AVAYA communication

DEFINITY® Communications System Generic 3i (G3i)

Upgrades and Additions
Volume 1

555-230-108
Issue 1
Comcode 107737421
March 1996

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About This Document

This book provides procedures and information for upgrading and updating an assortment of existing systems to a DEFINITY® Generic 3 Version 4 system. This book also contains instructions for adding equipment to an existing DEFINITY Generic 3 V4 system.

The following conventions are used to describe the systems referred to in this book: DEFINITY Communications System Generic 3vs, Generic 3s, Generic 3i, and Generic 3r are referred to as G3vs, G3s, G3i, and G3r.

Purpose

This book is intended for use by a trained installation technician.

For upgrades to the various G3 V4 systems, the following table correlates each software-upgrade PEC, and sometimes an associated hardware-upgrade PEC, to chapter numbers within this manual.

NOTE:
Software upgrades from G3 V4 Advantage to G3 V4 Premier (PECS 1264-402, 1264-405, and 1264-407) do not correlate to chapters in this book. Instead, *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, should be used for these translation-only upgrades.

CAUTION:
Increased login security is an attribute of the G3 V4 software, and is not discussed in previous manuals. Therefore, especially when using other manuals for a G3 V4 upgrade, remember to:

- *Advise customers that their existing passwords will expire 24 hours after the upgrade*
- *Explain the new passwords must conform to stricter requirements*

Table 1. G3 V4 Software- and Hardware-Upgrade PECS to Upgrade Chapters

PEC	Description	Chapter
1264-400, -401, or -402	G3vs V1 to G3vs V4 Upgrades	G3i 15, 16
	G3vs V2 to G3vs V4 Upgrades	G3i 16
	G3vs V3 to G3vs V4 Upgrades	G3i 16
1264-402	G3vs V4a to G3vs V4p (System parameters and translations only)	N/A
1264-403, -405, or -406	G3vs V1 to G3s V4 Upgrades	G3i 15, 16, 17
	G3vs V2 to G3s V4 Upgrades	G3i 16, 17
	G3vs V3 to G3s V4 Upgrades	G3i 16, 17
	G3vs V4 to G3s V4 Upgrades	G3i 17
1264-407 or -408	G3s V1 to G3s V4 Upgrades	G3i 19, 20
	G3s V2 to G3s V4 Upgrades	G3i 20
	G3s V3 to G3s V4 Upgrades	G3i 20
1264-407	G3s V4a to G3s V4p (System parameters and translations only)	N/A
1264-409	G3vs V1 to G3i V4 Upgrades	G3i 15, 16, 18
	G3vs V2 to G3i V4 Upgrades	G3i 16, 18
	G3vs V3 to G3i V4 Upgrades	G3i 16, 18
	G3vs V4 to G3i V4 Upgrades	G3i 18
	G3s V1 to G3i V4 Upgrades	G3i 19, 20, 21
	G3s V2 to G3i V4 Upgrades	G3i 20, 21
	G3s V3 to G3i V4 Upgrades	G3i 20, 21
	G3s V4 to G3i V4 Upgrades	G3i 21
1264-410	System 75 to G3i V4	
6300-C19	Small-Cabinet R1V3 to G3i V4 (new enhanced control carrier)	G3i 4
6300-X12	System 75 XE to G3i V4 (XE) (circuit-pack upgrade)	G3i 1
6300-159	Small-Cabinet R1V3 to G3i V4 (new PPN)	G3i 4
6300-359	Medium-Cabinet R1V3 to G3i V4 (new control carrier)	G3i 3
6300-412	System 75 XE to G3i V4 (new control cabinet)	G3i 2
6300-59X	Medium-Cabinet R1V3 to G3i V4 (new expansion control carrier and PPN)	G3i 3

Continued on next page

Table 1. G3 V4 Software- and Hardware-Upgrade PECS to Upgrade Chapters — *Continued*

PEC	Description	Chapter
1264-411	G3i V2 to G3i V4 Upgrades	G3i 12
	G3i V3 to G3i V4 Upgrades	G3i 12
63343	G3i V2 (XE) to G3i V4	G3i 12, 22
63343	G3i V3 (XE) to G3i V4	G3i 12, 22
	G3i V2 (XE) to G3i V4 (XE) Upgrades	G3i 12
	G3i V3 (XE) to G3i V4 (XE) Upgrades	G3i 12
63343	G3i V4 (XE) to G3i V4 Upgrade	G3i 22
1264-413	G2 to G3i V4 Upgrades (EPN upgrade, new G3r V4 PPN)	
	MCC cabinet	G3i 7
	SCC cabinet	G3i 8
1264-415	System 75 to G3r V4 Upgrades (EPN upgrade, new G3r V4 PPN)	
63540A	Medium cabinet	G3r 2
63541A	XE cabinet	G3r 1
63543A	Small cabinet	G3r 3
1264-415 or -416	G1 or G3i to G3r V4 Upgrades (EPN upgrade, new G3r V4 PPN)	
63540A or 63544A	MCC cabinet	G3r 4
63541A or 63545A	SCC cabinet	G3r 5
1264-418	G2 to G3r V4 Upgrades (EPN upgrade, new G3r V4 PPN)	
	MCC cabinet	G3r 6
	SCC cabinet	G3r 7
1264-419	G3r V1 to G3r V4 Upgrades	G3r 8, 9
	G3r V2 to G3r V4	G3r 9
	G3r V3 to G3r V4	G3r 9
1264-420	G1 to G3i V4 Upgrades	
	MCC cabinet	G3i 5, 10
	SCC cabinet	G3i 6, 11
	G3i V1 or G3i - Global to G3i V4 Upgrades	
	MCC cabinet	G3i 10
	SCC cabinet	G3i 11
	G3i V1.1 to G3i V4 Upgrades	
	MCC cabinet	G3i 13
	SCC cabinet	G3i 14

As supplemental information, the following documents are required to perform upgrades and additions to Generic 3 Version 4 systems:

- *GBCS Products Security Handbook*, 555-025-600, Issue 3
- *DEFINITY Communications System Generic 3 V1.1 and V2 Upgrades and Generic 3 Additions*, 555-230-107
- *DEFINITY Communications System Generic 3 V3 to Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3r Transition Reference*, 555-230-620
- *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655
- *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
- *DEFINITY Communications System Generic 3r V1 and V2 Maintenance*, 555-230-105, Issue 4
- *DEFINITY Communications System Generic 3 System Description and Specifications*, 555-230-206, Issue 3
- *DEFINITY Communications System and System 75 and System 85 Terminals and Adjuncts*, 555-015-201, Issue 5
- *LINEAGE. 2000 Standby Power Systems, Product Manual*, 555-790-110 (required for DC-powered switches)

Additional DEFINITY Communications System documentation can be found in Appendix A of this book.

Conventions Used in This Document

This manual uses the following conventions:

- Information you type is shown in the following typeface:

  `save announcements`

- Information displayed on the screen is shown in the following typeface: `login:`
- Keyboard keys are shown as follows: RETURN.
- Circuit-pack codes (for example, TN772, CFY1, or TN786B) are shown with the *minimum acceptable* alphabetic suffix (like the ‘‘B’’ in the code ‘‘TN786B’’).

Generally, an alphabetic suffix higher than the one shown is also acceptable. However, not every *vintage* of either the minimum-suffix or a higher-suffix code is necessarily acceptable.

NOTE:
Refer to *Technical Monthly: Reference Guide for Circuit-Pack Vintages and Change Notices*, for current information about the usable vintages of specific circuit-pack codes (including the suffix) in a G3 system.

System 75 XE to G3i V4 (XE)

1

This chapter provides the necessary information for a circuit pack replacement upgrade from a System 75 XE to a DEFINITY G3i V4 (XE) system:

- With an Intel[1] 80386 processor
- Without duplicated control cabinets
- Without the LAN (packet) bus and related applications
- Without expansion port networks (EPNs)

The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

The following processes are required for a System 75 XE to a 386 G3i V4 (XE) PPN upgrade:

- Upgrading the hardware

  This involves removing the TN741 or an international TN419A Tone-Clock (if present), Processor, Memory, Netcon, and Tape Drive circuit packs in the System 75 XE control cabinet, and then installing the new Tone-Clock (if a TN741 or TN419A was removed), G3i V4 Processor, Memory, and Netcon circuit packs.

1. Registered trademark of the Intel Corporation.

- Replacing the software tape with a DEFINITY memory card containing G3i V4 translations.
- Upgrading the software

  This involves loading the G3i V4 translations from the translation memory card and then (when necessary) reentering translations.
- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Contact Network System Technician

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

For a system where a TN765 Processor Interface circuit pack already resides in the ''TONE DET/PROCR INTFC'' slot, a TN768, TN780, or TN2182 Tone-Clock must reside in port slot ''02'' (not port slot ''1'') of a G3i V4 (XE) control cabinet. Therefore, if a TN741 (or an international TN419A) Tone-Clock will be replaced by a TN768, TN780, or TN2182, an existing port circuit pack in slot ''02'' of the control cabinet must be moved and retranslated.

Whenever possible, it is recommended that this circuit pack be relocated and retranslated before the upgrade. This will shorten the service interruption that will occur during the upgrade.

Usable Circuit Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped for the upgrade should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every System 75 circuit pack that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4 system.

Software

The G3i V4 translations are saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the R1V3 TN764 Tape Drive circuit pack.

The translations in the R1V3 system must be copied to a spare tape and sent to the regional Customer Software Administration (CSA) group within the FSAC (formerly known as the CSSO) to be converted and written to a G3i V4 translation memory card. This process takes two weeks. The G3i V4 translation memory card must be on-site before the upgrade can begin. Two tapes (one system tape and one backup tape) must always be retained on site with the System 75 XE.

After the upgrade, the Software Associate should ensure the upgraded translations are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Hardware Description

Circuit Packs

Four circuit packs are required for a basic G3i V4 system upgrade. The others will be provided on an optional basis for G3i V4 features or for non-US installations, as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel 80386 microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also, an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

  Functions of the TN786B include:

  — Monitoring and controlling circuit-pack conditions

  — Monitoring the environmental sensor and control leads for a single processor operation

  — Controlling emergency-transfer operation

  — Providing direct access to a G3-MT terminal

  — Providing an interface to a CDR output device

  — Providing an external alarm closure

  — Reporting system status via alarm LEDs

- CPP1

  The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

- TN777B

  The Netcon circuit pack (TN777B) does the following:

  — Houses the mass-storage DEFINITY memory card.

  — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.

— Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility, a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).

— Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.

— Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

- TN756, TN768, TN419B, TN780, or TN2182

  The TN756 Tone Detector/Generator supplies Stratum 4 timing to the single-carrier cabinet (SCC) port network where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces *and detects* call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  Due to limited synchronization capabilities, the TN756 cannot be used in systems with:

  — A DS1/E1 Interface

  — An Outbound Call Management (OCM) application

  The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

  The TN419B Tone-Clock (for non-US installations) supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz and 160-kHz clocks and an 8-kHz frame clock from its Stratum 4 source frequency. Using European A-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-voltage alarm-detection circuit.

  The TN419B can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768 and TN419B, the TN780 can be assigned to:

— Produce six customized tones in five different tone plans for use outside the USA

— Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The optional circuit packs are:

- TN464C

  The TN464C serves as both a DS1 and an ISDN — PRI interface. This circuit pack, which can reside in any G3i V4 port slot, has the following attributes:

- — Complies with the 1.544-Mbps North American DS1 standard
- — Converts the European A-law to the North American mu-law companding algorithm
- — Operates compatibly with the optional Stratum 3 clock
- — Provides D-channel connectivity for ISDN — PRI

■ TN726B

The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

■ TN744 or TN744C

The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B V10 and later versions provide tone detection. Prior to TN744Bv10, the TN744 provides call classification only.

The TN744Bv10 and higher Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

The processor on the TN744Bv10 and TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

■ TN765

The TN765 Processor Interface provides four data links to the TDM bus and a link through the memory bus to the processor. This circuit pack has four ports that provide interfaces for applications such as DCS, CMS, and AUDIX.

■ TN767B

The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN-PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

■ TN771D

On a G3i V4 (XE) system (without a packet bus and without duplication), the Maintenance/Test circuit pack (TN771D) performs three maintenance functions: DCP Mode 2 endpoint testing, digital trunk testing, and analog

trunk testing. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-Kbps digital facilities and is also used for ISDN PRI trunk testing. The TN771D is required for digital trunk testing.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port Network Configurations

Every G3i V4 (XE) configuration contains a single port network which consists of XE cabinets.

The following sections describe upgrades to a G3i V4 (XE) with one port network.

Software Translation Upgrade

The G3i V4 software and translations are saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the TN764 Tape Drive circuit pack in the System 75 XE.

During an upgrade from an R1V3 to a G3i V4, the regional CSA must convert the R1V3 translations and write them to a G3i V4 translation memory card. To enable this tape conversion, replace the system tape with a spare R1V3 tape. (Spare R1V3 tape cartridges can be acquired from the CSA before the upgrade.) Then, copy the current R1V3 translations to the spare tape, and overnight mail this tape to the CSA. Also, put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure the customer's switch administrator keeps detailed records of any translation changes made during that interval. These records will facilitate the reassignment of any changes on the G3i V4 system after the upgrade.

The new G3i V4 translation memory card must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager I terminal.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. If the system is equipped with a TN750 Announcement circuit pack, enter **`display announcements`**, and press RETURN.

If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.

4. Remove the system tape, insert the backup tape, and wait for the tape to retension.
5. Enter **`save translation`**. Press RETURN.
6. Enter **`save announcements`** if appropriate. Press RETURN.

Make Source Tape for Upgrade

A spare R1V3 tape must be acquired from the regional CSA before performing the following steps. There must always be two system tapes on site with the System 75. Do not send the system or backup tape to the CSA.

After performing the previous procedures, copy the R1V3 translations to the spare tape that will be used to make the G3i V4 translation memory card. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. See NOTE. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.

   NOTE:
   The off-site CSA translation upgrade does not preserve the contents of recorded announcements. Therefore, if a TN750/B circuit pack resides in the control cabinet which is powered down during the upgrade, any announcements stored on the TN750/B must be rerecorded.

3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to the CSA for use in making the G3i V4 memory card.

System Upgrades

There are many configurations of System 75 XE in the field. In terms of both hardware and software, each system can have a unique configuration. However, every System 75 XE consists of a single port network (that is, one stack of single-carrier cabinets including one control cabinet). Therefore, upgrading a System 75 XE to a G3i V4 PPN always requires replacing circuit packs in the control cabinet.

System 75 XE to Standard-Reliability G3i V4 (XE) PPN

A System 75 XE is upgraded to a standard-reliability G3i V4 (XE) PPN by:

- Powering down the control cabinet
- Removing a TN741 or an international TN419A Tone-Clock (if present), TN759 Processor, TN761 Memory, TN727 Netcon, and TN764 Tape Drive circuit packs from the control cabinet
- Installing the new Tone-Clock (if a TN741 or a TN419A was removed), TN786B/CPP1 Processor/Memory, and TN777B Netcon circuit packs into the control cabinet
- Inserting the memory card with the current translations
- Rebooting the upgraded G3i V4 system
- Verifying that the system boots properly

Prerequisite Hardware

The equipment in Table 1-1 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains 4 Mbytes of memory.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 1-1. Required Hardware

Equipment	Description	Quantity
106718521	TN786B Processor	1
106590953	CPP1 Memory	1 (Note 1)
106577422	TN777B Network Control	1
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 (Note 2)
846986792	Control-Cabinet Label	1
846309466	DEFINITY Label	1 per cabinet
103557096	TN756 Tone-Detector/Generator	1
or		
103557211	TN768 Tone-Clock	1
or		
103557336	TN780 Tone-Clock	1 (Note 3)
or		
106706955	TN2182 Tone-Clock	1 (Note 4)

NOTE:

1. During the hardware upgrade, the CPP1 is attached to the TN786B before inserting the combined assembly into the control cabinet.
2. A 4-Mbyte translation memory card is required for a system that uses recorded announcements.
3. Use TN780 as Tone-Clock for Stratum 3 timing. Also required are the TN748, and TN744 for tone-detection.
4. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack and replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Authorized wrist grounding strap
- Static-proof or original circuit-pack packaging for transporting circuit packs
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Open Control Cabinet's Door

Use a screwdriver, and turn the door-latch screw counter-clockwise one-fourth turn to open the door.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the control cabinet to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its clip to the cabinet's frame.

Connect CPP1 Memory to TN786B Processor

See WARNING. Using a hard, flat, static-free surface, connect the CPP1 Memory circuit pack to the TN786B Processor circuit pack.

Line up the two pin clips and the two 50-pin connectors (on the CPP1) with the two pairs of corresponding holes and the two 50-pin connectors (on the TN786B), and then squeeze the two circuit packs together.

WARNING:
Before handling a circuit pack, put on a wrist strap and attach its clip to the cabinet's frame.

Power Down Control Cabinet

See CAUTION. Behind the control cabinet's power supply, set the circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Replace Circuit Packs

NOTE:
If new adjuncts or features are being added that require additional circuit packs, refer to Chapter 23, "Changes to G3vs, G3s, and G3i V4 Systems" of this manual for installation instructions.

1. See WARNING. At the J58890G control cabinet, remove the TN741 or TN419A Tone-Clock (if present), the TN759 Processor, the TN761 Memory, and the TN764 Tape Drive circuit pack (see Figure 1-1).

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its clip to the cabinet's frame.

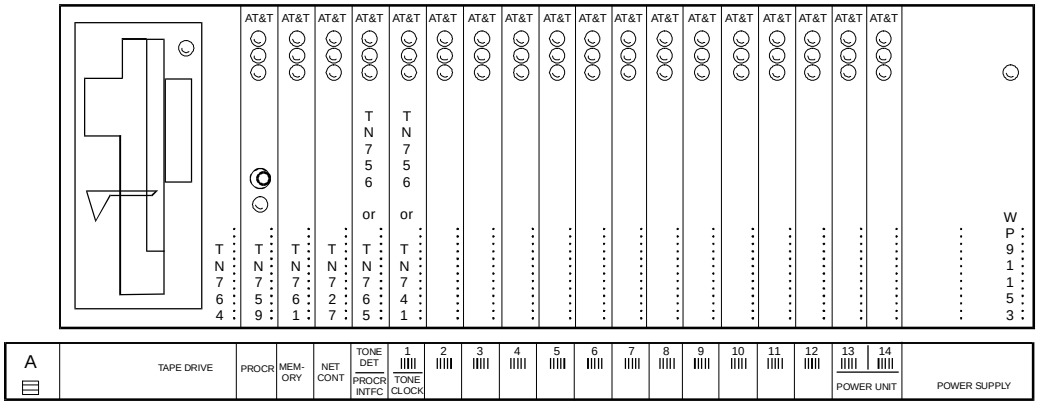


Figure 1-1. Circuit-Pack Locations in System 75 XE Control Cabinet

2. See NOTE. Install the new circuit-pack position label (designation strip) in its place on the control cabinet.

   NOTE:
   Since the new label has an adhesive backing, it can be placed over the existing label.

   See previous WARNING. Install the combined TN786B/CPP1 processor/memory circuit pack into the control-cabinet slots labeled ''PROCR'' and ''MEM'' (see Figure 1-2).

3. See previous WARNING. Install the TN777B Netcon circuit pack into the control-cabinet slot labeled ''NETWK CNTRL'' (see Figure 1-2).

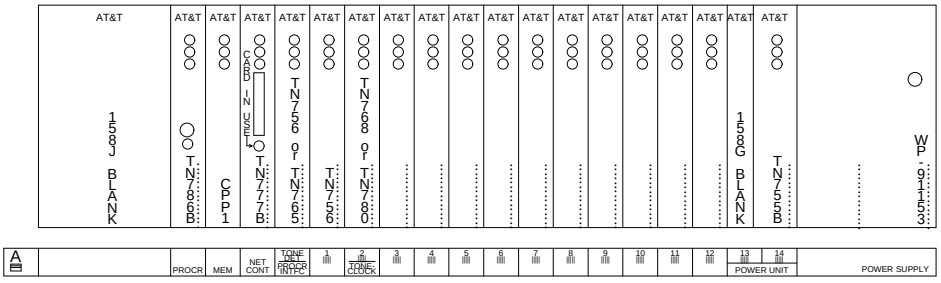
4. If not being replaced, leave a TN756 Tone-Detector/Generator circuit pack (that resides in either the ''TONE DET/PROCR INTFC'' slot or port slot ''1'') in the same slot.

5. See NOTES and previous WARNING. If replacing either a TN756 Tone Detector/Generator or a TN741 or TN419A Tone-Clock with a TN2182 Tone-Clock, install the new Tone-Clock circuit pack into either the ''TONE DET/PROCR INTFC'' slot or port slot ''2'' of the control cabinet (also labeled ''TONE CLOCK'').

   NOTE:
   If a TN756 is replaced by a new tone-clock, a new G3i V4 tone-clock (TN2182) replaces this circuit pack. This new tone-clock serves to replace the tone detector circuits on the TN756. The TN2182 is installed in the Tone Detector/Tone Generator slot as well as the Tone Clock slot.

NOTE:
To make room for a new tone-clock in port slot ‘‘2,’’ a port circuit pack residing in slot ‘‘2’’ will need to be moved and retranslated. If not done before the upgrade, move the circuit pack now, and retranslate its circuits after the system is rebooted with the G3i V4 translation memory card.

6. Install circuit-pack blanks in slots not equipped with circuit packs.



NOTE: Only one tone-clock can reside in a port network. Although pictured to show possible locations, only one TN756 can reside in a control cabinet. And, a TN756 cannot reside in a control cabinet with a TN768 or TN780.

G3i V2 XE Control Cabinet

Figure 1-2. Circuit-Pack Locations in G3i V4 (XE) Control Cabinet

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the control cabinet, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its clip to the cabinet’s frame.

Reboot the System

1. See NOTE. At the TN777B faceplate, insert the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ‘‘DEFINITY Memory Card’’ label facing left and with the insert arrow (on the same side) pointing forward.

2. Behind the control cabinet’s power supply, set the circuit breaker to ON.

3. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the "System Reboot Indications" section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.

4. Get the order number of the upgrade, and call the regional CSA to request an "init" login so that the G3 V4 option can be enabled on the upgraded system.

5. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.

6. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.

7. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-653, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close Cabinet Door and Install Labels

1. Close the front door and secure with the latch.
2. Install the DEFINITY label on each cabinet.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the control cabinet that was powered down, any announcements that were stored on the circuit pack must be rerecorded.

Save Announcements

If a TN750/B Announcement circuit pack resides in a port cabinet that was *not* powered down, save the announcements using the save announcements command. Enter **`save announcements`**. Press RETURN.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the G3i V4, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced Equipment

The R1V3 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced R1V3 equipment includes:

- If replaced, TN741 or TN419A Tone Clock circuit pack
- If replaced, TN756 Tone Detector/Generator circuit pack
- TN759 Processor, TN761 Memory, TN727 Netcon, and TN764 Tape Drive circuit packs
- R1V3 tape cartridges

System 75 XE to G3i V4

2

This chapter provides the information necessary for a control cabinet-replacement upgrade from an R1V3 System 75 XE system to a DEFINITY® G3i V4. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

⚠ CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

Any new cabinets, shipped by the factory to fulfill the upgrade order, are the new "DEFINITY style" of multicarrier or single-carrier cabinets. Whereas, the R1V3 single-carrier cabinets to be upgraded are old-style cabinets. Although the new G3i V4 cabinet(s) and the upgraded G3i V4 cabinets look different, they can be used together.

The following processes are required for a Version 3 to G3i V4 PPN upgrade:

- Upgrading the hardware

  This involves replacing the System 75 XE control cabinet with an enhanced control cabinet and replacing and adding circuit packs.
- Replacing the software tape with a DEFINITY memory card containing G3i V4 translations.
- Upgrading the software

  This involves loading the G3i V4 translations from the translation memory card, and then (when necessary) reentering translations.
- Testing the upgraded system to verify proper operation

The following processes are required for an R1V3 to G3i V4 EPN upgrade:

- Upgrading the hardware

  This involves adding a new PPN, replacing the R1V3 control cabinet with an expansion control cabinet, and replacing and adding circuit packs.

- Replacing the software tape
- Upgrading the software

  This involves saving, loading, and (when necessary) reentering system translations.

- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication between Equipment Rooms

For an EPN upgrade where some of the equipment resides at a remote location, the upgrade is much easier if temporary communications are established between the equipment rooms.

Contact Network Technicians

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, network-access trunk facilities may be busied out at the far end.

Relocation of Port Circuit Packs

System 75 XE to G3i V4 PPN

A System 75 XE upgrade to a G3i V4 PPN *can* cause port circuit packs, from the R1V3 control cabinet, to be moved and manually retranslated. For this upgrade, a G3i V4 enhanced control cabinet (with 16 port slots) replaces the R1V3 control cabinet (with 14 port slots) providing 2 extra port slots.

However, of these 16 port slots, nonport-related circuit packs may need to occupy certain slots.

- If the TN756 Tone Detector/Generator is being replaced in the System 75 XE control cabinet, then a new TN2182 Tone-Clock should be used. The TN2182 replaces the tone detector circuits on the TN756.
- A simultaneous EPN addition requires a TN776 or TN570 Expansion Interface circuit pack be installed in slot ‘‘1’’ of the new G3i V4 enhanced control cabinet.
- If the control cabinet in the System 75 XE contains a TN755 power supply in slots ‘‘13’’ and ‘‘14,’’ then this circuit pack is relocated to port slots ‘‘15’’ and ‘‘16’’ of the new G3i V4 enhanced control cabinet (with no effect on available port circuits).

If all of the above scenarios occurred, the result would be neither a gain nor a loss of port slots.

System 75 XE to G3i V4 EPN

A System 75 XE upgrade to a G3i V4 EPN *can* cause port circuit packs, from the R1V3 control cabinet, to be moved and manually retranslated. For this upgrade, a G3i V4 expansion control cabinet (with 17 port slots) replaces the R1V3 control cabinet (with 14 port slots) providing 3 extra port slots.

However, out of these 17 port slots, nonport-related circuit packs may need to occupy certain slots.

- For an EPN upgrade, a TN768, TN780, or TN2182 Tone-Clock *must* replace a TN756 Tone Detector/Generator in the System 75 XE control cabinet. In the process, a new TN748B Tone Detector should also be added to the EPN. The TN748B replaces the tone detector circuits on the TN756.
- A TN776 or TN570 must be installed in slot ''1'' of the new G3i V4 expansion control cabinet in order to interconnect the upgraded G3i V4 EPN with the new PPN. Therefore, any circuit pack residing in slot ''1'' of the R1V3 control cabinet must be relocated (usually to one of the extra port slots in the new expansion control cabinet).
- If the control cabinet in the System 75 XE contains a TN755 power supply in slots ''13'' and ''14,'' then this circuit pack is relocated to port slots ''16'' and ''17'' of the new G3i V4 expansion control cabinet (with no effect on available port circuits).

If all of the above scenarios occurred, the result would be a net gain of *only* 1 port slot.

Usable Circuit-Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped in the new G3i V4 PPN or shipped loose with the new EPN equipment should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every R1V3 circuit pack to be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Refer to *Technical Monthly* Reference Guide for Circuit-Pack Vintages and Change Notices for current information about usable vintages in a G3i V4 system.

Power and Grounding

A new cabinet added for the upgrade can be either AC- or DC-powered. If an added cabinet is powered differently from an existing cabinet, the existing cabinet does not have to be converted since mixed power configurations are

allowed. However, the system's power and grounding must be modified so that the AC-powered cabinet is grounded to the same single-point ground bar as the DC-powered cabinet (see Figure 2-1).

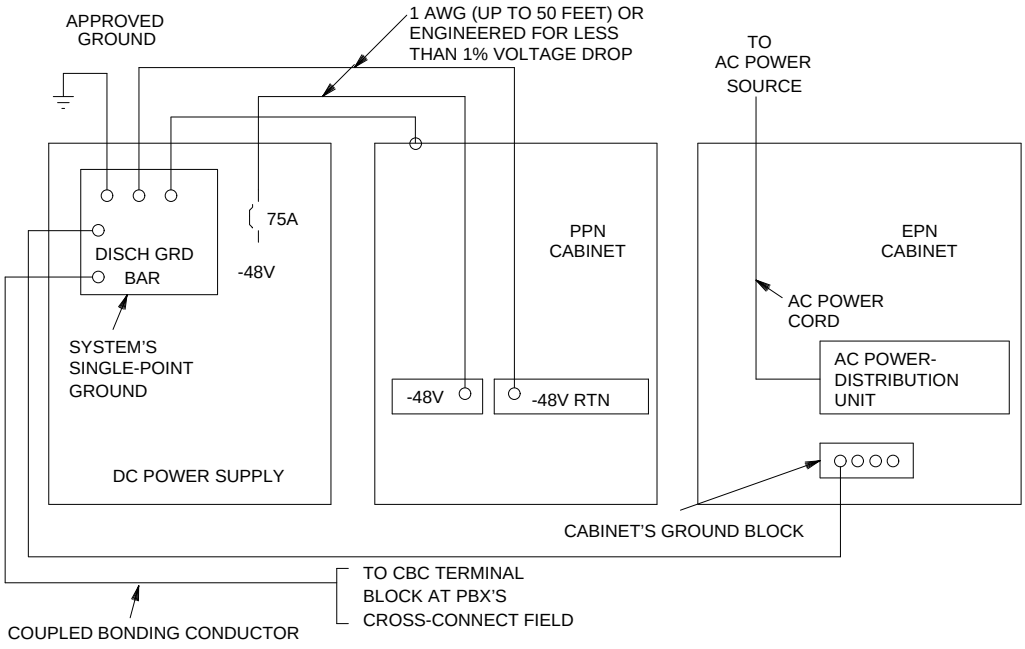


Figure 2-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be controlled by a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field. Any available power source can be used as long as the phase or leg provides 115 VAC at the required drain.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, for DC power and grounding requirements.

Isolator

Each G3-MT connected to a DC-powered cabinet, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface, between the G3-MT and the interface connector, to isolate grounding between the system and external adjuncts.

Power-Failure Stations

During routine switch operation, the ground for the power-failure stations is derived from the system's auxiliary cable. This ground is disconnected during the upgrade thus disabling the power-failure stations. Therefore, a ground strap must be run to the power-failure transfer panel. This strap should be connected shortly after power is removed and then disconnected just before power is restored to the upgraded system.

To minimize downtime during the G3i V4 upgrade, power-failure transfer equipment should be tested, and if need be, repaired before the hardware upgrade begins.

Software

The G3i V4 translations are saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the R1V3 TN764 Tape Drive circuit pack.

The translations in the R1V3 system must be copied to a spare tape and sent to the regional Customer Software Administration (CSA) group within the FSAC (formerly known as the CSSO) to be converted and written to a G3i V4 translation memory card. This process takes two weeks. The G3i V4 translation memory card must be on-site before the upgrade can begin. Two tapes (one system tape and one backup tape) must always be retained on site with the System 75 XE.

After the upgrade, the Software Associate should ensure that the upgraded translations are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Alarm Connections

See NOTE. The AUXILIARY connector on System 75 XE systems had appearances for Alarm Monitors 1M 1m, 2M, 2m, 3M, 3m, and 3W. Whereas, the AUXILIARY connector on a DEFINITY G3i V4 system only has appearances for 1M and 1m. If the system being upgraded used the other alarm-monitor appearances, they can either be distributed to the AUXILIARY connector on a G3i V4 EPN, or ''ganged'' so that several external devices share the same appearance. The alarms can also be accommodated by paralleling them to the above connections.

NOTE:
When several external devices are ganged to the same appearance, each device loses its individual identity. An alarm on a shared appearance only denotes that one of several devices reported a problem. Subsequent maintenance effort is needed to determine which device reported the problem and the nature of the problem.

The control circuit pack behind the AUXILIARY connector detects external alarms with a ground-detector chip. Therefore, to gang several external devices, every device must be able to return a true relay ground closure to the AUXILIARY connector. (Alternatives such as a TTL low driver are inadequate.)

Hardware Description

Circuit Packs

Four circuit packs are required for a basic G3i V4 system upgrade. The others will be provided on an optional basis for G3i V4 features or for non-US installations as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel [1] 80386 microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

  Functions of the TN786B include:

  — Monitoring and controlling circuit-pack conditions

  — Monitoring the environmental sensor and control leads for a single processor operation

  — Controlling emergency-transfer operation

  — Providing direct access to a G3-MT terminal

  — Providing an interface to a CDR output device

  — Providing an external alarm closure

  — Reporting system status via alarm LEDs

- CPP1

  The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

- TN777B

  The Netcon circuit pack (TN777B) does the following:

  — Houses the mass-storage DEFINITY memory card.

1. Registered trademark of the Intel Corporation.

- — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.
- — Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

  Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).
- — Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.
- — Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

■ TN756, TN768, TN419B, TN780, or TN2182

The TN756 Tone Detector/Generator supplies Stratum 4 timing to the single-carrier cabinet (SCC) port network where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces *and detects* call-progress tones touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

Due to limited synchronization capabilities, the TN756 cannot be used in systems with:

- — A DS1/E1 Interface
- — An Outbound Call Management (OCM) application

The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN419B Tone-Clock (for non-US installations) supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz and 160-kHz clocks and an 8-kHz frame clock from its Stratum 4 source frequency. Using European A-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-voltage alarm-detection circuit.

The TN419B can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system can use this clock.

The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768 and TN419B, the TN780 can be assigned to:

— Produce six customized tones in five different tone plans for use outside the USA

— Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The optional circuit packs are:

- TN464C

  The TN464C serves as both a DS1 and an ISDN—PRI interface. This circuit pack, which can reside in any G3i V4 port slot, has the following attributes:

  — Complies with the 1.544-Mbps North American DS1 standard

  — Converts the European A-law to the North American mu-law companding algorithm

  — Operates compatibly with the optional Stratum 3 clock

  — Provides D-channel connectivity for ISDN—PRI

- TN726B

  The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

- TN744 or TN744C

  The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B V10 and later versions provide tone detection. Prior to TN744C, the TN744 provides call classification only.

  The TN744C Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN765

  The TN765 Processor Interface provides four data links to the TDM bus and a link through the memory bus to the processor. This circuit pack has four ports that provide interfaces for applications such as DCS, CMS, and AUDIX.

- TN767B

  The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN—PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

- TN771D

  On a G3i V4 system (without a packet bus and without duplication), the Maintenance/Test circuit pack (TN771D) performs three maintenance functions: DCP Mode 2 endpoint testing, digital trunk testing, and analog trunk testing. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-Kbps digital facilities and is also used for ISDN PRI trunk testing. The TN771D is required for digital trunk testing.

  A TN771D is required in each port network of a critical-reliability G3i V4 system with the optional packet bus. For these systems, this circuit pack performs the additional maintenance function of diagnosing and correcting recoverable packet-bus failures before the LAPD links (which use the bus) fail.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port-Network Configurations

Every G3i V4 port-network configuration contains one PPN, which can be either a multicarrier or single-carrier cabinet. Larger configurations can contain either one or two EPNs. Figure 2-2 shows the three main port-network configurations including:

- Basic system containing only a PPN
- Directly connected systems containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe various upgrades to a G3i V4 with either one or two port networks.

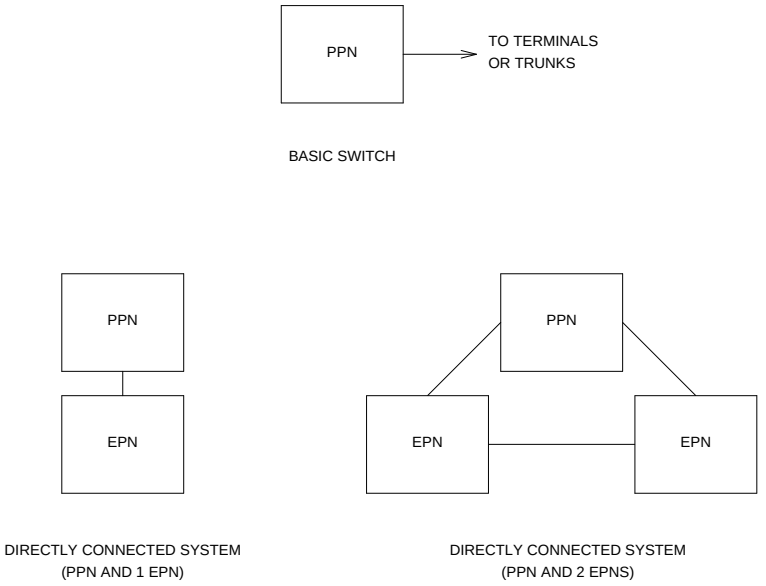


Figure 2-2. G3i V4 Port-Network Configurations

Port Networks

For a System 75 system, upgrading to a G3i V4 offers an optional second and third port network. Each port network with single-carrier cabinets allows the system to grow by one expansion control cabinet and up to three more port cabinets. These EPN cabinet stacks are the same as the "DEFINITY" style EPN stacks that were first available for G1 systems.

Software-Translation Upgrade

The G3i V4 software and translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the TN764 Tape Drive circuit pack in the System 75 XE.

During an upgrade from an R1V3 to a G3i V4, the regional CSA must convert the R1V3 translations and write them to a G3i V4 translation memory card. To enable this tape conversion, replace the system tape with a spare R1V3 tape. (Spare R1V3 tape cartridges can be acquired from the CSA before the upgrade.) Then, copy the current R1V3 translations to the spare tape, and overnight mail this tape to the CSA. Also, put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure that the customer's switch

administrator keeps detailed records of any translation changes made during that interval. These records will facilitate the reassignment of any changes on the G3i V4 system after the upgrade.

The new G3i V4 memory card must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager I on the R1V3 XE.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.
4. Remove the system tape, install the backup tape, and wait for the tape to retension.
5. Enter **`save translation`**. Press RETURN.
6. Enter **`save announcements`** if appropriate. Press RETURN.

Make Source Tape for Upgrade

A spare R1V3 tape must be acquired from the regional CSA before performing the following steps. There must always be two system tapes on site with the System 75. Do not send the system or backup tape to the CSA.

After performing the previous procedures, copy the R1V3 translations to the spare tape that will be used to make the G3i V4 translation memory card. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. See NOTE. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.

   NOTE:
   The off-site CSA translation upgrade does not preserve the contents of recorded announcements. Therefore, if a TN750/B circuit pack resides in the stack of single-carrier cabinets which is dismantled

during the upgrade, any announcements stored on the TN750/B must be rerecorded.

3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to the CSA for use in making the G3i V4 translation memory cards.

System Upgrades

There are many configurations of R1V3 System 75 XEs in the field. In terms of both hardware and software, each system can have a unique configuration. The manner in which a particular system is upgraded depends on it present configuration. An R1V3 upgrade involves replacing the control cabinet with either:

- A G3i V4 enhanced control cabinet for a PPN upgrade
- An expansion control cabinet for an EPN upgrade

For an upgrade to a duplicated G3i V4 PPN, an enhanced duplicated control cabinet is also added.

This section gives a sequential list of the steps required to upgrade the R1V3 system.

R1V3 System 75 XE to Standard- or Critical-Reliability G3i V4 PPN

NOTE:
In this section, PPN upgrades of System 75 XEs, the concept of high-reliability systems is not considered. This is because, for systems with only one port network, high- and critical-reliability hardware configurations are identical.

If an EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPN.

Upgrade Single-Carrier Cabinet Stack

An R1V3 System 75 XE is upgraded to a G3i V4 PPN with standard or critical reliability by:

- Removing the TDM cables, cable adapters, and terminators
- Removing the control cabinet in position ‘‘A’’
- If necessary, removing the port cabinet in position ‘‘B’’

- Installing the J58890L-1 L5 enhanced control cabinet in position ‘‘A’’
- Installing the J58890M-1 L5 enhanced duplicated control cabinet in position ‘‘B’’ for critical reliability, if required
- Installing the new TDM/LAN cables and terminators
- Adding the G3i V4 control and port circuit packs to control cabinet ‘‘A’’ and, if duplicated, control cabinet ‘‘B’’

Upgrading a System 75 XE single-carrier cabinet stack requires, at a minimum, that the control cabinet in the ‘‘A’’ position be replaced. Since the control cabinet is the bottom cabinet in the port network, the system will have to be completely dismantled. Properly label every cable to be disconnected so that reconnecting them is easier.

Prerequisite Hardware

The equipment in Table 2-1 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains 4 Mbytes of memory.

To place a claim for missing equipment as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 2-1. Required Hardware

Equipment	Description	Quantity
J58890L	Enhanced Control Cabinet	1
J58890M	Enhanced Duplicated Control Cabinet	1 (Note 1)
106718521	TN786B Processor	1 or 2 (Note 2)
106590953	CPP1 Memory	1 or 2 (Notes 2 and 3)
103557187	TN765 Processor Interface	1, 2, or 4 (Note 4)
106577422	TN777B Network Control	1 or 2 (Note 2)
103557096 or 103557211 or 103557336 or 106706955	TN756 Tone-Detector TN768 Tone-Clock TN780 Tone-Clock TN2182 Tone-Clock	1 or 2 1 or 2 1 or 2 (Notes 2, 5, 10) 1 (Note 11)
H600-259 G1	Intercabinet Cables A, B, and C	3 (Note 1)
103557252	TN772 Duplication Interface	2 (Note 1)
405907015	WP-91716 L3 TDM/LAN Cable	0 to 3 (Note 6)
105631527	AHF110 TDM/LAN Bus Terminator	2
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 or 2 (Notes 2 and 7)
846307841	''C'' Port Label	1
846307958	''D'' Port Label	1
106689516	TN771D Maintenance/Test	1 (Note 8)
846307809	Ground Plate	1 (Note 1)
846309466	DEFINITY Label	1 per cabinet
846408268	Earthquake Front Panel	1 (Note 9)
846408386	Earthquake Ground Plate	1 (Note 9)
846408250	Stiffener	1 (Note 9)
846408243	Earthquake Front Mounting Angle	1 (Note 9)

Notes:

1. Required for critical reliability.
2. One with standard reliability, two with critical reliability.
3. During the hardware upgrade, the CPP1 is attached to the TN786B before inserting the combined assembly into the control cabinet.

4. Provided as required for DCS, CMS, AUDIX, etc.
5. A TN741 (or its international equivalent, TN419A) Tone-Clock in the System 75 XE must be replaced. A TN2182 Tone-Clock in the System 75 XE is recommended for the upgrade.
6. This value depends on the number of single-carrier cabinets in the upgraded PPN.
7. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
8. Required in a port slot of a critical-reliability G3i V4 PPN with the optional packet bus.
9. Required if earthquake protection is provided.
10. Use TN780 as Tone-Clock for Stratum 3 timing. Also required with the TN780 are the TN748, and TN744 for tone-detection.
11. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Flash maintenance kit (MTCE 00037), acquired from Material Stocking Location (MSL)
- Flashlight or high-intensity AC drop light
- Power screwdriver (optional)
- 1/4-inch flat-blade screwdriver
- 1/4-inch socket with ratchet (optional)
- Long-nose pliers to straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding screws
- One dozen #8 self-tapping screws
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label every connector cable associated with the system (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down System

See CAUTION. Behind each cabinet's power supply, set the circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Disconnect Power and Grounding

1. Disconnect the cabinet power cords from the rear of each cabinet.
2. Disconnect the coupled bonding conductor.
3. Disconnect the 6AWG cabinet ground wire from the ground bar in the cabinet.

   NOTE:
   A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from all of the cabinets.
2. Disconnect all of the previously labeled connector cables.
3. Disconnect the Manager I from the TERM connector.
4. Remove the ground plate(s) from between all of the cabinets.
5. Remove the top and bottom rear covers from all of the cabinets.

Remove Circuit Packs

1. Label each port circuit pack in control cabinet ''A'' with its slot number.
2. See WARNING and NOTE. Remove all circuit packs and power units from the control cabinet. Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

NOTE:
A TN756 Tone Detector/Generator is acceptable for the upgraded G3i V4 system. However, if a TN756 is being replaced by a new tone-clock during the upgrade, both a new G3i V4 tone-clock (TN768, TN780, or TN2182) and a new tone detector (TN748B) should later replace this circuit pack. This tone detector will serve to replace the tone detector circuits on the TN756.

3. See WARNING. If a TN741 (or an international TN419A) Tone-Clock resides in port cabinet ''B,'' remove this circuit pack from the port cabinet. It will not be reused.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Disconnect TDM Cables

See NOTE. Remove all of the TDM cables and AHF103 TDM cable adapters. They will not be reused.

NOTE:
Before disconnecting each cable adapter note its position.

Remove the Existing Control Cabinet

Since the control cabinet is located at the bottom of the port network, the system will have to be completely dismantled. At this point in the upgrade, all of the power, grounding, TDM, and connector cables should be disconnected. Before you proceed, ensure that there is adequate space available to place each cabinet in an out-of-the-way location as the port network is dismantled.

1. Remove the cabinet clip between each cabinet.
2. See DANGER. Remove the port cabinets from the stack, and put them in a safe place.

DANGER:
A port cabinet may weigh as much as 125 pounds and requires two handlers to unstack the cabinets. If third or fourth cabinet is to be removed, remove the front door, power supply, and circuit packs to lighten the load. Make sure the two handlers are capable (size and strength) of lifting the cabinet from its position.

3. If the control cabinet is earthquake mounted, remove the hardware securing the cabinet to the floor.
4. Move the existing control cabinet out of its present location. It will not be reused, so it can be removed at this time.

Unpack and Inspect Enhanced Control Cabinet for Damage

1. See DANGER. Unpack cabinet.

   DANGER:
   Take care to avoid injury while cutting and removing bands.

2. Visually inspect cabinet for any physical damage caused during shipping. Report any damage for appropriate action per local procedures.

Remove Front Door

Remove the front door of new control cabinet.

1. Use a screwdriver, and turn door-latch screw counterclockwise one quarter turn to release door (see Figure 2-3).
2. Lift door from lower slots, and remove from cabinet.

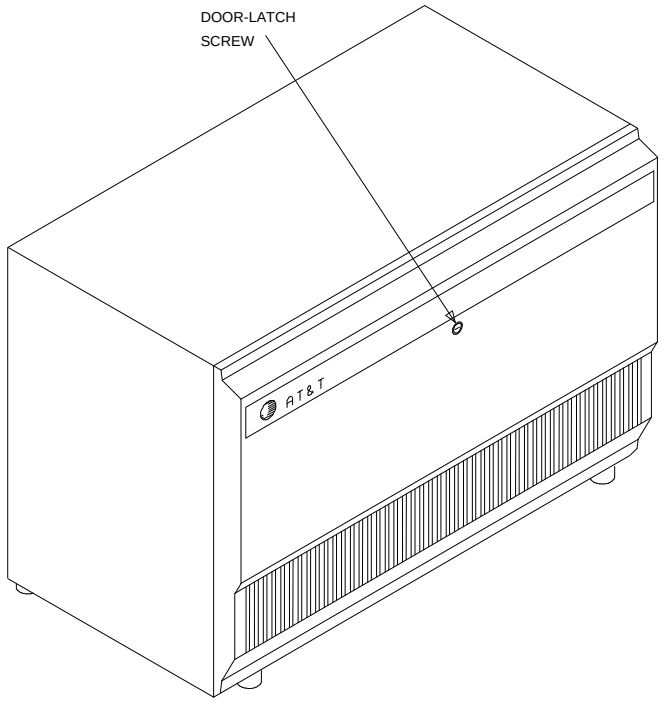


Figure 2-3. Location of Door-Latch Screw for G3i V4 Cabinet

Install Enhanced Control Cabinet

1. See DANGER. Position the J58890L control cabinet ‘‘A’’ at the desired location.

   DANGER:
   The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

2. If earthquake protection is not required, install hole plugs (provided with cabinet) in the holes previously occupied by the two carriage bolts at the bottom rear of the cabinet.

Add Earthquake Protection

If earthquake protection is required:

1. Place the front mounting angle at the location selected for the front of the enhanced control cabinet.
2. Using the angle as a template, mark the locations of the two mounting bolts.
3. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 2.
4. Mount the front mounting angle to the floor (Figure 2-4).
5. Move the cabinet back into place, and temporarily stabilize the cabinet by attaching the cabinet to the angle with two No. 12-24 by 1/2-inch thread-forming screws.
6. Insert a pencil or marker through the two holes (previously occupied with carriage bolts) in the bottom rear of the cabinet, and mark the floor directly beneath each hole.
7. Remove the two screws installed in Step 5, and move the cabinet out of the way.
8. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 6.
9. Move the cabinet back into place.
10. Attach the cabinet to the front mounting angle using four No. 12-24 by 1/2-inch thread-forming screws.

11. In the rear of the cabinet, lay the stiffener on the bottom of the cabinet aligning the stiffener with the holes in the bottom of the cabinet.
12. Fasten the cabinet to the floor (Figure 2-5).

NOTE:
This procedure is only a portion of the complete earthquake protection package. According to the logical installation sequence, instructions for adding the earthquake front plate and earthquake ground plate will be given at the appropriate location in this chapter.

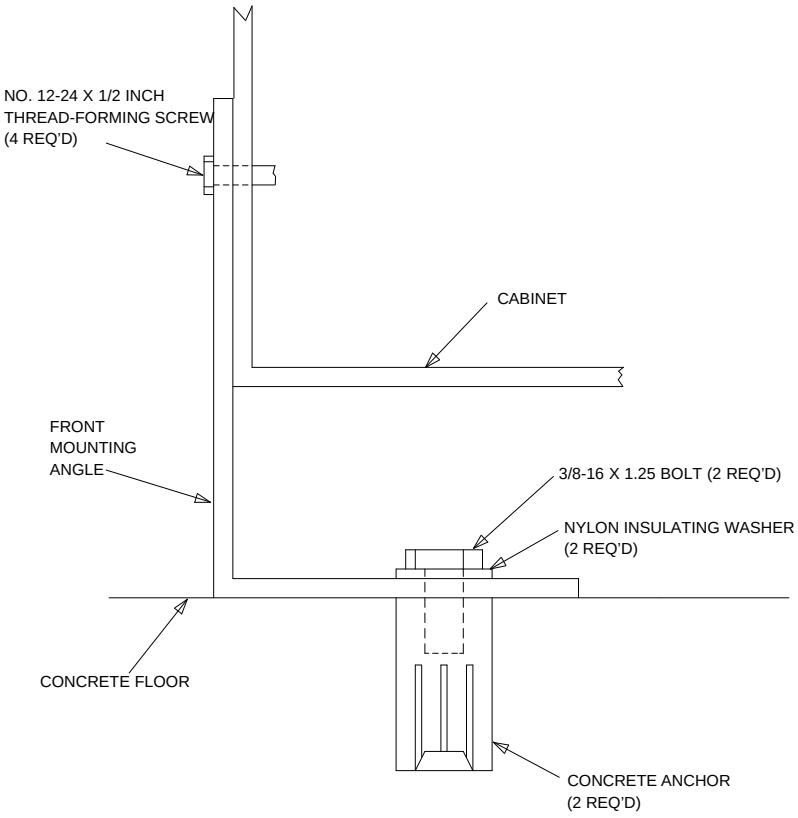


Figure 2-4. Front Mounting Angle — Concrete Floor

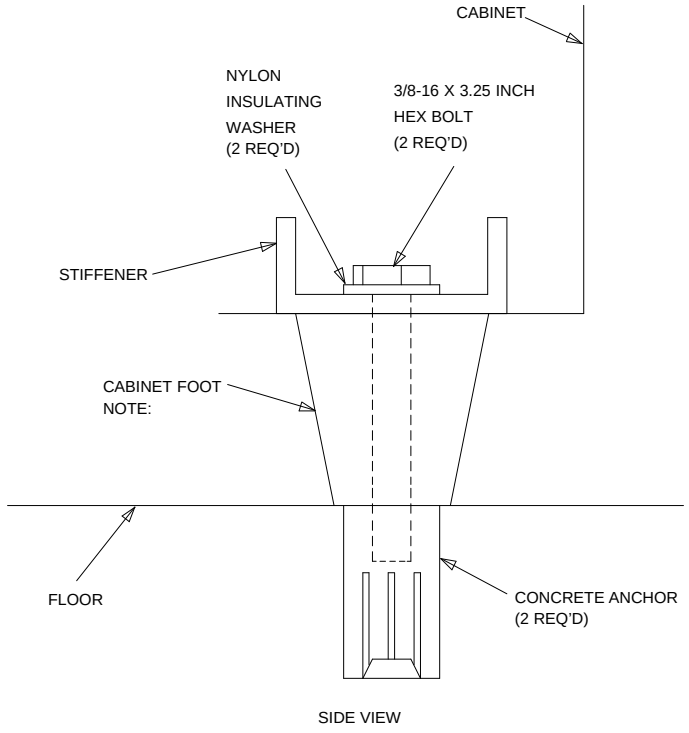


Figure 2-5. Cabinet Earthquake Mounting — Concrete Floor

Install Enhanced Control Cabinet

See DANGER. For a duplicated system position the J58890M duplicated control cabinet ‘‘B’’ above cabinet ‘‘A.’’

DANGER:
The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

Install Port Cabinets

1. See DANGER. Place the port cabinets into the positions from which they were previously removed (see Figure 2-6).

   DANGER:
   The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

2. Install the new labels on the front and rear of the port cabinets.

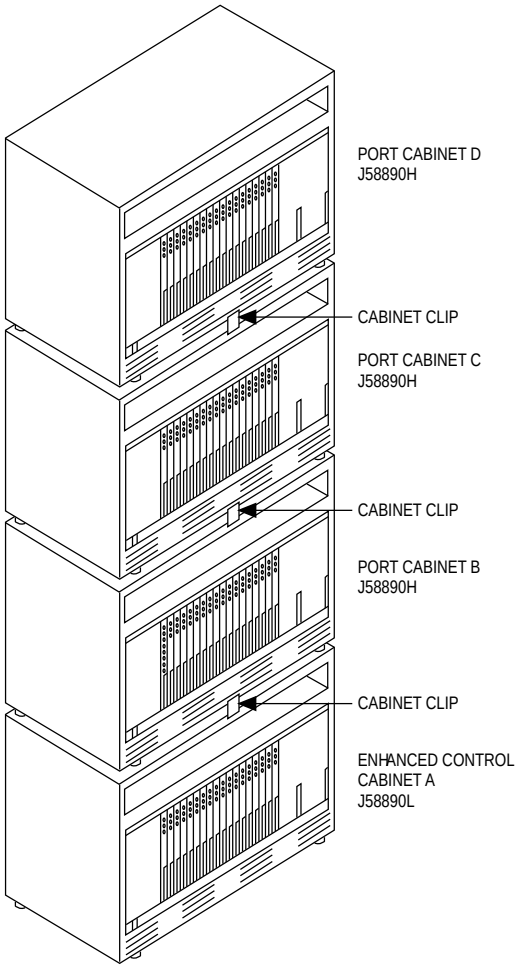


Figure 2-6. 4-Cabinet G3i V4 PPN — Front View Doors Removed

Install Circuit Packs

1. See WARNINGS. Replace the circuit packs and power supplies in port cabinets ‘‘C’’ and ‘‘D’’ if they were previously removed.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   WARNING:
   These replaced port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

2. See previous WARNING. Using a hard, flat, static-free surface, connect each CPP1 Memory circuit pack (for each control cabinet) to a TN786B circuit pack. [Line up the two pin clips and the two 50-pin connectors (on the CPP1) with the four corresponding holes and the two 50-pin connectors (on the TN786B), and then squeeze the two circuit packs together.]

3. See preceding WARNING and following NOTE. Using the following figure, the label, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card), install the G3i V4 control circuit packs into the new enhanced control cabinet(s).

   NOTE:
   A TN756 Tone Detector/Generator is acceptable for the upgraded G3i V4 system. However, if a TN756 is being replaced by a new tone-clock, both a new G3i V4 tone-clock (TN768, TN780, or TN2182) and a new tone detector (TN748B) should replace this circuit pack (the TN748B is not required when the TN2182 is used). The TN748B replaces the tone detector circuits on the TN756.

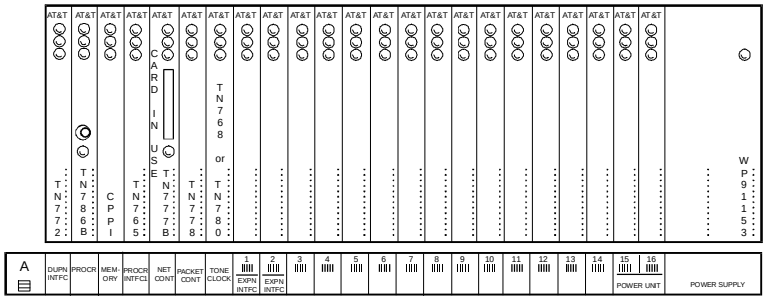


Figure 2-7. Circuit-Pack Locations in Duplicated G3i V4 Enhanced Control Cabinet

4. See preceding WARNINGS and following NOTE. Install the port circuit packs, previously removed, into the ''A'' cabinet using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

NOTE:
Since the new G3i V4 enhanced control cabinet has 2 or 3 more port slots than the removed control cabinet, there should not be a need to move and retranslate these circuit packs.

Change Cabinet Address Plugs

If a duplicated control cabinet was added to position ''B'' and did not replace a port cabinet, the upgraded PPN's port cabinets occupy different positions in the cabinet stack. If so, the location of each port cabinet's address plug must be changed to reflect the cabinet's current position (see Figure 2-8).

Behind each port cabinet, find the address plug attached to two of the six backplane pins to the right of the pin-field block for slot ''00.''

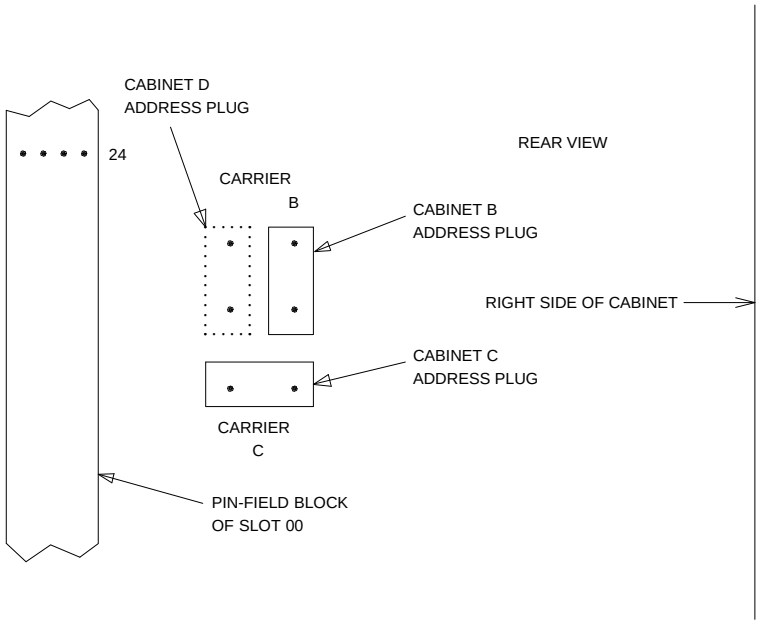


Figure 2-8. Cabinet Address-Plug Location

Install TDM/LAN Bus Terminators

1. If the PPN has only one single-carrier cabinet, verify that the two AHF110 TDM/LAN bus terminators are located per Figure 2-9.
2. If the PPN has more than one single-carrier cabinet, perform the following procedures:
    a. Verify that an AHF110 TDM/LAN bus terminator is installed on the right side of the enhanced control cabinet (looking from the back of the cabinet) as shown in Figure 2-10.
    b. On the top port cabinet, remove the existing TDM terminator (AHF1), and replace it with a AHF110 TDM/LAN bus terminator (see Figure 2-10).

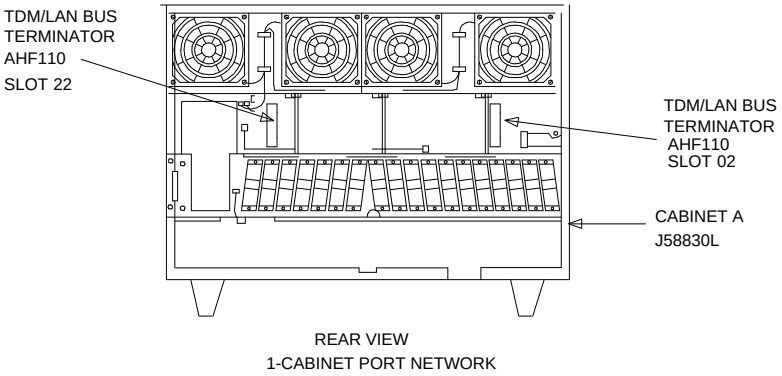


Figure 2-9. Locations of TDM/LAN Bus Terminators for Single-Cabinet PPN

Connect TDM/LAN Cables and ICC Cables

1. Route and connect the new WP-91716 L3 TDM/LAN cables (see Figure 2-10). Use the following steps to route the cables between the R1V3 port cabinets being reused. The new cables are not run through the existing slot in the rear shelves.
    a. Loosen two left (as viewed from the rear) connector-panel screws then remove the other two connector-panel screws.
    b. Attach the TDM/LAN cable to the backplane, and slide the cable between the connector panel and the rear shelf (not through the existing hole in the shelf). Route the cable along the bottom of the cabinet.
    c. Replace and tighten the connector-panel screws.
2. Connect the ICC cables as shown in Table 2-2 and Figure 2-11 and Figure 2-12.
3. On the ‘‘A’’ carrier, verify the 982LS current limiter (CURL) is properly connected to the pin-field block marked ‘‘CURL’’ (see Figure 2-11). The CURL’s components should be on the left side as viewed from the rear.

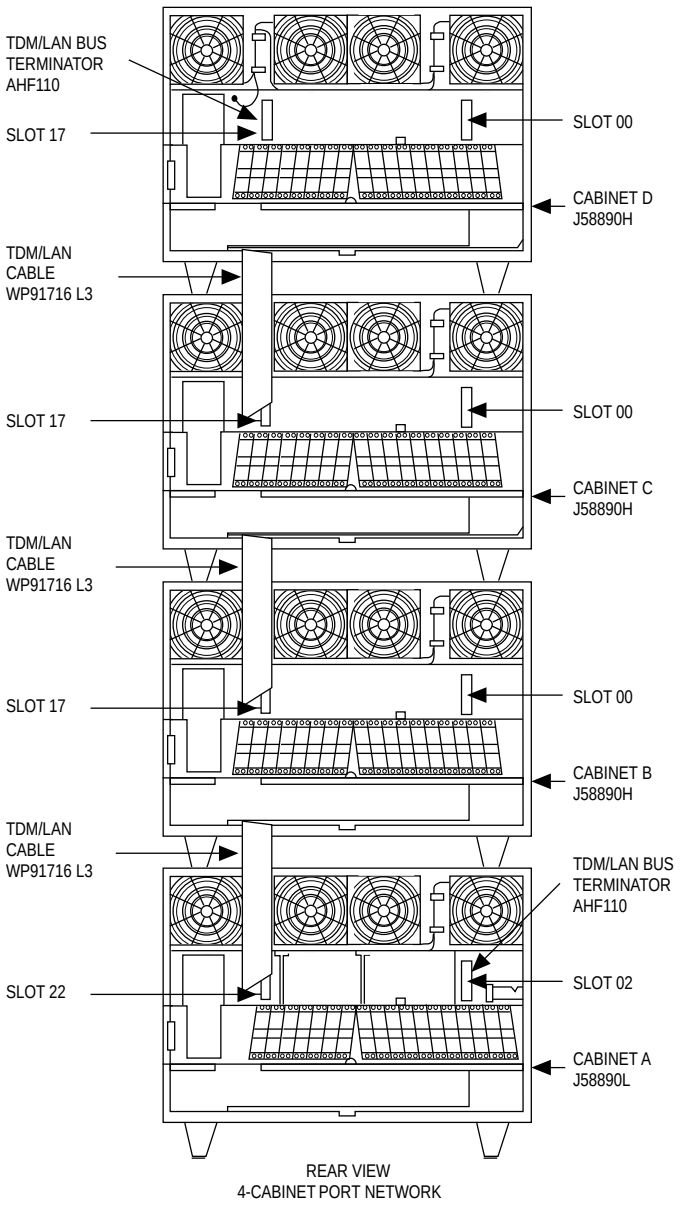


Figure 2-10. TDM/LAN Connections for G3i V4 PPN

Table 2-2. Intercabinet Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
PPN	J58890L-1 L5	ICCA	J58890M-1 L5	ICCA
		ICCB		ICCB
		ICCC		ICCC

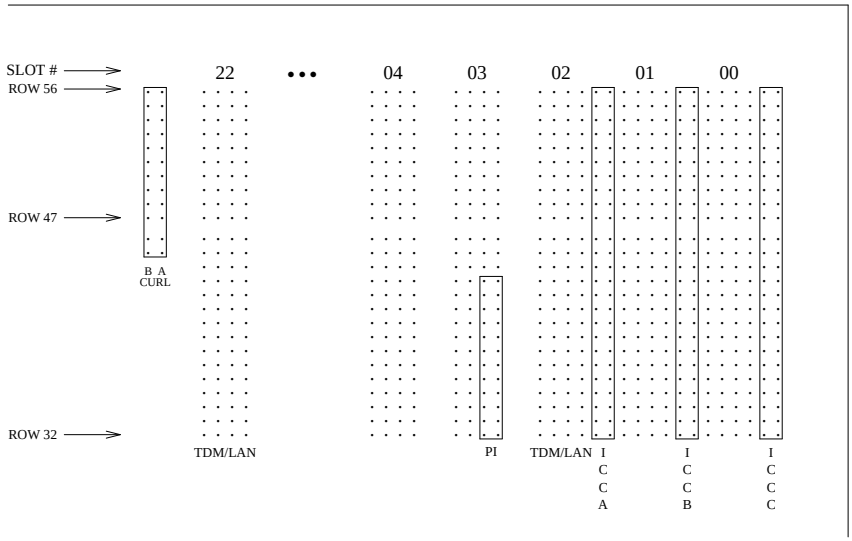


Figure 2-11. ICC Pin-Field Blocks on J58890L-1 L5 Enhanced Control Cabinet

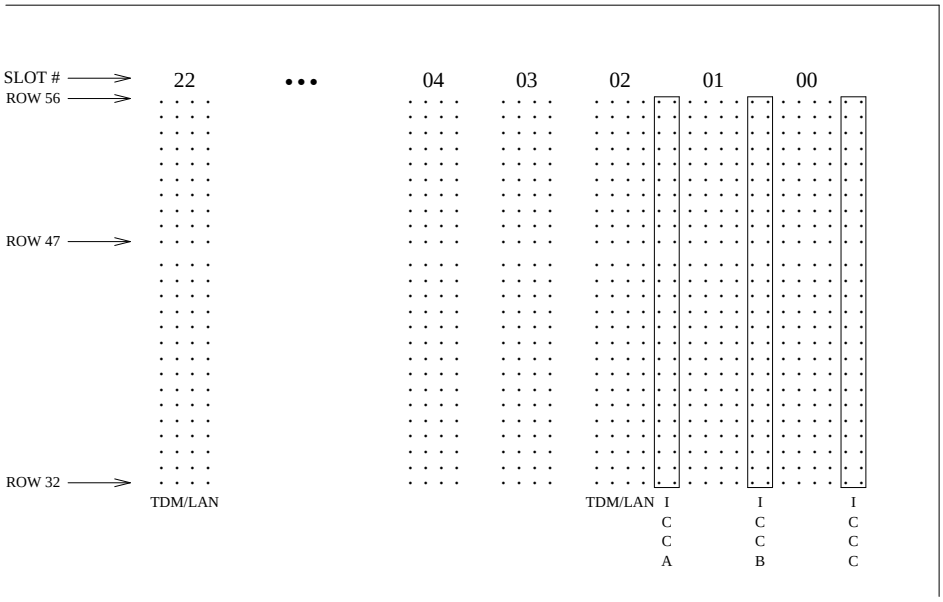


Figure 2-12. ICC Pin-Field Blocks on J58890M-1 L5 or J58890M-2 L7 Enhanced Duplicated Control Cabinet

Install Ground Plate(s)

NOTE:
If the system being upgraded is mounted with earthquake protection, do not install the ground plates at this time.

A ground plate is required between each cabinet (see Figure 2-13). The ground plate not only provides the ground connection between cabinets it also stabilizes the cabinets.

1. See NOTE. Behind the cabinets, replace the upper and lower covers (leave the screws loose).

   NOTE:
   On a critical-reliability G3i V4, the rear covers for the control cabinets need two detents (one for the TDM/LAN cable and another for the ICC cables).

2. Place the ground plate over the lower rear cover of the upper cabinet so that the four screws that attach the lower rear cover go through the four ground-plate keyhole slots.
3. Slide the ground plate down over the upper rear cover of the lower cabinet so that the four screws that attach the upper rear cover go through the four lower ground-plate slots.
4. Ensure that the exposed portion of the TDM/LAN cable that is between the cabinets does not get pinched.
5. Tighten all screws.

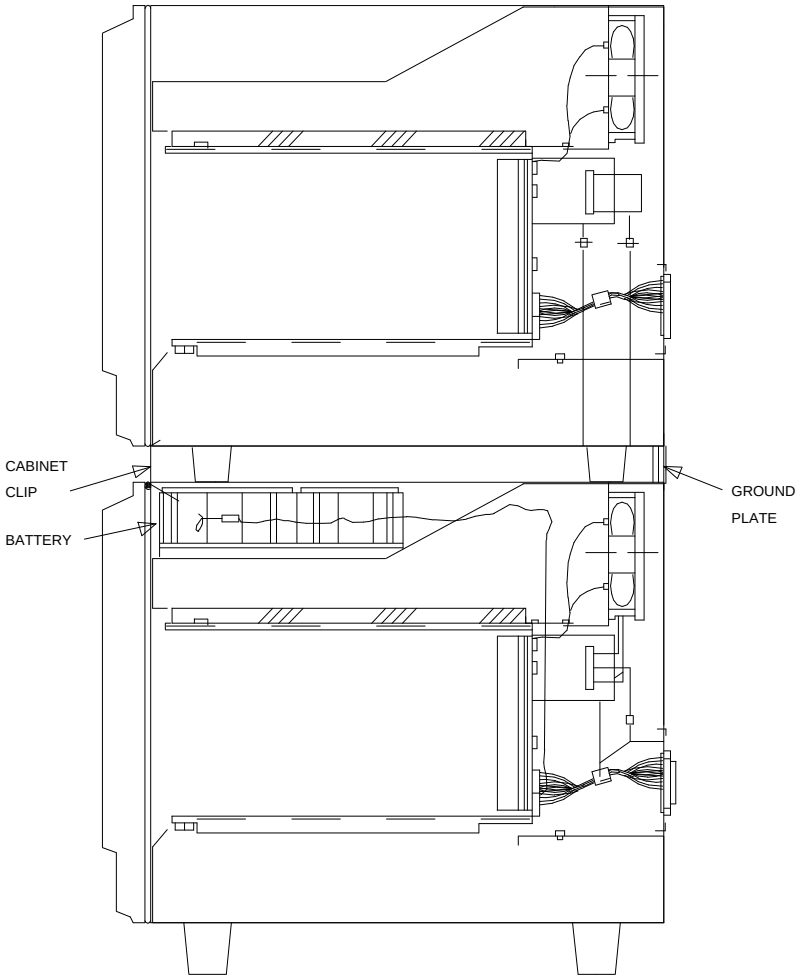


Figure 2-13. Locations of Ground Plate Cabinet Clip, and Battery

Install Cabinet Clip(s)

NOTE:
This procedure is used only on systems without earthquake protection.

A cabinet clip, used to ground and stabilize the cabinets, is required between each cabinet.

At the front of the cabinets, install the cabinet clip between the cabinets by hooking the clip into the slot of the upper cabinet and snapping the straight leg of the clip into the slot on the lower cabinet (see Figure 2-13).

Connect Power and Grounding

1. Reconnect the 6-AWG cabinet ground wire from the ground bar in the cabinet.

   NOTE:
   A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

2. Reconnect the coupled bonding conductor.
3. Reconnect the cabinet power cords behind each cabinet.

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the previously installed ground strap from the power-failure transfer unit.

Reboot the System

Standard-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control cabinet ''A,'' or install the G3-MA according to the "Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left and with the insert arrow (on the same side) pointing forward.

3. Behind each cabinet's power supply, set the circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications*

System Generic 3 V4 Implementation, 555-230-655, and make the necessary changes.

Critical-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control cabinet ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At each TN777B faceplate, insert a translation memory card obtained from the CSA.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. Behind each PPN cabinet's power supply, set the circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory cards. Loading the translations takes 10 to 15 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Log in at the `login:` prompt on the G3-MT or G3-MA, and set the time to ensure that the system is booted properly.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close Upgraded PPN Stack without Earthquake Protection and Reconnect Cables

1. Behind each PPN cabinet's power supply, set the circuit breaker to OFF.
2. Replace all cables that were labeled and removed.
3. Install the front door on each cabinet.
4. Install a DEFINITY label on each existing port cabinet.
5. Install the top and bottom rear covers. Be sure that the correct rear covers are installed on the new control cabinet(s). Do not use these rear covers on the port cabinets.

Close Upgraded PPN Stack with Earthquake Mounting and Reconnect Cables

1. Behind each PPN cabinet's power supply, set the circuit breaker to OFF.
2. Replace all cables that were labeled and removed.
3. Install the upper and lower rear covers with all of the screws except the screws that run along the top and bottom of the cabinet. Do not tighten the screws.

   NOTE:
   On a critical-reliability G3i V4, the rear covers for the control cabinets need two detents (one for the TDM/LAN cable and another for the ICC cables).

4. Line up the four holes in the ground plate with the four holes at the bottom of the lower rear cover of the upper cabinet and install the screws, but do not tighten.
5. Line up the ground plate with the top holes of the upper rear cover of the lower cabinet. Install the four screws but do not tighten.
6. At the front of the cabinet, line up the earthquake front plate with the holes at the top and bottom of the cabinet (see Figure 2-14). Install the eight screws, but do not tighten.
7. Tighten all screws.
8. Repeat Steps 3 through 7 for the remaining cabinets.
9. Install the front door on each cabinet.
10. Install a DEFINITY label on each existing port cabinet.

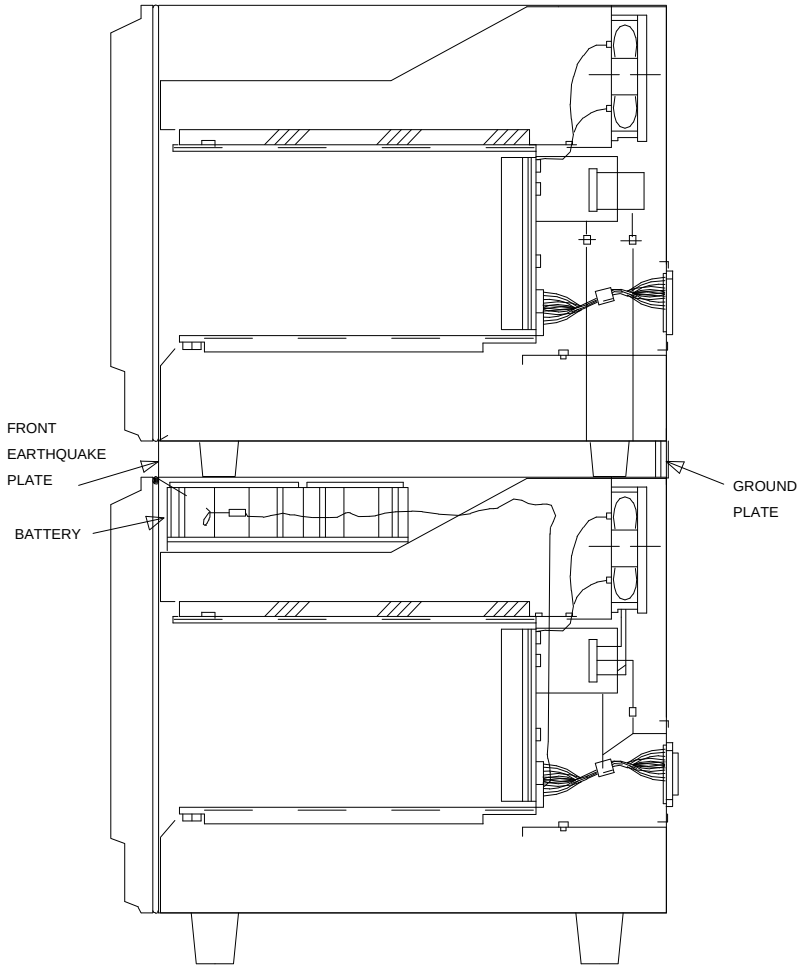


Figure 2-14. Locations of Ground Plate, Earthquake Front Plate, and Battery

Install Cable Clamps

Behind the cabinets using screws provided, install two cable clamps on each ground plate (see Figure 2-15). These clamps are used to hold the port cables.

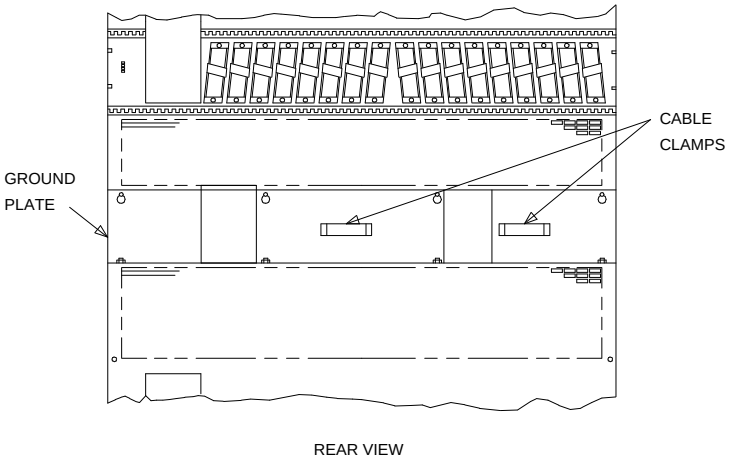


Figure 2-15. Locations of Ground Plate and Cable Clamps on Single-Carrier Cabinet

Power Up the PPN Cabinets

1. Behind each PPN cabinet's power supply, set the circuit breaker to ON.
2. The system now goes through the rebooting process loading the translations from the memory card. Rebooting requires 8 to 11 minutes.

   Refer to the "System Reboot Indications" section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
3. After the system reboot is finished and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the R1V3 control cabinet were relocated in order to:

- Use a TN748B to replace the tone detector circuits on a TN756
- Put a TN755 power supply in port slots ''15'' and ''16''
- Put a critical port circuit pack requiring longer nominal battery holdover (e.g. a DS1 or an Announcement circuit pack) in a port slot
- Put a TN776 or TN570 Expansion Interface in port slot ''1'' (for a simultaneous EPN addition)

verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, any announcements that were stored on a TN750/B Announcement circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control cabinet, control circuit packs, and RMSS tape drive
- System 75 TN741 (or international TN419A) tone-clock circuit pack if replaced
- R1V3 tape cartridges
- TDM cables and AHF103 cable adapters
- AHF1 TDM bus terminators

R1V3 System 75 XE to G3i V4 EPN

See NOTE. Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

NOTE:
During the wall-field wiring of the PPN installation, the wall field can also be relabeled with the new port-network number of the R1V3 system to be upgraded. (For an R1V3 system, the CSA software upgrade assigned the upgraded EPN as port network ''2.'')

If a second EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new EPN.

Upgrade Single-Carrier Cabinet Stack

An R1V3 System 75 XE is upgraded to a G3i V4 EPN with standard, high, or critical reliability by:

- Removing the TDM cables, cable adapters, and terminators
- Removing the control cabinet in position ''A''
- Installing the J58890N expansion control cabinet in position ''A''
- Installing the new TDM/LAN cables and terminators
- Adding the G3i V4 control and port circuit packs
- Restructuring the port circuits as required
- Adding G3i V4 circuit packs to the ''B'' port cabinet for critical reliability, if required

Upgrading a System 75 XE single-carrier cabinet stack requires, at a minimum, that the control cabinet in the ''A'' position be replaced. Since the control cabinet is the bottom cabinet in the port network, the system will have to be completely dismantled. Properly label every cable to be disconnected so that reconnecting them is easier.

Prerequisite Hardware

The equipment in Table 2-3 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain 4 Mbytes of memory.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ''1-800-772-5409,'' and respond to the call prompter.

Table 2-3. Required Hardware

Equipment	Description	Quantity
PEC 6300-04X	Processor Port Network	1
J58890N	Expansion Control Cabinet	1
106647985	TN775B Maintenance	1
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2 or 4 (Note 1) 2 or 4 (Notes 1 and 2)
103557211 or 103557336 or 106706955	TN768 Tone-Clock TN780 Tone-Clock TN2182 Tone-Clock	1 or 2 1 or 2 (Notes 3 and 13) 1 (Note 14)
405907015	WP-91716 L3 TDM/LAN Cable	0 to 3 (Note 4)
63300A	FL2P-P-XX Fiber Cable	1 or 2 (Note 5)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 or 4 (Note 6) 2 or 4 (Note 6)
105631527	AHF110 TDM/LAN Bus Terminator	2
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 or 2 (Notes 7 and 8)
846307841	''C'' Port Label	1
846307958	''D'' Port Label	1
846307817	Lower Rear Cover	1 (Note 9)
106689516	TN771D Maintenance/Test	1 (Note 10)
846307809	Ground Plate	1 (Note 11)
H600-248 G1	ICC Cables	2 (Note 11)
846309466	DEFINITY Label	1 per cabinet
846408268	Earthquake Front Panel	1 (Note 12)
846408386	Earthquake Ground Plate	1 (Note 12)
846408250	Stiffener	1 (Note 12)
846408243	Earthquake Front Mounting Angle	1 (Note 12)

Notes:

1. Two are required for standard- or high-reliability switches with two port networks. One Expansion Interface (EI) is shipped loose with the EPN equipment. The factory has installed the other EI in the new PPN.

   Four are required for critical-reliability switches with two port networks. Two EIs are shipped loose with the EPN equipment. The factory has installed the other two EIs in the new PPN.

2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. One with standard or high reliability, two with critical reliability.
4. This value depends on the number of single-carrier cabinets in the upgraded EPN.
5. Two cables are required for a critical-reliability G3i V4 system.
6. Four transceivers are required for a critical-reliability G3i V4 system.
7. High- or critical-reliability G3i V4 systems require two memory cards.
8. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
9. Required for the ''B'' port cabinet of a critical-reliability G3i V4 system.
10. Required in a port slot of a critical-reliability G3i V4 EPN with the optional packet bus.
11. Required for a critical-reliability G3i V4 system.
12. Required if earthquake protection is provided.
13. Use TN780 as Tone-Clock for Stratum 3 timing. Also required with the TN780 are the TN748, and TN744 for tone-detection.
14. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Flashlight or high-intensity AC drop light
- Power screwdriver (optional)
- 1/4-inch flat-blade screwdriver
- 1/4-inch socket with ratchet (optional)
- Long-nose pliers to straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding screws
- One dozen #8 self-tapping screws
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7
  - — *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the "Preventive Maintenance'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label every connector cable associated with the system (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down System

See CAUTION. Behind each cabinet's power supply, set the circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Disconnect Power and Grounding

1. Disconnect the cabinet power cords from the rear of each cabinet.
2. Disconnect the coupled bonding conductor.
3. Disconnect the 6-AWG cabinet ground wire from the ground bar in the cabinet.

   NOTE:
   A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from all of the cabinets.
2. Disconnect all of the previously labeled connector cables.
3. Disconnect the Manager I from the TERM connector.
4. Remove the ground plate(s) from between all of the cabinets.
5. Remove the top and bottom rear covers from all of the cabinets.

Remove Circuit Packs

1. Label each port circuit pack in control cabinet "A" with its slot number.
2. See WARNING and NOTE. Remove all circuit packs and power units from the control cabinet. Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

NOTE:
Since an R1V3 system is being converted to an EPN, a TN756 Tone Detector/Generator is *not* acceptable for the upgraded G3i V4 system. However, if a TN756 is being replaced by a new tone-clock during the upgrade, both a new G3i V4 tone-clock (TN768, TN780, TN2182) and a new tone detector (TN748B) should later replace this circuit pack. This tone detector will serve to replace the tone detector circuits on the TN756. If a TN2182 is used, no TN748 is required.

3. See WARNING. If a TN741 (or an international TN419A) Tone-Clock resides in port cabinet ‘‘B,’’ remove this circuit pack from the port cabinet. It will not be reused.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

Disconnect TDM Cables

See NOTE. Remove all of the TDM cables and AHF103 TDM cable adapters. They will not be reused.

NOTE:
Before disconnecting each cable adapter, note its position.

Remove the Existing Control Cabinet

Since the control cabinet is located at the bottom of the port network, the system will have to be completely dismantled. At this point in the upgrade, all of the power, grounding, TDM, and connector cables should be disconnected. Before you proceed, ensure that there is adequate space available to place each cabinet in an out-of-the-way location as the port network is dismantled.

1. Remove the cabinet clip between each cabinet.
2. See DANGER. Remove the port cabinets from the stack, and put them in a safe place.

DANGER:
A port cabinet may weigh as much as 125 pounds and requires two handlers to unstack the cabinets. If third or fourth cabinet is to be removed, remove the front door, power supply, and circuit packs to lighten the load. Make sure the two handlers are capable (size and strength) of lifting the cabinet from its position.

3. If the control cabinet is earthquake mounted, remove the hardware securing the cabinet to the floor.
4. Move the existing control cabinet out of its present location. It will not be reused so it can be removed at this time.

Unpack and Inspect Expansion Control Cabinet for Damage

1. See DANGER. Unpack cabinet.

   DANGER:
   Take care to avoid injury while cutting and removing bands.

2. Visually inspect cabinet for any physical damage caused during shipping. Report any damage for appropriate action per local procedures.

Remove Front Door

Remove the front door of expansion control cabinet.

1. Use a flat blade screwdriver to turn the door-latch screw counterclockwise one quarter turn to release door (see Figure 2-16).
2. Lift door from lower slots, and remove from cabinet.

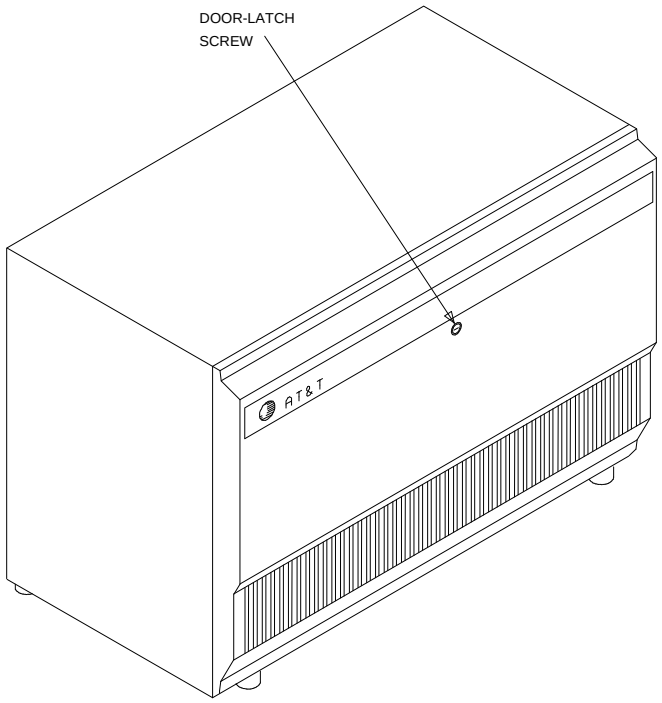


Figure 2-16. Location of Door-Latch Screw for G3i V4 Cabinet

Install Expansion Control Cabinet

1. See DANGER. Position the J58890N-1 expansion control cabinet "A" at the desired location.

   DANGER:
   The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

2. If earthquake protection is not required, install hole plugs (provided with cabinet) in the holes previously occupied by the two carriage bolts at the bottom rear of the cabinet.

Add Earthquake Protection

If earthquake protection is required:

1. Place the front mounting angle at the location selected for the front of the expansion control cabinet.
2. Using the angle as a template, mark the locations of the two mounting bolts.
3. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 2.
4. Mount the front mounting angle to the floor (Figure 2-17).
5. Move the cabinet back into place, and temporarily stabilize the cabinet by attaching the cabinet to the angle with two No. 12-24 by 1/2-inch thread-forming screws.
6. Insert a pencil or marker through the two holes (previously occupied with carriage bolts) in the bottom rear of the cabinet, and mark the floor directly beneath each hole.
7. Remove the two screws installed in Step 5, and move the cabinet out of the way.
8. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 6.
9. Move the cabinet back into place.
10. Attach the cabinet to the front mounting angle using four No. 12-24 by 1/2-inch thread-forming screws.

11. In the rear of the cabinet, lay the stiffener on the bottom of the cabinet aligning the stiffener with the holes in the bottom of the cabinet.
12. Fasten the cabinet to the floor (Figure 2-18).

NOTE:
This procedure is only a portion of the complete earthquake protection package. According to the logical installation sequence, instructions for adding the earthquake front plate and earthquake ground plate will be given at the appropriate location in this chapter.

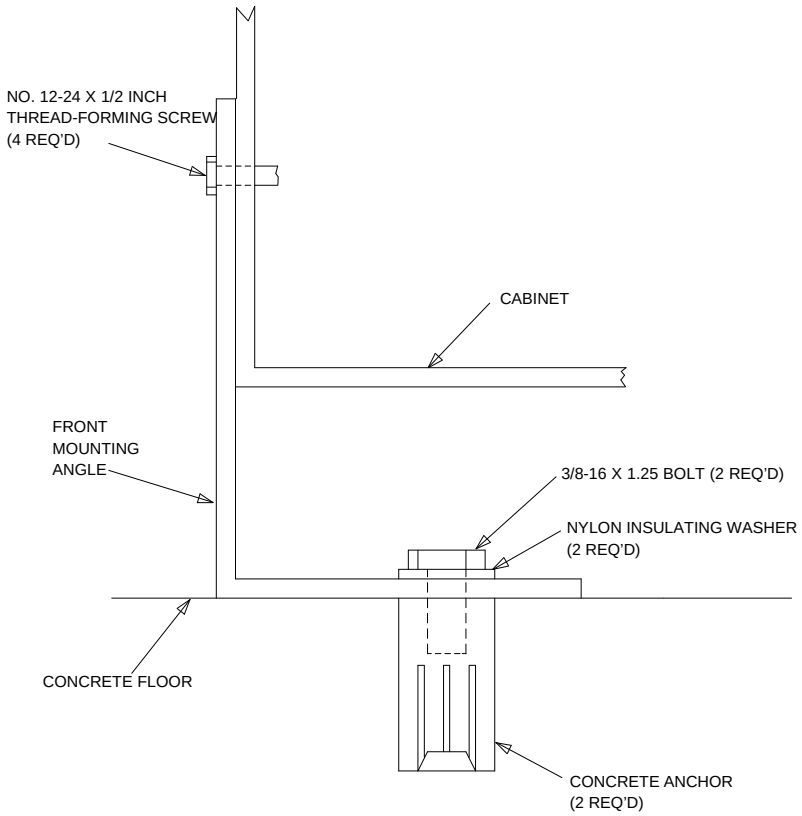


Figure 2-17. Front Mounting Angle — Concrete Floor

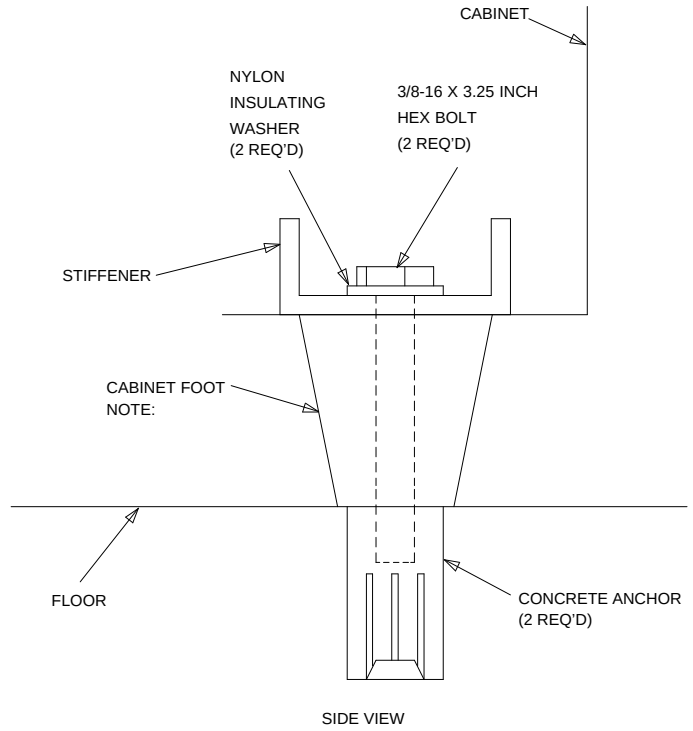


Figure 2-18. Cabinet Earthquake Mounting — Concrete Floor

Install Port Cabinets

1. See DANGER. Place the port cabinets into the positions from which they were previously removed (see Figure 2-19).

   DANGER:
   The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

2. Install the new labels on the front and rear of the port cabinets.

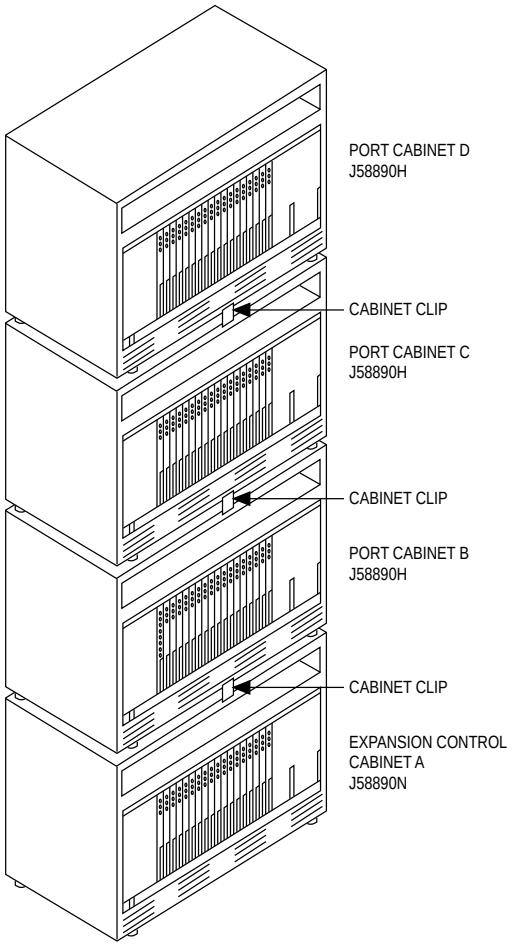


Figure 2-19. 4-Cabinet G3i V4 EPN — Front View Doors Removed

Install Circuit Packs

1. See WARNINGS. Replace the circuit packs and power supplies in port cabinets ‘‘C’’ and ‘‘D’’ if they were previously removed.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   WARNING:
   These replaced port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

2. See preceding WARNING and following NOTE. Using Figure 2-20, the label, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card), install the G3i V4 control circuit packs into the new expansion control cabinet.

   NOTE:
   Since an R1V3 system is being converted to an EPN, a TN756 Tone Detector/Generator is *not* acceptable for the upgraded G3i V4 system. However, if a TN756 is being replaced by a new tone-clock during the upgrade, both a new G3i V4 tone-clock (TN768, TN780, or TN2182) and a new tone detector (TN748B) should later replace this circuit pack. This tone detector will serve to replace the tone detector circuits on the TN756. If a TN2182 is used, no TN748 is required.

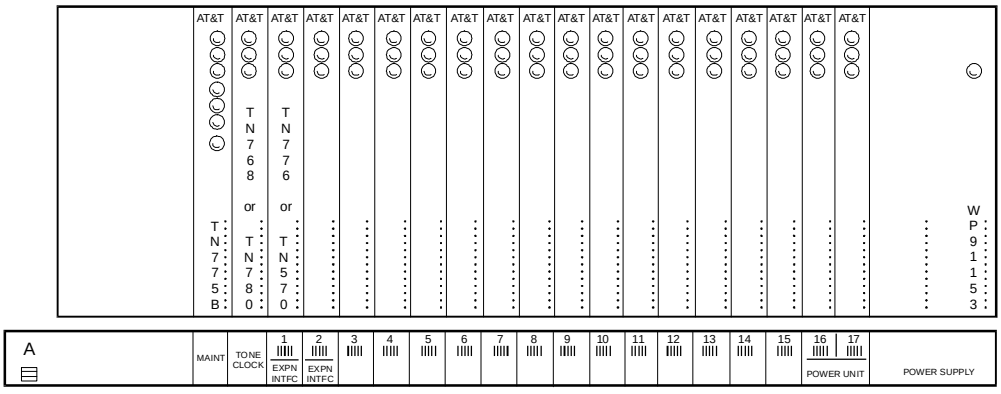


Figure 2-20. Circuit-Pack Locations in G3i V4 Expansion Control Cabinet

3. See preceding WARNINGS and following NOTE. Install the port circuit packs, previously removed, into the ''A'' cabinet using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   NOTE:
   Since the new G3i V4 expansion control cabinet has from one to three more port slots than the removed control cabinet, there should not be a need to move and retranslate these circuit packs.

4. See preceding WARNINGS and following NOTE. For an EPN in a critical-reliability G3i V4 system, install a TN768 or a TN2182 Tone-Clock and a TN776 or TN570 EI in slots ''1'' and ''2'' of port cabinet ''B.''

   Do not reinsert the TN741 (or the international TN419A) Tone-Clock into port cabinet ''B.''

   NOTE:
   Installing these circuit packs may require some port circuit packs be moved. If this was not performed before the upgrade, install the circuit packs now. The port circuits will have to be retranslated after the system is rebooted with the G3i V4 translation memory card.

Install TDM/LAN Bus Terminators

1. If the EPN has only one single-carrier cabinet, verify that the two AHF110 TDM/LAN bus terminators are located per Figure 2-21.
2. If the EPN has more than one single-carrier cabinet, perform the following procedures:
   a. Verify that an AHF110 TDM/LAN bus terminator is installed on the right side of the expansion control cabinet (looking from the back of the cabinet) as shown in Figure 2-22.
   b. On the top port cabinet, remove the existing TDM terminator (AHF1) and replace it with a AHF110 TDM/LAN bus terminator (see Figure 2-22).

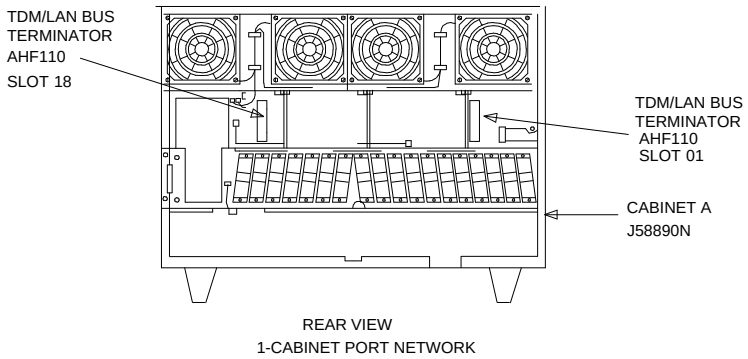


Figure 2-21. Locations of TDM/LAN Bus Terminators for Single-Cabinet EPN

Connect TDM/LAN Cables and ICC Cables

1. Route and connect the new WP-91716 L3 TDM/LAN cables (see Figure 2-22). Use the following steps to route the cables between the R1V3 port cabinets being reused. The new cables are not run through the existing slot in the rear shelves.
    a. Loosen two left (as viewed from the rear) connector-panel screws, then remove the other two connector-panel screws.
    b. Attach the TDM/LAN cable to the backplane, and slide the cable between the connector panel and the rear shelf (not through the existing hole in the shelf). Route the cable along the bottom of the cabinet.
    c. Replace and tighten the connector-panel screws.
2. Connect the ICC cables as shown in Table 2-4 and Figure 2-23 and Figure 2-24.
3. On the ‘‘A’’ carrier, verify the CFY1 current limiter (CURL) is properly connected to pin-field block ‘‘00’’ (see Figure 2-23). The CURL’s components should be on the left side as viewed from the rear.

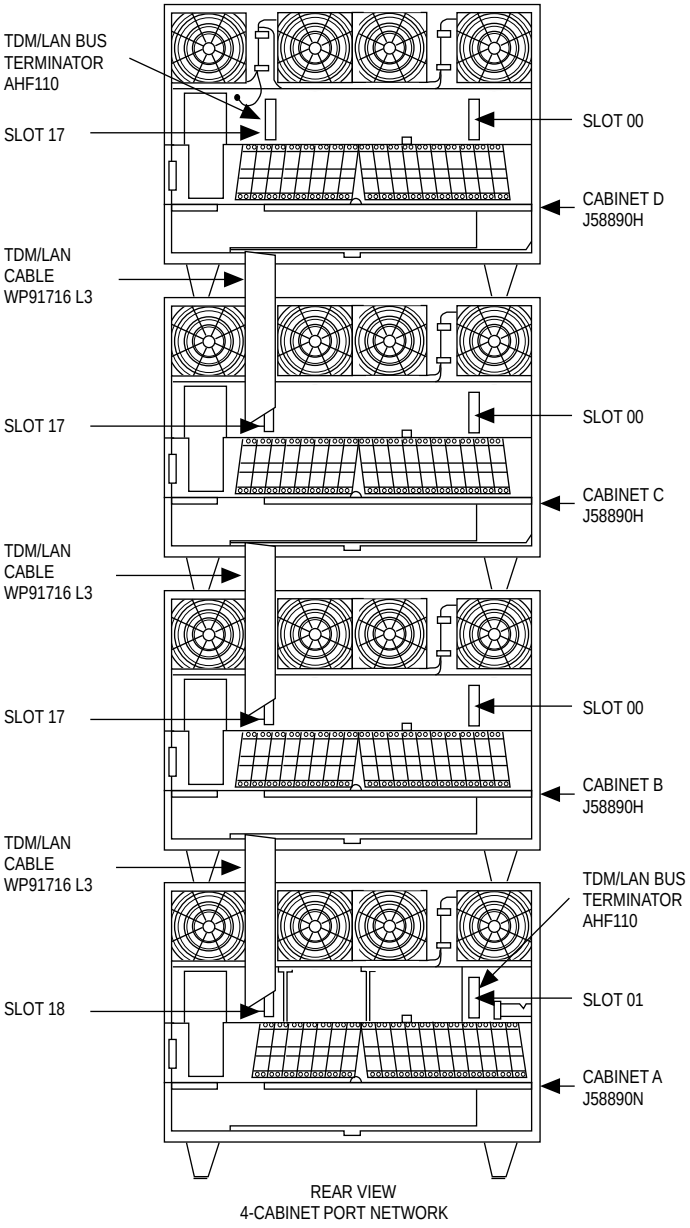


Figure 2-22. TDM/LAN Connections for G3i V4 EPN

Table 2-4. Intercabinet Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
EPN	J58890N	ICCA	J58890H	ICCA
		ICCB		ICCB

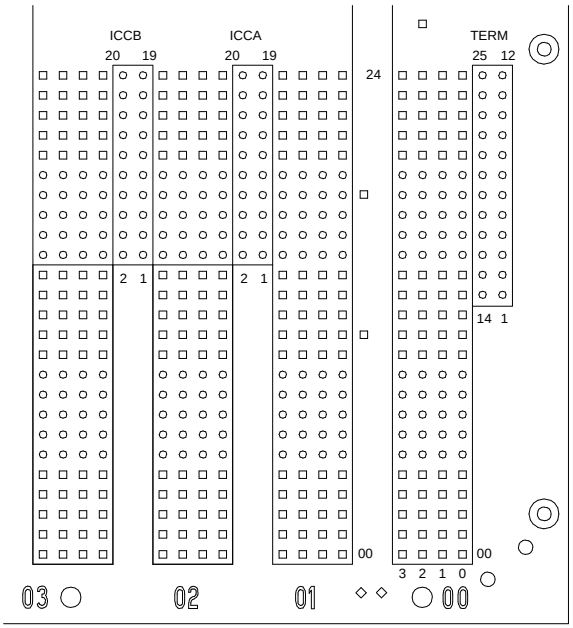


Figure 2-23. ICC Pin-Field Blocks on J58890N Expansion Control Cabinet

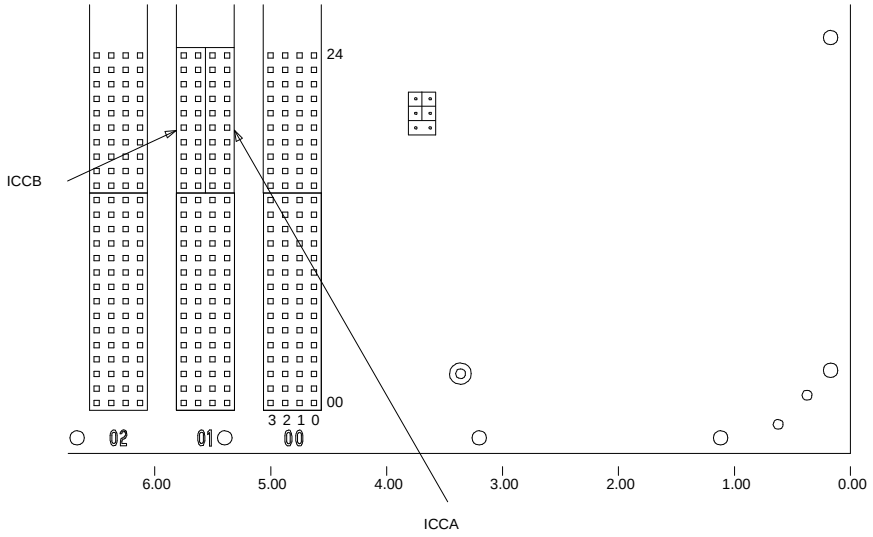


Figure 2-24. ICC Pin-Field Blocks on J58890H Port Cabinet

Interconnect Port Networks

See NOTE. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

With Standard Reliability

When a standard-reliability PPN and EPN are collocated, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to connect the EPN.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

When a standard-reliability PPN and EPN are remotely separated with fiber, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

With High Reliability

When a high-reliability PPN and EPN are collocated, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to connect the EPN.

When a high-reliability PPN and EPN are remotely separated with fiber, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

With Critical Reliability

When a critical-reliability PPN and EPN are collocated, two fiber-optic cables (FL2P-P-XX) and four lightwave transceivers (9823-type) are required to connect the EPN.

When a critical-reliability PPN and EPN are remotely separated with fiber, four fiber-optic cables (FL2P-P-XX), four lightwave transceivers (9823-type), and four lightwave-interface units (provided by the PSC) are required.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either "TX" (transmit) or "RX" (receive), while the fibers attached to each connector are numbered either "1" or "2." A viable fiber connection is only made when both fibers in each cable (that is "1" and "2") route from the "TX" connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 2-26.

NOTE:
For implementation details, refer to the "Fiber Link Administration" sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Connections with Standard Reliability (Adjacent Cabinets)

1. Behind control cabinet A of the single-carrier PPN (see Figure 2-25 and Figure 2-26):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable, coming from the PPN, to the 9823-type lightwave transceiver at slot 2A01.
3. Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
4. Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

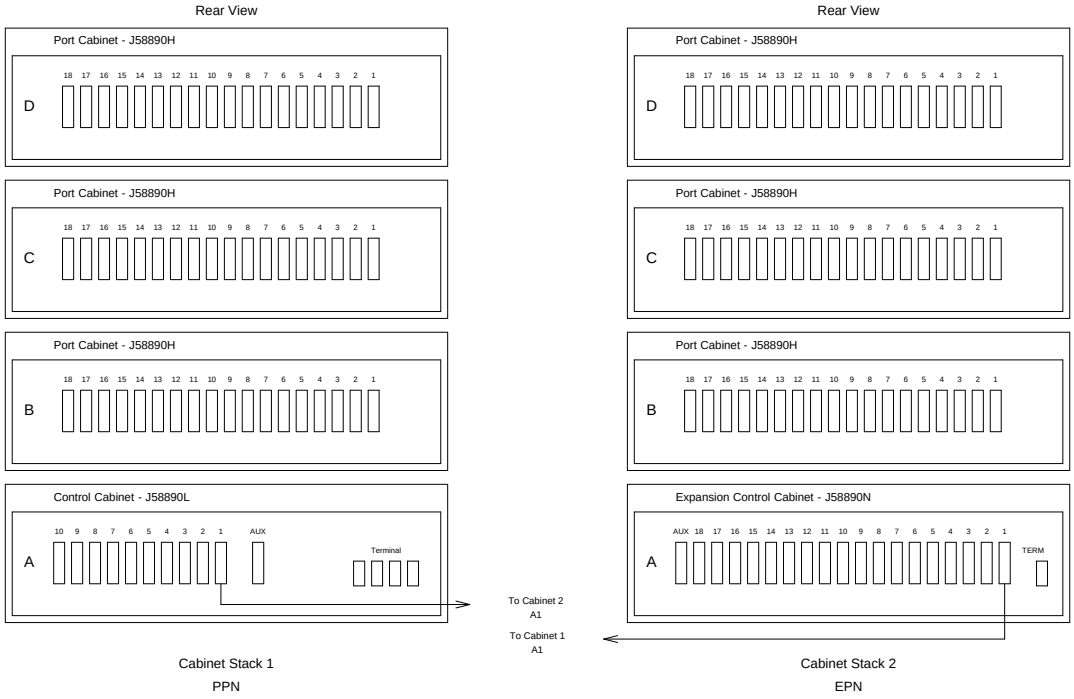


Figure 2-25. Standard-Reliability G3i V4 with Two Port Networks

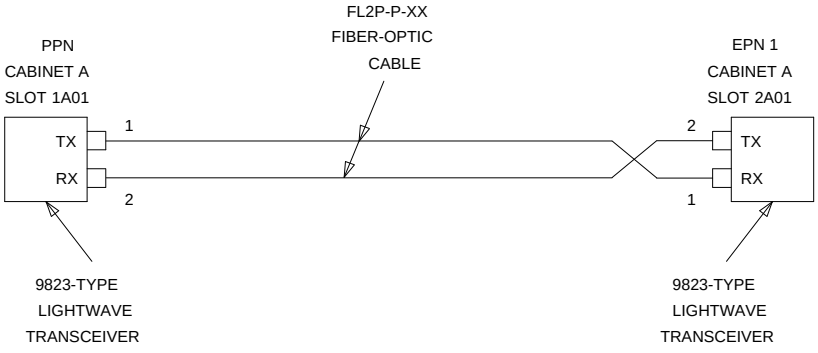


Figure 2-26. Fiber-Optic Connections PPN to EPN

Connections with Standard Reliability (Remote Cabinets)

1. Behind control cabinet A of the single-carrier PPN (Figure 2-25 and Figure 2-27):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable to the 9823-type lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

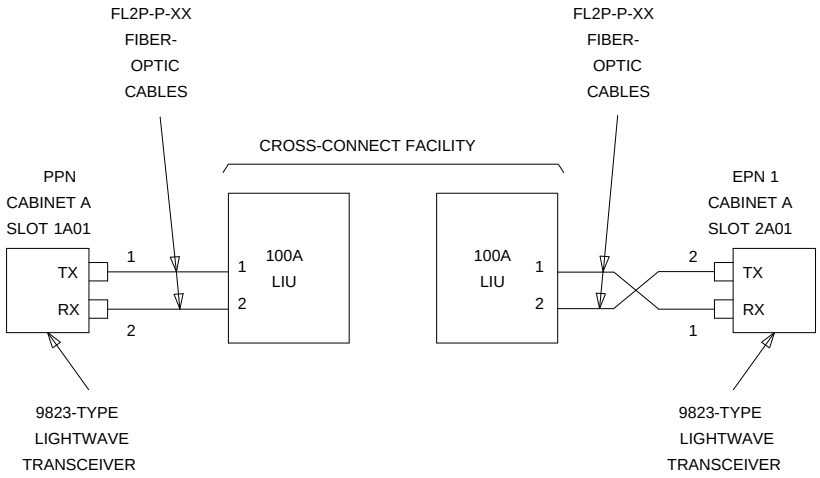


Figure 2-27. Fiber-Optic Connections PPN to EPN

Connections with High Reliability (Adjacent Cabinets)

1. Behind control cabinet A of the single-carrier PPN (see Figure 2-28 and Figure 2-29):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from control cabinet A of the PPN, to the 9823-type lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

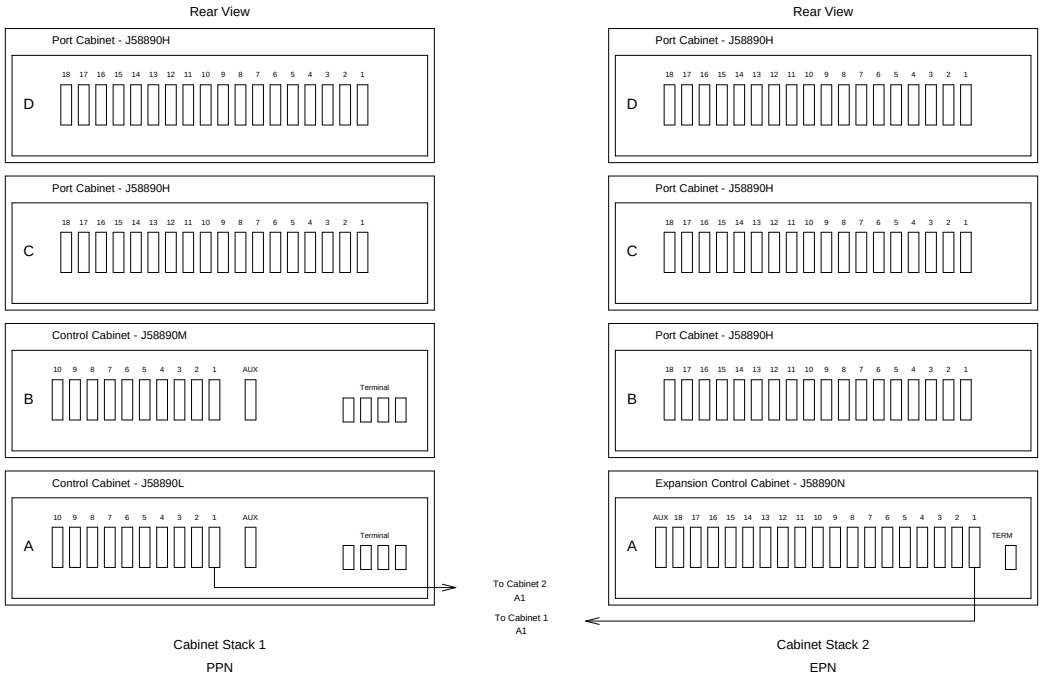


Figure 2-28. High-Reliability G3i V4 with Two Port Networks

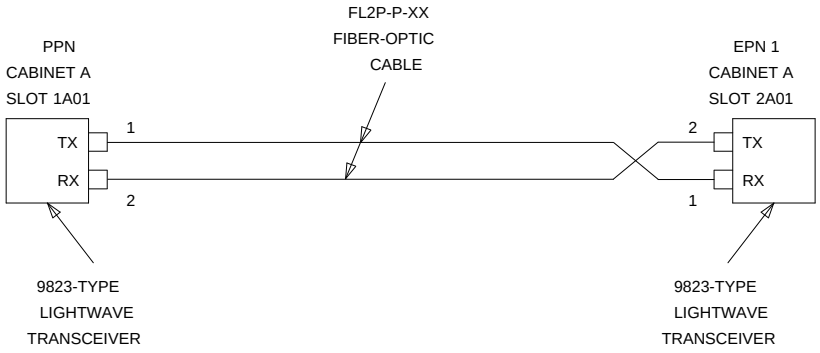


Figure 2-29. Fiber-Optic Connections PPN to EPN

Connections with High Reliability (Remote Cabinets)

1. Behind control cabinet A of the single-carrier PPN (see Figure 2-28 and Figure 2-30):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from control cabinet A of the PPN, to the 9823-type lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

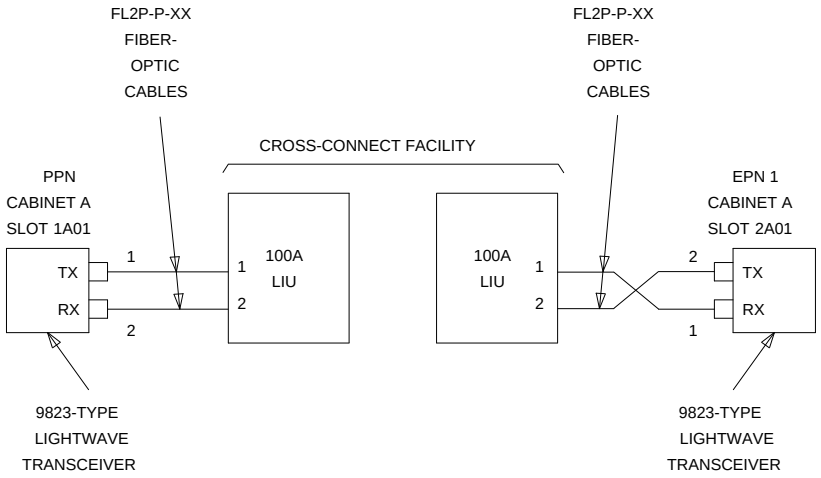


Figure 2-30. Fiber-Optic Connections PPN to EPN

Connections with Critical Reliability (Adjacent Cabinets)

1. Behind control cabinet A of the single-carrier PPN (see Figure 2-31 and Figure 2-32):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from control cabinet A of the PPN, to the 9823-type lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

3. Behind control cabinet B of the single-carrier PPN:
    - Install a 9823-type lightwave transceiver on the connector at slot 1B01.
    - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
    - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind port cabinet B of the single-carrier EPN:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
    - Connect the fiber-optic cable, coming from control cabinet B of the PPN, to the 9823-type lightwave transceiver at slot 2B02.
    - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
    - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

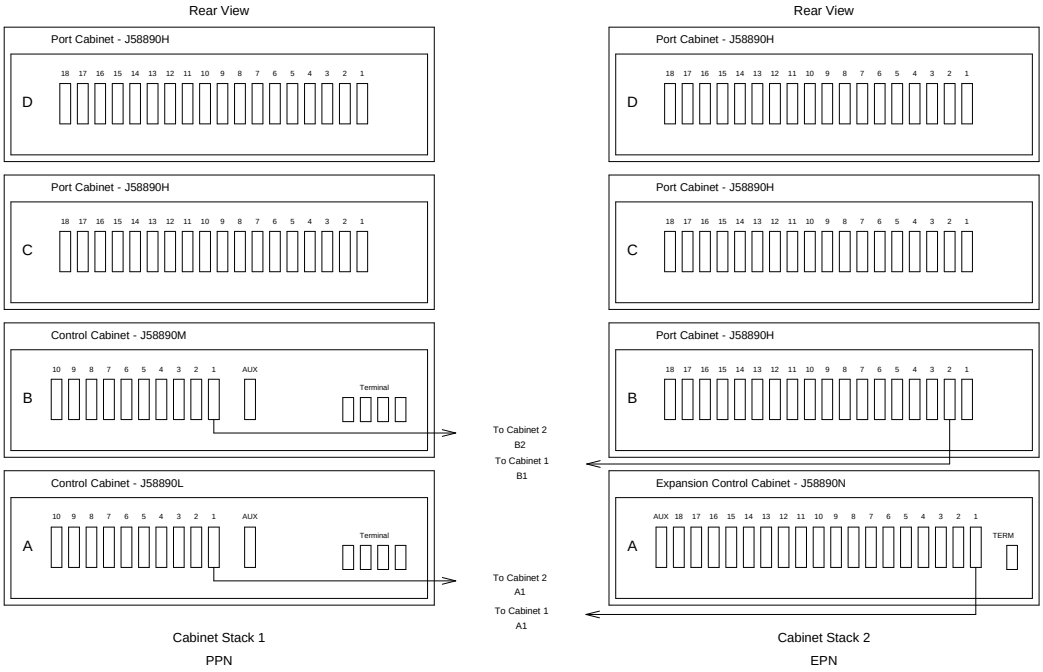


Figure 2-31. Critical-Reliability G3i V4 with Two Port Networks

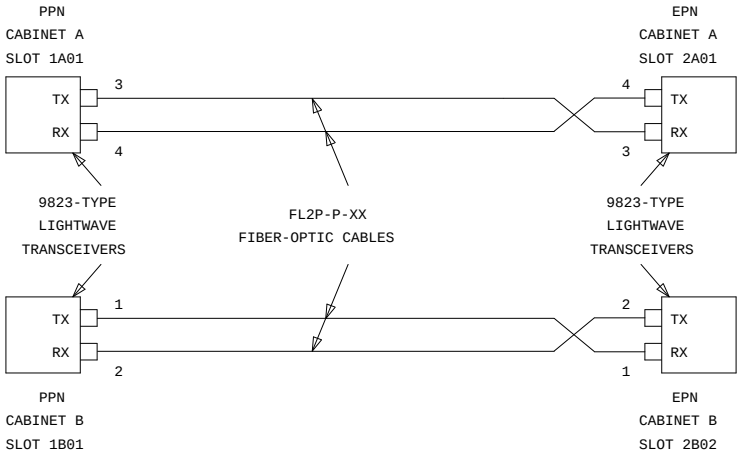


Figure 2-32. With Critical Reliability

Connections with Critical Reliability (Remote Cabinets)

1. Behind control cabinet A of the single-carrier PPN (see Figure 2-31 and Figure 2-33):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from control cabinet A of the PPN, to the 9823-type lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
3. Behind control cabinet B of the single-carrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.

- Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

4. Behind port cabinet B of the single-carrier EPN:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect the fiber-optic cable, coming from control cabinet B of the PPN, to the 9823-type lightwave transceiver at slot 2B02.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

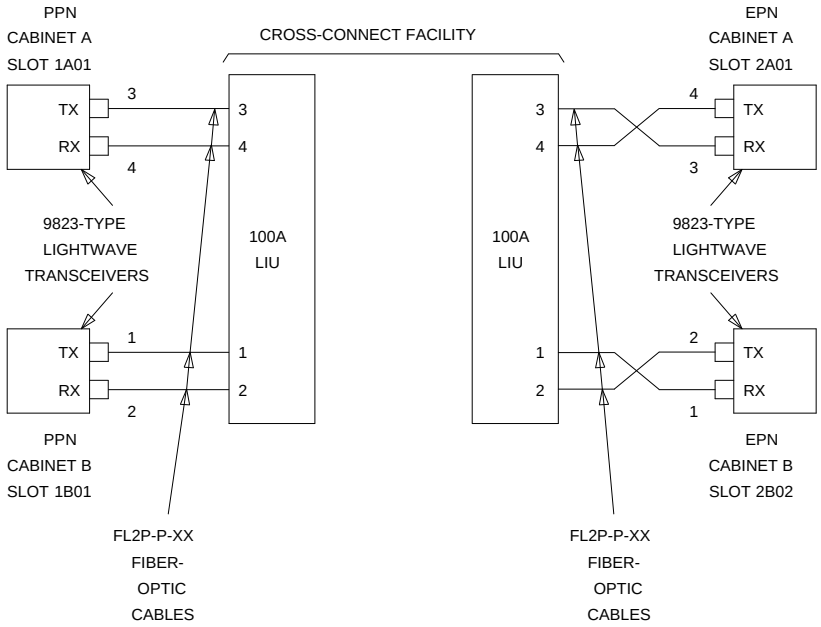


Figure 2-33. With Critical Reliability

Install Ground Plate(s)

NOTE:
If the system being upgraded is mounted with earthquake protection, do not install the ground plates at this time.

A ground plate is required between each cabinet (see Figure 2-34). The ground plate not only provides the ground connection between cabinets, it also stabilizes the cabinets.

1. See NOTE. Behind the cabinets, replace the upper and lower covers (leave the screws loose).

   NOTE:
   The rear covers for G3i V4 control cabinets may need two detents (one for the TDM/LAN cable and another for the ICC cables). Therefore, if an R1V3 XE is being upgraded to a critical-reliability G3i V4's EPN, the lower rear cover of the port cabinet in position ''B'' (serving as the duplicate expansion control cabinet) must be replaced with the new cover (846307817) so that the ICC cables and the new ground plate can be properly installed between cabinets ''A'' and ''B.''

2. Place the ground plate over the lower rear cover of the upper cabinet so that the four screws that attach the lower rear cover go through the four ground-plate keyhole slots.
3. Slide the ground plate down over the upper rear cover of the lower cabinet so that the four screws that attach the upper rear cover go through the four lower ground-plate slots.
4. Ensure that the exposed portion of the TDM/LAN cable that is between the cabinets does not get pinched.
5. Tighten all screws.

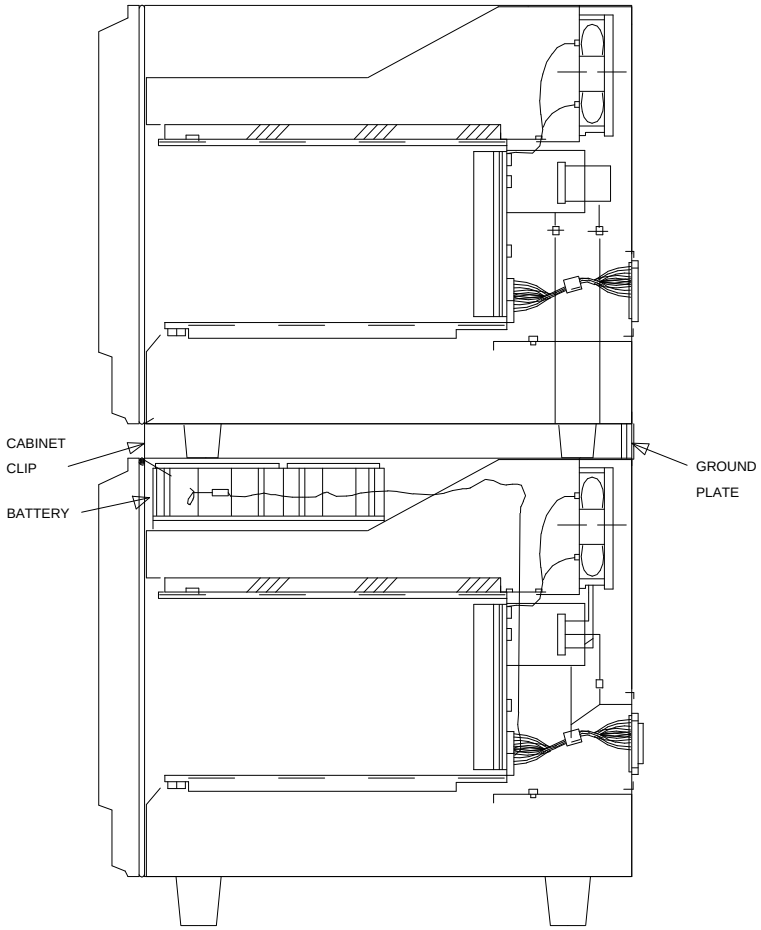


Figure 2-34. Locations of Ground Plate, Cabinet Clip, and Battery

Install Cabinet Clip(s)

NOTE:
This procedure is used only on systems without earthquake protection.

A cabinet clip, used to ground and stabilize the cabinets, is required between each cabinet.

At the front of the cabinets, install the cabinet clip between the cabinets by hooking the clip into the slot of the upper cabinet and snapping the straight leg of the clip into the slot on the lower cabinet (see Figure 2-34).

Connect Power and Grounding

1. Reconnect the 6-AWG cabinet ground wire from the ground bar in the cabinet.

   NOTE:
   A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

2. Reconnect the coupled bonding conductor.
3. Reconnect the cabinet power cords behind each cabinet.

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the previously installed ground strap from the power-failure transfer unit.

Reboot the System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control cabinet ''A,'' or install the G3-MA according to the "Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left and with the insert arrow (on the same side) pointing forward.

3. Behind each cabinet's power supply, set the circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Relabel Wall Field

If not done during the installation of new PPN, relabel the wall field with the new port-network number of the upgraded G3i V4 EPN. (For an upgrade of an R1V3 system, the CSA software upgrade assigned port-network number ''2'' to the upgraded EPN.)

Close Upgraded EPN Stack without Earthquake Protection and Reconnect Cables

1. Behind each EPN cabinet's power supply, set the circuit breaker to OFF.

   NOTE:
   Powering down an EPN cabinet without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Replace all cables that were labeled and removed.
3. Install the front door on each cabinet.
4. Install a DEFINITY label on each existing port cabinet.
5. Install the top and bottom rear covers. Be sure that the correct rear covers are installed on the new J58890N expansion control cabinet. Do not use these rear covers on the port cabinets.

Close Upgraded EPN Stack with Earthquake Mounting and Reconnect Cables

1. Behind each EPN cabinet's power supply, set the circuit breaker to OFF.

   NOTE:
   Powering down an EPN cabinet without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Replace all cables that were labeled and removed.
3. Install the upper and lower rear covers with all of the screws, except the screws that run along the top and bottom of the cabinet. Do not tighten the screws.

   NOTE:
   The rear covers for G3i V4 control cabinets may need two detents (one for the TDM/LAN cable and another for the ICC cables). Therefore, if an R1V3 XE is being upgraded to a critical-reliability G3i V4's EPN, the lower rear cover of the port cabinet in position ''B'' (serving as the duplicate expansion control cabinet) must be replaced with the new cover (846307817) so that the ICC cables and the new ground plate can be properly installed between cabinets ''A'' and ''B.''

4. Line up the four holes in the ground plate with the four holes at the bottom of the lower rear cover of the upper cabinet, and install the screws, but do not tighten.
5. Line up the ground plate with the top holes of the upper rear cover of the lower cabinet. Install the four screws, but do not tighten.
6. At the front of the cabinet, line up the earthquake front plate with the holes at the top and bottom of the cabinet (see Figure 2-35). Install the eight screws, but do not tighten.
7. Tighten all screws.
8. Repeat Steps 3 through 7 for the remaining cabinets.
9. Install the front door on each cabinet.
10. Install a DEFINITY label on each existing port cabinet.

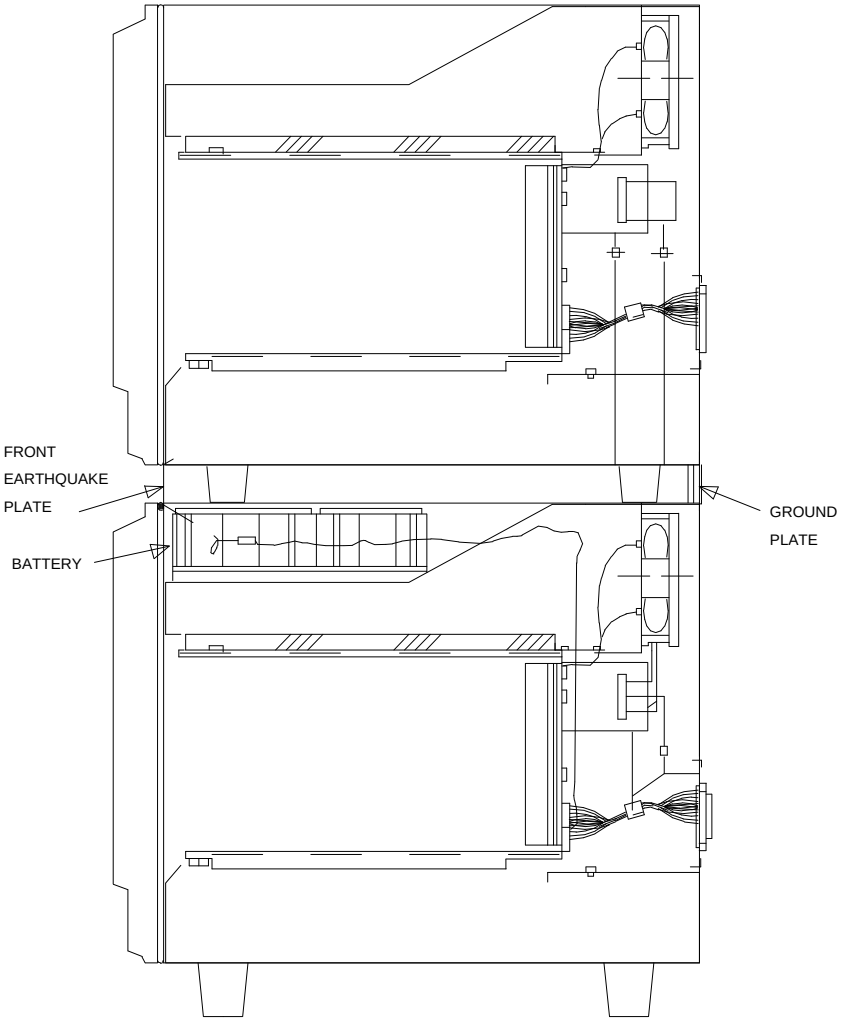


Figure 2-35. Locations of Ground Plate, Earthquake Front Plate, and Battery

Install Cable Clamps

Behind the cabinets, using screws provided, install two cable clamps on each ground plate (see Figure 2-36). These clamps are used to hold the port cables.

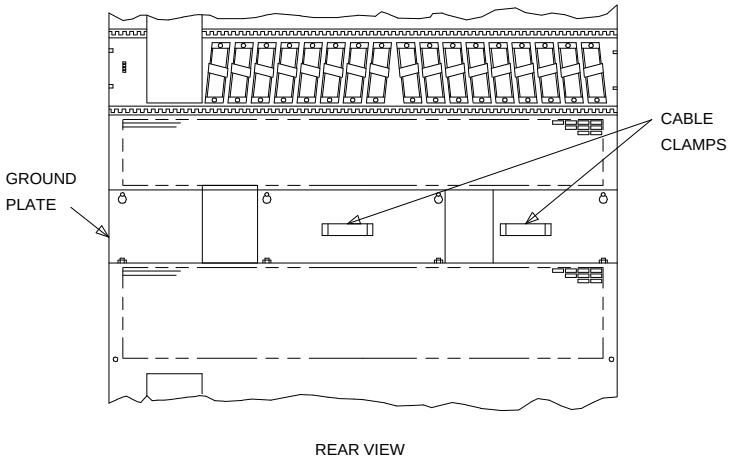


Figure 2-36. Locations of Ground Plate and Cable Clamps on Single-Carrier Cabinet

Power Up the EPN Cabinets

1. Behind each EPN cabinet's power supply, set the circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to the EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the R1V3 control cabinet were relocated in order to do the following:

- Use a TN748B to replace the tone detector circuits on a TN756
- Put a TN776 or TN570 Expansion Interface in port slot ‘‘1’’
- Put a TN755 power supply in port slots ‘‘16’’ and ‘‘17’’
- Put a critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot,

Verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, any announcements that were stored on a TN750 Announcement circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment, replaced during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control cabinet, control circuit packs, and RMSS tape drive
- System 75 tone-clock circuit pack
- R1V3 tape cartridges

- TDM cables and AHF103 cable adapters
- AHF1 TDM bus terminators
- Lower rear cover for expansion control cabinet

Medium-Cabinet System 75 R1V3 to G3i V4

3

This chapter provides the information necessary to upgrade a medium-cabinet Release 1, Version 3 (R1V3) System 75 system to a DEFINITY® G3i V4. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

⚠ CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

Any new cabinets, shipped by the factory to fulfill the upgrade order, are the new ''DEFINITY style'' of multicarrier or single-carrier cabinets. Whereas, the System 75 R1V3 cabinet to be upgraded is an old-style medium cabinet. Although the new G3i V4 cabinet(s) and the upgraded G3i V4 cabinet will look different, they can be used together.

The following processes are required for an R1V3 to G3i V4 PPN upgrade:

- Upgrading the hardware

  This involves replacing the R1V3 control carrier with a G3i V4 control carrier and replacing and adding circuit packs
- Replacing the software tape with a DEFINITY memory card containing G3i V4 translations.
- Upgrading the software

  This involves loading the G3i V4 translations from the translation memory card, and then (when necessary) re-entering translations.
- Testing the upgraded system to verify proper operation

The following processes are required for an R1V3 to G3i V4 EPN upgrade:

- Upgrading the hardware

  This involves adding a new PPN, replacing the R1V3 control carrier with an expansion control carrier, and replacing and adding circuit packs

- Replacing the software tape
- Upgrading the software

  This involves saving, loading, and (when necessary) reentering system translations.

- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication Between Equipment Rooms

For an EPN upgrade where some of the equipment resides at a remote location, the upgrade activity will be much easier if temporary communications are established between the equipment rooms.

Contact Network Technicians

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

Medium-Cabinet R1V3 to G3i V4 PPN

A medium-cabinet System 75 upgrade to a G3i V4 PPN *can* cause port circuit packs, from the R1V3 control carrier, to be moved and manually retranslated. For this upgrade, a G3i V4 control carrier (with 9 port slots) will replace the R1V3 control carrier (with 8 port slots) providing 1 extra port slot.

However, out of these 9 port slots, nonport-related circuit packs may need to occupy certain slots.

- If the control carrier in the medium-cabinet R1V3 system contains a TN736 or TN752 power supply, then this circuit pack will occupy port slots ‘‘8’’ and ‘‘9’’ of the new G3i V4 control carrier.
- A simultaneous EPN addition will require that a TN776 or TN570 Expansion Interface circuit pack be installed in slot ‘‘1’’ of the new G3i V4 control carrier.

If both of the above scenarios occurred, the result would be a net *loss* of two port slots.

Medium-Cabinet R1V3 to G3i V4 EPN

A medium-cabinet System 75 upgrade to a G3i V4 EPN *can* cause a circuit pack to be moved and manually retranslated. For this upgrade, a G3i V4 expansion control carrier (with 19 port slots) will replace the R1V3 control carrier (with 8 port slots) providing 11 extra port slots.

However, out of these 19 port slots, nonport-related circuit packs may need to occupy certain slots.

- If the control carrier in the medium-cabinet R1V3 system contains a TN736 or TN752 power supply, then this circuit pack will occupy port slots ''18'' and ''19'' of the new G3i V4 expansion control carrier.
- A TN776 or TN570 must be installed in slot ''1'' of the new G3i V4 expansion control carrier in order to interconnect the upgraded G3i V4 EPN with the new PPN. Therefore, any circuit pack residing in slot ''1'' of the R1V3 control carrier must be relocated (usually to one of the extra port slots in the new expansion control carrier).

If both of the above scenarios occurred, the result would be a net gain of *only* 8 port slots.

Usable Circuit-Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped in the new G3i V4 PPN or shipped loose with the new EPN equipment should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every R1V3 circuit pack that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4 system.

Power and Grounding

A new cabinet added, usually for an EPN upgrade, can be either AC- or DC-powered. If an added cabinet is powered differently from an existing cabinet, the existing cabinet does not have to be converted since mixed power configurations are allowed. However, the system's power and grounding must be modified so that the AC-powered cabinet is grounded to the same single-point ground bar as the DC-powered cabinet (see Figure 3-1).

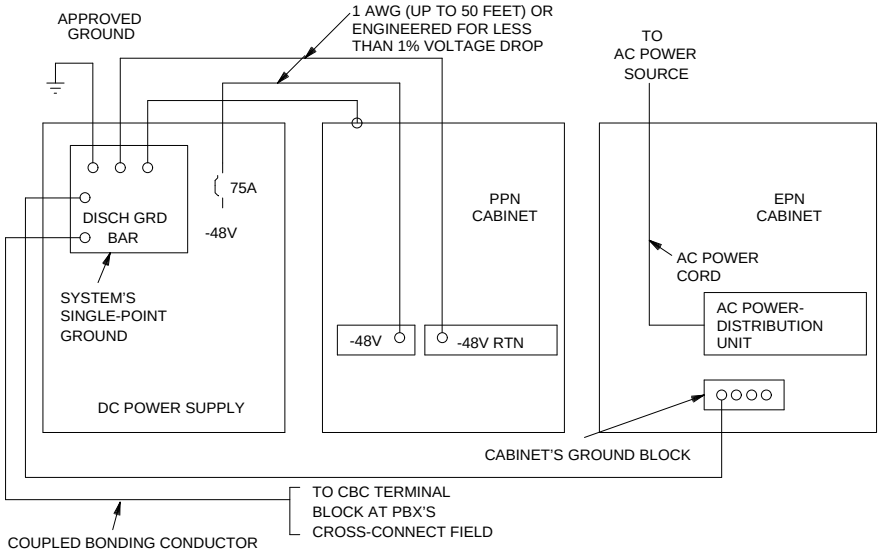


Figure 3-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be controlled by a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

Isolator

Each G3-MT connected to a DC-powered cabinet, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the G3-MT and the interface connector to isolate grounding between the system and external adjuncts.

Power-Failure Stations

During routine switch operation, the ground for the power-failure stations is derived from the system's auxiliary cable. This ground will be disconnected during the upgrade, thus disabling the power-failure stations. Therefore, a ground strap will have to be run to the power-failure transfer panel. This strap should be connected shortly after power is removed and then disconnected just before power is restored to the upgraded system.

To minimize downtime during the G3i V4 upgrade, power-failure transfer equipment should be tested and, if need be, repaired before the hardware upgrade begins.

Software

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with either the R1V3 high capacity mini-recorder (HCMR) or the removable mass storage subsystem (RMSS) tapes.

The translations in the R1V3 system must be copied to a spare tape and sent to the regional Customer Software Administration (CSA) group within the FSAC (formerly known as the CSSO) to be converted and written to a G3i V4 translation memory card. This process takes two weeks. The G3i V4 translation memory card must be on-site before the upgrade can begin. Two tapes (one system tape and one backup tape) must always be retained on site with the System 75.

After the upgrade, the Software Associate should ensure that the upgraded translations are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Alarm Connection

See NOTE. The AUXILIARY connector on System 75 systems had appearances for Alarm Monitors 1M, 1m, 2M, 2m, 3M, 3m, and 3W. Whereas, the AUXILIARY connector on a DEFINITY G3i V4 system only has appearances for 1M and 1m. If the system being upgraded used the other alarm-monitor appearances, they can either be distributed to the AUXILIARY connector on a G3i V4 EPN, or ''ganged'' so that several external devices share the same appearance. The alarms can also be accommodated by paralleling them to the above connections.

NOTE:
When several external devices are ganged to the same appearance, each device loses its individual identity. An alarm on a shared appearance only denotes that one of several devices reported a problem. Subsequent maintenance effort is needed to determine which device reported the problem and the nature of the problem.

The control circuit pack behind the AUXILIARY connector detects external alarms with a ground-detector chip. Therefore, to gang several external devices, every device must be able to return a true relay ground closure to the AUXILIARY connector. (Alternatives, such as a TTL low driver, are inadequate.)

Hardware Description

Circuit Packs

Four circuit packs are required for a basic G3i V4 system upgrade. The others will be provided on an optional basis for G3i V4 features or for non-US installations, as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel 80386[1] microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also, an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

1. Registered trademark of the Intel Corporation.

Functions of the TN786B include:

- — Monitoring and controlling circuit-pack conditions
- — Monitoring the environmental sensor and control leads for a single processor operation
- — Controlling emergency-transfer operation
- — Providing direct access to a G3-MT terminal
- — Providing an interface to a CDR output device
- — Providing an external alarm closure
- — Reporting system status via alarm LEDs

■ CPP1

The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

■ TN777B

The Netcon circuit pack (TN777B) does the following:

- — Houses the mass-storage DEFINITY memory card.
- — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.
- — Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility, a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

  Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).
- — Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.
- — Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

■ TN768, TN419B, TN780 or TN2182

The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN419B Tone-Clock (for non-US installations) supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz and 160-kHz clocks and an 8-kHz frame clock from its Stratum 4 source frequency. Using European A-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-voltage alarm-detection circuit.

The TN419B can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768 and TN419B, the TN780 can be assigned to:

- Produce six customized tones in five different tone plans for use outside the USA
- Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The optional circuit packs are:

- TN464C

  The TN464C serves as both a DS1 and an ISDN—PRI interface. This circuit pack, which can reside in any G3i V4 port slot, has the following attributes:

  — Complies with the 1.544-Mbps North American DS1 standard

  — Converts the European A-law to the North American mu-law companding algorithm

  — Operates compatibly with the optional Stratum 3 clock

  — Provides D-channel connectivity for ISDN—PRI

- TN726B

  The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

- TN744 or TN744C

  The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B v10 and later versions provide tone detection. Prior to TN744C, the TN744 provides call classification only.

  The TN744Bv10 and TN744C Call Classifier/Detector circuit packs have eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN765

The TN765 Processor Interface provides four data links to the TDM bus and a link through the memory bus to the processor. This circuit pack has four ports that provide interfaces for applications such as DCS, CMS, and AUDIX.

- TN767B

  The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN—PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

- TN771D

  On a G3i V4 system (without a packet bus and without duplication), the Maintenance/Test circuit pack (TN771D) performs three maintenance functions: DCP Mode 2 endpoint testing, digital trunk testing, and analog trunk testing. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-Kbps digital facilities and is also used for ISDN PRI trunk testing. The TN771D is required for digital trunk testing.

  A TN771D is required in each port network of a critical-reliability G3i V4 system with the optional packet bus. For these systems, this circuit pack performs the additional maintenance function of diagnosing and correcting recoverable packet-bus failures before the LAPD links (which use the bus) fail.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port-Network Configurations

Every G3i V4 port-network configuration contains one PPN which can be either a multicarrier or single-carrier cabinet. Larger configurations can contain either one or two EPNs. Figure 3-2 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe various upgrades to a G3i V4 with either one or two port networks.

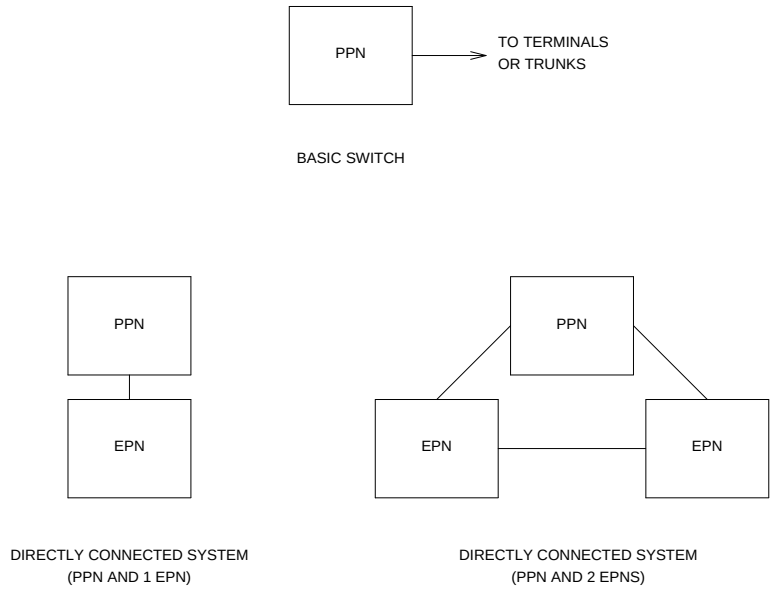


Figure 3-2. G3i V4 Port-Network Configurations

Port Networks

For a System 75 system, upgrading to a G3i V4 offers an optional second and third port network. Each port network in a multicarrier cabinet allows the system to grow by one expansion control carrier and up to four more port carriers. These EPN cabinets are the same as the ‘‘DEFINITY’’ style EPN cabinets that were first available for G1 systems.

Software-Translation Upgrade

The G3i V4 software and translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with either the R1V3 high capacity mini-recorder (HCMR) or the removable mass storage subsystem (RMSS) tapes.

During an upgrade from an R1V3 to a G3i V4, the regional CSA must convert the R1V3 translations and write them to a G3i V4 translation memory card. To enable this tape conversion, replace the system tape with a spare R1V3 tape. (Spare R1V3 tape cartridges can be acquired from the CSA before the upgrade.) Then, copy the current R1V3 translations to the spare tape, and overnight mail this tape to the CSA. Also, put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure that the customer's switch administrator keeps detailed records of any translation changes made during that interval. These records will facilitate the reassignment of any changes on the G3i V4 system after the upgrade.

The new G3i V4 memory card must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager I on the R1V3.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.
4. Remove the system tape, install the backup tape, and wait for the tape to retension.
5. Enter **`save translation`**. Press RETURN.
6. Enter **`save announcements`** if appropriate. Press RETURN.

Make Source Tape for Upgrade

A spare R1V3 tape must be acquired from the regional CSA before performing the following steps. There must always be two system tapes on site with the System 75. Do not send the system or backup tape to the CSA.

After performing the previous procedures, copy the R1V3 translations to the spare tape that will be used to make the G3i V4 translation memory card. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. See NOTE. Enter **`save translation`**. Press (RETURN). This command instructs the system to write all translation information from memory to the tape.

   NOTE:
   The off-site CSA translation upgrade does not preserve the contents of recorded announcements. Therefore, during the upgrade, any announcements stored on a TN750/B circuit pack must be rerecorded.

   If the TN750/B is located in a slot on the “A” carrier of the control cabinet, the CSA group can save the announcements. This is not true, however, if upgrading to a G3r.

3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to the CSA for use in making the G3i V4 translation memory card.

System Upgrades

There are many configurations of medium-cabinet R1V3 System 75s in the field. In terms of both hardware and software, each system can have a unique configuration. The manner in which a particular system is upgraded depends on it present configuration. An R1V3 upgrade involves replacing the control carrier with either:

- A G3i V4 control carrier for a PPN upgrade
- An expansion control carrier for an EPN upgrade

For an upgrade to a duplicated G3i V4 PPN, a duplicated control carrier is also added.

This section gives a sequential list of the steps required to upgrade the R1V3 system.

R1V3 Medium to Standard-Reliability G3i V4 PPN

If an EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new EPN.

Upgrade Cabinet

A medium-cabinet System 75 R1V3 is upgraded to a standard-reliability G3i V4 by:

- Removing the tape-drive unit
- Removing the control carrier in position ‘‘A’’
- Installing the J58890AH control carrier in position ‘‘A’’
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 3-1 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ''1-800-772-5409,'' and respond to the call prompter.

Table 3-1. Required Hardware

Equipment	Description	Quantity
J58890AH	Control Carrier	1
106718521	TN786B Processor	1
106590953	CPP1 Memory	1 (Note 1)
103557187	TN765 Processor Interface	1 or 2 (Note 2)
106577422	TN777B Network Control	1
103557211 or 103557336 or 106706955	TN768 Tone-Clock TN780 Tone-Clock TN2182 Tone-Clock	1 1 (Note 6) 1 (Note 7)
106455504	982LS Current Limiter	1
103960456	ZAHF4 TDM/LAN Bus Terminator	2
J58890A L20	WP91716 L6 TDM/LAN Cable	max 3
J58890A L21	WP91716 L7 TDM/LAN Cable	1 (Note 3)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 (Note 5)
106689516	TN771D Maintenance/Test	1 (Note 6)
105731202	176A Apparatus Blank (for removed tape drive)	1
846309466	DEFINITY Label	1

Notes:

1. During the hardware upgrade, the CPP1 is attached to the TN786B before inserting the combined assembly into the control carrier.
2. Optional. Replaces TN716, TN719, and TN738 if present in the system.
3. Use the TN780 as Tone-Clock for Stratum 3 timing. See Note 7.
4. Required only if carrier ''D'' is present.

5. A 4-Mbyte translation memory card is required for a system that uses recorded announcements.
6. Optional. Required for digital trunk testing.
7. Use TN780 as Tone-Clock for Stratum 3 timing. Also required with the TN780 are the TN748, and TN744 for tone-detection.
8. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Flash maintenance kit (MTCE 00037), acquired from Material Stocking Location (MSL)
- High-intensity AC drop light or flashlight
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Pliers
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for labeling the cables attached to the rear of cabinets and port circuit pack
- Receptacle for holding approximately 100 self-tapping screws
- Twelve spare #12 and #10 self-tapping screws
- Four spare carrier grounding straps
- Authorized wrist grounding strap
- Cabinet air filter (may be required)
- Backplane pin repair kit (KS-22876-L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the "Preventive Maintenance'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet, if desired.
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch is recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect the previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Control Carrier A

1. To ensure that the circuit packs and power units in the ''A'' carrier are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ''A'' carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

4. Remove circuit-pack blanks from the slots that do not contain circuit packs.
5. Remove the front trim plate from the ''A'' carrier by pulling straight off.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove the tape.
2. Disconnect the AHF4 cable adapter from behind slot ''07'' of control carrier ''A'' (see Figure 3-3).
3. Open the snap connectors to remove the adapter from the tape drive's ribbon cable. Route the cable back to the tape drive and remove it. (There are two cable clamps on the cabinet's side panel. Use a screwdriver to unsnap them.) Neither the cable nor the adapter will be used in the upgraded EPN cabinet.
   - On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A Apparatus Blank over the empty space left by the removal of the tape drive.

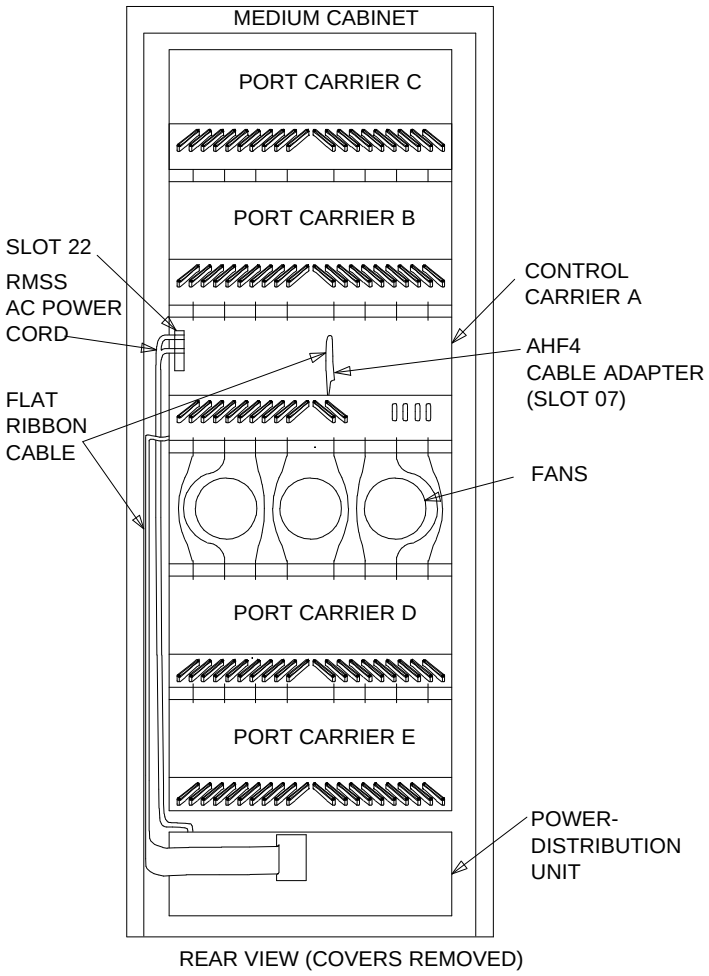


Figure 3-3. R1V3 System Cabinet

Remove Control Carrier A

1. See the following CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-4). They will not be reused.
2. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-4). They will not be reused.

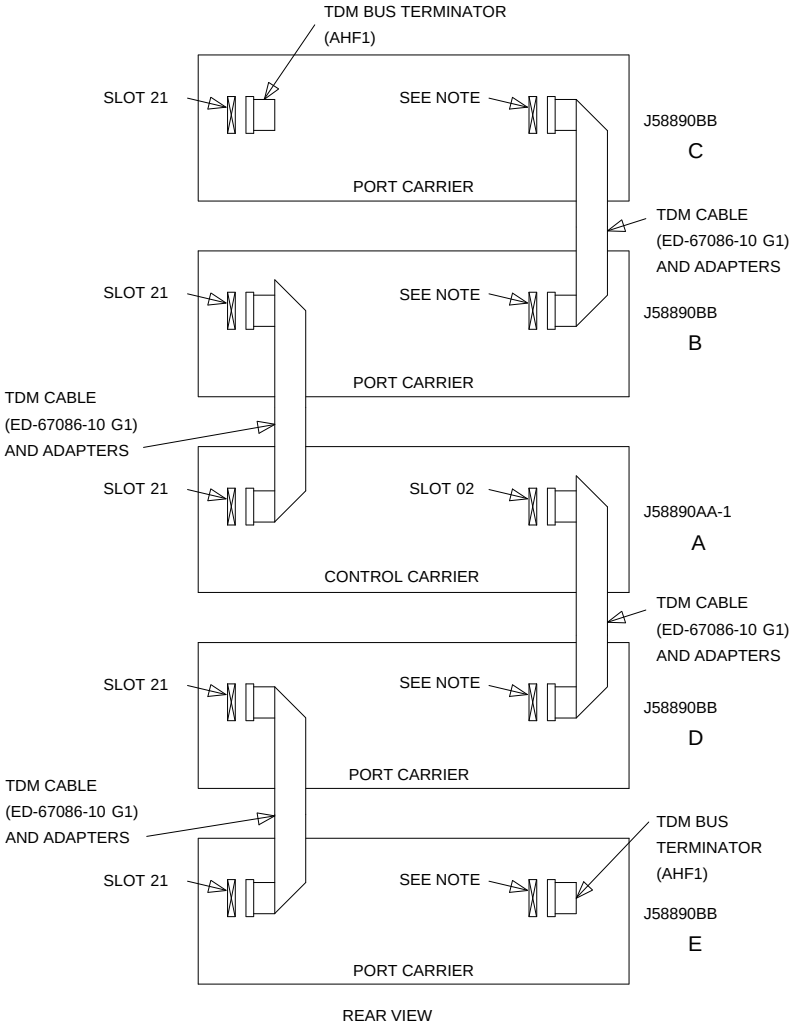
CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter, note its position.

3. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘B’’ carriers) from the ‘‘A’’ carrier (see Figure 3-5). These straps will be reconnected to the new ‘‘A’’ carrier.
4. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 3-5). These straps will be reconnected to the new ‘‘A’’ carrier.
5. Slide the latch up, and disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 37-pin) connector from the ‘‘A’’ carrier (see Figure 3-6). Move the cables into a position where they will not interfere with removing the carrier.
6. Remove the fan trim plate by pulling straight off.
7. Clean or replace the air filter (403326820) if necessary.
8. In front of carrier, remove the four screws (top two first) holding the ‘‘A’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
9. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

10. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-4. TDM Connections for R1V3 System

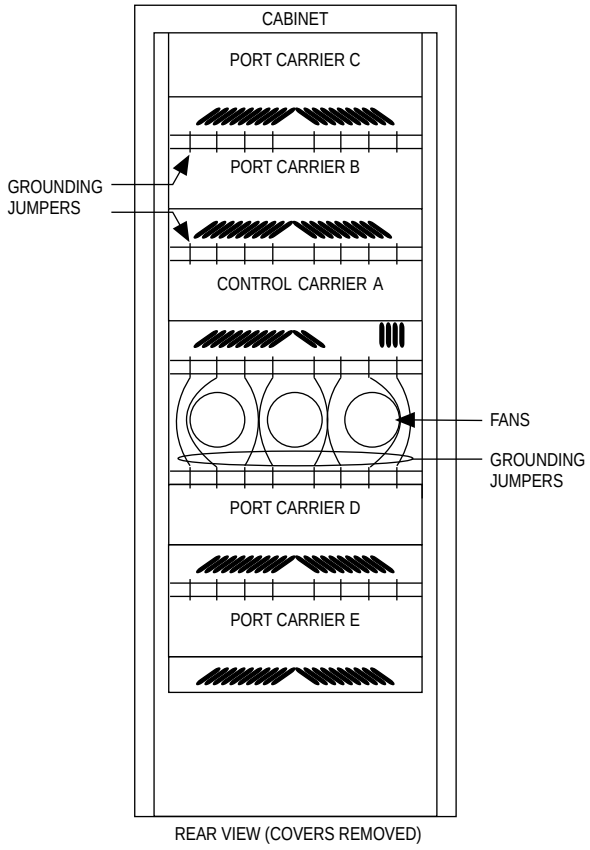


Figure 3-5. Locations of Grounding Jumpers

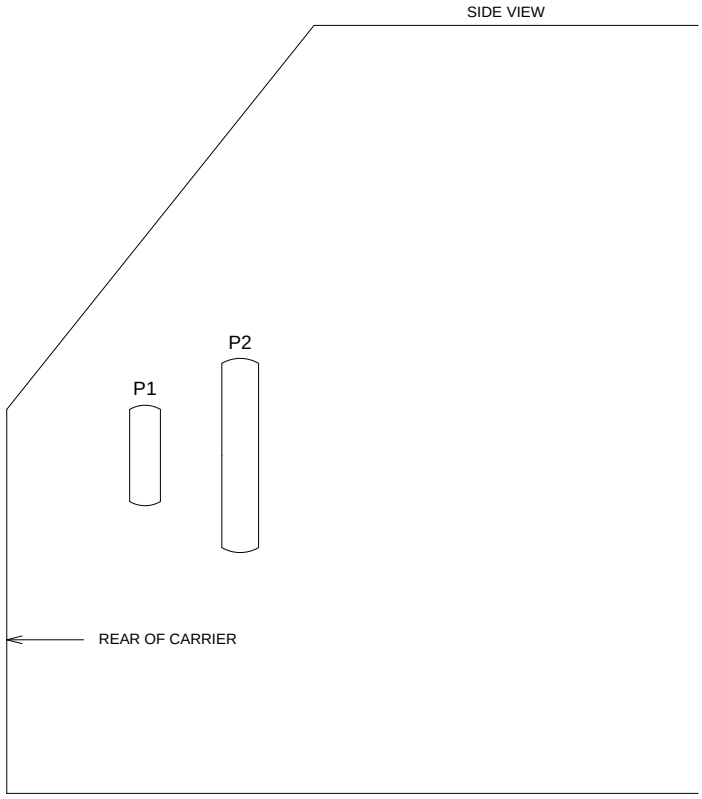


Figure 3-6. Location of P1 and P2 Connectors on System 75 Carrier

Prepare New Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the control carrier on the floor so that the rear of the carrier faces up.
3. Install the 982LS current limiter (CURL) on the ''A'' carrier to the pin-field block marked ''CURL.'' The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install the New Control Carrier

1. Install the J58890AH control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being installed. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 3-7). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cable from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure connection is properly made.
4. Connect the eight ground straps from the ‘‘B’’ carrier to the new ‘‘A’’ carrier (see Figure 3-5). These straps were left connected to the ‘‘B’’ carrier when the old ‘‘A’’ carrier was removed.
5. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 3-5). These straps were left connected to the ‘‘D’’ carrier when the old ‘‘A’’ carrier was removed.
6. See NOTE. For an AC-powered control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

7. Connect the new TDM/LAN cable (WP-91716 L7) between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-8 and Table 3-2). The cable is connected to the ‘‘A’’ and ‘‘D’’ carriers at the pin-field blocks marked TDM on the right side of each carrier.

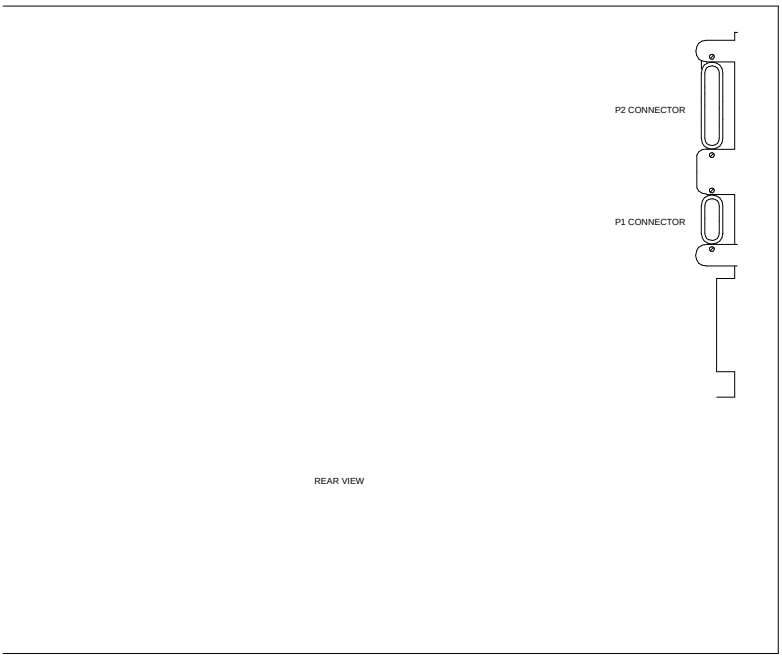
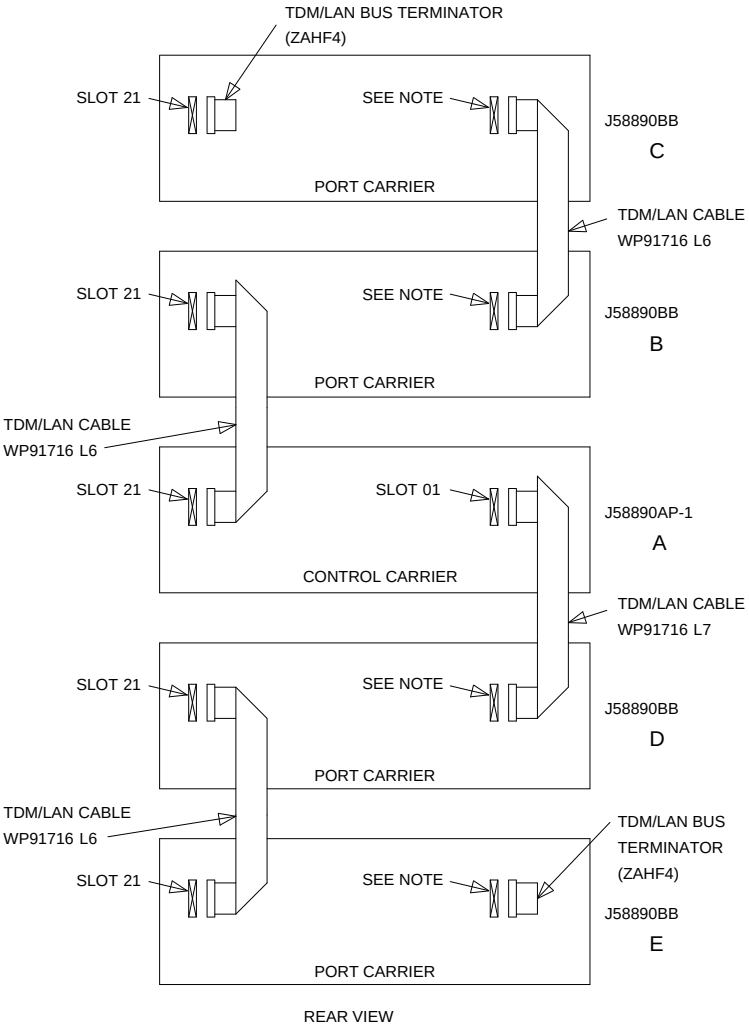


Figure 3-7. Location of P1 and P2 Connectors on DEFINITY Carrier

Table 3-2. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AH	PPN Control "A"	20	03



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 3-8. TDM/LAN Connections for G3i V4 PPN

8. Connect a new TDM/LAN cable (WP-91716 L6) between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-8 and Table 3-2). The cable is connected to the ‘‘A’’ and ‘‘B’’ carriers at the pin-field blocks marked TDM on the left side of each carrier.

9. See CAUTION and NOTE. Remove the TDM cables and adapters from between the ‘‘B’’ and ‘‘C’’ carriers (see Figure 3-4). Install a new WP91716 L6 TDM/LAN cable. The new cable is connected to the same pin-field blocks that the old cable was disconnected from (right side). (See Figure 3-8 and Table 3-3).
10. See CAUTION and NOTE. Remove the TDM cables and adapters from between the ‘‘D’’ and ‘‘E’’ carriers (see Figure 3-4). Install the new WP91716 L6 TDM/LAN cable. The new cable is connected to the same pin-field blocks that the old cable was disconnected from (left side). (See Figure 3-8 and Table 3-2).

CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter or terminator, note its position.

11. See previous CAUTION and NOTE. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 3-4 and Figure 3-8 and Table 3-2).
12. Install the front trim plates on the ‘‘A’’ carrier. Install the fan trim plate.
13. Peel the old decal strip (designation strip) from the trim plates. Then, install the new decal strip at the bottom of the trim panel.
14. Install the connector-panel decal on the rear connector panel.
15. Install the 631-type power units (removed from R1V3) into the ‘‘A’’ carrier. Three different pairs of AC power units have been developed. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Since power units from the newer pairs are downward compatible with the older ones, power units from different pairs can reside in the same carrier.

    However, do not interchange the physical locations of the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 3-9).

16. If the control carrier contains a 631BR1 or 631WB1 power unit, install the previously removed TN736 power unit in port slots ‘‘8’’ and ‘‘9’’ of the carrier (adjacent to the 631BR1 or 631WB1). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    A TN736 is not required when a 631DB1 power unit is used in a J58890AH control carrier or in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.

17. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 3-10).

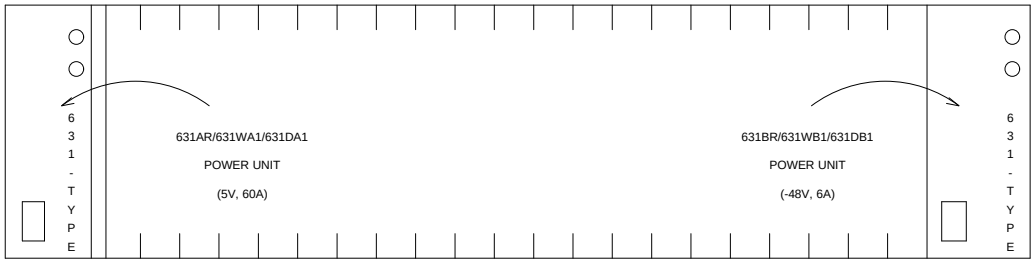


Figure 3-9. Locations of Power Units

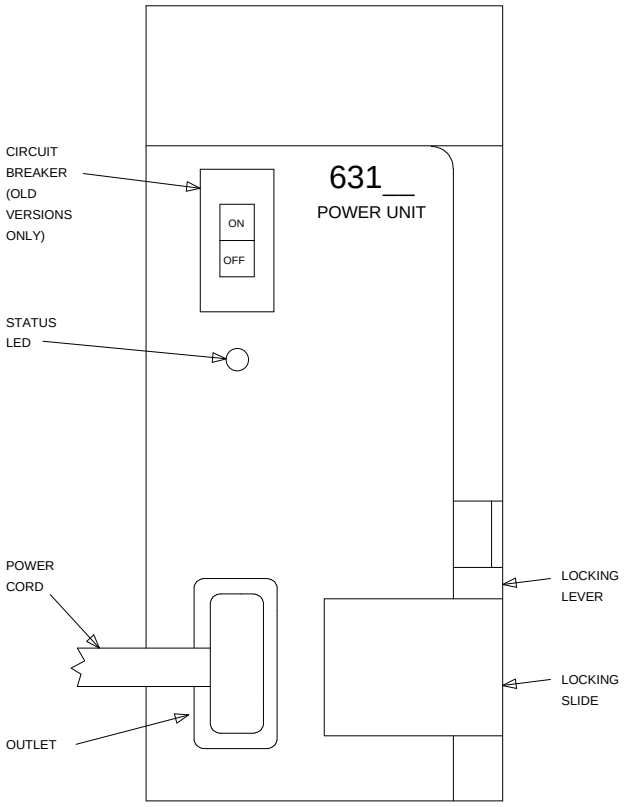


Figure 3-10. 631-Type Power Unit

Install Circuit Packs

1. See WARNING. Using a hard, flat, static-free surface, connect the CPP1 Memory circuit pack to the TN786B circuit pack. [Line up the two pin clips and the two 50-pin connectors (on the CPP1) with the four corresponding holes and the two 50-pin connectors (on the TN786B), and then squeeze the two circuit packs together.]

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

2. See previous WARNING. Install the new G3i V4 control circuit packs into control carrier ''A.'' Use the following figure, the new decal, and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.
3. See preceding WARNING and following WARNING and NOTE. Install the port circuit packs previously removed into the ''A'' carrier using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

   NOTE:
   Since the new G3i V4 control carrier has only one more port slot than the removed control carrier, there may be a need to move and retranslate circuit packs. If not done before the upgrade, relocate the circuit packs now. The relocated port circuits will also have to be translated after the system is rebooted with the G3i V4 translation memory card.

4. Install circuit-pack blanks in slots not equipped with circuit packs.

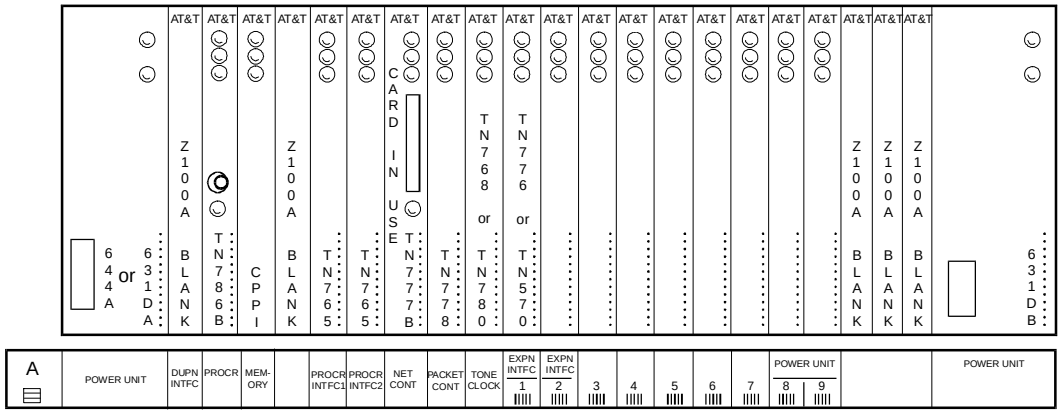


Figure 3-11. Circuit-Pack Locations in Standard-Reliability G3i V4 Control Carrier

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Reboot the Standard-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-498, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close PPN Cabinet and Reconnect Cables

1. Replace the back panels previously removed.
2. Install the front door on the PPN cabinet if previously removed.
3. Install a DEFINITY label on the PPN cabinet.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN736, TN752, or TN755 power supply in port slots ‘‘8’’ and ‘‘9’’
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN776 or TN570 Expansion Interface in port slot ‘‘1’’ (for a simultaneous EPN addition)

of the new control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the translations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

R1V3 Medium to Critical-Reliability G3i V4 PPN

NOTE:
In this section, PPN upgrades of System 75 R1V3 Medium systems, the concept of high-reliability systems is not considered. This is because, for systems with only one port network, high- and critical-reliability hardware configurations are identical. The configurations of high- and critical-reliability systems only differ once an EPN exists in the system.

If an EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new EPN.

Upgrade Cabinet

A medium-cabinet System 75 R1V3 is upgraded to a critical-reliability G3i V4 by:

- Removing the tape-drive unit
- Removing the control carrier in position ‘‘A’’
- Removing the port carrier in position ‘‘B’’
- Installing the J58890AH control carrier in position ‘‘A’’
- Installing the J58890AJ control carrier in position ‘‘B’’
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 3-3 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 3-3. Required Hardware

Equipment	Description	Quantity
J58890AH	Control Carrier	1
J58890AJ	Duplicated Control Carrier	1
106718521	TN786B Processor	2
106590953	CPP1 Memory	2 (Note 1)
103557187	TN765 Processor Interface	2 or 4 (Note 2)
106577422	TN777B Network Control	2
103557211 or 103557336 or 106706955	TN768 Tone-Clock TN780 Tone-Clock TN2182 Tone-Clock	1 1 (Notes 3, 7) 1 (Note 8)
103557252	TN772 Duplication Interface	2
106455504	982LS Current Limiter	1
103960456	ZAHF4 TDM/LAN Bus Terminator	2
J58890A L20	WP91716 L6 TDM/LAN Cable	max 3
J58890A L21	WP91716 L7 TDM/LAN Cable	1 (Note 4)
H600-182 G1	Intercarrier Cable A	1
H600-182 G1	Intercarrier Cable B	1
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	2 (Note 5)
106689516	TN771D Maintenance/Test	1 (Note 6)
105731202	176A Apparatus Blank (for removed tape drive)	1
846309466	DEFINITY Label	1

Notes:

1. During the hardware upgrade, each CPP1 is attached to a TN786B before inserting the combined assemblies into the control carriers.
2. Optional. Replaces TN716, TN719, and TN738 if present in the system.
3. A TN741 (or its international equivalent, TN419A) Tone-Clock in the System 75 must be replaced.
4. Required only if carrier ‘‘D’’ is present.
5. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
6. Required in a port slot of a critical-reliability G3i V4 PPN with the optional packet bus.
7. Use TN780 as Tone-Clock for Stratum 3 timing. Also required are the TN748, and TN744 for tone-detection.
8. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Flash maintenance kit (MTCE 00037), acquired from Material Stocking Location (MSL)
- High-intensity AC drop light or flashlight
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Pliers
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for labeling the cables attached to the rear of cabinets and port circuit pack
- Receptacle for holding approximately 100 self-tapping screws
- Twelve spare #12 and #10 self-tapping screws
- Four spare carrier grounding straps
- Authorized wrist grounding strap
- Cabinet air filter (may be required)
- Backplane pin repair kit (KS-22876-L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carriers to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet, if desired.
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch is recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect the previously labeled cables associated with the carriers to be removed.
4. Behind the cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Carriers A and B

1. To ensure that the circuit packs and power units in the ''A'' and ''B'' carriers are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ''A'' and ''B'' carriers.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.
4. See WARNING. Remove all circuit packs and power units from carrier ''B.'' Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

5. Remove circuit-pack blanks from the slots that do not contain circuit packs.
6. Remove the front trim plate from the ''B'' carrier by pulling straight off. Then remove the front trim plate from the ''A'' carrier.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove the tape.
2. Disconnect the AHF4 cable adapter from behind slot ''07'' of control carrier ''A'' (see Figure 3-12).
3. Open the snap connectors to remove the adapter from the tape drive's ribbon cable. Route the cable back to the tape drive and remove it. (There are two cable clamps on the cabinet's side panel. Use a screwdriver to unsnap them.) Neither the cable nor the adapter will be used in the upgraded EPN cabinet.
   - On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A Apparatus Blank over the empty space left by the removal of the tape drive.

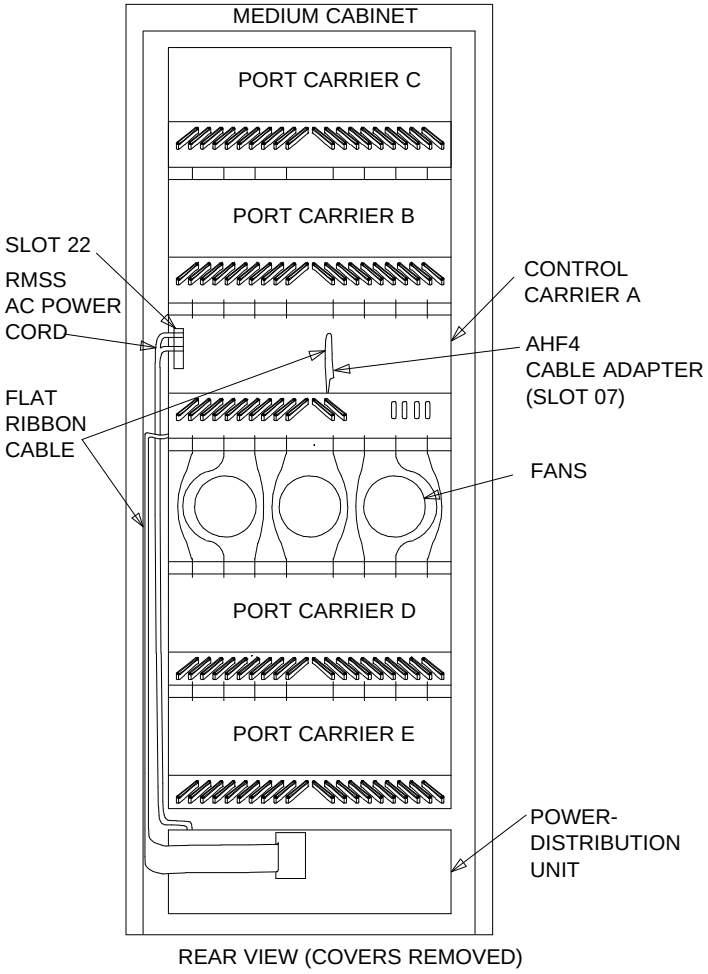


Figure 3-12. R1V3 System Cabinet

Remove Carriers A and B

1. See the following CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-13). They will not be reused.
2. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-13). They will not be reused.

3. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘B’’ and ‘‘C’’ carriers (see Figure 3-13). They will not be reused.

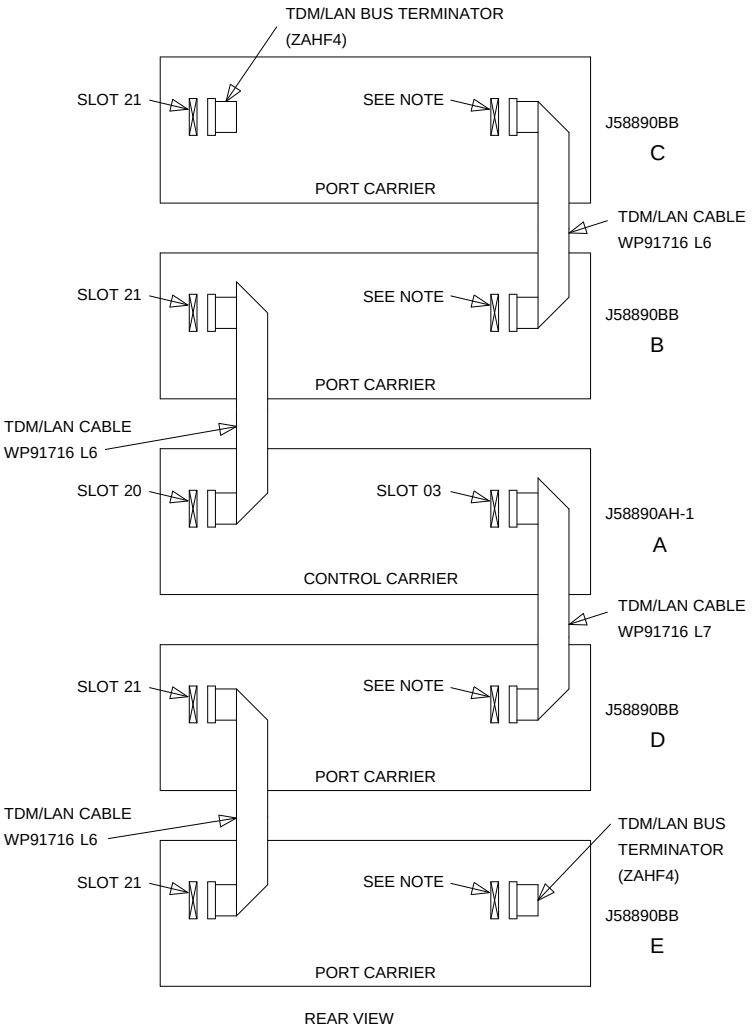
CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter, note its position.

4. Remove the eight ground straps from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-14). These straps will be reconnected to the new ‘‘A’’ and ‘‘B’’ carriers.
5. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 3-14). These straps will be reconnected to the new ‘‘A’’ carrier.
6. Disconnect one end of the eight ground straps (between the ‘‘B’’ and ‘‘C’’ carriers) from the ‘‘B’’ carrier (see Figure 3-14). These straps will be reconnected to the new ‘‘B’’ carrier.
7. Slide the latch up, and disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 37-pin) connector from the ‘‘A’’ carrier (see Figure 3-15). Move the cables into a position where they will not interfere with removing the carrier.
8. Remove the fan trim plate by pulling straight off.
9. Clean or replace the air filter (403326820) if necessary.
10. In front of carrier, remove the four screws (top two first) holding the ‘‘B’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
11. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

12. Remove the carrier by sliding it out the front of the cabinet.
13. Repeat Steps 10 through 12 for the carrier in position ‘‘A.’’



NOTE:

ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 3-13. TDM Connections for R1V3 System

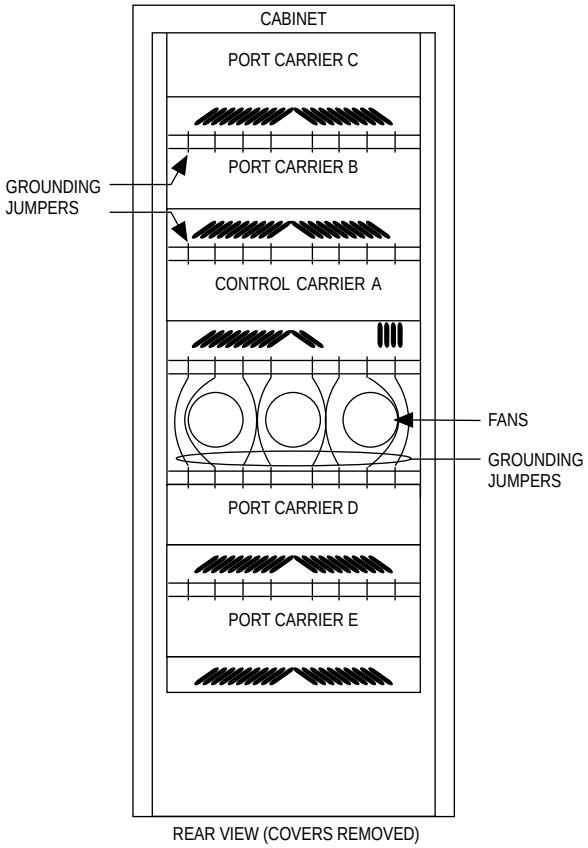


Figure 3-14. Locations of Grounding Jumpers

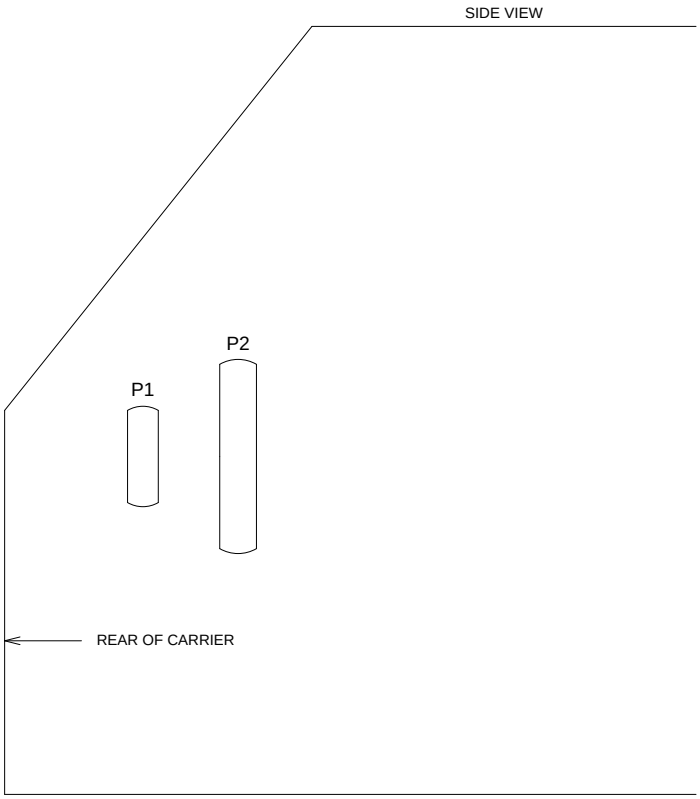


Figure 3-15. Location of P1 and P2 Connectors on System 75 Carrier

Prepare New Control Carriers A and B

1. Visually inspect the new carriers for any damage. Verify that the backplane pins are not bent.
2. Place the control carriers on the floor so that the rears of the carriers face up.
3. Install the 982LS current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel on each carrier, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install the New Control Carriers

1. Install the J58890AH control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips support the carrier while the screws are being installed. Ensure the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws from the removal of the old carrier.

   CAUTION:
   Carefully align the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the framework threads.

3. Install the J58890AJ control carrier in position ‘‘B’’ by repeating Steps 1 and 2.
4. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 3-16). To get enough slack in the cables, cut the tie wrap holding the intercabinet cable from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure connection is properly made.
5. Connect the ‘‘P1’’ (small) connector to the ‘‘B’’ carrier (see Figure 3-16). To get enough slack in the cable, cut the tie wrap holding the intercabinet cable from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure connection is properly made.
6. Connect the eight ground straps from the ‘‘C’’ carrier to the new ‘‘B’’ carrier (see Figure 3-14). These straps were left connected to the ‘‘B’’ carrier when the old ‘‘A’’ carrier was removed.
7. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier. These straps were left connected to the ‘‘D’’ carrier when the old ‘‘A’’ carrier was removed.
8. Install the eight ground straps between the new ‘‘A’’ and ‘‘B’’ carriers. These straps were saved after removal from the old ‘‘A’’ and ‘‘B’’ carriers.
9. See NOTE. For each AC-powered control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

10. Connect the new TDM/LAN cable (WP-91716 L7) between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-17 and Table 3-4). The cable is connected to the ‘‘A’’ and ‘‘D’’ carriers at the pin-field blocks marked TDM on the right side of each carrier.

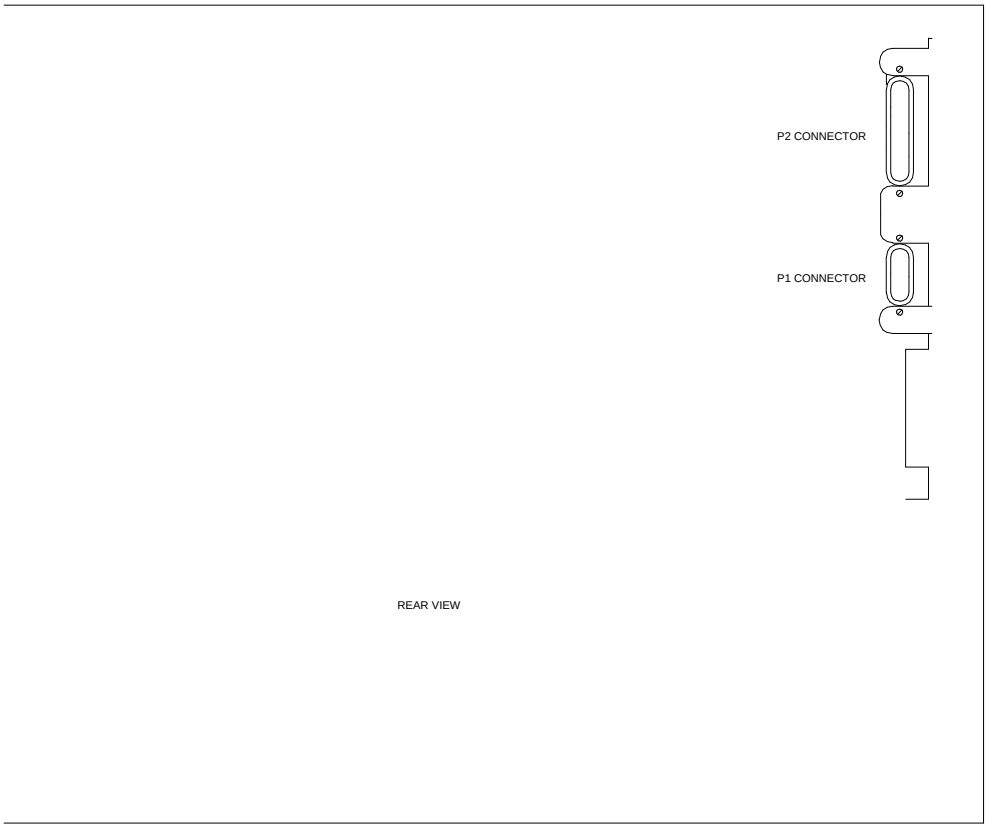


Figure 3-16. Location of P1 and P2 Connectors on DEFINITY Carrier

NOTE:
A J58890AJ duplicated control carrier does not have a P2 connector.

Table 3-4. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AH	PPN Control "A"	20	03

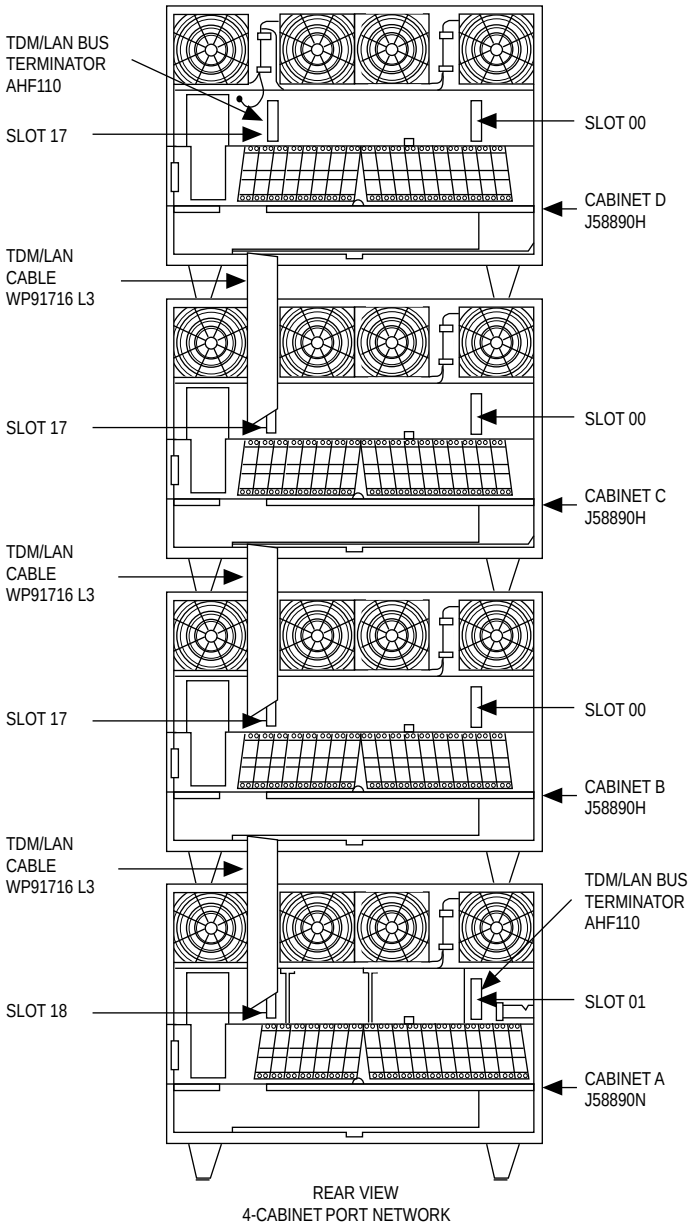


Figure 3-17. TDM/LAN Connections for G3i V4 PPN

11. Connect a new TDM/LAN cable (WP-91716 L6) between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-17 and Table 3-4). The cable is connected to the ‘‘A’’ and ‘‘B’’ carriers at the pin-field blocks marked TDM on the left side of each carrier.
12. Connect a new TDM/LAN cable (WP-91716 L6) between the ‘‘B’’ and ‘‘C’’ carriers (see Figure 3-17 and Table 3-4). The cable is connected to the ‘‘B’’ and ‘‘C’’ carriers at the pin-field blocks marked TDM on the right side of each carrier.
13. See CAUTION and NOTE. Remove the TDM cables and adapters from between the ‘‘D’’ and ‘‘E’’ carriers (see Figure 3-13). Install the new WP91716 L6 TDM/LAN cable. The new cable is connected to the same pin-field blocks that the old cable was disconnected from (left side). (See Figure 3-17 and Table 3-4).

CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter or terminator, note its position.

14. See previous CAUTION and NOTE. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 3-13 and Figure 3-17 and Table 3-4).
15. See CAUTION. Install the ICC cables (H600-204 G1) between carriers ‘‘A’’ and ‘‘B.’’ Connect the cables to the ICC pin-field block on both carriers (see Table 3-5 and Figure 3-18). Each cable is installed so that the dark red, blue, or purple stripe (depending upon the supplier) is on the bottom at both ends.

CAUTION:
While installing the ICC cable connectors, be careful not to bend any backplane pins. Double check each connection to verify that the pins are straight.

16. Install the front trim plates, first on the ‘‘A’’ carrier, then on the ‘‘B’’ carrier. Install the fan trim plate.
17. Peel the old decal strip (designation strip) from the trim plates. Then, install the new decal strip at the bottom of the trim panel.
18. Install the connector-panel decal on the rear connector panel.

19. Install the 631-type power units (removed from R1V3) into both the ‘‘A’’ and ‘‘B’’ carriers. Three different pairs of AC power units have been developed. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Since power units from the newer pairs are downward compatible with the older ones, power units from different pairs can reside in the same carrier.

    However, do not interchange the physical locations of the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 3-19).

20. If the control carrier contains a 631BR1 or 631WB1 power unit, install the previously removed TN736 power unit in port slots ‘‘8’’ and ‘‘9’’ of the carrier (adjacent to the 631BR1 or 631WB1). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    A TN736 is not required when a 631DB1 power unit is used in a J58890AH control carrier or in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.

21. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 3-20).

Table 3-5. Intercarrier Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
EPN	J58890AH	ICCA	J58890AJ	ICCA
		ICCB		ICCB

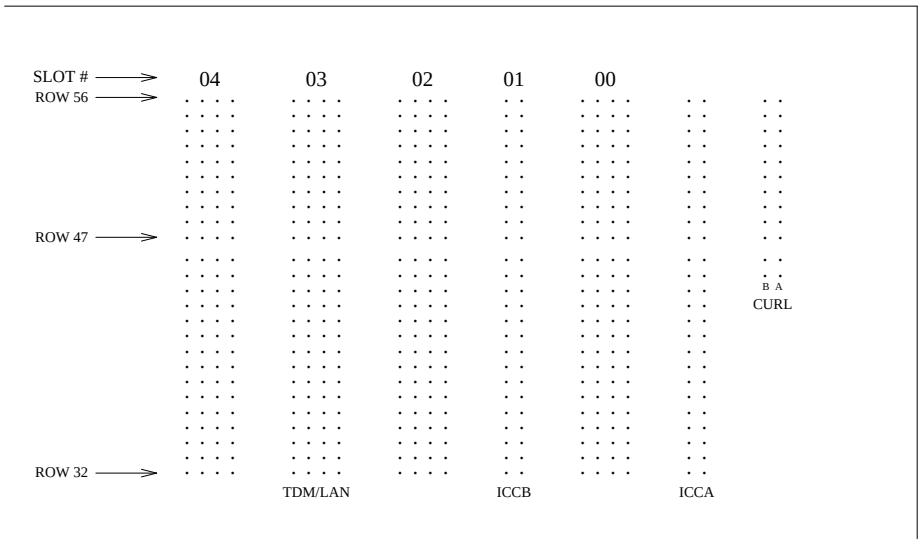


Figure 3-18. ICC Connections for Control Carrier

NOTE:
A J58890AJ-1 duplicated control carrier does not have a pin-field block for a 982LS CURL.

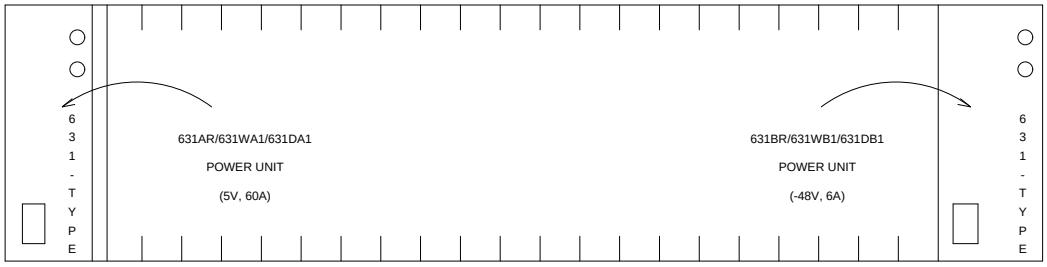


Figure 3-19. Locations of Power Units

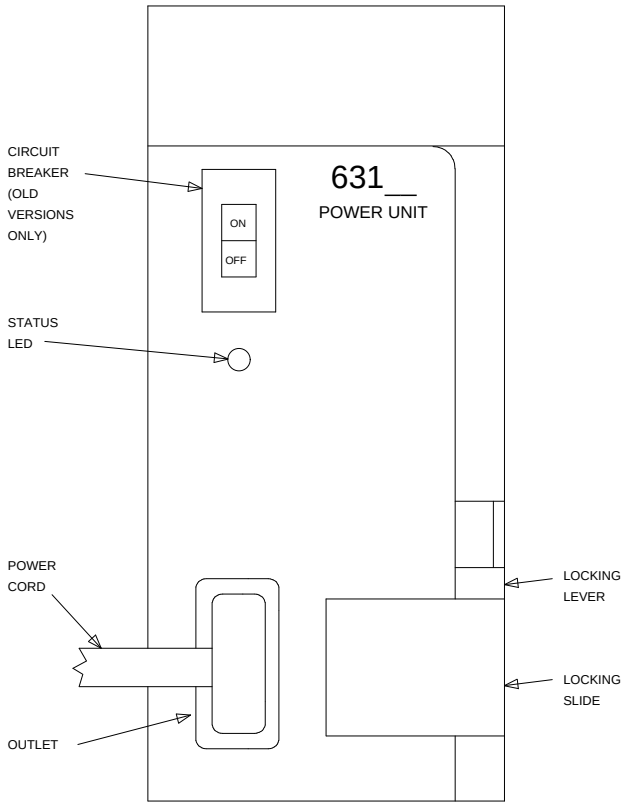


Figure 3-20. 631-Type Power Unit

Test the CURL

1. Plug the cabinet power cord into the appropriate receptacle.
2. At the power-distribution unit, set the main circuit breaker to ON.
3. Unplug the power cord from the power unit ''B'' (right-hand side) in the ''A'' carrier.
4. Verify that the fans continue running. If they are not running, check the installation of the CURL.
5. Reconnect the power cord to the power unit in the ''A'' carrier, then unplug the power cord from power unit ''B'' (right-hand side) in the ''B'' carrier.
6. Verify that the fans continue running. If they are not running, check the installation of the CURL.
7. Reconnect the power cord to the power unit in the ''B'' carrier.
8. At the power-distribution unit, set the main circuit breaker to OFF.

Install Circuit Packs

1. See WARNING. Using a hard, flat, static-free surface, connect each CPP1 Memory circuit pack to a TN786B circuit pack. [Line up the two pin clips and the two 50-pin connectors (on the CPP1) with the four corresponding holes and the two 50-pin connectors (on the TN786B), and then squeeze the two circuit packs together.]

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

2. See previous WARNING. Install the new G3i V4 control circuit packs into control carriers ''A'' and ''B.'' Use the following figure, the new decal, and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   Since carrier ''B'' duplicates carrier ''A,'' once the appropriate slot is determined for a circuit pack in carrier ''A,'' a like circuit pack can be installed in the corresponding slot of carrier ''B.''

3. See preceding WARNING and following WARNING and NOTE. Install the port circuit packs previously removed into the ''A'' carrier using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

4. See preceding WARNING and following WARNING and NOTE. Install the port circuit packs previously removed into the ‘‘B’’ carrier using the decal and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card) as a guide.

WARNING:
These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

NOTE:
Since the new G3i V4 control carriers have fewer port slots than the removed port carrier, there may be a need to move and retranslate circuit packs. If not done before the upgrade, relocate the circuit packs now. The relocated port circuits must also be translated after the system is rebooted with the G3i V4 translation memory card.

5. Install circuit-pack blanks in slots not equipped with circuit packs.

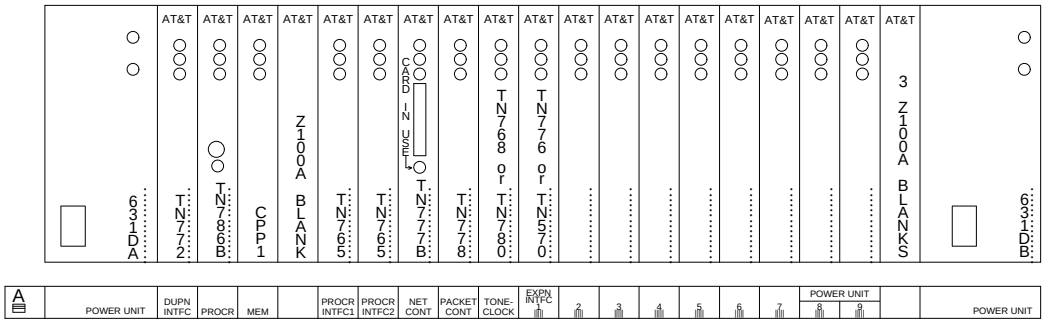


Figure 3-21. Circuit-Pack Locations in Critical-Reliability G3i V4 Control Carrier

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Reboot the Critical-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At each TN777B faceplate, insert a translation memory card obtained from the CSA.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory cards. Loading the translations takes 10 to 15 minutes.

   Refer to the "System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press (RETURN) to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version long`**, and press (RETURN) to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press (RETURN). Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close PPN Cabinet and Reconnect Cables

1. Replace the back panels previously removed.
2. Install the front door on the PPN cabinet if previously removed.
3. Install a DEFINITY label on the PPN cabinet.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN736, TN752, or TN755 power supply in port slots ‘‘8’’ and ‘‘9’’
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN776 or TN570 Expansion Interface in port slot ‘‘1’’ (for a simultaneous EPN addition)

of the new control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

R1V3 Medium to 2-Cabinet G3i V4 with Standard Reliability

See NOTE. Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

NOTE:
During the wall-field wiring of the PPN installation, the wall field can also be relabeled with the new port-network number of the R1V3 system to be upgraded. (For an R1V3 system, the CSA software upgrade assigned the upgraded EPN as port network ''2.'')

If a second EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new EPN.

Upgrade Cabinet

The existing cabinet is always upgraded to an EPN. Upgrade the cabinet using the following procedures.

A medium-cabinet System 75 R1V3 is upgraded to a standard-reliability G3i V4 EPN by:

- Removing the tape-drive unit
- Removing the TDM cables, cable adapters, and terminators
- Removing the control carrier from position ''A''
- Installing the J58890AF expansion control carrier in position ''A''
- Installing the new TDM/LAN cables and terminators
- Adding the G3i V4 circuit packs to the EPN
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 3-6 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ''1-800-772-5409,'' and respond to the call prompter.

Table 3-6. Required Hardware

Equipment	Description	Quantity
PEC 6300-59X	Processor Port Network	1
J58890AF	Expansion Control Carrier	1
106647985	TN775B Maintenance	1
103557211 or 106706955	TN768 Tone-Clock or TN2182 Tone-Clock	2 1 (Note 7)
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2 (Note 1) 2 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 (Note 3)
105691158	CFY1 Current Limiter	1
63300A	FL2P-P-XX Fiber Cable	1 (Note 4)
103960456	ZAHF4 TDM/LAN Bus Terminator	2
J58890A L20	WP-91716 L6 TDM/LAN Cable	max 3
J58890A L21	WP-91716 L7 TDM/LAN Cable	1 (Note 5)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 (Note 6) 2 (Note 6)
105731202	176A Apparatus Blank (for removed tape drive)	1
846309466	DEFINITY Label	1

Notes:

1. Two expansion interfaces (EIs) are required for a standard-reliability switch with two port networks. One EI is shipped loose with the EPN equipment. The factory has installed the other EI in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. A 4-Mbyte translation memory card is required for a system that uses recorded announcements.
4. Two cables are required if the EPN and PPN are remotely separated.
5. L7 required if the R1V3 system is equipped with a ‘‘D’’ carrier.

6. Shipped loose with the EPN equipment only. One lightwave transceiver is installed in the EPN, and one in the PPN.
7. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the "Preventive Maintenance'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

CAUTION:
The ground strap must not be connected while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Control Carrier A

1. To ensure that the port circuit packs and power units in the ''A'' carrier are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ''A'' carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

4. Remove the circuit-pack blanks from slots that do not contain circuit packs.
5. Remove the front trim plate from the ‘‘A’’ carrier by pulling straight off.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove tape.
2. Disconnect the AHF4 cable adapter from behind slot ‘‘07’’ of control carrier ‘‘A’’ (see Figure 3-22).
3. Open the snap connectors to remove the adapter from the tape drive’s ribbon cable. Route the cable back to the tape drive and remove it. (There are two cable clamps on the cabinet’s side panel. Use a screwdriver to unsnap them.) Neither the cable nor the adapter will be used in the upgraded EPN cabinet.
   - — On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - — On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A apparatus blank over the empty space left by the removal of the tape drive.

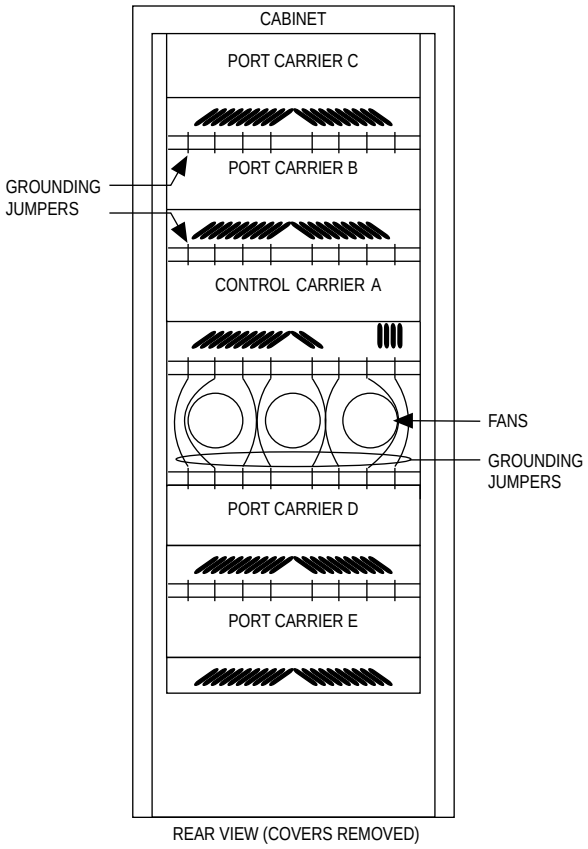


Figure 3-22. R1V3 System Cabinet

Remove Control Carrier A

1. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-23). They will not be reused.
2. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-23). They will not be reused.

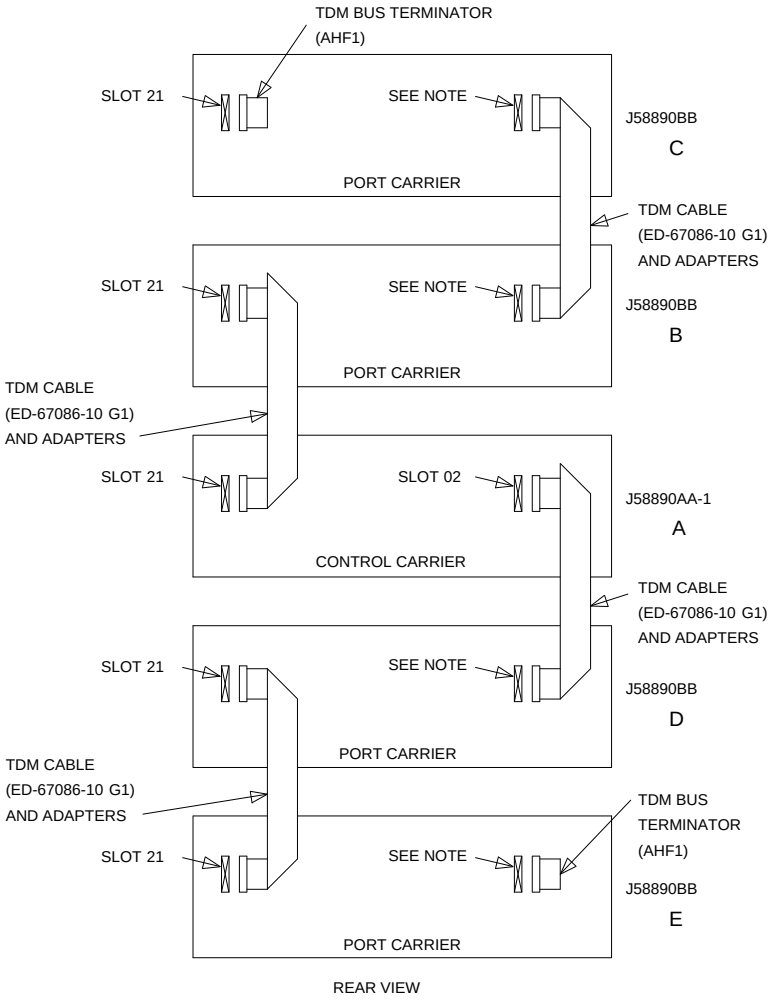
CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter, note its position.

3. Disconnect one end of the eight ground straps (between the ''A'' and ''B'' carriers) from the ''A'' carrier (see Figure 3-24). These straps will be reconnected to the new ''A'' carrier.
4. Disconnect one end of the eight ground straps (between the ''A'' and ''D'' carriers) from the ''A'' carrier (see Figure 3-24). These straps will be reconnected to the new ''A'' carrier.
5. Slide the latch up, and disconnect the ''P1'' (small 9-pin) connector and the ''P2'' (large 37-pin) connector from the ''A'' carrier (see Figure 3-25). Move the cables into a position where they will not interfere with removing the carrier.
6. Remove the fan trim plate by pulling straight off.
7. Clean or replace the air filter (403326820) if necessary.
8. In front of carrier, remove the four screws (top two first) holding the ''A'' carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
9. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

10. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-23. TDM Connections for R1V3 System

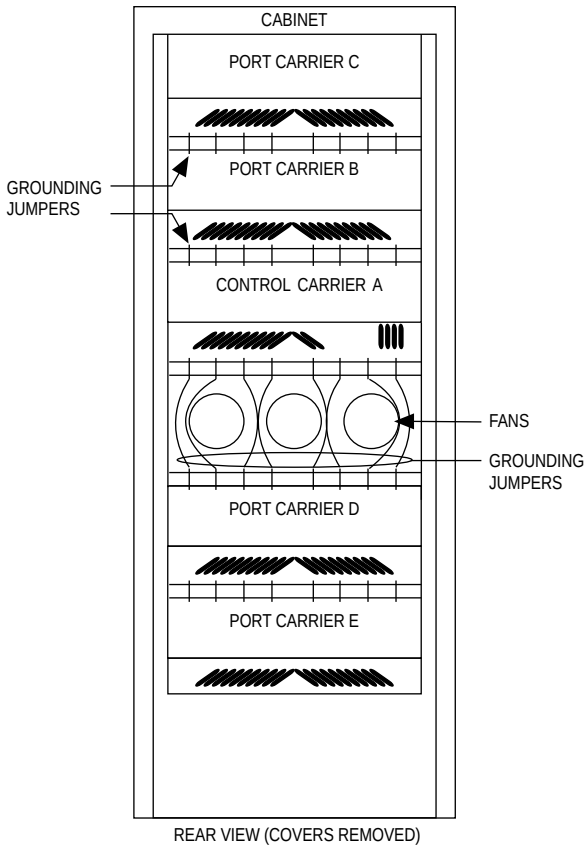


Figure 3-24. Locations of Grounding Jumpers

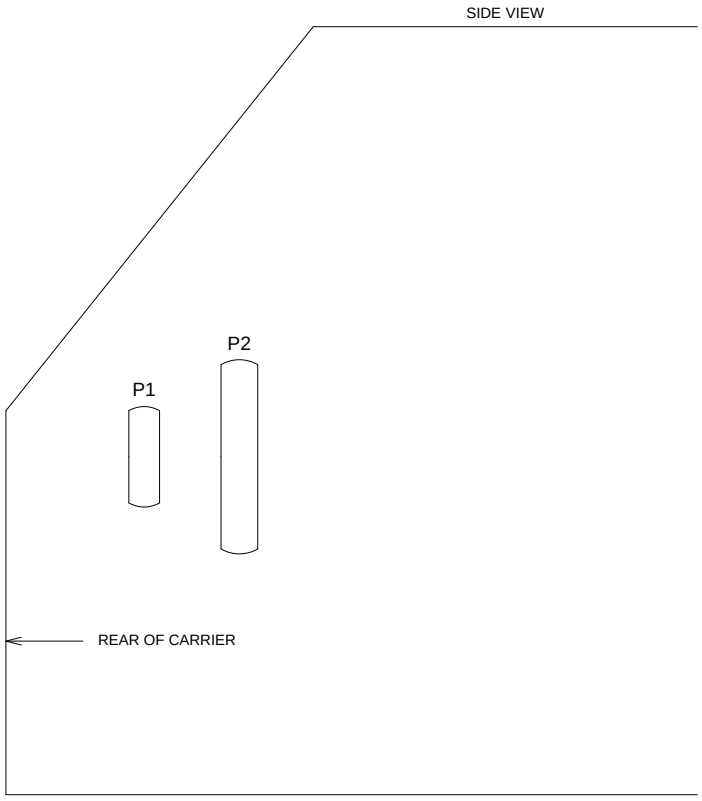


Figure 3-25. Location of P1 and P2 Connectors on System 75 Carrier

Prepare New Expansion Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install New Expansion Control Carrier A

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the carrier with the screw holes in the cabinet. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 3-26). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area being installed. Snap the connector lock into place to ensure that the connection is properly made.
4. Connect the eight ground straps from the ‘‘B’’ carrier to the new ‘‘A’’ carrier (see Figure 3-24). These straps were left connected to the ‘‘B’’ carrier when the old ‘‘A’’ carrier was removed.
5. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 3-24). These straps were left connected to the ‘‘D’’ carrier when the old ‘‘A’’ carrier was removed.
6. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

7. Connect the new TDM/LAN cable (WP-91716 L7) between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-27 and Table 3-7). The cable is connected to the ‘‘A’’ and ‘‘D’’ carriers at the pin-field blocks marked TDM on the right side of each carrier.

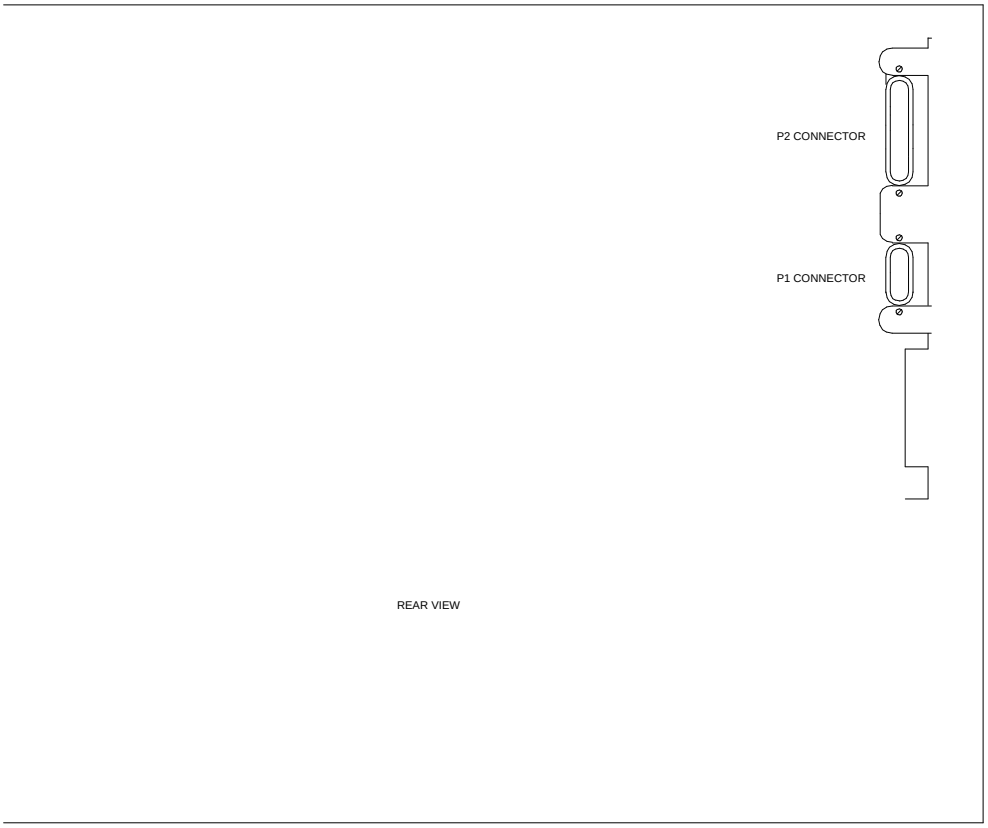
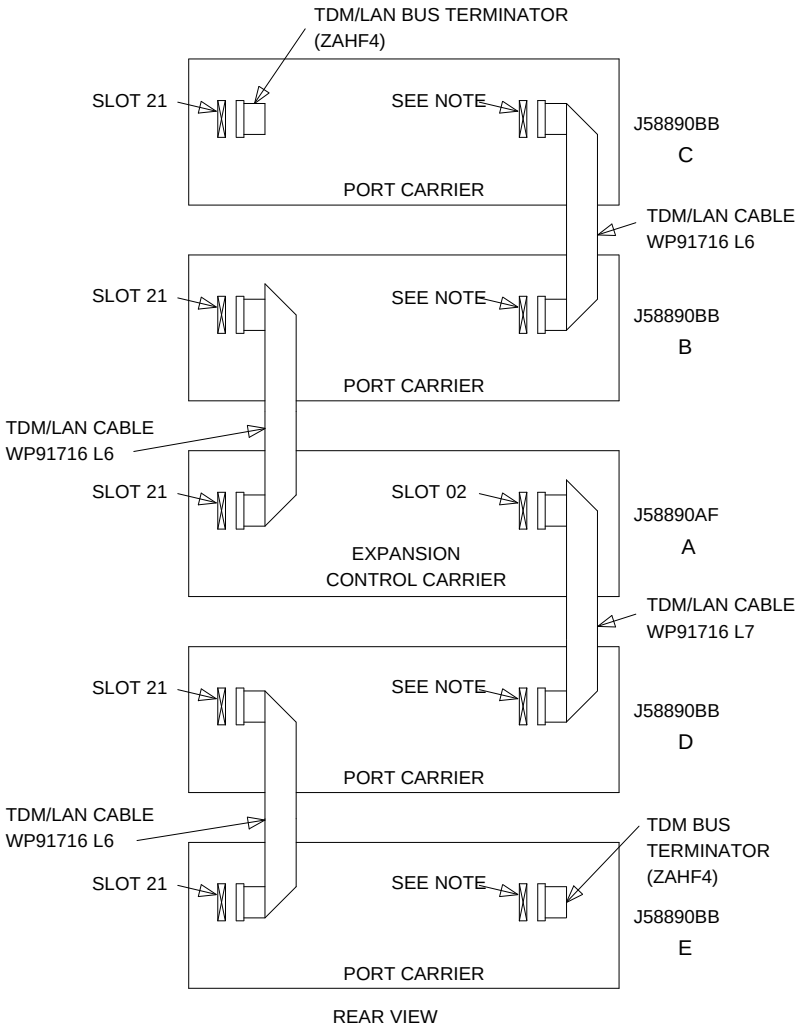


Figure 3-26. Location of P1 and P2 Connectors on DEFINITY Carrier



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-27. TDM/LAN Connections for G3i V4 EPN

Table 3-7. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control "A"	21	02

8. Connect a new TDM/LAN cable (WP-91716 L6) between the "A" and "B" carriers (see Figure 3-27 and Table 3-7). The cable is connected to the "A" and "B" carriers at the pin-field blocks marked TDM on the left side of each carrier.
9. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the "B" and "C" carriers (see Figure 3-23). Install a new WP-91716 L6 TDM/LAN cable. The new cable is connected to the same pin-field blocks that the old cable was disconnected from (right side). (See Figure 3-27 and Table 3-7.)
10. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the "D" and "E" carriers (se Figure 3-23). Install the new WP-91716 L6 TDM/LAN cable. The new cable is connected to the same pin-field blocks that the old cable was disconnected from (left side). (See Figure 3-27 and Table 3-7.)

CAUTION:
When removing the cable adapters or terminators, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter or terminator, note its position.

11. See previous CAUTION and NOTE. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 3-23 and Figure 3-27 and Table 3-7.)
12. Install the front trim plates on the "A" carrier. Install the fan trim plate.
13. Peel the old decal strip (designation strip) from the trim plates. Then, install the new decal strip at the bottom of the trim panel.

14. Install the new connector-panel decal on the rear connector panel.
15. Install the 631-type power units (removed from R1V3) into the ''A'' carrier. Three different pairs of AC power units have been developed. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Since power units from the newer pairs are downward compatible with the older ones, power units from different pairs can reside in the same carrier.

    However, do not interchange the physical locations of the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 3-28).
16. If the expansion control carrier contains a 631BR1 or 631WB1 power unit, install the previously removed TN736 power unit in port slots ''18'' and ''19'' of the carrier (adjacent to the 631BR1 or 631WB1). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    A TN736 is not required when a 631DB1 power unit is used in a J58890AF expansion control carrier or in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.
17. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 3-29).

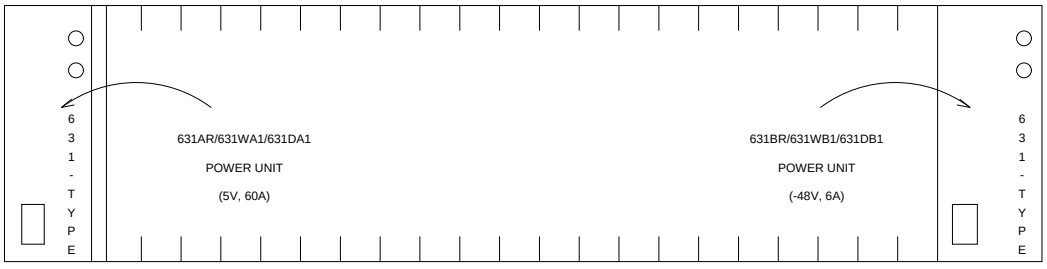


Figure 3-28. Locations of Power Units

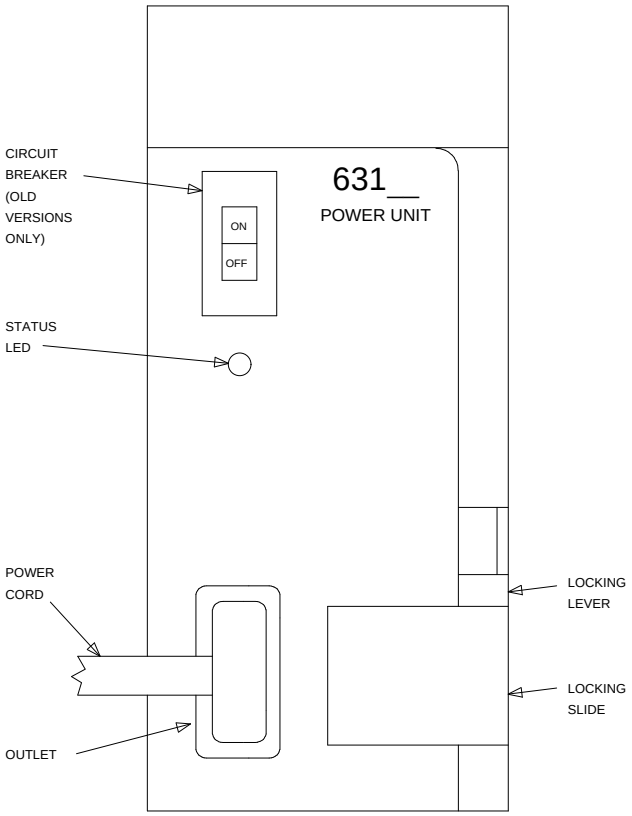


Figure 3-29. 631-Type Power Unit

Install Circuit Packs

1. See WARNING. Install the new G3i V4 control circuit packs into expansion control carrier ‘‘A.’’ Refer to Figure 3-30, new decal, and annotated ‘‘list configuration all’’ (provided with G3i V4 translation memory card).

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

2. See WARNING and NOTE. Install the port circuit packs previously removed into the ‘‘A’’ carrier referencing the decal and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card).

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

   NOTE:
   Since the new G3i V4 expansion control carrier has eleven more port slots than the removed control carrier, there should not be a need to move and retranslate these circuit packs.

   If a port circuit pack was located in slot ‘‘01’’ of control carrier ‘‘A,’’ the CSA software upgrade retranslated this circuit pack to occupy an empty port slot in the new expansion control carrier.

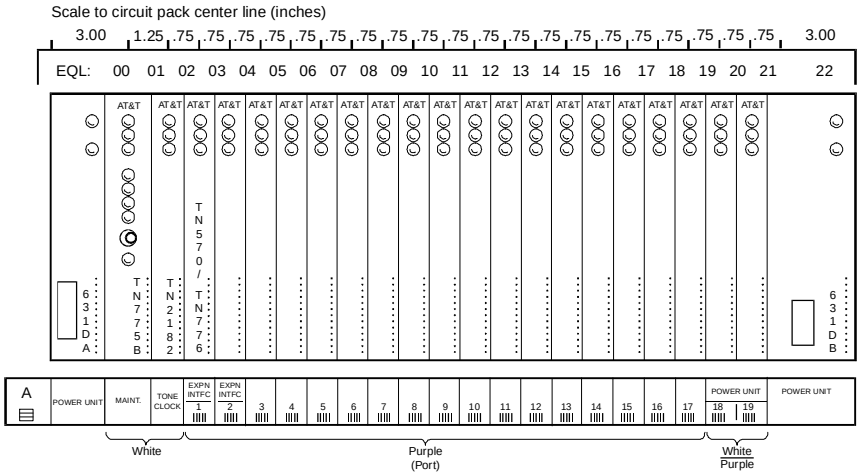


Figure 3-30. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

3. Install circuit-pack blanks in slots not equipped with circuit packs.
4. Ensure that the PPN associated with this EPN is equipped with a TN776 or a TN570 Expansion Interface.

Interconnect Port Networks

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either “TX”

(transmit) or “RX’’ (receive), while the fibers attached to each connector are numbered either ‘‘1’’ or ‘‘2.’’ A viable fiber connection is only made when both fibers in each cable (that is, ‘‘1’’ and ‘‘2’’) route from the “TX’’ connector of a port network to the “RX’’ connector of its adjacent port network. For an example, refer to Figure 3-32.

NOTE:
For implementation details, refer to the ‘‘Fiber Link Administration’’ sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

When a standard-reliability PPN and EPN are collocated, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to connect the EPN.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

For collocated cabinets, the fiber-optic cable should be routed directly from the PPN to the EPN cabinet. Since, for this upgrade, a ''DEFINITY style'' PPN cabinet is next to a medium EPN cabinet, the preferred routing is to run the cable down the cable tray and out the bottom of the PPN cabinet. The cable is then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

When a standard-reliability PPN and EPN are remotely separated with fiber, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units [provided by the Premises Service Consultant (PSC)] are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

One Collocated Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-31 and Figure 3-33):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver, just installed, at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable to the 9823-type lightwave transceiver, just installed, at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

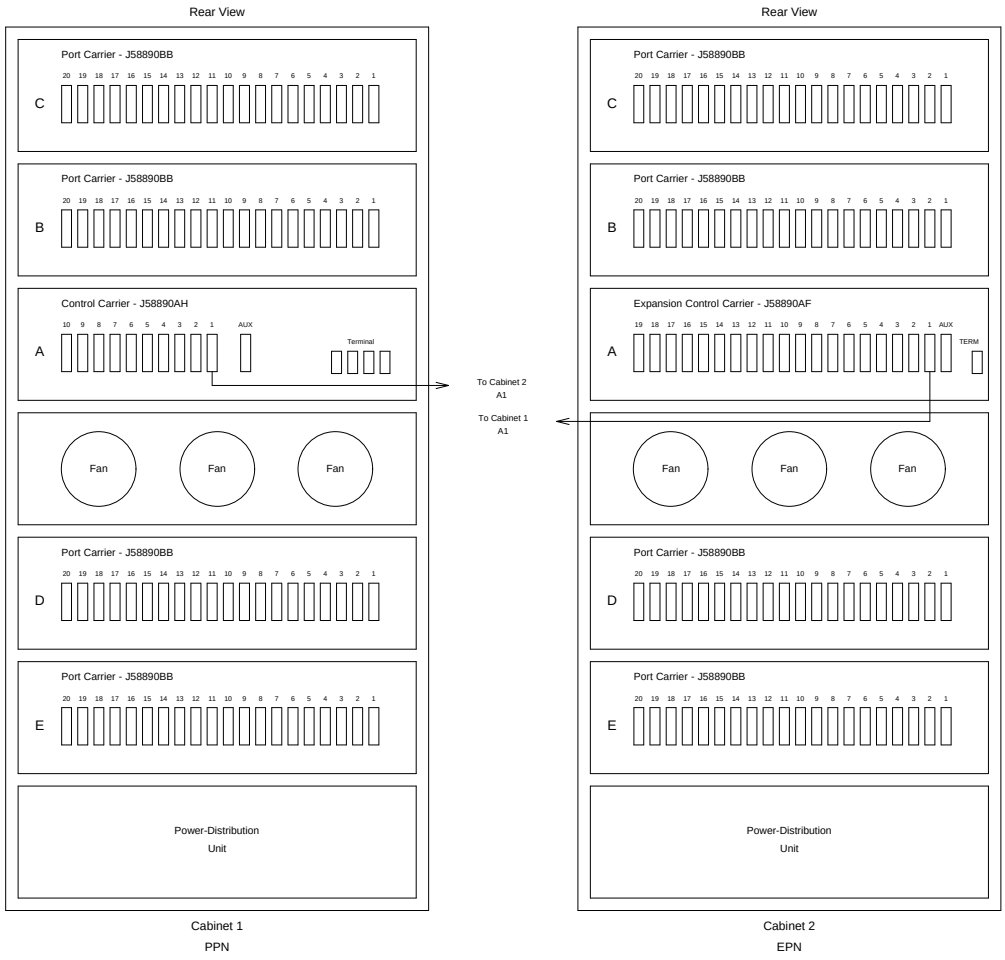


Figure 3-31. Standard-Reliability G3i V4 with Two Port Networks

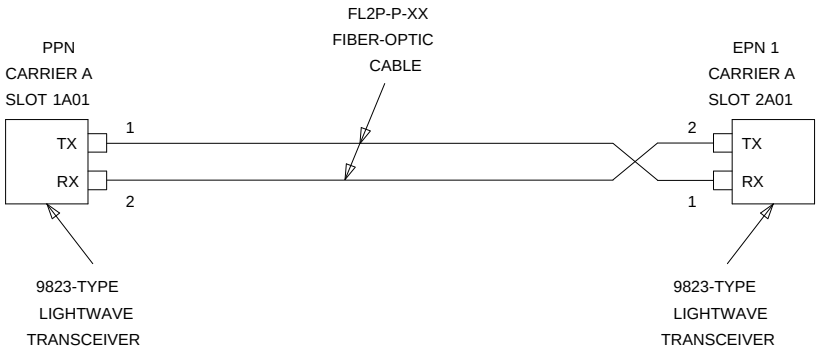


Figure 3-32. Fiber-Optic Connections PPN to EPN

One Fiber-Remoted Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-31 and Figure 3-34):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the Premises Distribution System (PDS) cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable to the 9823-type lightwave transceiver slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.

- Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
- Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

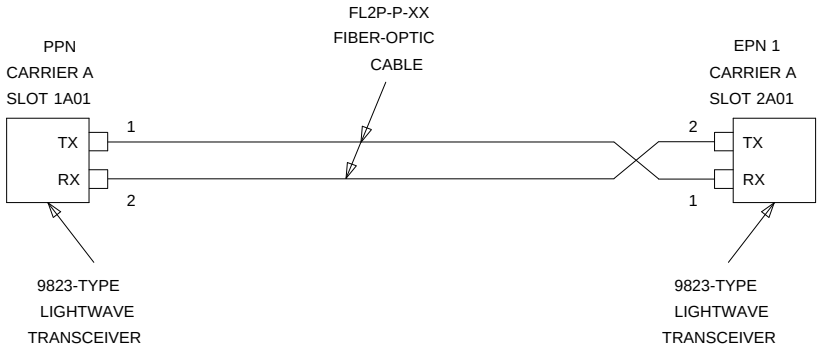


Figure 3-33. Fiber-Optic Connections PPN to EPN

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Reboot the System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.

8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Relabel Wall Field

If not done during the installation of new PPN, relabel the wall field with the new port-network number of the upgraded G3i V4 EPN. (For an upgrade of an R1V3 system, the CSA software upgrade assigned port-network number ‘‘2’’ to the upgraded EPN.)

Close EPN Cabinet and Reconnect Cables

1. At the EPN power-distribution unit, set the main circuit breaker to OFF.

   NOTE:
   Powering down the EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.
6. Install a DEFINITY label on the EPN cabinet.

Power Up the EPN Cabinet

1. At the EPN power-distribution unit, set the main circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to the EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN736, TN752, or TN755 power supply in port slots ''18'' and ''19''
- A TN776 or TN570 Expansion Interface in port slot ''1''
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be recorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

R1V3 Medium to 2-Cabinet G3i V4 with High Reliability

See NOTE. Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new PPN cabinet.

NOTE:
During the wall-field wiring of the PPN installation, the wall field can also be relabeled with the new port-network number of the R1V3 system to be upgraded. (For an R1V3 system, the CSA software upgrade assigned the upgraded EPN as port network ''2.'')

If a second EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, to install the new EPN.

Upgrade Cabinet

The existing cabinet is always upgraded to an EPN. Upgrade the cabinet using the following procedures.

The System 75 Medium R1V3 is upgraded to a high-reliability G3i V4 EPN by:

- Removing the tape-drive unit
- Removing the TDM cables, cable adapters, and terminators
- Removing the control carrier from position ''A''
- Installing the J58890AF expansion control carrier in position ''A''
- Installing the new TDM/LAN cables and terminators
- Adding the G3i V4 circuit packs to the EPN
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 3-8 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ''1-800-772-5409,'' and respond to the call prompter.

Table 3-8. Required Hardware

Equipment	Description	Quantity
PEC 6300-59X	Processor Port Network	1
J58890AF	Expansion Control Carrier	1
106647985	TN775B Maintenance	1
103557211 or 106706955	TN768 Tone-Clock TN2182 Tone-Clock	1 1 (Note 7)
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2 (Note 1) 2 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	2 (Note 3)
105691158	CFY1 Current Limiter	1
63300A	FL2P-P-XX Fiber Cable	1 (Note 4)
103960456	ZAHF4 TDM Bus Terminator	2
J58890A L20	WP-91716 L6 TDM/LAN Cable	max 3
J58890A L21	WP-91716 L7 TDM/LAN Cable	1 (Note 5)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 (Note 6) 2 (Note 6)
105731202	176A Apparatus Blank (for removed tape drive)	1
846309466	DEFINITY Label	1

Notes:

1. Two expansion interfaces (EIs) are required for a high-reliability switch with two port networks. One EI is shipped loose with the EPN equipment. The factory has installed the other EI in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
4. Two cables are required if the EPN and PPN are remotely located.
5. L7 required if the R1V3 system is equipped with a ‘‘D’’ carrier.

6. Shipped loose with the EPN equipment only. One lightwave transceiver is installed in the EPN, and one in the PPN.
7. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - — *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105 Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove the top three panels (positions A, B, and C) and the bottom panel. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Control Carrier A

1. To ensure that circuit packs and power units in the ''A'' carrier are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ''A'' carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

4. Remove the circuit-pack blanks from slots that do not contain circuit packs.
5. Remove the front trim plate from the ''A'' carrier by pulling straight off.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove tape.
2. Disconnect the AHF4 cable adapter from behind slot ''07'' of control carrier ''A'' (see Figure 3-35).
3. Open the snap connectors and remove the cable from the adapter. Route the cable back to the tape drive and remove it. There are two cable clamps on the cabinet side panel. Use a screwdriver to unsnap them. Neither the cable nor the adapter will be used in the upgraded cabinet.
   - — On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - — On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A apparatus blank over the empty space left by the removal of the tape drive.

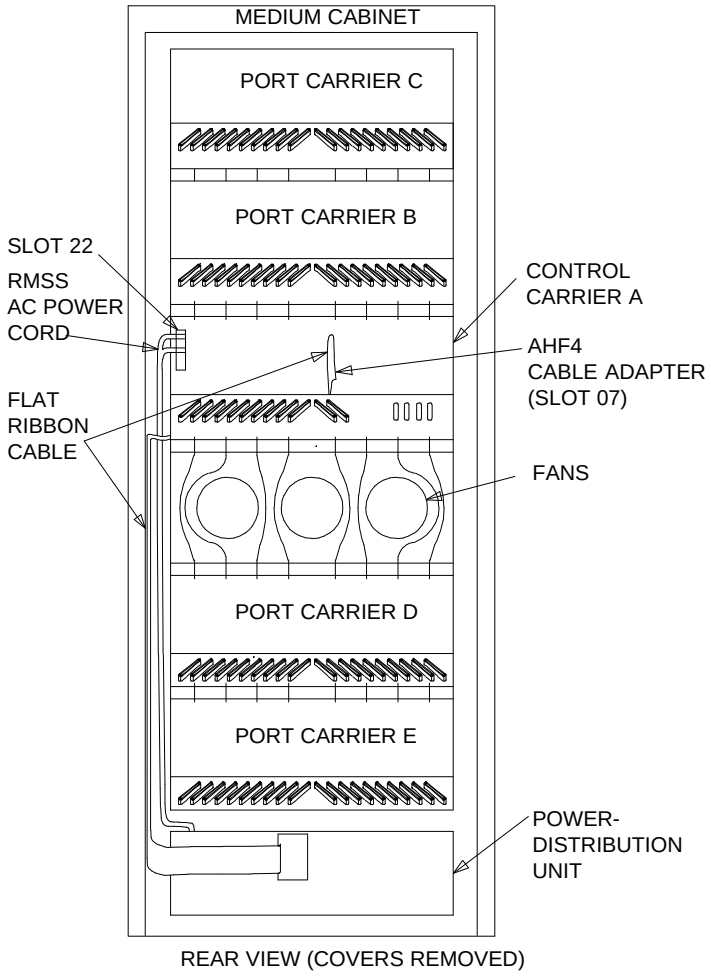


Figure 3-34. R1V3 System Cabinet

Remove Control Carrier A

1. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-35). They will not be reused.
2. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-35). They will not be reused.

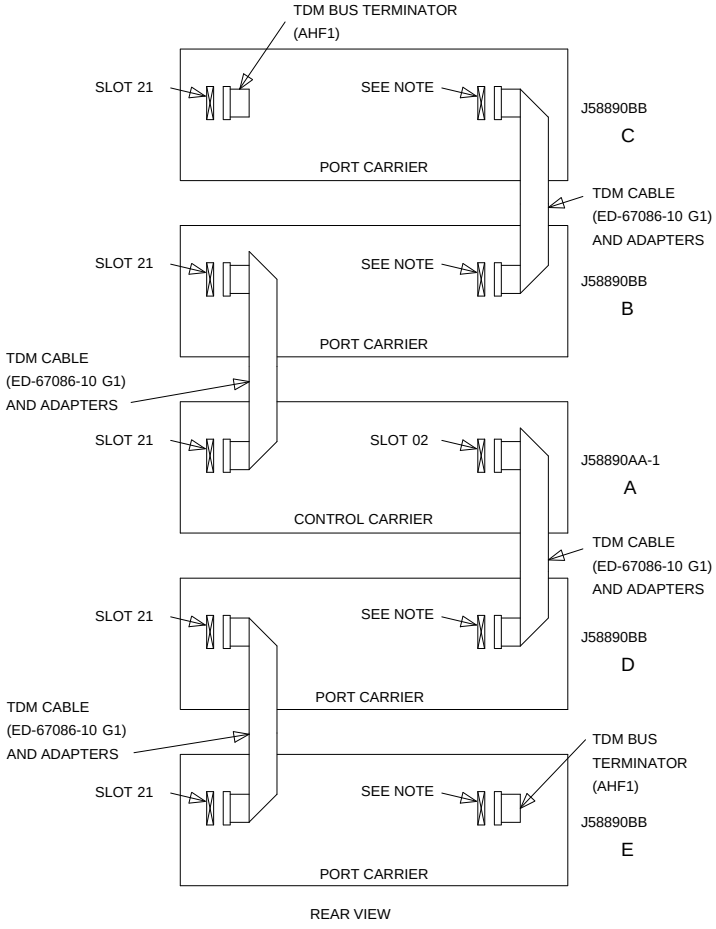
CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter, note its position.

3. Disconnect one end of the eight ground straps (between the ''A'' and ''B'' carriers) from the ''A'' carrier (see Figure 3-36). These straps will be reconnected to the new ''A'' carrier.
4. Disconnect one end of the eight ground straps (between the ''A'' and ''D'' carriers) from the ''A'' carrier (see Figure 3-36). These straps will be reconnected to the new ''A'' carrier.
5. Slide the latch up, and disconnect the ''P1'' (small 9-pin) connector and the ''P2'' (large 37-pin) connector from the ''A'' carrier (see Figure 3-37). Move the cables into a position where they will not interfere with removing the carrier.
6. Remove the fan trim plate by pulling straight off.
7. Clean or replace the air filter (403326820) if necessary.
8. In front of carrier, remove the four screws (top two first) holding the ''A'' carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
9. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

10. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-35. TDM Connections for R1V3 System

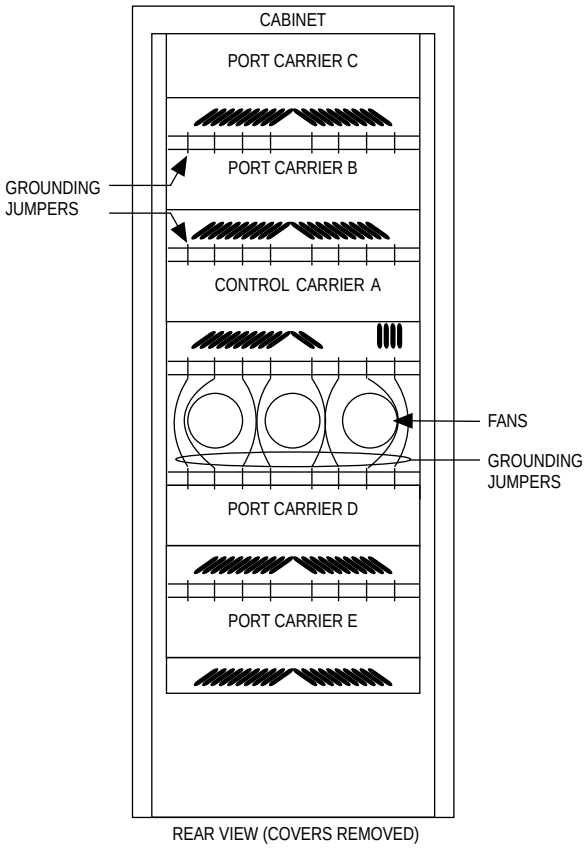


Figure 3-36. Locations of Grounding Jumpers

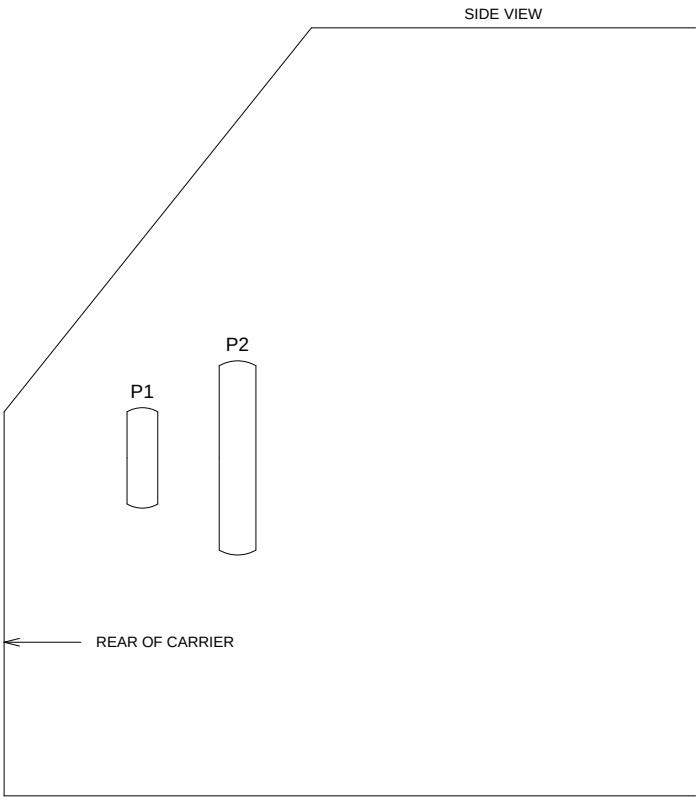


Figure 3-37. Location of P1 and P2 Connectors

Prepare New Expansion Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install New Expansion Control Carrier A

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the carrier with the screw holes in the cabinet. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 3-38). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area being installed. Snap the connector lock into place to ensure that the connection is properly made.
4. Connect the eight ground straps from the ‘‘B’’ carrier to the new ‘‘A’’ carrier (see Figure 3-36). These straps were left connected to the ‘‘B’’ carrier when the old ‘‘A’’ carrier was removed.
5. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 3-36). These straps were left connected to the ‘‘D’’ carrier when the old ‘‘A’’ carrier was removed.

6. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ''1'' to the A-carrier frame (on the right side), and the other connects ground point ''8'' to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

7. Connect the new TDM/LAN cable (WP-91716 L7) between the ''A'' and ''D'' carriers (see Figure 3-39 and Table 3-9). The cable is connected to the ''A'' and ''D'' carriers at the pin-field blocks marked TDM on the right side of the carriers.

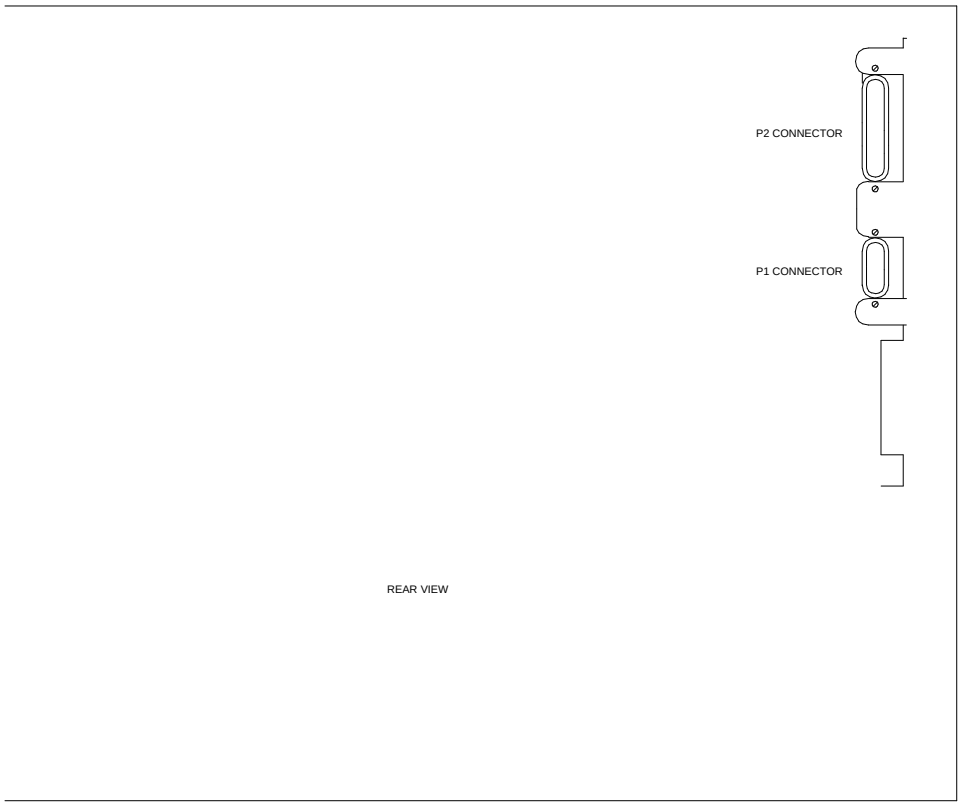
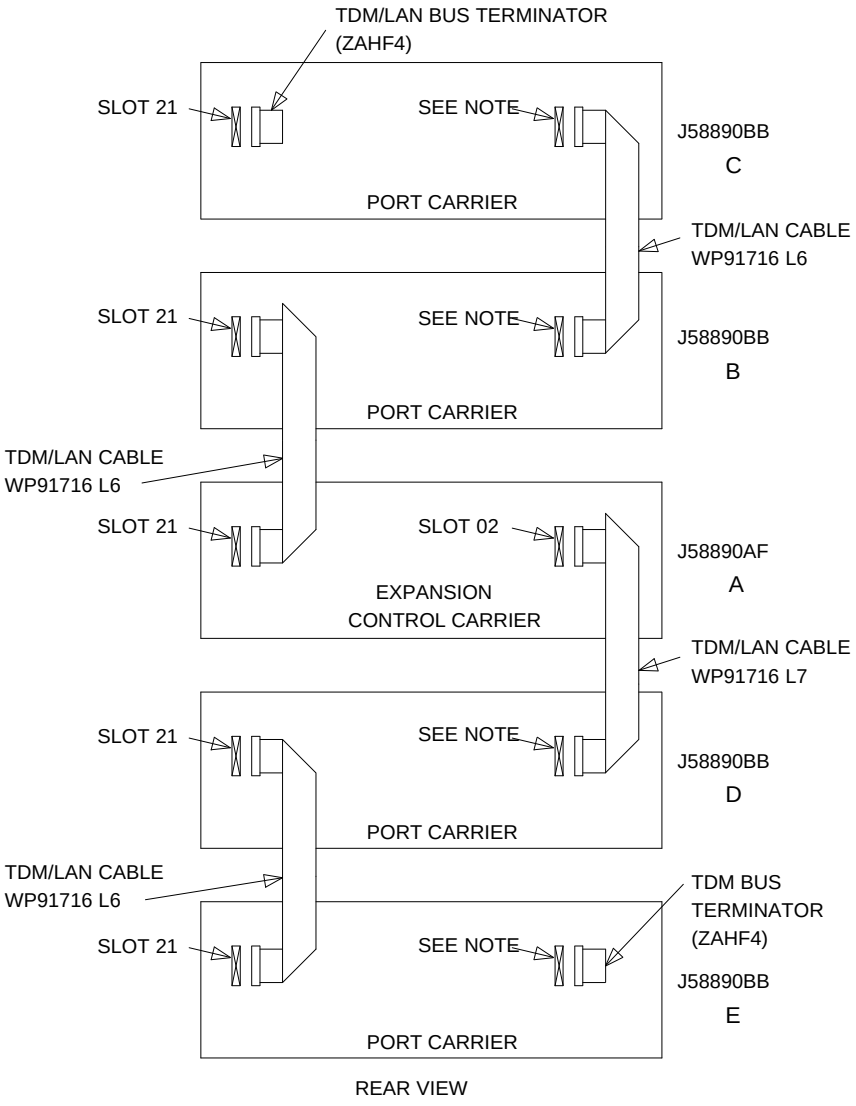


Figure 3-38. Location of P1 and P2 Connectors on DEFINITY Carrier



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-39. TDM/LAN Connections for G3i V4 EPN

Table 3-9. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control "A"	21	02

8. Connect a new TDM/LAN cable (WP-91716 L6) between the "A" and "B" carriers (see Figure 3-39 and Table 3-9). The cable is connected to the "A" and "B" carriers at the pin-field blocks marked TDM on the left side of the carriers.
9. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between carriers "B" and "C" (see Figure 3-35). Install a new WP-91716 L6 TDM/LAN cable. The cable is connected to the same pin-field blocks that the old cable was disconnected from (right side). (See Figure 3-39 and Table 3-10 on page 3-122.)
10. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between carriers "D" and "E" (see Figure 3-35). Install the new WP-91716 L6 TDM/LAN cable. The cable is connected to the same pin-field blocks that the old cable was disconnected from (left side). (See Figure 3-39 and Table 3-10.)

CAUTION:
When removing the cable adapters or terminators, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter or terminator, note its position.

11. See previous CAUTION and NOTE. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 3-35 and Figure 3-39 and Table 3-9.)
12. Install the front trim plates on the "A" carrier. Install the fan trim plate.
13. Peel the old decal strip (designation strip) from the trim plates. Then, install the new decal strip at the bottom of the trim panel.

14. Install the new connector-panel decal on the rear connector panel.
15. Install the 631-type power units (removed from R1V3) into the ‘‘A’’ carrier. Three different pairs of AC power units have been developed. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Since power units from the newer pairs are downward compatible with the older ones, power units from different pairs can reside in the same carrier.

    However, do not interchange the physical locations of the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 3-40).
16. If the expansion control carrier contains a 631BR1 or 631WB1 power unit, install the previously removed TN736 power unit in port slots ‘‘18’’ and ‘‘19’’ of the carrier (adjacent to the 631BR1 or 631WB1). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    A TN736 is not required when a 631DB1 power unit is used in a J58890AF-1 expansion control carrier or in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.
17. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 3-41).

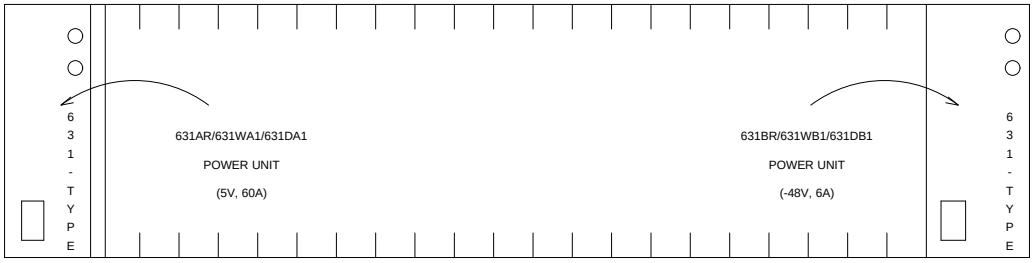


Figure 3-40. Locations of Power Units

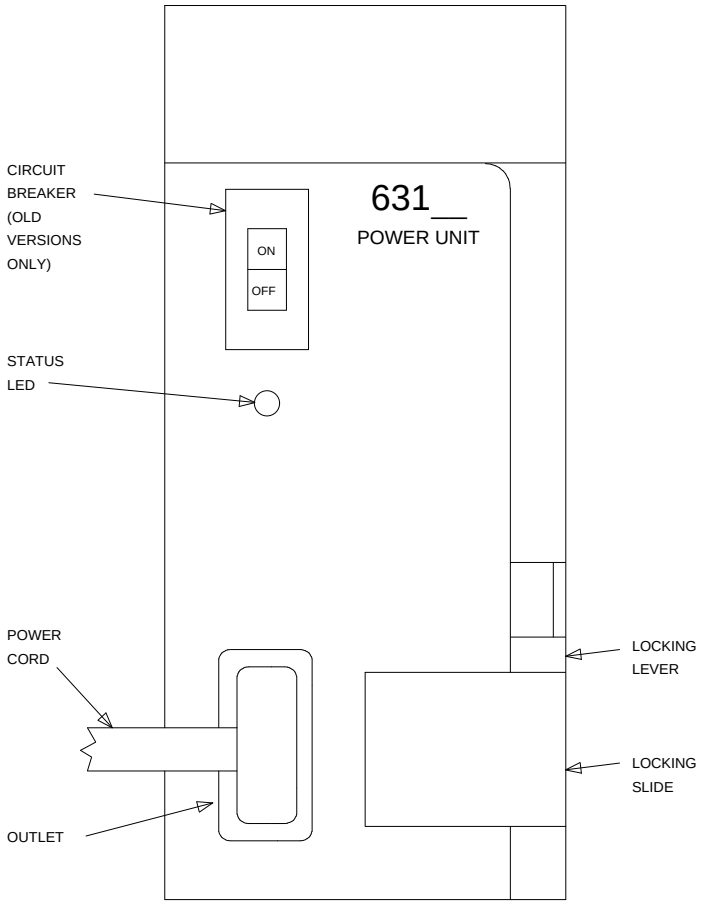


Figure 3-41. 631-Type Power Unit

Install Circuit Packs

1. See WARNING. Install the new G3i V4 control circuit packs into expansion control carrier ‘‘A.’’ Refer to Figure 3-42, new decal, and annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card).

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

2. See WARNING and NOTE. Install the previously removed port circuit packs into the ‘‘A’’ carrier referencing the decal and annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card).

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

   NOTE:
   Since the new G3i V4 expansion control carrier has eleven more port slots than the removed control carrier, there should not be a need to move and retranslate these circuit packs.

   If a port circuit pack was located in slot ‘‘01’’ of control carrier ‘‘A,’’ the CSA software upgrade retranslated this circuit pack to occupy an empty port slot in the new expansion control carrier.

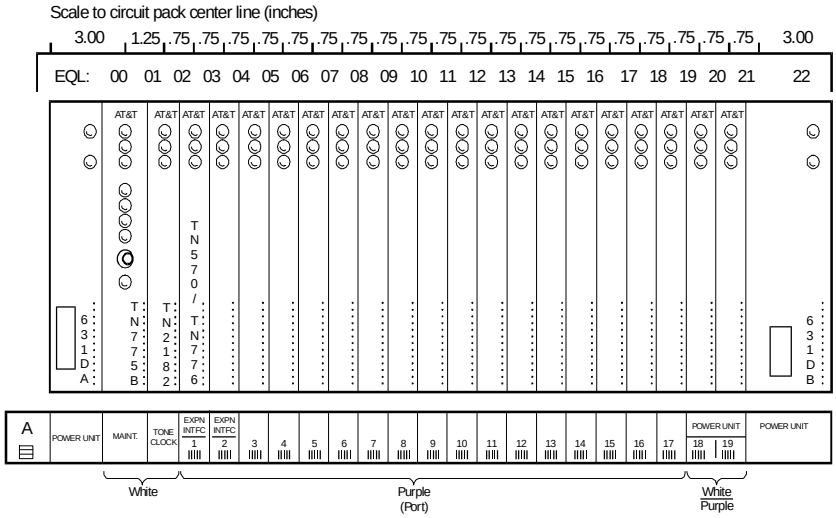


Figure 3-42. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

3. Install circuit-pack blanks in slots not equipped with circuit packs.
4. Ensure that the PPN associated with this EPN is equipped with a TN776 or TN570 Expansion Interface.

Interconnect Port Networks

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either “TX” (transmit) or “RX’’ (receive), while the fibers attached to each connector are numbered either ‘‘1’’ or ‘‘2.’’ A viable fiber connection is only made when both fibers in each cable (that is, ‘‘1’’ and ‘‘2’’) route from the “TX” connector of a port network to the “RX’’ connector of its adjacent port network. For an example, refer to Figure 3-44.

NOTE:
For implementation details, refer to the ‘‘Fiber Link Administration’’ sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

When a high-reliability PPN and EPN are collocated, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to connect the EPN.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

For collocated cabinets, the fiber-optic cable should be routed directly from the PPN to the EPN cabinet. Since, for this upgrade, a ‘‘DEFINITY style’’ PPN cabinet is next to a medium EPN cabinet, the preferred routing is to run the cable down the cable tray and out the bottom of the PPN cabinet. The cable is then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

When a high-reliability PPN and EPN are remotely separated with fiber, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

One Collocated Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-43 and Figure 3-44):
   - Install a 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from port carrier C of the PPN cabinet, to the 9823-type lightwave transceiver at slot 2A01.
3. Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
4. Coil the surplus length of fiber-optic cable and place it in the cable manager.

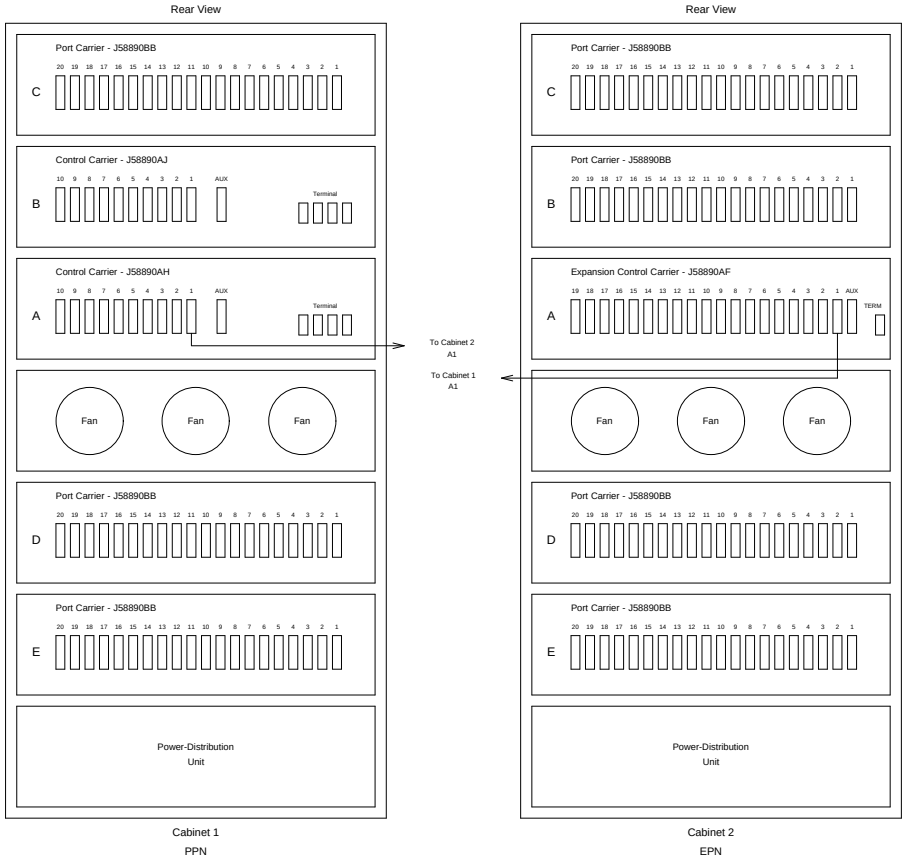


Figure 3-43. High-Reliability G3i V4 with Two Port Networks

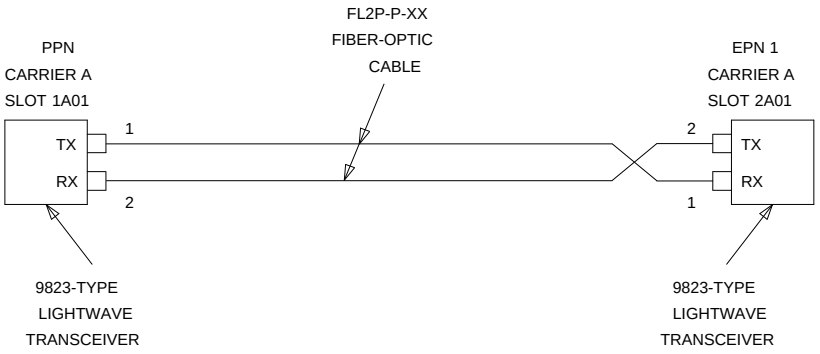


Figure 3-44. Fiber-Optic Connections PPN to EPN

One Fiber-Remoted Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-43 and Figure 3-45):
   - Install a 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.

- Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
- Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

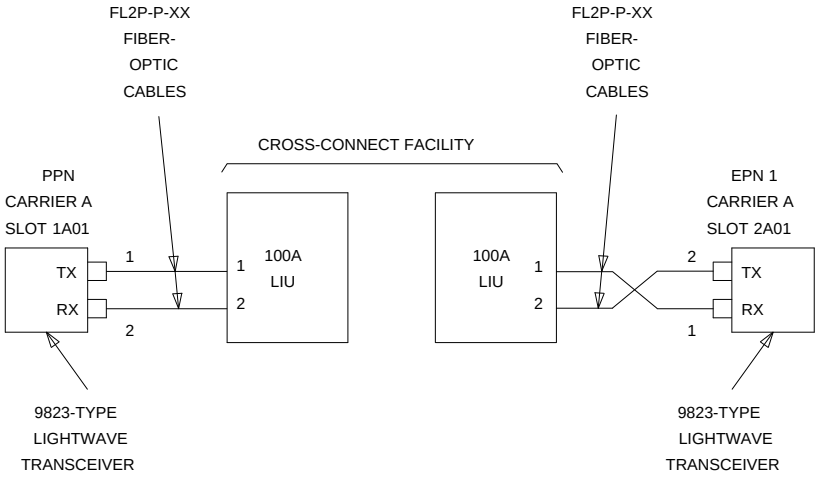


Figure 3-45. Fiber-Optic Connections PPN to EPN

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the previously installed ground strap from the power-failure transfer unit.

Reboot the System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At each TN777B faceplate, insert a translation memory card obtained from the CSA.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory cards. Loading the translations takes 10 to 15 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Relabel Wall Field

If not done during the installation of new PPN, relabel the wall field with the new port-network number of the upgraded G3i V4 EPN. (For an upgrade of an R1V3 system, the CSA software upgrade assigned port-network number ‘‘2’’ to the upgraded EPN.)

Close EPN Cabinet and Reconnect Cables

1. At the EPN power-distribution unit, set the main circuit breaker to OFF.

   NOTE:
   Powering down the EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.
6. Install a DEFINITY label on the EPN cabinet.

Power Up the EPN Cabinet

1. At the EPN power-distribution unit, set the main circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to the EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN736, TN752, or TN755 power supply in port slots ''18'' and ''19''
- A TN776 or TN570 Expansion Interface in port slot ''1''
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

R1V3 Medium to 2-Cabinet G3i V4 with Critical Reliability

See NOTE. Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

NOTE:
During the wall-field wiring of the PPN installation, the wall field can also be relabeled with the new port-network number of the R1V3 system to be upgraded. (For an R1V3 system, the CSA software upgrade assigned the upgraded EPN as port network ''2.'')

If a second EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPN.

Upgrade Cabinet

The existing cabinet is always upgraded to an EPN. Upgrade the cabinet using the following procedures.

The System 75 Medium R1V3 is upgraded to a critical-reliability G3i V4 EPN by:

- Removing the tape-drive unit
- Removing the TDM cables, cable adapters, and terminators
- Removing the control carrier from position ''A''
- Installing the J58890AF expansion control carrier in position ''A''
- Installing the new TDM/LAN cables and terminators
- Adding the G3i V4 circuit packs to the EPN
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 3-10 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 3-10. Required Hardware

Equipment	Description	Quantity
PEC 6300-59X	Processor Port Network	1
J58890AF-1	Expansion Control Carrier	1
106647985	TN775B Maintenance	1
103557211 or 106706955	TN768 Tone-Clock or TN2182 Tone-Clock	2 1 (Note 8)
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	4 (Note 1) 4 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	2 (Note 3)
105691158	CFY1 Current Limiter	1
H-600-204 G1	Intercarrier Cable A	1
H-600-204 G1	Intercarrier Cable B	1
63300A	FL2P-P-XX Fiber Cable	2 (Note 4)
J58890A L20	WP-91716 L6 TDM/LAN Cable	max 3
J58890A L21	WP-91716 L7 TDM/LAN Cable	1 (Note 5)
103960456	ZAHF4 TDM Bus Terminator	2
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	4 (Note 6) 4 (Note 6)
105731202	176A Apparatus Blank (for removed tape drive)	1
106689516	TN771D Maintenance/Test	1 (Note 7)
846309466	DEFINITY Label	1

(See notes on the next page)

NOTE:

1. Four expansion interfaces (EIs) are required for a critical-reliability switch with two port networks. Two EIs are shipped loose with the EPN equipment. The factory has installed the other two EIs in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
4. Four cables are required if EPN and PPN are remotely located.
5. L7 required if the R1V3 system is equipped with a ''D'' carrier.
6. Shipped loose with the EPN equipment only. Two lightwave transceivers are installed in the EPN, and two in the PPN.
7. Required in a port slot of a critical-reliability G3i V4 EPN with the optional packet bus.
8. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - — *DEFINITY Communications System Generic 3 V4 — Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. Disconnect previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove the top three panels (positions A, B, and C) and the bottom panel. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Carriers A and B

1. To ensure that circuit packs and power units in the ‘‘A’’ and ‘‘B’’ carriers are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ‘‘A’’ and ‘‘B’’ carriers.
3. See WARNING. Remove all circuit packs and power units from carrier ‘‘A.’’ Store the circuit packs in the static-proof packaging.
4. See WARNING. Relocate the circuit packs that are in slots 1 and 2 of the ‘‘B’’ carrier.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

5. Remove the circuit-pack blanks from slots that do not contain circuit packs.
6. Remove the front trim plate from the ‘‘B’’ carrier by pulling straight off. Then remove the front trim plate from the ‘‘A’’ carrier.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove tape.
2. Disconnect the AHF4 cable adapter from behind slot ''07'' of control carrier ''A'' (see Figure 3-46).
3. Open the snap connectors, and remove the cable from the adapter. Route the cable back to the tape drive and remove it. There are two cable clamps mounted on the cabinet side panel. Use a screwdriver to unsnap the cable clamps. Neither the cable nor the adapter will be used in the upgraded cabinet.
   - — On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - — On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A apparatus blank over the empty space left by the removal of the tape drive.

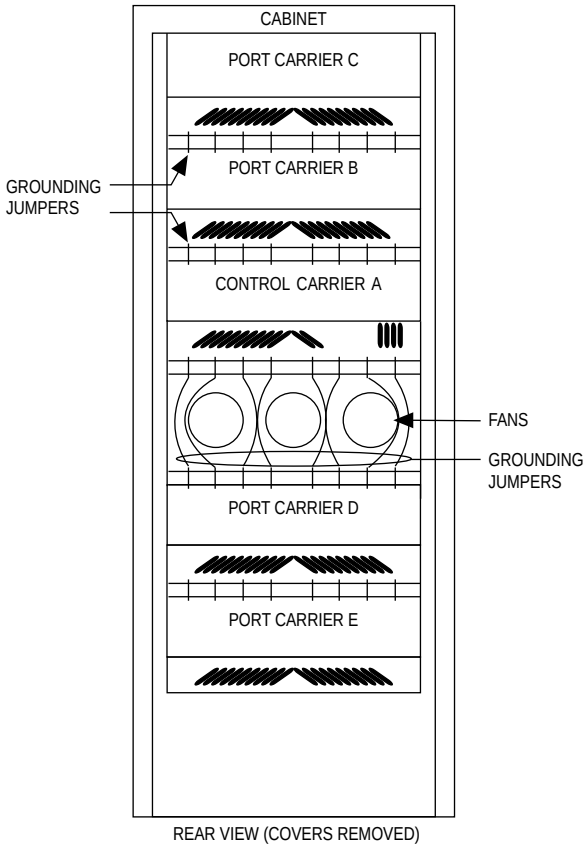


Figure 3-46. R1V3 System Cabinet

Remove Control Carrier A

1. See the following CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 3-47). They will not be reused.
2. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘D’’ carriers (see Figure 3-47). They will not be reused.

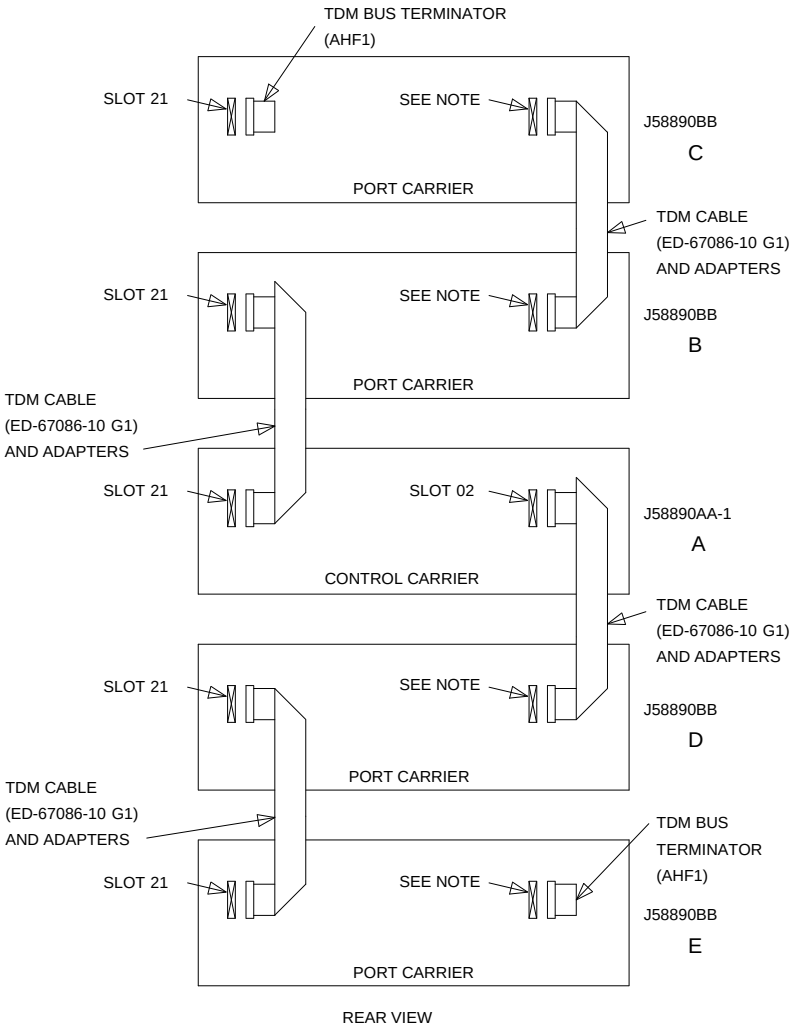
CAUTION:
When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter, note its position.

3. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘B’’ carriers) from the ‘‘A’’ carrier (see Figure 3-48). These straps will be reconnected to the new ‘‘A’’ carrier.
4. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 3-48). These straps will be reconnected to the new ‘‘A’’ carrier.
5. Slide the latch up, and disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 37-pin) connector from the ‘‘A’’ carrier (see Figure 3-49). Move the cables into a position where they will not interfere with removing the carrier.
6. Remove the fan trim plate by pulling straight off.
7. Clean or replace the air filter (403326820) if necessary.
8. In front of carrier, remove the four screws (top two first) holding the ‘‘A’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
9. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

10. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-47. TDM Connections for R1V3 System

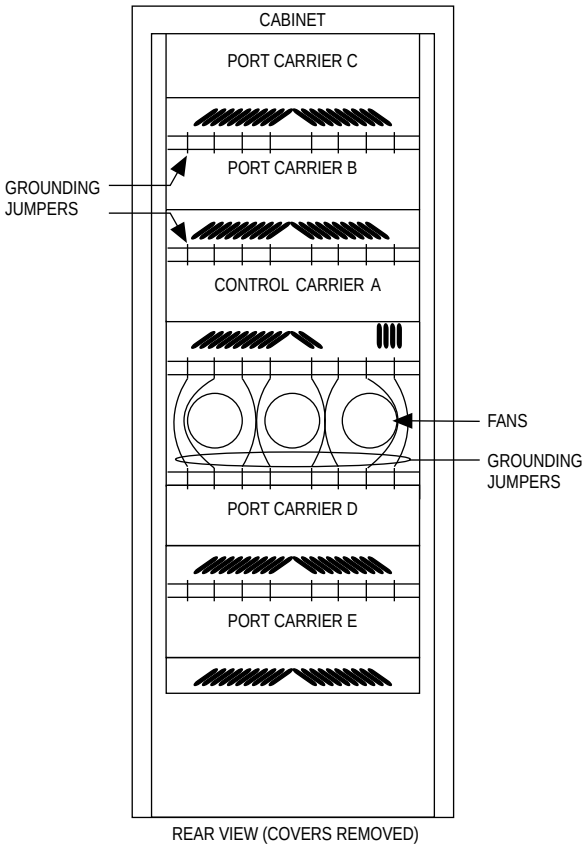


Figure 3-48. Locations of Grounding Jumpers

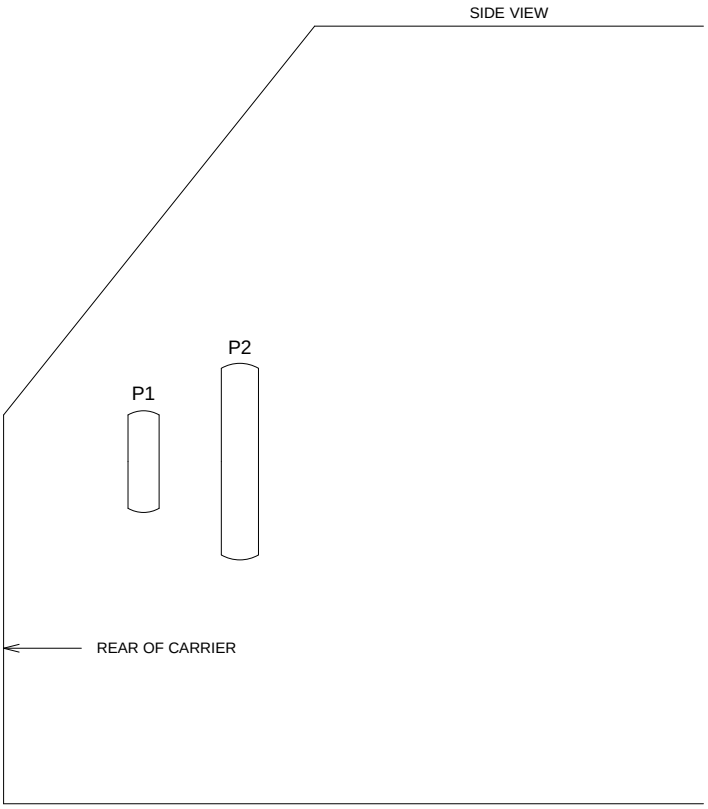


Figure 3-49. Location of P1 and P2 Connectors

Prepare New Expansion Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install New Expansion Control Carrier A

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the carrier with the screw holes in the cabinet. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the “P2’’ and “P1’’ (large and small) connectors to the ‘‘A’’ carrier. If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure that the connection is properly made (see Figure 3-50).
4. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 3-48). These straps were left connected to the ‘‘D’’ carrier.
5. Connect the eight ground straps from the ‘‘B’’ carrier to the new ‘‘A’’ carrier (see Figure 3-48). These straps were left connected to the ‘‘B’’ carrier.
6. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

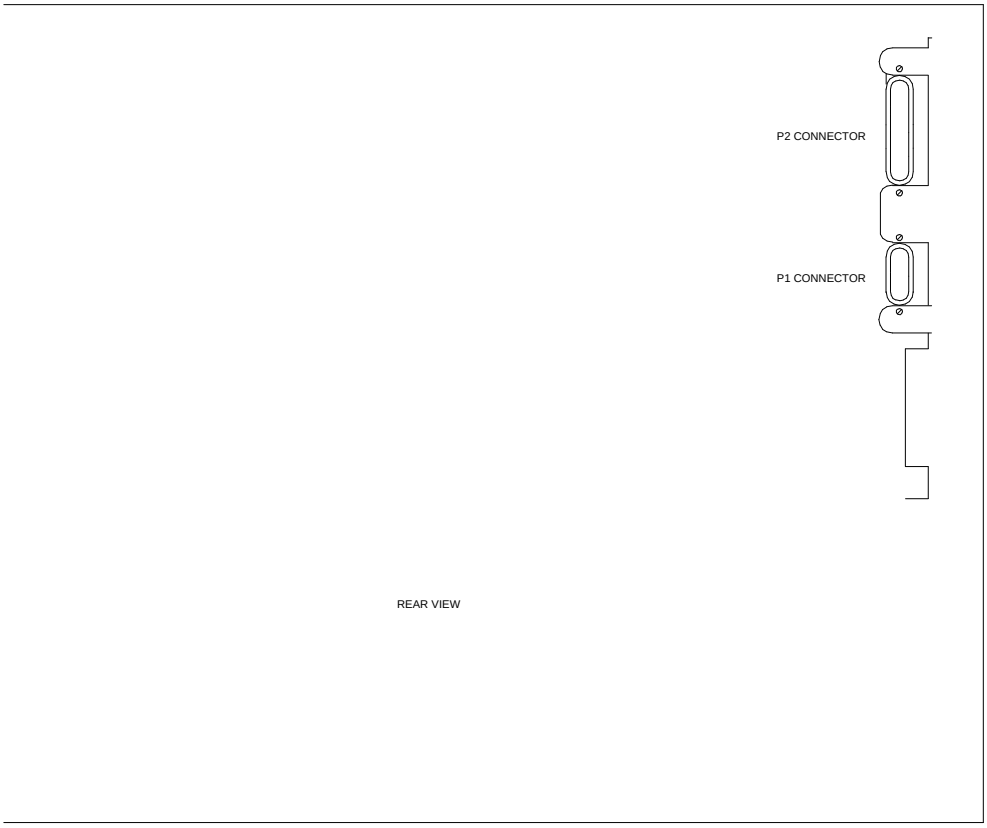
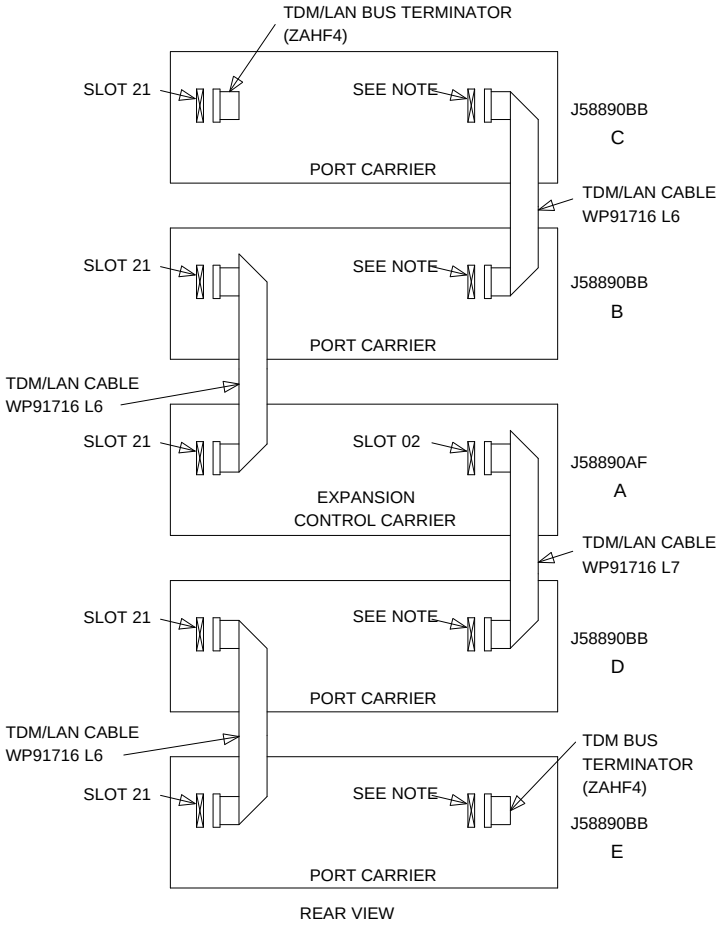


Figure 3-50. Location of P1 and P2 Connectors on DEFINITY Carrier



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 3-51. TDM/LAN Connections for G3i V4 EPN

Table 3-11. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control "A"	21	02

7. Connect the new TDM/LAN cable (WP-91716 L7) between the "A" and "D" carriers (see Figure 3-51 and Table 3-11). The cable is connected to the "A" and "D" carriers at the blocks marked "TDM" on the right side of each carrier.
8. Connect the new TDM/LAN cable (WP-91716 L6) between the "A" and "B" carriers (see Figure 3-51 and Table 3-11). The cable is connected to the "A" and "B" carriers at the blocks marked "TDM" on the left side of each carrier.
9. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between carriers "B" and "C" (see Figure 3-47). Install the new WP-91716 L6 TDM/LAN cable. The new cable is connected to the same blocks that the old cable was disconnected from (right side). (See Figure 3-51 and Table 3-11.)
10. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between carriers "D" and "E" (see Figure 3-47). Install the new WP-91716 L6 TDM/LAN cable. The new cable is connected to the same blocks that the old cable was disconnected from (left side). (See Figure 3-51 and Table 3-11.)

CAUTION:
When removing the cable adapters or terminators, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Before disconnecting each cable adapter or terminator, note its position.

11. See previous CAUTION and NOTE. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 3-47 and Figure 3-51 and Table 3-11.)

12. Install the front trim plates; first on the ‘‘A’’ carrier, and then on the ‘‘B’’ carrier.
13. Peel the old decal strip (designation strip) from both trim plates. Then, install the new decal strip at the bottom of each trim panel.
14. Install the new connector-panel decal on the rear connector panel.
15. See CAUTION. Install the ICC cables (H600-204 G1) between carriers ‘‘A’’ and ‘‘B.’’ Connect the cables to the ICC pin-field block on both carriers (see < is installed so that the dark red, blue, or purple stripe (depending upon the supplier) is on the bottom at both ends. See Table 3-12.

    CAUTION:
    While installing the ICC cable connectors, be careful not to bend any backplane pins. Double check each connection to verify that the pins are straight.

16. Install the 631-type power units (removed from R1V3) into the ‘‘A’’ carrier. Three different pairs of AC power units have been developed. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Since power units from the newer pairs are downward compatible with the older ones, power units from different pairs can reside in the same carrier.

    However, do not interchange the physical locations of the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 3-54).
17. If the expansion control carrier contains a 631BR1 or 631WB1 power unit, install the previously removed TN736 power unit in port slots ‘‘18’’ and ‘‘19’’ of the carrier (adjacent to the 631BR1 or 631WB1). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    A TN736 is not required when a 631DB1 power unit is used in a J58890AF-1 expansion control carrier or in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.

18. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 3-55).

Table 3-12. Intercarrier Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
EPN	J58890AF	ICCA	J58890BB	ICCA
		ICCB		ICCB

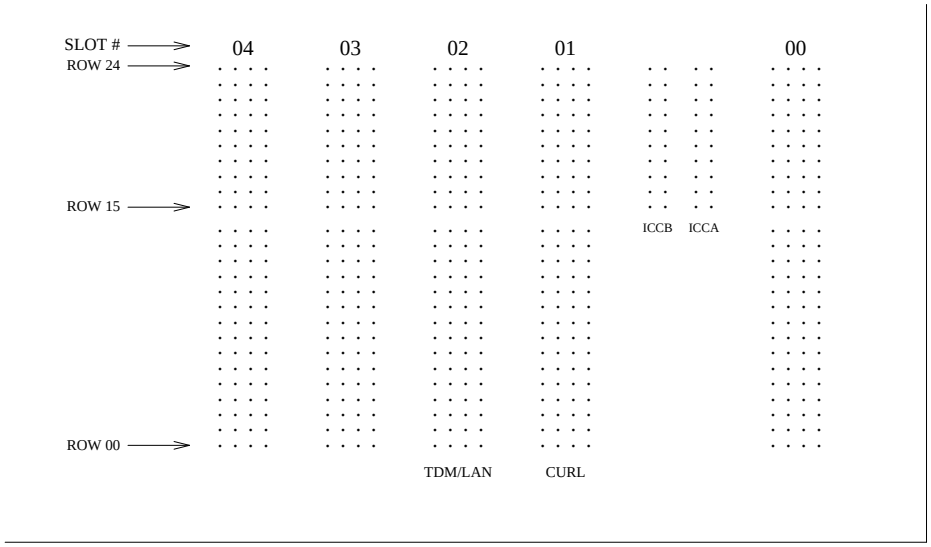


Figure 3-52. ICC Connections for Expansion Control Carrier

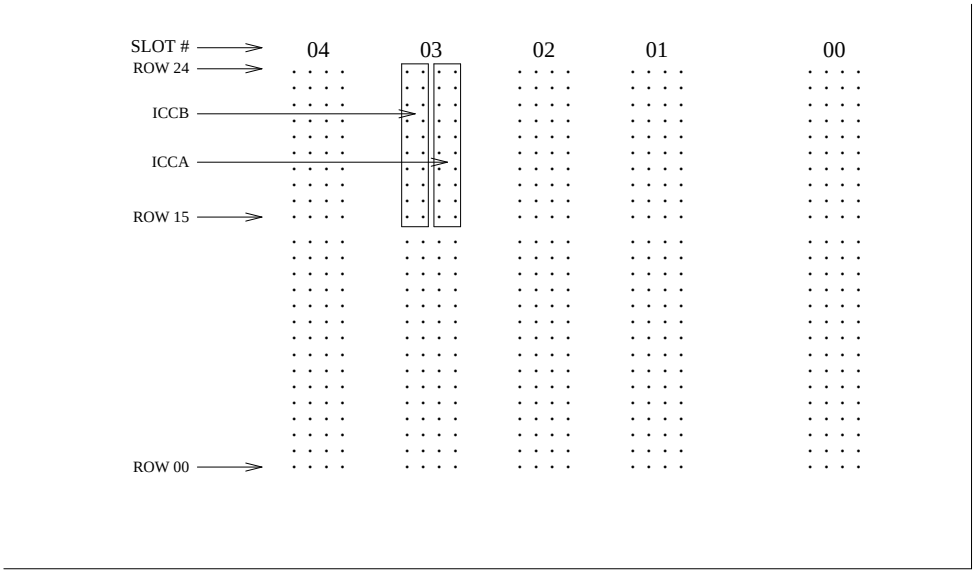


Figure 3-53. ICC Connections for Port Carrier

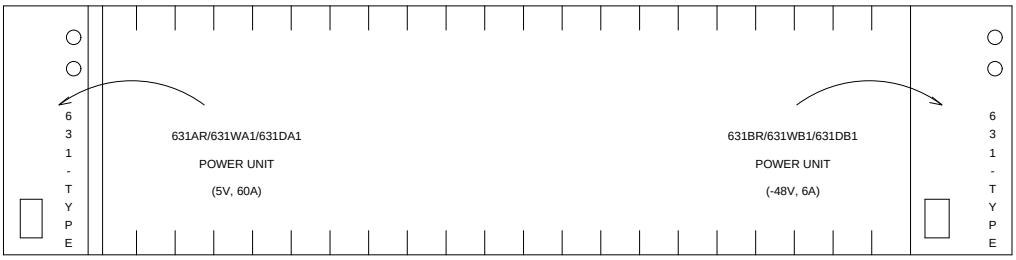


Figure 3-54. Locations of Power Units

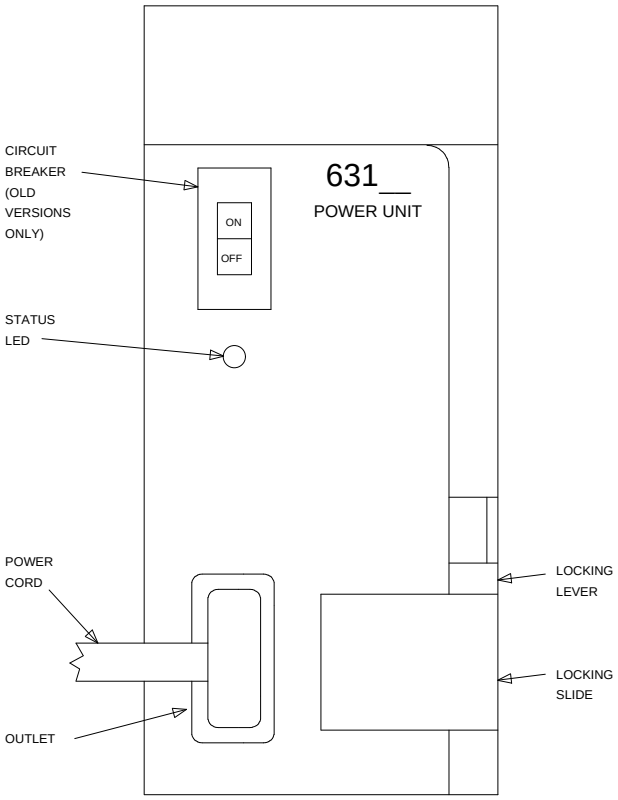


Figure 3-55. 631-Type Power Unit

Test the CURL

1. Plug the cabinet power cord into the appropriate receptacle.
2. At the power-distribution unit, set the main circuit breaker to ON.
3. Unplug the power cord from the power unit ''B'' (right-hand side) in the ''A'' carrier.
4. Verify that the fans continue running. If they are not running, check the installation of the CURL.
5. Reconnect the power cord to the power unit in the ''A'' carrier, then unplug the power cord from power unit ''B'' (right-hand side) in the ''B'' carrier.
6. Verify that the fans continue running. If they are not running, check the installation of the CURL.
7. Reconnect the power cord to the power unit in the ''B'' carrier.
8. At the power-distribution unit, set the main circuit breaker to OFF.

Install Circuit Packs

1. See WARNING. Install the new G3i V4 control circuit packs into EPN carriers ''A'' and ''B.'' Use the following figure, the new decal, and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

2. See preceding WARNING and following WARNING and NOTE. Install the previously removed port circuit packs into the ''A'' carrier using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

   NOTE:
   Since the new G3i V4 expansion control carrier has eleven more port slots than the removed control carrier, there should not be a need to move and retranslate these circuit packs.

   If a port circuit pack was located in slot ''01'' of control carrier ''A,'' the CSA software upgrade retranslated this circuit pack to occupy an empty port slot in the new expansion control carrier.

3. See preceding WARNINGS. Install the port circuit packs previously removed into the ‘‘B’’ carrier referencing the decal and annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card).
4. Verify that the associated PPN is equipped with two TN776 or two TN570 Expansion Interfaces.

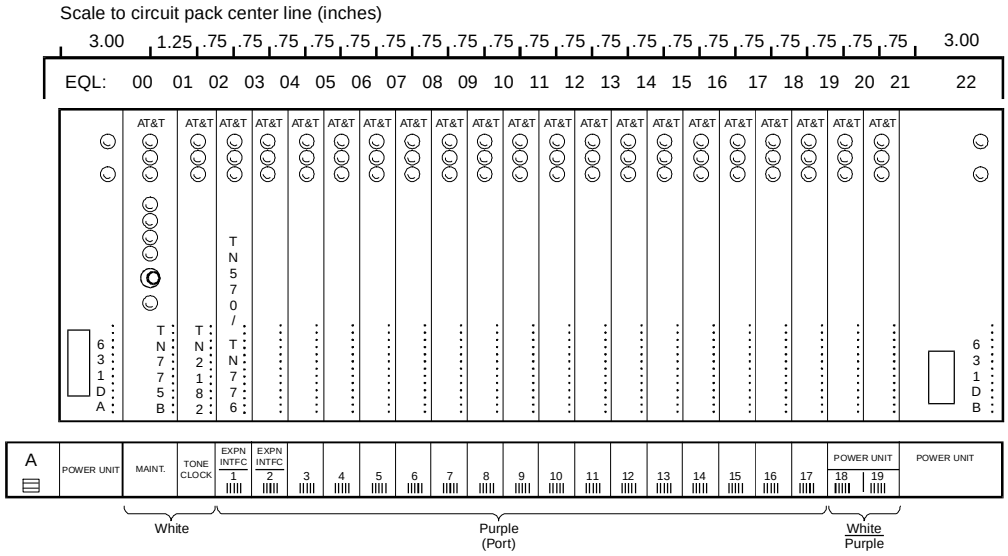


Figure 3-56. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

Interconnect Port Networks

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either "TX" (transmit) or "RX" (receive), while the fibers attached to each connector are numbered either ''1'' or ''2.'' A viable fiber connection is only made when both fibers in each cable (that is, ''1'' and ''2'') route from the "TX" connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 3-58.

NOTE:
For implementation details, refer to the ''Fiber Link Administration'' sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

When a critical-reliability PPN and EPN are collocated, two fiber-optic cables (FL2P-P-XX) and four lightwave transceivers (9823-type) are required to connect the EPN.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to the EPN cabinet. Since, for this upgrade, a ''DEFINITY style'' PPN cabinet is next to a medium EPN cabinet, the preferred routing is to run the cables down the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

When a critical-reliability PPN and EPN are remotely separated with fiber, four fiber-optic cables (FL2P-P-XX), four lightwave transceivers (9823-type), and four lightwave-interface units (provided by the PSC) are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

One Collocated Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-57 and Figure 3-58):
   - Install a 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable, coming from control carrier A of the PPN cabinet, to the 9823-type lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.
3. Behind control carrier B of the PPN cabinet:
   - Install a 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN.
4. Behind port carrier B of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect the fiber-optic cable, coming from control carrier B of the PPN cabinet, to the 9823-type lightwave transceiver at slot 2B02.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

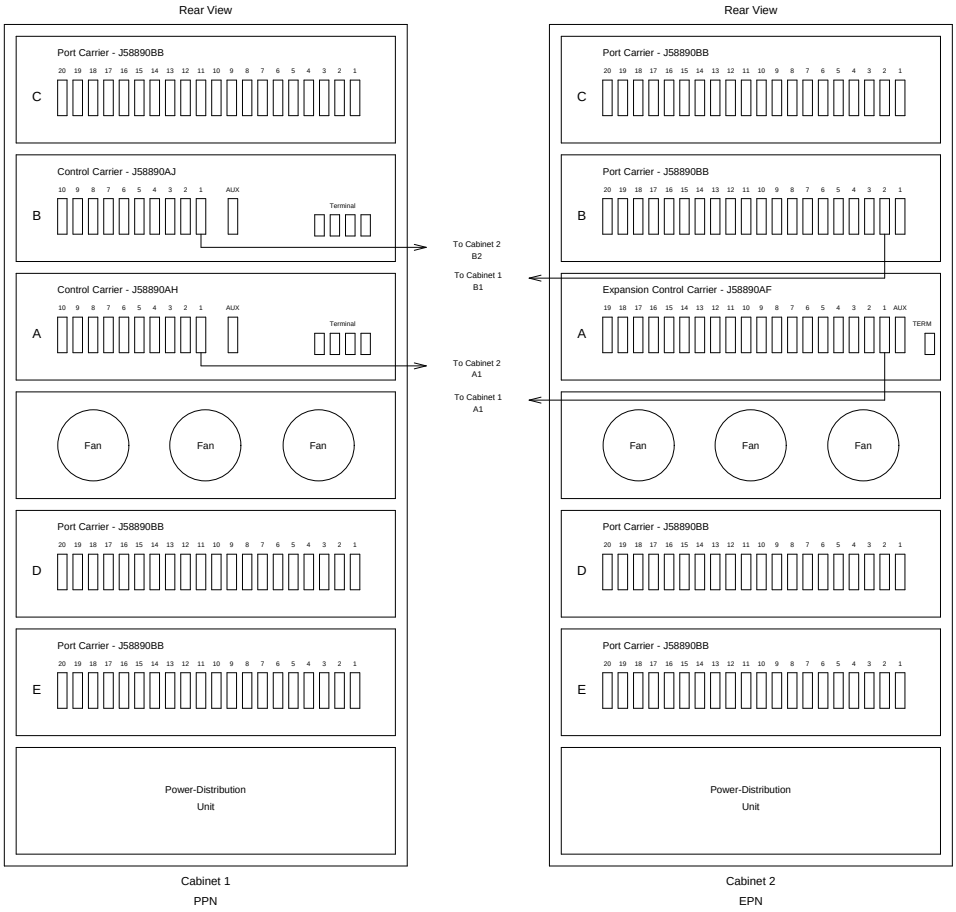


Figure 3-57. Critical-Reliability G3i V4 with Two Port Networks

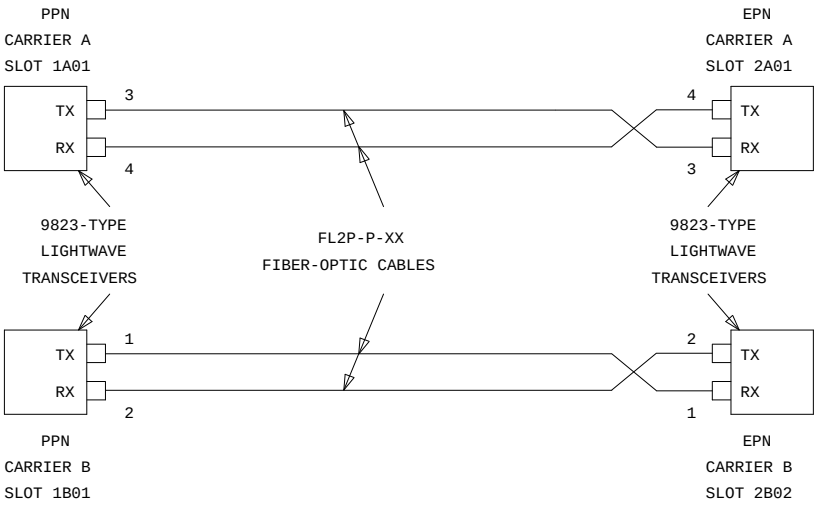


Figure 3-58. With Critical Reliability

One Fiber-Remoted Expansion Port Network

1. Behind control carrier A of the PPN cabinet (see Figure 3-57 and Figure 3-59):
   - Install a 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 2A01.

- Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
- At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
- Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
- Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

3. Behind control carrier B of the PPN cabinet:
   - Install a 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind port carrier B of the EPN cabinet:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 2B02.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear panels of the EPN cabinet.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

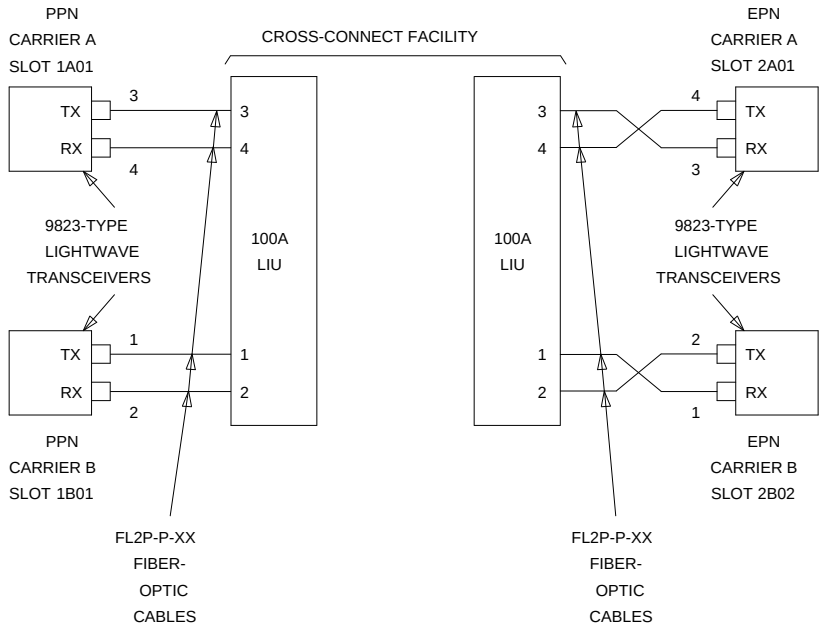


Figure 3-59. With Critical Reliability

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

⚠ WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the previously installed ground strap from the power-failure transfer unit.

Reboot the System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At each TN777B faceplate, insert a translation memory card obtained from the CSA.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory cards. Loading the translations takes 10 to 15 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Relabel Wall Field

If not done during the installation of new PPN, relabel the wall field with the new port-network number of the upgraded G3i V4 EPN. (For an upgrade of an R1V3 system, the CSA software upgrade assigned port-network number ''2'' to the upgraded EPN.)

Close EPN Cabinet and Reconnect Cables

1. At the EPN power-distribution unit, set the main circuit breaker to OFF.

   NOTE:
   Powering down the EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.
6. Install a DEFINITY label on the EPN cabinet.

Power Up the EPN Cabinet

1. At the EPN power-distribution unit, set the main circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to the EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN736, TN752, or TN755 power supply in port slots ''18'' and ''19''
- A TN776 or TN570 Expansion Interface in port slot ''1''
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750 Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

Small-Cabinet R1V3 to G3i V4

4

This chapter provides the information necessary to upgrade a small-cabinet Release 1, Version 3 (R1V3) System 75 system to a DEFINITY® G3i V4. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

The following processes are required for a small R1V3 system to G3i V4 PPN upgrade by replacing the cabinet and control carrier:

- Upgrading the hardware

  This involves:

  — Installing a new multicarrier G3i V4 PPN

  — For an upgrade to an AC-powered G3i V4 PPN, moving the R1V3 port carrier (if present) to carrier position ''C'' of the new PPN

  For an upgrade to a DC-powered G3i V4 PPN, installing a new DC-powered port carrier (if necessary), ordered separately, to provide enough slots for port circuit packs

  — Replacing and adding circuit packs

- Replacing the software tape with a DEFINITY memory card containing G3i V4 translations

- Upgrading the software

  This involves loading the G3i V4 translations from the translation memory card, and then (when necessary) re-entering translations.

- Testing the upgraded system to verify proper operation

See NOTE. The following processes are required for a small R1V3 system to G3i V4 PPN upgrade by replacing the control carrier:

NOTE:
This upgrade scenario, replacing a small System 75 control carrier with an enhanced G3i V4 control carrier, will not be an available option until the fall of 1993.

- Upgrading the hardware

  This involves replacing the R1V3 control carrier with a G3i V4 enhanced control carrier and replacing and adding circuit packs

- Replacing the software tape with a DEFINITY memory card containing G3i V4 translations.
- Upgrading the software

  This involves loading the G3i V4 translations from the translation memory card, and then (when necessary) reentering translations.

- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Contact Network Technicians

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

Control-Carrier Replacement

Replacing the control carrier in small-cabinet System 75 *can* cause port circuit packs, from the R1V3 control carrier, to be moved and manually retranslated. For this upgrade, a new G3i V4 enhanced control carrier (with 13 port slots) and new power supplies will either replace:

- An R1V3 J58890AB control carrier in a Model 1 (with 12 port slots) providing one extra port slot
- An R1V3 J58890AA control carrier in a Model 2 (with 8 port slots) providing five extra port slots

However, out of these 13 port slots, nonport-related circuit packs may need to occupy certain slots.

- If the control carrier in the medium-cabinet R1V3 system contains a TN752 or TN755 power supply, then this circuit pack will occupy port slots ‘‘12’’ and ‘‘13’’ of the new G3i V4 enhanced control carrier.
- A simultaneous EPN addition will require that a TN776 or TN570 Expansion Interface circuit pack be installed in slot ‘‘1’’ of the new G3i V4 enhanced control carrier.

If both of the above scenarios occurred, the result would either be a net *loss* of two port slots (coming from the ‘‘AB’’ carrier) or a net gain of only two port slots (coming from the ‘‘AA’’ carrier).

Cabinet and Control-Carrier Replacement

Replacing the cabinet and control carrier for a small-cabinet System 75 *can* cause port circuit packs, from the R1V3 control carrier, to be moved and manually retranslated. For this upgrade, a new G3i V4 control carrier (with 9 port slots) and new power supplies will either replace:

- An R1V3 J58890AB control carrier in a Model 1 (with 12 port slots) providing three fewer port slots
- An R1V3 J58890AA control carrier in a Model 2 (with 8 port slots) providing one extra port slot

However, out of these 9 port slots, nonport-related circuit packs may need to occupy certain slots.

- If the control carrier in the medium-cabinet R1V3 system contains a TN752 or TN755 power supply, then this circuit pack will occupy port slots ''8'' and ''9'' of the new G3i V4 control carrier.
- A simultaneous EPN addition will require that a TN776 or TN570 Expansion Interface circuit pack be installed in slot ''1'' of the new G3i V4 control carrier.

If both of the above scenarios occurred, the result would either be a net *loss* of six port slots (coming from the ''AB'' carrier) or a net loss of two port slots (coming from the ''AA'' carrier).

Usable Circuit-Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped in the new G3i V4 PPN should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every R1V3 circuit pack that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4 system.

Power and Grounding

A new PPN cabinet added for a cabinet-replacement upgrade, can be either AC- or DC-powered. However, if a DC-powered PPN cabinet is ordered for the upgrade, the AC-powered port carrier from the R1V3 system cannot be reused in the new PPN. If needed to provide enough port slots, a new DC-powered port carrier must also be ordered and installed as a separate port-carrier addition.

See NOTE. If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be controlled by a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

NOTE:
In contrast to the AC power that is likely to be currently available in an R1V3 equipment room, the new AC-powered PPN added for a G3i V4 upgrade uses 3-wire, 50A, 115 VAC power. Whereas, the R1V3 small cabinet used 3-wire, 20A, 115 VAC power.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

Isolator

Each G3-MT connected to a DC-powered cabinet, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the G3-MT and the interface connector to isolate grounding between the system and external adjuncts.

Power-Failure Stations

During routine switch operation, the ground for the power-failure stations is derived from the system's auxiliary cable. This ground will be disconnected during the upgrade, thus disabling the power-failure stations. Therefore, a ground strap will have to be run to the power-failure transfer panel. This strap should be connected shortly after power is removed and then disconnected just before power is restored to the upgraded system.

To minimize downtime during the G3i V4 upgrade, power-failure transfer equipment should be tested and, if need be, repaired before the hardware upgrade begins.

Software

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with either the R1V3 high capacity mini-recorder (HCMR) or the removable mass storage subsystem (RMSS) tapes.

The translations in the R1V3 system must be copied to a spare tape and sent to the regional Customer Software Administration (CSA) group within the FSAC (formerly known as the CSSO) to be converted and written to a G3i V4 translation memory card. This process takes two weeks. The G3i V4 translation memory card must be on-site before the upgrade can begin. Two tapes (one system tape and one backup tape) must always be retained on site with the System 75.

After the upgrade, the Software Associate should ensure that the upgraded translations are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Alarm Connection

See NOTE. The AUXILIARY connector on System 75 systems had appearances for Alarm Monitors 1M, 1m, 2M, 2m, 3M, 3m, and 3W. Whereas, the AUXILIARY connector on a DEFINITY G3i V4 system only has appearances for 1M and 1m. If the system being upgraded used the other alarm-monitor appearances, they can either be distributed to the AUXILIARY connector on a G3i V4 EPN, or ''ganged'' so that several external devices share the same appearance. The alarms can also be accommodated by paralleling them to the above connections.

NOTE:
When several external devices are ganged to the same appearance, each device loses its individual identity. An alarm on a shared appearance only denotes that one of several devices reported a problem. Subsequent maintenance effort is needed to determine which device reported the problem and the nature of the problem.

The control circuit pack behind the AUXILIARY connector detects external alarms with a ground-detector chip. Therefore, to gang several external devices, every device must be able to return a true relay ground closure to the AUXILIARY connector. (Alternatives, such as a TTL low driver, are inadequate.)

Hardware Description

Circuit Packs

Four circuit packs are required for a basic G3i V4 system upgrade. The others will be provided on an optional basis for G3i V4 features or for non-US installations, as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel 80386[1] microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also, an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

  Functions of the TN786B include:

  — Monitoring and controlling circuit-pack conditions

  — Monitoring the environmental sensor and control leads for a single processor operation

  — Controlling emergency-transfer operation

  — Providing direct access to a G3-MT terminal

  — Providing an interface to a CDR output device

  — Providing an external alarm closure

  — Reporting system status via alarm LEDs

1. Registered trademark of the Intel Corporation.

- CPP1

  The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

- TN777B

  The Netcon circuit pack (TN777B) does the following:

  — Houses the mass-storage DEFINITY memory card.

  — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.

  — Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility, a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

  Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).

  — Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.

  — Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

- TN768, TN419B, TN780, or TN2182

  The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

  The TN419B Tone-Clock (for non-US installations) supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz and 160-kHz clocks and an 8-kHz frame clock from its Stratum 4 source frequency. Using European A-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-voltage alarm-detection circuit.

The TN419B can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768 and TN419B, the TN780 can be assigned to:

— Produce six customized tones in five different tone plans for use outside the USA

— Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The optional circuit packs are:

- TN464C

  The TN464C serves as both a DS1 and an ISDN – PRI interface. This circuit pack, which can reside in any G3i V4 port slot, has the following attributes:

  — Complies with the 1.544-Mbps North American DS1 standard

  — Converts the European A-law to the North American mu-law companding algorithm

  — Operates compatibly with the optional Stratum 3 clock

  — Provides D-channel connectivity for ISDN – PRI

- TN726B

  The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

- TN744 or TN744C

  The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B V10 and later versions provide tone detection. Prior to TN744Bv10, the TN744 provides call classification only.

  The TN744C Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN765

  The TN765 Processor Interface provides four data links to the TDM bus and a link through the memory bus to the processor. This circuit pack has four ports that provide interfaces for applications such as DCS, CMS, and AUDIX.

- TN767B

  The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN – PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

- TN771D

  For a G3i V4 system (without a packet bus and without duplication), the Maintenance/Test circuit pack (TN771D) performs three maintenance functions: DCP Mode 2 endpoint testing, digital trunk testing, and analog trunk testing. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-Kbps digital facilities and is also used for ISDN PRI trunk testing. The TN771D is required for digital trunk testing.

  A TN771D is required in each port network of a critical-reliability G3i V4 system with the optional packet bus. For these systems, this circuit pack performs the additional maintenance function of diagnosing and correcting recoverable packet-bus failures before the LAPD links (which use the bus) fail.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port-Network Configurations

Every G3i V4 port-network configuration contains one PPN which can be either a multicarrier or single-carrier cabinet. Larger configurations can contain either one or two EPNs. Figure 4-1 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe various upgrades to a G3i V4 with one multicarrier port network.

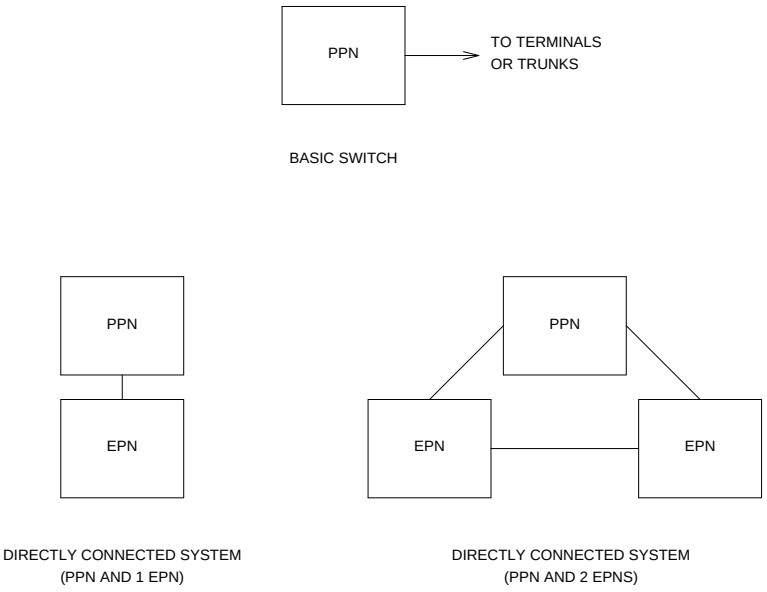


Figure 4-1. G3i V4 Port-Network Configurations

Port Networks

For a System 75 system, upgrading to a G3i V4 offers an optional second and third port network. Each port network in a multicarrier cabinet allows the system to grow by one expansion control carrier and up to four more port carriers. These EPN cabinets are the same as the "DEFINITY" style EPN cabinets that were first available for G1 systems.

Software-Translation Upgrade

The G3i V4 software and translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with either the R1V3 high capacity mini-recorder (HCMR) or the removable mass storage subsystem (RMSS) tapes.

During an upgrade from an R1V3 to a G3i V4, the regional CSA must convert the R1V3 translations and write them to a G3i V4 translation memory card. To enable this tape conversion, replace the system tape with a spare R1V3 tape. (Spare R1V3 tape cartridges can be acquired from the CSA before the upgrade.) Then, copy the current R1V3 translations to the spare tape, and overnight mail this tape to the CSA. Also, put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure that the customer's switch administrator keeps detailed records of any translation changes made during that interval. These records will facilitate the reassignment of any changes on the G3i V4 system after the upgrade.

The new G3i V4 memory card must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager I on the R1V3.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.
4. Remove the system tape, install the backup tape, and wait for the tape to retension.
5. Enter **`save translation`**. Press RETURN.
6. Enter **`save announcements`** if appropriate. Press RETURN.

Make Source Tape for Upgrade

A spare R1V3 tape must be acquired from the regional CSA before performing the following steps. There must always be two system tapes on site with the System 75. Do not send the system or backup tape to the CSA.

After performing the previous procedures, copy the R1V3 translations to the spare tape that will be used to make the G3i V4 translation memory card. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. See NOTE. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the tape.

   NOTE:
   The off-site CSA translation upgrade does not preserve the contents of recorded announcements. Therefore, during the upgrade, any announcements stored on a TN750/B circuit pack must be rerecorded.

3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to the CSA for use in making the G3i V4 translation memory card.

System Upgrades

There are many configurations of small-cabinet R1V3 System 75s in the field. In terms of both hardware and software, each system can have a unique configuration. The manner in which a particular system is upgraded depends on it present configuration.

A small R1V3 control-carrier replacement upgrade involves replacing the R1V3 control carrier with a new G3i V4 enhanced control carrier.

A small R1V3 control-carrier *and* cabinet replacement upgrade involves:

- Installing a new multicarrier PPN
- For an upgrade to an AC G3i V4 system, moving the AC R1V3 port carrier (if present) to carrier position ‘‘C’’ of the new PPN

  For an upgrade to a DC G3i V4 system, adding a new DC port carrier (if needed to provide enough port slots) to carrier position ‘‘C’’ of the new PPN

The following sections give a sequential list of the steps required to upgrade the R1V3 system.

R1V3 Small to Standard-Reliability G3i V4 PPN (Control-Carrier Replacement)

If an EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPN.

Upgrade Cabinet

A small-cabinet System 75 R1V3 is upgraded to a standard-reliability G3i V4 by:

- Removing the tape-drive unit
- Removing the control carrier in position ‘‘A’’
- Installing the new G3i V4 enhanced control carrier in position ‘‘A’’
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 4-1 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 4-1. Required Hardware

Equipment	Description	Quantity
J58890AH	Enhanced Control Carrier	1
106718521	TN786B Processor	1
106590953	CPP1 Memory	1 (Note 1)
103557187	TN765 Processor Interface	1 or 2 (Note 2)
106577422	TN777B Network Control	1
103557211 or	TN768 Tone-Clock	1
103557336 or	TN780 Tone-Clock	1 (Note 7)
106706955	TN2182 Tone-Clock	1 (Note 7)
106432602	631DB1 Power Supply	1
106455504	982LS Current Limiter	1
103960456	ZAHF4 TDM/LAN Bus Terminator	2
J58890A L20	WP91716 L6 TDM/LAN Cable	1 (Note 3)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 (Note 4)
106689516	TN771D Maintenance/Test	1 (Note 5)
105731202	176A Apparatus Blank (for removed tape drive)	1
846309466	DEFINITY Label	1

(See notes on the next page)

NOTE:

1. During the hardware upgrade, the CPP1 is attached to the TN786B before inserting the combined assembly into the control carrier.
2. Optional. Replaces TN716, TN719, and TN738 if present in the system.
3. Required only if carrier ‘‘B’’ is present.
4. A 4-Mbyte translation memory card is required for a system that uses recorded announcements.
5. Optional. Required for digital trunk testing.
6. Use TN780 as Tone-Clock for Stratum 3 timing. Also required with the TN780 are the TN748, and TN744 for tone-detection.
7. The TN2182 Tone-Clock provides tone detection, tone generation, and tone-clock in one circuit pack, and it replaces the TN756, TN768, and TN780 circuit packs, while providing the same functionality as the TN748 and TN420 circuit packs.

Required Tools

The following tools and items may be required during the upgrade:

- Flash maintenance kit (MTCE 00037), acquired from Material Stocking Location (MSL)
- High-intensity AC drop light or flashlight
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Pliers
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for labeling the cables attached to the rear of cabinets and port circuit pack
- Receptacle for holding approximately 100 self-tapping screws
- Twelve spare #12 and #10 self-tapping screws
- Four spare carrier grounding straps
- Authorized wrist grounding strap
- Cabinet air filter (may be required)
- Backplane pin repair kit (KS-22876-L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the "Preventive Maintenance'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet, if desired.
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch is recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect the previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Control Carrier A

1. To ensure that the port circuit packs in the ''A'' carrier are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ''A'' carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

4. Remove circuit-pack blanks from the slots that do not contain circuit packs.
5. Remove the front trim plate from the ''A'' carrier by pulling straight off.

Remove Tape Drive

NOTE:
The tape drive does not have to be removed at this time. It can be disconnected now, and then removed at a later date when time is less critical.

1. Remove the tape.
2. Disconnect the AHF4 cable adapter from behind slot ''07'' of control carrier ''A'' (see Figure 4-2).
3. Open the snap connectors to remove the adapter from the tape drive's ribbon cable. Route the cable back to the tape drive and remove it. (There are two cable clamps on the cabinet's side panel. Use a screwdriver to unsnap them.) Neither the cable nor the adapter will be used in the upgraded EPN cabinet.
   - On the HCMR tape drive, disconnect the power supply from the front of the unit. Then, remove the screws (at the rear of the unit) that attach the drive to the chassis, and slide the tape drive out the front of the cabinet.
   - On the RMSS tape drive, disconnect the red and black wire. Remove the faceplate. Then, remove the screws that hold the unit to the chassis. Slide the drive out the front of the cabinet.
4. Coil the red and black wire in an out-of-the-way position in the cabinet.
5. Install the 176A Apparatus Blank over the empty space left by the removal of the tape drive.

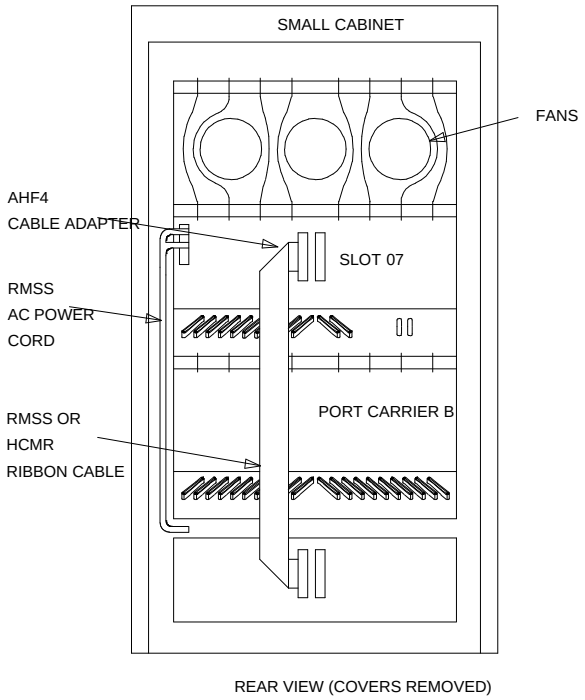


Figure 4-2. R1V3 System Cabinet

Remove Control Carrier A

1. See CAUTION and NOTE. Remove the TDM cable and AHF3 cable adapters from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 4-3). They will not be reused.

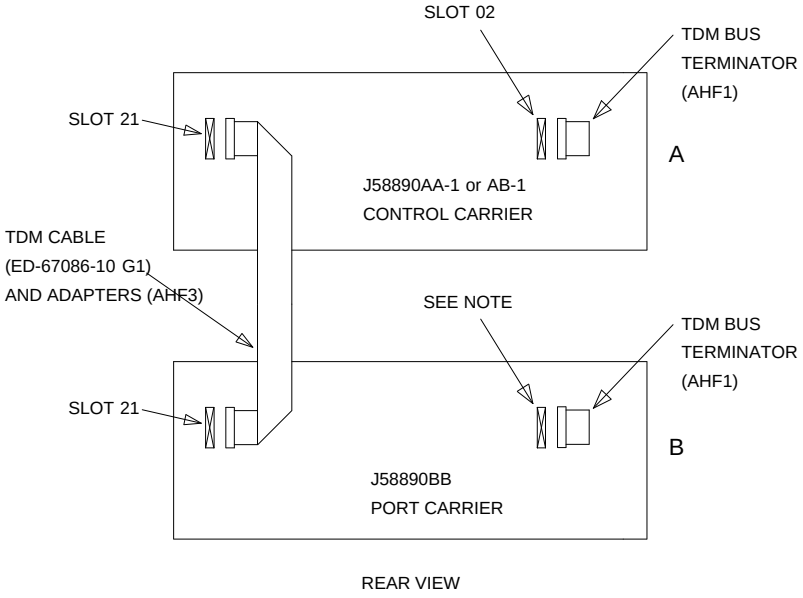
   CAUTION:
   When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

   NOTE:
   Before disconnecting each cable adapter, note its position.

2. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘B’’ carriers) from the ‘‘A’’ carrier (see Figure 4-4). These straps will be reconnected to the new ‘‘A’’ carrier.
3. Slide the latch up, and disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 37-pin) connector from the ‘‘A’’ carrier (see Figure 4-5). Move the cables into a position where they will not interfere with removing the carrier.
4. Remove the fan trim plate by pulling straight off.
5. Clean or replace the air filter (403326820) if necessary.
6. In front of carrier, remove the four screws (top two first) holding the ‘‘A’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
7. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

   CAUTION:
   Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

8. Remove the carrier by sliding it out the front of the cabinet.



NOTE: ON PORT CARRIER J58890BB-1, DISCONNECT THE TDM TERMINATOR FROM SLOT 02. ON PORT CARRIERS J58890BB-2 AND J58890BB-3, DISCONNECT THE TDM TERMINATOR FROM SLOT 01. IF THE PORT CARRIER HAS BOTH J58890BB-1 AND J58890BB-2 STENCILLED ON IT, TREAT IT AS A J58890BB-1.

Figure 4-3. TDM Connections for Small R1V3 System

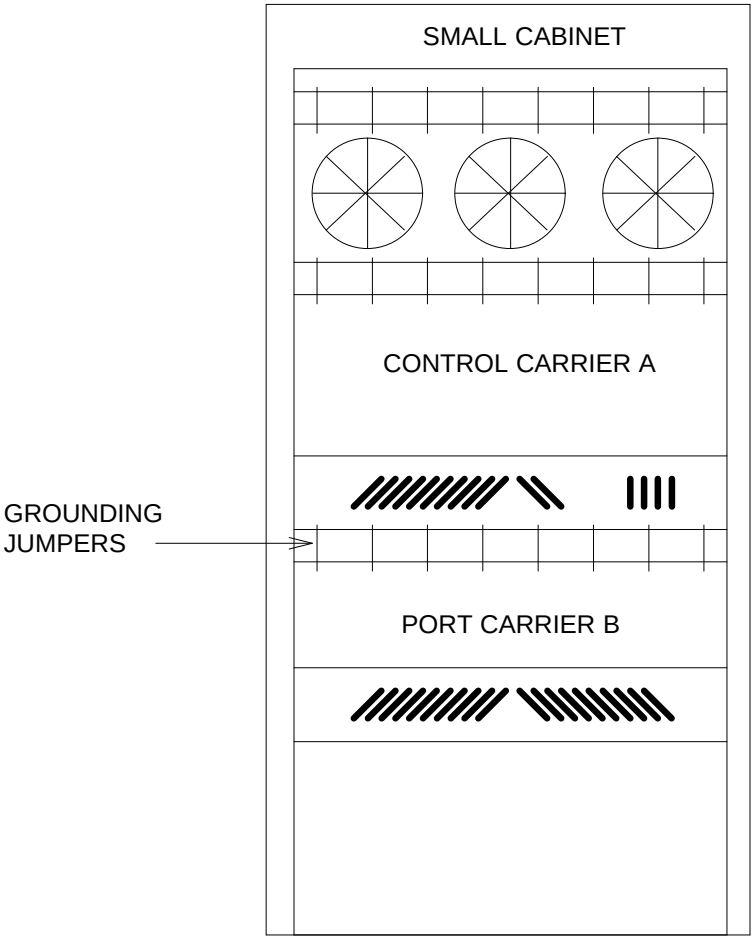


Figure 4-4. Locations of Grounding Jumpers

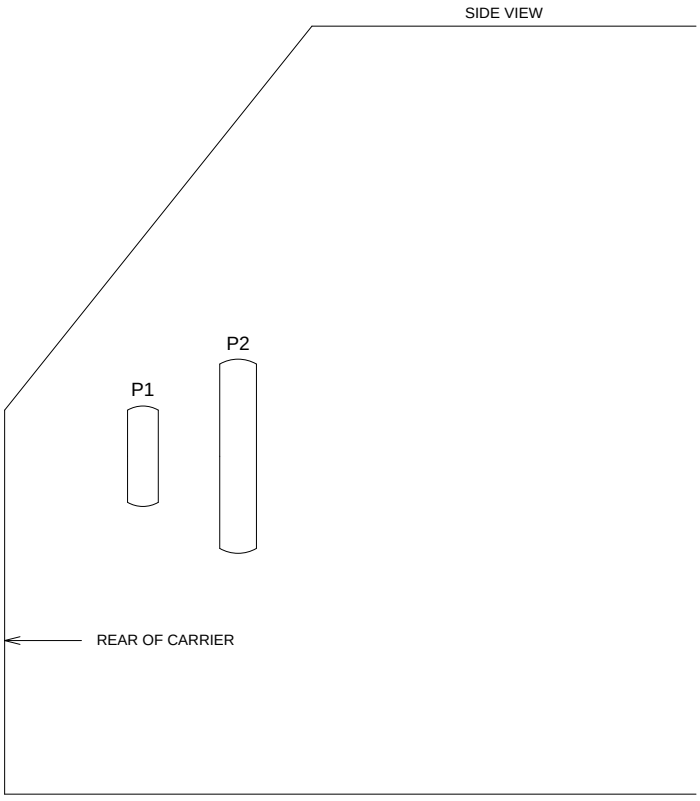


Figure 4-5. Location of P1 and P2 Connectors on System 75 Carrier

Prepare New Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the enhanced control carrier on the floor so that the rear of the carrier faces up.
3. Install the 982LS current limiter (CURL) on the ''A'' carrier to the pin-field block marked ''CURL.'' The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install the New Control Carrier

1. Install the J58890AH control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being installed. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 4-6). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cable from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure connection is properly made.
4. Connect the eight ground straps from the ‘‘B’’ carrier to the new ‘‘A’’ carrier (see Figure 4-4). These straps were left connected to the ‘‘B’’ carrier when the old ‘‘A’’ carrier was removed.
5. For the AC-powered control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).
6. Connect the new TDM/LAN cable (WP-91716 L6) between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 4-7 and Table 4-2). The cable is connected to the ‘‘A’’ and ‘‘B’’ carriers at the pin-field blocks marked TDM on the left side of each carrier.
7. See previous CAUTION. Replace the existing TDM bus terminators (AHF1) with the new ZAHF4 bus terminators. (See Figure 4-3 and Figure 4-7 and Table 4-2).
8. Install the front trim plates on the ‘‘A’’ carrier. Install the fan trim plate.
9. Peel the old decal strip (designation strip) from the trim plates. Then, install the new decal strip at the bottom of the trim panel.

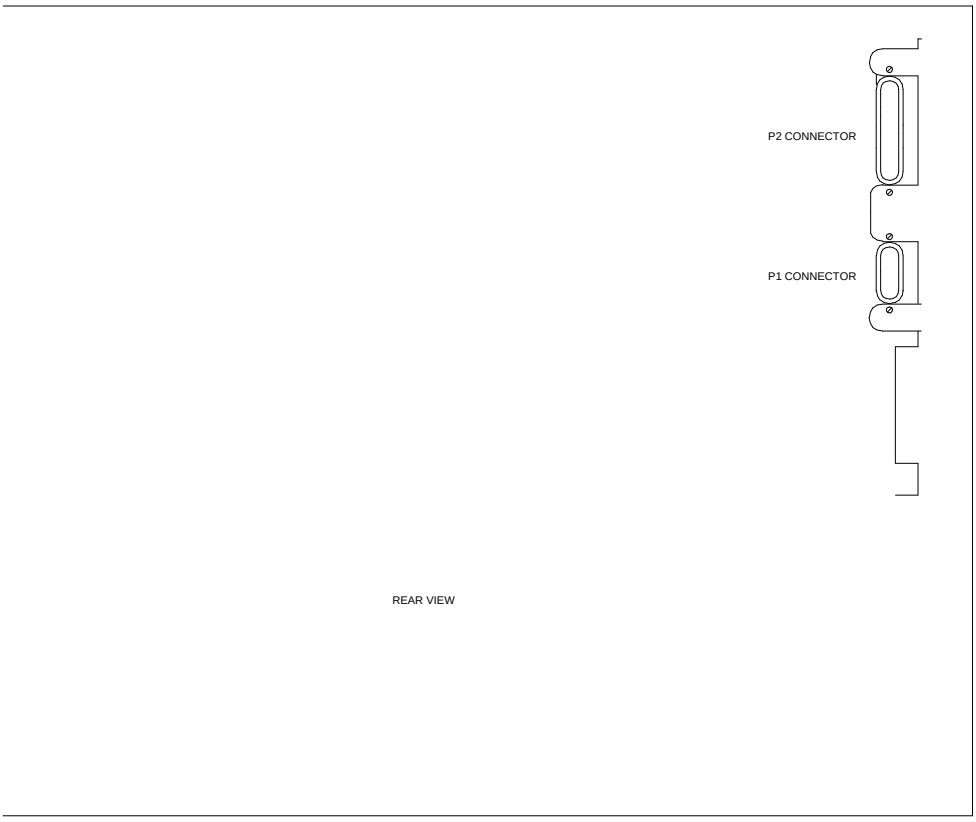
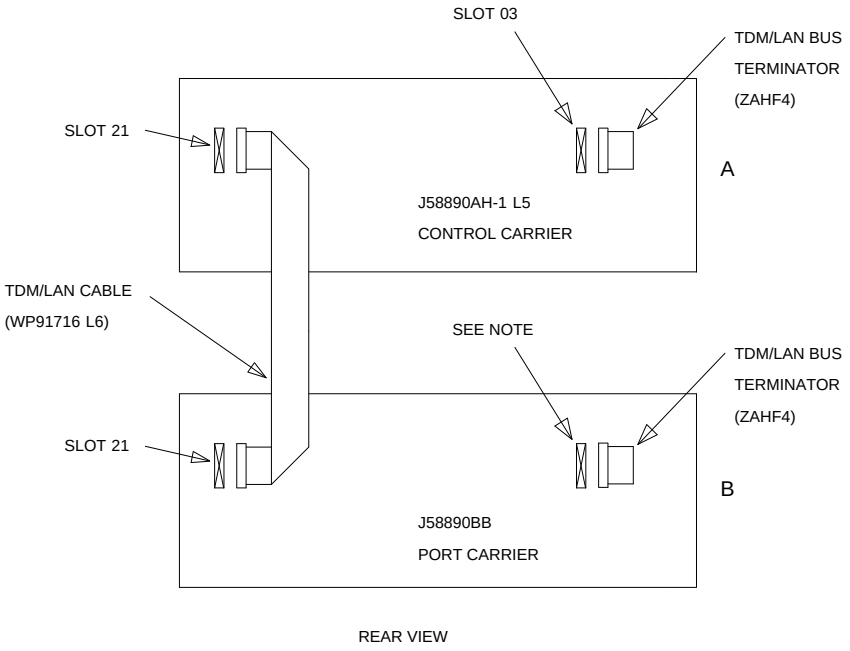


Figure 4-6. Location of P1 and P2 Connectors on DEFINITY Carrier

Table 4-2. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AH	PPN Enhanced Control "A"	20	03



NOTE: ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND J58890BB-3, CONNECT THE TDM/LAN TERMINATOR TO SLOT 01. IF THE PORT CARRIER HAS BOTH J58890BB-1 AND J58890BB-2 STENCILLED ON IT, TREAT IT AS A J58890BB-1.

Figure 4-7. TDM/LAN Connections for G3i V4 PPN

10. Install the connector-panel decal on the rear connector panel.
11. Install the 631-type power units into the ''A'' carrier. Install the new 631DB1 in the right side of the carrier, and reuse the old 631-type power supply in the left side. Do not interchange the units. The 631AR, 631WA1, or 631DA1 is installed in the left side, while the new 631DB1 is installed in the right side (see Figure 4-8).
12. If the system is equipped with neon message waiting, install the previously removed TN752 or TN755 power unit in port slots ''12'' and ''13'' of the carrier (adjacent to the 631DB1).
13. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 4-9).

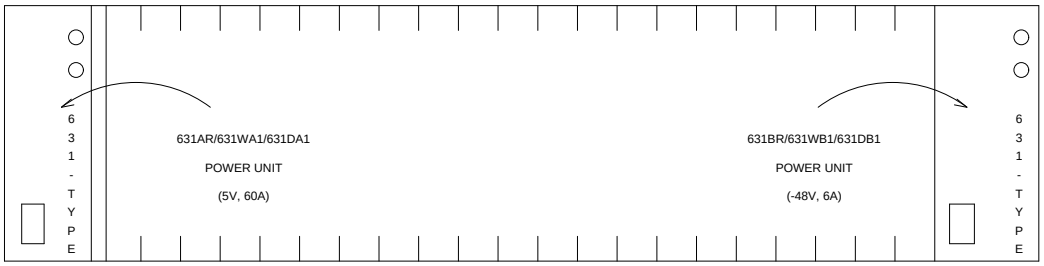


Figure 4-8. Locations of Power Units

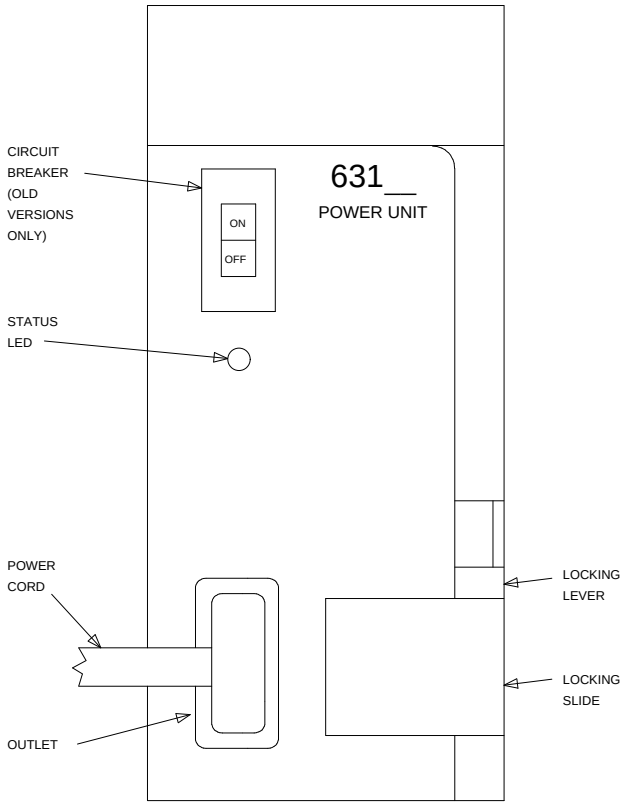


Figure 4-9. 631-Type Power Unit

Install Circuit Packs

1. See WARNING. Using a hard, flat, static-free surface, connect the CPP1 Memory circuit pack to the TN786B circuit pack. [Line up the two pin clips and the two 50-pin connectors (on the CPP1) with the four corresponding holes and the two 50-pin connectors (on the TN786B), and then squeeze the two circuit packs together.]

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

2. See previous WARNING. Install the new G3i V4 control circuit packs into control carrier ''A.'' Use the following figure, the new decal, and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.
3. See preceding WARNING and following WARNING and NOTE. Install the port circuit packs previously removed into the ''A'' carrier using the decal and the annotated ''list configuration all'' (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

   NOTE:
   Since the new G3i V4 control carrier has only one more port slot than a J58890AB control carrier, there may be a need to move and retranslate circuit packs. If not done before the upgrade, relocate the circuit packs now. The relocated port circuits will also have to be translated after the system is rebooted with the G3i V4 translation memory card.

4. Install circuit-pack blanks in slots not equipped with circuit packs.

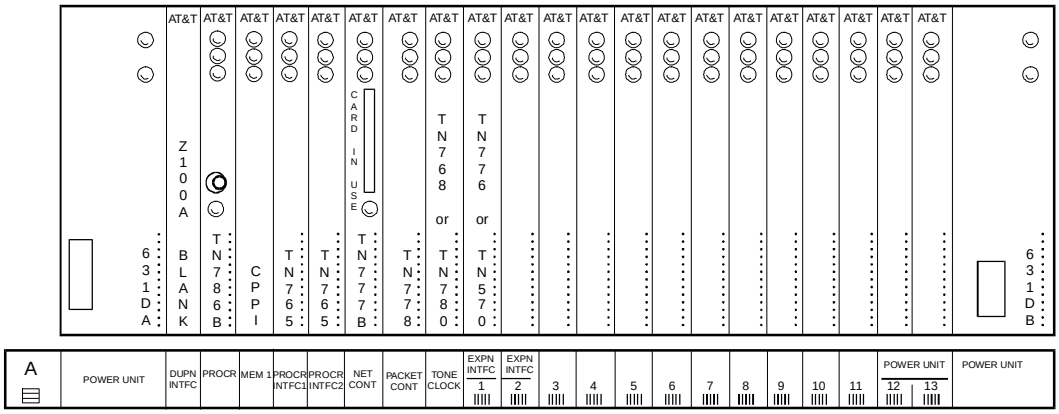


Figure 4-10. Circuit-Pack Locations in Standard-Reliability G3i V4 Control Carrier

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

⚠ WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Reboot the Standard-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the translation memory card.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now goes through the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close PPN Cabinet and Reconnect Cables

1. Replace the back panels previously removed.
2. Install the front door on the PPN cabinet if previously removed.
3. Install a DEFINITY label on the PPN cabinet.

Retranslate Port Circuits

If port circuit packs in the R1V3 control carrier were relocated in order to put:

- A TN752 or TN755 power supply in port slots ‘‘12’’ and ‘‘13’’
- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN776 or TN570 Expansion Interface in port slot ‘‘1’’ (for a simultaneous EPN addition)

of the new control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

`Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced System 75 equipment includes:

- System 75 control carrier and control circuit packs
- System 75 tone-clock circuit pack
- System 75 631BR, 631WB1, or 631DB1 power supply
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cable (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

R1V3 Small to Multicarrier G3i V4 PPN with Standard or Critical Reliability (Cabinet Replacement)

NOTE:
In this section, PPN upgrades of System 75 R1V3 Small systems, the concept of high-reliability systems is not considered. This is because, for systems with only one port network, high- and critical-reliability hardware configurations are identical. The configurations of high- and critical-reliability systems only differ once an EPN exists in the system.

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

If an EPN is being added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPN.

Upgrade Cabinet

The existing cabinet is replaced with a new multicarrier G3i V4 PPN. Upgrade the cabinet using the following procedures.

A small-cabinet System 75 R1V3 is upgraded to a multicarrier G3i V4 PPN by:

- Removing the port circuit packs from the small R1V3 cabinet
- Removing the port carrier (if present) from the small R1V3 cabinet
- See NOTE. For an upgrade to an AC G3i V4 system, installing the previously removed AC port carrier in position ''C'' of the new multicarrier PPN

  For an upgrade to a DC G3i V4 system, installing a new DC port carrier (if needed to provide enough port slots) in position ''C'' of the new multicarrier PPN

  NOTE:
  For a standard-reliability upgrade, the new PPN will ship with a control carrier in position ''A'' and a port carrier in position ''B.'' For a critical-reliability upgrade, the new PPN will ship with control carriers in both positions ''A'' and ''B.''

- Installing the port circuit packs in the new PPN
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 4-3 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contains 4 Mbytes of memory.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 4-3. Required Hardware

Equipment	Description	Quantity
PEC 6300-159	Processor Port Network	1
PEC 63155	DC-Powered Port Carrier	1 (Note 1)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 or 2 (Notes 2 and 3)
J58890BB	Port Carrier	1 (Note 4)
J58890A L20	WP-91716 L6 TDM/LAN Cable	1 (Note 5)
106689516	TN771D Maintenance	1 (Note 6)

NOTE:

1. To provide enough port slots, may be ordered separately for upgrade to DC-powered G3i V4.
2. One with standard-reliability, two with critical reliability.
3. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
4. For AC upgrade, reused from the small R1V3 cabinet (if present).
5. Shipped loose with the upgrade equipment. Extends TDM/LAN bus to reused port carrier.
6. Required in a port slot of a critical-reliability G3i V4 PPN with the optional packet bus. Optional for use with digital trunk testing.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - — *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down R1V3 System

See CAUTION. At the power-distribution unit, set the main AC circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from the cabinet, if desired.
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch is recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect the previously labeled cables associated with the carrier to be removed.
4. Behind the cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Carriers A and B

1. To ensure that the port circuit packs (in the ‘‘A’’ and ‘‘B’’ carriers) and the power units (in the ‘‘B’’ carrier) are properly replaced, label each component with its slot number.
2. Disconnect the power cords from the power units in the ‘‘B’’ carrier.
3. See WARNING. Remove all port circuit packs from carriers ‘‘A’’ and ‘‘B’’ and the power units from carrier ‘‘B.’’ Store the circuit packs in the static-proof packaging.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

4. Remove the circuit-pack blanks from slots that do not contain circuit packs.
5. Remove the front trim plate from the ‘‘A’’ carrier by pulling straight off.

Remove Port Carrier B

NOTE:
Even for an upgrade to a DC-powered G3i V4, this port carrier (if present) should be removed. According to upgrade pricing for both AC and DC upgrades, this carrier and the 631-type power units belong to the customer.

1. See CAUTION and NOTE. Disconnect one end of the TDM cable (between the ''A'' and ''B'' carriers) from the ''B'' carrier (see Figure 4-11). Remove the AHF3 cable adapter from the ''B'' carrier. The cable and the adapter will not be reused.

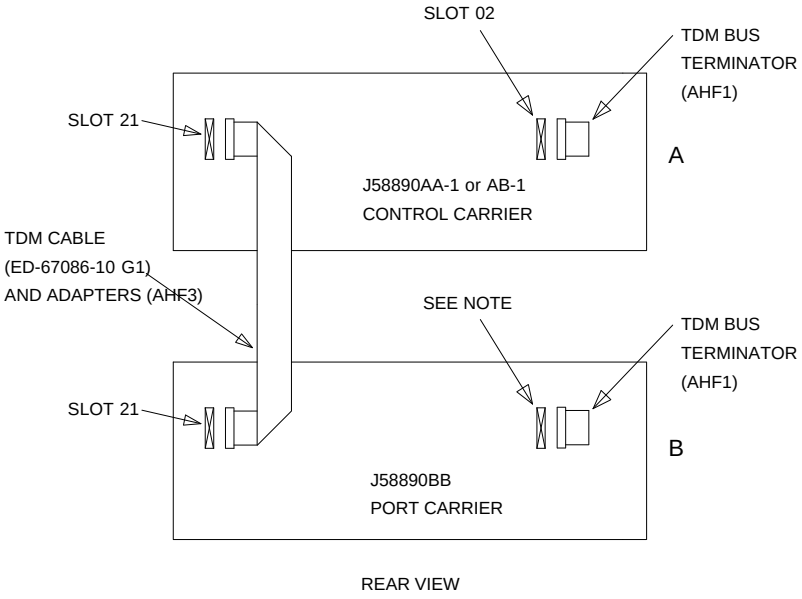
   CAUTION:
   When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

   NOTE:
   Before disconnecting the cable adapter, note its position.

2. Remove the eight ground straps from between the ''A'' and ''B'' carriers (see Figure 4-12). These straps will be installed for the reused port carrier in the new PPN.
3. Slide the latch up, and disconnect the ''P1'' (small 9-pin) connector connector from the ''B'' carrier (see Figure 4-13). Move the cable into a position where it will not interfere with removing the carrier.
4. Remove the fan trim plate by pulling straight off.
5. Clean or replace the air filter (403326820) if necessary.
6. In front of port carrier, remove the four screws (top two first) holding the ''B'' carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
7. See CAUTION. Slide the port carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

   CAUTION:
   Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

8. Remove the port carrier by sliding it out the front of the cabinet.



NOTE: ON PORT CARRIER J58890BB-1, DISCONNECT THE TDM TERMINATOR FROM SLOT 02. ON PORT CARRIERS J58890BB-2 AND J58890BB-3, DISCONNECT THE TDM TERMINATOR FROM SLOT 01. IF THE PORT CARRIER HAS BOTH J58890BB-1 AND J58890BB-2 STENCILLED ON IT, TREAT IT AS A J58890BB-1.

Figure 4-11. TDM Connections for Small R1V3 System

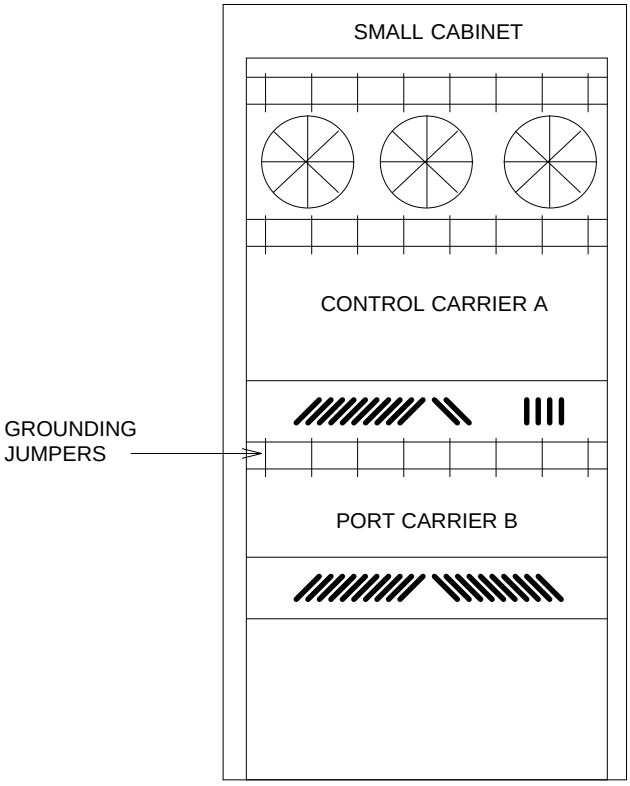


Figure 4-12. Locations of Grounding Jumpers

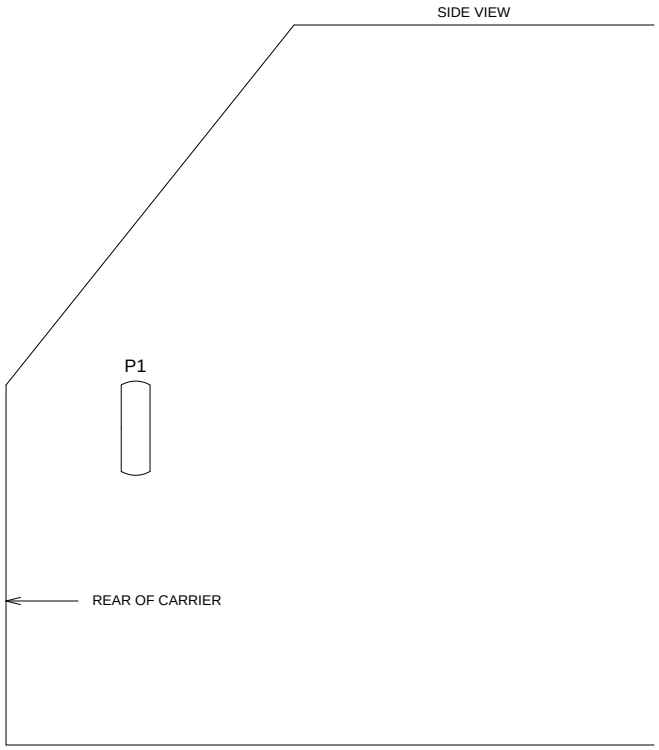


Figure 4-13. Location of P1 Connector

Install Port Carrier in New G3i V4 Cabinet

1. Install the previously removed AC-powered or (if ordered separately to provide enough port capacity) a new DC-powered port carrier in position "C."

   Line up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being installed. Ensure that the power cords are properly placed in the slots at the sides of the carrier.

2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Connect the "P1" (small) connector to the "C" carrier (see Figure 4-13). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cable from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure connection is properly made.

4. Install the eight ground straps between the "B" carrier and the "C" carrier (see Figure 4-14). These straps were saved when the port carrier was removed from the R1V3 cabinet, and should already be in place.

5. See CAUTION and NOTE. Behind the PPN cabinet, move the ZAHF4 bus terminator from its current position on the "B" carrier to pin-field block "21" of the "C" carrier. (See Figure 4-15 and Table 4-4).

   CAUTION:
   When removing the cable adapters, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

   NOTE:
   Before disconnecting the cable adapter, note its position.

6. Connect the new TDM/LAN cable (WP-91716 L6) between the ‘‘B’’ and ‘‘C’’ carriers (see Figure 4-15 and Table 4-4). The cable is connected to the ‘‘B’’ and ‘‘C’’ carriers at the pin-field blocks marked TDM on the right side of each carrier.

Table 4-4. TDM/LAN Connections

‘‘J’’ Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AH-1	PPN Control ‘‘A’’	20	03

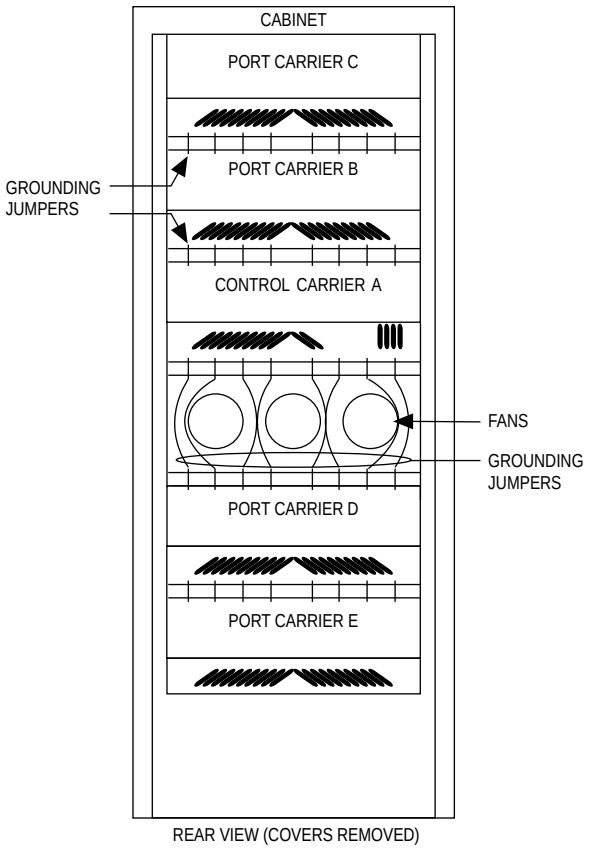
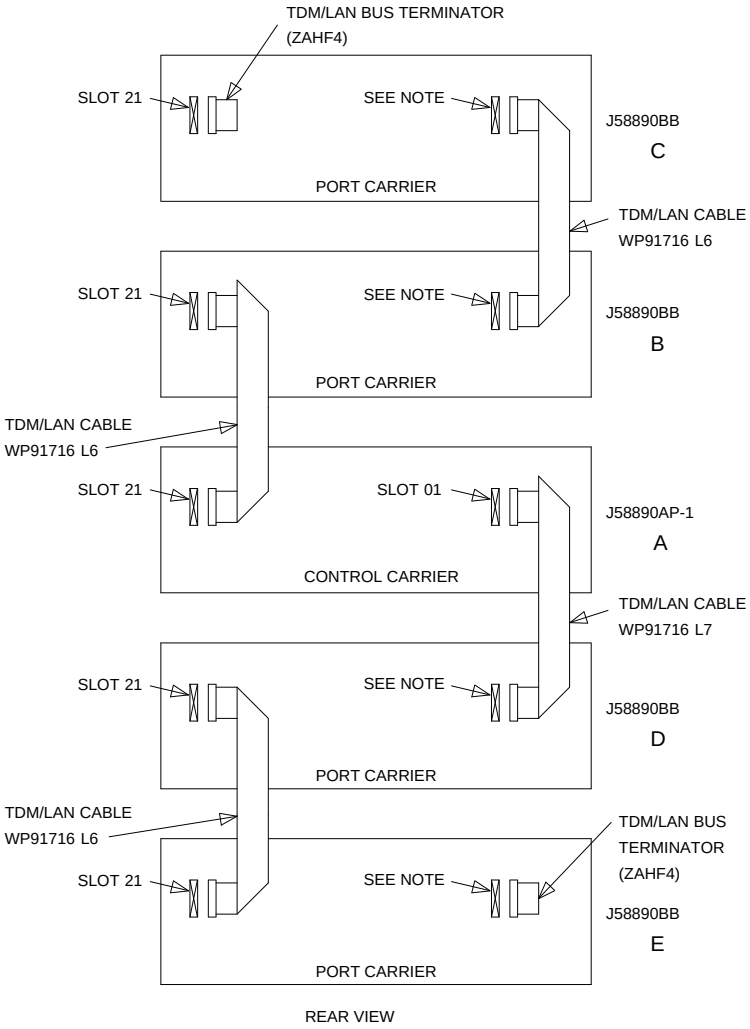


Figure 4-14. Locations of Grounding Jumpers



NOTE:

ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 4-15. TDM/LAN Connections for Standard-Reliability G3i V4 PPN

7. Install the front trim plates on the ‘‘C’’ carrier. Install the fan trim plate.
8. For an upgrade to an AC-powered G3i V4, install the 631-type power units (removed from the R1V3) into the ‘‘C’’ carrier. There are three different pairs of power units available. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, and the 631DA1 and 631DB1. Do not interchange the units. The 631AR1, 631WA1, or 631DA1 are installed in the left side, while the 631BR1, 631WB1, or 631DB1 are installed in the right side (see Figure 4-16).

   For an upgrade to a DC-powered G3i V4, install the new 644A and 645B power units into the new ‘‘C’’ carrier. Do not interchange the units. The 644A is installed in the left side, while the 645B is installed in the right side.
9. If the port carrier contains a 631AR1 or 631WA1 power supply, install the previously removed TN736 power unit on the left side of the of the carrier adjacent to this power supply. If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

   NOTE:
   A TN736 is not required when a 631DB1 power unit is used in a in a J58890BB-2 or -3 port carrier. It is always required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use a TN752 or TN755 if the system is equipped with neon message waiting.
10. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 4-17).

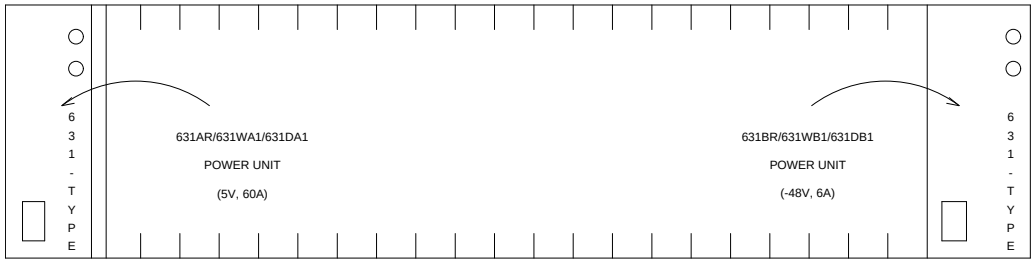


Figure 4-16. Locations of Power Units

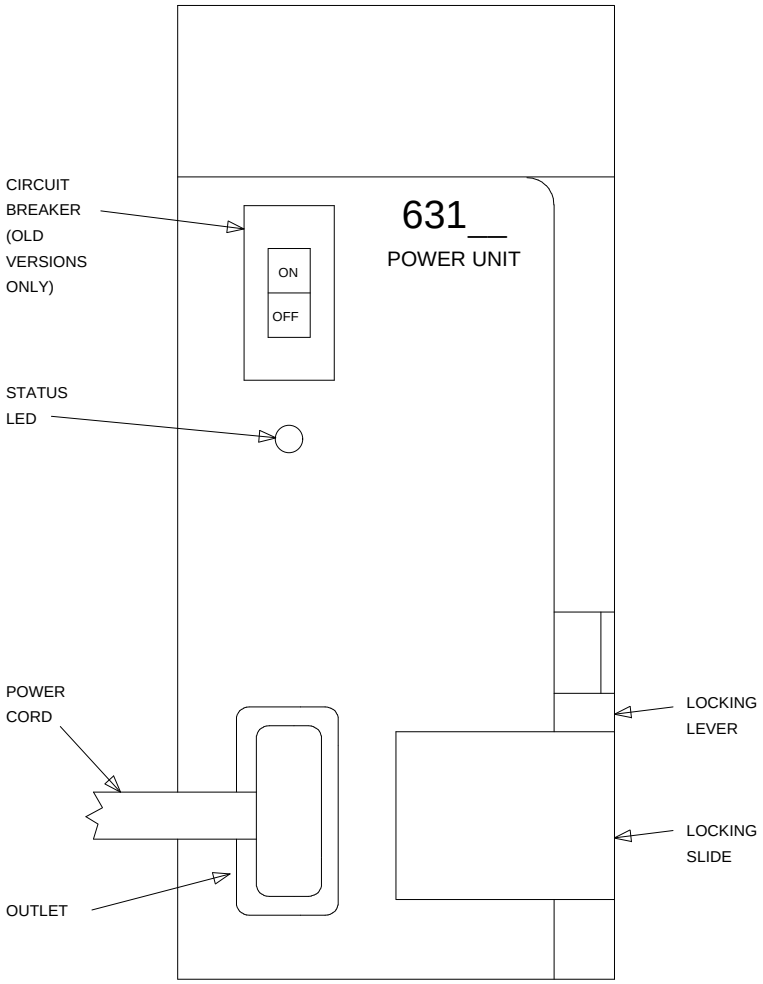


Figure 4-17. 631-Type Power Unit

Install Port Circuit Packs

1. See WARNINGS. Install the port circuit packs, previously removed, into the ‘‘A,’’ ‘‘B,’’ and ‘‘C’’ carriers using the following figures, the decals, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   WARNING:
   These installed port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

2. Install circuit-pack blanks in slots not equipped with circuit packs.

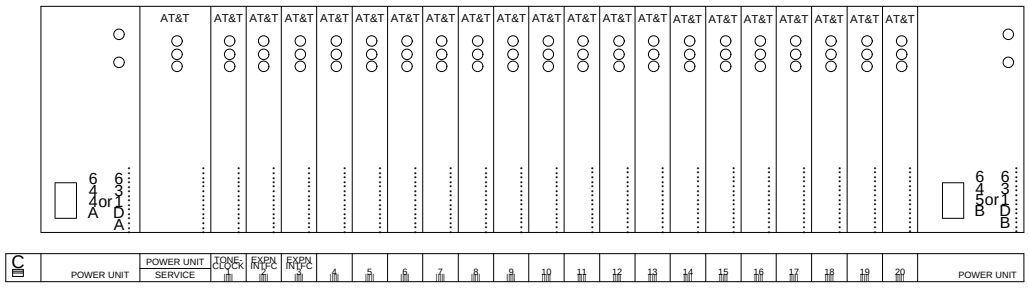


Figure 4-18. Circuit-Pack Locations in G3i V4 Port Carrier

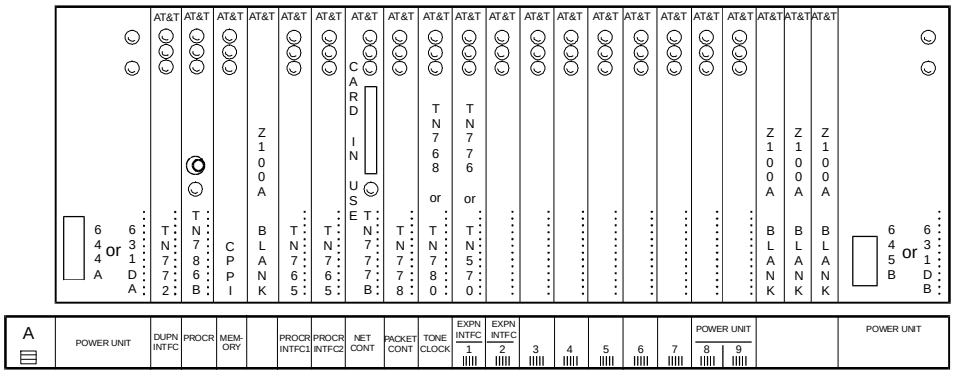


Figure 4-19. Circuit-Pack Locations in Critical-Reliability G3i V4 Control Carrier

Verify Usable Circuit-Pack Vintages

Verify that every R1V3 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Reseat DEFINITY AUDIX System

See WARNING. If a DEFINITY AUDIX System resides in the system, reseat the AUDIX assembly to its backplane connectors.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Reboot the G3i V4 System

Standard-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications – Operations*, 585-229-202.
2. See NOTE. At the TN777B faceplate, insert the the translation memory card obtained from the CSA.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left and with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory card. Loading the translations takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY*

Communications System Generic 3 V4 Implementation, 555-230-655, and make the necessary changes.

Critical-Reliability System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications – Operations*, 585-229-202.
2. See NOTE. At each TN777B faceplate, insert a translation memory card obtained from the CSA.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At the PPN power-distribution unit, set the main AC circuit breaker to ON.
4. The system now performs the reset level 4 rebooting process by loading translations from the memory cards. Loading the translations takes 10 to 15 minutes.

   Refer to the "System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
5. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option can be enabled on the upgraded system.
6. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
7. Enter l**`ist configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.

8. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling this option.

   NOTE:
   Certain forms have changed for G3i V4. Upgraded R1V3 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636, and *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, and make the necessary changes.

Close PPN Cabinet and Reconnect Cables

1. Replace the back panels previously removed.
2. Install the front door on the cabinet if previously removed.

Retranslate Port Circuits

If port circuit packs from the R1V3 control carrier were relocated because of fewer port slots in the G3i V4 control carrier or in order to put:

- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN776 or TN570 Expansion Interface in port slot ''1'' (for a simultaneous EPN addition)

of the new control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Rerecord Announcements

The off-site CSA translation upgrade did not preserve the contents of recorded announcements. Therefore, if a TN750/B Announcement circuit pack resides in the system, any announcements that were stored on the circuit pack must be rerecorded.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Returning Replaced System 75 Equipment

The System 75 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

See NOTE. The replaced System 75 equipment includes the unused portions of the small System 75 cabinet including:

- System 75 cabinet frame
- Control carrier, control circuit packs, and control-carrier power supplies
- System 75 tone-clock circuit pack
- RMSS or HCMR tape drive
- R1V3 tape cartridges
- TDM cables (ED-67086-10 G1) and cable adapters (AHF3)
- TDM bus terminators (AHF1)

NOTE:
For an upgrade to a DC-powered G3i V4, the AC port carrier in the ''B'' position (if present) should have been removed. According to upgrade pricing for both AC and DC upgrades, this carrier and the 631-type power units belong to the customer.

If the customer decides not to keep the carrier and power supplies for possible reuse in an AC cabinet, then (without reinstallation) this equipment should also be returned to AT&T.

Multicarrier G1 to G3i V1

5

As the first stage of a G1 to G3i V4 upgrade, this chapter provides the information necessary to upgrade a DEFINITY® G1 system with a multicarrier PPN to a DEFINITY G3i V1 system. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

NOTE:
Refer to Chapter 11, for information about the second stage of this upgrade, upgrading a G3i V1 to a G3i V4.

The following processes are required for a G1 PPN to G3i V1 PPN upgrade:

- Saving the software translations
- Upgrading the hardware

  This involves installing a memory circuit pack.
- Replacing the software tape
- Upgrading the software

  This involves saving, loading, and (when necessary) reentering system translations
- Testing the upgraded system to verify proper operation

G3i V1 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System*

Generic 3i Implementation, 555-230-650, provides the procedures and forms required to implement the G3i V1 features. *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, provides the commands and procedures required to initialize and administer the G3i V1.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication Between Equipment Rooms

For an upgrade where some of the equipment resides at a remote location, the upgrade activity will be much easier if temporary communications are established between the equipment rooms.

Contact Network System Technician

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

Whenever possible, it is recommended that port circuits be relocated and retranslated before the upgrade. This will shorten the service interruption that will occur during the upgrade.

If a third cabinet is required, it cannot be added until the time of the upgrade. G1 software will not support the third cabinet.

Usable Circuit-Pack Vintages

Since a G3i V4 system is the outcome of the second stage of the upgrade, every port or control circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped for the upgrade should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every G1 circuit pack (including any CFY1 current limiters) that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Also, since a G3i V1.1 system is transient step in the second stage of the upgrade, every control circuit pack *not* reused in the upgraded G3i V4-386 system must conform to the minimum usable vintage requirements for G3i V1.1. If necessary, replace those control circuit packs that have unusable vintages at the same presale site inspection.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4-386 system and in a G3i V1.1 control carrier.

Site Inspections

For the purposes of a G3i V1 upgrade, most G1 systems are already equipped with the correct TDM/LAN cables (WP-91716 L6 and L7). However, some of these systems contain earlier versions of the cables, and (based on QPPCN site inspection number CN 615DR) these older cables must be replaced.

The two earlier versions of the TDM/LAN cable included the WP-91112 (L1 and L2) and the WP-91716 (L1 and L2). Both of these versions, had white labels. In contrast, the correct cables (WP-91716 L6 and L7) have blue labels.

ISDN Gateway

When a system is upgraded from a G1 to a G3, the ISDN Gateway (if installed) must be upgraded to the correct software release. Call progress messages to the ISDN Gateway may be intermittently lost, therefore, this upgrade must occur at the same time as the G1 to G3 upgrade.

Contact your AT&T representative for the correct software release.

Power

If a new cabinet (either a PPN or EPN) is added, it may be either AC- or DC-powered. If an added cabinet is powered differently from the existing cabinets, the existing cabinets do not have to be converted since mixed power configurations are allowed. However, the system's power and grounding must be modified so that the AC-powered cabinets are grounded to the same single-point ground bar as the DC-powered cabinets (see Figure 5-1).

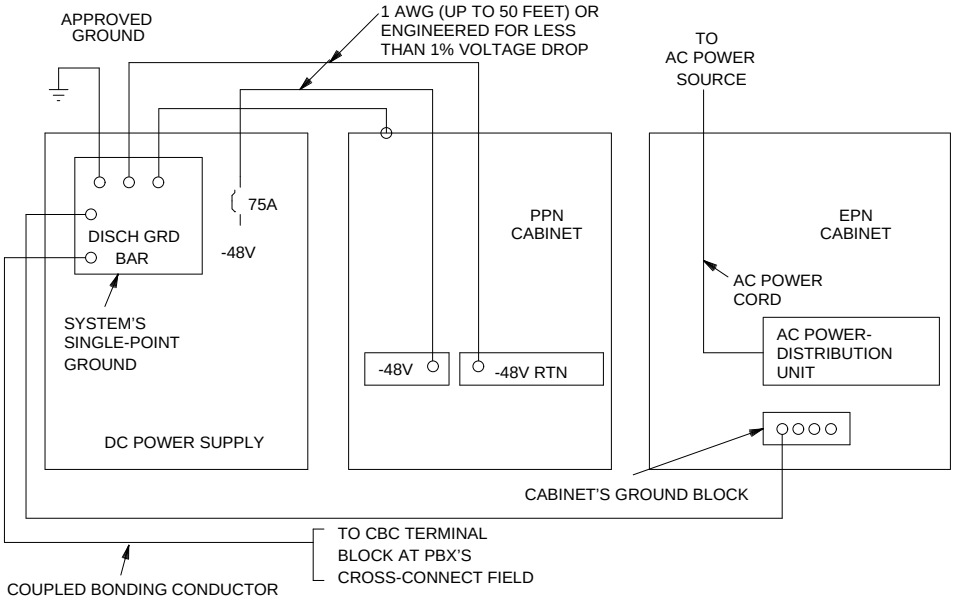


Figure 5-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be under the control of a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

116A Isolator

Each peripheral connected to a DC-powered system, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the peripheral and the interface connector to isolate grounding between the system and external adjuncts.

Software

Like the G1 software and translations, the G3i V1 software and translations are saved on the TN774 Tape Drive circuit pack. Although the G1 translations upgrade automatically to G3i V1, several features require special attention because of form changes or potential naming conflicts in the upgrade procedure. Also, if ARS is enabled (when upgrading from International Release 1 Version 4 (IR1V4) to Global Definity-91 (GD-91) software), it may be necessary to modify the Call Type field on the ARS Analysis form to "unk" for all call types except "iop" or "int."

Table 5-1 contains a list of forms that are either changed or new for G3i V1.

After the upgrade, the Software Associate should check these forms to ensure that the upgraded translations are appropriate for the customer's needs. Refer to the *DEFINITY Communications System Generic 3i Implementation*, 555-230-650, and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, for information to make any required changes.

Table 5-1. Changed/New Administration Forms for G3i V1

From G1	To G3i V1
ARS fnpa	ARS Digit Analysis
ARS hnpa	ARS Digit Analysis
Allowed Call List	Toll Analysis
Code Restriction fnpa	Toll Analysis
Code Restriction hnpa	Toll Analysis
Permanent Switched Calls	Administered Connections
RNX Table	AAR Digit Analysis
Ten-Seven Digit Conversion	ARS/AAR Digit Conversion
None (Note)	Alias Station
None	Alphanumeric Dialing
None	Call Vector
None	Signaling Group
None	Access Endpoints
None	Vector Directory Number

Note: ''None'' represents a new form for G3i V1.

Hardware Description

Circuit Packs

Only one circuit pack is required for a basic G3i V1 system upgrade. The other seven will be provided on an optional basis for G3i V1 features, as required by the customer.

The required circuit pack is:

- TN770

  A second TN770 Memory circuit pack, providing an additional 6 Mbytes of memory, is required for G3i V1.

The seven optional new circuit packs are:

- TN556

  The Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) circuit pack (TN556) has 12 ports and provides both circuit and packet connectivity for up to 12 BRI (2B+D) endpoints using the 4-wire S/T interface. It also supports up to 24 endpoints in a passive bus (or multipoint drop) arrangement. The circuit pack supports the frame relaying of ISDN Packet Mode data in either the D channel or in one of the B channels, but G3i software will support only circuit switching of Mode 3 in the B channel.

  The system must be equipped with a Packet Control (TN778) circuit in order to support this circuit pack.

- TN570

  The EI circuit pack (TN570) provides the control-channel connectivity and the time-slot interchanging between the PPN and an EPN cabinet(s). The TN776 EI circuit packs used in G1 provide only TDM-bus connectivity, while the TN570 also provides packet-bus connectivity between port networks. G3i V4 continues to support the TN776 for upgrades from G1 or G3i V1, and new G3i V4 shipments can use either the TN570 or the TN776. The TN570 is required to connect EPNs and PPNs in an G3i V4 system with packet switching or ISDN BRI.

  The system must be equipped with a Packet Control (TN778) circuit in order to support this circuit pack.

- TN726B

  The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

- TN744 or TN744C

  The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B V10 and later versions provide tone detection. Prior to TN744C, the TN744 provides call classification only.

  In addition, it detects Special Information Tones (SIT) for network Information/intercept-tone detection in the Outbound Call Management (OCM) application. This circuit pack will be optionally provided for OCM applications.

  The TN744C Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN771D

  The Maintenance/Test circuit pack (TN771D) performs four maintenance functions: packet-bus reconfiguration, Digital Communications Protocol (DCP) Mode 2 endpoint testing, digital trunk testing, and analog trunk testing. The packet-bus reconfiguration function allows the Maintenance/Test to diagnose and correct recoverable packet-bus failures before the Link Access Procedure D (LAPD) links, using the bus, fail. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-kbps digital facilities and will be used in G3i for ISDN PRI trunk testing. The Maintenance/Test is required for the Duplication Option and for digital trunk testing. Without a Maintenance/Test circuit pack, packet-bus failures can be detected but automatic recovery is not possible.

- TN778

  Direct access between the Switch Processing Element (SPE) and the packet bus is achieved by the Packet Control (TN778) circuit pack. Similar to the PI on the TDM bus, the Packet Control circuit pack provides a generalized protocol-processing capability to interface the SPE to the packet bus.

The Packet Control circuit pack is required to support signaling for ISDN BRI, X.25, DDS/NIPM/Analog, and the remote concentrator, and for packet-bus maintenance.

- TN780 or TN2182

  The TN780 Tone-Clock circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

  The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

  The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

  The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

  It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

  The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

  — Normal broadband dial tone detection

  — Wide broadband dial tone detection

  In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

Port-Network Configurations

Every G3i V1 port-network configuration contains one PPN which can be either a multicarrier or single-carrier cabinet. Larger configurations can contain either one or two EPNs. Figure 5-2 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe PPN upgrades to a G3i V1 with from one to three port networks.

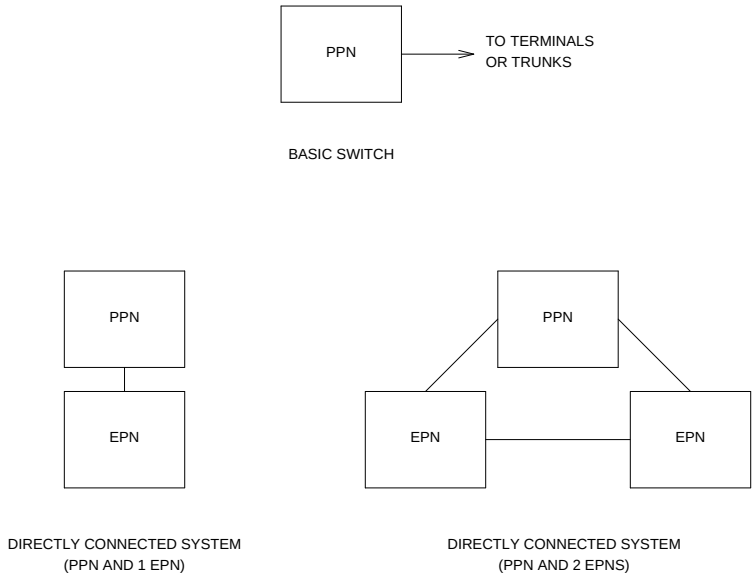


Figure 5-2. G3i V1 Port-Network Configurations

Port Networks

The G3i V1 offers an optional third port network. This port network, a second EPN, allows the system to grow by one expansion control carrier and up to four more port carriers. This second EPN cabinet is the same as the ‘‘DEFINITY’’ style EPN cabinets that were first available for G1 systems.

Software-Translation Upgrade

The G3i V1 uses the same format and tape drive as the G1. Therefore, it is a simple task to perform the software upgrade. The translations must be saved onto the existing G1 tape. The G1 tape should then be removed and the new G3i V1 tape installed. The translations should then be saved onto the new G3i V1 tape. After the hardware upgrade is completed, the system should be rebooted with the G3i V1 tape.

System Upgrades

There are many configurations of DEFINITY G1 in the field. In terms of both hardware and software, each system can have a unique configuration. The manner in which a system is upgraded depends on its present configuration.

Upgrading a G1 PPN to a G3i V1 PPN requires a hardware change (that is, adding a circuit pack in the control carrier). Whereas, upgrading a G1 EPN to a G3i V4 EPN requires no hardware changes.

If the upgrade involves adding a new cabinet, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, for the installation procedures.

Simplex G1 PPN to Simplex G3i V1 PPN

A simplex G1 PPN is upgraded to a simplex G3i V1 PPN by:

- Installing the G3i V1 tape and loading the existing translations onto it.
- Adding the second TN770 Memory circuit pack to the control carrier.

Prerequisite Hardware

The equipment in Table 5-2 *must* be:

- Acquired from local Material Stocking Location (MSL) as part of the G3i V4 upgrade kit
- Delivered to the installation site before the upgrade begins

Ensure that the tape is a G3i V1 tape.

Table 5-2. Required Hardware

Equipment	Description	Quantity
J58890TE L1	G3i V1 Tape Cartridge	1
103557237	TN770 Memory	1

Required Tools

The following tools and items may be required during the upgrade:

- Authorized wrist grounding strap
- Static-proof or original circuit-pack packaging for transporting circuit packs
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - — *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500
  - — *DEFINITY Communications System Generic 3i Implementation*, 555-230-655

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Save Translations

1. Log in at the G1 Manager I terminal.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G1 tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.
4. Remove the G1 tape, insert the G3i V1 tape, and wait for the tape to retension.
5. Enter **`save translation`**. Press RETURN.
6. Enter **`save announcements`** if appropriate. Press RETURN.

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the PPN to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down PPN

See CAUTION. At the PPN power-distribution unit, set the main circuit breaker OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Memory Circuit Pack

NOTE:
If new adjuncts or features are being added that require additional circuit packs, refer to Chapter 23, "Changes to G3vs, G3s, and G3i V4 Systems" of this manual for installation instructions.

1. At the J58890AH control carrier, remove the circuit-pack blank from the ''MEM 2'' slot on the right side of the existing TN770 Memory circuit pack (see Figure 5-3).

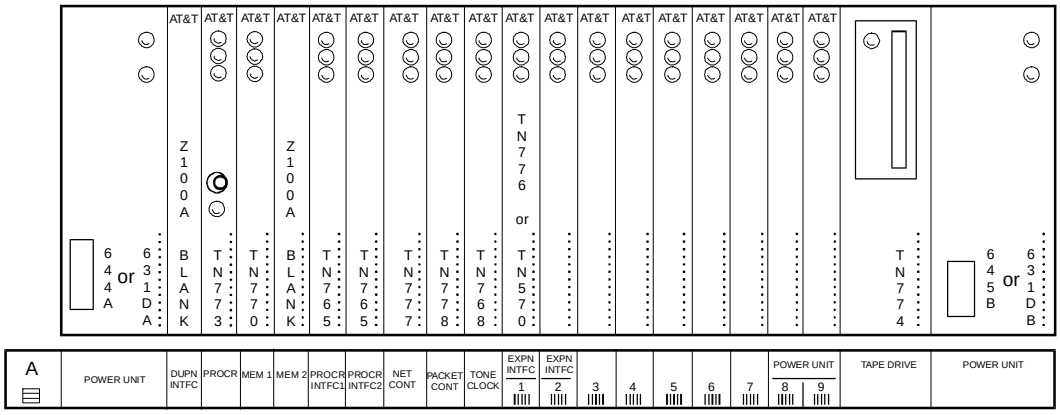


Figure 5-3. Circuit-Pack Locations in Simplex G1 Control Carrier

2. See WARNING. Install the TN770 memory circuit pack in the ''MEM 2'' slot (see Figure 5-4).

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

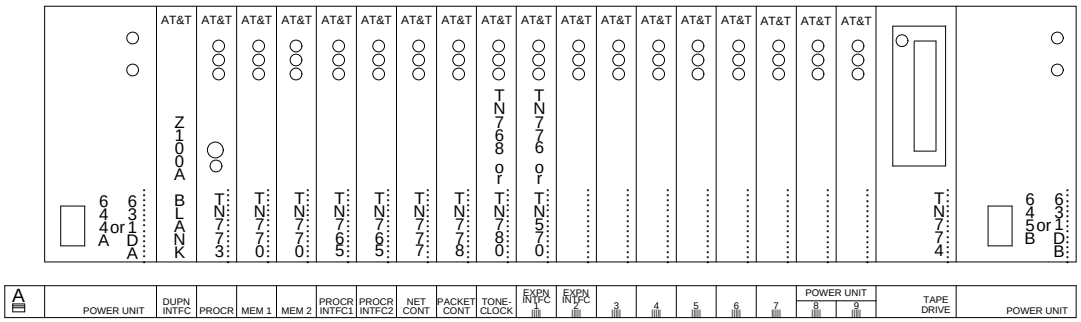


Figure 5-4. Circuit-Pack Locations in Simplex G3i V1 Control Carrier

Update the Netcon Circuit Pack

NOTE:
If necessary, the Netcon circuit pack should be updated during this G1-to-G3i V1 stage of a G3i V4 upgrade to avoid an unnecessary power down during the following G3i V1-to-G3i V4 stage of the upgrade.

See WARNING. If the Netcon circuit pack in the control carrier is a TN777 or is a TN777B of Vintage 16 or less, replace this circuit pack with a TN777B of Vintage 17 or higher.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Upgrade System Translations

1. Connect the G1 Manager I or G3-MT terminal to the connector labeled "TERMINAL" on the rear of the "A" carrier (if required).
2. Insert the new G3i V1 system tape (if required).
3. See NOTE. At the PPN power-distribution unit, set the main circuit breaker to ON.

NOTE:
Do *not* reseat the DEFINITY AUDIX assembly, if present, to its backplane connectors. This assembly will be reseated before the final reboot of the G3i V4 stage of this upgrade.

4. The system now goes through the rebooting process, loading the system translations from the tape. Rebooting requires 15 to 20 minutes. Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and G1 Manager I or G3-MT terminal displays that occur during system reboot.
5. Log in at the `login:` prompt on the G1 Manager I or G3-MT, and set the time to ensure that the system is booted properly.
6. If a CMS is connected to the system, enter **`change system-parameters features`**, and press RETURN to specify its release in the Adjunct CMS Release field.
7. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G3i V1 tape.
8. If the system is equipped with a TN750/B Announcement circuit pack, enter **`list configuration software-version`**, and press RETURN.

   If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using the restore announcements command. Enter **`restore announcements`**, and press RETURN.

   NOTE:
   Certain forms have changed for G3i V1. Upgraded G1 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to Table 5-1 and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, to make any necessary changes.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104 Issue 5, and perform the appropriate tests.

Duplex G1 PPN to Duplex G3i V1 PPN

A duplex G1 PPN is upgraded to a duplex G3i V1 PPN by:

- Installing a G3i V1 tape in both control carriers and loading the existing translations onto them
- Adding a second TN770 Memory circuit pack to each control carrier

Prerequisite Hardware

The equipment in Table 5-3 *must* be:

- Acquired from local Material Stocking Location (MSL) as part of the G3i V4 upgrade kit
- Delivered to the installation site before the upgrade begins

Ensure that the tapes are G3i V1 tapes.

Table 5-3. Required Hardware

Equipment	Description	Quantity
J58890TE L1	G3i V1 Tape Cartridge	2
103557237	TN770 Memory	2

Required Tools

The following tools and items may be required during the upgrade:

- Authorized wrist grounding strap
- Static-proof or original circuit-pack packaging for transporting circuit packs
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 6
  - *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500
  - *DEFINITY Communications System Generic 3i Implementation*, 555-230-650

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Save Translations

1. Log in at the G1 Manager I terminal.
2. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
3. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to both G1 tapes.
4. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.
5. Remove the G1 tapes, insert the G3i V1 tapes, and wait for the tapes to retension.
6. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
7. Enter **`save translation`**. Press RETURN.
8. Enter **`save announcements`** if appropriate. Press RETURN.

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the PPN to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down PPN

See CAUTION. At the PPN power-distribution unit, set the main circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Memory Circuit Packs

NOTE:
If new adjuncts or features are being added that require additional circuit packs, refer to Chapter 23, "Changes to G3vs, G3s, and G3i V4 Systems" of this manual for installation instructions.

1. At each control carrier, remove the circuit-pack blank from the ''MEM 2'' slot on the right side of the existing TN770 Memory circuit pack (see Figure 5-3).

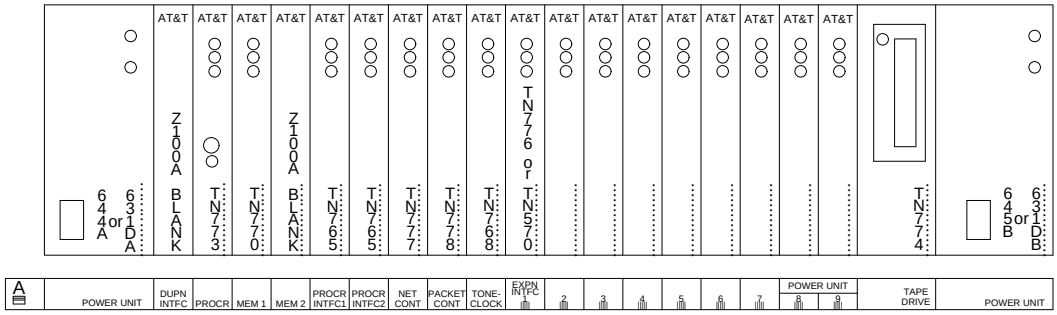


Figure 5-5. Circuit-Pack Locations in Duplex G1 Control Carrier

2. See WARNING. At each control carrier, install the TN770 memory circuit pack in the ‘‘MEM 2’’ slot (see Figure 5-4).

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

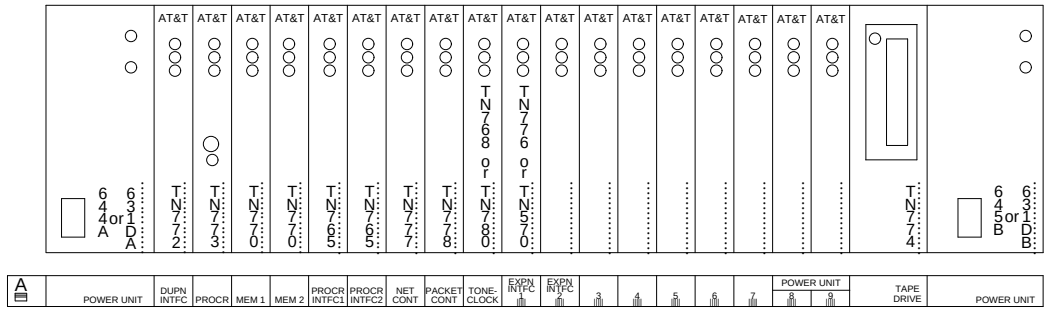


Figure 5-6. Circuit-Pack Locations in Duplex G3i V1 Control Carrier

Update the Netcon Circuit Packs

NOTE:
If necessary, the Netcon circuit packs should be updated during this G1-to-G3i V1 stage of a G3i V4 upgrade to avoid the more complicated replacement of these circuit packs in a working duplicated system during the following G3i V1-to-G3i V4 stage of the upgrade.

See WARNING. If the Netcon circuit pack in each control carrier is a TN777 or is a TN777B of Vintage 16 or less, replace this circuit pack with a TN777B of Vintage 17 or higher.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Upgrade System Translations

1. Connect the G1 Manager I or G3-MT terminal to the connector labeled "TERMINAL" on the rear of the "A" carrier (if required).
2. Insert the new G3i V1 system tapes (if required).
3. See NOTE. At the PPN power-distribution unit, set the main circuit breaker to ON.

   NOTE:
   Do *not* reseat the DEFINITY AUDIX assembly, if present, to its backplane connectors. This assembly will be reseated before the final reboot of the G3i V4 stage of this upgrade.

4. The system now goes through the rebooting process, loading the system translations from the tape. Rebooting requires 15 to 20 minutes. Refer to the "System Reboot Indications" section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and G1 Manager I or G3-MT terminal displays that occur during system reboot.
5. Log in at the `login:` prompt on the G1 Manager I or G3-MT, and set the time to ensure that the system is booted properly.
6. If a CMS is connected to the system, enter **`change system-parameters features`**, and press RETURN to specify its release in the Adjunct CMS Release field.
7. Enter **`status system 1`**, and press RETURN to verify that the system is in the "active/standby" mode.

8. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to both G3i V1 tapes.
9. If the system is equipped with a TN750/B Announcement circuit pack, enter **`list configuration software-version`**, and press RETURN.

   If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using the restore announcements command. Enter **`restore announcements`**, and press RETURN.

   NOTE:
   Certain forms have changed for G3i V1. Upgraded G1 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to Table 5-1 and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, to make any necessary changes.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Single-Carrier G1 to G3i V1

6

As the first stage of a G1 to G3i V4 upgrade, this chapter provides the information necessary to upgrade a DEFINITY® G1 system with a single-carrier cabinet PPN to a DEFINITY G3i V1 system. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

NOTE:
Refer to Chapter 11, for information about the second stage of this upgrade, upgrading a G3i V1 to a G3i V4.

The following processes are required for a G1 PPN to G3i V1 PPN upgrade:

- Saving the software translations
- Upgrading the hardware

  This involves installing a memory circuit pack.
- Replacing the software tape
- Upgrading the software

  This involves saving, loading, and (when necessary) reentering system translations
- Testing the upgraded system to verify proper operation

G3i V1 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System*

Generic 3i Implementation, 555-230-650, provides the procedures and forms required to implement the G3i V1 features. *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, provides the commands and procedures required to initialize and administer the G3i V1.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication between Equipment Rooms

For an upgrade where some of the equipment resides at a remote location, the upgrade activity will be much easier if temporary communications are established between the equipment rooms.

Contact Network System Technician

The technician for each public and private network accessed by the switch must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

Whenever possible, it is recommended that port circuits be relocated and retranslated before the upgrade. This will shorten the service interruption that will occur during the upgrade.

If a third cabinet is required, it cannot be added until the time of the upgrade. G1 software will not support the third cabinet.

Usable Circuit-Pack Vintages

Since a G3i V4 system is the outcome of the second stage of the upgrade, every port or control circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped for the upgrade should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every G1 circuit pack that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages.

Also, since a G3i V1.1 system is a transient step in the second stage of the upgrade, every control circuit pack *not* reused in the upgraded G3i V4-386 system must conform to the minimum usable vintage requirements for G3i V1.1. If necessary, replace those control circuit packs that have unusable vintages at the same presale site inspection.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4-386 system and in a G3i V1.1 control cabinet.

Power

If a new cabinet (either a PPN or EPN) is added, it may be either AC- or DC-powered. If an added cabinet is powered differently from the existing cabinets, the existing cabinets do not have to be converted since mixed power configurations are allowed. However, the system's power and grounding must be modified so that the AC-powered cabinets are grounded to the same single-point ground bar as the DC-powered cabinets (see Figure 6-1).

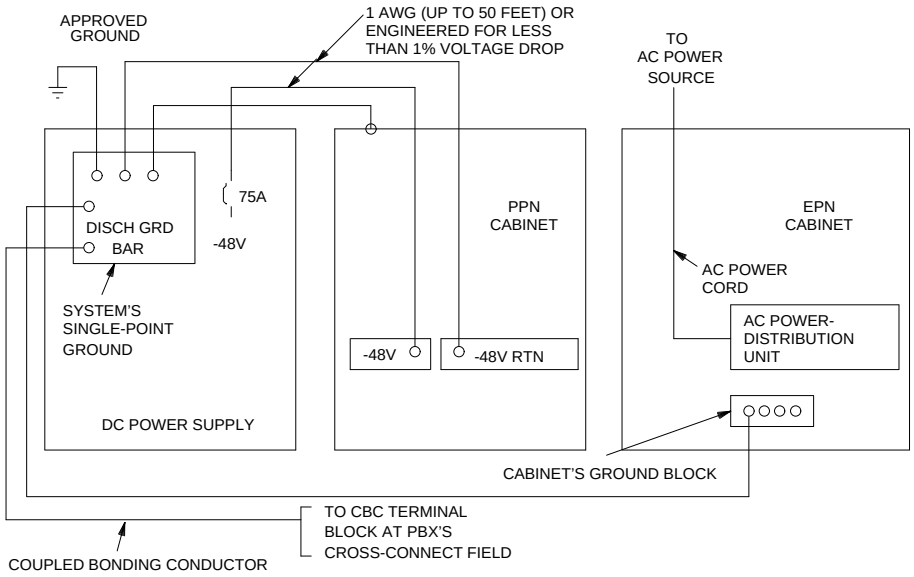


Figure 6-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be under the control of a wall switch. For the

convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

116A Isolator

Each peripheral connected to a DC-powered system, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control cabinet or behind an EPN expansion control cabinet), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the peripheral and the interface connector to isolate grounding between the system and external adjuncts.

Software

Like the G1 software and translations, the G3i V1 software and translations are saved on the TN774 Tape Drive circuit pack. Although the G1 translations upgrade automatically to G3i V1, several features require special attention because of form changes or potential naming conflicts in the upgrade procedure. Also, if ARS is enabled (when upgrading from IR1V4 to GD-91 software), it may be necessary to modify the Call Type field on the ARS Analysis form to “unk” for all call types except “iop” or “int.”

Table 6-1 contains a list of forms that are either changed or new for G3i V1.

After the upgrade, the Software Associate should check these forms to ensure the upgraded translations are appropriate for the customer’s needs. Refer to the *DEFINITY Communications System Generic 3i Implementation*, 555-230-650, and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, for information to make any required changes.

ISDN Gateway

When a system is upgraded from a G1 to a G3, the ISDN Gateway (if installed) must be upgraded to the correct software release. Call progress messages to the ISDN Gateway may be intermittently lost, therefore, this upgrade must occur at the same time as the G1 to G3 upgrade.

Contact your AT&T representative for the correct software release.

Table 6-1. Changed/New Administration Forms for G3i V1

From G1	To G3i V1
ARS fnpa	ARS Digit Analysis
ARS hnpa	ARS Digit Analysis
Allowed Call List	Toll Analysis
Code Restriction fnpa	Toll Analysis
Code Restriction hnpa	Toll Analysis
Permanent Switched Calls	Administered Connections
RNX Table	AAR Digit Analysis
Ten-Seven Digit Conversion	ARS/AAR Digit Conversion
None (Note)	Alias Station
None	Alphanumeric Dialing
None	Call Vector
None	Signaling Group
None	Access Endpoints
None	Vector Directory Number

Note: ''None'' represents a new form for G3i V1.

Hardware Description

Circuit Packs

Only one circuit pack is required for a basic G3i V1 system upgrade. The other seven will be provided on an optional basis for G3i V1 features, as required by the customer.

The required circuit pack is:

- TN770

  A second TN770 Memory circuit pack, providing an additional 6 Mbytes of memory, is required for G3i V1.

The seven optional new circuit packs are:

- TN556

  The Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) circuit pack (TN556) has 12 ports and provides both circuit and packet connectivity for up to 12 BRI (2B+D) endpoints using the 4-wire S/T interface. It also supports up to 24 endpoints in a passive bus (or multipoint drop) arrangement. The circuit pack supports the frame relaying of ISDN Packet Mode data in either the D channel or in one of the B channels, but G3i software will support only circuit switching of Mode 3 in the B channel.

  The system must be equipped with a Packet Control (TN778) circuit in order to support this circuit pack.

- TN570

  The EI circuit pack (TN570) provides the control-channel connectivity and the time-slot interchanging between the PPN and an EPN cabinet(s). The TN776 EI circuit packs used in G1 provide only TDM-bus connectivity, while the TN570 also provides packet-bus connectivity between port networks. G3i V4 continues to support the TN776 for upgrades from G1 or G3i V1, and new G3i V4 shipments can use either the TN570 or the TN776. The TN570 is required to connect EPNs and PPNs in an G3i V4 system with packet switching or ISDN BRI.

  The system must be equipped with a Packet Control (TN778) circuit in order to support this circuit pack.

- TN726B

  The Data Line circuit pack (TN726B) provides eight ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints and uses the Mode 2 or Mode 3 data-transfer protocol.

- TN744 or TN744C

  The Call Classifier circuit pack (TN744) provides eight detectors that can be used as either touch-tone or call-classifier tone detectors. The TN744B V10 and later versions provide tone detection. Prior to TN744C, the TN744 provides call classification only.

  In addition, it detects Special Information Tones (SIT) for network Information/intercept-tone detection in the Outbound Call Management (OCM) application. This circuit pack will be optionally provided for OCM applications.

  The TN744C Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN771D

  The Maintenance/Test circuit pack (TN771D) performs four maintenance functions: packet-bus reconfiguration, Digital Communications Protocol (DCP) Mode 2 endpoint testing, digital trunk testing, and analog trunk testing. The packet-bus reconfiguration function allows the Maintenance/Test to diagnose and correct recoverable packet-bus failures before the Link Access Procedure D (LAPD) links, using the bus, fail. The digital trunk-testing function can originate and terminate loopback tests on 56- and 64-kbps digital facilities and will be used in G3i for ISDN PRI trunk testing. The Maintenance/Test is required for the Duplication Option and for digital trunk testing. Without a Maintenance/Test circuit pack, packet-bus failures can be detected but automatic recovery is not possible.

- TN778

  Direct access between the Switch Processing Element (SPE) and the packet bus is achieved by the Packet Control (TN778) circuit pack. Similar to the PI on the TDM bus, the Packet Control circuit pack provides a generalized protocol-processing capability to interface the SPE to the packet bus.

  The Packet Control circuit pack is required to support signaling for ISDN BRI, X.25, DDS/NIPM/Analog, and the remote concentrator, and for packet-bus maintenance.

- TN780 or TN2182

  The TN780 Tone-Clock circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

  The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

  The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

  The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

  It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

  The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

  — Normal broadband dial tone detection

  — Wide broadband dial tone detection

  In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

Port-Network Configurations

Every G3i V1 port-network configuration contains one PPN that can be either a multicarrier or single-carrier cabinet. Larger configurations can contain either one or two EPNs. Figure 6-2 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe PPN upgrades to a G3i V1 with from one to three port networks.

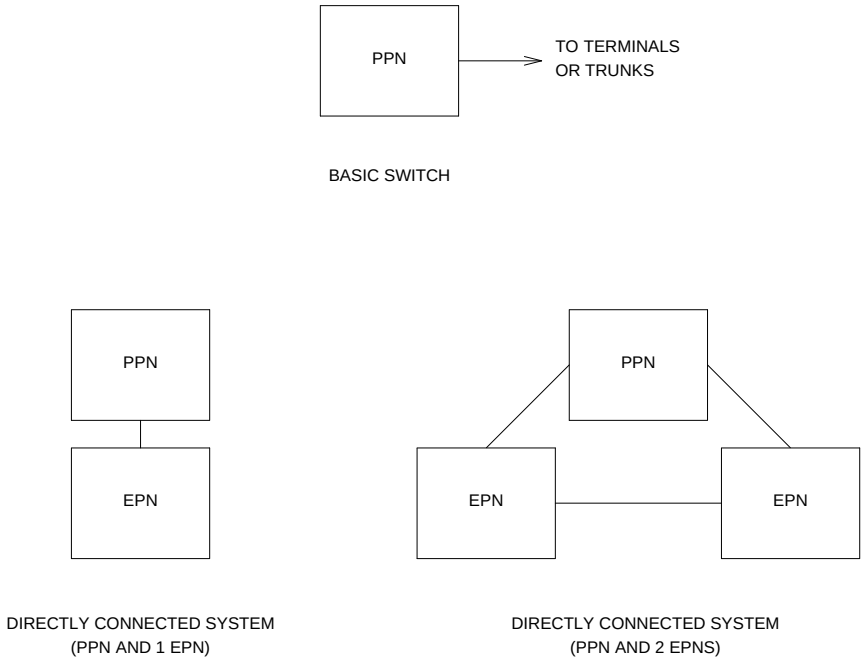


Figure 6-2. G3i V1 Port-Network Configurations

Port Networks

The G3i V1 offers an optional third port network. This port network, a second EPN, allows the system to grow by one expansion control cabinet and up to three more port cabinets. This second EPN cabinet stack is the same as the "DEFINITY" style EPN cabinet stacks that were first available for G1 systems.

Software-Translation Upgrade

The G3i V1 uses the same format and tape drive as the G1. Therefore, it is a simple task to perform the software upgrade. The translations must be saved onto the existing G1 tape. The G1 tape should then be removed and the new G3i V1 tape installed. The translations should then be saved onto the new G3i V1 tape. After the hardware upgrade is completed, the system should be rebooted with the G3i V1 tape.

System Upgrades

There are many configurations of DEFINITY G1 in the field. In terms of both hardware and software, each system can have a unique configuration. The manner in which a system is upgraded depends on its present configuration.

Upgrading a G1 PPN to a G3i V1 PPN requires a hardware change (that is, adding a circuit pack in the control cabinet). Whereas, upgrading a G1 EPN to a G3i V4 EPN requires no hardware changes.

If the upgrade involves adding a new cabinet, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for the installation procedures.

Simplex G1 PPN to Simplex G3i V1 PPN

A simplex G1 PPN is upgraded to a simplex G3i V1 PPN by:

- Installing the G3i V1 tape and loading the existing translations onto it.
- Adding the second TN770 Memory circuit pack to the control cabinet.

Prerequisite Hardware

The equipment in the following table *must* be:

- Acquired from local Material Stocking Location (MSL) as part of the G3i V4 upgrade kit
- Delivered to the installation site before the upgrade begins

Ensure that the tape is a G3i V1 tape.

Table 6-2. Required Hardware

Equipment	Description	Quantity
J58890TE L1	G3i V1 Tape Cartridge	1
103557237	TN770 Memory	1

Required Tools

The following tools and items may be required during the upgrade:

- Authorized wrist grounding strap
- Static-proof or original circuit-pack packaging for transporting circuit packs
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 6
  - — *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500
  - — *DEFINITY Communications System Generic 3i Implementation*, 555-230-650

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Save Translations

1. Log in at the G1 Manager I terminal.
2. If the system is duplex, enter **`status system 1`**, and press RETURN to verify that the system is in the ‘‘active/standby’’ mode.
3. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G1 tape(s).
4. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.

5. Remove the G1 tape, insert the G3i V1 tape, and wait for the tape to retension.
6. Enter **`save translation`**. Press RETURN.
7. Enter **`save announcements`** if appropriate. Press RETURN.

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in the control cabinet to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

2. See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down Control Cabinet

See CAUTION. Behind the control cabinet's power supply, set the circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Memory Circuit Pack

NOTE:
If new adjuncts or features are being added that require additional circuit packs, refer to Chapter 23, "Changes to G3vs, G3s, and G3i V4 Systems" of this manual for installation instructions.

1. At the J58890L-1 control cabinet, remove the circuit-pack blank from the ‘‘MEM 2’’ slot on the right side of the existing TN770 Memory circuit pack (see Figure 6-3).

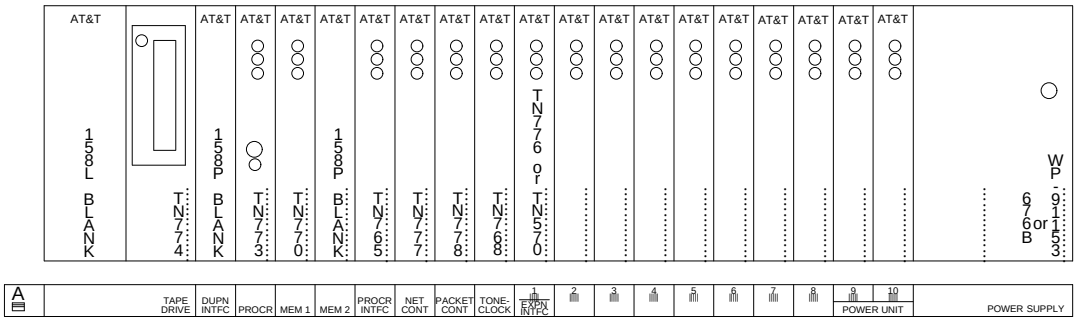


Figure 6-3. Circuit-Pack Locations in Simplex G1 Control Cabinet

2. See WARNING. Install the TN770 memory circuit pack in the ‘‘MEM 2’’ slot (see Figure 6-4).

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

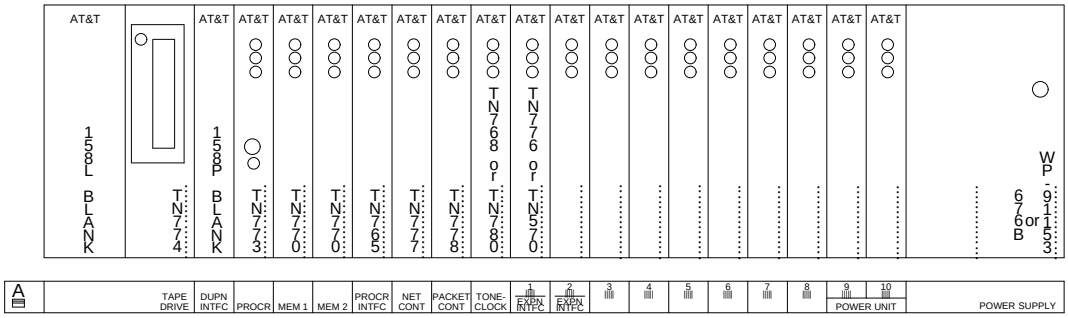


Figure 6-4. Circuit-Pack Locations in Simplex G3i V1 Control Cabinet

Update the Netcon Circuit Pack

NOTE:
If necessary, the Netcon circuit pack should be updated during this G1-to-G3i V1 stage of a G3i V4 upgrade to avoid an unnecessary power down during the following G3i V1-to-G3i V4 stage of the upgrade.

See WARNING. If the Netcon circuit pack in the control cabinet is a TN777 or is a TN777B of Vintage 16 or less, replace this circuit pack with a TN777B of Vintage 17 or higher.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Upgrade System Translations

1. Connect the G1 Manager I or G3-MT terminal to the connector labeled "TERMINAL" on the rear of the "A" cabinet (if required).
2. Insert the new G3i V1 system tape (if required).
3. See NOTE. Behind the control cabinet's power supply, set the circuit breaker to ON.

   NOTE:
   Do *not* reseat the DEFINITY AUDIX assembly, if present, to its backplane connectors. This assembly will be reseated before the final reboot of the G3i V4 stage of this upgrade.

4. The system now goes through the rebooting process, loading the system translations from the tape. Rebooting requires 15 to 20 minutes. Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 6, for circuit-pack LED indications and G1 Manager I or G3-MT terminal displays that occur during system reboot.
5. Log in at the `login:` prompt on the G1 Manager I or G3-MT, and set the time to ensure that the system is booted properly.
6. If a CMS is connected to the system, enter **`change system-parameters features`**, and press RETURN to specify its release in the Adjunct CMS Release field.
7. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G3i V1 tape.
8. If the system is equipped with a TN750/B Announcement circuit pack, enter **`list configuration software-version`**, and press RETURN.

   If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using the restore announcements command. Enter **`restore announcements`**, and press RETURN.

   NOTE:
   Certain forms have changed for G3i V1. Upgraded G1 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to Table 6-1 and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, to make any necessary changes.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Duplex G1 PPN to Duplex G3i V1 PPN

A duplex G1 PPN is upgraded to a duplex G3i V1 PPN by:

- Installing a G3i V1 tape in both control cabinets and loading the existing translations onto them
- Adding a second TN770 Memory circuit pack to each control cabinet

Prerequisite Hardware

The equipment in the following table *must* be:

- Acquired from local Material Stocking Location (MSL) as part of the G3i V4 upgrade kit
- Delivered to the installation site before the upgrade begins

Ensure that the tapes are G3i V1 tapes.

Table 6-3. Required Hardware

Equipment	Description	Quantity
J58890TE L1	G3i V1 Tape Cartridge	2
103557237	TN770 Memory	2

Required Tools

The following tools and items may be required during the upgrade:

- Authorized wrist grounding strap
- Static-proof or original circuit-pack packaging for transporting circuit packs
- One copy of each of the following manuals:
  - — *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - — *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500
  - — *DEFINITY Communications System Generic 3i Implementation*, 555-230-655

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Save Translations

1. Log in at the G1 Manager I terminal.
2. Enter **`status system 1`**, and press RETURN to verify that the system is in the ‘‘active/standby’’ mode.
3. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to both G1 tapes.

4. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.

5. Remove the G1 tapes, insert the G3i V1 tapes, and wait for the tapes to retension.
6. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
7. Enter **`save translation`**. Press RETURN.
8. Enter **`save announcements`** if appropriate. Press RETURN.

Shut Down DEFINITY AUDIX System

1. See WARNING. If a DEFINITY AUDIX System resides in a control cabinet to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.

   WARNING:
   Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.

   WARNING:
   See WARNING. To avoid an unexpected AUDIX reboot after an unplanned switch reboot, unseat the AUDIX assembly from its backplane connectors.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Power Down Control Cabinets

See CAUTION. Behind each control cabinet's power supply, set the circuit breaker to OFF.

CAUTION:
Powering down the control cabinet will cause important system data, such as BCMS data, records of queued ACD calls, Automatic Wakeup requests, and Do Not Disturb requests to be lost. Refer to DEFINITY Communications

System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance, 555-204-105, Issue 7, for information about preparing the system for a power down. BCMS data cannot be stored to or retreived from tape.

Install Memory Circuit Packs

NOTE:
If new adjuncts or features are being added that require additional circuit packs, refer to Chapter 23, "Changes to G3vs, G3s, and G3i V4 Systems" of this manual for installation instructions.

1. At each control cabinet, remove the circuit-pack blank from the ‘‘MEM 2’’ slot on the right side of the existing TN770 Memory circuit pack (see Figure 6-3).

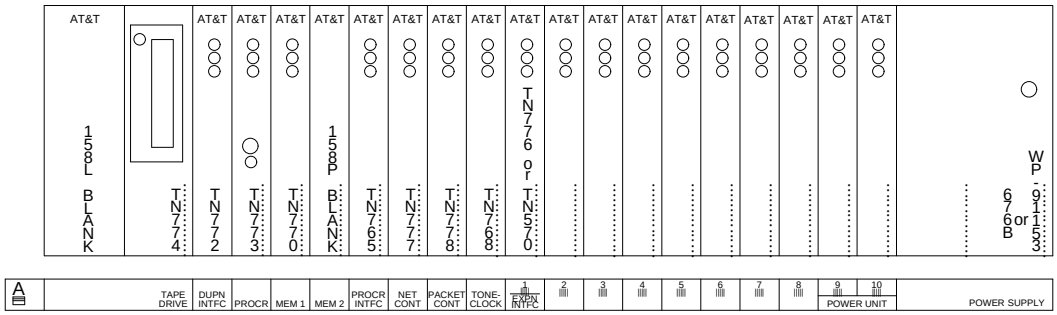


Figure 6-5. Circuit-Pack Locations in Duplex G1 Control Cabinet

2. See WARNING. At each control cabinet, install the TN770 memory circuit pack in the ‘‘MEM 2’’ slot (see Figure 6-4).

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

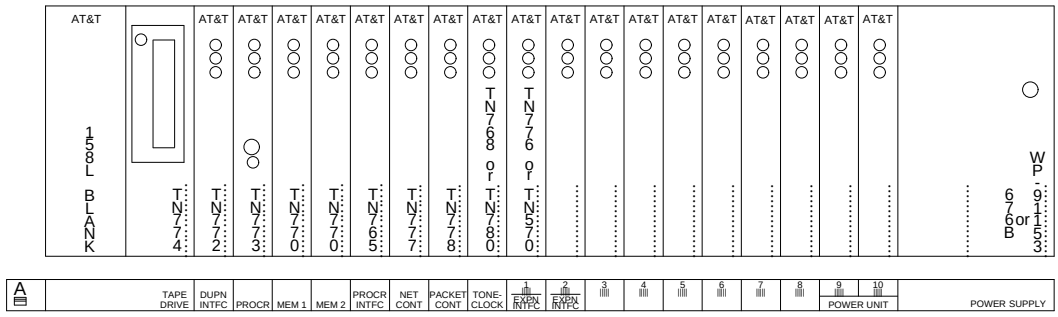


Figure 6-6. Circuit-Pack Locations in Duplex G3i V1 Control Cabinet

Update the Netcon Circuit Packs

NOTE:
If necessary, the Netcon circuit packs should be updated during this G1-to-G3i V1 stage of a G3i V4 upgrade to avoid the more complicated replacement of these circuit packs in a working duplicated system during the following G3i V1-to-G3i V4 stage of the upgrade.

See WARNING. If the Netcon circuit pack in each control cabinet is a TN777 or is a TN777B of Vintage 16 or less, replace this circuit pack with a TN777B of Vintage 17 or higher.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Upgrade System Translations

1. Connect the G1 Manager I or G3-MT terminal to the connector labeled "TERMINAL'' on the rear of the ''A'' cabinet (if required).
2. Insert the new G3i V1 system tapes (if required).
3. See NOTE. Behind each control cabinet's power supply, set the circuit breaker to ON.

NOTE:
Do *not* reseat the DEFINITY AUDIX assembly, if present, to its backplane connectors. This assembly will be reseated before the final reboot of the G3i V4 stage of this upgrade.

4. The system reboots and loads the system translations from tape. This takes 15 to 20 minutes. Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit pack LED indications and terminal displays.
5. Log in at the `login:` prompt on the terminal and set the time to ensure the system is booted properly.
6. If a CMS is connected to the system, enter **`change system-parameters features`**, and press RETURN to specify its release in the Adjunct CMS Release field.
7. Enter **`status system 1`**, and press RETURN to verify the system is in the ''active/standby'' mode.
8. Enter **`save translation`**. Press RETURN. This instructs the system to write all translation information from memory to both G3i V1 tapes.
9. If the system is equipped with a TN750/B Announcement circuit pack, enter **`list configuration software-version`**, and press RETURN.

   If Page 2 of this form shows recorded announcements were saved, these announcements can be restored using the restore announcements command. Enter **`restore announcements`** and press RETURN.

   NOTE:
   Certain forms have changed for G3i V1. Upgraded G1 translations may appear on a different form, fields may have shifted within a form, and/or the names assigned to particular fields may have changed. Refer to Table 6-1 and the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurement Reports*, 555-200-500, to make any necessary changes.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Multicarrier G2 Universal Module to G3i V4 EPN

7

This chapter provides the information necessary to upgrade a DEFINITY® G2 universal module to a multicarrier EPN of a DEFINITY G3i V4 system. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

The following processes are required for a G2 to G3i V4 upgrade:

- Upgrading the hardware

  This involves adding a new multicarrier PPN cabinet, replacing the first module control carrier (in each universal module) with an expansion control carrier, replacing each duplicated module control carrier with a port carrier, and replacing and adding circuit packs

- Replacing the software tape with a DEFINITY translation memory card
- Upgrading the software

  This involves saving translations, acquiring a Translations Recovery, Additions, and Conversions System (TRACS) report, and extensively reentering system translations

- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication between Equipment Rooms

For an upgrade where some of the equipment resides at a remote location, the upgrade activity will be much easier if temporary communications are established between the equipment rooms.

Contact Network Technicians

The technician for each public and private network accessed by the system must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

A G2 universal-module upgrade to G3i V4 *does not* cause port circuit packs, from the G2 universal module, to be moved and manually retranslated. This is because a G2 universal module is always upgraded to an EPN. So, during the universal-module upgrade to a G3i V4 EPN, a G3i V4 expansion control carrier (with 18 available port slots) always replaces the G2 module-control carrier (with no port slots), providing a net gain of 18 port slots.

Usable Circuit-Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped in the new G3i V4 PPN or shipped loose with the new EPN equipment should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every G2 circuit pack (including any CFY1 current limiters) that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages. Refer to *Technical Monthly*, "Reference Guide for Circuit-Pack Vintages and Change Notices," for current information about usable vintages in a G3i V4 system.

Site Inspections

For the purposes of a G3i V4 upgrade, most G2 systems are already equipped with the correct TDM/LAN cables (WP-91716 L6 and L7) and with the correct lightwave transceivers (9823-A or -B). However, some G2 systems contain earlier versions of these components, and (based on a site inspection) these older components must be replaced.

The two earlier versions of the TDM/LAN cable included the WP-91112 (L1 and L2) and the WP-91716 (L1 and L2). Both of these versions, had white labels. In contrast, the correct cables (WP-91716 L6 and L7) have blue labels. If a QPPCN site inspection reveals that the older cables reside in the system, the older cables are replaced under the QPPCN process.

See NOTE. The earlier versions of lightwave transceivers included the 4-series transceivers (4A through 4F). These transceivers supported fiber connections up to 7,000 feet apart; whereas the 9823-A supports connections up to 5,000 feet, and the 9823-B supports connections up to 25,000 feet. If the site inspection reveals that the older transceivers reside in the system, the correct transceivers are ordered and shipped according to a separate PEC.

NOTE:
The 9823-A transceiver is *not* a direct replacement for the 4-series transceiver (since a pair of 9823-A transceivers *cannot* replace a pair of 4-series transceivers supporting a connection of between 5,000 and 7,000 feet).

Power and Grounding

The new multicarrier PPN cabinet or any EPN cabinet added for the upgrade can be either AC- or DC-powered. If an added cabinet is powered differently from the existing cabinets, the existing cabinets do not have to be converted since mixed power configurations are allowed. However, the system's power and grounding must be modified so that the AC-powered cabinets are grounded to the same single-point ground bar as the DC-powered cabinets (see Figure 7-1).

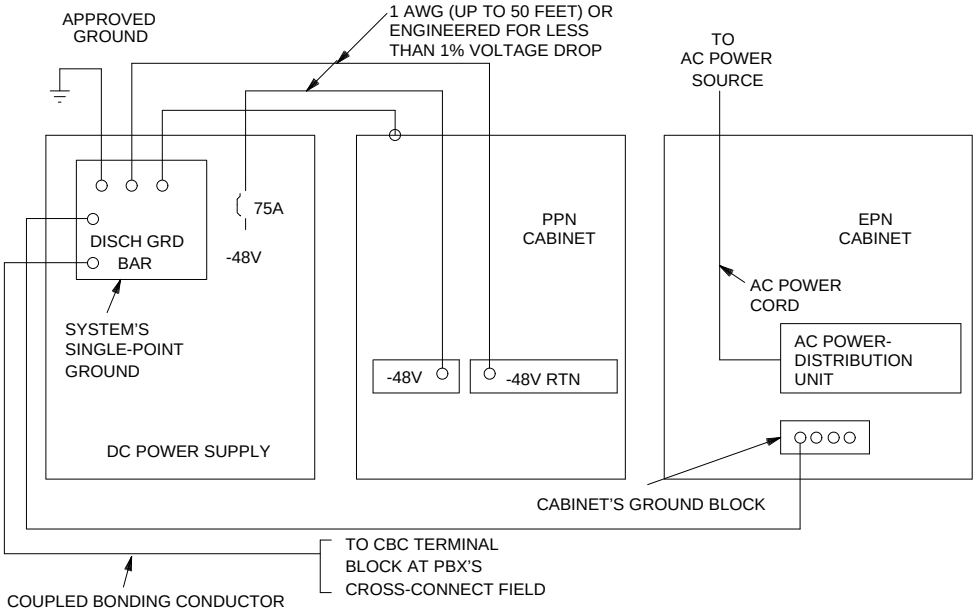


Figure 7-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

See NOTE. If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be controlled by a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

NOTE:
In contrast to the AC power that is likely to be currently available in a G2 equipment room, the new AC-powered PPN added for a G3i V4 upgrade uses 3-wire, 50A, 115 VAC power. Whereas, G2 traditional cabinets used 4-wire, 20A, 208 VAC power and G2 universal cabinets used 3-wire, 30A, 208 VAC power.

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

116A Isolator

Each G3-MT connected to a DC-powered cabinet, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the G3-MT and the interface connector to isolate grounding between the system and external adjuncts.

Power-Failure Stations

During routine system operation, the ground for the power-failure stations is derived from the system's auxiliary cable. This ground will be disconnected during the upgrade, thus disabling the power-failure stations. Therefore, a ground strap will have to be run to the power-failure transfer panel. This strap should be connected shortly after power is removed and then disconnected just before power is restored to the upgraded system.

To minimize downtime during the G3i V4 upgrade, power-failure transfer equipment should be tested and, if need be, repaired before the hardware upgrade begins.

Software

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the format of the G2 disk/tape system (DTS).

If the customer plans to emulate existing G2 translations in the upgraded G3i V4, then these translations must be copied to a spare tape and sent to Software Technical Support (STS) so that reports of the current G2 translations and a G3-MA diskette with basic station translations can be generated. After STS receives the spare tape, this process takes one week. STS must return the G2 reports and the diskette to the Project Manager before the upgrade can begin. For each G2 processor, two tapes (one system tape and one backup tape) must always be retained on site with the G2 system.

After the reports arrive, many features will require special attention because of feature differences, form changes, and potential naming conflicts in the upgrade process.

During the upgrade, the Software Specialist should implement G3i V4 translations that are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3r Transition Reference*, 555-230-620
- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-498
- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204
- *DEFINITY Communications System Generic 2 Feature Description*, 555-105-301
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-653
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Alarm Connection

See NOTE. The D6 connector on G2 systems had 31 alarm-monitor appearances (Unit 1 to Unit 31) for external equipment. Whereas, the AUXILIARY connector on a DEFINITY G3i V4 PPN only has appearances for 1M (major alarm) and 1m (minor alarm). If the G2 system being upgraded used more than one major or more than one minor alarm-monitor appearance, these extra appearances, they can either be distributed to the AUXILIARY connector on a G3i V4 EPN, or ''ganged'' so that several external devices share the same appearance. The alarms can also be accommodated by paralleling them to the above connections.

NOTE:
When several external devices are ganged to the same appearance, each device loses its individual identity. An alarm on a shared appearance only denotes that one of several devices reported a problem. Subsequent maintenance effort is needed to determine which device reported the problem and the nature of the problem.

The control circuit pack behind the AUXILIARY connector detects external alarms with a ground-detector chip. Therefore, to gang several external devices, every device must be able to return a true relay ground closure to the AUXILIARY connector. Alternatives, such as a TTL low driver, are inadequate.

The following tables correlate wall-field terminal numbers, connector pin numbers, lead colors, and lead designations for the G2 D6 and G3i V4 AUXILIARY connectors.

Table 7-1. Pinouts for D6 Connector on G2 System

Terminal #	Pin #	Color	Desig.	Terminal #	Pin #	Color	Desig.
1	26	W-BL	UNIT20	2	01	BL-W	UNIT19
3	27	W-O	UNIT22	4	02	O-W	UNIT21
5	28	W-G	UNIT24	6	03	G-W	UNIT23
7	29	W-BR		8	04	BR-W	UNIT25
9	30	W-S	UNIT27	10	05	S-W	UNIT26
11	31	R-BL	UNIT29	12	06	BL-R	UNIT28
13	32	R-O	UNIT31	14	07	O-R	UNIT30
15	33	R-G	AUXCTMP	16	08	G-R	UNIT32
17	34	R-BR	EXTEQMN	18	09	BR-R	EXTEQMJ
19	35	R-S	AUXCRCT	20	10	S-R	AUXCHO
21	36	BK-BL	AUXCCB	22	11	BL-BK	AUXCFRQ
23	37	BK-O	AUXCFAN	24	12	O-BK	
25	38	BK-G	EXTPRMJ	26	13	G-BK	EXTPRMN
27	39	BK-BR	UNIT2	28	14	BR-BK	UNIT1
29	40	BK-S	UNIT4	30	15	S-BK	UNIT3
31	41	Y-BL	UNIT6	32	16	BL-Y	UNIT5
33	42	Y-O	UNIT8	34	17	O-Y	UNIT7
35	43	Y-G	UNIT10	36	18	G-Y	UNIT9
37	44	Y-BR		38	19	BR-Y	UNIT11
39	45	Y-S	UNIT13	40	20	S-Y	UNIT12
41	46	V-BL	UNIT15	42	21	BL-V	UNIT14
43	47	V-O	UNIT17	44	22	O-V	UNIT16
45	48	V-G		46	23	G-V	UNIT18
47	49	V-BR	RING0	48	24	BR-V	TIP0
49	50	V-S	RING1	50	25	S-V	TIP1

Table 7-2. Pinouts for Auxiliary Connector on G3i V4 System

Terminal #	Pin #	Color	Desig.	Terminal #	Pin #	Color	Desig.
1	26	W-BL	AUXMJ	2	01	BL-W	GRD
3	27	W-O	AUXMN	4	02	O-W	GRD
5	28	W-G		6	03	G-W	GRD
7	29	W-BR		8	04	BR-W	GRD
9	30	W-S		10	05	S-W	GRD
11	31	R-BL		12	06	BL-R	GRD
13	32	R-O		14	07	O-R	GRD
15	33	R-G		16	08	G-R	
17	34	R-BR		18	09	BR-R	
19	35	R-S		20	10	S-R	
21	36	BK-BL	XFER48	22	11	BL-BK	GRD
23	37	BK-O	XFER48	24	12	O-BK	GRD
25	38	BK-G	XFER48	26	13	G-BK	GRD
27	39	BK-BR	XFER48	28	14	BR-BK	GRD
29	40	BK-S	XFER48	30	15	S-BK	GRD
31	41	Y-BL	XFER48	32	16	BL-Y	GRD
33	42	Y-O	XFER48	34	17	O-Y	GRD
35	43	Y-G		36	18	G-Y	
37	44	Y-BR	GRD	38	19	BR-Y	ACC48A
39	45	Y-S	GRD	40	20	S-Y	ACC48B
41	46	V-BL	GRD	42	21	BL-V	ACC48C
43	47	V-O		44	22	O-V	
45	48	V-G	EXT_ALM	46	23	G-V	EXT_ALM_RT
47	49	V-BR		48	24	BR-V	
49	50	V-S	INADS TIP	50	25	S-V	INADS RING

Hardware Description

Circuit Packs

Seven different circuit packs are required for a basic G3i V4 system upgrade. The others are provided on an optional basis for G3i V4 features, as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel[1] 80386 microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also, an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

  Functions of the TN786B include:

  — Monitoring and controlling circuit-pack conditions

  — Monitoring the environmental sensor and control leads for a single processor operation

  — Controlling emergency-transfer operation

  — Providing direct access to a G3-MT terminal

  — Providing an interface to a CDR output device

  — Providing an external alarm closure

  — Reporting system status via alarm LEDs

- CPP1

  The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

1. Registered trademark of the Intel Corporation.

- TN777B

  The Netcon circuit pack (TN777B) does the following:

  — Houses the mass-storage DEFINITY memory card.

  — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.

  — Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility, a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

  Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).

  — Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.

  — Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

- TN768, TN780, or TN2182

  The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

  The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

  The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768, the TN780 can be assigned to:

— Produce six customized tones in five different tone plans for use outside the USA

— Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The three required EPN circuit packs are:

- TN775B

  The TN775B is the maintenance circuit in the expansion control carrier. It monitors and controls the clock, power signals, and the environment. It provides two serial links to communicate with Expansion Interface (EI) circuit packs. The TN775B also has an RS232C interface that allows an administration terminal to connect with the EPN.

- TN768, TN780, or TN2182

  The TN768, TN780, or TN2182 Tone-Clock supplies Stratum 4 or Stratum 3 timing to the port network (PN) where it resides. For more details, see the previous description under required PPN circuit packs.

- TN776 or TN570

  The TN776 or TN570 Expansion Interface (EI) is an interface between fiber-optic links that interconnect port networks and between the TDM bus and the packet bus (TN570 only). The EI provides control-channel connectivity and time-slot interchanging between the PPN and EPNs.

These circuit packs carry the following information: circuit-switched data, packet-switched data (TN570 only), network control, timing control, and DS1 control.

The TN570 also communicates with the EPN's TN775B maintenance circuit pack to relay the EPN's environmental and alarm status to the switch processing element (SPE).

The optional circuit packs are:

- TN771D

  The TN771D Maintenance/Test circuit pack is required in each port network of critical-reliability G3i V4 with the optional packet bus, and is optional for a standard- or high-reliability G3i V4. This circuit pack, which resides in a port slot, performs packet-bus reconfiguration and ISDN—PRI testing.

- TN772

  One TN772 Duplication Interface (DUP INT) per common control is required with either high or critical reliability. It selects the active processing element in a high- or critical-reliability system and coordinates the interchange of processing elements.

Other optional circuit packs include:

- TN556

  The TN556 ISDN—BRI circuit pack has 12 ports that provide circuit/packet connectivity for BRI endpoints using the 4-wire S/T interface. Each port has two 64-kbps B channels and one 16-kbps D channel (not used to carry data). The TN556 also provides passive bus (multipoint drop) support, allowing two endpoints (either two voice terminals, two data terminals, or one voice terminal and one data terminal) to connect to each BRI port.

  The TN556 also allows eight ports to provide an interface links for ASAI/CVS applications with Inbound Call Management (ICM) feature.

- TN726B

  The TN726B Data Line circuit pack provides eight EIA ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints [including data terminals, printers, host computers, personal computers, graphics systems, facsimile machines, and call-detail acquisition and processing systems (CDAPs)] and uses the Mode 2 data-transfer protocol.

- TN744 or TN744C

  The TN744 Call Classifier has eight detectors that recognize tones for Outgoing Call Management (OCM) and Call Prompting applications. For the OCM application, the TN744 detects special network intercept tones. The TN744 also detects answer supervision from a serving central office (CO).

  The TN744Bv10 and later versions provide tone detection. Prior to TN744Bv10, the TN744 provides call classification only.

  The TN744C Call Classifier/Detector circuit pack has eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

  The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN464C

  The TN464C serves as both a DS1 and an ISDN—PRI interface. This circuit pack, which can reside in any G3i V4 port slot, has the following attributes:

  — Complies with the 1.544-Mbps North American DS1 standard

  — Converts the European A-law to the North American mu-law companding algorithm

  — Operates compatibly with the optional Stratum 3 clock

  — Provides D-channel connectivity for ISDN—PRI

- TN767B

  The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN—PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

- TN736/TN752

  The TN736 Power Unit provides -5 VDC on the backplanes of all carriers for the port circuit packs. It is required in a G3i V4 upgrade if the system is equipped with a 631BR1 or 631WB1 power unit. The TN752 provides the same capabilities plus power for neon message lamp.

- TN755

  The TN755 Power Unit circuit pack provides 150 VDC for neon message waiting. It should be used in conjunction with an Analog Line circuit pack that supports neon message waiting (TN746 and TN769). Each carrier containing an analog circuit pack for neon message waiting requires the TN755.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port-Network Configurations

Every G3i V4 port-network configuration contains one PPN which, for this G3i V4 upgrade, is always a new multicarrier cabinet. Larger configurations can contain either one or two EPNs. Figure 7-2 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe various upgrades to a G3i V4 with either two or three port networks.

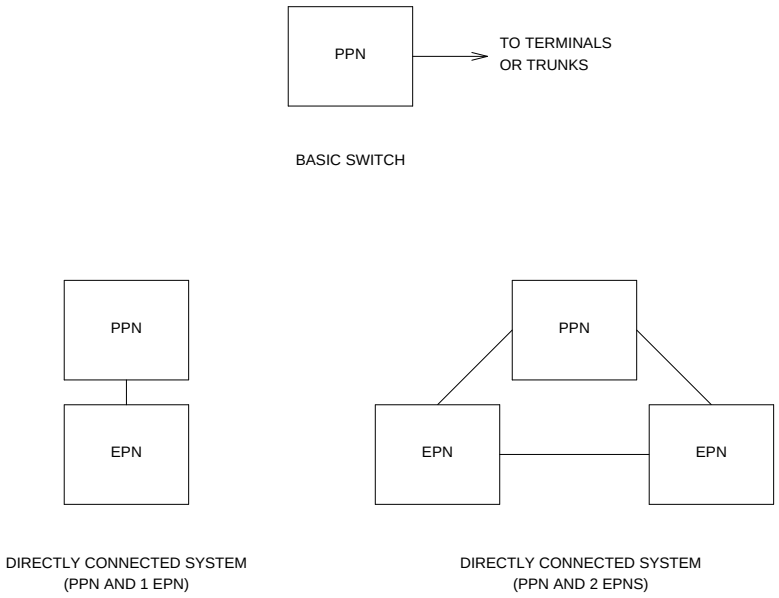


Figure 7-2. G3i V4 Port-Network Configurations

Software-Translation Upgrade

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the format of the G2 disk/tape system (DTS).

During an upgrade from a G2 to a G3i V4, STS generates TRACS reports (that show the current software translations) and G3-MA diskettes (with basic station translations) in the G2 system and sends the reports to the Project Manager. To enable these activities, replace the system tape with a spare G2 tape. (Spare G2 tape cartridges can be acquired from the QPPCN before the upgrade.) Then, copy the current G2 translations to the spare tape, and overnight mail to STS. Also, put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure that the customer's switch administrator keeps detailed records of any translation changes made during that interval. These records will supplement the TRACS reports to facilitate the transition from G2 to G3i V4 software translations.

The TRACS reports with the current G2 translations must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager II on the G2.
2. Enter **rtx** (run tape, execute). Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. Remove the system tape, install the backup tape, and wait for the tape to retension.
4. Enter **rtx** (run tape, execute). Press RETURN.

Make Source Tape for TRACS Report

A spare G2 tape must be acquired from the QPPCN before performing the following steps. For each processor, there must always be two tapes on site with the G2 system. Do not send a system or backup tape to STS.

After performing the previous procedures, copy the G2 translations to the spare tape used to make the TRACS report. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. Enter **rtx** (run tape, execute). Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to STS for use in making the G2 TRACS report.

System Upgrades

There are many configurations of DEFINITY G2 in the field. In terms of both hardware and software, each system can have a unique configuration. However, to simplify G3i V4 upgrades:

- The existing common control is always replaced by a multicarrier PPN
- Existing traditional modules are replaced by EPNs [2]
- Existing universal modules are upgraded to EPNs

A new multicarrier cabinet would then always serve as the PPN.

If a G2 universal module is upgraded to a G3i V4 EPN, hardware changes (including carrier replacement) are required.

This section gives a sequential list of the steps required to upgrade the system.

Standard-Reliability G2 to Standard-Reliability G3i V4

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

If traditional modules are being replaced by EPNs, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPNs.

Upgrade Cabinets

An existing universal-module cabinet is always upgraded to an EPN. Upgrade the cabinets using the following procedures.

A standard-reliability G2 universal module is upgraded to a standard-reliability G3i V4 EPN by:

- Removing the module control carrier in position ‘‘A’’
- Installing the J58890AF expansion control carrier in position ‘‘A’’
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

2. There is not necessarily a one-to-one correspondence between G3i V4 EPNs and G2 modules. With careful hardware and traffic engineering, an upgraded G3i V4 can have fewer EPNs than the G2 had modules.

Prerequisite Hardware

The equipment in Table 7-1 *must* be on-site before the upgrade begins. Ensure that the translation memory card is current and, if necessary, contains enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 7-3. Required Hardware

Equipment	Description	Quantity
PEC 6300-05X	Processor Port Network	1
J58890AF-1	Expansion Control Carrier	1
106647985	TN775B Maintenance	1
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2 or 6 (Note 1) 2 or 6 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 (Note 3)
63300A	FL2P-P-XX Fiber Cable	1 or 3 (Note 4)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 or 6 (Note 5) 2 or 6 (Note 5)

Notes:

1. Depending on the number of G3i V4 EPNs. Two are required for a standard-reliability system with two port networks; six with three port networks. Either one or four Expansion Interfaces (EIs) are shipped loose with the EPN equipment. The factory has installed either one or two EIs in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. A 4-Mbyte translation memory card is required for a system that uses recorded announcements.

4. Depending on the number of G3i V4 EPNs. Two or six are required if the PPN and EPN(s) are remotely located. Assuming acceptable lengths, the fiber that previously connected an upgraded G2 universal module (*not* a traditional module) to the G2 TMS has the correct transceiver connectors and, therefore, can be reused.
5. One pair for each fiber connection. For each connection, either one 9823-type lightwave transceiver is installed in an EPN and one in the PPN. A 9823-type transceiver can be reused from each upgraded G2 universal module. Additional 9823-type transceivers, ordered separately, are also shipped loose with the EPN equipment.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Power Down G2 System

1. At the common control’s power-distribution unit, set the main circuit breaker to OFF.
2. At the universal module’s power-distribution unit, set the main circuit breaker to OFF.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap’s lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Doors and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).

2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. (This slot is adjacent to the part number.) Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot, and twist the screwdriver. The retainer will snap open easily so that the cable can be removed.
3. At the cabinet, disconnect previously labeled cables associated with the carrier to be removed.
4. Behind a ''DEFINITY style'' cabinet, remove the back doors from the cabinet.
5. Behind a previously upgraded cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Module Control Carrier A

1. To ensure that power units in the ''A'' carrier are properly replaced, label each power unit with its slot number.
2. Disconnect the power cords from the power units in the ''A'' carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

4. Remove the circuit-pack blanks from slots that do not contain circuit packs.
5. Remove the front trim plate from the ''A'' carrier by pulling straight off.

Remove CURL from Module Control Carrier A

See NOTES. Remove the CFY1 current limiter (CURL) from the pin-field block marked ''CURL'' on the ''A'' carrier. The CURL is reused in the G3i V4 EPN.

NOTE:
Note the position of the components on the left side of the CURL.

NOTE:
Verify the CURL meets the minimum usable vintage requirements.

Remove Module Control Carrier A

1. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘C’’ carriers) from the ‘‘A’’ carrier (see Figure 7-3).
2. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 7-3).

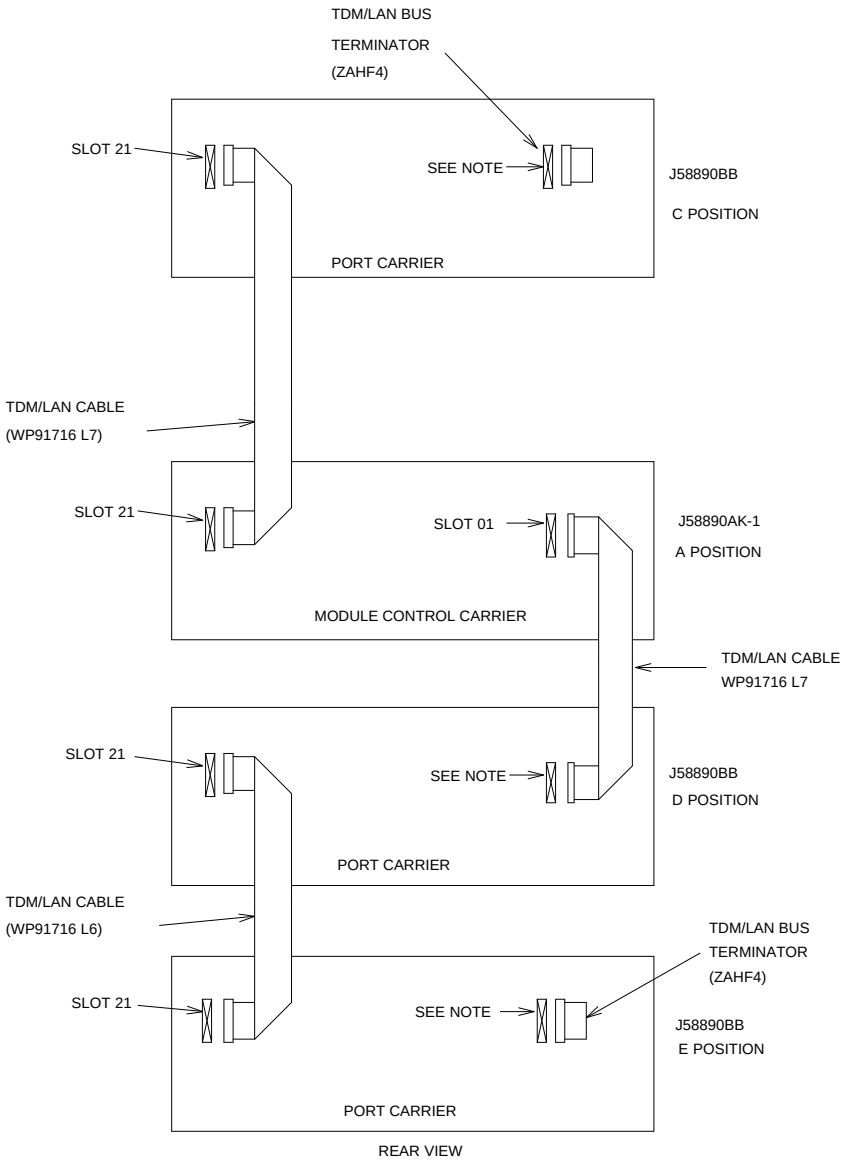
CAUTION:
When removing the TDM/LAN cables from a previously upgraded carrier, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Note the position of the cable before disconnecting the TDM/LAN cables.

3. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘C’’ carriers) from the ‘‘A’’ carrier (see Figure 7-4). These straps will be reconnected to the new ‘‘A’’ carrier.
4. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 7-4). These straps will be reconnected to the new ‘‘A’’ carrier.
5. Disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 38-pin) connector from the ‘‘A’’ carrier (see Figure 7-5). Move the cables into a position where they will not interfere with removing the carrier.
6. Remove the fan trim plate by pulling straight off.
7. Clean or replace the air filter (403326820) if necessary.
8. In front of carrier, remove the four screws (top two first) holding the ‘‘A’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
9. Behind the carrier in a ‘‘DEFINITY style’’ cabinet, remove the two screws holding the ‘‘A’’ carrier’s rear connector panel to the cabinet frame.
10. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

CAUTION:
Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

11. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 7-3. TDM/LAN Connections for Standard-Reliability G2 Universal Module

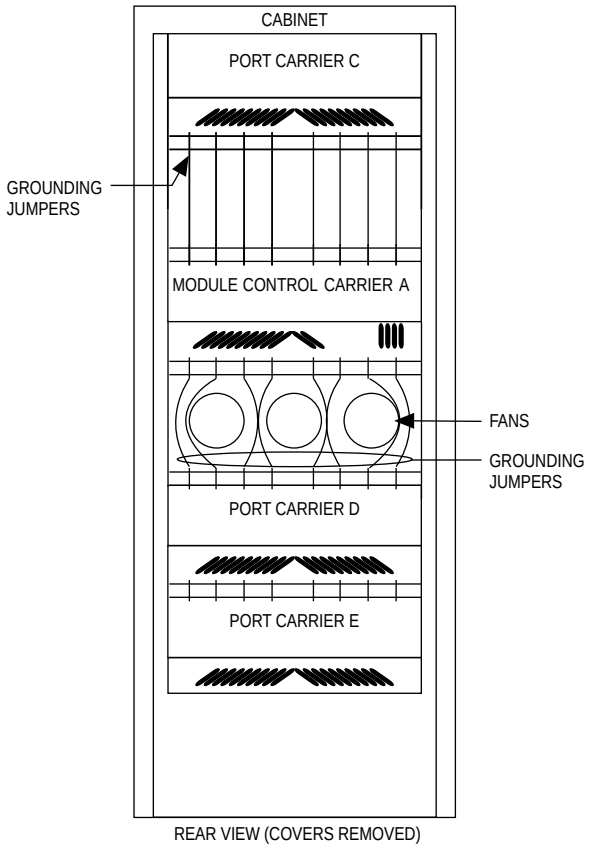


Figure 7-4. Locations of Grounding Jumpers

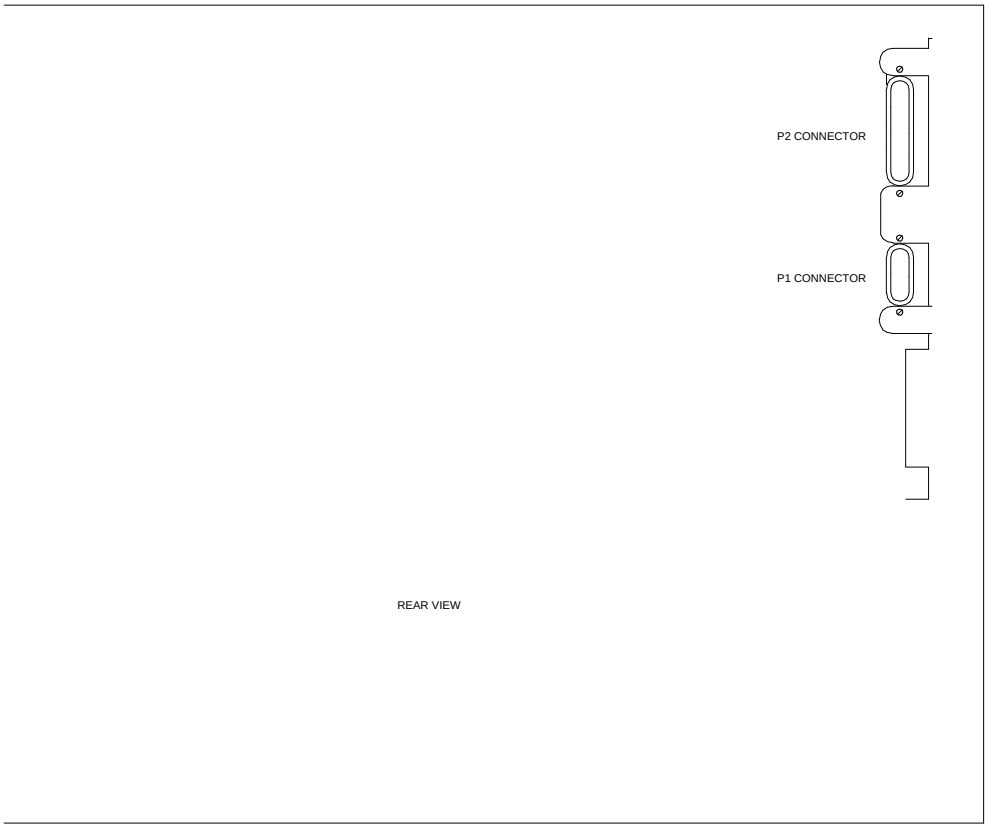


Figure 7-5. Location of P1 and P2 Connectors

Prepare New Expansion Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block markeed ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install New Expansion Control Carrier A

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being replaced. Ensure that the power cords are properly placed in the slots at the sides of the carrier.
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

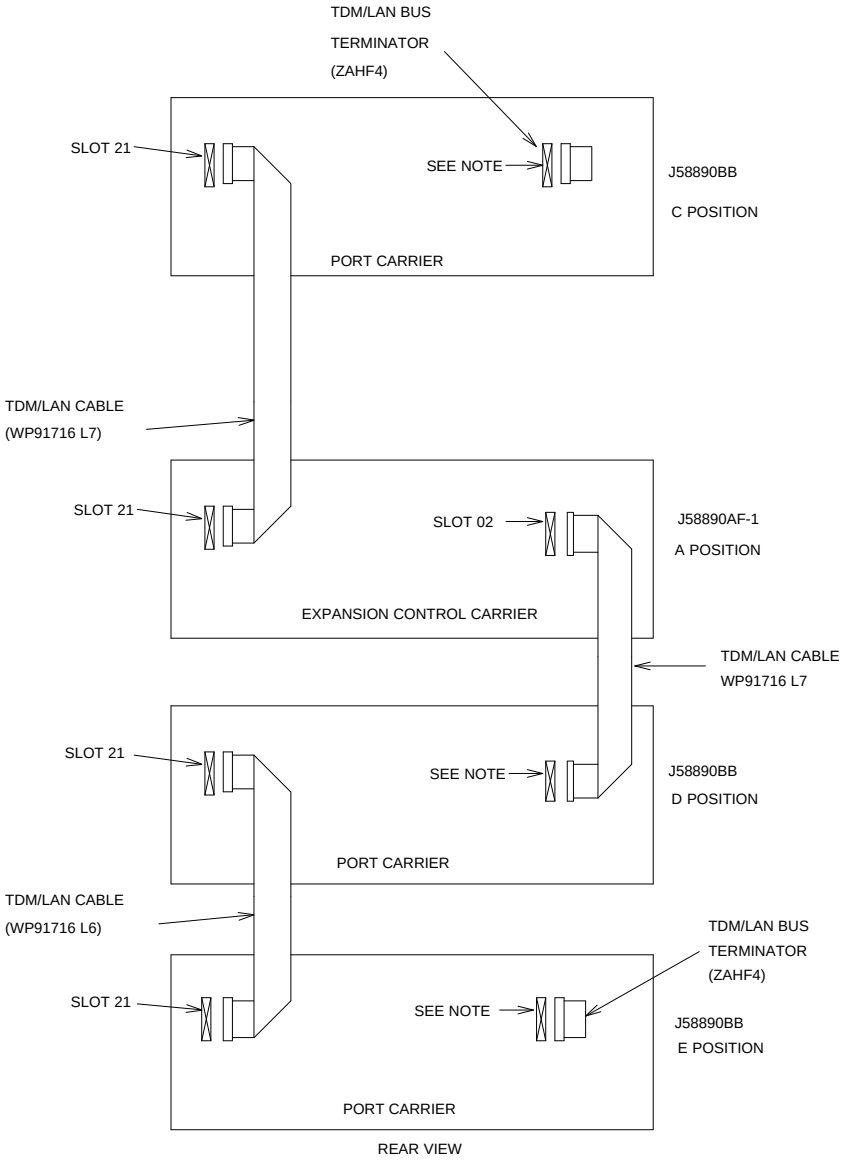
   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Behind the carrier in a ‘‘DEFINITY style’’ cabinet, replace the two screws saved from the removal of the old carrier.
4. Connect the ‘‘P2’’ and ‘‘P1’’ (large and small) connectors to the ‘‘A’’ carrier (see Figure 7-5). If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area being installed. Snap the connector lock into place to ensure the connection is properly made.
5. Connect the eight ground straps from the ‘‘C’’ carrier to the new ‘‘A’’ carrier (see Figure 7-4). These straps were left connected to the ‘‘C’’ carrier when the old ‘‘A’’ carrier was removed.
6. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 7-4). These straps were left connected to the ‘‘D’’ carrier when the old ‘‘A’’ carrier was removed.

7. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ''1'' to the A-carrier frame (on the right side), and the other connects ground point ''8'' to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

8. Connect the loose end of the TDM/LAN cable (between the ''A'' and ''D'' carriers) to the pin-field block marked ''TDM'' on the right side of the ''A'' carrier (see Figure 7-6 and Table 7-5). The other end remained connected to the ''D'' carrier when the old carrier was removed.
9. Connect the loose end of the TDM/LAN cable (between the ''A'' and ''C'' carriers) to the pin-field block marked ''TDM'' on the left side of the ''A'' carrier (see Figure 7-6 and Table 7-5). The other end remained connected to the ''C'' carrier when the old carrier was removed.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 7-6. TDM/LAN Connections for Standard-Reliability G3i V4 EPN

Table 7-4. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control "A"	21	02

10. Install the front trim plate on the "A" carrier. Install the fan trim plate.
11. Install the power units (removed from G2 universal module) into the "A" carrier. There are four different pairs of power units available. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, the 631DA1 and 631DB1, and the 644A and 645B.

    Do not interchange the physical locations of the units. The 631AR1, 631WA1, 631DA1, or 644A are installed in the left side, while the 631BR1, 631WB1, 631DB1, or 645B are installed in the right side (see Figure 7-7).
12. If the expansion control carrier contains a 631BR1, 631WB1, or 645B power unit, install the previously removed TN736 power unit in port slots "18" and "19" of the carrier (adjacent to the 631BR1, 631WB1, or 645B). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    The TN736 is not required when the 631DB1 or 645B power unit is used in the J58890AF-1 expansion control carrier or the J58890BB-2 or J58890BB-3 port carriers. It is required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use the TN752 or TN755 if the system is equipped with neon message waiting.
13. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 7-8).

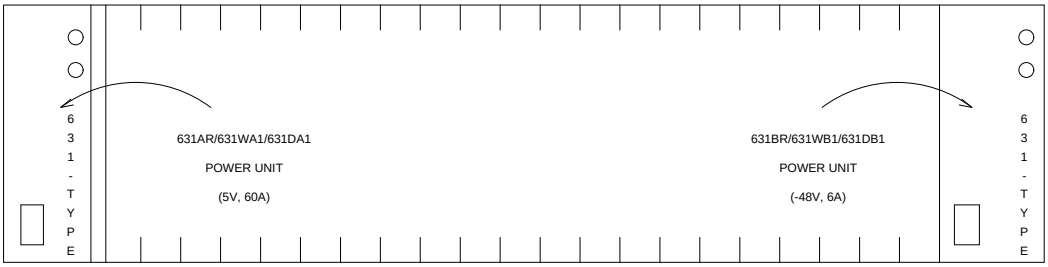


Figure 7-7. Locations of Power Units

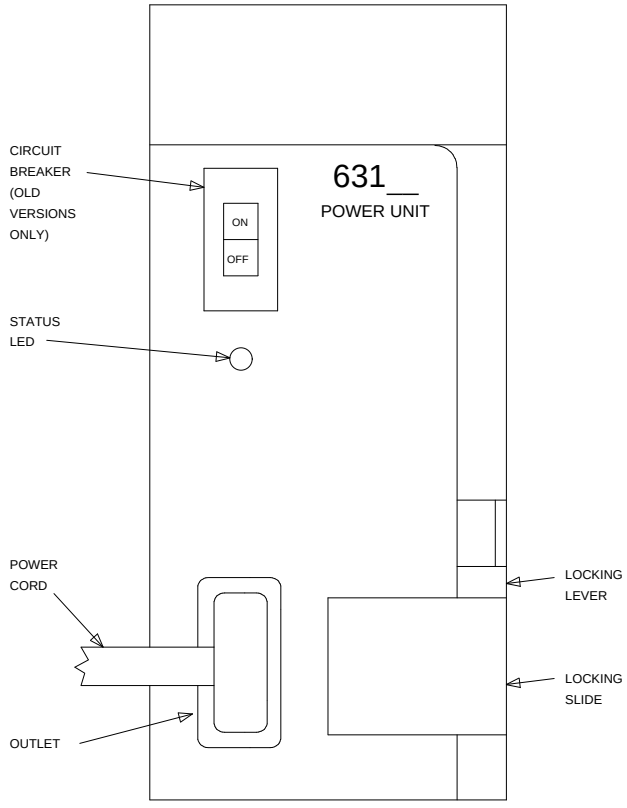


Figure 7-8. 631-Type Power Unit

Install Circuit Packs

1. See WARNING and NOTE. Install the new G3i V4 control circuit packs into carrier ''A.'' See Figure 7-9. The new decal, and the annotated ''list configuration all'' (provided with the G3i V4 tape) as a guide.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

   NOTE:
   Currently, the TN768 Tone-Clock circuit pack resides in a port slot of the universal module being upgraded. As part of this step, relocate this circuit pack to the ''TONE CLOCK'' slot of carrier ''A.'' AT&T recommends that you upgrade to the TN2182 Tone-Clock.

2. Install circuit-pack blanks in slots not equipped with circuit packs.
3. For a directly connected standard-reliability G3i V4 system with two port networks, ensure that the PPN and this EPN are both equipped with a TN776 or TN570 expansion interface circuit pack.

   For a directly connected system with three port networks, ensure that the PPN and each EPN have two TN776s or TN570s.

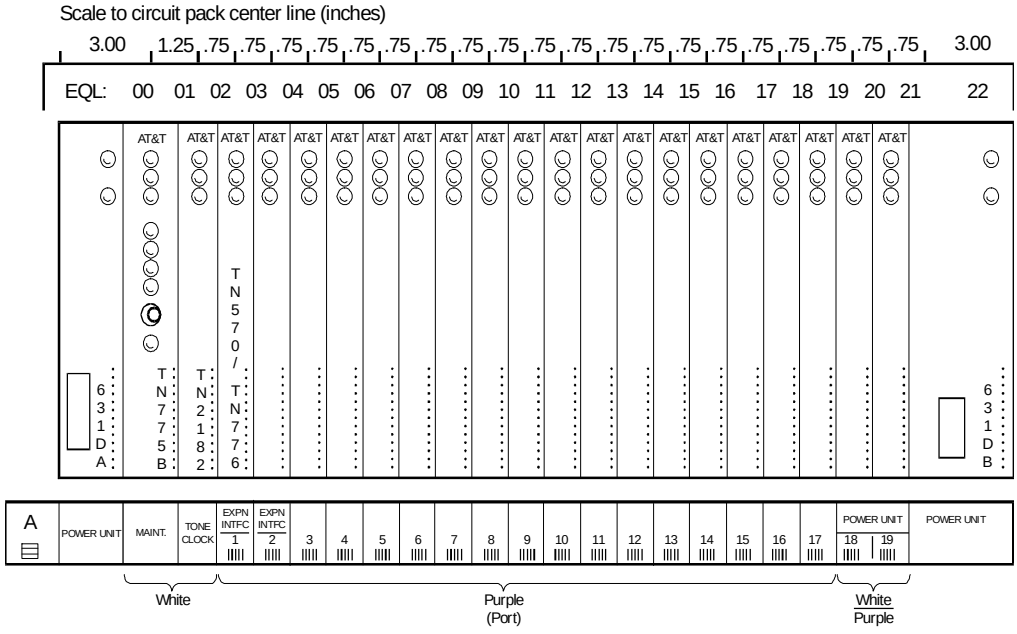


Figure 7-9. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

Interconnect Port Networks — Standard-Reliability System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either "TX" (transmit) or "RX" (receive), while the fibers attached to each connector are numbered either "1" or "2." A viable fiber connection is only made when both fibers in each cable (that is, "1" and "2") route from the "TX" connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 7-11 on page 7-37.

NOTE:
For implementation details, refer to the "Fiber Link Administration" sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a standard-reliability system with one collocated expansion port network, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to directly connect the networks.

For a standard-reliability system with two collocated expansion port networks, three fiber-optic cables (FL2P-P-XX) and six lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to the EPN cabinet. If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with another ''DEFINITY style'' EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with either a small cabinet, medium cabinet, or single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

For a standard-reliability system with one fiber-remoted expansion port network, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

For a standard-reliability system with two fiber-remoted expansion port networks, six fiber-optic cables (FL2P-P-XX), six lightwave transceivers (9823-type), and six lightwave-interface units (provided by the PSC) are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

In either case, use cable ties to secure the cable against the walls of the cable tray at the cable-tie positions built into the trays.

For Either One or Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-10, Figure 7-11, Figure 7-12, and Figure 7-13):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.
3. Behind control carrier A of EPN cabinet 2:
   - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

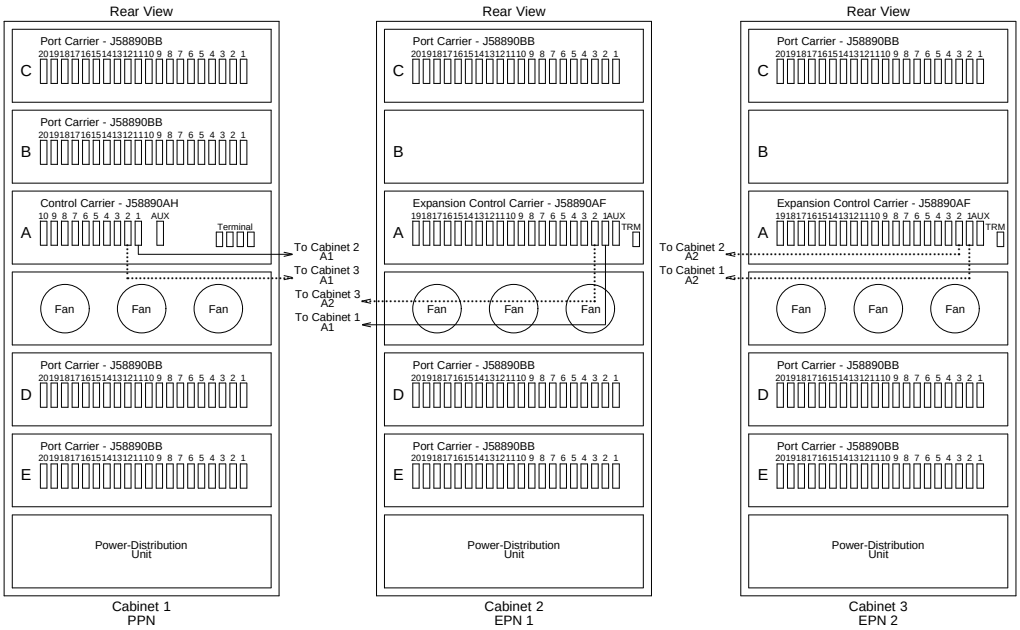


Figure 7-10. Standard-Reliability G3i V4 with Two or Three Port Networks

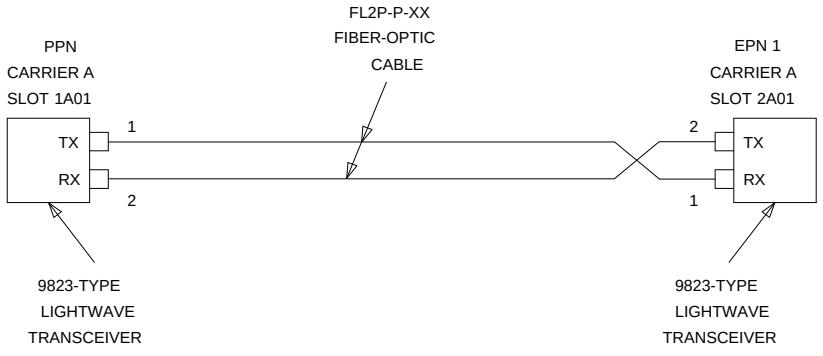


Figure 7-11. Fiber-Optic Connections PPN to EPN1

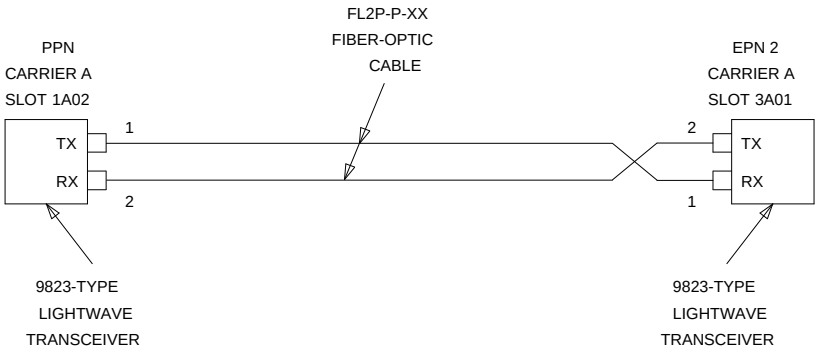


Figure 7-12. Collocated Fiber-Optic Connections PPN to EPN2

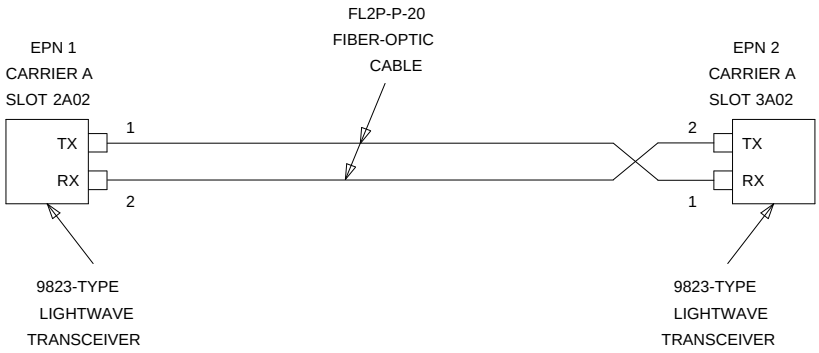


Figure 7-13. Collocated Fiber-Optic Connections EPN1 to EPN2

For Either One or Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-14, Figure 7-15, Figure 7-16, and Figure 7-17):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable to the lightwave transceiver slot 2A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

For Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the fiber-optic cable to the lightwave transceiver slot 3A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

3. Behind control carrier A of EPN cabinet 2:
    - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind control carrier A of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the fiber-optic cable to the lightwave transceiver slot 3A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

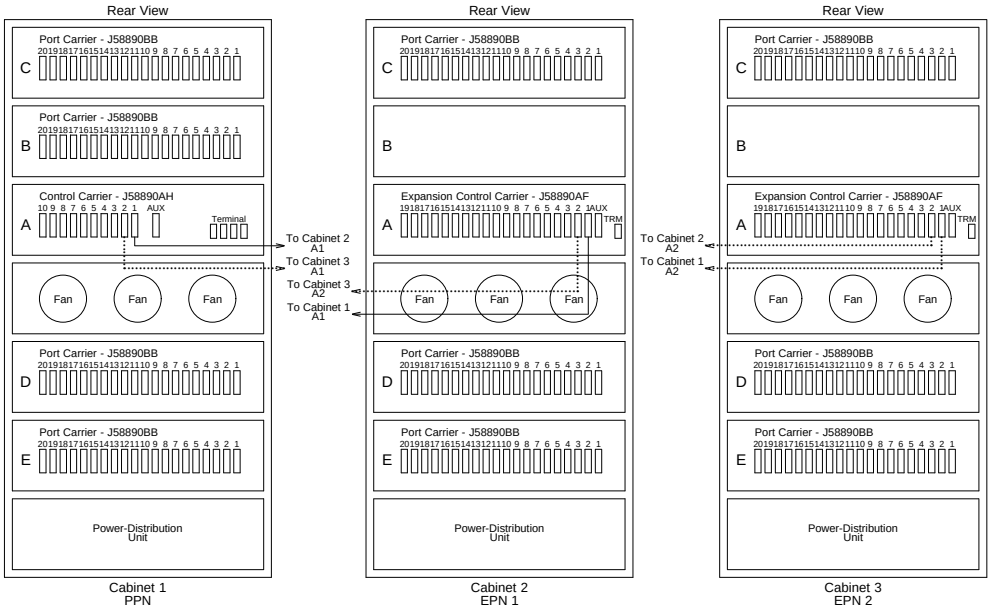


Figure 7-14. Standard-Reliability G3i V4 with Two or Three Port Networks

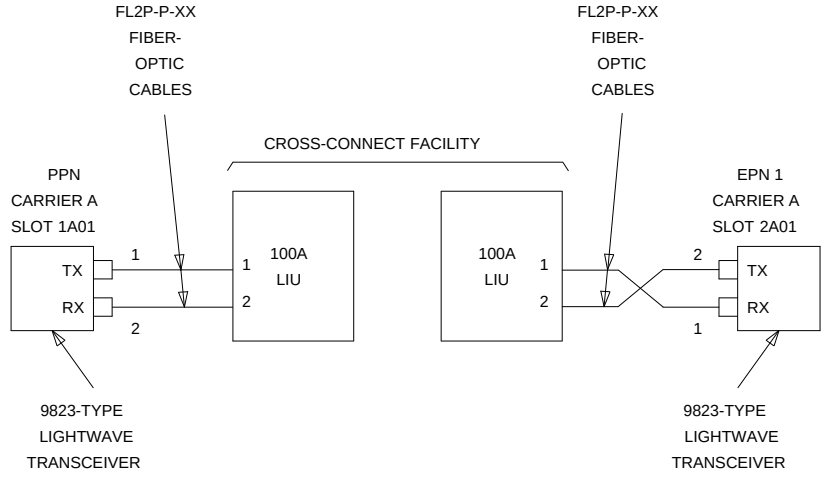


Figure 7-15. Fiber-Optic Connections PPN to EPN1

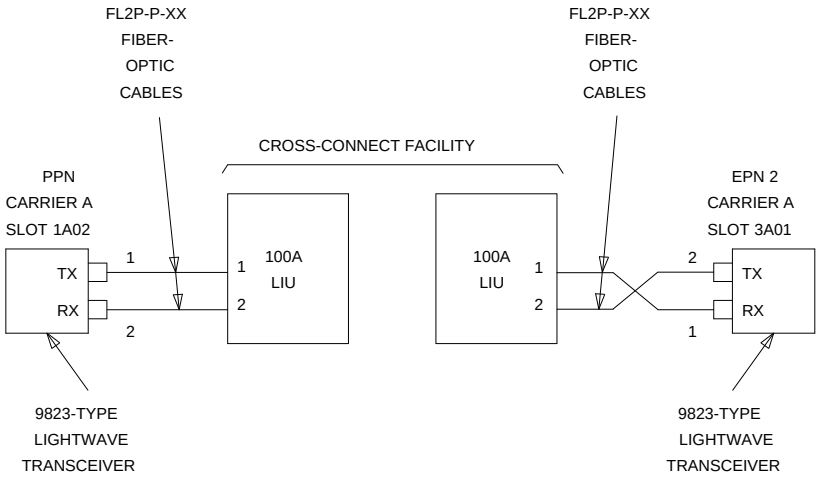


Figure 7-16. Fiber-Optic Connections PPN to EPN2

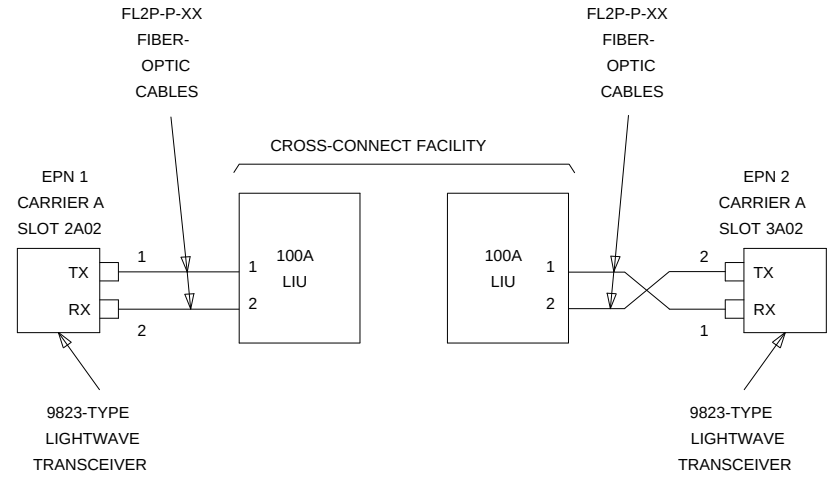


Figure 7-17. Fiber-Optic Connections EPN1 to EPN2

Verify Usable Circuit-Pack Vintages

Verify that every G2 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Boot the G3i V4 System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. Verify that the translation memory card is inserted in the TN777B faceplate.

   NOTE:
   The memory card is keyed to assure proper installation. Insert the card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At each EPN power-distribution unit, set the main circuit breaker to ON.
4. At the PPN power-distribution unit, set the main circuit breaker to ON.
5. The system now goes through the reset level 4 rebooting process, loading default system translations from the memory card. Rebooting takes 8 to 11 minutes.

   Refer to the "System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
6. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option and other right-to-use options can be enabled on the upgraded system.
7. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.

8. Enter **`list configuration software-version`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
9. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option and to assign the customer's other right-to-use options on the G2-to-G3i V4 upgrade order. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-653, for details on enabling these options.
10. Enter **`change site-data`**. Press RETURN. Use this form to assign system-specific information (such as building, floor, stations, etc.)
11. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the memory card.

WARNING:
If the terminal screen displays "translation corruption detected; call AT&T distributor immediately", an error was detected in the translations. Call your AT&T representative.

Close Upgraded EPN Cabinet and Reconnect Cables

1. At the power-distribution unit of the upgraded EPN, set the main circuit breaker to OFF.

NOTE:
Powering down an EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to each EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back doors or back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.

Power Up the EPN Cabinets

1. At each EPN power-distribution unit, set the main circuit breaker to ON. After about 40 seconds, EPN power and PPN/EPN communications return.
2. After power returns to each EPN and all trouble is cleared, verify the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the G2 module control carrier were relocated in order to put:

- A critical port circuit pack, requiring longer nominal battery holdover (such as a DS1 or an Announcement circuit pack), in a port slot
- A TN736, TN752, or TN755 power supply in port slots ''18'' and ''19''
- A TN776 or TN570 Expansion Interface in port slot ''1''
- A TN776 or TN570 in port slot ''2'' (for a second directly connected EPN)

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced G2 Equipment

The G2 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced G2 equipment includes:

- G2 common control (CC) cabinet, carriers, and circuit packs and G2 time-multiplexed switch (TMS) cabinet, carriers, and circuit packs

  or

  G2 CC/TMS cabinet, carriers, and circuit packs
- G2 traditional module cabinets, carriers, and circuit packs
- G2 universal module control carrier (J58890AK) and control circuit packs
- G2 tape cartridges
- 4-series lightwave transceivers

High-Reliability G2 to High-Reliability G3i V4

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

If traditional modules are being replaced by EPNs, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPNs.

Upgrade Cabinets

An existing universal-module cabinet is always upgraded to an EPN. Upgrade the cabinets using the following procedures.

A high-reliability G2 universal module is upgraded to a high-reliability G3i V4 EPN by:

- Removing the module control carrier in position ''A''
- Installing the J58890AF-1 expansion control carrier in position ''A''
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 7-5 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ''1-800-772-5409,'' and respond to the call prompter.

Table 7-5. Required Hardware

Equipment	Description	Quantity
PEC 6300-05X	Processor Port Network	1
J58890AF	Expansion Control Carrier	1
106647985	TN775B Maintenance	1
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2 or 6 (Note 1) 2 or 6 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	2 (Note 3)
J58890TF	Tape Cartridge	4
63300A	FL2P-P-XX Fiber Cable	1 or 3 (Note 4)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 or 6 (Note 5) 2 or 6 (Note 5)

Notes:

1. Depending on the number of G3i V4 EPNs. Two are required for a high-reliability system with two port networks; six with three port networks. Either one or four Expansion Interfaces (EIs) are shipped loose with the EPN equipment. The factory has installed either one or two EIs in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.
4. Depending on the number of G3i V4 EPNs. Two or six are required if the PPN and EPN(s) are remotely located. Assuming acceptable lengths, the fiber that previously connected an upgraded G2 universal module (*not* a traditional module) to the G2 TMS has the correct transceiver connectors and, therefore, can be reused.
5. One pair for each fiber connection. For each connection, one 9823-type lightwave transceiver is installed in an EPN, and one in the PPN. A 9823-type transceiver can be reused from each upgraded G2 universal module. Additional 9823-type transceivers, ordered separately, are also shipped loose with the EPN equipment.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed (if not already labeled).

Power Down G2 System

1. At the power-distribution unit, set the main circuit breaker to OFF.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Doors and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. This slot is adjacent to the part number. Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot. Twist the screwdriver while the blade is in the slot. The retainer will snap open easily, and the cable can be removed.
3. Disconnect previously labeled cables associated with the carrier to be removed.
4. Behind a ''DEFINITY style'' cabinet, remove the back doors from the cabinet.
5. Behind a previously upgraded cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Module Control Carrier A

1. To ensure that power units in the ‘‘A’’ carrier are properly replaced, label each power unit with its slot number.
2. Disconnect the power cords from the power units in the ‘‘A’’ carrier.
3. See WARNING. Remove all circuit packs and power units from carrier ‘‘A.’’ Store the circuit packs in the static-proof packaging.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

4. Remove the circuit-pack blanks from slots that do not contain circuit packs.
5. Remove the front trim plate from the ‘‘A’’ carrier by pulling straight off.

Remove CURL from Module Control Carrier A

See NOTES. Remove the CFY1 current limiter (CURL) from the pin-field block marked ‘‘CURL’’ on the ‘‘A’’ carrier. The CURL will be reused in the G3i V4 EPN.

NOTE:
Note the position of the components on the left side of the CURL.

NOTE:
Verify that the CURL meets the minimum usable vintage requirements.

Remove Module Control Carrier A

1. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘C’’ carriers) from the ‘‘A’’ carrier (see Figure 7-18 on page 7-53). Leave the other end connected to the ‘‘C’’ carrier, and move the cable into a position so that it will not interfere with removing the ‘‘A’’ carrier.
2. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier (see Figure 7-18). Leave the other end connected to the ‘‘D’’ carrier, and move the cable into a position so that it will not interfere with removing the ‘‘D’’ carrier.

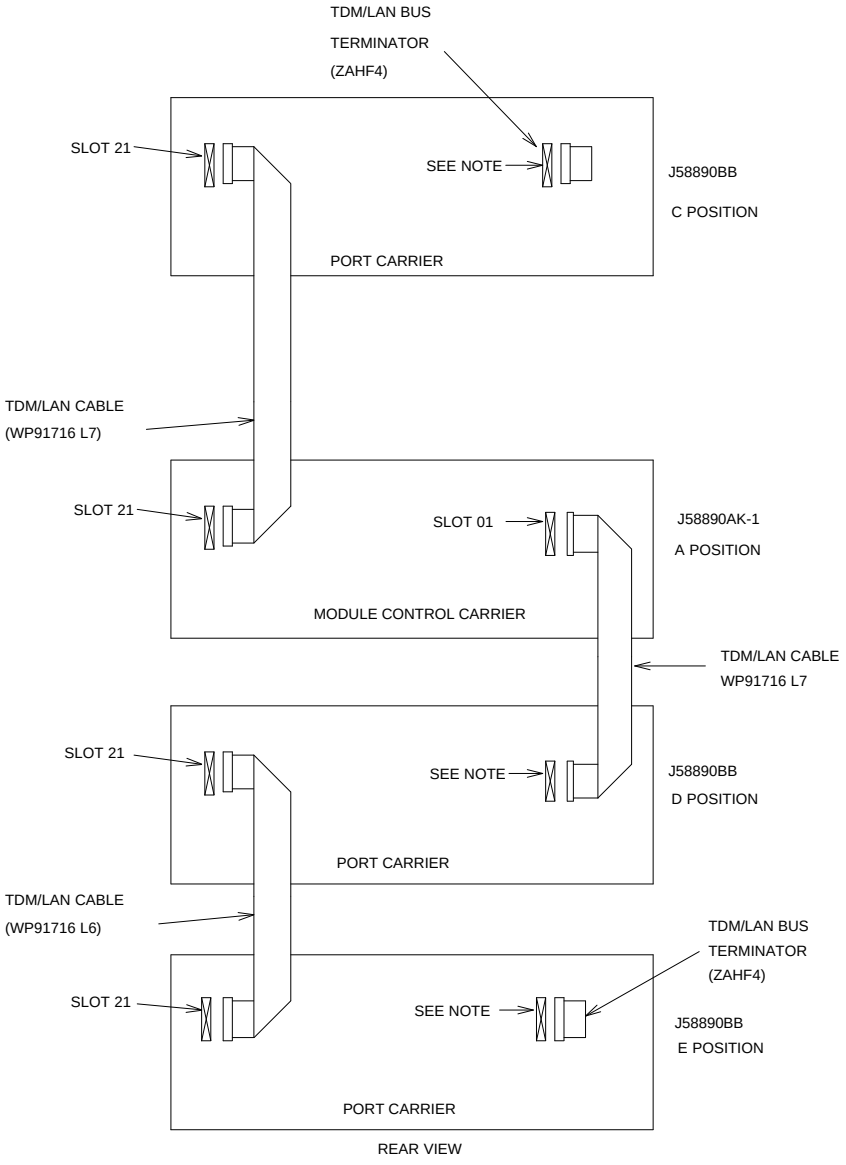
CAUTION:
When removing the TDM/LAN cables from a previously upgraded carrier, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

NOTE:
Note the position of the cable before disconnecting each TDM/LAN cable.

3. Disconnect one end of the eight ground straps (between the ''A'' and ''C'' carriers) from the ''A'' carrier (see Figure 7-19 on page 7-54). These straps will be reconnected to the new ''A'' carrier.
4. Disconnect one end of the eight ground straps (between the ''A'' and ''D'' carriers) from the ''A'' carrier (see Figure 7-19). These straps will be reconnected to the new ''A'' carrier.
5. Disconnect the ''P1'' (small 9-pin) connector and the ''P2'' (large 38-pin) connector from the ''A'' carrier (see Figure 7-20 on page 7-55). Move the cables into a position where they will not interfere with removing the carrier.
6. Slide the latch up, and disconnect the ''P1'' (small 9-pin) connector from the ''B'' carrier (see Figure 7-20). Move the cable into a position where it will not interfere with removing the carrier.
7. Remove the fan trim plate by pulling straight off.
8. Clean or replace the air filter (403326820) if necessary.
9. In front of carrier, remove the four screws (top two first) holding the ''A'' carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
10. Behind the carrier in a ''DEFINITY style'' cabinet, remove the two screws holding the ''A'' carrier's rear connector panel to the cabinet frame.
11. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

    CAUTION:
    Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

12. Remove the carrier by sliding it out the front of the cabinet.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLES TO SLOT 01.

Figure 7-18. TDM/LAN Connections for High-Reliability G2 Universal Module

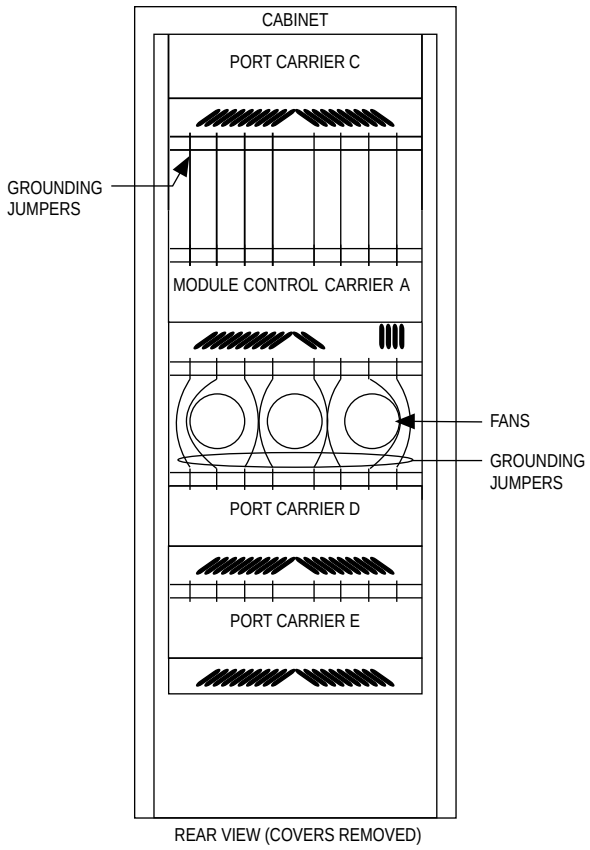


Figure 7-19. Locations of Grounding Jumpers

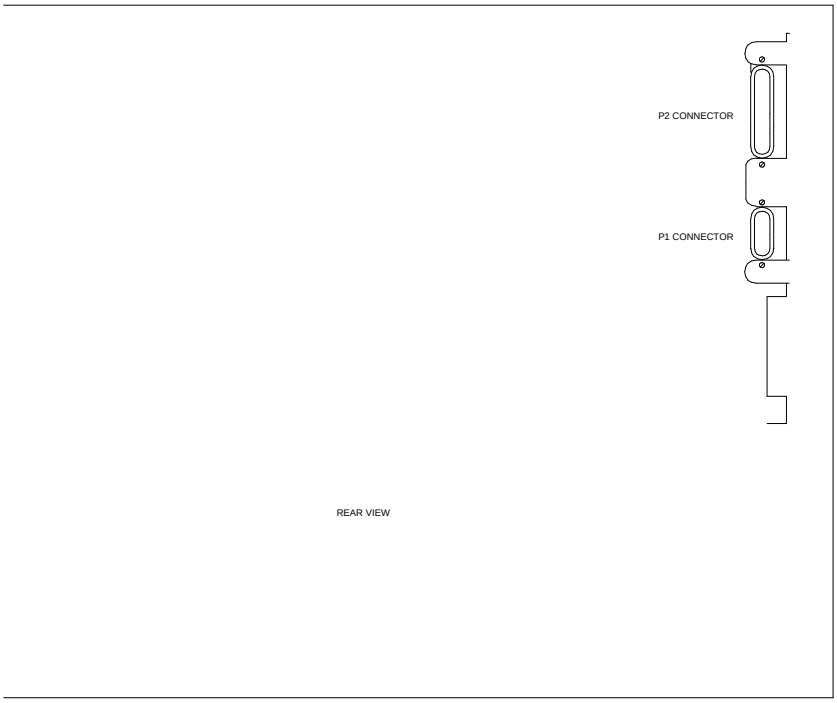


Figure 7-20. Location of P1 and P2 Connectors

Prepare New Expansion Control Carrier A

1. Visually inspect the new carrier for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install New Expansion Control Carrier A

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being replaced. Ensure that the power cords are properly placed in the slots at the sides of the carrier.

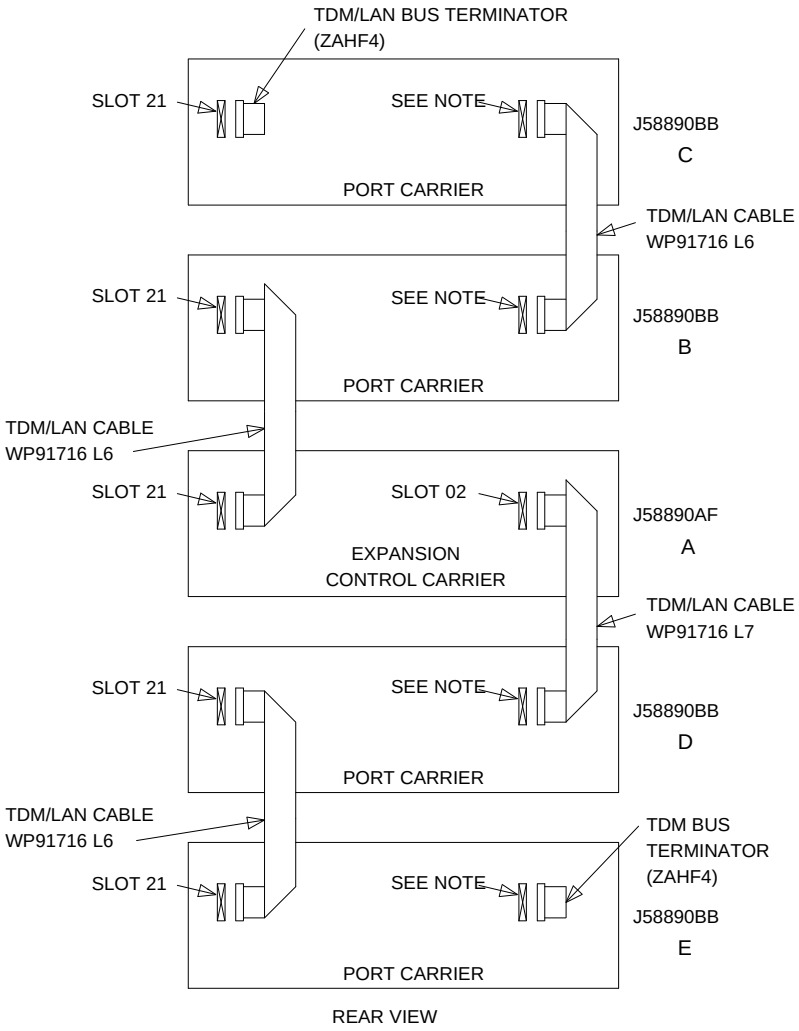
2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Behind the carrier in a ''DEFINITY style'' cabinet, replace the two screws saved from the removal of the old carrier.
4. Connect the "P2'' and "P1'' (large and small) connectors to the ''A'' carrier. If necessary, to get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure the connection is properly made (see Figure 7-20).
5. Connect the ''P1'' (small) connector to the ''C'' carrier. To get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure the connection is properly made (see Figure 7-20).
6. Connect the eight ground straps from the ''D'' carrier to the new ''A'' carrier (see Figure 7-19). These straps were left connected to the ''D'' carrier.
7. Connect the eight ground straps from the ''C'' carrier to the new ''A'' carrier (see Figure 7-19). These straps were left connected to the ''C'' carrier.
8. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ''1'' to the A-carrier frame (on the right side), and the other connects ground point ''8'' to the A-carrier frame (on the left side).

   NOTE:
   DC-powered carriers do not use these carrier-ground straps.

9. Connect the loose end of the TDM/LAN cable (between the ''A'' and ''D'' carriers) to the pin-field block marked ''TDM'' on the right side of the ''A'' carrier (see Figure 7-21 and Table 7-6). The other end remained connected to the ''D'' carrier when the old carrier was removed.
10. Connect the loose end of the TDM/LAN cable (between the ''A'' and ''C'' carriers) to the pin-field block marked ''TDM'' on the left side of the ''A'' carrier. The other end remained connected to the ''C'' carrier when the old carrier was removed.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM CABLES TO SLOT 01.

Figure 7-21. TDM/LAN Connections for High-Reliability G3i V4 EPN

Table 7-6. TDM/LAN Connections

"J" Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control "A"	21	02

11. Install the front trim plate on the "A" carrier.
12. Install the power units (removed from G2 module control carrier) into the "A" carrier. There are four different pairs of power units available. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, the 631DA1 and 631DB1, and the 644A and 645B.

    Do not interchange the physical locations of the units. The 631AR1, 631WA1, 631DA1, or 644A are installed in the left side, while the 631BR1, 631WB1, 631DB1, or 645B are installed in the right side (see Figure 7-22).
13. If the expansion control carrier contains a 631BR1, 631WB1, or 645B power unit, install the previously removed TN736 power unit in port slots "18" and "19" of the carrier (adjacent to the 631BR1, 631WB1, or 645B). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    The TN736 is not required when the 631DB1 or 645B power unit is used in the J58890AH control carrier or the J58890BB-2 or J58890BB-3 port carriers. It is required in the J58890BB-1 port carrier, regardless of which 631 power unit is provided. Use the TN752 or TN755 if the system is equipped with neon message waiting.
14. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 7-23).

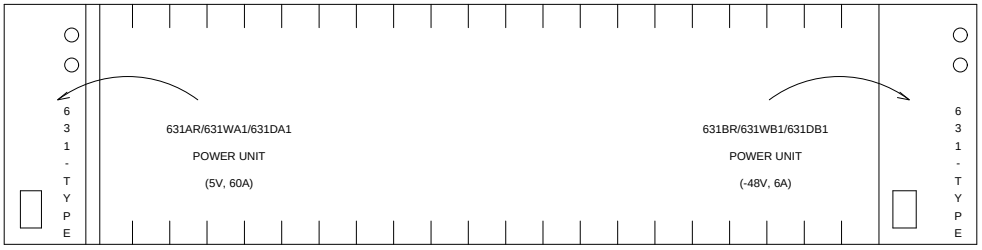


Figure 7-22. Locations of Power Units

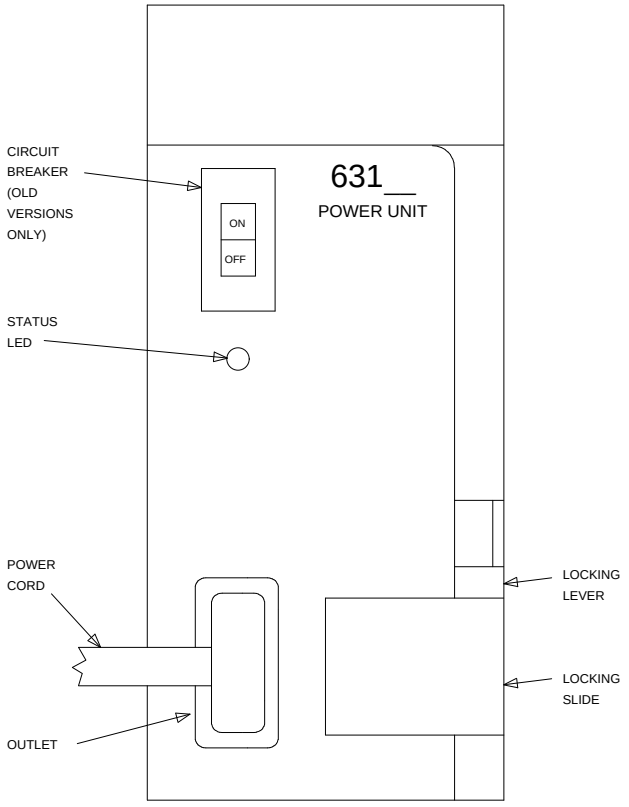


Figure 7-23. 631-Type Power Unit

Install Circuit Packs

1. See WARNING and NOTE. Install the new G3i V4 control circuit packs into carrier ‘‘A.’’ See Figure 7-24. The new decal, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 tape) as a guide.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   NOTE:
   Currently, the TN768 Tone-Clock circuit pack resides in a port slot of the universal module being upgraded. As part of this step, relocate this circuit pack to the ‘‘TONE CLOCK’’ slot of carrier ‘‘A.’’ AT&T recommends that you upgrade to the TN2182 Tone-Clock.

2. For a directly connected high-reliability G3i V4 system with two port networks, ensure that the PPN and this EPN are both equipped with a TN776 or TN570 expansion interface circuit pack.

   For a directly connected system with three port networks, ensure that the PPN and each EPN have two TN776s or TN570s.

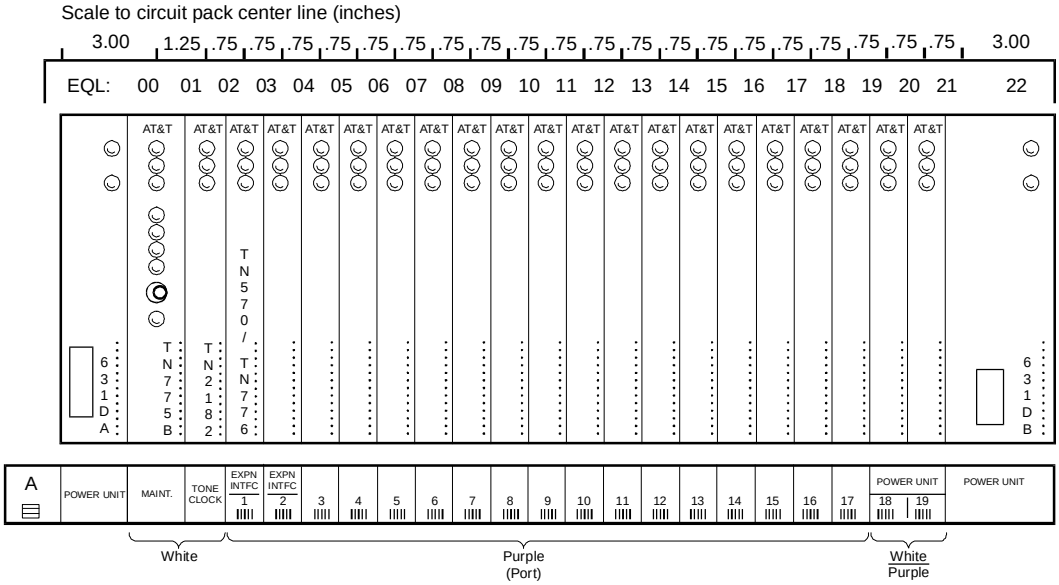


Figure 7-24. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

Interconnect Port Networks — High-Reliability System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either "TX" (transmit) or "RX" (receive), while the fibers attached to each connector are numbered either "1" or "2." A viable fiber connection is only made when both fibers in each cable (that is, "1" and "2") route from the "TX" connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 7-26 on page 7-65.

NOTE:
For implementation details, refer to the "Fiber Link Administration" sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a high-reliability system with one collocated expansion port network, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to directly connect the networks.

For a high-reliability system with two collocated expansion port networks, three fiber-optic cables (FL2P-P-XX) and six lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to the EPN cabinet. If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with another ''DEFINITY style'' EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with either a small cabinet, medium cabinet, or single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

For a high-reliability system with one fiber-remoted expansion port network, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

For a high-reliability system with two fiber-remoted expansion port networks, six fiber-optic cables (FL2P-P-XX), six lightwave transceivers (9823-type), and six lightwave-interface units (provided by the PSC) are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

In either case, use cable ties to secure the cable against the walls of the cable tray at the cable-tie positions built into the trays.

For Either One or Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-25 on page 7-65, Figure 7-26, Figure 7-27, and Figure 7-28):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.
3. Behind control carrier A of EPN cabinet 2:
   - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

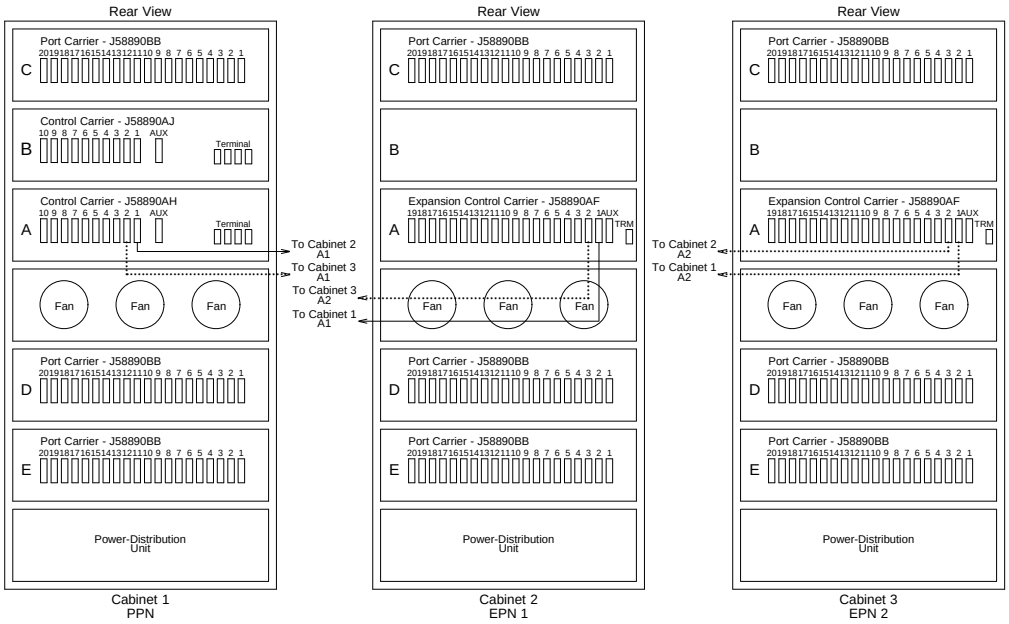


Figure 7-25. High-Reliability G3i V4 with Two or Three Port Networks

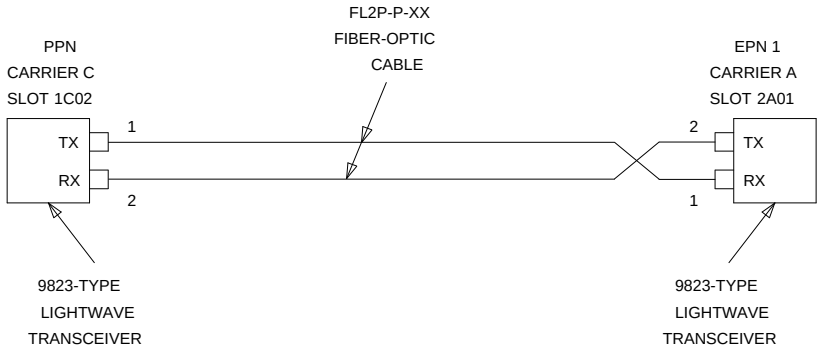


Figure 7-26. Fiber-Optic Connections PPN to EPN1

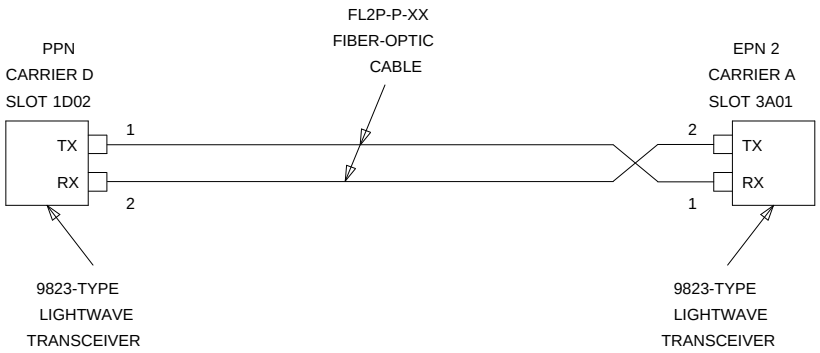


Figure 7-27. Fiber-Optic Connections PPN to EPN2

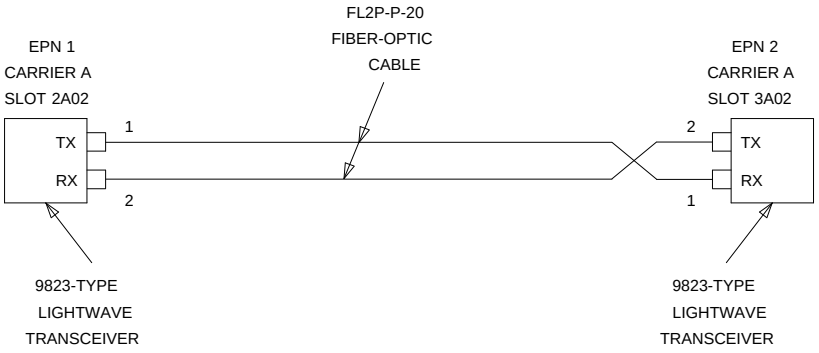


Figure 7-28. Fiber-Optic Connections EPN1 to EPN2

For Either One or Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-29 on page 7-70, Figure 7-30, Figure 7-31, and Figure 7-32):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable to the lightwave transceiver slot 2A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

For Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the fiber-optic cable to the lightwave transceiver slot 3A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

3. Behind control carrier A of EPN cabinet 2:
    - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind control carrier A of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the fiber-optic cable to the lightwave transceiver slot 3A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

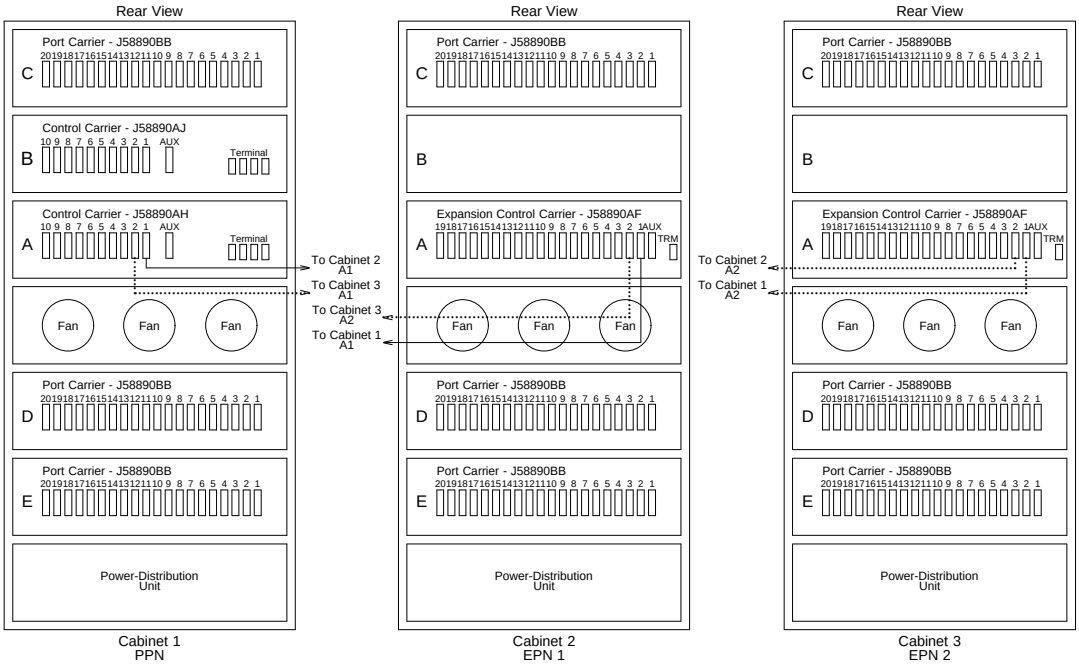


Figure 7-29. High-Reliability G3i V4 with Two or Three Port Networks

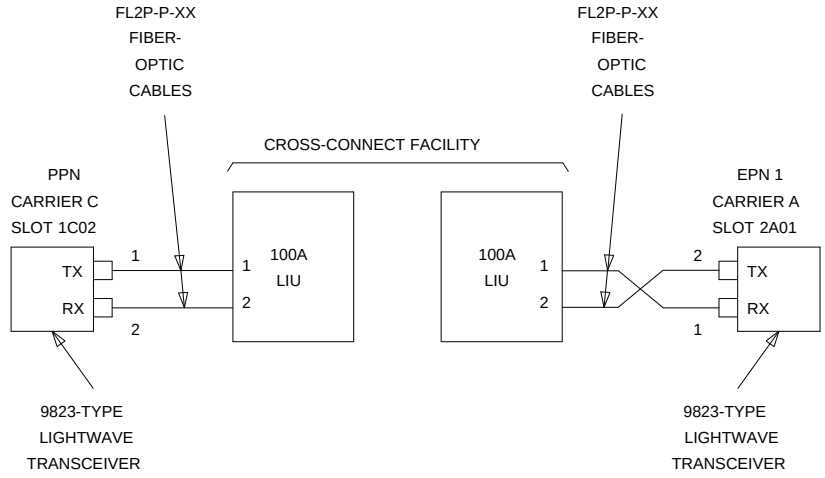


Figure 7-30. Fiber-Optic Connections PPN to EPN1

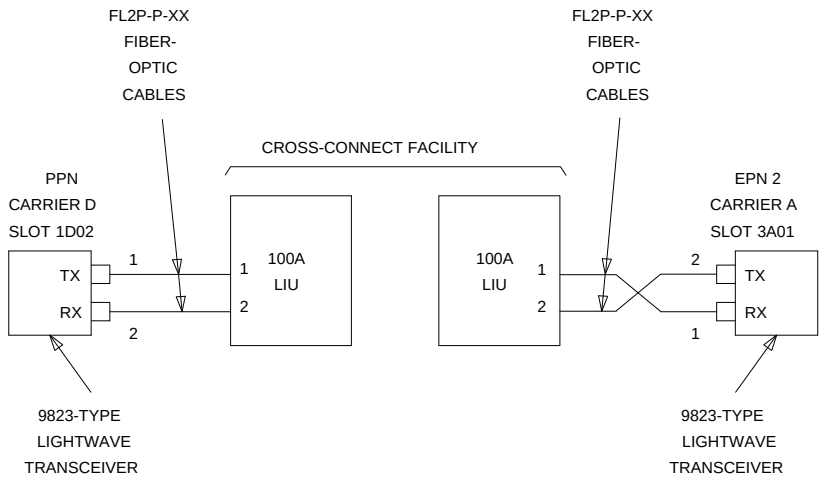


Figure 7-31. Fiber-Optic Connections PPN to EPN2

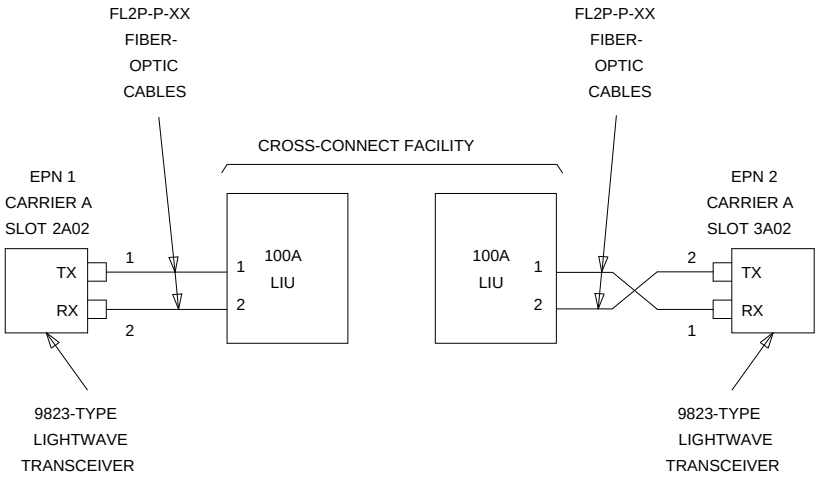


Figure 7-32. Fiber-Optic Connections EPN1 to EPN2

Verify Usable Circuit-Pack Vintages

Verify that every G2 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit Pack Vintages and Change Notices).

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Boot the G3i V4 System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. Verify that the translation memory cards are inserted in the TN777B faceplates.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At each EPN power-distribution unit, set the main circuit breaker to ON.
4. At the PPN power-distribution unit, set the main circuit breaker to ON.
5. The system now goes through the reset level 4 rebooting process, loading the default system translations from the memory card. Rebooting takes 8 to 11 minutes.

   Refer to the ''System Reboot Indications'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
6. Get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that the G3 V4 option and other right-to-use options can be enabled on the upgraded system.
7. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.

8. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
9. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option and to assign the customer's other right-to-use options on the G2-to-G3i V4 upgrade order. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling these options.
10. Enter **`change site-data`**. Press RETURN. Use this form to assign system-specific information (such as building, floor, stations, etc.)
11. Enter **`status system 1`**, and press RETURN to verify the system is in the ''active/standby'' mode.
12. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the memory card.

WARNING:
If the terminal screen displays "translation corruption detected; call AT&T distributor immediately", an error was detected in the translations. Call your AT&T representative.

Close Upgraded EPN Cabinet and Reconnect Cables

1. At the power-distribution unit of the upgraded EPN, set the main circuit breaker to OFF.

NOTE:
Powering down an EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to each EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back doors or back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.

Power Up the EPN Cabinets

1. At each EPN power-distribution unit, set the main circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to each EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the G2 module control carrier were relocated in order to put:

- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN736, TN752, or TN755 power supply in port slots ''18'' and ''19''
- A TN776 or TN570 Expansion Interface in port slot ''1''
- A TN776 or TN570 in port slot ''2'' (for a second directly connected EPN)

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced G2 Equipment

The G2 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced G2 equipment includes:

- G2 common control (CC) cabinet, carriers, and circuit packs and G2 time-multiplexed switch (TMS) cabinet, carriers, and circuit packs

  or

  G2 CC/TMS cabinet, carriers, and circuit packs
- G2 traditional module cabinets, carriers, and circuit packs
- G2 universal module control carriers (J58890AK) and control circuit packs
- G2 tape cartridges
- 4-series lightwave transceivers

Critical-Reliability G2 to Critical-Reliability G3i V4

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

If traditional modules are being replaced by EPNs, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPNs.

Upgrade Cabinets

An existing universal module cabinet is always upgraded to an EPN. A critical-reliability G2 universal module is upgraded to a critical-reliability G3i V4 EPN by:

- Removing the module control carrier in position ''A''
- Installing the J58890AF expansion control carrier in position ''A''
- Removing the module control carrier in position ''B''
- Installing the J58890BB-3 port carrier in position ''B''
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required

Prerequisite Hardware

The equipment in Table 7-7 *must* be on-site before the upgrade begins. Ensure the translation memory cards are current and they contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 7-7. Required Hardware

Equipment	Description	Quantity
PEC 6300-05X	Processor Port Network	1
J58890AF	Expansion Control Carrier	1
J58890BB-3	Port Carrier	1
106647985	TN775B Maintenance	1
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	4 or 12 (Note 1) 4 or 12 (Notes 1 and 2)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	2 (Note 3)
J58890TF	Tape Cartridge	4
H-600-204 G1	ICC	2 (Note 4)
63300A	FL2P-P-XX Fiber Cable	2 or 6 (Note 5)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	4 or 12 (Note 6) 4 or 12 (Note 6)
106689516	TN771D Maintenance Test	1 or 2 (Note 7)

Notes:

1. Depending on the number of G3i V4 EPNs. Four are required for a critical-reliability system with two port networks; twelve with three port networks. Either two or eight Expansion Interfaces (EIs) are shipped loose with the EPN equipment. The factory has installed the other two or four EIs in the new PPN.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. 4 Mbyte translation memory cards are required for a system using recorded announcements.
4. Required for an EPN in a critical-reliability system.
5. Depending on the number of G3i V4 EPNs. Four or twelve are required if the EPNs and the PPN are remotely located. Assuming acceptable lengths, the fibers previously connecting an upgraded G2 universal module (*not* a traditional module) to the G2 TMS have the correct transceiver connectors and can be reused.

6. One pair for each fiber connection. For each connection, one 9823-type lightwave transceiver is installed in an EPN and one in the PPN. Two 9823-type transceivers can be reused from each upgraded G2 universal module. Additional 9823-type transceivers, ordered separately, are shipped loose with the EPN equipment.
7. Depending on the number of G3i V4 EPNs.

Required Tools

The following tools and items may be required during the upgrade:

- High-intensity flashlight or AC drop light
- 3/8-inch flat-blade screwdriver with a 10-inch shank (minimum)
- 5/16-inch and 1/4-inch sockets with a ratchet and 10-inch extension
- Power screwdriver (optional)
- Long-nose pliers to disconnect grounding straps and straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding approximately 100 self-tapping screws
- 12 spare #12 and #10 self-tapping screws
- 4 spare carrier grounding straps
- Authorized wrist grounding strap
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the ‘‘Preventive Maintenance’’ section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label both ends of the connector cables associated with the carrier to be removed.

Power Down G2 System

At the power-distribution unit, set the main circuit breaker to OFF.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Doors and Panels and Disconnect Cables

1. Remove the front door from the cabinet (if desired).
2. With the cable retainer in front of you and the part number visible (4B or 4C), locate the slot that is almost vertical. This slot is adjacent to the part number. Insert a flat-blade screwdriver with a wide blade (1/4-inch recommended) into the slot. Twist the screwdriver while the blade is in the slot. The retainer will snap open easily, and the cable can be removed.
3. Disconnect previously labeled cables associated with the carrier to be removed.
4. Behind a ''DEFINITY style'' cabinet, remove the back doors from the cabinet.
5. Behind a previously upgraded cabinet, remove all of the back panels. (Two different types of screws hold the back panels to the cabinet. The #10 screws can be removed with a screwdriver or a 1/4-inch socket. The #12 screws can be removed with a screwdriver or a 5/16-inch socket.)

Remove Circuit Packs from Module Control Carriers A and B

1. To ensure that power units in the ''A'' and ''B'' carriers are properly replaced, label each power unit with its slot number.
2. Disconnect the power cords from the power units in the ''A'' and ''B'' carriers.
3. See WARNING. Remove all circuit packs and power units from carrier ''A.'' Store the circuit packs in the static-proof packaging.
4. See WARNING. Remove all circuit packs from carrier ''B.'' Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

5. Remove the circuit-pack blanks from slots that do not contain circuit packs.
6. Remove the front trim plate from the ''B'' carrier by pulling straight off. Then remove the front trim plate from the ''A'' carrier.

Remove CURL from Module Control Carrier A

See NOTES. Remove the CFY1 current limiter (CURL) from the pin-field block marked ''CURL'' on the ''A'' carrier. The CURL will be reused in the G3i V4 EPN.

NOTE:
Note the position of the components on the left side of the CURL.

NOTE:
Verify that the CURL meets the minimum usable vintage requirements.

Remove Module Control Carriers A and B

1. See the following CAUTION and NOTE. Remove the TDM/LAN cable from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 7-33 on page 7-82). This cable will be reused.
2. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier. Leave the other end connected to the ‘‘D’’ carrier, and move the cable into a position so that it will not interfere with removing the ‘‘A’’ carrier.
3. See CAUTION and NOTE. Disconnect one end of the TDM/LAN cable (between the ‘‘B’’ and ‘‘C’’ carriers) from the ‘‘B’’ carrier. Leave the other end connected to the ‘‘C’’ carrier, and move the cable into a position so that it will not interfere with removing the ‘‘B’’ carrier.

CAUTION:
When removing the TDM/LAN cables from a previously upgraded carrier, be careful that none of the short pieces of shrink tubing come off the four corner pins of the pin-field block. Otherwise, when the new equipment is connected, -48 volts could short to ground.

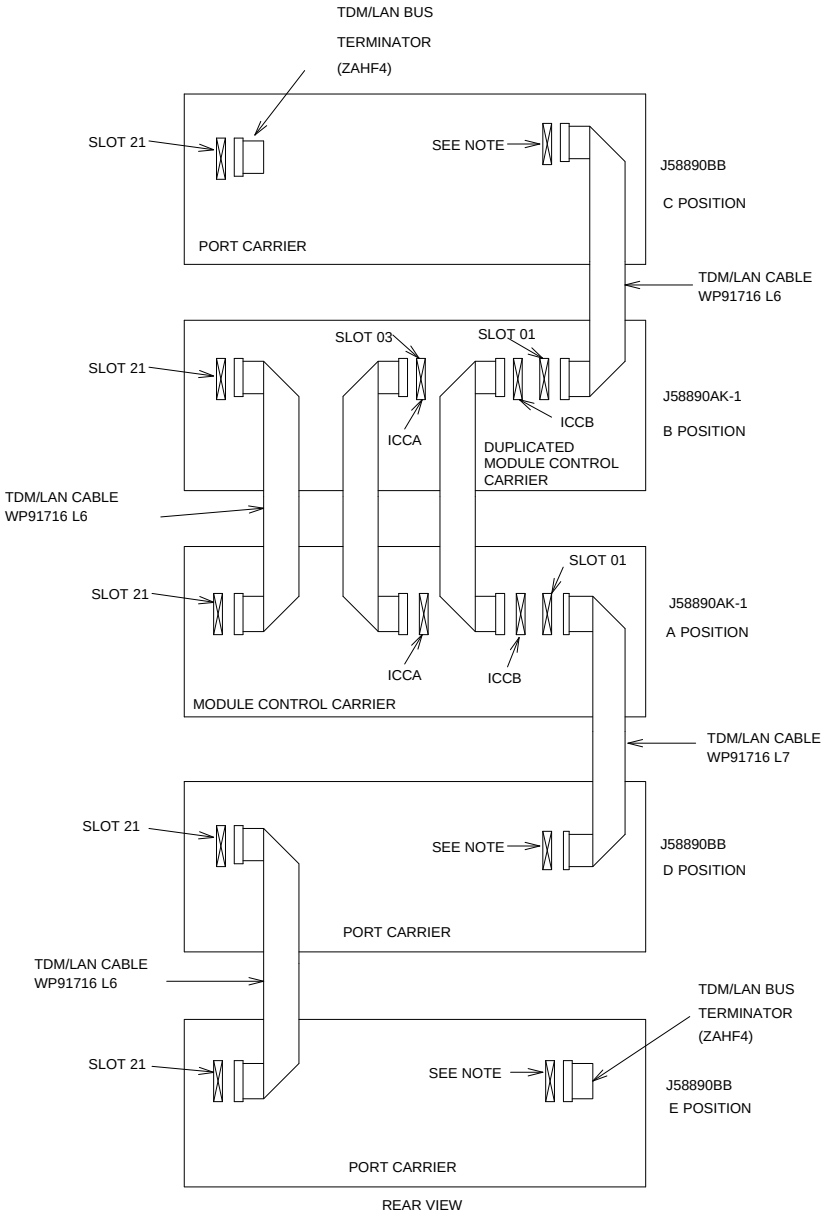
NOTE:
Note the position of the TDM/LAN cable before disconnecting.

4. Remove the eight ground straps from between the ‘‘A’’ and ‘‘B’’ carriers (see Figure 7-34 on page 7-83). Retain these straps since they will reconnected to the new ‘‘A’’ and ‘‘B’’ carriers.
5. Disconnect one end of the eight ground straps (between the ‘‘A’’ and ‘‘D’’ carriers) from the ‘‘A’’ carrier. These straps will be reconnected to the new ‘‘A’’ carrier.
6. Disconnect one end of the eight ground straps (between the ‘‘B’’ and ‘‘C’’ carriers) from the ‘‘B’’ carrier. These straps will be reconnected to the new ‘‘B’’ carrier.
7. Disconnect the ‘‘P1’’ (small 9-pin) connector and the ‘‘P2’’ (large 38-pin) connector from the ‘‘A’’ carrier (see Figure 7-35 on page 7-84). Move the cables into a position where they will not interfere with removing the carrier.
8. Slide the latch up, and disconnect the ‘‘P1’’ (small 9-pin) connector from the ‘‘B’’ carrier. Move the cable into a position where it will not interfere with removing the carrier.

9. Disconnect and remove the ICC cables (see Figure 7-33). They will not be reused.
10. Remove the fan trim plate by pulling straight off.
11. Clean or replace the air filter (403326820) if necessary.
12. In front of carrier, remove the four screws (top two first) holding the ‘‘B’’ carrier to the cabinet frame. Use a long-handle screwdriver or 5/16-inch socket with a 10-inch extension.
13. Behind the carrier in a ‘‘DEFINITY style’’ cabinet, remove the two screws holding the ‘‘B’’ carrier’s rear connector panel to the cabinet frame.
14. See CAUTION. Slide the carrier forward 1 to 2 inches; then, from the back, be sure that no cables or wiring harnesses are caught on the cabinet/carrier framework.

    CAUTION:
    Cables and wiring harnesses can be damaged if they catch on the framework and if too much pressure is applied in removing the carrier.

15. Remove the carrier by sliding it out the front of the cabinet.
16. Repeat Steps 12 through 15 for the ‘‘A’’ carrier.



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT THE TDM CABLE OR TDM TERMINATOR TO SLOT 02.
ON PORT CARRIERS J58890BB-2 AND J58890BB-3, CONNECT THE TDM CABLES OR TDM TERMINATOR TO SLOT 01. IF THE PORT CARRIER HAS J58890BB-1 AND J58890BB-2 STENCILLED ON IT, TREAT IT AS J58890BB-1.

Figure 7-33. TDM/LAN Connections for Duplicated G2 Universal Module

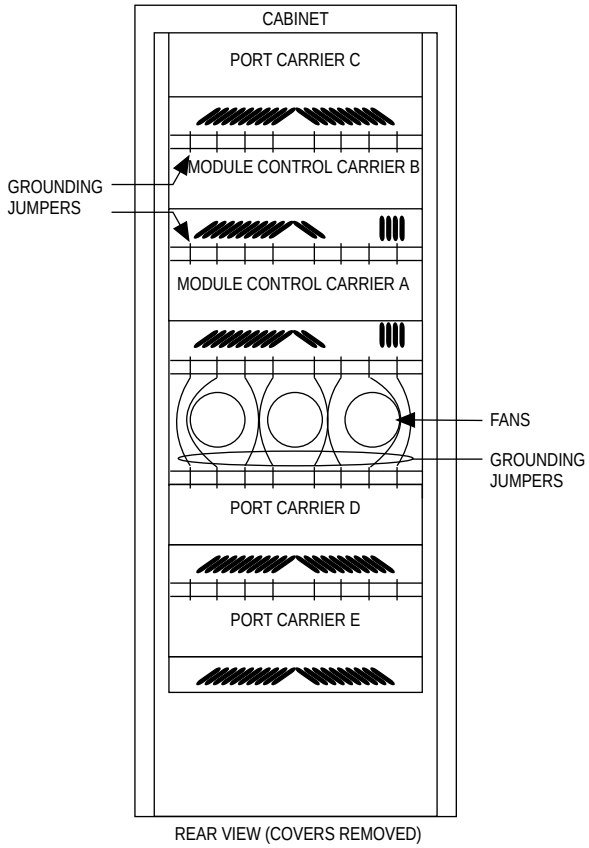


Figure 7-34. Locations of Grounding Jumpers

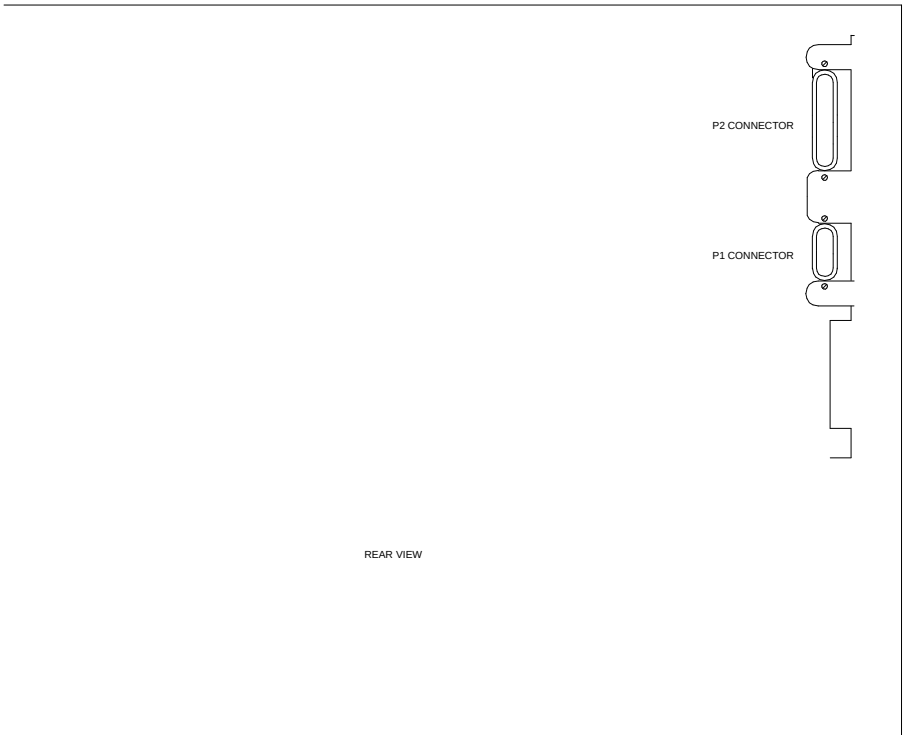


Figure 7-35. Location of P1 and P2 Connectors

Prepare the New A and B Position Carriers

1. Visually inspect the new carriers for any damage. Verify that the backplane pins are not bent.
2. Place the expansion control carrier on the floor so that the rear of the carrier faces up.
3. Install the CFY1 current limiter (CURL) on the ‘‘A’’ carrier to the pin-field block marked ‘‘CURL.’’ The CURL is inserted with the components on the left side as viewed from the rear.
4. At the rear connector panel, determine which connectors will have a cable attached, and install a 4B cable retainer on each of these connectors.

Install the New A and B Position Carriers

1. Install the J58890AF expansion control carrier in position ‘‘A’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips will support the carrier while the screws are being replaced. Ensure that the power cords are properly placed in the slots at the sides of the carrier.

2. See CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.

   CAUTION:
   Carefully realign the threads on the self-tapping screws by turning them clockwise a turn or two before tightening them to avoid stripping the threads out of the framework.

3. Behind the carrier in a ‘‘DEFINITY style’’ cabinet, replace the two screws saved from the removal of the old carrier.
4. Install the J58890BB-3 port carrier in position ‘‘B’’ by lining up the plastic alignment tips on the top rear of the carrier with the screw holes in the cabinet. These alignment tips support the carrier while the screws are being replaced. Ensure the power cords are properly placed in the slots at the sides of the carrier.
5. See previous CAUTION. Fasten the carrier into position with four self-tapping screws saved from the removal of the old carrier.
6. Connect the “P2’’ and “P1’’ (large and small) connectors to the ‘‘A’’ carrier. To get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure the connection is properly made (see Figure 7-35).
7. Connect the “P1’’ (small) connector to the ‘‘B’’ carrier. To get enough slack in the cables, cut the tie wrap holding the intercabinet cables from the upright in the area of the carrier being installed. Snap the connector lock into place to ensure the connection is properly made.
8. Connect the eight ground straps from the ‘‘D’’ carrier to the new ‘‘A’’ carrier (see Figure 7-34). These straps were left connected to the ‘‘D’’ carrier.
9. Connect the eight ground straps from the ‘‘C’’ carrier to the new ‘‘B’’ carrier. These straps were left connected to the ‘‘C’’ carrier.
10. Install the eight ground straps between the new ‘‘A’’ and ‘‘B’’ carriers. These straps were removed from the old carriers.
11. See NOTE. For an AC-powered expansion control carrier, install the two new carrier-ground straps. One strap connects ground point ‘‘1’’ to the A-carrier frame (on the right side), and the other connects ground point ‘‘8’’ to the A-carrier frame (on the left side).

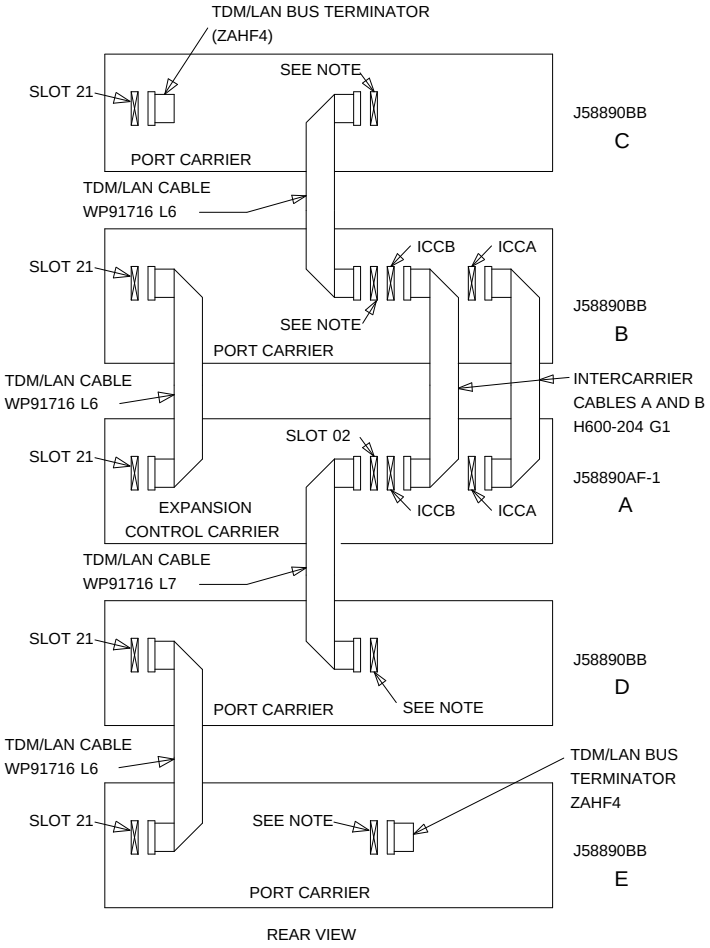
    NOTE:
    DC-powered carriers do not use these carrier-ground straps.

12. Connect the loose end of the TDM/LAN cable (between the ‘‘A’’ and ‘‘D’’ carriers) to the pin-field block marked ‘‘TDM’’ on the right side of the ‘‘A’’ carrier (see Figure 7-36 and Table 7-8). The other end remained connected to the ‘‘D’’ carrier when the old carrier was removed.

13. Connect the loose end of the TDM/LAN cable (between the ‘‘B’’ and ‘‘C’’ carriers) to the pin-field block marked ‘‘TDM’’ on the right side of the ‘‘B’’ carrier. The other end remained connected to the ‘‘C’’ carrier when the old carrier was removed.
14. Install the TDM/LAN cable between the ‘‘A’’ and ‘‘B’’ carriers. The cable is connected to the ‘‘A’’ and ‘‘B’’ carriers at the pin-field blocks marked ‘‘TDM’’ on the left side of each carrier.

Table 7-8. TDM/LAN Connections

‘‘J’’ Number	Carrier Type	LHS Slot	RHS Slot
J58890BB-1	Port	21	02
J58890BB-2	Port	21	01
J58890BB-3	Port	21	01
J58890AF	EPN Control ‘‘A’’	21	02



NOTE:
ON PORT CARRIER J58890BB-1, CONNECT TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 02. ON PORT CARRIERS J58890BB-2 AND -3, CONNECT THE TDM/LAN CABLE OR TDM/LAN TERMINATOR TO SLOT 01.

Figure 7-36. TDM/LAN Connections for Critical-Reliability G3i V4 EPN

15. Install the front trim plates; first on the ‘‘A’’ carrier, and then on the ‘‘B’’ carrier.

16. See CAUTION. Install the ICC cables (H600-204 G1) between carriers ‘‘A’’ and ‘‘B.’’ Connect the cables to the ‘‘ICC’’ pin-field block on both carriers (see Figure 7-37 and Figure 7-38 and Table 7-9). The cable is installed so that the dark red, blue, or purple stripe (depending on the supplier) is on the bottom at both ends.

    CAUTION:
    While installing the ICC cable connectors, be careful not to bend any backplane pins. Double check each connection to verify that the pins are straight.

17. Install the power units (removed from G2 universal module) into the ‘‘A’’ carrier. There are four different pairs of power units available. They are the 631AR1 and 631BR1, the 631WA1 and 631WB1, the 631DA1 and 631DB1, and the 644A and 645B.

    Do not interchange the physical locations of the units. The 631AR1, 631WA1, 631DA1 or 644A are installed in the left side, while the 631BR1, 631WB1, 631DB1 or 645B are installed in the right side (see Figure 7-39 on page 7-90).

18. If the expansion control carrier contains a 631BR1, 631WB1, or 645B power unit, install the previously removed TN736 power unit in port slots ‘‘18’’ and ‘‘19’’ of the carrier (adjacent to the 631BR1, 631WB1, or 645B). If the system is equipped for neon message waiting, a TN752 or TN755 power unit must be used.

    NOTE:
    The TN736 is not required when the 631DB1 or 645B power unit is used in the J58890AH control carrier or the J58890BB-2 or J58890BB-3 port carriers. It is required in the J58890BB-1 port carrier regardless of which 631 power unit is provided. Use the TN752 or TN755 if the system is equipped with neon message waiting.

19. Connect the power cords to the power units. The power cords are the white cables equipped with plugs that are run through the slots in the front of each carrier (see Figure 7-40 on page 7-91).

Table 7-9. Intercarrier Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
EPN	J58890AF	ICCA	J58890BB	ICCA
		ICCB		ICCB

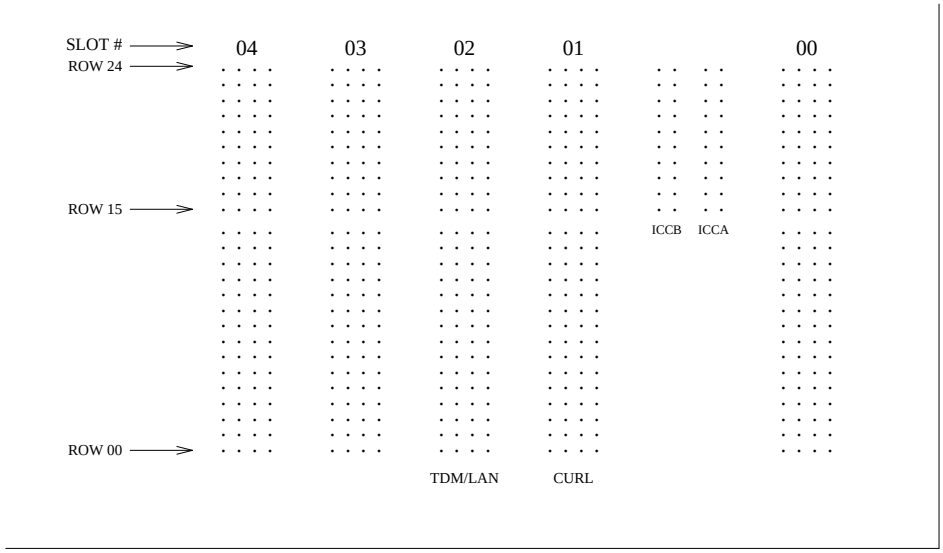


Figure 7-37. ICC Connections for Expansion Control Carrier

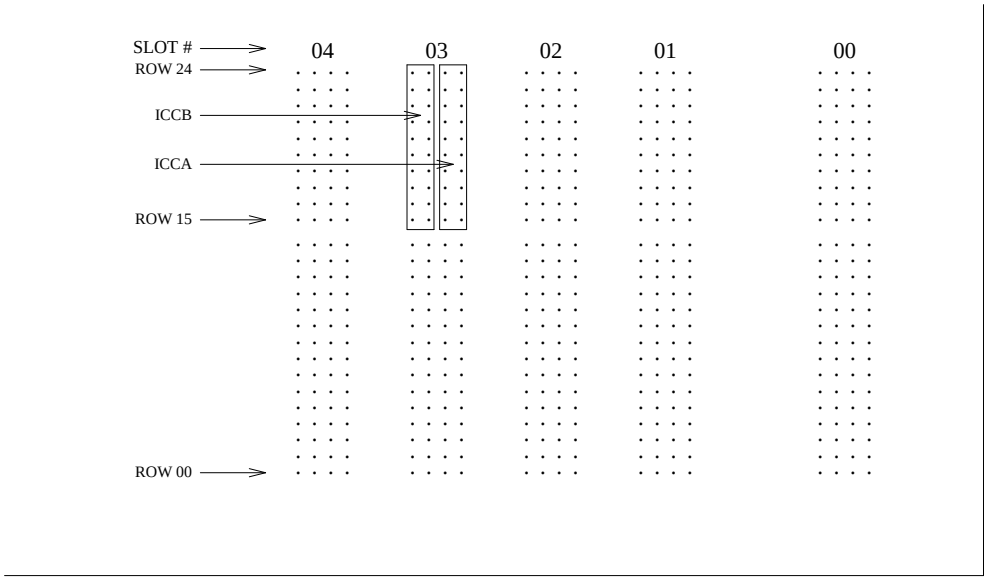


Figure 7-38. ICC Connections for Port Carrier

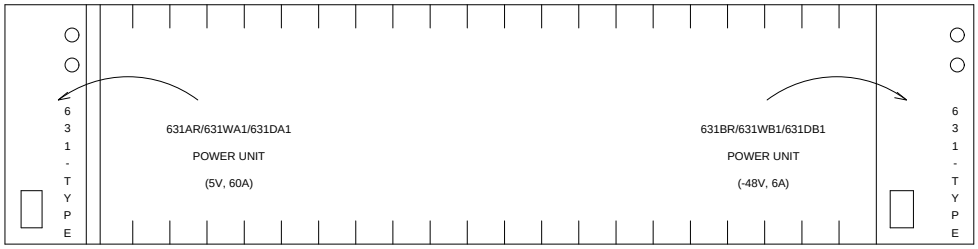


Figure 7-39. Locations of Power Units

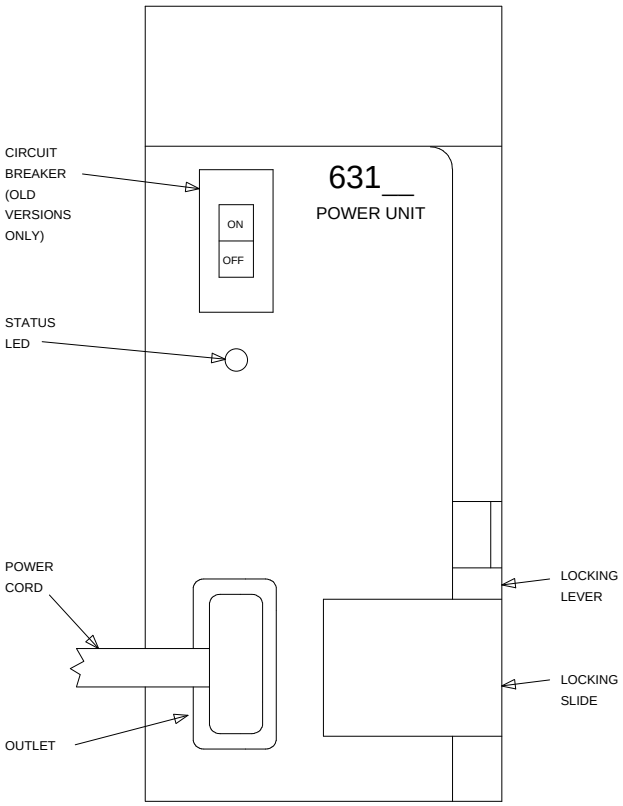


Figure 7-40. 631-Type Power Unit

Test the CURL

1. Plug the cabinet power cord into the appropriate receptacle.
2. At the power-distribution unit, set the main circuit breaker to ON.
3. Unplug the power cord from the power unit ‘‘B’’ (right-hand side) in the ‘‘A’’ carrier.
4. Verify that the fans continue running. If they are not running, check the installation of the CURL.
5. Reconnect the power cord to the power unit in the ‘‘A’’ carrier, then unplug the power cord from power unit ‘‘B’’ (right-hand side) in the ‘‘B’’ carrier.
6. Verify that the fans continue running. If they are not running, check the installation of the CURL.
7. Reconnect the power cord to the power unit in the ‘‘B’’ carrier.
8. At the power-distribution unit, set the main circuit breaker to OFF.

Install Circuit Packs

1. See WARNING and NOTE. Install the new G3i V4 control circuit packs into carriers ‘‘A’’ and ‘‘B.’’ See Figure 7-41. The new decal, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory card) as a guide.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   NOTE:
   Currently, both TN768 Tone Clock circuit packs reside in port slots of the universal module being upgraded. As part of this step, relocate these circuit packs to the ‘‘TONE CLOCK’’ slot of carrier ‘‘A’’ and port slot ‘‘1’’ of carrier ‘‘B.’’

2. For a directly connected critical-reliability G3i V4 system with two port networks, ensure that the PPN and this EPN are both equipped with two TN776 or TN570 expansion interface circuit packs.

   For a directly connected system with three port networks, ensure that the PPN and each EPN have four TN776s or TN570s.

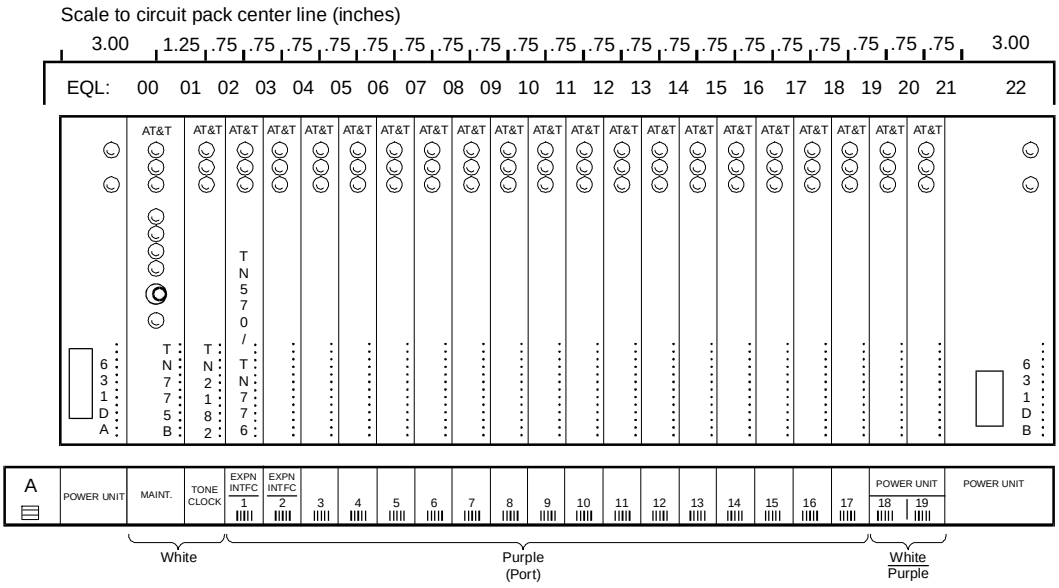


Figure 7-41. Circuit-Pack Locations in G3i V4 Expansion Control Carrier

Interconnect Port Networks — Critical-Reliability System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either "TX" (transmit) or "RX" (receive), while the fibers attached to each connector are numbered either "1" or "2." A viable fiber connection is only made when both fibers in each cable ("1" and "2") route from the "TX" connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 7-43 on page 7-98.

NOTE:
For implementation details, refer to the "Fiber Link Administration" sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a critical-reliability system with one collocated expansion port network, two fiber-optic cables (FL2P-P-XX) and four lightwave transceivers (9823-type) are required to directly connect the networks.

For a critical-reliability system with two collocated expansion port networks, six fiber-optic cables (FL2P-P-XX) and twelve lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to the EPN cabinet. If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with another ''DEFINITY style'' EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

If, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with either a small cabinet, medium cabinet, or single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

Fiber-Remoted Port Networks

For a critical-reliability system with one fiber-remoted expansion port network, four fiber-optic cables (FL2P-P-XX), four lightwave transceivers (9823-type), and four lightwave-interface units (provided by the PSC) are required.

For a critical-reliability system with two fiber-remoted expansion port networks, twelve fiber-optic cables (FL2P-P-XX), twelve lightwave transceivers (9823-type), and twelve lightwave-interface units (provided by the PSC) are required.

For fiber-remoted cabinets, the cables should be routed down the cable tray and out the bottom of the cabinet to the cross-connect field where the lightwave-interface units are located.

In either case, use cable ties to secure the cable against the walls of the cable tray at the cable-tie positions built into the trays.

For Either One or Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-42 on page 7-98, Figure 7-43, Figure 7-44, and Figure 7-45):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.
3. Behind control carrier B of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1B01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1B01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind port carrier B of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2B02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.
3. Behind control carrier B of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1B02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 1B02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind port carrier B of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B02.
   - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3B02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

5. Behind control carrier A of EPN cabinet 2:
    - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2A02.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
6. Behind control carrier A of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3A02.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.
7. Behind port carrier B of EPN cabinet 2:
    - Install a 9823-type lightwave transceiver on cable connector at slot 2B03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 2B03.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
8. Behind port carrier B of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B03.
    - Connect the other end of the fiber-optic cable to the lightwave transceiver, just installed, at slot 3B03.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - At the top of the cabinet, coil up the surplus length of fiber-optic cable, and delicately attach the coil to the wall of the cable tray.

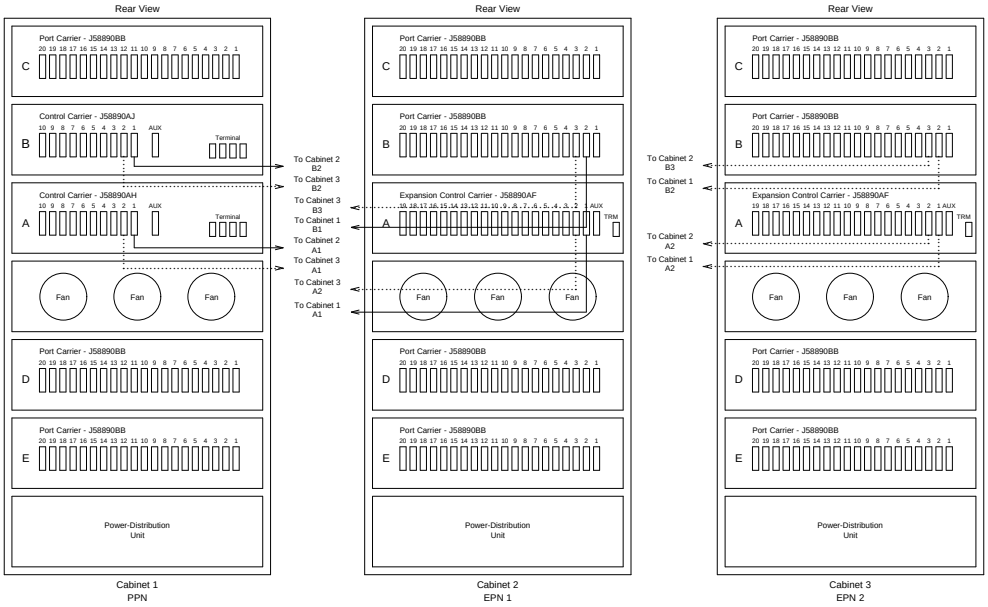


Figure 7-42. Critical-Reliability G3i V4 with Two or Three Port Networks

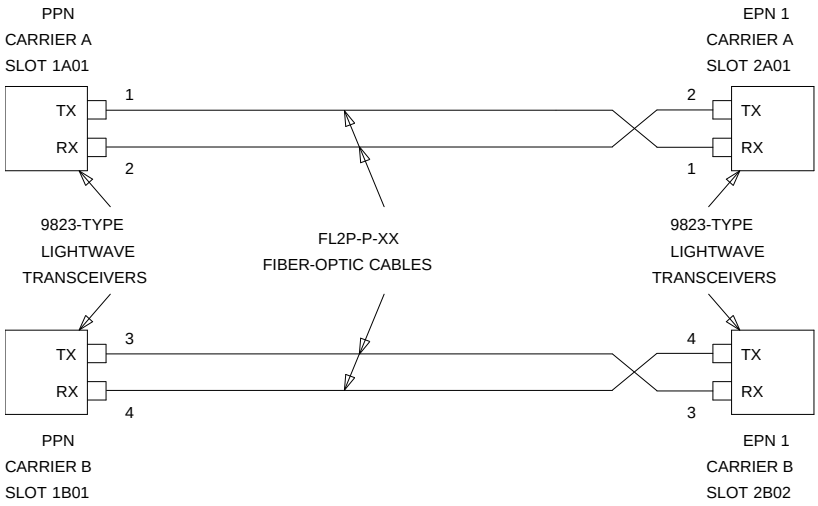


Figure 7-43. Fiber-Optic Connections PPN to EPN1

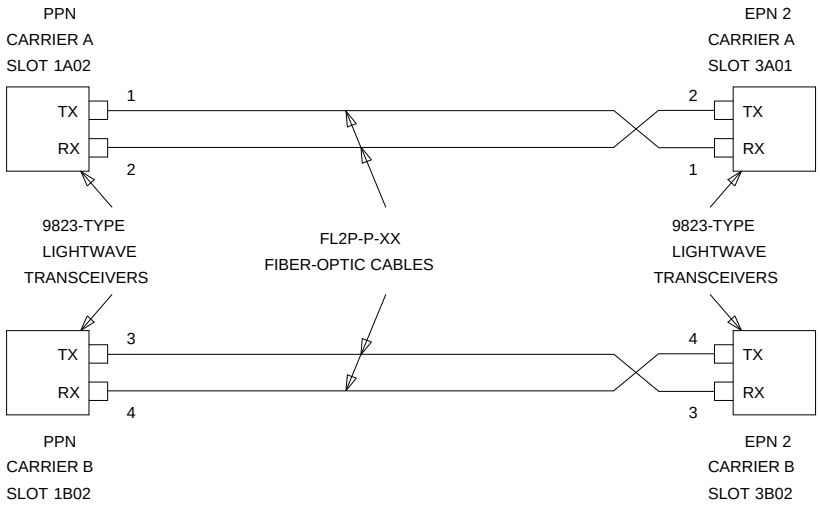


Figure 7-44. Fiber-Optic Connections PPN to EPN2

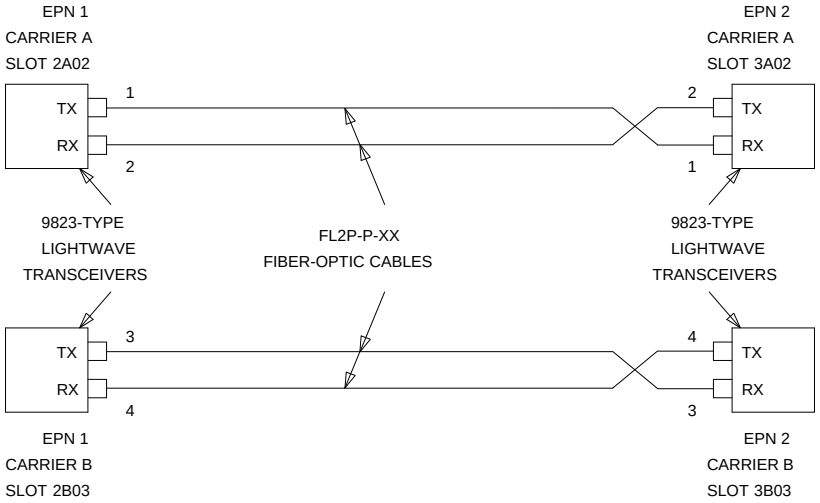


Figure 7-45. Fiber-Optic Connections EPN1 to EPN2

For Either One or Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1 (see Figure 7-46 on page 7-105, Figure 7-47, Figure 7-48, and Figure 7-49):
   - Install a 9823-type lightwave transceiver on cable connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the fiber-optic cable to the lightwave transceiver slot 2A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
3. Behind control carrier B of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1B01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.

- Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

4. Behind port carrier B of EPN cabinet 2:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
    - Connect the fiber-optic cable to the lightwave transceiver slot 2B02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

For Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of PPN cabinet 1:
    - Install a 9823-type lightwave transceiver on cable connector at slot 1A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control carrier A of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
    - Connect the fiber-optic cable to the lightwave transceiver slot 3A01.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

- Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

3. Behind control carrier B of PPN cabinet 1:
   - Install a 9823-type lightwave transceiver on cable connector at slot 1B02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1B02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind port carrier B of EPN cabinet 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B02.
   - Connect the fiber-optic cable to the lightwave transceiver slot 3B02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
5. Behind control carrier A of EPN cabinet 2:
   - Install a 9823-type lightwave transceiver on cable connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

6. Behind control carrier A of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
7. Behind port carrier B of EPN cabinet 2:
    - Install a 9823-type lightwave transceiver on cable connector at slot 2B03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2B03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
8. Behind port carrier B of EPN cabinet 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B03.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3B03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet's cable tray and downward out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

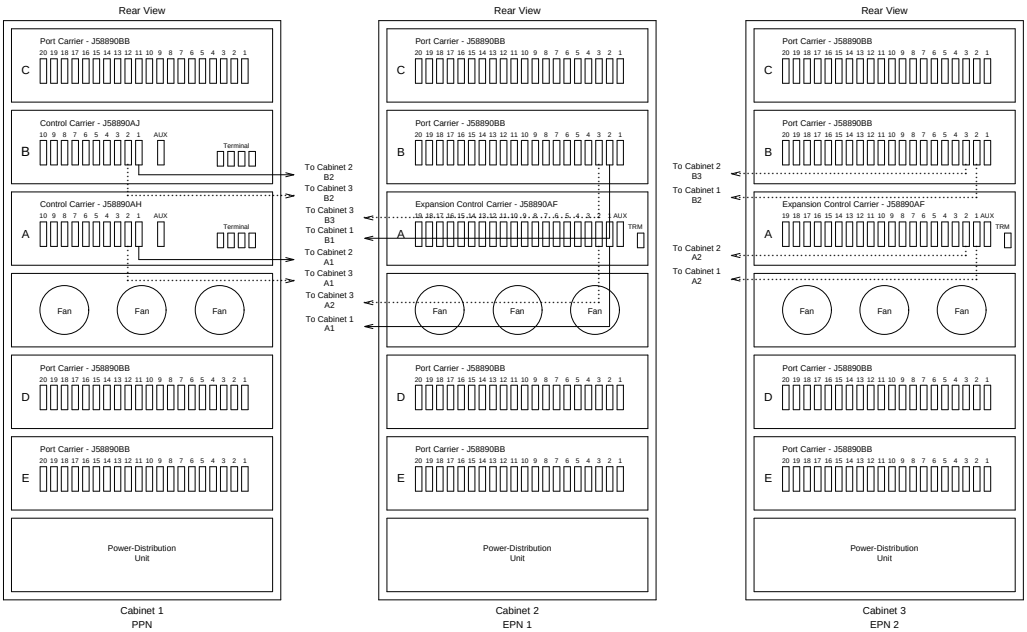


Figure 7-46. Critical-Reliability G3i V4 with Two or Three Port Networks

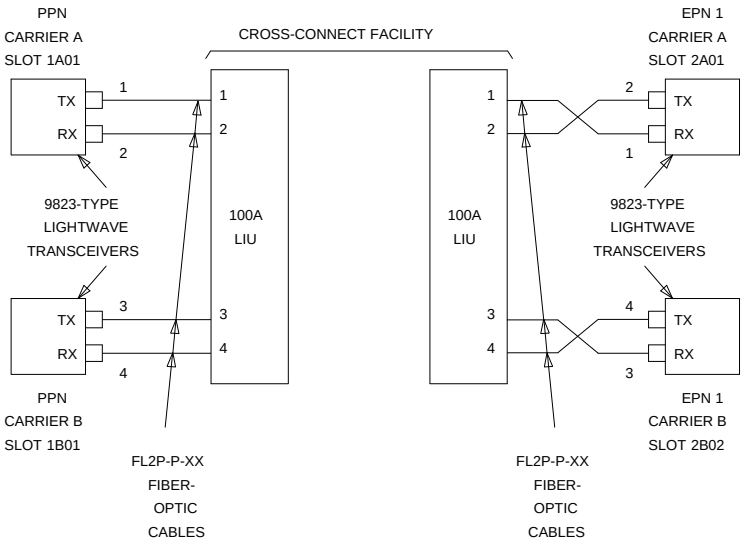


Figure 7-47. Fiber-Optic Connections PPN to EPN1

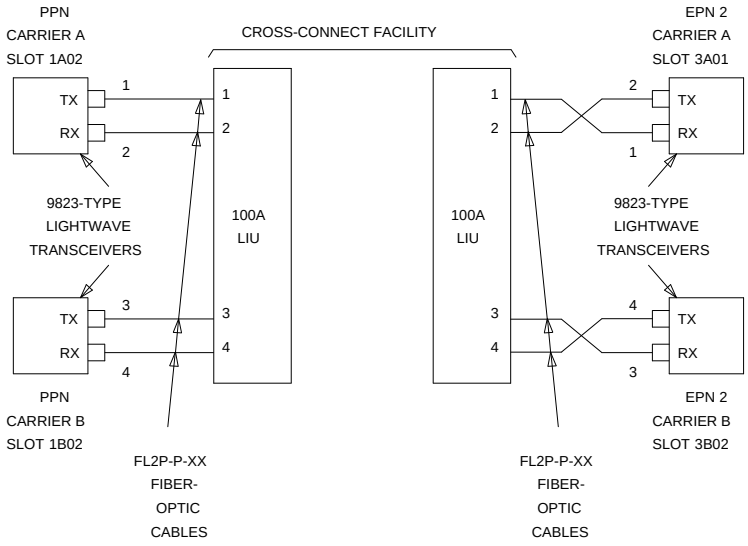


Figure 7-48. Fiber-Optic Connections PPN to EPN2

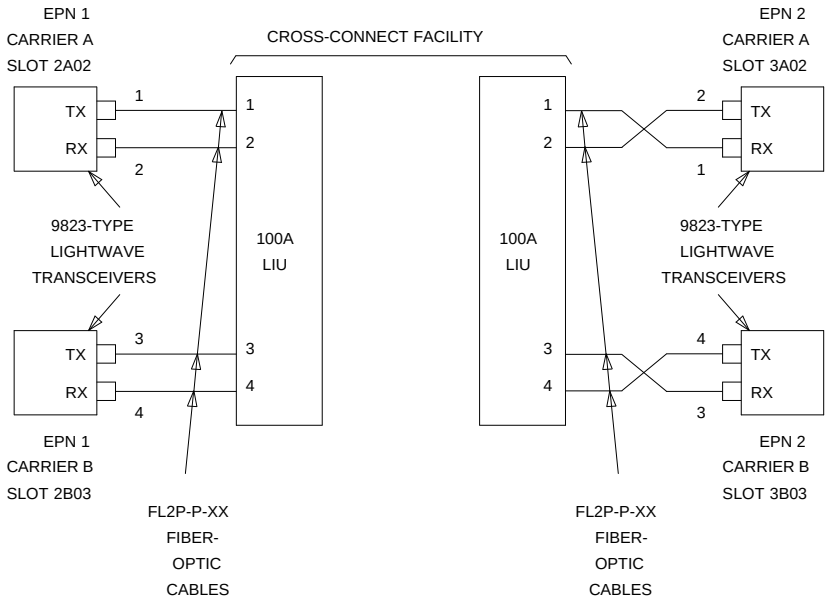


Figure 7-49. Fiber-Optic Connections EPN1 to EPN2

Verify Usable Circuit-Pack Vintages

Verify that every G2 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Remove Power-Failure Ground Strap

Remove the ground strap from the power-failure transfer unit.

Boot the G3i V4 System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. Verify that the translation memory cards are inserted in the TN777B faceplates.

NOTE:
The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At each EPN power-distribution unit, set the main circuit breaker to ON.
4. At the PPN power-distribution unit, set the main circuit breaker to ON.
5. The system now goes through the reset level 4 rebooting process, loading the default system translations from the memory cards. Rebooting takes 8 to 11 minutes.

   Refer to the "System Reboot Indications" section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
6. Get the order number of the upgrade, and call the regional CSA to request an "init" login so that the G3 V4 option and other right-to-use options can be enabled on the upgraded system.
7. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
8. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
9. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option and to assign the customer's other right-to-use options on the G2-to-G3i V4 upgrade order. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling these options.
10. Enter **`change site-data`**. Press RETURN. Use this form to assign system-specific information (such as building, floor, stations, etc.)
11. Enter **`status system 1`**, and press RETURN to verify that the system is in the "active/standby" mode.
12. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the memory cards.

WARNING:
If the terminal screen displays "translation corruption detected; call AT&T distributor immediately", an error was detected in the translations. Call your AT&T representative.

Close Upgraded EPN Cabinet and Reconnect Cables

1. At the power-distribution unit of the upgraded EPN, set the main circuit breaker to OFF.

   NOTE:
   Powering down an EPN without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to each EPN.

2. Temporarily disconnect the lightwave transceivers and fiber-optic cables, already labeled, from the appropriate carriers.
3. Replace the back doors or back panels previously removed.
4. At the EPN cabinet, reconnect the lightwave transceivers, fiber-optic cables, and the connector cables associated with the carrier being replaced.
5. Install the front door on the EPN cabinet if previously removed.

Power Up the EPN Cabinets

1. At each EPN power-distribution unit, set the main circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to each EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the G2 module control carrier were relocated in order to put:

- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN736, TN752, or TN755 power supply in port slots ‘‘18’’ and ‘‘19’’
- A TN776 or TN570 Expansion Interface in port slot ‘‘1’’
- A TN776 or TN570 in port slot ‘‘2’’ (for a second directly connected EPN)

of the new expansion control carrier, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced G2 Equipment

The G2 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced G2 equipment includes:

- G2 common control (CC) cabinet, carriers, and circuit packs and G2 time-multiplexed switch (TMS) cabinet, carriers, and circuit packs

  or

  G2 CC/TMS cabinet, carriers, and circuit packs
- G2 traditional module cabinets, carriers, and circuit packs
- G2 universal module control carriers (J58890AK) and control circuit packs
- G2 ICC cables (ED-1E434-11)
- G2 tape cartridges
- 4-series lightwave transceivers

Single-Carrier Cabinet G2 Universal Module to G3i V4 EPN

8

This chapter provides the information necessary to upgrade a DEFINITY® G2 universal module with single-carrier cabinets to a DEFINITY G3i V4 EPN. The hardware and software involved in the upgrades and the upgrade procedures are also provided.

CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

The following processes are required for a G2 to G3i V4 upgrade:

- Upgrading the hardware

  This involves adding a new multicarrier PPN cabinet, replacing the first logical module control carrier (in each universal module) with an expansion control cabinet, replacing each second logical module control carrier with a port carrier, and replacing and adding circuit packs
- Replacing the software tape with a DEFINITY translation memory card
- Upgrading the software

  This involves saving translations, acquiring a Translations Recovery, Additions, and Conversions System (TRACS) report, and extensively re-entering system translations
- Testing the upgraded system to verify proper operation

G3i V4 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V4 Implementation*, 555-230-655, provides the commands, procedures, and forms required to initialize and administer the G3i V4.

Considerations

Service Interruption

The upgrade process requires a service interruption. This service interruption must be closely coordinated with the customer and the local account team.

Communication between Equipment Rooms

For an upgrade where some of the equipment resides at a remote location, the upgrade activity will be much easier if temporary communications are established between the equipment rooms.

Contact Network Technicians

The technician for each public and private network accessed by the system must be contacted before the upgrade begins. Otherwise, if these technicians are not aware of the service interruption caused by the upgrade, it is possible that network-access trunk facilities will be busied out at the far end.

Relocation of Port Circuit Packs

A G2 universal-module upgrade to G3i V4 *does not* cause port circuit packs, from the G2 universal module, to be moved and manually retranslated. This is because a G2 universal module is always upgraded to an EPN. So, during the universal-module upgrade to a G3i V4 EPN, a G3i V4 expansion control cabinet (with 14 to 16 available port slots) always replaces the G2 module-control cabinet (with no port slots), providing a net gain of from 14 to 16 port slots.

Usable Circuit-Pack Vintages

Every circuit pack used in the upgraded G3i V4 system must conform to the minimum usable vintage requirements for G3i V4. Those circuit packs shipped in the new G3i V4 PPN or shipped loose with the new EPN equipment should always meet the usable vintage specifications. In addition, at a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every G2 circuit pack that will be reused in the upgraded G3i V4 and, if necessary, replace those circuit packs that have unusable vintages. Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices, for current information about usable vintages in a G3i V4 system.

Site Inspections

For the purposes of a G3i V4 upgrade, most G2 systems are already equipped with the correct lightwave transceivers (9823-A or -B). However, some G2 systems contain earlier versions of these components, and (based on a site inspection) these older components must be replaced.

See NOTE. The earlier versions of lightwave transceivers included the 4-series transceivers (that is, 4A through 4F). These transceivers supported fiber connections up to 7,000 feet apart; whereas the 9823-A supports connections up to 5,000 feet, and the 9823-B supports connections up to 25,000 feet. If the site inspection reveals that the older transceivers reside in the system, the correct transceivers are ordered and shipped according to a separate PEC.

NOTE:
The 9823-A transceiver is *not* a direct replacement for the 4-series transceiver (since a pair of 9823-A transceivers *cannot* replace a pair of 4-series transceivers supporting a connection of between 5,000 and 7,000 feet).

Power and Grounding

The new multicarrier PPN cabinet or any EPN cabinet added for the upgrade can be either AC- or DC-powered. If an added cabinet is powered differently from the existing cabinets, the existing cabinets do not have to be converted since mixed power configurations are allowed. However, the system's power and grounding must be modified so that the AC-powered cabinets are grounded to the same single-point ground bar as the DC-powered cabinets (see Figure 8-1).

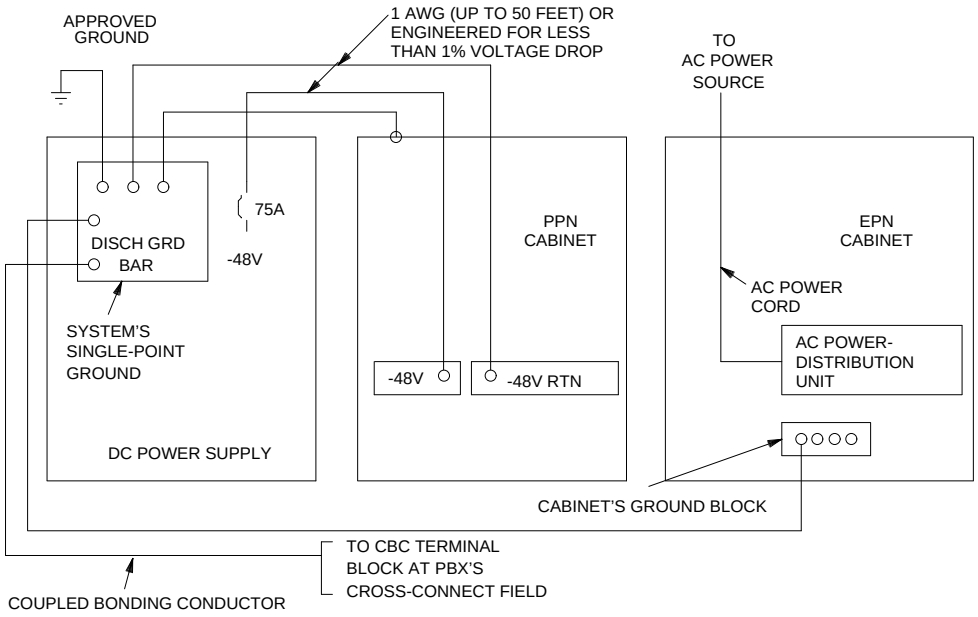


Figure 8-1. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multicabinet Configuration

See NOTE. If a new AC-powered cabinet is to be added, a separate AC receptacle is provided to support the new cabinet. This AC receptacle must not be shared with any other equipment and must not be controlled by a wall switch. For the convenience and safety of equipment-room personnel, the receptacle should not be located under the cross-connect field.

NOTE:
In contrast to the AC power likely to be currently available in a G2 equipment room, the new AC-powered PPN added for a G3i V4 upgrade uses 3-wire, 50A, 115 VAC power. Whereas:

- G2 traditional cabinets used 4-wire, 20A, 208 VAC power
- G2 universal cabinets used 3-wire, 30A, 208 VAC power
- Each cabinet in a G2 EPN stack used 3-wire, 15- or 20A, 115 VAC power

If a new DC-powered cabinet is to be added, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for DC power and grounding requirements.

Isolator

Each G3-MT connected to a DC-powered cabinet, via the asynchronous Electronic Industries Association (EIA) RS-232 interface (behind a PPN control carrier or behind an EPN expansion control carrier), requires a 116A isolator. The isolator is inserted at the RS-232 interface between the G3-MT and the interface connector to isolate grounding between the system and external adjuncts.

Power-Failure Stations

During routine system operation, the ground for the power-failure stations is derived from the system's auxiliary cable. This ground will be disconnected during the upgrade, thus disabling the power-failure stations. Therefore, a ground strap will have to be run to the power-failure transfer panel. This strap should be connected shortly after power is removed and then disconnected just before power is restored to the upgraded system.

To minimize downtime during the G3i V4 upgrade, power-failure transfer equipment should be tested and, if need be, repaired before the hardware upgrade begins.

Software

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the format of the G2 disk/tape system (DTS).

If the customer plans to emulate existing G2 translations in the upgraded G3i V4, then these translations must be copied to a spare tape and sent to Software Technical Support (STS) so reports of the current G2 translations and a G3-MA diskette with basic station translations can be generated. After STS receives the spare tape, this process takes one week. STS must return the G2 reports and the diskette to the Project Manager before the upgrade can begin. For each G2 processor, two tapes (one system tape and one backup tape) must always be retained on site with the G2 system.

After the reports arrive, many features will require special attention because of feature differences, form changes, and potential naming conflicts in the upgrade process.

During the upgrade, the Software Specialist should implement G3i V4 translations that are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3r Transition Reference*, 555-230-620
- *DEFINITY Communications System Generic 3 V4 Transition Reference*, 555-230-636
- *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204
- *DEFINITY Communications System Generic 2 Feature Description*, 555-105-301
- *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Alarm Connection

See NOTE. The D6 connector on G2 systems had 31 alarm-monitor appearances (Unit 1 to Unit 31) for external equipment. Whereas, the AUXILIARY connector on a DEFINITY G3i V4 PPN only has appearances for 1M (major alarm) and 1m (minor alarm). If the G2 system being upgraded used more than one major or more than one minor alarm-monitor appearance, these extra appearances, they can either be distributed to the AUXILIARY connector on a G3i V4 EPN, or ''ganged'' so that several external devices share the same appearance. The alarms can also be accommodated by paralleling them to the above connections.

NOTE:
When several external devices are ganged to the same appearance, each device loses its individual identity. An alarm on a shared appearance only denotes that one of several devices reported a problem. Subsequent maintenance effort is needed to determine which device reported the problem and the nature of the problem.

The control circuit pack behind the AUXILIARY connector detects external alarms with a ground-detector chip. Therefore, to gang several external devices, every device must be able to return a true relay ground closure to the AUXILIARY connector. Alternatives, such as a TTL low driver, are inadequate.

Table 8-1 and Table 8-2 correlate wall-field terminal numbers, connector pin numbers, lead colors, and lead designations for the G2 D6 and G3i V4 AUXILIARY connectors.

Table 8-1. Pinouts for D6 Connector on G2 System

Terminal #	Pin #	Color	Desig.	Terminal #	Pin #	Color	Desig.
1	26	W-BL	UNIT20	2	01	BL-W	UNIT19
3	27	W-O	UNIT22	4	02	O-W	UNIT21
5	28	W-G	UNIT24	6	03	G-W	UNIT23
7	29	W-BR		8	04	BR-W	UNIT25
9	30	W-S	UNIT27	10	05	S-W	UNIT26
11	31	R-BL	UNIT29	12	06	BL-R	UNIT28
13	32	R-O	UNIT31	14	07	O-R	UNIT30
15	33	R-G	AUXCTMP	16	08	G-R	UNIT32
17	34	R-BR	EXTEQMN	18	09	BR-R	EXTEQMJ
19	35	R-S	AUXCRCT	20	10	S-R	AUXCHO
21	36	BK-BL	AUXCCB	22	11	BL-BK	AUXCFRQ
23	37	BK-O	AUXCFAN	24	12	O-BK	
25	38	BK-G	EXTPRMJ	26	13	G-BK	EXTPRMN
27	39	BK-BR	UNIT2	28	14	BR-BK	UNIT1
29	40	BK-S	UNIT4	30	15	S-BK	UNIT3
31	41	Y-BL	UNIT6	32	16	BL-Y	UNIT5
33	42	Y-O	UNIT8	34	17	O-Y	UNIT7
35	43	Y-G	UNIT10	36	18	G-Y	UNIT9
37	44	Y-BR		38	19	BR-Y	UNIT11
39	45	Y-S	UNIT13	40	20	S-Y	UNIT12
41	46	V-BL	UNIT15	42	21	BL-V	UNIT14
43	47	V-O	UNIT17	44	22	O-V	UNIT16
45	48	V-G		46	23	G-V	UNIT18
47	49	V-BR	RING0	48	24	BR-V	TIP0
49	50	V-S	RING1	50	25	S-V	TIP1

Table 8-2. Pinouts for Auxiliary Connector on G3i V4 System

Terminal #	Pin #	Color	Desig.	Terminal #	Pin #	Color	Desig.
1	26	W-BL	AUXMJ	2	01	BL-W	GRD
3	27	W-O	AUXMN	4	02	O-W	GRD
5	28	W-G		6	03	G-W	GRD
7	29	W-BR		8	04	BR-W	GRD
9	30	W-S		10	05	S-W	GRD
11	31	R-BL		12	06	BL-R	GRD
13	32	R-O		14	07	O-R	GRD
15	33	R-G		16	08	G-R	
17	34	R-BR		18	09	BR-R	
19	35	R-S		20	10	S-R	
21	36	BK-BL	XFER48	22	11	BL-BK	GRD
23	37	BK-O	XFER48	24	12	O-BK	GRD
25	38	BK-G	XFER48	26	13	G-BK	GRD
27	39	BK-BR	XFER48	28	14	BR-BK	GRD
29	40	BK-S	XFER48	30	15	S-BK	GRD
31	41	Y-BL	XFER48	32	16	BL-Y	GRD
33	42	Y-O	XFER48	34	17	O-Y	GRD
35	43	Y-G		36	18	G-Y	
37	44	Y-BR	GRD	38	19	BR-Y	ACC48A
39	45	Y-S	GRD	40	20	S-Y	ACC48B
41	46	V-BL	GRD	42	21	BL-V	ACC48C
43	47	V-O		44	22	O-V	
45	48	V-G	EXT_ALM	46	23	G-V	EXT_ALM_RT
47	49	V-BR		48	24	BR-V	
49	50	V-S	INADS TIP	50	25	S-V	INADS RING

Hardware Description

Circuit Packs

Seven different circuit packs are required for a basic G3i V4 system upgrade. The others are provided on an optional basis for G3i V4 features, as required by the customer.

The four required PPN circuit packs are:

- TN786B

  The Processor circuit pack (TN786B) controls the G3i V4 system. This circuit pack executes stored programs (with an Intel[1] 80386 microprocessor) to perform call-processing activity and maintenance functions.

  This circuit pack contains 7 Mbytes of flash ROM memory for the system generic program and 4 Mbytes of DRAM memory for customer translations. Also, an internal 1200-/2400-bps asynchronous modem originates alarms to the TSC's remote maintenance system allowing technicians to remotely execute maintenance and administrative commands.

  Functions of the TN786B include:

  — Monitoring and controlling circuit-pack conditions

  — Monitoring the environmental sensor and control leads for a single processor operation

  — Controlling emergency-transfer operation

  — Providing direct access to a G3-MT terminal

  — Providing an interface to a CDR output device

  — Providing an external alarm closure

  — Reporting system status via alarm LEDs

- CPP1

  The CPP1 Memory circuit pack mounts to the TN786B processor circuit pack and provides an additional 4 Mbytes of dynamic random access memory (DRAM).

1. Registered trademark of the Intel Corporation.

- TN777B

  The Netcon circuit pack (TN777B) does the following:

  — Houses the mass-storage DEFINITY memory card.

  — Communicates control-channel messages between the processor circuit pack and the distributed network of port circuit packs on the TDM bus.

  — Controls the four data channels that process and route information directly from the processor circuit pack to customer-connected equipment such as: a data service facility, a CDR device, an on- or off-premises administration terminal, or an on-premises remote pooled modem.

  Some of these connections require modems such as a modular processor data module (MPDM) or a modular trunk data module (MTDM).

  — Contains the time-of-day clock with battery backup for a power failure or for a low voltage condition. This circuit pack also has a 24-hour clock for record keeping and system maintenance.

  — Monitors the status of the system's clocks and alerts the processor to the failure of a clock.

- TN768, TN780, or TN2182

  The TN768 Tone-Clock supplies Stratum 4 timing to the port network (PN) where it resides. It derives 2-MHz, 160-kHz, and 8-kHz clocks from its Stratum 4 source frequency. Using North American Mu-law companding, it produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN768 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone-clock provides clocking for the entire system.

  The TN780 Tone-Clock (for both US and non-US installations) circuit pack can connect to an external Stratum 3 clock and monitor it. When done, the TN780 also couples the Stratum 3 clock's output to local clocks. Only the control cabinet responsible for supplying master timing to the system, can use this clock.

  The TN780 derives 2-MHz, 160-kHz, and 8-kHz clocks from either its external Stratum 3 or internal Stratum 4 source frequency. It produces call-progress tones, touch tones, answer-back tone, and trunk-transmission test tone. It also has a ring-generator detection circuit.

  The TN780 can transmit clock signals and tones on time-division multiplex (TDM) bus A, on TDM bus B, or on both buses. This circuit pack also allows the system to control which PN's tone clock provides clocking for the entire system.

Unlike the TN768, the TN780 can be assigned to:

— Produce six customized tones in five different tone plans for use outside the USA

— Operate with either the North American Mu-law or European A-law companding algorithm

The TN2182 Tone-Clock circuit pack integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems.

The TN2182 supports eight ports for tone detection and provides Stratum 4 enhanced clock accuracy. It supports Multifrequency Compelled (MFC) signaling, and allows gain or loss to be applied to PCM signals received from the bus.

It places a single tone on any of the 256 time slots of the system's TDM bus, supports A-Law and Mu-Law companding, and provides continuous, cadenced, and mixed tones.

The TN2182 allows administrable setting of tone's frequency and level, detects 2025 Hz, 2100Hz, or 2225 Hz modem answerback tones, and provides:

— Normal broadband dial tone detection

— Wide broadband dial tone detection

In most configurations, the two- or three-board combination of a tone generator pack, tone detector pack, and/or call classifier pack can be replaced with this one circuit pack, freeing up one or two port slots.

The three required EPN circuit packs are:

- TN775B

  The TN775B is the maintenance circuit in the expansion control carrier. It monitors and controls the clock, power signals, and the environment. It provides two serial links to communicate with Expansion Interface (EI) circuit packs. The TN775B also has an RS232C interface that allows an administration terminal to connect with the EPN.

- TN768 or TN780

  The TN768 or TN780 Tone-Clock supplies Stratum 4 or Stratum 3 timing to the port network (PN) where it resides. For more details, see the previous description under required PPN circuit packs.

- TN776 or TN570

  The TN776 or TN570 Expansion Interface (EI) is an interface between fiber-optic links that interconnect port networks and between the TDM bus and the packet bus (TN570 only). The EI provides control-channel connectivity and time-slot interchanging between the PPN and EPNs.

These circuit packs carry the following information: circuit-switched data, packet-switched data (TN570 only), network control, timing control, and DS1 control.

The TN570 also communicates with the EPN's TN775B maintenance circuit pack to relay the EPN's environmental and alarm status to the switch processing element (SPE).

The optional circuit packs are:

- TN771D

  The TN771D Maintenance/Test circuit pack is required in each port network of critical-reliability G3i V4 with the optional packet bus, and is optional for a standard- or high-reliability G3i V4. This circuit pack resides in a port slot and performs packet-bus reconfiguration and ISDN—PRI testing.

- TN772

  One TN772 Duplication Interface (DUP INT) per common control is required with either high or critical reliability. It selects the active processing element in a high- or critical-reliability system and coordinates the interchange of processing elements.

Other optional circuit packs include:

- TN556

  The TN556 ISDN—BRI circuit pack has 12 ports that provide circuit/packet connectivity for BRI endpoints using the 4-wire S/T interface. Each port has two 64-kbps B channels and one 16-kbps D channel (not used to carry data). The TN556 also provides passive bus (multipoint drop) support, allowing two endpoints (either two voice terminals, two data terminals, or one voice terminal and one data terminal) to connect to each BRI port.

  The TN556 also allows eight ports to provide an interface links for ASAI/CVS applications with Inbound Call Management (ICM) feature.

- TN726B

  The TN726B Data Line circuit pack provides eight EIA ports with limited distance modem interfaces for circuit data switching. It supports asynchronous data endpoints [including data terminals, printers, host computers, personal computers, graphics systems, facsimile machines, and call-detail acquisition and processing systems (CDAPs)] and uses the Mode 2 data-transfer protocol.

- TN744 or TN744C

  The TN744 Call Classifier has eight detectors that recognize tones for Outgoing Call Management (OCM) and Call Prompting applications. For the OCM application, the TN744 detects special network intercept tones and also detects answer supervision from a serving central office (CO).

The TN744B V10 and later versions provide tone detection. Prior to TN744Bv10, the TN744 provides call classification only.

The TN455Bv10 and TN744C Call Classifier/Detector circuit packs have eight ports of tone detection that detect call progress tones when the board is connected and once every 2.5 seconds thereafter. It supports digital signal processing of PCM signals, supports A-Law and Mu-Law companding, and provides DTMF detectors that collect address digits during dialing.

The processor on the TN744C supports digital signal processing of PCM signals on each port to detect tones and other signals. Generation of tones is also supported for applications like R2-MFC and Spanish MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus

- TN464C

  The TN464C serves as both a DS1 and an ISDN—PRI interface. This circuit pack resides in any G3i V4 port slot and:

  — Complies with the 1.544-Mbps North American DS1 standard

  — Converts the European A-law to the North American mu-law companding algorithm

  — Operates compatibly with the optional Stratum 3 clock

  — Provides D-channel connectivity for ISDN—PRI

- TN767B

  The TN767B Digital Service 1 (DS1) Interface allows DS1 and ISDN—PRI B-channel signaling to be carried transparently on any of the 24 ports of the trunk between the TDM bus and the DS1 facility. It also performs robbed-bit signaling using central office (CO), tie, Direct Inward Dialed (DID), or Off-Premises Station (OPS) signaling protocol in any remaining ports on a per port basis.

- TN736/TN752

  The TN736 Power Unit provides -5 volt DC on the backplanes of all carriers for the port circuit packs. It is required in a G3i V4 upgrade if the system is equipped with a 631BR1 or 631WB1 power unit. The TN752 provides the same capabilities plus power for neon message lamp.

- TN755

  The TN755 Power Unit circuit pack provides 150 volts DC for neon message waiting. It should be used in conjunction with an Analog Line circuit pack that support neon message waiting (TN746 and TN769). Each carrier that contains an analog circuit pack for neon message waiting requires the TN755.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Port-Network Configurations

Every G3i V4 port-network configuration contains one PPN which, for this G3i V4 upgrade, is always a new multicarrier cabinet. Larger configurations can contain either one or two EPNs. Figure 8-2 shows the three main port-network configurations including:

- Basic system, containing only a PPN
- Directly connected systems, containing:
  - — Two port networks (PPN and EPN) connected directly together
  - — Three port networks (PPN and two EPNs) connected directly together

The following sections describe various upgrades to a G3i V4 with either two or three port networks.

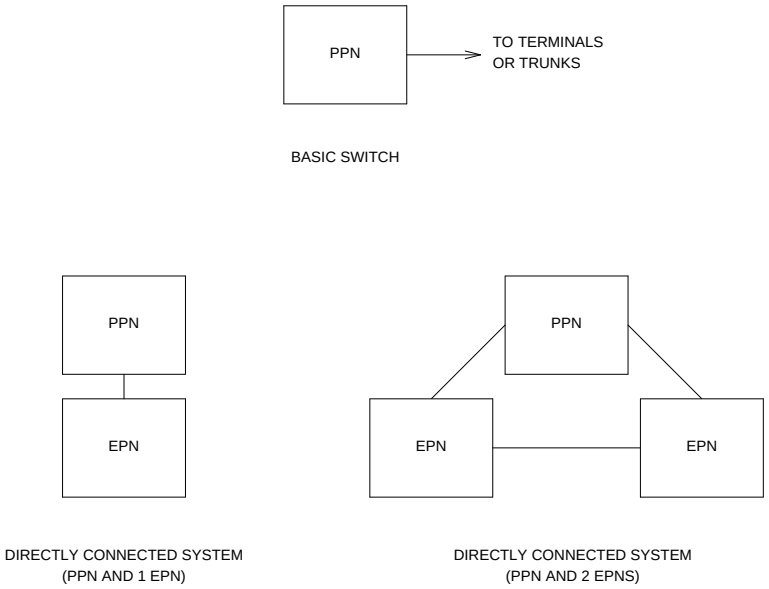


Figure 8-2. G3i V4 Port-Network Configurations

Software-Translation Upgrade

The G3i V4 translations will be saved on a memory card installed in the new TN777B Netcon circuit pack. The format of this translation memory card is not compatible with the format of the G2 disk/tape system (DTS).

During an upgrade from a G2 to a G3i V4, STS generates TRACS reports (shows the current software translations) and G3-MA diskettes (basic station translations) in the G2 system and sends the reports to the Project Manager. To enable these activities, replace the system tape with a spare G2 tape. (Spare G2 tape cartridges can be acquired from the QPPCN before the upgrade.) Copy the current G2 translations to the spare tape and overnight mail to STS. Put the original system tape back into the system.

If possible, the customer should put a freeze on any new translations while the spare tape is being converted. If not, be sure the customer's switch administrator keeps detailed records of any translation changes made during that interval. These records will supplement the TRACS reports to facilitate the transition from G2 to G3i V4 software translations.

The TRACS reports with the current G2 translations must be on-site before the upgrade begins.

Save Translations

1. Log in at the Manager II on the G2.
2. Enter `rtx` (run tape, execute). Press RETURN. This command instructs the system to write all translation information from memory to the tape.
3. Remove the system tape, install the backup tape, and wait for the tape to retension.
4. Enter `rtx` (run tape, execute). Press RETURN.

Make Source Tape for TRACS Report

A spare G2 tape must be acquired from the QPPCN before performing the following steps. For each processor, there must always be two tapes on site with the G2 system. Do not send a system or backup tape to STS.

After performing the previous procedures, copy the G2 translations to the spare tape used to make the TRACS report. Perform the following procedures:

1. Remove the backup tape, install the spare tape, and wait for the tape to retension.
2. Enter `rtx` (run tape, execute). Press RETURN. This command instructs the system to write all translation information from memory to the tape.

3. Remove the source tape.
4. Insert the system tape.

The tape removed in Step 3 should be mailed (with next-day delivery) to STS for use in making the G2 TRACS report.

System Upgrades

There are many configurations of DEFINITY G2s in the field. In terms of both hardware and software, each system can have a unique configuration. However, to simplify G3i V4 upgrades:

- The existing common control is always replaced by a multicarrier PPN
- Existing traditional modules are replaced by EPNs [2]
- Existing universal modules are upgraded to EPNs

A new multicarrier cabinet would then always serve as the PPN.

If a G2 universal module is upgraded to a G3i V4 EPN, hardware changes (including carrier replacement) are required.

This section gives a sequential list of the steps required to upgrade the system.

G2 to G3i V4

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new PPN cabinet.

If traditional modules are being replaced by EPNs, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, to install the new EPNs.

2. There is not necessarily a one-to-one correspondence between G3i V4 EPNs and G2 modules. With careful hardware and traffic engineering, an upgraded G3i V4 can have fewer EPNs than the G2 had modules.

Upgrade Single-Carrier Cabinet Stack

An existing universal-module cabinet stack is always upgraded to an EPN. Upgrade the modules using the following procedures.

A G2 universal module is upgraded to a G3i V4 EPN by:

- Removing the module control cabinet occupying position ‘‘A’’ or logical positions ‘‘A’’ and ‘‘B’’
- Installing the J58890N expansion control cabinet in position ‘‘A’’
- Replacing the module control in logical position ‘‘B’’ with a J58890H-1 port cabinet (if desired) or changing the port cabinets’ address plugs
- Adding the G3i V4 circuit packs
- Restructuring the port circuits as required
- Adding G3i V4 circuit packs to the ‘‘B’’ port cabinet for critical reliability if required

Upgrading a G2 universal module with single-carrier cabinets requires, at a minimum, that the module control cabinet be replaced. Since the module control cabinet is the bottom cabinet in the stack, the stack will have to be completely dismantled. Properly label every cable to be disconnected so that reconnecting them is easier.

Prerequisite Hardware

The equipment in Table 8-3 *must* be on-site before the upgrade begins. Ensure that the translation memory cards are current and, if necessary, contain enough memory for recorded announcements.

To place a claim for missing equipment, as part of the Streamlined Implementation process, call ‘‘1-800-772-5409,’’ and respond to the call prompter.

Table 8-3. Required Hardware

Equipment	Description	Quantity
PEC 6300-05X	Processor Port Network	1
J58890N-1	Expansion Control Cabinet	1
106647985	TN775B Maintenance	1
103557294 or 103281788	TN776 Expansion Interface TN570 Expansion Interface	2, 4, 6, or 12 (Note 1) 2, 4, 6, or 12 (Notes 1 and 2)
63300A	FL2P-P-XX Fiber Cable	1 to 12 (Note 3)
106455348 or 106455363	9823-A Lightwave Transceiver 9823-B Lightwave Transceiver	2 to 12 (Note 4) 2 to 12 (Note 4)
406809889	J58890TG L10 4-MByte Mass-Storage Translation Memory Card	1 or 2 (Notes 5 and 6)
106689516	TN771D Maintenance Test	1 or 2 (Note 7)
846307817	Lower Rear Cover	1 (Note 8)
846307809	Ground Plate	1 (Note 9)
H600-248 G1	ICC Cables	2 (Note 9)
846408268	Earthquake Front Panel	1 (Note 10)
846408386	Earthquake Ground Plate	1 (Note 10)
846408250	Stiffener	1 (Note 10)
846408243	Earthquake Front Mounting Angle	1 (Note 10)

Notes:

1. Depending on the reliability type and on the number of G3i V4 port networks. Two Expansion Interfaces (EIs) are required for a standard- or high-reliability system with two port networks; six with three port networks. Four are required for a critical-reliability system with two port networks; twelve with three port networks. The factory has installed the necessary EIs in the new PPN. The rest are shipped loose with the EPN equipment.
2. Required port-network interfaces in a G3i V4 system with the optional packet bus.
3. Depending on the reliability type, on the number of G3i V4 port networks, and on whether the networks are remotely separated. One fiber cable is required for a standard- or high-reliability system with two collocated port networks; three with three collocated port networks. Two are required for a critical-reliability system with two

collocated port networks; six with three collocated port networks. (When the port networks are remotely separated, each value doubles.)

Assuming acceptable lengths, the fiber(s) that previously connected an upgraded G2 universal module (*not* a traditional module) to the G2 TMS have the correct transceiver connectors and, therefore, can be reused.

4. Depending on the reliability type and on the number of G3i V4 port networks. Two transceivers are required for a standard- or high-reliability system with two port networks; six with three port networks. Four are required for a critical-reliability system with two port networks; twelve with three port networks.

   For each fiber connection, one 9823-type lightwave transceiver is installed in one port network, and another 9823-type transceiver in the adjacent port network. A 9823-type transceiver can be reused from each upgraded G2 universal module. Additional 9823-type transceivers, ordered separately, are also shipped loose with the EPN equipment.

5. Depending on the reliability type of the G3i V4 system. One memory card is required for a standard-reliability system; two for a high-

6. 4-Mbyte translation memory cards are required for a system that uses recorded announcements.

7. Depending on the number of EPNs in a critical-reliability G3i V4 system.

8. Required for the ''B'' port cabinet of a critical-reliability G3i V4 EPN. (May not have been installed during R1V3 System 75-to-G2 universal module upgrade.)

9. Required for a critical-reliability G3i V4 EPN.

10. Required if earthquake protection is provided.

Required Tools

The following tools and items may be required during the upgrade:

- Flashlight or high-intensity AC drop light
- Power screwdriver (optional)
- 1/4-inch flat-blade screwdriver
- 1/4-inch socket with ratchet (optional)
- Long-nose pliers to straighten backplane pins
- Static-proof or original circuit-pack packaging for transporting circuit packs
- Labels for identifying the port circuit packs and cables attached to the rear of cabinets
- Receptacle for holding screws
- One dozen #8 self-tapping screws
- Repair kit for backplane pins (KS-22876 L2 or equivalent)
- One copy of each of the following manuals:
  - *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7
  - *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655

Preventive Maintenance

During the G3i V4 upgrade, follow routine preventive maintenance procedures on the system to be upgraded. For information about the procedures and necessary equipment, refer to the "Preventive Maintenance'' section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7.

Verify System Status

Before proceeding, the system should be examined for alarms, and every problem should be corrected. The system must be alarm-free.

Label Cables

To make reconnecting the cables simpler and more reliable, label every connector cable associated with the system (if not already labeled).

Power Down System

1. At each PPN cabinet's power supply, set the main circuit breaker to OFF.
2. At each EPN cabinet's power supply, set the main circuit breaker to OFF.

Disconnect Power and Grounding

1. Disconnect the cabinet power cords from the rear of each cabinet.
2. Disconnect the coupled bonding conductor.
3. Disconnect the 6-AWG cabinet ground wire from the ground bar in the cabinet.

NOTE:
A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

Install Power-Failure Transfer Ground Strap

CAUTION:
To avoid contaminating single-point ground, do not connect the ground strap while the system is powered up.

1. Connect a strap's lead either to pin 49 of the connecting block or to pin 49 of the CAP (cable access panel) associated with the power-failure transfer panel.
2. Route the other lead to an approved ground source.
3. Connect the lead to the approved ground source.

Remove Door and Panels and Disconnect Cables

1. Remove the front door from all of the universal module's cabinets.
2. Disconnect the previously labeled connector cables attached to the universal module.
3. Remove the ground plate(s) from between all of the universal module's cabinets.
4. Remove the top and bottom rear covers from all of the universal module's cabinets.

Remove Circuit Packs

See WARNING. Remove all circuit packs and power units from the module control cabinet. Store the circuit packs in the static-proof packaging.

WARNING:
Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet's frame.

Disconnect TDM/LAN Cables

See NOTES. Remove and retain all of the TDM/LAN cables. They will be reused.

NOTE:
Before disconnecting each cable, note the position of the cable.

NOTE:
Since duplicated G2 module control carriers reside in the same single-carrier cabinet, ICC cables are not required to interconnect these carriers. However, new ICC cables (H600-248 G1) will be installed to interconnect the ''A'' and ''B'' carriers residing in separate cabinets of the upgraded G3i V4 EPN.

Remove the Existing Module Control Cabinet

Since the module control cabinet is located at the bottom of the universal module, the stack will have to be completely dismantled. At this point in the upgrade, all the power, grounding, TDM, ICC, and connector cables should be disconnected. Before proceeding, ensure there is adequate space available to place each cabinet in an out-of-the-way location as the stack is dismantled.

1. Remove the cabinet clip between each cabinet or front earthquake plate as provided.
2. Remove rear ground plate.
3. See DANGER. Remove the port cabinets from the stack, and put them in a safe place.

   DANGER:
   A port cabinet may weigh as much as 125 pounds and requires two handlers to unstack the cabinet. If a third or fourth cabinet is to be removed, remove the front door, power supply, and circuit packs from the cabinet to lighten the load. Make sure the two handlers are capable (size and strength) of lifting the cabinet from its position.

4. If the module control cabinet in position ''A'' is earthquake mounted, remove the hardware securing the cabinet to the floor.
5. See NOTE. Move the existing module control cabinet out of its present location. It will not be reused, so it can be removed at this time.

   NOTE:
   If the universal module being upgraded is part of a critical-reliability G2 system, both the ''A'' and ''B'' logical carriers reside in this cabinet. In this case, two sets of module control circuit packs occupy both sides of the cabinet.

Unpack and Inspect Expansion Control Cabinet for Damage

1. See DANGER. Unpack cabinet.

   DANGER:
   Take care to avoid injury while cutting and removing bands.

2. Visually inspect cabinet for any physical damage caused during shipping. Report any damage for appropriate action per local procedures.

Remove Front Door

Remove the front door of expansion control cabinet.

1. Use a screwdriver, and turn door-latch screw counterclockwise one quarter turn to release door (see Figure 8-3).
2. Lift door from lower slots and remove from cabinet.

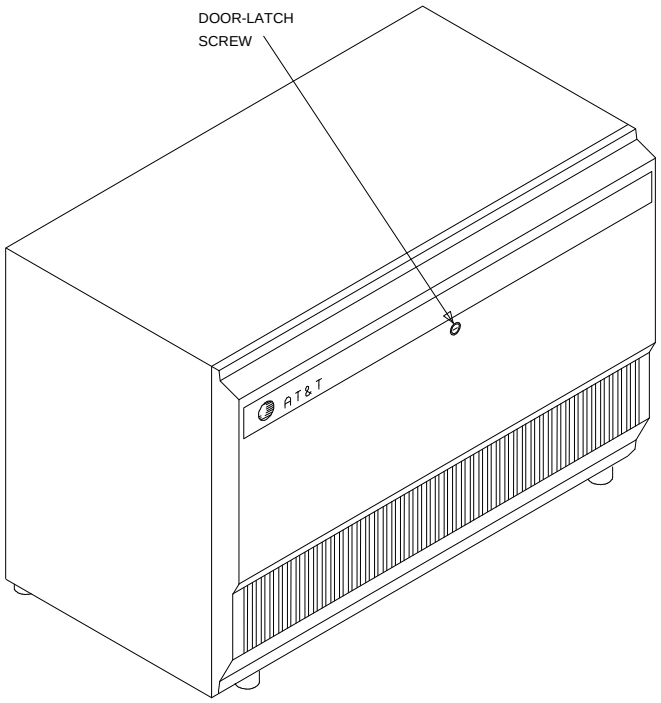


Figure 8-3. Location of Door-Latch Screw for G3i V4 Cabinet

Install Expansion Control Cabinet

1. See DANGER. Position the J58890N-1 expansion control cabinet "A" at the desired location.

   DANGER:
   The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

2. If earthquake protection is not required, install hole plugs (provided with cabinet) in the holes previously occupied by the two carriage bolts at the bottom rear of the cabinet.

Add Earthquake Protection

If earthquake protection is required:

1. Place the front mounting angle at the location selected for the front of the expansion control cabinet.
2. Using the angle as a template, mark the locations of the two mounting bolts.
3. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 2.
4. Mount the front mounting angle to the floor (Figure 8-4).
5. Move the cabinet back into place, and temporarily stabilize the cabinet by attaching the cabinet to the angle with two No. 12-24 by 1/2-inch thread-forming screws.
6. Insert a pencil or marker through the two holes (previously occupied with carriage bolts) in the bottom rear of the cabinet, and mark the floor directly beneath each hole.
7. Remove the two screws installed in Step 5, and move the cabinet out of the way.
8. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spots marked in Step 6.
9. Move the cabinet back into place.
10. Attach the cabinet to the front mounting angle using four No. 12-24 by 1/2-inch thread-forming screws.

11. In the rear of the cabinet, lay the stiffener on the bottom of the cabinet, aligning the stiffener with the holes in the bottom of the cabinet.
12. Fasten the cabinet to the floor (Figure 8-5).

NOTE:
This procedure is only a portion of the complete earthquake protection package. According to the logical installation sequence, instructions for adding the earthquake front plate and earthquake ground plate will be given at the appropriate location in this chapter.

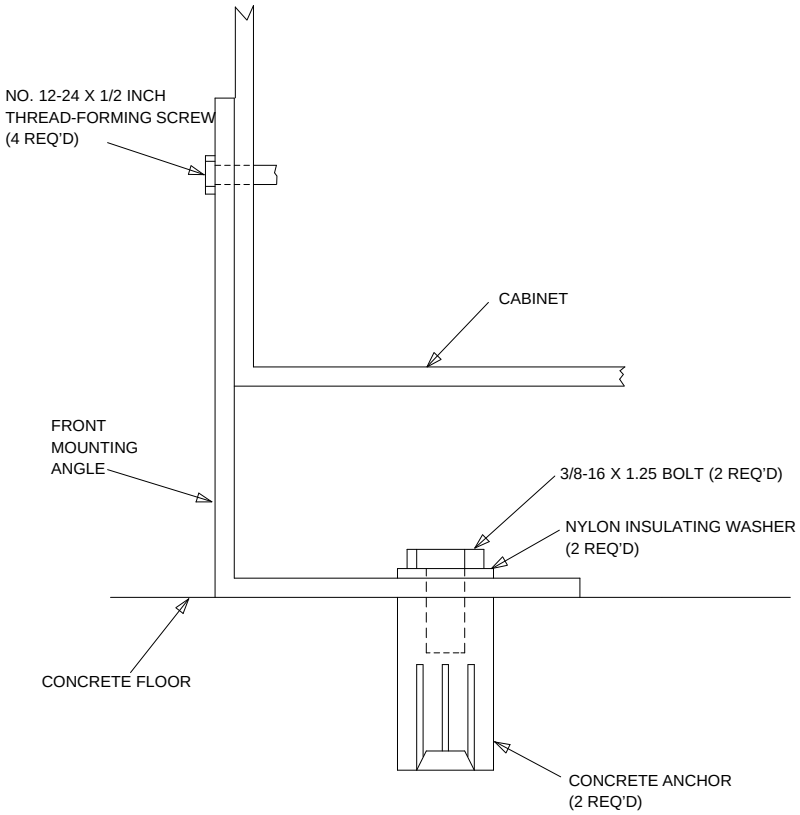
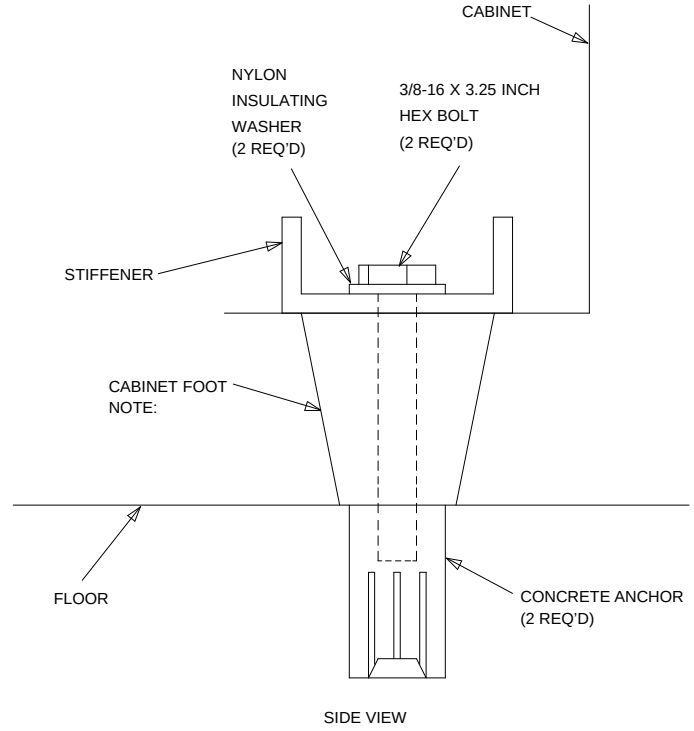


Figure 8-4. Front Mounting Angle — Concrete Floor



NOTE: BOLT DOES NOT RUN THROUGH CABINET FOOT

Figure 8-5. Cabinet Earthquake Mounting — Concrete Floor

Install Port Cabinets

See DANGER and NOTE. Place the port cabinets into the positions from which they were previously removed (see Figure 8-6).

DANGER:
The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.

NOTE:
If a critical-reliability G2 universal module is being upgraded to a G3i V4 EPN, the second logical carrier in the G2 module control cabinet (J58890P) can be replaced by a new J58890H port cabinet in position ''B.''

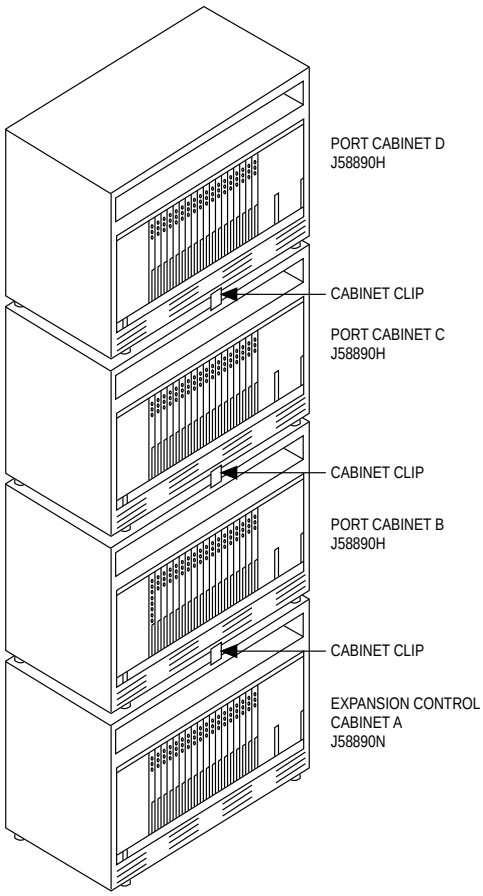


Figure 8-6. 4-Cabinet G3i V4 EPN — Front View, Doors Removed

Install Circuit Packs

1. See WARNINGS. Replace the circuit packs and power supplies in port cabinets ‘‘D’’ and “E’’ if they were previously removed. See Figure 8-7.

   WARNING:
   Before inserting or removing a circuit pack from a cabinet, put on a wrist strap and attach its plug or clip to the cabinet’s frame.

   WARNING:
   These replaced port circuit packs must conform to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

2. See preceding WARNINGS and following NOTE. Using the following figure, the label, and the annotated ‘‘list configuration all’’ (provided with the G3i V4 translation memory cards), install the G3i V4 control circuit packs into the new expansion control cabinet.

   NOTE:
   Currently, both TN768 Tone Clock circuit packs reside in port slots of the universal module being upgraded. As part of this step, relocate one of these circuit packs to the ‘‘TONE CLOCK’’ slot of carrier ‘‘A.’ AT&T recommends that you upgrade to the TN2182 Tone-Clock.’

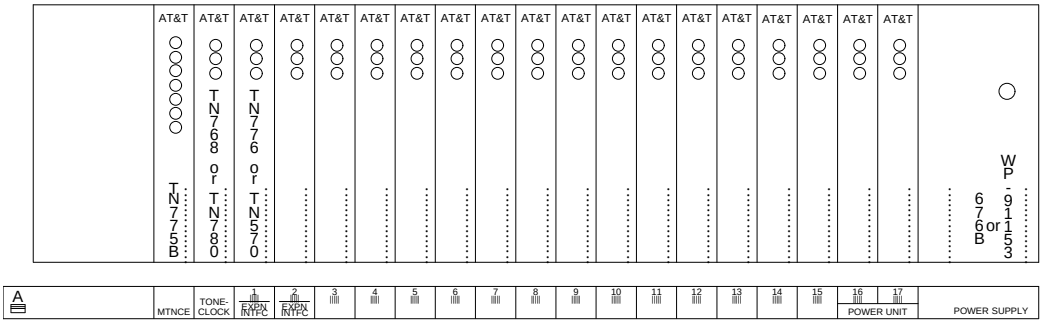


Figure 8-7. Circuit-Pack Locations in G3i V4 Expansion Control Cabinet

3. See preceding WARNINGS and following NOTE. For an EPN in a critical reliability G3i V4 system, install the other TN768 Tone-Clock and either a TN776 or TN570 EI (see Table 8-4) in slots ''1'' and ''2'' of port cabinet ''B.''

NOTE:
Installing these circuit packs may require a port circuit pack (in slot 3B02) to be moved. If not done before the upgrade, move this circuit pack to an available slot now. Its port circuits will have to be retranslated after the system is rebooted with the G3i V4 translation memory card.

Table 8-4. TN776 or TN570 Requirements

Cabinet	2 Port Networks w/o Critical Reliability	2 Port Networks w/Critical Reliability	3 Port Networks w/o Critical Reliability	3 Port Networks w/Critical Reliability
PPN	1	2	2	4
EPN 1	1	2	2	4
EPN 2	N/A	N/A	2	4

Change Cabinet Address Plugs

If the G2 universal module was not duplicated or if a duplicated module control cabinet was removed from position "B" and was not replaced with a new port cabinet, the upgraded EPN's port cabinets occupy incorrect positions in the cabinet stack. If so, the location of each port cabinet's address plug must be changed to reflect the cabinet's current position (see Figure 8-8).

Behind each port cabinet, find either one or two address plugs attached to either two or four of the six backplane pins to the right of the pin-field block for slot 00.

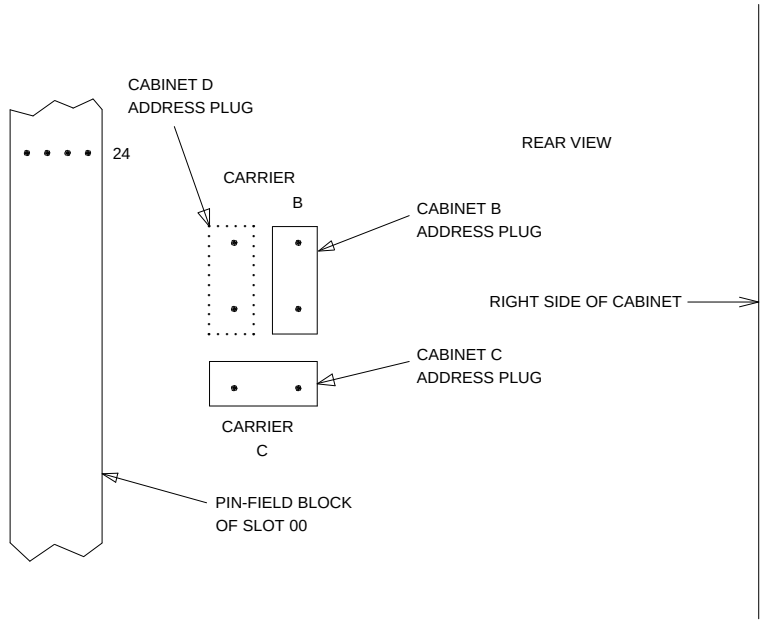


Figure 8-8. Cabinet Address-Plug Location

Install TDM/LAN Bus Terminators

1. Verify that the AHF110 TDM/LAN bus terminator is installed on the right side of the control cabinet looking from the back of the cabinet as shown in Figure 8-9.
2. Verify the AHF110 TDM/LAN bus terminator is installed on the top port cabinet.

Connect TDM/LAN Cables and ICC Cables

1. Route and connect the TDM/LAN cables (see Figure 8-9). If any of the G2 port cabinets (being upgraded to G3i V4 cabinets) were originally R1V3 System 75 port cabinets, use the following steps to route a cable between an R1V3 upper cabinet and cabinet beneath it. Do not run a new cable through the existing slot in the rear shelf of the upper cabinet.
    a. Loosen two left (as viewed from the rear) connector-panel screws, then remove the other two connector-panel screws.
    b. Attach the TDM/LAN cable to the backplane, and slide the cable between the connector panel and the rear shelf (not through the existing slot in the shelf). Route the cable along the bottom of the cabinet.
    c. Replace and tighten the connector-panel screws.
2. Connect the new ICC cables (H600-248 G1) as shown in Figure 8-5 on page 8-33 and Figure 8-10 on page 8-33 and Figure 8-11.
3. On the ‘‘A’’ carrier, verify that the CFY1 current limiter (CURL) is properly connected to pin-field block ‘‘00’’ (see Figure 8-10). The CURL’s components should be on the left side as viewed from the rear.

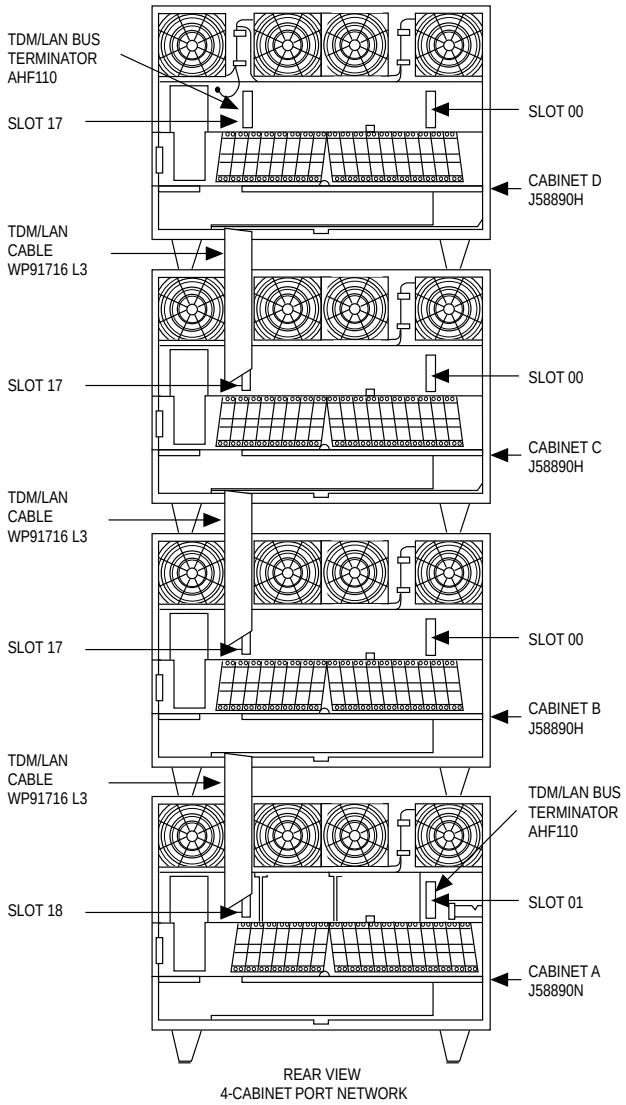


Figure 8-9. TDM/LAN Connections for G3i V4 EPN

Table 8-5. Intercabinet Cable Connections

Connect ICC Cables				
	From		To	
	Carrier	Pin-Field Block	Carrier	Pin-Field Block
EPN	J58890N	ICCA	J58890H-1	ICCA
		ICCB		ICCB

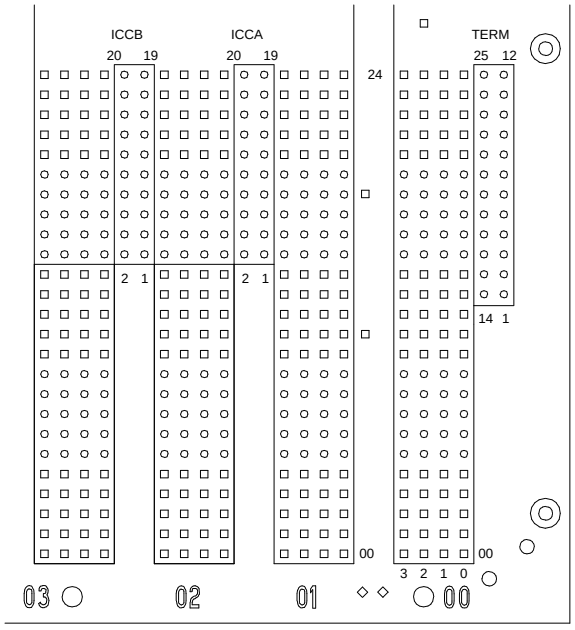


Figure 8-10. ICC Pin-Field Blocks on J58890N Expansion Control Cabinet

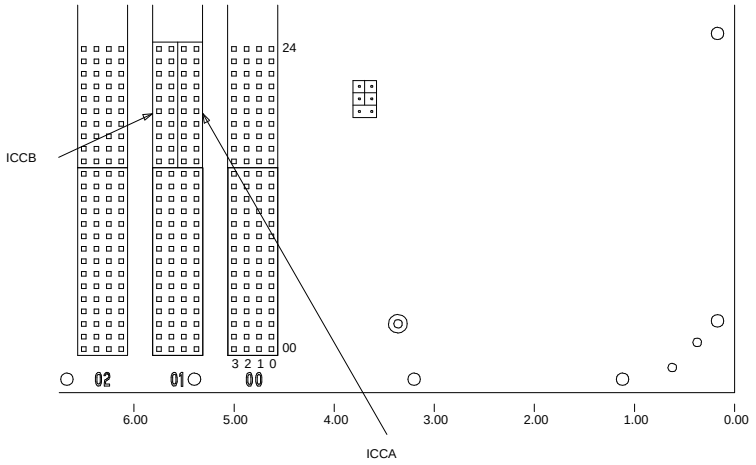


Figure 8-11. ICC Pin-Field Blocks on J58890H Port Cabinet

Interconnect Port Networks — Standard-Reliability G3i V4 System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
These distance limitations are approximate measurements of the *actual* fiber right-of-way (not the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable installed. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either “TX” (transmit) or “RX” (receive), while the fibers attached to each connector are numbered either ‘‘1’’ or ‘‘2.’’ A viable fiber connection is only made when both fibers in each cable (‘‘1’’ and ‘‘2’’) route from the “TX” connector of a

port network to the ‘‘RX’’ connector of its adjacent port network. For an example, refer to Figure 8-13 on page 8-38.

NOTE:
For implementation details, refer to the ‘‘Fiber Link Administration’’ sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a standard-reliability system with one collocated expansion port network, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to directly connect the networks.

For a standard-reliability system with two collocated expansion port networks, three fiber-optic cables (FL2P-P-XX) and six lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the cable length in feet. Based on floor-plan considerations, the length of cables may vary. Twenty foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to each EPN cabinet. Since, for this upgrade, a ‘‘DEFINITY style’’ PPN cabinet is collocated with a single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

If a ‘‘DEFINITY style’’ PPN cabinet is also collocated with another ‘‘DEFINITY style’’ multicarrier EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

Fiber-Remoted Port Networks

For a standard-reliability system with one fiber-remoted expansion port network, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

For a standard-reliability system with two fiber-remoted expansion port networks, six fiber-optic cables (FL2P-P-XX), six lightwave transceivers (9823-type), and six lightwave-interface units (provided by the PSC) are required.

For One or Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN (see Figure 8-12 through , Figure 8-15):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 2A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 3:

- Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A01.
- Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3A01.
- Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
- Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

3. Behind control cabinet A of EPN stack 2:
   - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers to the other EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
4. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A02.
   - Connect the other end of the fiber-optic cable coming from the other EPN to the lightwave transceiver at slot 3A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - Coil up the surplus length of fiber-optic cable, and delicately attach the coil (with a cable tie) to a leg of an EPN cable clamp.

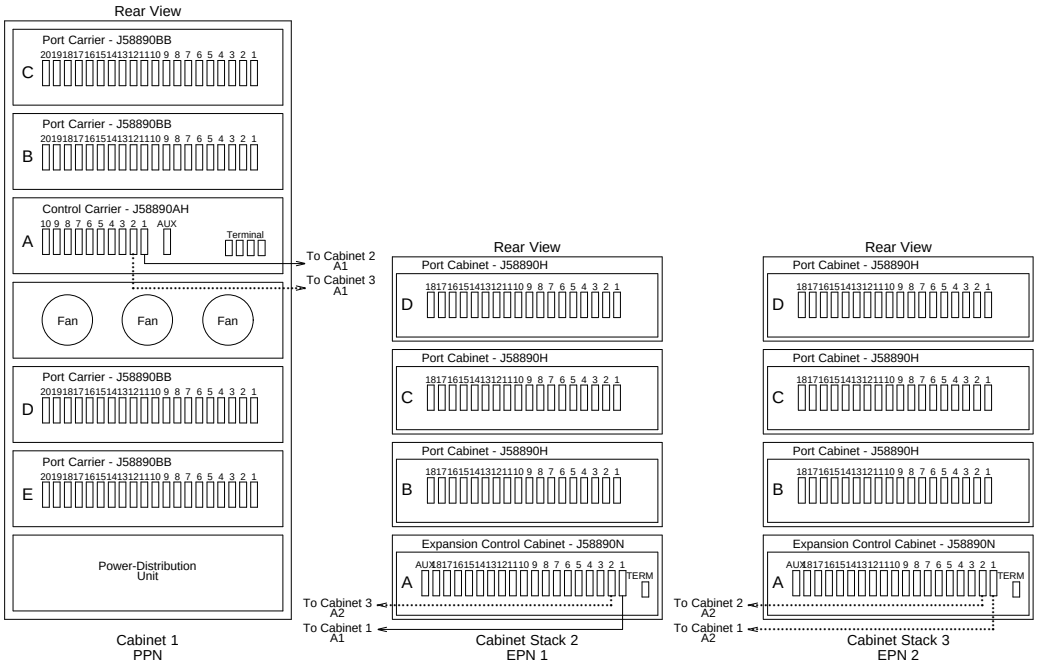


Figure 8-12. Standard-Reliability G3i V4 with Two or Three Port Networks

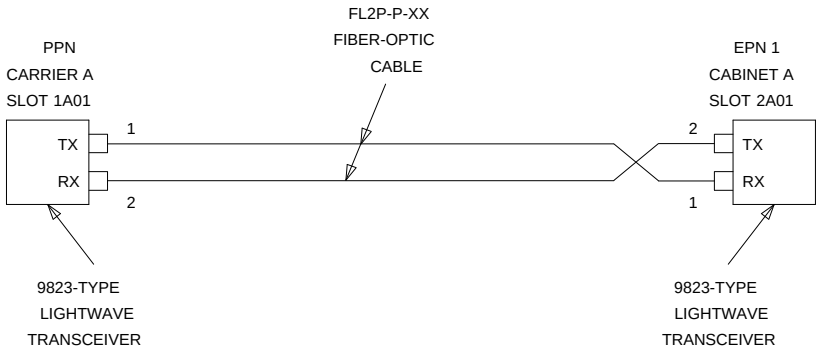


Figure 8-13. Fiber-Optic Connections PPN to EPN1

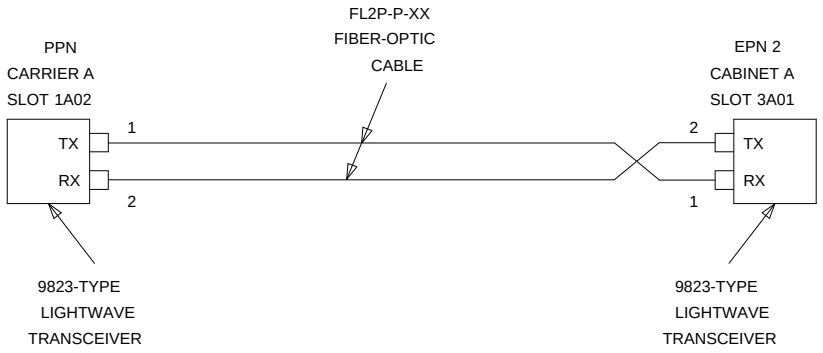


Figure 8-14. Fiber-Optic Connections PPN to EPN2

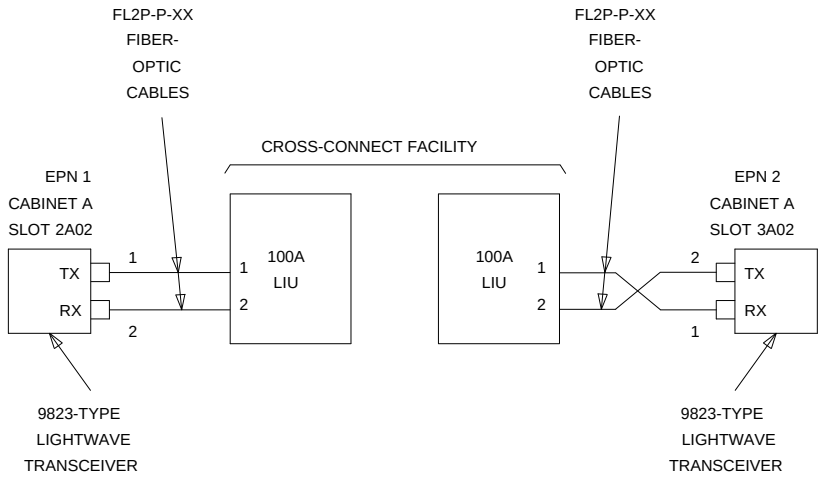


Figure 8-15. Fiber-Optic Connections EPN1 to EPN2

For One or Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN (Figure 8-16 on page 8-42, Figure 8-17, Figure 8-18, and Figure 8-19):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 2A01.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

For Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A01.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 3A01.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
3. Behind control carrier A of EPN stack 2:
   - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.

4. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A02.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 3A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

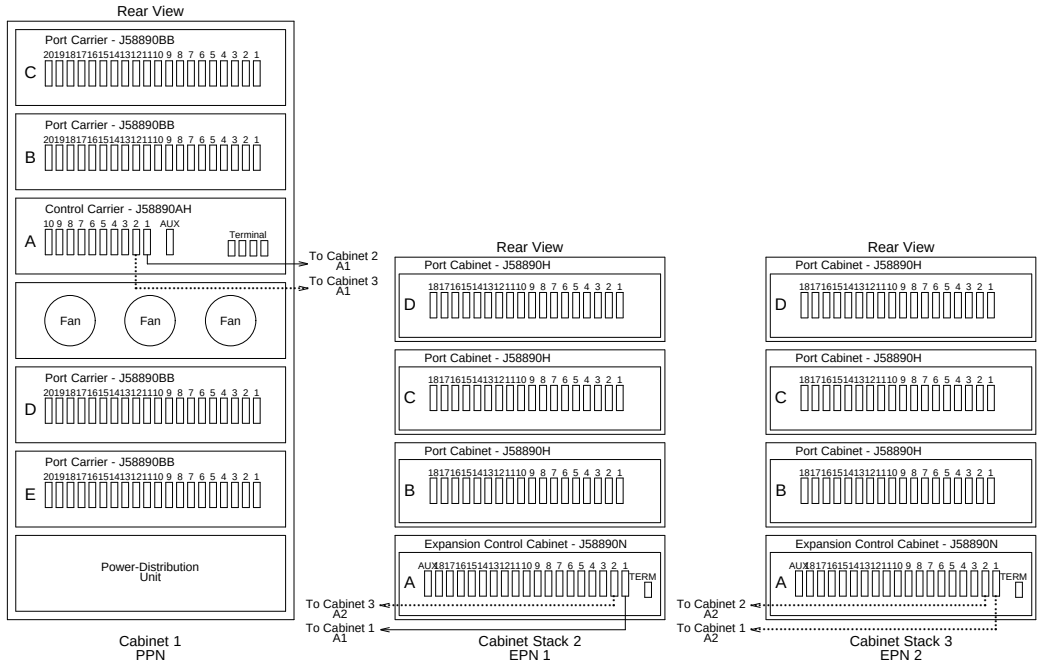


Figure 8-16. Standard-Reliability G3i V4 with Two or Three Port Networks

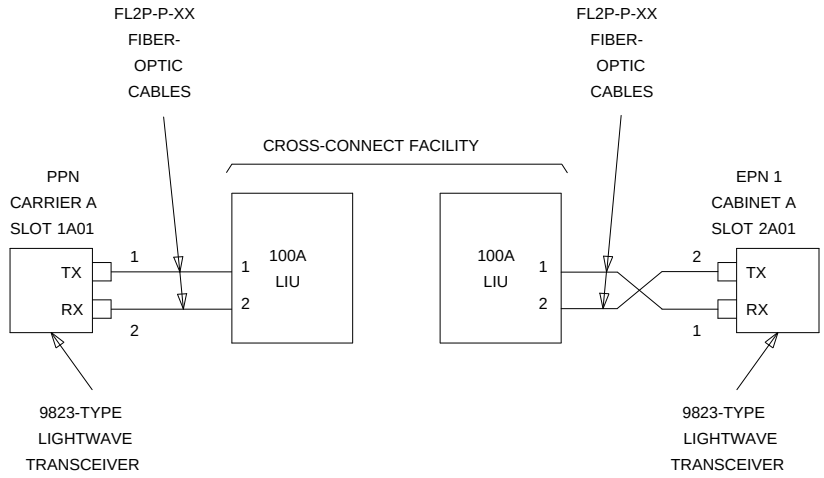


Figure 8-17. Fiber-Optic Connections PPN to EPN1

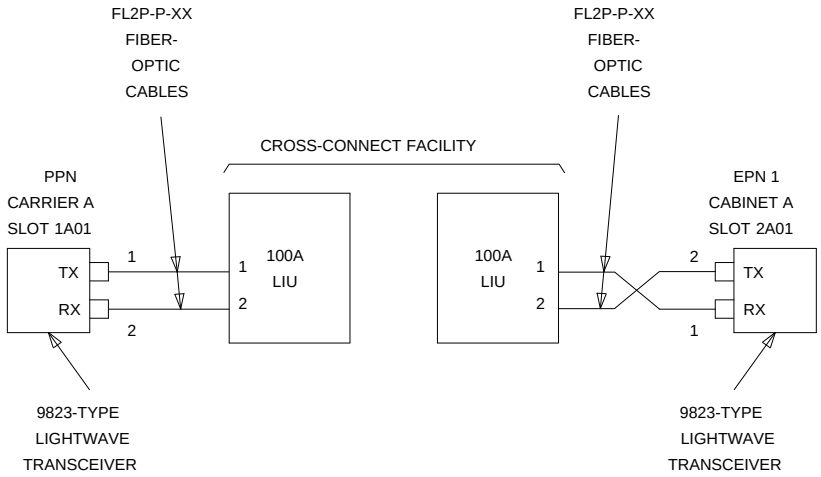


Figure 8-18. Fiber-Optic Connections PPN to EPN2

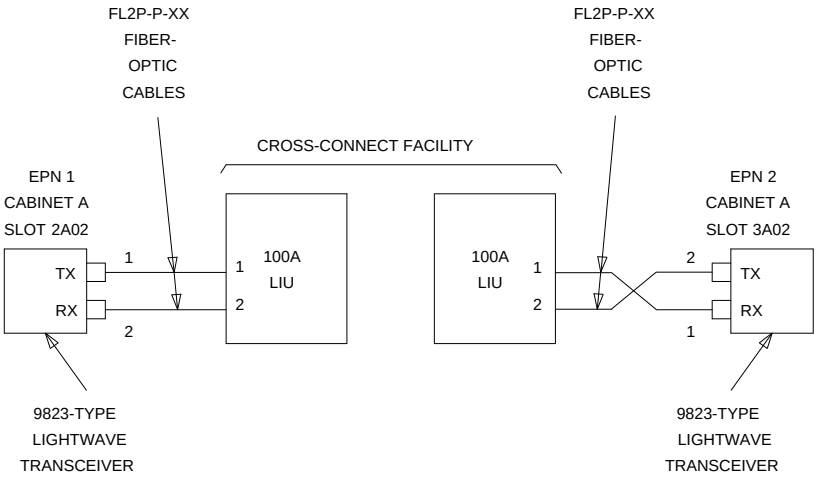


Figure 8-19. Fiber-Optic Connections EPN1 to EPN2

Interconnect Port Networks — High-Reliability G3i V4 System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
These distance limitations are approximate measurements of *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable installed. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either “TX” (transmit) or “RX” (receive), while the fibers attached to each connector are numbered either ‘‘1’’ or ‘‘2.’’ A viable fiber connection is only made when both fibers in each cable (that is, ‘‘1’’ and ‘‘2’’) route from the “TX” connector of a port network to the “RX” connector of its adjacent port network. For an example, refer to Figure 8-21.

NOTE:
For implementation details, refer to the ''Fiber Link Administration'' sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a high-reliability system with one collocated expansion port network, one fiber-optic cable (FL2P-P-XX) and two lightwave transceivers (9823-type) are required to directly connect the networks.

For a high-reliability system with two collocated expansion port networks, three fiber-optic cables (FL2P-P-XX) and six lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to each EPN cabinet. Since, for this upgrade, a ''DEFINITY style'' PPN cabinet is collocated with a single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

If, for this upgrade, a ''DEFINITY style'' PPN cabinet is also collocated with another ''DEFINITY style'' multicarrier EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

Fiber-Remoted Port Networks

For a high-reliability system with one fiber-remoted expansion port network, two fiber-optic cables (FL2P-P-XX), two lightwave transceivers (9823-type), and two lightwave-interface units (provided by the PSC) are required.

For a high-reliability system with two fiber-remoted expansion port networks, six fiber-optic cables (FL2P-P-XX), six lightwave transceivers (9823-type), and six lightwave-interface units (provided by the PSC) are required.

For One or Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN (see Figure 8-20 on page 8-48, Figure 8-21, Figure 8-22, and Figure 8-23):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 2A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet's cable tray and downward out of the cabinet to the EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil either in the cable manager or on the bottom shelf (holding the power supply) of the PPN cabinet.
3. Behind control cabinet A of EPN stack 2:
   - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers to the other EPN stack.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
4. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A02.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3A02.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and delicately attach the coil (with a cable tie) to a leg of an EPN cable clamp.

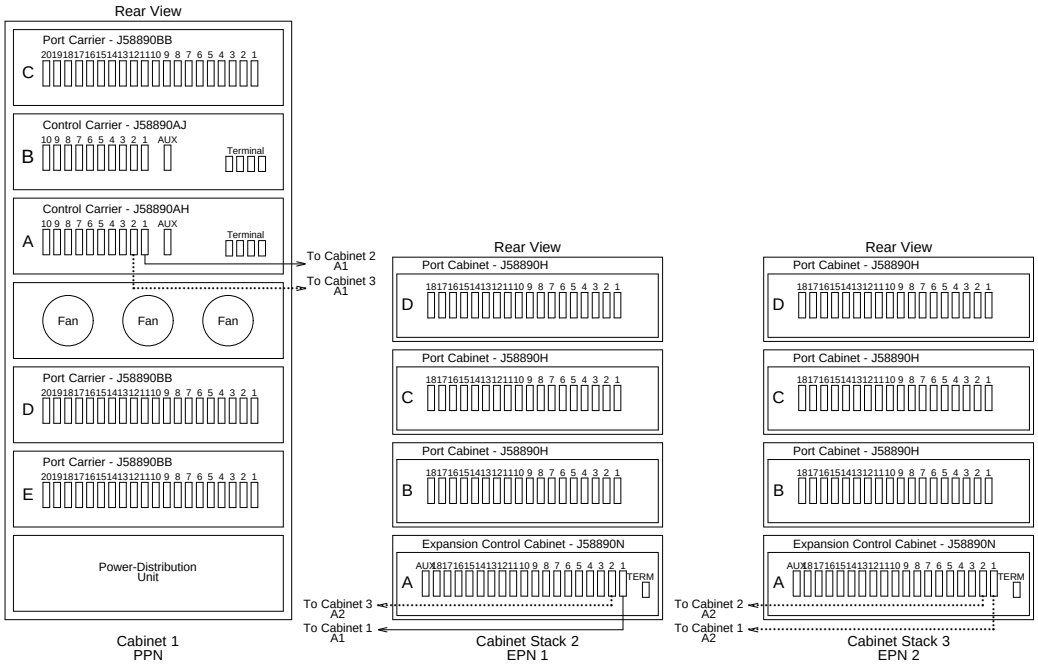


Figure 8-20. High-Reliability G3i V4 with Two or Three Port Networks

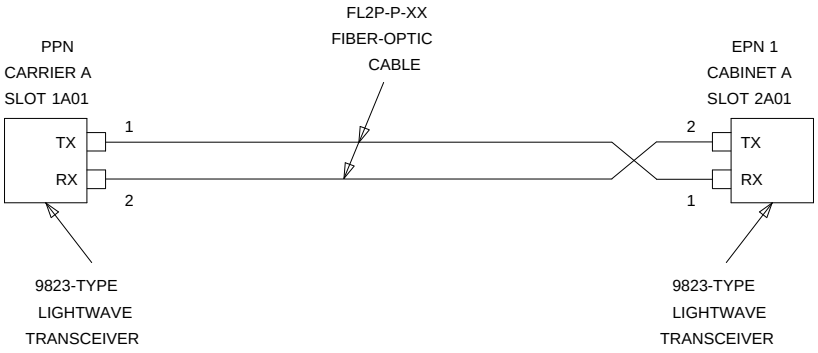


Figure 8-21. Fiber-Optic Connections PPN to EPN1

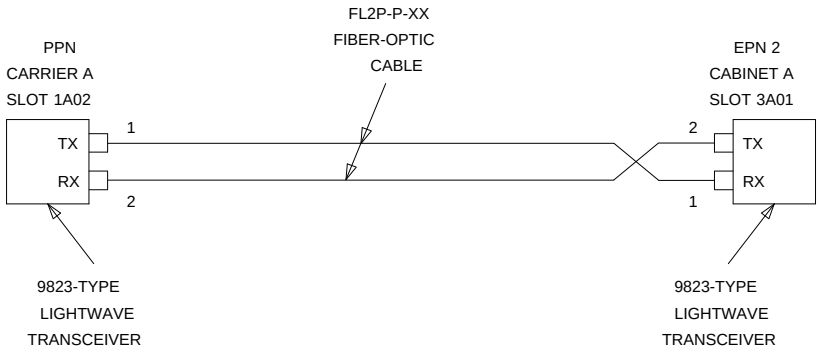


Figure 8-22. Fiber-Optic Connections PPN to EPN2

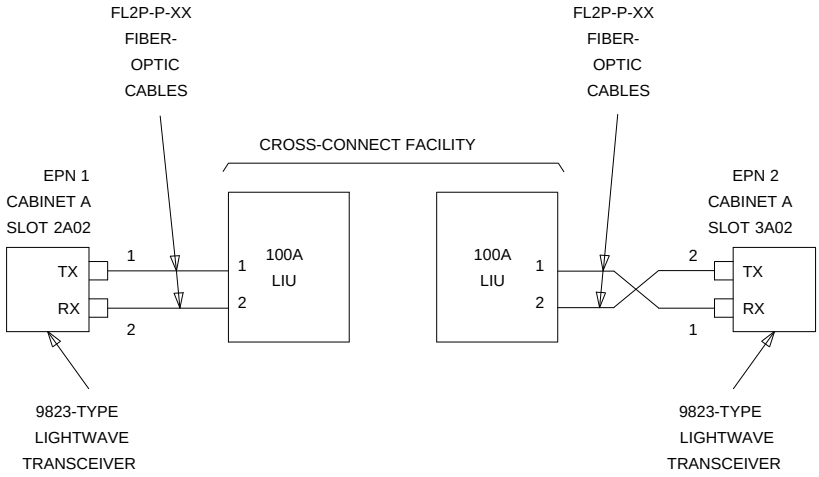


Figure 8-23. Fiber-Optic Connections EPN1 to EPN2

For One or Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN (Figure 8-24 on page 8-52, Figure 8-25, Figure 8-26, and Figure 8-27):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 2A01.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

For Two Fiber-Remoted Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A01.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 3A01.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.
3. Behind control cabinet A of EPN stack 2:
   - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.

4. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on the connector at slot 3A02.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 3A02.
   - Route the fiber-optic cable from the lightwave transceiver down the outside of the rear covers and through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the rear covers of the EPN stack.
   - Coil up the surplus length of fiber-optic cable, and place the coil in the cable manager.

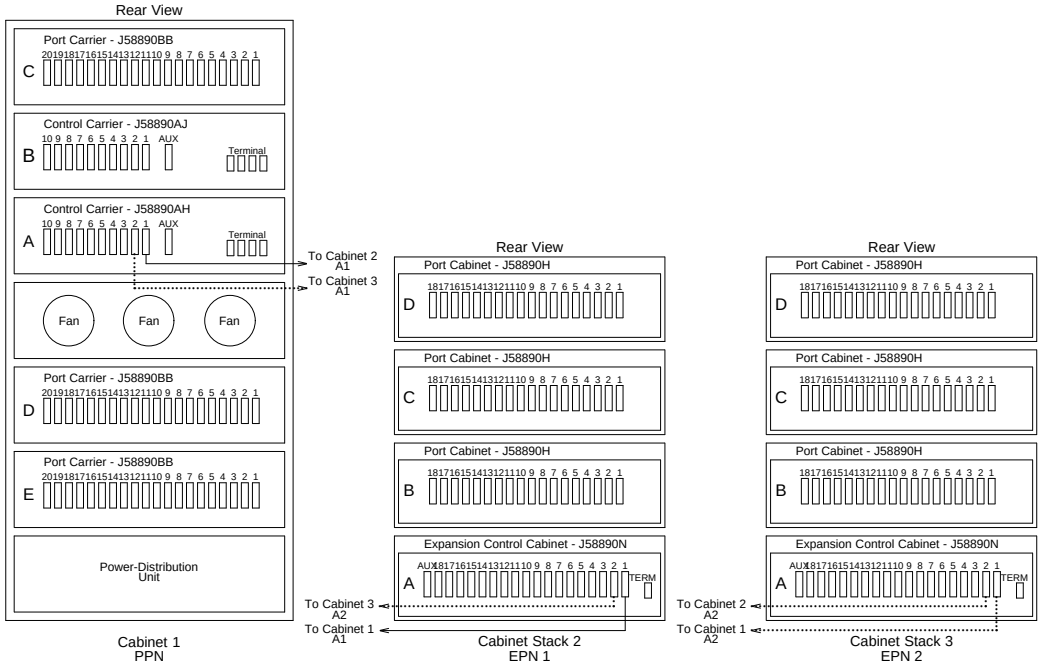


Figure 8-24. High-Reliability G3i V4 with Two or Three Port Networks

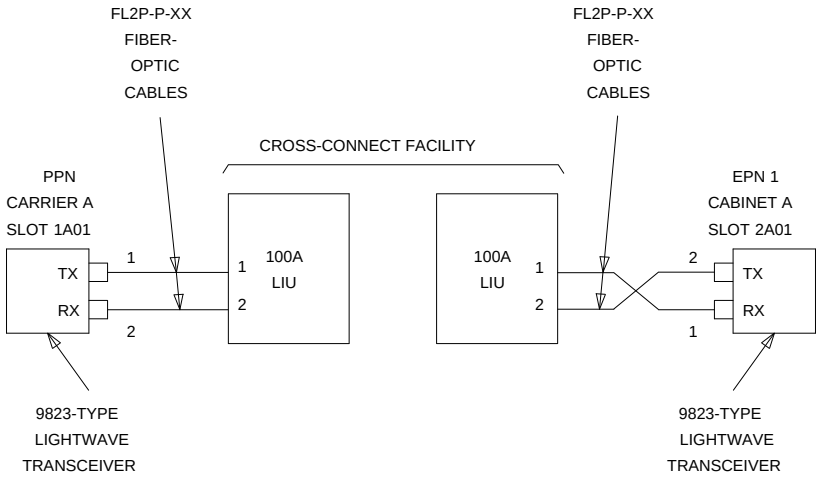


Figure 8-25. Fiber-Optic Connections PPN to EPN1

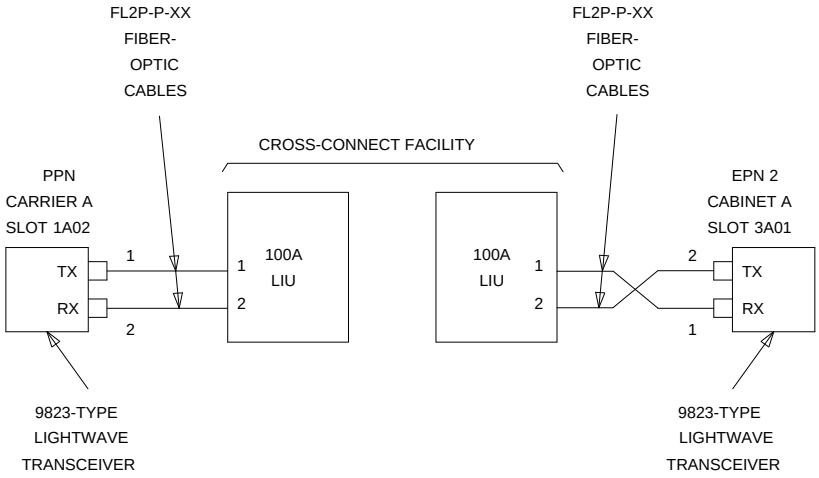


Figure 8-26. Fiber-Optic Connections PPN to EPN2

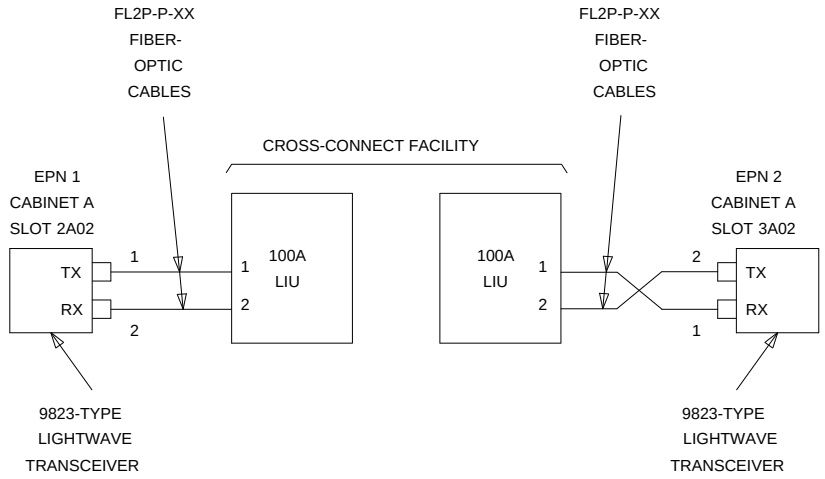


Figure 8-27. Fiber-Optic Connections EPN1 to EPN2

Interconnect Port Networks — Critical-Reliability G3i V4 System

See NOTES. Fiber-optic cabling terminated to 9823A lightwave transceivers can interconnect port networks (PNs) located up to 4,900 feet (about 9/10 mile) apart. Whereas, fiber-optic cabling terminated to 9823B lightwave transceivers can interconnect port networks located up to 25,000 feet (about 4.7 miles) apart.

NOTE:
As always, these distance limitations are approximate measurements of the *actual* fiber right-of-way (not of the shortest linear distance) between the two endpoints.

NOTE:
It is important to label every cable that you install. For details, refer to the section, *Labels for Fiber-Optic Cables*, in Appendix E of the installation manual.

NOTE:
Throughout these procedures, remember to keep track of which fiber is attached to which connector on each lightwave transceiver. This section provides figures offering the suggested way of making these connections.

The connectors on the lightwave transceivers are labeled either “TX” (transmit) or “RX” (receive), while the fibers attached to each connector are numbered either ‘‘1’’ or ‘‘2.’’ A viable fiber connection is only made when both fibers in each cable (that is, ‘‘1’’ and ‘‘2’’) route from the “TX”

connector of a port network to the "RX" connector of its adjacent port network. For an example, refer to Figure 8-29.)

NOTE:
For implementation details, refer to the "Fiber Link Administration" sections of *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655.

Collocated Port Networks

For a critical-reliability system with one collocated expansion port network, two fiber-optic cables (FL2P-P-XX) and four lightwave transceivers (9823-type) are required to directly connect the networks.

For a critical-reliability system with two collocated expansion port networks, six fiber-optic cables (FL2P-P-XX) and twelve lightwave transceivers (9823-type) are required to directly connect the networks.

NOTE:
For the FL2P-P-XX fiber-optic cable, the -XX suffix represents the length of the cable in feet. Based on floor-plan considerations, the length of these cables may vary. However, 20-foot cables are normally adequate for a G3i V4 with two port networks.

See NOTE. For collocated cabinets, the fiber-optic cables should be routed directly from the PPN to each EPN cabinet. Since, for this upgrade, a "DEFINITY style" PPN cabinet is collocated with a single-carrier cabinet stack, the preferred routing is to run the cables *down* the cable tray and out the bottom of the PPN cabinet. The cables are then run to the EPN cabinet and up the outside of the rear panels to the desired carrier level.

If, for this upgrade, a "DEFINITY style" PPN cabinet is also collocated with another "DEFINITY style" multicarrier EPN cabinet, the preferred routing is to run the cables *up* the cable tray and out the top of the PPN cabinet. The cables are then run to the other cabinet, through the top of the cabinet, and down the cable tray to the desired carrier level.

NOTE:
Refer to Appendix E of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for additional guidelines about fiber routing.

Fiber-Remoted Port Networks

For a critical-reliability system with one fiber-remoted expansion port network, four fiber-optic cables (FL2P-P-XX), four lightwave transceivers (9823-type), and four lightwave-interface units (provided by the PSC) are required.

For a critical-reliability system with two fiber-remoted expansion port networks, twelve fiber-optic cables (FL2P-P-XX), twelve lightwave transceivers (9823-type), and twelve lightwave-interface units (provided by the PSC) are required.

For One or Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN (see Figure 8-28 on page 8-60, Figure 8-29, Figure 8-30, and Figure 8-31):
   - Install a 9823-type lightwave transceiver on the connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
2. Behind control cabinet A of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 2A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.
3. Behind control carrier B of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1B01.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
4. Behind port cabinet B of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 2B02.

- Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
- At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.

For Two Collocated Expansion Port Networks

1. Behind control carrier A of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1A02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1A02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
2. Behind control cabinet A of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3A01.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
   - At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.
3. Behind control carrier B of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1B02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1B02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
4. Behind port cabinet B of EPN stack 3:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B02.
   - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3B02.

- Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
- At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.

5. Behind control cabinet A of EPN stack 2:
    - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
6. Behind control cabinet A of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3A02.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.
7. Behind port cabinet B of EPN stack 2:
    - Install a 9823-type lightwave transceiver on the connector at slot 2B03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2B03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet. Then route the cable into the cable tray of the EPN cabinet.
8. Behind port cabinet B of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B03.
    - Connect the other end of the fiber-optic cable coming from the PPN to the lightwave transceiver at slot 3B03.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
    - At top of cabinet, coil up the surplus length of fiber-optic cable. Delicately attach the coil to the cable-tray wall with cable ties.

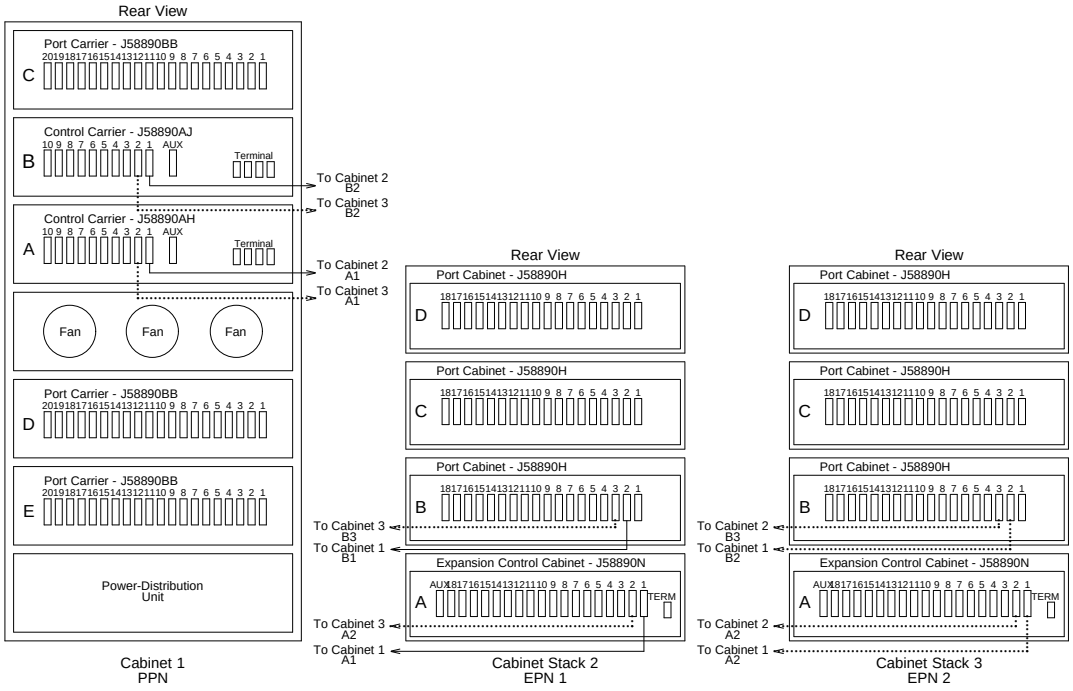


Figure 8-28. Critical-Reliability G3i V4 with Two or Three Port Networks

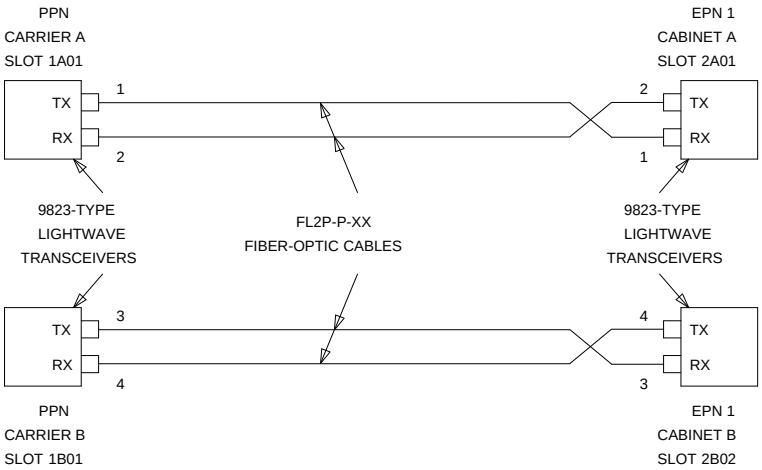


Figure 8-29. Fiber-Optic Connections PPN to EPN1

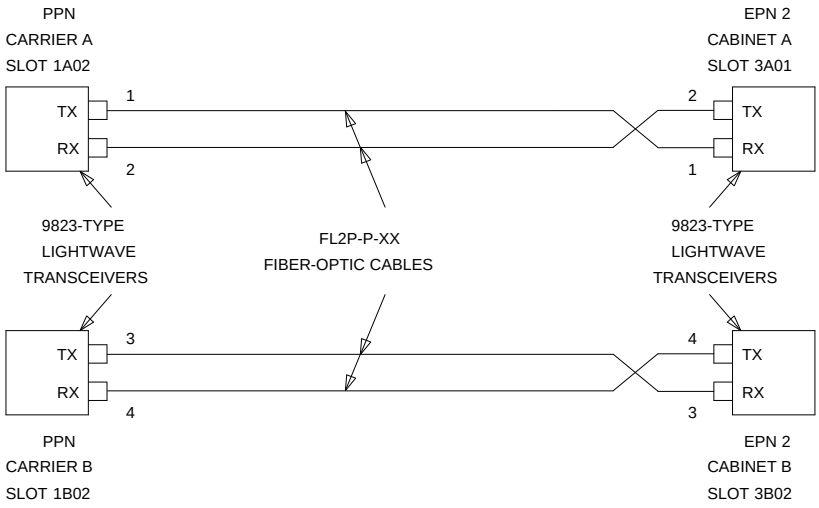


Figure 8-30. Fiber-Optic Connections PPN to EPN2

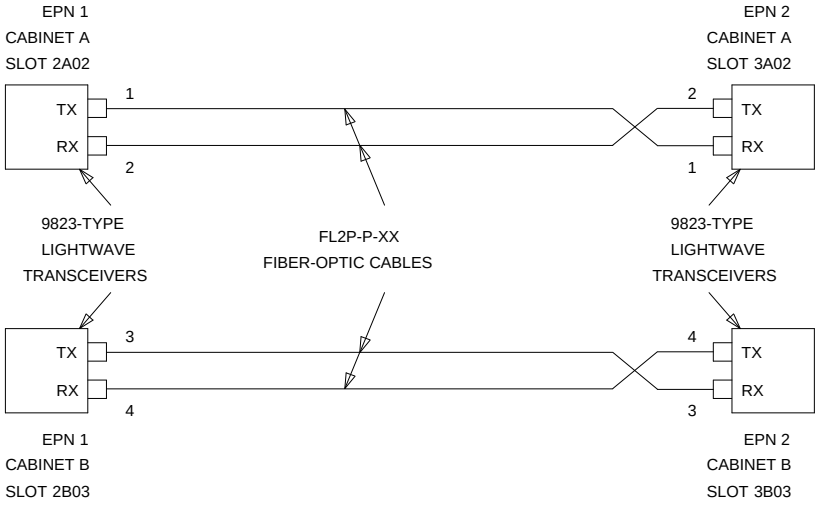


Figure 8-31. Fiber-Optic Connections EPN1 to EPN2

For One or Two Fiber-Remoted Expansion Port Networks

1. Behind port carrier C of the multicarrier PPN (Figure 8-32 on page 8-66, Figure 8-33, Figure 8-34, and Figure 8-35):
   - Install a 9823-type lightwave transceiver on the connector at slot 1C02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1C02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind port cabinet B of EPN stack 2:
   - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2B02.
   - Connect the fiber-optic cable to the lightwave transceiver at slot 2B02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
3. Behind port carrier D of the multicarrier PPN:
   - Install a 9823-type lightwave transceiver on the connector at slot 1D02.
   - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1D02.
   - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
   - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

4. Behind control cabinet A of EPN stack 2:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 2A01.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 2A01.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

For Two Fiber-Remoted Expansion Port Networks

1. Behind port carrier C of the multicarrier PPN:
    - Install a 9823-type lightwave transceiver on the connector at slot 1C03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1C03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
2. Behind port cabinet B of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B02.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3B02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

3. Behind port carrier D of the multicarrier PPN:
    - Install a 9823-type lightwave transceiver on the connector at slot 1D03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 1D03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
4. Behind control cabinet A of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A01.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3A01.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
5. Behind control cabinet A of EPN stack 2:
    - Install a 9823-type lightwave transceiver on the connector at slot 2A02.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

6. Behind control cabinet A of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3A02.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3A02.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
7. Behind port cabinet B of EPN stack 2:
    - Install a 9823-type lightwave transceiver on the connector at slot 2B03.
    - Connect one end of the fiber-optic cable to the lightwave transceiver at slot 2B03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.
8. Behind port cabinet B of EPN stack 3:
    - Install the same kind (either 9823-A or 9823-B) of lightwave transceiver on cable connector at slot 3B03.
    - Connect the fiber-optic cable to the lightwave transceiver at slot 3B03.
    - Route the fiber-optic cable from the lightwave transceiver to the cabinet cable tray and out of the cabinet through the cable manager to the PDS cross-connect facility.
    - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave-interface unit provided.
    - Delicately attach the fiber-optic cable (with cable ties) to the wall of the cable tray at the built-in cable-tie positions.

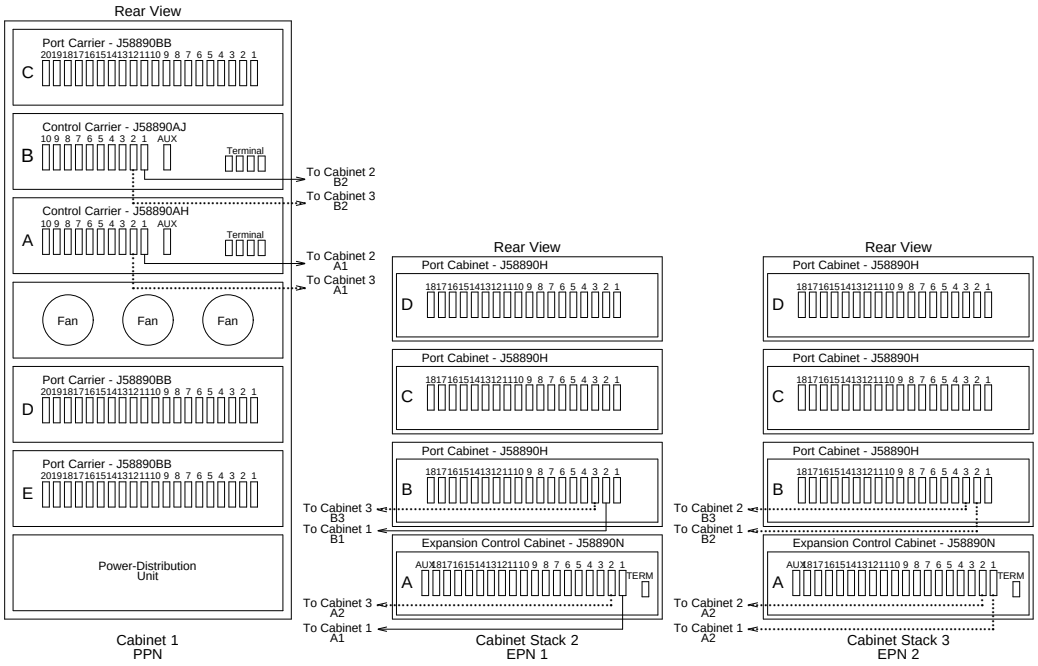


Figure 8-32. Critical-Reliability G3i V4 with Two or Three Port Networks

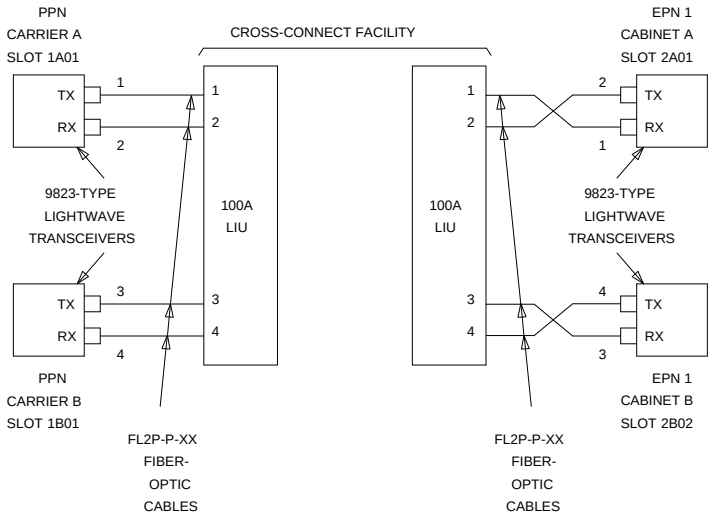


Figure 8-33. Fiber-Optic Connections PPN to EPN1

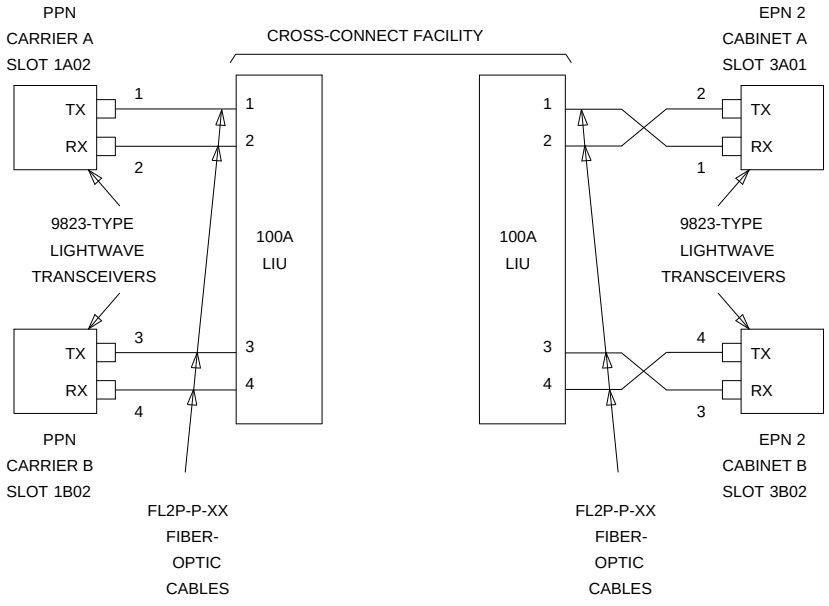


Figure 8-34. Fiber-Optic Connections PPN to EPN2

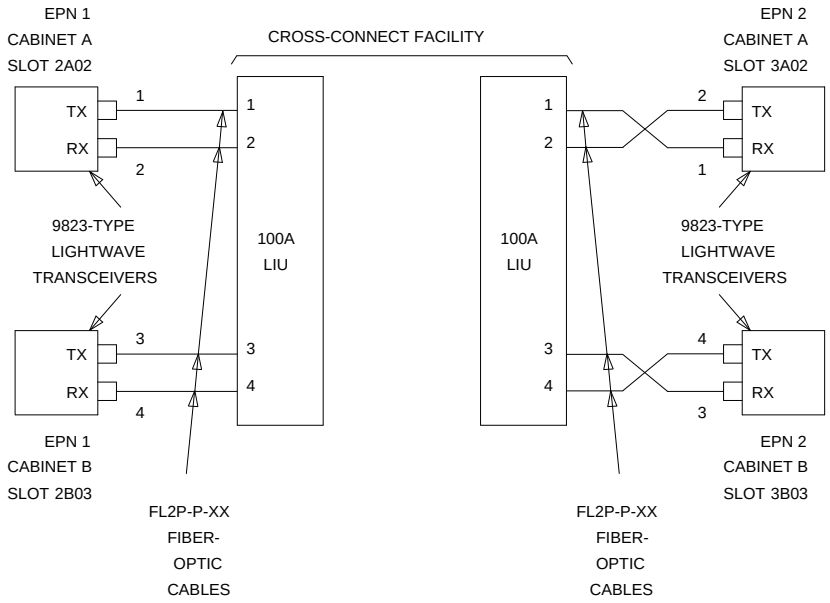


Figure 8-35. Fiber-Optic Connections EPN1 to EPN2

Install Ground Plate(s)

NOTE:
If the system being upgraded is mounted with earthquake protection, do not install the ground plates at this time.

A ground plate is required between each cabinet (see Figure 8-36). The ground plate not only provides the ground connection between cabinets, it also stabilizes the cabinets.

1. See NOTE. Behind the cabinets, replace the upper and lower covers (leave the screws loose).

   NOTE:
   The rear covers for G3i V4 control carriers may need two detents (one for the TDM/LAN cable and another for the ICC cables). Therefore, if the G2 universal module being upgraded to a critical-reliability G3i V4's EPN was originally an R1V3 System 75, verify that the lower rear cover of the port cabinet in position ''B'' (serving as the duplicate expansion control cabinet) has been replaced with a new cover (846307817) so that the ICC cables and the new ground plate can be properly installed between cabinets ''A'' and ''B.'' If not, replace this cover with the new cover.

2. Place the ground plate over the lower rear cover of the upper cabinet so that the four screws that attach the lower rear cover go through the four ground plate keyhole slots.
3. Slide the ground plate down over the upper rear cover of the lower cabinet so that the four screws that attach the upper rear cover go through the four lower ground plate slots.
4. Assure that the exposed portion of the TDM/LAN cable that is between the cabinets does not get pinched.
5. Tighten all screws.

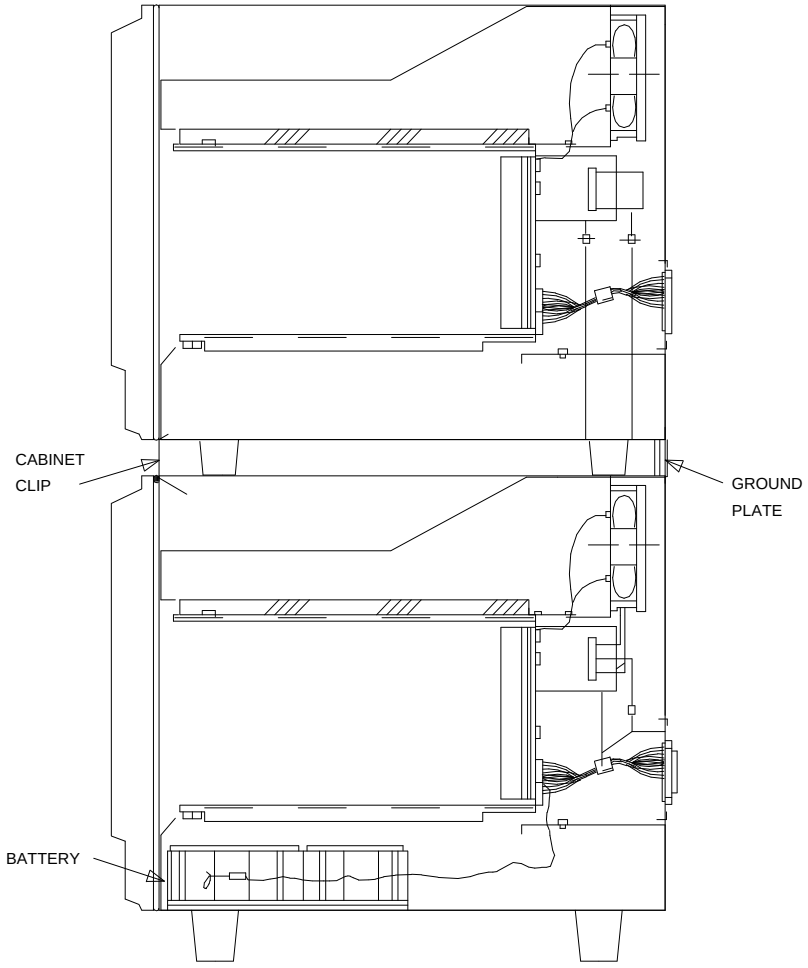


Figure 8-36. Locations of Ground Plate, Cabinet Clip, and Battery

Install Cabinet Clip(s)

NOTE:
This procedure is only used on systems without earthquake protection.

A cabinet clip, used to ground and stabilize the cabinets, is required between each cabinet.

At the front of the cabinets, install cabinet clip between the cabinets by hooking the clip into the slot of the upper cabinet and snapping the straight leg of the clip into the slot on the lower cabinet (see Figure 8-36).

Connect Power and Grounding

1. Reconnect the 6-AWG cabinet ground wire from the ground bar in the cabinet.

   NOTE:
   A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

2. Reconnect the coupled bonding conductor.
3. Reconnect the cabinet power cords at the rear of each cabinet.

Verify Usable Circuit-Pack Vintages

Verify that every G2 circuit pack reused in the upgrade conforms to the usable vintage requirements for a G3i V4 system (see Reference Guide for Circuit-Pack Vintages and Change Notices).

Remove Power-Failure Ground Strap

Remove the previously installed ground strap from the power-failure transfer unit.

Boot the G3i V4 System

1. Connect the G3-MT to the connector labeled ''TERMINAL'' behind PPN control carrier ''A,'' or install the G3-MA according to the ''Set Up G3-MA'' chapter of *DEFINITY Communications System Generic 3 Management Applications — Operations*, 585-229-202.
2. See NOTE. Verify that the translation memory cards are inserted in the TN777B faceplates.

   NOTE:
   The memory cards are keyed to assure proper installation. Insert each card with the white ''DEFINITY Memory Card'' label facing left with the insert arrow (on the same side) pointing forward.

3. At each EPN power-distribution unit, set the main circuit breaker to ON.
4. At the PPN power-distribution unit, set the main circuit breaker to ON.
5. The system now goes through the reset level 4 rebooting process, loading the default system translations from the memory cards. Rebooting takes 8 to 11 minutes.

   Refer to the "System Reboot Indications" section in *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V4 Maintenance*, 555-204-105, Issue 7, for circuit-pack LED indications and screen displays that occur during system reboot.
6. Get the order number of the upgrade, and call the regional CSA to request an "init" login so that the G3 V4 option and other right-to-use options can be enabled on the upgraded system.
7. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
8. Enter **`list configuration software-version long`**, and press RETURN to compare the version number of the G3i V4 software program (displayed on the G3-MT or G3-MA) with the TN786B version number (written on a label on the TN786B's faceplate). If the version numbers are not the same, change the version number on the TN786B label so that they agree.
9. Enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable the G3 V4 option and to assign the customer's other right-to-use options on the G2-to-G3i V4 upgrade order. See *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for details on enabling these options.
10. Enter **`change site-data`**. Press RETURN. Use this form to assign system-specific information (such as building, floor, stations, etc.)
11. Enter **`status system 1`**, and press RETURN to verify that the system is in the "active/standby" mode.
12. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the memory cards.

WARNING:
If the terminal screen displays "translation corruption detected; call AT&T distributor immediately", an error was detected in the translations. Call your AT&T representative.

Close Upgraded EPN Stack without Earthquake Protection and Reconnect Cables

1. Behind each EPN cabinet's power supply, set the circuit breaker to OFF.

   NOTE:
   Powering down an EPN cabinet without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Replace all cables that were labeled and removed.
3. Install the front door on each cabinet.
4. Install the top and bottom rear covers. Be sure that the correct rear covers are installed on the new J58890N expansion control cabinet. Do not use these rear covers on the port cabinets.

Close Upgraded EPN Stack with Earthquake Mounting and Reconnect Cables

1. Behind each EPN cabinet's power supply, set the circuit breaker to OFF.

   NOTE:
   Powering down an EPN cabinet without powering down the PPN will set off alarms. However, these alarms should clear after power is restored to the EPN.

2. Replace all cables that were labeled and removed.
3. Install the upper and lower rear covers with all of the screws except for the screws that run along the top and bottom of the cabinet. Do not tighten the screws.

   NOTE:
   The rear covers for G3i V4 control carriers may need two detents (one for the TDM/LAN cable and another for the ICC cables). Therefore, if the G2 universal module being upgraded to a critical-reliability G3i V4's EPN was originally an R1V3 System 75, verify that the lower rear cover of the port cabinet in position ''B'' (serving as the duplicate expansion control cabinet) has been replaced with a new cover (846307817) so that the ICC cables and the new ground plate can be properly installed between cabinets ''A'' and ''B.'' If not, replace this cover with the new cover.

4. Line up the four holes in the ground plate with the four holes and install the screws, but do not tighten.
5. Line up the ground plate with the top holes of the upper rear cover of the lower cabinet. Install the four screws, but do not tighten.
6. At the front of the cabinet, line up the earthquake front plate with the holes at the top and bottom of the cabinet (see Figure 8-37). Install the eight screws, but do not tighten.
7. Tighten all screws.
8. Repeat Steps 3 through 7 for the remaining cabinets.
9. Install the front door on each cabinet.

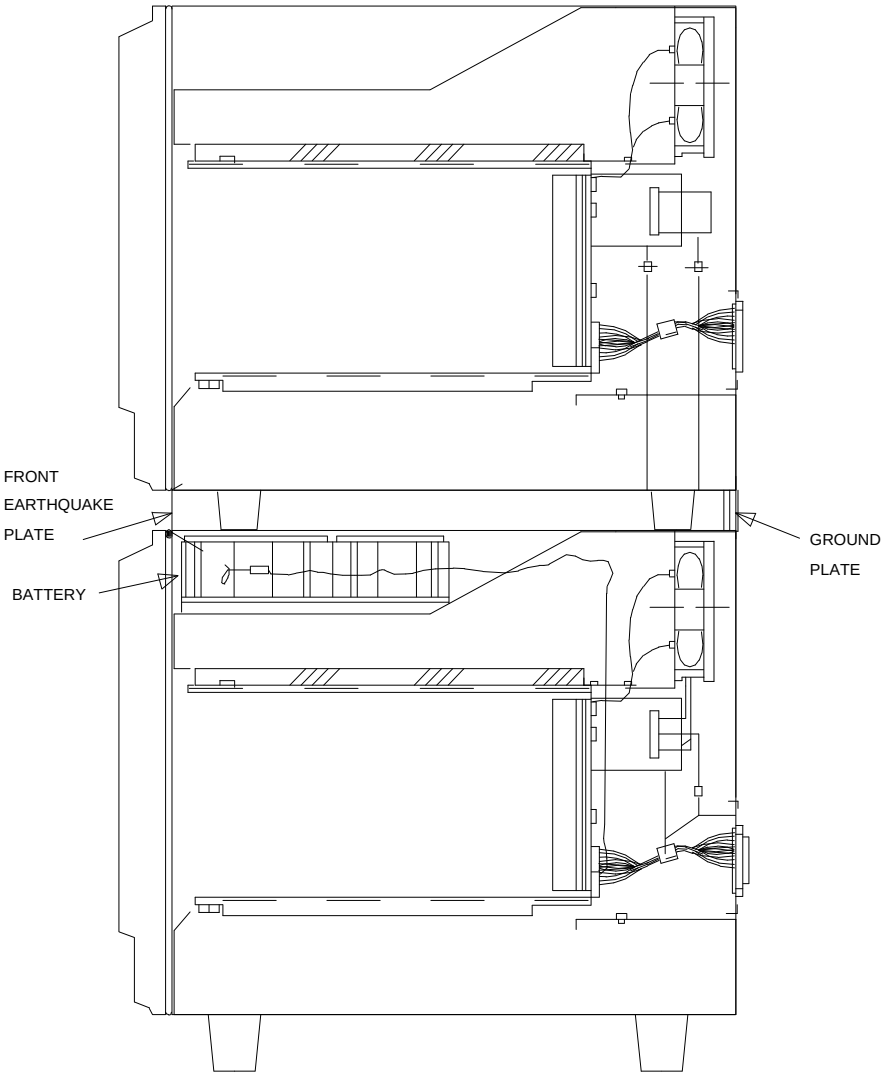


Figure 8-37. Locations of Ground Plate, Earthquake Front Plate, and Battery

Install Cable Clamps

Behind the cabinets, using screws provided, install two cable clamps on each ground plate (see Figure 8-38). These clamps are used to hold the port cables.

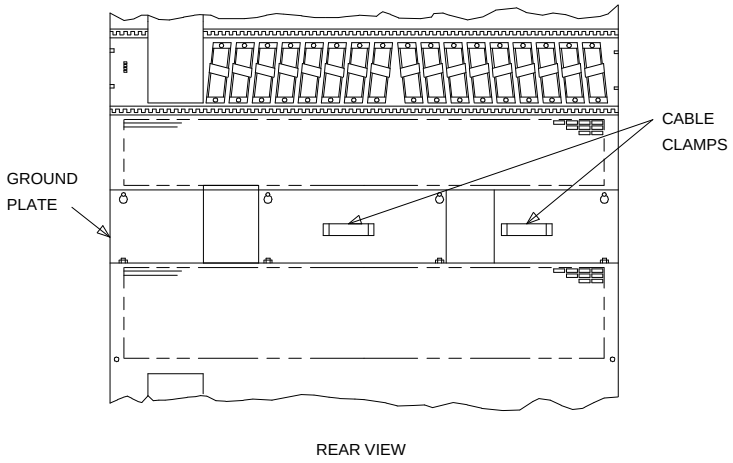


Figure 8-38. Locations of Ground Plate and Cable Clamps on Single-Carrier Cabinet

Power Up the EPN Cabinets

1. Behind each EPN cabinet's power supply, set the circuit breaker to ON.

   After about 40 seconds, EPN power and PPN/EPN communications return.

2. After power returns to the EPN and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

Retranslate Port Circuits

If port circuit packs in the G2 module control cabinet were relocated in order to put:

- A critical port circuit pack, requiring longer nominal battery holdover (e.g., a DS1 or an Announcement circuit pack), in a port slot
- A TN755 power supply in port slots ''16'' and ''17''

- A TN776 or TN570 Expansion Interface in port slot ‘‘1’’
- A TN776 or TN570 in port slot ‘‘2’’ (for a second directly connected EPN)

of the new expansion control cabinet, verify that they were retranslated during the off-site software upgrade. If not, they must be retranslated now. Refer to *DEFINITY Communications System Generic 3 V4 Implementation*, 555-230-655, for instructions on performing the retranslations.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V4

Get the serial number of the new G3i V4 PPN, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the upgraded system as a G3i V4.

Return Replaced G2 Equipment

The G2 equipment replaced, during the upgrade to G3i V4, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced G2 equipment includes:

- G2 common control (CC) cabinet, carriers, and circuit packs and G2 time-multiplexed switch (TMS) cabinet, carriers, and circuit packs

  or

  G2 CC/TMS cabinet, carriers, and circuit packs
- G2 traditional module cabinets, carriers, and circuit packs
- G2 module control cabinets (J58890P) and control circuit packs
- G2 tape cartridges
- Lower rear cover for expansion control cabinet
- 4-series lightwave transceivers

G3i V1 or G3i-Global to G3i V1.1

9

This chapter provides the information necessary to perform either a maintenance update or an upgrade from a DEFINITY® G3i V1 or G3i-Global system to a DEFINITY G3i V1.1 system with an Intel[1] 80286 processor. The software involved in the updates or upgrades and the update or upgrade procedures are also provided.

⚠ CAUTION:
Be careful to find the right chapter for your upgrade. Using the software- and sometimes the hardware-upgrade PEC on the customer's order, refer to Table 1 in "About This Document" for the correct chapter.

The following processes are required for a G3i V1 or G3i-Global PPN to a 286 G3i V1.1 PPN update or upgrade:

- Replacing the software tape
- Updating the software

  This involves saving, loading, and (when necessary) reentering system translations.
- Testing the updated or upgraded system to verify proper operation

G3i V1.1 features and functions are listed in the *DEFINITY Communications System Generic 3 Feature Description*, 555-230-204. *DEFINITY Communication System Generic 3 V1.1 Implementation*, 555-230-654, provides the commands, procedures, and forms required to initialize and administer the G3i V1.1.

1. Registered trademark of the Intel Corporation.

Considerations

Service Interruption

The update or upgrade process requires a non-call preserving service interruption which occurs during a reboot with the G3i V1.1 tapes. This service interruption (of about 15 to 20 minutes for a simplex system and about 5 minutes for a duplex system) must be closely coordinated with the customer and the local account team.

Usable Circuit-Pack Vintages

Every circuit pack used in the updated or upgraded G3i V1.1 system must conform to the minimum usable vintage requirements for G3i V1.1. At a presale site inspection, the Quality Protection Plan Change Notice (QPPCN) process must check the vintages of every G3i V1 or G3i-Global circuit pack that will be reused in the updated or upgraded G3i V1.1 and, if necessary, replace those circuit packs that have unusable vintages.

Refer to *Technical Monthly*, Reference Guide for Circuit-Pack Vintages and Change Notices for current information about usable vintages in a G3i V1.1 system.

Verify Tape EDIs Are Acceptable for G3i V1.1 Update

At the same presale site inspection, verify that the EDI versions of the G3i V1 or G3i-Global system tapes are current enough for a successful update or upgrade.

For a successful on-site translation update or upgrade, the tape versions must be at least:

- Release 14.2 (EDI 5.0) for G3i V1
- Release 1e.40.59.09 for G3i-Global

If the system tapes are *not* an acceptable version:

1. Replace the system tapes with acceptable spare tapes acquired through the QPPCN process, and wait for the tapes to retension.
2. If the system is duplex, enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
3. Enter **`save translation`**, and press RETURN.
4. For a simplex system, enter **`reset system 4`**, and press RETURN to reboot the system with the usable tape.

   For a duplex system, enter **`upgrade software`**, and press RETURN to reboot the system with the usable tapes.

For the remainder of this update or upgrade, consider these tapes as the G3i V1 or G3i-Global system tapes.

Software

Like the G3i V1 and the G3i-Global, the G3i V1.1 software and translations are saved on the TN774 Tape Drive circuit pack. Although the G3i V1 or G3i-Global translations automatically update or upgrade to G3i V1.1, several features require special attention because of form changes or potential naming conflicts in the update or upgrade process.

After the update or upgrade, the Software Associate should check these forms to ensure that the updated translations are appropriate for the customer's needs. For information to make the required changes, refer to:

- *DEFINITY Communications System Generic 3 V2 Transition Reference*, 555-230-498
- *DEFINITY Communications System Generic 3 V1.1 Implementation*, 555-230-654

Circuit Packs

No new circuit packs are required for a basic G3i V1.1 system update or upgrade.

Since G3i V4 supports international call-processing applications, a wide variety of non-US circuit packs can also be used in this system. For a listing and description of these circuit packs, refer to Chapter 24, "DEFINITY Circuit Packs".

Software-Translation Update

Since the G3i V1.1 uses the same format and tape drive as the G3i V1 or G3i-Global, updating the software is a simple task. As a fall-back precaution, the current translations are saved to the existing G3i V1 or G3i-Global tape. Then, the new G3i V1.1 tape replaces the G3i V1 or G3i-Global tape, and the current translations are saved to the new G3i V1.1 tape. Next, the system is rebooted with the G3i V1.1 tape. Then, as another precaution, backup G3i V1.1 tapes are made.

The instructions on how and when to do these operations are included in the "System Updates" section of this chapter.

System Updates

There are many configurations of DEFINITY G3i V1 and G3i-Global in the field. In terms of both hardware and software, each system can have a unique configuration. However, updating a G3i V1 or G3i-Global PPN to a G3i V1.1 PPN requires no hardware changes.

If the update or upgrade involves adding a new cabinet, refer to *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, for the installation procedures.

Simplex G3i V1 or G3i-Global to Simplex G3i V1.1

A simplex G3i V1 or G3i-Global is updated or upgraded to a simplex G3i V1.1 by installing the G3i V1.1 tape and downloading the existing translations onto it.

Prerequisite Hardware

The equipment in Table 9-1 *must* be on-site before the update or upgrade begins. Ensure that the new tapes are G3i V1.1 tapes.

Table 9-1. Required Hardware

Equipment	Description	Quantity
J58890TE L2	G3i V1.1 Tape	2 (Note)

Note: Acquired from the Technical Service Center.

Required Tools

One copy of each of the following manuals may be required during the update or upgrade:

- *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V2 Maintenance*, 555-204-105, Issue 6
- *DEFINITY Communications System Generic 3 V1.1 Implementation*, 555-230-654

Open PPN Cabinet's Door

Use a screwdriver and turn the door-latch screws one-fourth turn to open the door.

Verify System Status

Before proceeding, the system should be examined for alarms, and every possible problem should be corrected. Except for an unresolved alarm that may be the reason for a G3i V1.1 maintenance update, the system must be alarm-free.

Save Current Translations to G3i V1 or G3i-Global Tape

The current G3i V1 or G3i-Global translations should be saved to system tape.

1. Log in at the G3-MT terminal.
2. Enter **`save translation`**. Press (RETURN). This command instructs the system to write all translation information from memory to the G3i V1 or G3i-Global system tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press (RETURN).

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press (RETURN). Check Page 2 of this form to find out when the announcements were last saved and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press (RETURN).

Download Current Translations to G3i V1.1 Tape

1. Remove the G3i V1 or G3i-Global system tape, install the G3i V1.1 tape, and wait for the tape to retension.
2. Enter **`save translation`**. Press (RETURN). This command instructs the system to write all translation information from memory to the G3i V1.1 tape.
3. If the system is equipped with a TN750/B Announcement circuit pack, these announcements can be saved using the save announcements command. Enter **`save announcements`**, and press (RETURN).

Reboot the System

1. At the the G3-MT or G3-MA, enter **`reset system 4`**, and press (RETURN).
2. The system begins the reset level 4 rebooting process by loading system software and translations from the tape. This takes 15 to 20 minutes.
3. For a G3i V1.1 update, log in at the `login:` prompt on the terminal.

   For a G3i V1.1 upgrade, get the order number of the upgrade and call the regional CSA to request an ‘‘init’’ login so that G3 V1.1 Enhanced Feature Set (EFS) options can be enabled on the upgraded system.

4. Enter **`set time`**, and press RETURN to set the time and ensure the system is booted properly.
5. For a G3i V1.1 upgrade, enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable EFS options for a G3i V1.1 upgrade. See *DEFINITY Communications System Generic 3 V1.1 Implementation*, 555-230-654, to enable these options.

Save Current Translations to G3i V1.1 Backup Tape

1. Remove the G3i V1.1 system tape, insert the G3i V1.1 tape to be used as the backup tape, and wait for the tape to retension.
2. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G3i V1.1 backup tape.
3. Enter **`save announcements`** if appropriate. Press RETURN.

Close Cabinet Door

Close the front door and secure with the latches.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V1.1

Get the serial number of the G3i V1.1, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the updated or upgraded system as a G3i V1.1.

Return Replaced Equipment

The G3i V1 or G3i-Global equipment replaced, during the update or upgrade to G3i V1.1, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced equipment includes the G3i V1 or G3i-Global tape cartridges.

Duplex G3i V1 or G3i-Global to Duplex G3i V1.1

A duplex G3i V1 or G3i-Global is updated or upgraded to a duplex G3i V1.1 by installing the G3i V1.1 tapes and downloading the existing translations onto them.

Prerequisite Hardware

The equipment in Table 9-2 *must* be on-site before the update or upgrade begins. Ensure that the new tapes are G3i V1.1 tapes.

Table 9-2. Required Hardware

Equipment	Description	Quantity
J58890TE L2	G3i V1.1 Tape	4 (Note)

Note: Acquired from the Technical Service Center.

Required Tools

One copy of each of the following manuals may be required during the update or upgrade:

- *DEFINITY Communications System Generic 1, Generic 3i, Generic 3i-Global, and Generic 3i V2 Maintenance*, 555-204-105, Issue 6
- *DEFINITY Communications System Generic 3 V1.1 Implementation*, 555-230-654

Open PPN Cabinet's Door

Use a screwdriver, and turn the door-latch screws one-fourth turn to open the door.

Verify System Status

Before proceeding, the system should be examined for alarms, and every possible problem should be corrected. Except for an unresolved alarm that may be the reason for a G3i V1.1 maintenance update, the system must be alarm-free.

Save Current Translations to G3i V1 or G3i-Global Tapes

As a fall-back precaution, the current G3i V1 or G3i-Global translations should first be saved to the system tapes.

1. Log in at the G3-MT terminal.
2. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
3. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G3i V1 or G3i-Global system tapes.
4. If the system is equipped with a TN750/B Announcement circuit pack, enter **`display announcements`**, and press RETURN.

   If administered recorded announcements are listed, enter **`list configuration software-version`**, press RETURN. Check Page 2 of this form to find out when the announcements were last saved, and ask the customer whether any announcements have changed since then.

   If so, the current announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.

Download Current Translations to G3i V1.1 Tapes

1. Remove the G3i V1 or G3i-Global system tapes, install the G3i V1.1 tapes, and wait for the tapes to retension.
2. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
3. Enter **`save translation`**. Press RETURN. This command instructs the system to write all translation information from memory to the G3i V1.1 tapes.
4. If the system is equipped with a TN750/B Announcement circuit pack, these announcements can be saved using the save announcements command. Enter **`save announcements`**, and press RETURN.

Reboot the System

1. Enter **`upgrade software`**, and press RETURN to reboot the system with the G3i V1.1 tapes.
2. The system begins the reset level 4 rebooting process by loading system software and translations from the tapes. This takes 15 to 20 minutes.
3. For a G3i V1.1 update, log in at the `login:` prompt on the terminal.

For a G3i V1.1 upgrade, get the order number of the upgrade, and call the regional CSA to request an ''init'' login so that G3 V1.1 options can be enabled on the upgraded system.

4. Enter **`set time`**, and press RETURN to set the time and ensure that the system is booted properly.
5. For a G3i V1.1 upgrade, enter **`change system-parameters customer-options`**. Press RETURN. Use this form to enable options for a G3i V1.1 upgrade. See *DEFINITY Communications System Generic 3 V1.1 Implementation*, 555-230-654, to enable these options.

Save Current Translations to G3i V1.1 Backup Tapes

1. Remove the G3i V1.1 system tapes, insert the G3i V1.1 tapes to be used as the backup tapes, and wait for the tapes to retension.
2. Enter **`status system 1`**, and press RETURN to verify that the system is in the ''active/standby'' mode.
3. Enter **`save translation`**. Press RETURN. This instructs the system to write all translation information from memory to the G3i V1.1 backup tapes.
4. Enter **`save announcements`** if appropriate. Press RETURN.

Close Cabinet Door

Close the front door and secure with the latches.

Run Acceptance Tests

Refer to Chapter 11 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104, Issue 5, and perform the appropriate tests.

Register System as G3i V1.1

Get the serial number of the G3i V1.1, and call the INADS Database Administrator at the Technical Service Center (1-800-248-1111) to register the updated or upgraded system as a G3i V1.1.

Return Replaced Equipment

The G3i V1 or G3i-Global equipment replaced, during the update or upgrade to G3i V1.1, should be returned to AT&T according to the requirements outlined in:

BCS/Material Logistics, MSL/Attended Stocking Locations

Methods and Procedures for Basic Material Returns

The replaced equipment includes the G3i V1 or G3i-Global tape cartridges.

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