Nortel Communication Server 1000

Spares Planning

NN43001-253

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Revision history

May 2007
Standard 01.02. This document is up-issued to support Communication Server 1000 Release 5.0. This document contains information previously contained in the following legacy document, now retired, Spares Planning (553-3001-153).

August 2005
Standard 18.00. This document is up-issued for Communication Server 1000 Release 4.5.

September 2004
Standard 17.00. This document is up-issued for Communication Server 1000 Release 4.0. Missing part numbers have been added, and terminal equipment updated with all IP Phones.

September 2003
Standard 16.00. This document is up-issued to support Succession 3.0 Software. This document is up-issued to include information for Succession 1000M and Meridian 1 Small Systems.

January 2002
Standard 15.00. This document is up-issued to support Meridian 1 Release 25.40 systems. This document is up-issued to include Call Processor Pentium (CP PII) and Fibre Network Fabric (FNF) for Option 81C.

April 2000
Standard 14.00. This is a global document and is up-issued for X11 Release 25.0x. Document changes include removal of: redundant content; references to equipment types except Options 11C, 51C, 61C, and 81C; and references to previous software releases.

June 1999
Standard 13.00. This document is reissued to include the NT5D03 Call Processor Card and minor edits. Changes to technical content are noted by revision bars in the margins.

October 1997
Standard 12.00. Changes are noted by revision bars in the margins.

August 1996
Standard 11.00. Changes to technical content are noted by revision bars in the margins.

August 1996
Standard 10.00. This document is reissued to include the Fiber Remote Multi-IPE units. Changes to technical content are noted by revision bars in the margins.

December 1995
Standard 9.00. This document is reissued to include the NT9D19 Call Processor Card and minor edits. Changes to technical content are noted by revision bars in the margins.

July 1995
Standard 8.00. This document is reissued to include international information to create a global NTP and Meridian 1 option 81C. Changes to technical content are noted by revision bars in the margins.

December 1994
Standard, 7.0. This document is reissued to include Small Systems Multi Disk Unit (SMDU), option 51C, and failure rate information updates. Changes to technical content are noted by revision bars in the margins.

April 1994
Standard 6.0. This document is reissued to include information on Meridian 1 system option 61C. New information and changes to technical content are noted by revision bars in the margins.

April 1993
Standard 5.0.

December 1992
Standard 4.0. This document is reissued to include information on system option 81 and equipment required for compatibility with X11 release 18. New information and changes to technical content are noted by revision bars in the margins.

December 1991
Standard 3.0. This document is reissued to include technical content updates. Due to the extent of changes revision bars are omitted.

December 1990
Standard 2.0. Reissued to include MTBF information for station equipment.

January 1990
Standard 1.0.

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Introduction

This document is a global document. Contact your system supplier or your Nortel representative to verify that the hardware and software described are supported in your area.

Subject

This document provides the information needed to calculate and plan for spare (replaceable) equipment. The document also contains failure rate information for the equipment.

Note on legacy products and releases

This NTP contains information about systems, components, and features that are compatible with Nortel Communication Server 1000 Release 4.5 software. For more information on legacy products and releases, click the **Technical Documentation** link under **Support & Training** on the Nortel home page:

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Applicable systems

This document applies to the following systems:

- Communication Server 1000S (CS 1000S)
- Communication Server 1000M Chassis (CS 1000M Chassis)
- Communication Server 1000M Cabinet (CS 1000M Cabinet)
- Communication Server 1000M Half Group (CS 1000M HG)
- Communication Server 1000M Single Group (CS 1000M SG)
- Communication Server 1000M Multi Group (CS 1000M MG)
- Communication Server 1000E (CS 1000E)
- Meridian 1 PBX 11C Chassis
- Meridian 1 PBX 11C Cabinet
- Meridian 1 PBX 51C

- Meridian 1 PBX 61C
- Meridian 1 PBX 81
- Meridian 1 PBX 81C

Note: When upgrading software, memory upgrades may be required on the Signaling Server, the Call Server, or both.

System migration

When particular Meridian 1 systems are upgraded to run CS 1000 Release 4.5 software and configured to include a Signaling Server, they become CS 1000M systems. Table 1 "Meridian 1 systems to CS 1000M systems" (page 10) lists each Meridian 1 system that supports an upgrade path to a CS 1000M system.

Table 1
Meridian 1 systems to CS 1000M systems

This Meridian 1 system...	Maps to this CS 1000M system
Meridian 1 PBX 11C Chassis	CS 1000M Chassis
Meridian 1 PBX 11C Cabinet	CS 1000M Cabinet
Meridian 1 PBX 51C	CS 1000M Half Group
Meridian 1 PBX 61C	CS 1000M Single Group
Meridian 1 PBX 81	CS 1000M Multi Group
Meridian 1 PBX 81C	CS 1000M Multi Group

For more information, see one or more of the following NTPs:

- *Communication Server 1000M and Meridian 1: Small System Upgrade Procedures (NN43011-458)*
- *Communication Server 1000M and Meridian 1: Large System Upgrade Procedures (NN43021-458)*
- *Communication Server 1000S: Upgrade Procedures (NN43031-458)*
- *Communication Server 1000E: Upgrade Procedures (NN43041-458)*

Intended audience

This document is intended for individuals responsible for system administration.

Conventions

Terminology

In this document, the following systems are referred to generically as "system":

- Communication Server 1000S (CS 1000S)
- Communication Server 1000M (CS 1000M)
- Communication Server 1000E (CS 1000E)
- Meridian 1

The following systems are referred to generically as "Small System":

- Communication Server 1000M Chassis (CS 1000M Chassis)
- Communication Server 1000M Cabinet (CS 1000M Cabinet)
- Meridian 1 PBX 11C Chassis
- Meridian 1 PBX 11C Cabinet

The following systems are referred to generically as "Large System":

- Communication Server 1000M Half Group (CS 1000M HG)
- Communication Server 1000M Single Group (CS 1000M SG)
- Communication Server 1000M Multi Group (CS 1000M MG)
- Meridian 1 PBX 51C
- Meridian 1 PBX 61C
- Meridian 1 PBX 81
- Meridian 1 PBX 81C

Related information

This section lists information sources that relate to this document.

NTPs

The following NTPs are referenced in this document:

- *Features and Services (NN43001-106)*
- *Software Input/Output: Administration (NN43001-611)*
- *Software Input/Output: Maintenance (NN43001-711)*

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CD-ROM

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Spares planning

Contents

This section contains information on the following topics:

Introduction

Spares planning is used to determine desired inventory levels of spare (replaceable) items. Spares planning is used by repair houses and centralized depots in order to ensure that there is an adequate stock of replaceable items on hand.

Definitions and assumptions

Failure rate — Failure rate is the estimated number of failures for an item during one million (10^6) hours of operation. The only exception is to measurements for cabling or other items with low failure rates. Failure rates are also measured in Failures in Time (FIT) measurements. One FIT equals one billion (10^9) hours of operation.

Sparing interval — Sparing interval is the period of time that stocks of replaceable items should last without being replenished. This period is assumed to be one year following the installation of the system.

Stock confidence level — Stock confidence level is the allowed probability of not being out of stock when the sparing interval of one year is greater than 99.9 percent.

Card ambient temperature — Card ambient temperature is the average temperature of the air immediately surrounding the circuit card (usually higher than the ambient room temperature). Card failure rates in this document are based on a card ambient temperature of 40° C (104° F).

Turnaround time for repair — Equipment may be serviced at a repair house or at a centralized depot that serves sub-depots. The turnaround time for the return-to-stock of a failed item is about ten working days (240 hours) from a repair house. The turnaround time for the return-to-stock of a failed item is about two working days (48 hours) from a centralized depot.

Actual turnaround periods vary in the field. As the number of systems served increases, the percentage of replaceable items required in stock is reduced.

Population range — Population range is the quantity of each type of system in the area served by the depot.

Spare stock size — The quantity of spares for a given stock item depends on the sparing interval, stock confidence level, failure rate, turnaround time for repair, and population range.

Calculating spares requirements

Use Procedure 1 "Calculating spares requirements" (page 14) to calculate the number of spares required to stock a depot for a one-year sparing interval:

Procedure 1
Calculating spares requirements

Step	Action
1	Determine the number (N) of in-service specified circuit cards serviced by the depot.
2	Obtain the card failure rate (F) for the specified circuit card from the sections in this document. Card failure rates are expressed in terms of the number of failures per one million hours (10^6).
3	Determine turnaround time (T) in hours.
4	For repair house service, turnaround time is typically ten working days (240 hours). For centralized depot service, turnaround time is typically two working days (48 hours).
5	Calculate the NFT value by multiplying N x F x T.
6	Look up the number of spares required in Table 7 "Number of spares required" (page 37).

—End—

Example

A centralized depot services 10,000 NT8D02 Digital Line Cards. The failure rate for this card is 6.0 failures per 1 million hours. With a turnaround time of 48 hours:

$$NFT = 10{,}000 \times \frac{6.0}{1{,}000{,}000} \times 48 = 2.88$$

The number of spares required for an NFT value of 2.88 = 10

Failure rates - system components

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit card ambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

Table 2 "Failure rates — system components" (page 17) gives the failure rates for system components. In this table, "N/A" indicates that the failure rate is not available at this time.

Table 2
Failure rates - system components

Order code	Description	Failure rate per 10^6 hrs
NT1P70AA	Wall Mount Fiber Remote Cabinet	N/A
NT4N41AA	Core/Network Module AC	N/A
NT4N41AD	Core/Network Module DC	N/A
NT5D21AA	Core/Network Module AC	0.25
NT5D21DA	Core/Network Module DC	
NT7D00AA	Top Cap (AC)	0.14
NT7D00BA	Top Cap (DC)	
NT8D35AA	Network Module AC	0.90
NT8D35DC	Network Module DC	

Order code	Description	Failure rate per 10^6 hrs
	Intelligent Peripheral Equipment	0.80
NT8D37AA NT8D37DC	IPE Module AC IPE Module DC	
NTAK11	Cabinet	N/A
NTDK91	Chassis	1.70
NTDK92	Chassis Expander	1.70
NTDU14	Chassis	N/A
NTDU15	Expansion Chassis	N/A
NTDU27	Signaling Server	N/A
NTDU30	Call Server	N/A

Failure rates - power and cooling equipment

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit card ambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

Table 3 "Failure rates — power and cooling equipment" (page 19) gives the failure rates for power and cooling equipment. In this table, "N/A" indicates that the failure rate is not available at this time.

Table 3
Failure rates - power and cooling equipment

Order code	Description	Failure rate per 10^6 hrs
A0355200	Power Failure Transfer Unit	5.70
A0367916	Power Supply –48V DC	N/A
MFA150	Modular Power System	N/A
MPP600	Modular Power Plant	N/A
NT4N49	Four Feed Power Distribution Unit (PDU)	N/A
NT5C06	MPR25 Modular Power Rectifier	8.33
NT5C07	MPR50 Modular Power Rectifier	8.33
NT5C10	MPS75 Modular Power Shelf	N/A

Order code	Description	Failure rate per 10^6 hrs
	Modular Power Cabinet	N/A
NT5C90EF NT5C90EG	75 A Single 150 A Dual	N/A
NT6D40	PE Power Supply DC	1.60
NT6D41	CE Power Supply DC	0.61
NT6D42	Ringing Generator DC	2.02
NT6D53	Junction Box	N/A
NT8D06	PE Power Supply AC	2.10
NT8D21	Ringing Generator AC	2.02
NT8D22	System Monitor	1.00
NT8D29	CE Power Supply AC	1.27
NT8D52AB NT8D52DD	Pedestal Blower Unit AC Pedestal Blower Unit DC	2.00 N/A
NT8D53	Power Distribution Unit AC	N/A
NT8D56AA	CE Module Power Distribution Unit	N/A
NT8D57AA	PE Module Power Distribution Unit	N/A
NTAK28	Junction Box	N/A
NTDK70	AC/DC Global Power Supply	N/A
NTDK72	DC/DC Power Supply	3.60
NTDK75	Battery Back-Up Unit	N/A
NTDK76	Battery Back-Up Unit	N/A
NTDK78	AC/DC Power Supply	3.60
NTWB16AA NTWB16BA	Candeo Power System (Large) – 50 A Rectifier Kit	8.33
NTWB16CA NTWB16DA	Candeo Power System (Small) – 30 A Rectifier Kit	8.33
QUA6A	Power Failure Transfer Unit (PFTU)	N/A

Failure rates - circuit cards

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit card ambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

Table 4 "Failure rates — circuit cards" (page 21) gives the failure rates for circuit cards. In this table, "N/A" indicates that the failure rate is not available at this time.

Table 4
Failure rates - circuit cards

Order code	Description	Failure rate per 10^6 hrs
A0634492 A0634493	Fiber Remote Multi-IPE Redundant Option Single-mode Multi-mode	1.86
A0773054 A0773055	Fiber Remote Multi-IPE Multi-mode 1-4 Superloops 1-2 Superloops	1.86
A0773056 A0773059	Fiber Remote Multi-IPE Single-mode 1-4 Superloops 1-2 Superloops	1.86
A0786611	Call Processor Pentium II® (128 MB)	N/A
A0810496	Call Processor Pentium II® (128 MB)	N/A

Order code	Description	Failure rate per 10^6 hrs
NT0961	Integrated ITG Trunk Card	N/A
NT1438	Integrated Conference Bridge PC Card (Europe)	N/A
NT1P61	Fiber Superloop Network Card	1.05
NT1P62	Fiber Controller Card	1.03
NT1P63	Electro-optical Interface	1.14
NT1R20	Off-Premises Station Analog Line Card	5.00
NT4N39	Call Processor Pentium IV®	N/A
NT4N43	cPCI Multi-Media Disk Unit	N/A
NT4N48	cPCI® System Utility (Sys Util)	N/A
NT4N64	Call Processor Pentium II® (256 MB)	N/A
NT4N65	cPCI® Core to Network Interface	N/A
NT4N66	cPCI® Core to Network Interface Transition	N/A
NT5D03	Call Processor Card (CP4)	12.50
NT5D10	Call Processor Card (CP3)	N/A
NT5D11	Line side T1 Line Card	N/A
NT5D12	Dual DTI/PRI Card (DDP)	1.76
NT5D14	Line side T1 Line Card	4.6
NT5D15	Extended Universal Trunk Card (Japan)	3.4
NT5D26	Extended Universal Trunk Card	4.6
NT5D28	Extended Direct Inward Dial (DID) Card (India)	4.6
NT5D29	Central Office Trunk Card (India)	4.6
NT5D30	Dual Intergroup Switch Card	N/A
NT5D31	Extended Universal Trunk Card	N/A
NT5D33	Line-side E1 Line Card	N/A
NT5D34	Line-side E1 Line Card	N/A
NT5D39	Extended Universal Trunk Card (Japan)	N/A
NT5D49	Analog Message Waiting Line Card (Brazil)	6.0
NT5D51	Nortel Integrated Conference Bridge Card	N/A
NT5D60	CLASS Modem Card (XCMC)	5.8
NT5D61	Input/Output Disk Unit with CD-ROM (IODU/C)	13.12
NT5D64	Local Mini-Carrier Interface Card	N/A
NT5D65	Local Mini-Carrier Extender Card	N/A

Order code	Description	Failure rate per 10^6 hrs
NT5D67	Remote Mini-Carrier Interface Card	N/A
NT5D68	Local Mini-Carrier Interface Card	N/A
NT5D69	Local Mini-Carrier Extender Card	N/A
NT5D97	Dual DTI/PRI (DDP) Card	N/A
NT5G11	Nortel Integrated Call Assistant Card	N/A
NT5K02	Flexible Analog Line Card	6.0
NT5K07	Universal Trunk Card (Hong Kong)	4.30
NT5K09	Quad Density Receiver	1.50
NT5K17	Enhanced Dual Loop Buffer Card	19.0
NT5K18	Extended PPM CO Trunk Card	N/A
NT5K19	E and M/2280 Hz Trunk Card	N/A
NT5K21	XMFC/MFE Sender Receiver card	2.70
NT5K36	Direct Inward Dial/Direct Outward Dial Trunk Card	19.00
NT5K48	Tone Detector Card	N/A
NT5K50	E and M TIE Trunk Card (France)	N/A
NT5K60	Direct Dial Inward (DDI) Card (CIS)	N/A
NT5K61	Direct Dial Outward (DDO) Card (CIS)	N/A
NT5K70	Central Office Trunk Card (8 units)	N/A
NT5K71	Central Office Trunk Card (4 units)	4.60
NT5K72	E and M Trunk Card	19.00
NT5K75	D-Channel Handler Card	19.00
NT5K76	XDAP Card	N/A
NT5K82	Central Office Trunk Card	N/A
NT5K83	E and M Trunk Card	N/A
NT5K84	Direct Inward Dial Trunk Card	N/A
NT5K90	Central Office Trunk Card (Denmark)	N/A
NT5K93	Central Office Trunk Card (Norway)	4.60
NT5K96	Flexible Analog Line Card without Message Waiting	6.0
NT5K99	Central Office Trunk Card (Spain)	4.60
NT6D11	D-Channel Handler Card	N/A
NT6D16	D-Channel Handler Interface Card	N/A
NT6D70	S/T Interface Line Card (SILC)	3.0

Order code	Description	Failure rate per 10^6 hrs
NT6D71	U Interface Line Card (UILC)	4.0
NT6D73	Multipurpose ISDN Signaling Processor (MISP)	N/A
NT7D16	Data Access Card	4.07
NT7R51	Local Carrier Interface Card	2.40
NT7R52	Remote Carrier Interface Card	1.80
NT8D01BC	Controller-4 Card SMT	1.86
NT8D01BD	Controller-2 Card	1.86
NT8D02	Digital Line Card	.231
NT8D04	Superloop Network Card	2.32
NT8D09	Analog Message Waiting Line Card	5.80
NT8D14	Universal Trunk Card	3.40
NT8D15	E and M Trunk Card	3.70
NT8D16	Digitone Receiver Card	2.70
NT8D17	Conference/TDS Card	5.10
	Quad Serial Data Interface Paddle Board	
NT8D41Ax	2-port version	N/A
NT8D41Bx	4-port version	164.00
NT8D72	PRI Card	N/A
NT9C14	CO/FX/WATS Trunk Card	N/A
NTAG03	Central Office Trunk Card (Holland)	19.00
NTAG04	Central Office/Direct Inward Dial Trunk Card (Holland)	19.00
NTAG26	Extended Multi-frequency Receiver	N/A
NTAG46	Central Office Trunk Card (Saudi Arabia)	N/A
NTAG54	DASS/DPNSS Card	N/A
NTAK02	SDI/DCH Circuit Card	2.90
NTAK09	1.5Mb DTI/PRI Card	2.60
NTAK10	2.0 Mb DTI	2.40
NTAK20	Clock Controller	0.54
NTAK93	D-Channel Handler Interface (DCHI) Daughterboard	1.60
NTBK22	MISP Circuit Card	7.66
NTBK50	2.0 Mb PRI	3.40

Order code	Description	Failure rate per 10^6 hrs
NTBK51	Downloadable D-Channel Handler (DDCH) Daughterboard	1.23
NTBX80	ISDN Network Termination Unit (NT1)	N/A
NTBX84	Rack-mount NT1 Card	N/A
NTCG01	CIS Trunk Card	N/A
NTCG02	CIS Trunk Card	N/A
NTCK16	Generic Central Office Trunk Card	4.6
NTCK18	Central Office Trunk Card	N/A
NTCK22	Direct Inward Dial Trunk Card (Italy)	N/A
NTCK24	Central Office Trunk Card (Portugal)	N/A
NTCK43	Dual PRI2 Card	N/A
NTCK90	802.11 Wireless Controller Card	N/A
NTCK91	802.11 Wireless Radio Card	N/A
NTCK93	802.11 Wireless Line Card	N/A
NTCK97	802.11 Wireless Base Card	N/A
NTCW00	Nortel Integrated DECT (DECT) Mobility Card (DMC8)	N/A
NTCW01	DECT Mobility Card-Expander (DMC8-E)	N/A
NTDK16	48-port Digital Line Card	.693
NTDK20	Small System Controller (SSC) Card	3.39
NTDK22	10m Fiber Daughterboard	2.19
NTDK23	10m Fiber Receiver Card	2.15
NTDK24	3km Fiber Daughterboard	2.19
NTDK25	3km FIber Receiver Card	2.15
NTDK26	Upgrade Daughterboard	0.46
NTDK79	3km Fiber Daughterboard	2.19
NTDK80	3km Fiber Receiver Card	2.15
NTDK83	Dual-port 100BaseT IP Expansion Daughterboard	N/A
NTDK84	Dual-port Fiber Expansion Daughterboard	N/A
NTDK85	Dual Fiber Expansion Daughterboard	2.28
NTDK97	Mini System Controller	3.39
NTDK99	Single-port 100BaseT IP Expansion Daughterboard	N/A

Order code	Description	Failure rate per 10^6 hrs
NTDR68	Single Reach Line Card	N/A
NTDR69	Nortel Remote Gateway 9150	N/A
NTDR70	Reach Line Card (32-port)	N/A
NTDR71	Reach Line Card (32-port)	N/A
NTDU19	Expansion Kit	N/A
NTDU40	Media Card	N/A
NTDU41	Voice Gateway Media Card	2.48
NTDW60BA E5	MGC Card	1.36
NTDW61BA E5	CP-PM Card (Call Server)	2.38
NTDW61BA E5	CP-PM Card (Signaling Server)	4.96
NTDW62AA E5	DSP D/B, 32-port	0.23
NTDW64AA E5	DSP D/B, 96-port	0.23
NTDW65AA E5	MC-32S Card	0.93
NTDW66BA E5	CP-PM Card (Signaling Server)	4.96
NTM400	Software Daughterboard	N/A
NTRA02	Extended Universal Trunk Card (China)	4.6
NTRA03	Extended E and M TIE Trunk Card (China)	N/A
NTRA04	Flexible Message Waiting Line Card (China)	N/A
NTRA05	Flexible Analog Line Card (China)	N/A
NTRA06	Off-premises Station (OPS) Analog Line Card (China)	N/A
NTRA08	Flexible Analog Line Card (China)	N/A
NTRA10	Extended Universal Trunk Card (China)	< 4.6
NTRA11	Extended Digital Tone Receiver Card (China)	< 4.6
NTRA12	Central Office Trunk Card (China)	N/A
NTRB18	CP Mgate	N/A
NTRB21	1.5 Mbit DTI/PRI/DCH TMDI Card	N/A
NTRB33	Fiber Junctor Interface (FIJI) Card	1.45

Order code	Description	Failure rate per 10^6 hrs
NTRB34	Core to Network Interface 3 Card (CNI-3)	0.53
NTRB37	Extended Universal Trunk Card (Hong Kong)	N/A
NTRB53	Downloadable Clock Controller Card	N/A
NTRE39	Optical Cable Management Card (OCMC)	N/A
NTTK01	Single-port 100BaseF IP Expansion Daughterboard	N/A
NTTK02	Dual-port 100BaseF IP Expansion Daughterboard	N/A
NTTK25	Software Daughterboard	N/A
NTVQ01	Media Card	
NTWE07	ITG 2.0 Pre-programmed Q.SIG DCI PC Card	N/A
QPC43	Peripheral Signaling Card	1.73
QPC414	Network Card	3.00
QPC441	Three-Port Extender Card	2.00
QPC444	Conference Card	N/A
QPC536	DTI2 Card	N/A
QPC775	Clock Controller Card	N/A
QPC785	JDMI Card	N/A

Failure rates - terminal equipment

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit cardambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

Table 5 "Failure rates — station equipment" (page 29) gives the failure rates for terminal equipment. In this table, "N/A" indicates that the failure rate is not available at this time.

Table 5
Failure rates - station equipment

Order code	Description	Failure rate per 10^6 hrs
NE-500/2500	Analog (500/2500-type) Telephone	N/A
NE-DGQC-35	Line Cord	3.50
NE-G3AR-35	Handset	0.50
NE-G3DRN-3	Console Handset	0.50
NNTM74	IP Phone Key Expansion Module (KEM)	N/A
NT1F11	M3000 Touchphone	21.01

Order code	Description	Failure rate per 10^6 hrs
NT1F21	M2317 Telephone	N/A
NT6G00	M2250 TCM Console	N/A
NT8K90	M2016S Telephone with Data	N/A
NTDU76	i2002 Internet Telephone	N/A
NTDU82	i2004 Internet Telephone	N/A
NTDU90	Nortel IP Phone 2001	N/A
NTDU91	Nortel IP Phone 2002	N/A
NTDU92	Nortel IP Phone 2004	N/A
NTDU96	Nortel IP Phone 2007	N/A
NTEX11	Nortel IP Audio Conference Phone 2033	N/A
NTMN31	M3901 Telephone	0.46
NTMN32	M3902 Telephone	0.57
NTMN33	M3903 Telephone	0.76
NTMN34	M3904 Telephone	1.23
NTMN35	M3905 Call Center Telephone	1.14
NTMN66	Key-based Expansion Unit	0.23
NTMN69	Meridian Communications Adapter	0.23
NTMN70	CTI Accessory (CTIA)	2.28
NTMN80	Power Supply for M3900-series Telephones	3.81
NTTQ4010	Nortel WLAN Handset 2210	N/A
NTTQ4050	Nortel WLAN Handset 2210 Battery Pack	N/A
NTTQ4060	Nortel WLAN Handset 2210 Desktop Charger	N/A
NTTQ4101	Nortel WLAN Handset 2210/2211 Charger & WLAN Application Gateway 2246-64 Power Supply (North America)	N/A
NTTQ5010	Nortel WLAN Handset 2211	N/A
NTTQ5050	Nortel WLAN Handset 2211 Battery Pack	N/A
NTTQ5060	Nortel WLAN Handset 2211 Desktop Charger	N/A
NTTQ60	Nortel WLAN IP Telephony Manager 2245	N/A
NTZK06	M2006 Telephone	3.08
NTZK08	M2008 Telephone	3.10
NTZK16	M2616 Telephone	3.88
NTZK20	M2016S Telephone	5.87
NTZK22	M2216ACD-1 Telephone	4.68

Order code	Description	Failure rate per 10^6 hrs
NTZK23	M2216ACD-2 Telephone	5.37
QSU1	SL-1 Telephone	N/A
QSU3	SL-1 Digit Display Telephone	N/A
QSU60	SL-1 Telephone (Fully Modular)	N/A
QSU61	SL-1 Digit Display Telephone	N/A
QSU71	M1109 Compact Telephone	N/A
	Nortel WLAN Handset 2212	N/A

Failure rates - cables

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit card ambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

There are many cables available from Nortel. The approximate failure rate for most cables, based on failures in time per billion hours (10^9), is 0.5. For a detailed listing of cables, see *Equipment Identification (NN43001-254)*.

Failure rates - miscellaneous components

Contents

This section contains information on the following topics:

Overview

Failure rates are based on a circuit card ambient temperature of 40° C (104° F). This temperature is usually higher than the surrounding room temperature. Running the system at a lower temperature increases the life expectancy of components and improves overall system reliability.

Failure rates

Table 6 "Failure rates — miscellaneous equipment" (page 35) gives the failure rates for miscellaneous equipment not included in other sections of this document. In this table, "N/A" indicates that the failure rate is not available at this time.

Table 6
Failure rates - miscellaneous equipment

Order code	Description	Failure rate per 10^6 hrs
A0345353	Black Box ABC Switch	N/A
A0638930	Motorola 28.8 Fax/Data Modem	N/A
A0863689	Blank PCMCIA Memory Card Assembly (64 MByte)	N/A
NT4N71	cPCI LED/LCD Status Display Panel	N/A
NT5D52	Ethernet Adapter Card	N/A
NTND36	Meridian Communications Unit	N/A

Converting NFT values to spares requirements

Table 7 "Number of spares required" (page 37) translates NFT values, calculated in Procedure 1 "Calculating spares requirements" (page 14), to the number of spares required in stock.

Table 7
Number of spares required

NFT values		Spares required		NFT values		Spares required
From	To			From	To	
0	0.001	1		4.01	4.58	13
0.001	0.0452	2		4.58	5.16	14
0.0452	0.189	3		5.16	5.76	15
0.189	0.425	4		5.76	6.37	16
0.425	0.734	5		6.37	6.99	17
0.734	1.09	6		6.99	7.62	18
1.09	1.5	7		7.62	8.26	19
1.5	1.95	8		8.26	8.91	20
1.95	2.43	9		8.91	9.57	21
2.43	2.94	10		9.57	10.2	22
2.94	3.46	11		10.2	10.9	23
3.46	4.01	12		10.9	11.5	24
11.5	12.2	25		26.9	27.7	46
12.2	12.9	26		27.7	28.5	47
12.9	13.6	27		28.5	29.2	48
13.6	14.3	28		29.2	30	49
14.3	15	29		30	30.8	50
15	15.8	30		30.8	31.6	51
15.8	16.5	31		31.6	32.4	52

NFT values		Spares required		NFT values		Spares required
From	To			From	To	
16.5	17.2	32		32.4	33.2	53
17.2	17.9	33		33.2	33.9	54
17.9	18.7	34		33.9	34.7	55
18.7	19.4	35		34.7	35.5	56
19.4	20.1	36		35.5	36.3	57
20.1	20.9	37		36.3	37.1	58
20.9	21.6	38		37.1	37.9	59
21.6	22.4	39		37.9	38.7	60
22.4	23.1	40		38.7	39.5	61
23.1	23.9	41		39.5	40.3	62
23.9	24.6	42		40.3	41.1	63
24.6	25.4	43		41.1	41.9	64
25.4	26.2	44		41.9	42.7	65
26.2	26.9	45		42.7	43.5	66
43.5	44.3	67		60.8	61.6	88
44.3	45.2	68		61.6	62.5	89
45.2	46	69		62.5	63.3	90
46	46.8	70		63.3	64.1	91
46.8	47.6	71		64.1	65	92
47.6	48.4	72		65	65.8	93
48.4	49.2	73		65.8	66.6	94
49.2	50	74		66.6	67.5	95
50	50.9	75		67.5	68.3	96
50.9	51.7	76		68.3	69.2	97
51.7	52.5	77		69.2	70	98
52.5	53.3	78		70	70.9	99
53.3	54.2	79		70.9	71.7	100
54.2	55	80		71.7	72.5	101
55	55.8	81		72.5	73.4	102
55.8	56.6	82		73.4	74.2	103
56.6	57.5	83		74.2	75.1	104
57.5	58.3	84		75.1	75.9	105
58.3	59.1	85		75.9	76.8	106

NFT values		Spares required		NFT values		Spares required
From	To			From	To	
59.1	60	86		76.8	77.6	107
60	60.8	87		77.6	78.5	108
78.5	79.3	109		96.5	97.3	130
79.3	80.2	110		97.3	98.2	131
80.2	81	111		98.2	99.1	132
81	81.9	112		99.1	99.9	133
81.9	82.7	113		99.9	100.8	134
82.7	83.6	114		100.8	101.7	135
83.6	84.4	115		101.7	102.5	136
84.4	85.3	116		102.5	103.4	137
85.3	86.2	117		103.4	104.3	138
86.2	87	118		104.3	105.1	139
87	87.9	119		105.1	106	140
87.9	88.7	120		106	106.9	141
88.7	89.6	121		106.9	107.7	142
89.6	90.4	122		107.7	108.6	143
90.4	91.3	123		108.6	109.5	144
91.3	92.2	124		109.5	110.3	145
92.2	93	125		110.3	111.2	146
93	93.9	126		111.2	112.1	147
93.9	94.7	127		112.1	113	148
94.7	95.6	128		113	113.8	149
95.6	96.5	129		113.8	114.7	150
114.7	115.6	151		133.1	134	172
115.6	116.4	152		134	134.9	173
116.4	117.3	153		134.9	135.8	174
117.3	118.2	154		135.8	136.6	175
118.2	119.1	155		136.6	137.5	176
119.1	119.9	156		137.5	138.4	177
119.9	120.8	157		138.4	139.3	178
120.8	121.7	158		139.3	140.2	179
121.7	122.6	159		140.2	141.1	180
122.6	123.5	160		141.1	141.9	181

NFT values		Spares required		NFT values		Spares required
From	To			From	To	
123.5	124.3	161		141.9	142.8	182
124.3	125.2	162		142.8	143.7	183
125.2	126.1	163		143.7	144.6	184
126.1	127	164		144.6	145.5	185
127	127.8	165		145.5	146.4	186
127.8	128.7	166		146.4	147.3	187
128.7	129.6	167		147.3	148.1	188
129.6	130.5	168		148.1	149	189
130.5	131.4	169		149	149.9	190
131.4	132.2	170		149.9	150.8	191
132.2	133.1	171		150.8	151.7	192
151.7	152.6	193		170.4	171.3	214
152.6	153.5	194		171.3	172.2	215
153.5	154.4	195		172.2	173.1	216
154.4	155.2	196		173.1	174	217
155.2	156.1	197		174	174.9	218
156.1	157	198		174.9	175.8	219
157	157.9	199		175.8	176.7	220
157.9	158.8	200		176.7	177.5	221
158.8	159.7	201		177.5	178.4	222
159.7	160.6	202		178.4	179.3	223
160.6	161.5	203		179.3	180.2	224
161.5	162.4	204		180.2	181.1	225
162.4	163.3	205		181.1	182	226
163.3	164.1	206		182	182.9	227
164.1	165	207		182.9	183.8	228
165	165.9	208		183.8	184.7	229
165.9	166.8	209		184.7	185.6	230
166.8	167.7	210		185.6	186.5	231
167.7	168.6	211		186.5	187.4	232
168.6	169.5	212		187.4	188.3	233
169.5	170.4	213		188.3	189.2	234
189.2	190.1	235		199.1	200	246

NFT values		Spares required		NFT values		Spares required
From	To			From	To	
190.1	191	236		200	200.9	247
191	191.9	237		200.9	201.8	248
191.9	192.8	238		201.8	202.7	249
192.8	193.7	239		202.7	203.6	250
193.7	194.6	240		203.6	204.5	251
194.6	195.5	241		204.5	205.4	252
195.5	196.4	242		205.4	206.3	253
196.4	197.3	243		206.3	207.2	254
197.3	198.2	244		207.2	208.1	255
198.2	199.1	245		208.1	209	256

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Nortel Communication Server 1000

Spares Planning

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