)
 - Option 81 to Option 81C upgrades, 603
- clock controller card connections, 574, 599

NT5D21 Core/Network module

- cable connections
 - option 21/21E to option 51C upgrades, 93
 - option 51 to option 51C upgrades, 124
 - option 51C to option 61C upgrades, 331
 - option 61 to option 61C upgrades, 308, 309

NT6D60 Core module

- backplane connections, 378, 407, 466, 469, 504
- cable connections (rear panel)
 - Option 71 to Option 81C upgrades, 534
 - SL-1 XN/XT system to Option 81C Core module upgrades, 644
- clock controller card connections, 507, 536
- installing columns, 686
- NTND11/13 cable connections, 915

NT6D63 IOP Cards, troubleshooting, 955

NT6D66, 761

NT6D66 Call Processing Cards

- system terminal connections, 928, 934

NT6D66 CP Cards, troubleshooting, 955

-
- NT7D11 cables
 - connections to NT6D60 Core Module, 915
 - option 51C to option 61C upgrades, 331
 - Option 71 to Option 81C upgrades, 534
 - Option 81 to Option 81C upgrades, 603
 - SL-1 XN/XT system to Option 81C Core module upgrades, 644
 - NT7D13 cables
 - connections to NT6D60 Core Module, 915
 - option 51C to option 61C upgrades, 331
 - Option 71 to Option 81C upgrades, 534, 603
 - SL-1 XN/XT system to Option 81C Core module upgrades, 644
 - NT7D90 cables (Option 71 to Option 81C upgrades), 534, 603
 - NT8D35 Network Module (SL-1 XN/XT Core/Network module to Option 81C upgrades), 686
 - NT8D36 InterGroup Module (SL-1 XN/XT Core/Network module to Option 81C upgrades), 686
 - NT8D37 Intelligent Peripheral Equipment (SL-1 XN/XT Core/Network module to Option 81C upgrades), 686
 - NT8D37 IPE Modules
 - backplane cabling, 383, 384, 432, 433
 - NT8D41 SDI Paddle Boards
 - cabling diagram, 932
 - ports and switches, 930
 - NT8D46 cable, 948, 950
 - NT8D46AD cable connections, 803
 - NT8D46AT cable field wiring connections
 - ST system monitor configuration (configuration 5), 832
 - system monitor configuration (configuration 2), 816
 - NT8D84 cable, 950
 - NT8D95 cable
 - modem cabling, 948, 950
 - system terminal cabling, 935, 937, 939
 - NT8D95AJ cable, 928
 - NT9D19, 761
 - NTND02 MSPS Cards
 - cabling diagram, 933
 - switches, 931
 - NTND33Bx Cable Kits installation, 897
 - NTND33CB cables (Group 0)
 - cable paths, 629
 - connector bracket connections, 648
 - internal cabinet, 640
 - intracabinet, 647
 - labels, 628
 - NTND33CC cables
 - groups 1-2
 - cable labels, 630
 - cable paths, 632
 - connector bracket connections, 650
 - connector positions on connector bracket, 640
 - intercabinet, 649
 - internal cabinet, 641
 - groups 3-4
 - cable labels, 633
 - cable paths, 635
 - connector bracket connections, 652
 - connector housing positions, 911
 - connector positions on connector bracket, 640
 - intracabinet, 651
 - NTND33Cx cable kits, installing, 618
 - NTND94CA cables
 - group 0 left I/O panel connections, 917
 - group 1 left I/O panel connections, 918
 - groups 2/3/4 right I/O panel connections, 920
 - NTND95AA cables
 - network shelf 0 connections to 3PE cards, 674
 - network shelf 1 connections to 3PE cards, 668
- O**
- option 21 systems
 - upgrading to
 - option 51C, 43
 - option 51C (card cage), 72
 - option 61C, 228
-

- option 21E systems
 - upgrading to
 - option 51C, 43
 - option 51C (card cage), 72
 - option 61C, 228
- option 51 systems
 - upgrading to
 - option 61C, 261
- option 51C systems
 - completing the upgrade, 42
 - defining system software, 67
 - installing intermodule cables, 329
 - transferring call processing, 329
 - upgrading from
 - option 21/21E, 43
 - option 21/21E (card cage), 72
 - SL-1 ST systems, 17
 - SL-1 STE systems, 17
 - upgrading to
 - option 61C systems, 317
- option 61
 - system terminals, 928
- option 61 systems
 - upgrading to
 - option 61C, 286
- option 61C
 - modems, 941
 - system terminals, 934
- Option 61C systems
 - splitting the CPUs, 455
 - upgrading to
 - Option 81C systems, 341, 442
- option 61C systems
 - upgrading from
 - option 21/21E, 228
 - option 51, 261
 - option 51C, 317
 - option 61, 286
 - SL-1 NT systems, 199
 - SL-1 RT systems, 173
 - SL-1 ST systems, 143
 - SL-1 STE systems, 143

- option 71
 - system terminals, 928
- Option 71 systems, upgrading
 - to Option 81C (card cage), 475
- option 81
 - modems, 941
 - system terminals, 928, 934
- option 81 systems
 - installing NTND33Bx Cable Kits, 897
- Option 81 systems, upgrading
 - to Option 81C (card cage), 545
- Option 81C systems
 - installing new modules, 452
 - upgrading, 337, 545
 - SL-1 XN/XT Core/Network modules to, 686
 - upgrading from
 - Option 61 systems, 341
 - Option 61C systems, 442
 - Option 61C systems with NT5D21 card cage, 442
 - Option 61C systems with NT9D11 card card, 390
 - Option 71 systems, 475
 - Option 81 systems, 545
 - SL-1 XN/XT Core modules, 608
- option switches
 - QPC441F 3PE Card
 - option 21/21E to option 51C upgrades, 91
 - option 51 to option 51C upgrades, 122
 - option 61 to option 61C upgrades, 299
 - Option 61 to Option 81C upgrades, 374
 - Option 61C to Option 81C upgrades, 427, 501, 567, 699
 - QPC471 Clock Controller Card
 - option 21/21E to option 51C upgrades, 92
 - option 51 to option 51C upgrades, 123

P

- P0696547 Connector Housing, mounting, 724
- P0702380 Connector Housing, mounting, 728
- P0703905/6 Connector Housing, mounting, 730
- P0703905/6 connector housing, mounting, 731

P0704511 Connector Housing, mounting, 732
 P0704511 connector housing, mounting, 733
 P0738866 Label Kits, 897
 paddle boards
 cabling diagram, 932
 ports and switches, 930
 peripheral equipment cards, moving, 70
 Phase 7, 758
 Phase 8, 745, 746, 748
 ping-pong effect, 928
 power
 upgrade preparation
 option 21/21E to option 51C upgrades, 49
 option 21/21E to option 61C upgrades, 234
 option 51 to option 61C upgrades, 267
 SL-1 NT system to option 61C upgrades, 205
 SL-1 RT system to option 61C upgrades, 179
 SL-1 ST system to option 51C upgrades, 23
 SL-1 ST system to option 61C upgrades, 148
 SL-1 STE system to option 51C upgrades, 23
 SL-1 STE system to option 61C upgrades, 148
 power connections
 Core module backplane
 option 61 to option 61C upgrades, 296
 Option 71 to Option 81C upgrades, 497
 Option 81 to Option 81C upgrades, 563
 Core/Network module, 372
 CPU module backplane
 Option 71 to Option 81C upgrades, 494
 Power Monitor connections, QCA55 cabinet, 679
 printers
 port software enable, 929
 SDI port connections, 928

Q

QCA136 cabinet system monitor configurations
 ST systems with CE/PE modules, 813
 ST systems with PE modules, 809
 ST systems with QCA137 cabinets and CE/PE modules, 829
 ST systems with QCA137 cabinets and PE modules, 824
 QCA137 cabinet system monitor configurations
 RT systems with QCA147 cabinets and CE/PE modules, 853
 RT systems with QCA147 cabinets and PE modules, 847
 RT systems with two cabinets and CE/PE modules, 860
 RT systems with two QCA137s, QCA147 cabinet and PE modules, 865
 ST systems with QCA136 cabinets and CE/PE modules, 829
 ST systems with QCA136 cabinets and PE modules, 824
 ST/RT systems with CE/PE modules, 820
 QCA147 cabinet system monitor configurations
 RT systems with PE modules, 838
 RT systems with QCA137 cabinets and CE/PE modules, 853
 RT systems with QCA137 cabinets and PE modules, 847
 RT systems with two QCA137 cabinets and CE/PE modules, 871
 RT systems with two QCA137 cabinets and PE modules, 865
 QCA60-type cabinets
 system monitoring in, 799
 QPC84 Power Monitors
 common equipment, 801
 connecting system monitors to
 NT/XT systems
 CE in cabinet, 799
 CE in column, 804
 common equipment connections, 805

QPC173 Power Monitors

- common equipment, 802
- connecting system monitors to
NT/XT systems, 799

QPC441F 3PE Card option switch settings

- option 21/21E to option 51C upgrades, 91
- option 51 to option 51C upgrades, 122
- option 61 to option 61C upgrades, 299
- Option 61 to Option 81C upgrades, 374
- Option 61C to Option 81C upgrades, 427, 501,
567, 699

QPC471 Clock Controller Card option switch
settings

- option 21/21E to option 51C upgrades, 92
- option 51 to option 51C upgrades, 123

QPC841 Four-Port SDI Card cabling diagram, 933

R

RS-232 cable

- modem cabling, 948, 950

S

SDI (serial data interface) ports

- cabling diagram, 933
- modem connections, 941, 948, 950, 952, 953
- software enable, 929
- system terminal connections, 927, 929

SDI filter adapter connections

- dual column installations, 680
- single column installations, 681

SDI port connections

- QCA55 cabinet, 679

self-test failures, troubleshooting, 955

SL-1 NT systems

- system monitoring in, 799
- upgrading
to option 61C, 199

SL-1 RT systems

- system monitoring in, 806
 - QCA137 and CE/PE module
configurations, 820
 - QCA137/147 cabinet and CE/PE module
configurations, 853
 - QCA137/147 cabinet and PE module
configurations, 847
 - QCA147 cabinet and CE/PE module
configurations, 842
 - QCA147 cabinet and PE module
configurations, 838
 - QCA147 cabinet, two QCA137s and
CE/PE module configurations,
871
 - QCA147 cabinet, two QCA137s and PE
module configurations, 865
 - two QCA137 cabinet and CE/PE module
configurations, 860
- upgrading
to option 61C, 173

SL-1 ST systems

- system monitoring in, 806
 - QCA136 cabinet and CE/PE module
configurations, 813
 - QCA136 cabinet and PE module
configurations, 809
 - QCA136/7 cabinets and CE/PE modules,
829
 - QCA136/7 cabinets and PE module
configurations, 824
- upgrading
to option 51C, 17
to option 61C, 143

SL-1 STE systems

- upgrading to
 - option 51C, 17
 - option 61C, 143

SL-1 XN systems, upgrading

- to Option 81C (Core module), 608
- to Option 81C (Core/Network modules), 686

-
- SL-1 XT systems
 - system monitoring in, 799
 - upgrading
 - to Option 81C (Core module), 608
 - to Option 81C (Core/Network modules), 686
 - smart modems, 928
 - split mode monitoring, 928, 935
 - SW1 system monitor switch settings, 797
 - switch boxes
 - modem connections, 950, 952, 953
 - system terminal connections, 937, 939
 - system monitor connections
 - dual column installations, 680, 682
 - MDF cross-connections, 684
 - NT/XT systems/QCA60-type cabinets, 799
 - RT systems
 - with QCA137/147 cabinets and CE/PE modules, 854
 - with QCA137/147 cabinets and PE modules, 848
 - with QCA147 cabinet, two QCA137s and CE/PE module, 872
 - with QCA147 cabinet, two QCA137s and PE module, 866
 - with QCA147 cabinets and CE/PE modules, 842
 - with two QCA137 cabinets and CE/PE modules, 861
 - single column installations
 - SL-1 XN/XT system to Option 81C Core module upgrades, 681, 683
 - ST systems
 - with QCA136 and CE/PE modules, 814
 - with QCA136 cabinet and PE modules, 810
 - with QCA136/7 cabinets and CE/PE modules, 830
 - with QCA136/7 cabinets and PE modules, 825
 - with QCA147 cabinets and PE modules, 839
 - ST/RT systems with QCA137 cabinet and CE/PE modules, 821
-

system monitor upgrade installation, 797

 fault clearing

 RT systems (configuration 6), 840

 RT systems (configuration 7), 845

 RT systems (configuration 8), 849

 RT systems (configuration 9), 857

 RT systems (configuration 10), 863

 RT systems (configuration 11), 868

 RT systems (configuration 12), 875

 ST systems (configuration 1), 811

 ST systems (configuration 2), 817

 ST systems (configuration 4), 826

 ST systems (configuration 5), 835

 ST/RT systems (configuration 3), 822

 hardware installation

 RT systems

 with QCA137/147 and
 CE/PE modules, 853

 with QCA137/147 cabinets
 and PE modules, 847

 with QCA147 cabinets and
 CE/PE modules, 842

 with QCA147, two
 QCA137s and
 CE/PE modules, 871

 with QCA147, two
 QCA137s and PE
 modules, 865

 with two QCA137 cabinets
 and CE/PE
 modules, 860

 ST systems

 with QCA136 and CE/PE
 modules, 813

 with QCA136 and PE
 modules, 809

 with QCA136/7 cabinets
 and CE/PE

 modules, 829

 with QCA136/7 cabinets
 and PE modules, 824

 with QCA147 cabinets and
 PE modules, 838

 ST/RT systems with QCA137 and CE/PE
 modules, 820

 NT/XT systems/QCA60-type cabinets, 799

 RT/ST systems, 806

system terminals

 cabling, 928

 connections, 927

 CPIO port connections, 934, 935, 937, 939

 system options 61C and 81, 934

T

terminal connections

 Option 81C, upgrades to, 9

testing

 option 61 to option 61C upgrades, 315

 Option 61C to Option 81C upgrades, 438, 472

 SL-1 XN/XT system to Option 81C

 Core/Network Module upgrades,
 743

transferring call processing

 to Core 1, 669

 to CPU 0, 653

 to Option 81C, 734

troubleshooting procedures, 955

U

upgrade preparation

- option 21/21E to option 51C (card cage) upgrades, 78
- option 21/21E to option 51C upgrades, 49
- option 21/21E to option 61C upgrades, 234
- option 51 to option 51C upgrades, 112
- option 51 to option 61C upgrades, 267
- option 51C to option 61C upgrades, 324
- option 61 to option 61C upgrades, 288
- Option 61 to Option 81C upgrades, 350
- Option 61C to Option 81C, 396, 451
- Option 71 to Option 81C card cage upgrades, 480
- Option 81 to Option 81C card cage upgrades, 549
- SL-1 NT system to option 61C upgrades, 205
- SL-1 RT system to option 61C upgrades, 179
- SL-1 ST system to option 51C upgrades, 23
- SL-1 ST system to option 61C upgrades, 148
- SL-1 STE system to option 51C upgrades, 23
- SL-1 STE system to option 61C upgrades, 148
- SL-1 XN/XT system Core/Network Module to Option 81C upgrades, 694, 696
- SL-1 XN/XT to Option 81C Core module upgrades, 621

upgrading

- CPU (central processor units)
 - Option 71 to Option 81C upgrades, 523
 - Option 81 to Option 81C upgrades, 587
 - SL-1 XN/XT systems to Option 81C Core module upgrades, 671

hardware

- SL-1 ST system to option 61C, 143
- SL-1 STE system to option 61C, 143

software

- option 21/21E to option 51C, 43
- option 21/21E to option 51C (card cage), 72
- option 21/21E to option 61C, 228
- option 51 to option 61C, 261
- SL-1 NT systems to option 61C, 199
- SL-1 RT system to option 61C, 173
- SL-1 ST system to option 51C, 17
- SL-1 ST system to option 61C, 143
- SL-1 STE system to option 51C, 17
- SL-1 STE system to option 61C, 143

system monitors, 797

upgrading preparation

- SL-1 XN/XT to Option 81C Core module upgrades, 617

USD FastTalk modem, 946

V

V.42 modem standard, 941

X

X11 release 17

database conversion requirements

- option 51 to X11 release 21 upgrades, 16
- SL-1 ST system to STE system upgrades, 14, 15

X11 release 18

database conversion requirements

SL-1 NT system to option 61C upgrades,
141, 142

SL-1 RT system to X11 release 24
upgrades, 141

SL-1 ST system to STE system upgrades,
140

X11 release 19

database conversion requirements

SL-1 NT system to option 61C upgrades,
142

SL-1 RT system to X11 release 24
upgrades, 141

SL-1 ST system to STE system upgrades,
140

X11 release 20

database conversion requirements

option 51C to option 61C upgrades, 142

SL-1 RT system to X11 release 24
upgrades, 141

X11 release 21

database conversion requirements

SL-1 RT system to X11 release 24
upgrades, 140

XON/XOFF flow control, 928

Meridian 1

Upgrade system installation to X11 release 24

Upgrading to Meridian 1 system
options

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Publication number: 553-3001-258

Document release: Standard 4.00

Date: June 1999

Printed in the United States of America

