



Nortel Communication Server 1000

# Spares Planning

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## Revision history

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### **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.

## 6 Revision history

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# Introduction

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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:

[www.nortel.com](http://www.nortel.com)

## 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.

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## 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)*

### Online

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**CD-ROM**

To obtain Nortel documentation on CD-ROM, contact your Nortel customer representative.

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# Spares planning

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## Contents

This section contains information on the following topics:

"Introduction" (page 13)

"Definitions and assumptions" (page 13)

"Calculating spares requirements" (page 14)

## 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 $N \times F \times T$ .
6	Look up the number of spares required in <a href="#">Table 7 "Number of spares required" (page 37)</a> .

—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:

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

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



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# Failure rates - system components

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## Contents

This section contains information on the following topics:

["Overview" \(page 17\)](#)

["Failure rates" \(page 17\)](#)

## 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 <sup>6</sup> 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	

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<b>Order code</b>	<b>Description</b>	<b>Failure rate per 10<sup>6</sup> hrs</b>
	Intelligent Peripheral Equipment	0.80
NT8D37AA	IPE Module AC	
NT8D37DC	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

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# Failure rates - power and cooling equipment

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## Contents

This section contains information on the following topics:

["Overview" \(page 19\)](#)

["Failure rates" \(page 17\)](#)

## 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 <sup>6</sup> 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 <sup>6</sup> hrs
	Modular Power Cabinet	N/A
NT5C90EF	75 A Single	N/A
NT5C90EG	150 A Dual	
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	Pedestal Blower Unit AC	2.00
NT8D52DD	Pedestal Blower Unit DC	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	Candeo Power System (Large) – 50 A	8.33
NTWB16BA	Rectifier Kit	
NTWB16CA	Candeo Power System (Small) – 30 A	8.33
NTWB16DA	Rectifier Kit	
QUA6A	Power Failure Transfer Unit (PFTU)	N/A

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## Failure rates - circuit cards

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### Contents

This section contains information on the following topics:

["Overview" \(page 21\)](#)

["Failure rates" \(page 21\)](#)

### 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 <sup>6</sup> hrs
A0634492	Fiber Remote Multi-IPE Redundant Option Single-mode	1.86
A0634493	Multi-mode	
A0773054	Fiber Remote Multi-IPE Multi-mode 1-4 Superloops	1.86
A0773055	1-2 Superloops	
A0773056	Fiber Remote Multi-IPE Single-mode 1-4 Superloops	1.86
A0773059	1-2 Superloops	
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 <sup>6</sup> 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 <sup>6</sup> 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 <sup>6</sup> 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 <sup>6</sup> 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 <sup>6</sup> 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 <sup>6</sup> 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



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# Failure rates - terminal equipment

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## Contents

This section contains information on the following topics:

["Overview" \(page 29\)](#)

["Failure rates" \(page 29\)](#)

## 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 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 <sup>6</sup> hrs
NE-500/250 0	Analog (500/2500-type) Telephone	N/A
NE-DGQC-3 5	Line Cord	3.50
NE-G3AR-3 5	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 <sup>6</sup> 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

<b>Order code</b>	<b>Description</b>	<b>Failure rate per 10<sup>6</sup> hrs</b>
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



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# Failure rates - cables

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## Contents

This section contains information on the following topics:

"Overview" (page 33)

"Failure rates" (page 33)

## 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<sup>9</sup>), is 0.5. For a detailed listing of cables, see *Equipment Identification (NN43001-254)*.



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# Failure rates - miscellaneous components

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## Contents

This section contains information on the following topics:

["Overview" \(page 35\)](#)

["Failure rates" \(page 35\)](#)

## 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 <sup>6</sup> 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

38 Converting NFT values to spares requirements

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

40 Converting NFT values to spares requirements

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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NTCK43 Dual PRI2 Card	25	NTDU19 Expansion Kit	26
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NTCK91 802.11 Wireless Radio Card	25	NTDU30 Call Server	18
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Nortel Communication Server 1000

## Spares Planning

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