**Nortel Communication Server 1000**

Nortel Communication Server 1000 Release 4.5

# Communication Server 1000E
Maintenance

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# Revision history

**April 2007**

Standard 4.00. This document is up-issued to reflect change in technical content on pages 124 and 126 due to CR Q01522450-01.

**July 2006**

Standard 3.00. This document is up-issued with corrections from CR Q001324850.

**August 2005**

Standard 2.00. This document is up-issued for Communication Server 1000 Release 4.5.

**September 2004**

Standard 1.00. This document is issued for Communication Server 1000 Release 4.0.

# Contents

# List of procedures

# About this document

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 describes system maintenance for the CS 1000E system.

### 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** on the Nortel home page:

www.nortel.com/

## Applicable systems

This document applies to the Communication Server 1000E (CS 1000E) system.

## Intended audience

This document is intended for individuals responsible for configuring, maintaining, and troubleshooting CS 1000E systems.

## Conventions

In this document, the CS 1000E system is referred to generically as "system."

# Related information

This section lists information sources that relate to this document.

### NTPs

The following NTPs are referenced in this document:

- *Converging the Data Network with VoIP* (553-3001-160)

- *Circuit Card: Description and Installation* (553-3001-211)

- *Software Input/Output: Administration* (553-3001-311)

- *Optivity Telephony Manager: System Administration* (553-3001-330)

- *Element Manager: System Administration* (553-3001-332)

- *IP Line: Description, Installation, and Operation*  (553-3001-365)

- *Software Input/Output: System Messages* (553-3001-411)

- *Software Input/Output: Maintenance* (553-3001-511)

- *Communication Server 1000E: Installation and Configuration* (553-3041-210)

### Online

To access Nortel documentation online, click the **Technical Documentation** link under **Support** on the Nortel home page:

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### CD-ROM

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

# Precautions

## Contents

This section contains information on the following topics:

## General precautions

The CS 1000E equipment is based on a solid state circuitry which is sensitive to static electricity and environmental conditions. Follow the precautions in this chapter to avoid personal injury and equipment damage.

> **DANGER OF ELECTRIC SHOCK**
> To avoid the danger of electric shock, be careful when working with power equipment and connections. Warning notices are displayed and must be heeded.

Wear an antistatic wrist strap when handling CS 1000E circuit cards to prevent damage caused by static electricity.

## Circuit cards

Handle the circuit cards as follows:

•    Wear an antistatic wrist strap before handling circuit cards.

- Handle the cards by the card stiffeners and edges only. Do not touch the contacts or components.

- Keep the cards installed in the system as much as possible to avoid dirty contacts and unnecessary wear.

- Set the cards on a protective antistatic bag. If an antistatic bag is not available, hold the card, or set it in a card slot unseated from the connectors.

- Unpack or handle the cards away from electric motors, transformers, or similar machinery.

- Store the cards in protective packing. Do not stack cards on top of each other unless they are packaged.

- Store the cards in a dry dust-free area.

During repair and maintenance procedures:

- Insert the cards into compatible slots only.

- Software-disable the cards, if applicable, before they are removed or inserted.

- Hardware-disable the cards, whenever there is an enable/disable switch, before they are removed or inserted.

- Return defective or heavily contaminated cards to a repair center; do not try to repair or clean them.

# Communicating with the system

## Contents

This section contains information on the following topics:

## Introduction

Send maintenance commands and receive system messages (status and error messages) by communicating with the system through one or more of the following input/output devices or management tools:

- TTY or VDT terminal as an input/output device

- PC running terminal emulation software

- RS-232-C compatible printer as an output-only device

- Optivity Telephony Manager (OTM)

- Maintenance telephone as an input-only device

- Element Manager

Refer to *Communication Server 1000E: Installation and Configuration* (553-3041-210) for information on how to connect these devices and management tools.

# System terminal access for CS 1000E

## Terminal Server

Because each CS 1000E Core Call Server provides only two ports for serial devices, the Terminal Server is used to provide the necessary standard serial ports for the applications and devices that require them (for example, for printers and Call Detail Recording [CDR]). The Terminal Server is also used to connect maintenance terminals and modems for support staff.

The Terminal Server provides an rlogin service that allows serial devices to establish dedicated connections to pseudo TTY (PTY) ports on the Call Server. (The Terminal Server therefore serves the same purpose as Serial Data Interface [SDI] and Multi-purpose Serial Data Link [MSDL] cards in Large Systems.) It is possible to telnet through the Terminal Server to individual components on the ELAN subnet, and therefore obtain maintenance access for each device. Users can also access the Terminal Server from a remote PC by dialing the on-board modem.

As the Terminal Server is configured to automatically log in to the active Call Server upon startup, only one Terminal Server is required for each Call Server pair.

> *Note:*  While the Terminal Server is required to provide serial port access to the Call Server, it can also be optionally configured to provide access to Media Gateway 1000T (MG 1000T) serial ports for maintenance purposes.

For more details on installing and configuring the Terminal Server, see *Communication Server 1000E: Installation and Configuration* (553-3041-210).

### System terminal

When a system terminal is installed locally, it is typically connected to a serial port on the Terminal Server. This ensures continued access to the active Call Server. When a system terminal is installed at a remote location, a modem and a telephone line are required between the system terminal and the Terminal Server.

Figure 1 shows a typical system terminal configuration to the Call Servers.

**Figure 1**
**CS 1000E local and remote access system terminals**
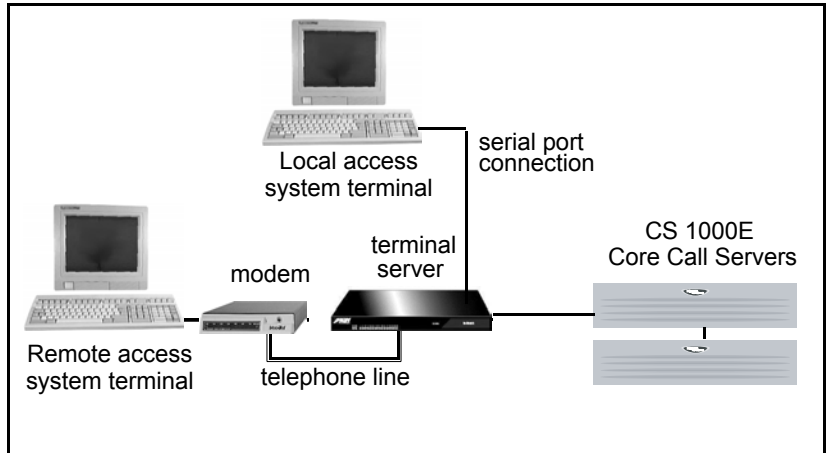


With the CS 1000E, a system terminal can also connect directly to the Call Server, Signaling Server, Media Cards, and Media Gateway 1000Es (MG 1000Es).

When a system terminal is installed directly on the Call Server, it connects to the Com 1 port.

When a system terminal is installed on the Signaling Server, the rear serial port is the primary port for maintenance and administration.

When a system terminal connects to an MG 1000E, it connects to the Small System Controller (SSC) through an SDI port on the rear of the MG 1000E.

The Voice Gateway Media Card faceplate provides a female 8-pin mini-DIN serial maintenance port for system terminal connection. The maintenance port on the Shielded 50-pin to Serial/ELAN/TLAN Adapter (L-Adapter) provides an alternative to the faceplate maintenance port. For details, see the Voice Gateway Media Card installation in *Communication Server 1000E: Installation and Configuration* (553-3041-210).

# System terminal access for MG 1000T

When a system terminal is installed locally with an MG 1000T, it connects to to the SSC card on the MG 1000T Core through a rear SDI port. The NTBK48 three-port cable can be connected to the SDI port to provide a total of three serial connections.

When a system terminal is installed at a location that is remote from the MG 1000T, modems and a telephone line are required between the terminal and the SDI port.

> *Note:* System terminals connected to the MG 1000T cannot be used to access the Call Server or MG 1000Es.

Figure 2 shows a typical system terminal configuration to the MG 1000T Core.

**Figure 2**
**MG 1000T local and remote access system terminals**
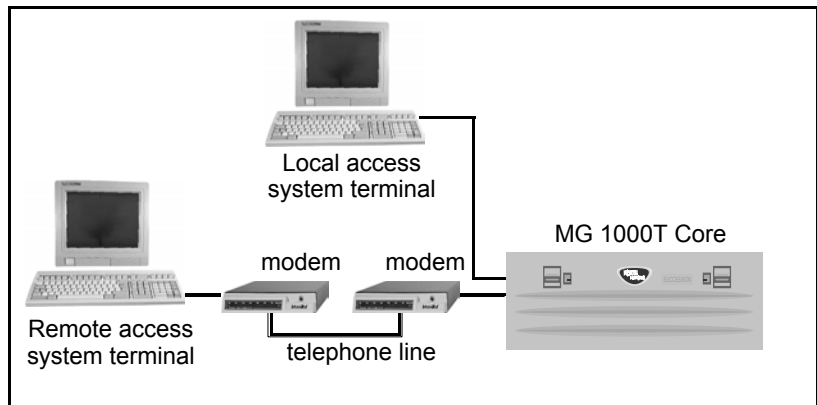


With the MG 1000T platform, a system terminal can also connect to the MG 1000T Expansion, Signaling Server, and Media Cards.

When a system terminal connects to an MG 1000T Expansion, it connects to the SSC through a rear SDI port, in the same manner as the MG 1000T Core.

When a system terminal is installed at a remote location, modems and a telephone line are required between the terminal and the SDI port.

When a system terminal is installed on the Signaling Server, the rear serial port is the primary port for maintenance and administration.

The Voice Gateway Media Card faceplate provides a female 8-pin mini-DIN serial maintenance port for system terminal connection. The maintenance port on the Shielded 50-pin to Serial/ELAN/TLAN Adapter (L-Adapter) provides an alternative to the faceplate maintenance port. For details, see the Voice Gateway Media Card installation in *Communication Server 1000E: Installation and Configuration* (553-3041-210).

### Additional Serial Ports

The maximum number of serial ports used for maintenance, administration, CDR, and traffic depends upon the number of MG 1000T Expansions equipped. There can be up to three serial ports on the MG 1000T Core and up to three for each equipped MG 1000T Expansion.

## Connecting to the Media Card RS-232 maintenance port

Connect a serial cable either to the rear P2 connector or to the faceplate connector, but not both at once. The card's hardware cannot support two devices connected at once.

The terminal device should be configured to 9600, 8, N, 1. Configure the flow control to "None" or a similar setting.

*Note:* If the hardware flow control is enabled, users see information from the card but the card does not respond to any keystrokes.

# Optivity Telephony Manager

The Optivity Telephony Manager (OTM) is a management server that can be used to configure and maintain the system. It collects and processes alarms from the system, collects call accounting and traffic data, and acts as a terminal server for multiple devices.

With CS 1000E systems, the Call Server and the MG 1000T Core can be accessed directly using OTM. Each is presented as a separate system in the network.

> *Note:* In OTM, the CS 1000E system appears as a Communication Server 1000M Multi Group (CS 1000M MG) system, and the MG 1000T appears as a Communication Server 1000S (CS 1000S) system.

See *Optivity Telephony Manager: System Administration* (553-3001-330) for details on how to use the OTM graphics-based user interface that incorporates icons, pull-down menus, and a mouse for maintenance functions.

OTM provides:

- Alarm Management

- Maintenance Applications

## Alarm Management

The OTM alarm management provides an alarm collection and a processing center for multiple systems and devices. The OTM receives Simple Network Management Protocol (SNMP) traps from the CS 1000E system, and stores them in a circular log file on the OTM Server. The OTM Alarm Notification application monitors incoming traps and notifies the appropriate users of important events and alarms.

The OTM alarm management has the following components:

- A web-based alarm browser server to view alarms from multiple systems and devices. HTML Help is provided for individual alarms.

- A Microsoft® Windows® alarm browser (Event Monitor) to view CS 1000E system-specific alarms. Windows help is provided for individual alarms.

- An Alarm Notification application to provide a scripting language to generate notifications on selected incoming traps. Notification types include pagers, e-mail, and the forwarding of SNMP traps to an upstream processor (such as Optivity Network Message Services [NMS]). The notification is triggered by trap data such as alarm severity, device type, and time of day. A Script Wizard application simplifies the creation of Alarm Notification scripts.

- A PC Event Log and Viewer to view events and alarms generated on the OTM Server and its Windows clients. This Windows application can also generate SNMP traps based on event severity level.

### Maintenance applications

With OTM Maintenance Windows, 37 maintenance overlays are grouped into hardware-related windows that allow users to perform all the maintenance tasks without having to remember or look up any overlay-based commands. The OTM interface provides a comprehensive view of the CS 1000E system hardware configuration.

## OTM System Terminal

The System Terminal helps users to perform overlay-based tasks directly through the TTY interface. The System Terminal provides online, context-sensitive help for overlays, prompts, and error messages. The System Terminal also provides a terminal emulation capability.

In the web environment, the Terminal Client provides the same functionality as the System Terminal.

There are two versions of System Terminal to support two different connection types — Ethernet or PPP and Serial — as follows:

- The Overlay Passthru is available on the OTM using Ethernet or PPP. The Overlay Passthru only supports access to the overlays.

- The VT220 provides similar functions using serial connections, as well as terminal emulation for all application modules.

Users can access overlays through the System Terminal and application modules through VT220.

# Element Manager

Element Manager is a simple and user-friendly web-based interface that supports a broad range of system management tasks, including:

- configuration and maintenance of IP Peer and IP telephony features

- configuration and maintenance of traditional routes and trunks

- configuration and maintenance of numbering plans

- configuration of Call Server data blocks (such as configuration data, customer data, Common Equipment data, D-channels)

- maintenance commands, system status inquiries, backup and restore functions

- software download, patch download, patch activation

Element Manager has many features to help administrators manage systems with greater efficiency. Examples are as follows:

- Web pages provide a single point-of-access to parameters that were traditionally available through multiple overlays.

- Parameters are presented in logical groups to increase ease-of-use and speed-of-access.

- The "hide or show information" option enables administrators to see information that relates directly to the task at hand.

- Full-text descriptions of parameters and acronyms help administrators reduce configuration errors.

- Configuration screens offer pre-selected defaults, drop-down lists, checkboxes, and range values to simplify response selection.

The Element Manager web server resides on the Signaling Server and can be accessed directly through a web browser or Optivity Telephony Manager (OTM). The OTM navigator includes integrated links to each network system and their respective instances of Element Manager.

For more information on Element Manager, refer to *System Management* (553-3001-300) and *Signaling Server: Installation and Configuration* (553-3001-212).

# Accessing the system

Maintenance commands are used to disable, enable, and test system components. They allow faulty equipment to be disabled to prepare for replacement. After the faulty equipment is replaced, the new equipment can then be tested and enabled.

To perform system maintenance on the CS 1000E, use the following:

- OTM Server or OTM Client PC using a graphics-based user interface that incorporates icons, pull-down menus and a mouse.

- SDI system terminal using command line inputs or OTM System Terminal Overlay Passthru/VT220.

- Element Manager. For details on Element Manager, refer to *Signaling Server: Installation and Configuration* (553-3001-212).

- Maintenance Telephone.

## Access through an OTM Server

See *Optivity Telephony Manager: System Administration* (553-3001-330) for details on how to access the system with OTM.

## Access through an SDI system terminal or OTM System Terminal Overlay Passthru/VT220

Send maintenance commands and receive system messages by accessing the Call Server or MG 1000T Core through an RS-232 device, such as a VDT or TTY.

On the Call Server, the device can be connected through the Terminal Server or through a Com port

*Note:* If the RS-232 device is connected directly to the Call Server Com port, a separate terminal is required to communicate with each Call Server in the Core.

On the MG 1000T Core, the device is connected directly to the Media Gateway SDI port using the NTBK48 three-port cable. (See *Communication Server 1000E: Installation and Configuration* (553-3041-210) for details.)

When the user accesses the system through a system terminal, a login procedure is required. If a sysload (system reload) occurs before the new password is saved in a data dump, the last active password remains valid.

Each system has two levels of passwords: level 1 is for general use, and level 2 is for administrative use. Either password is accepted in the login procedure.

### Accessing the system from an SDI system terminal

*Note:*  See *Optivity Telephony Manager: System Administration* (553-3001-330) for details on using OTM System Terminal Overlay Passthru/VT220.

To access the system from an SDI system terminal, follow the steps in Procedure 1.

**Procedure 1**
**Accessing the system from an SDI system terminal**

1   Press the **Return** key.

    a.   If the response is OVL111 nn IDLE or OVL111 nn BKGD, the user is ready to log into the system. Go to step 2.

    b.   If the response is OVL000 >, the user is already logged into the system. Go to step 4.

    Responses vary with different Background Terminal packages.

2   Enter **LOGI ADMIN1,** then press the **Return** key.
    The normal response is PASS?. If there is any other response, see *Software Input/Output: Maintenance* (553-3001-511).

3   Enter either the level 1 or level 2 password and press the **Return** key. If the password is correct, the system responds with the prompt >.

4   Enter **LD xx**, Where xx represents the number of the program.

5   Perform tasks.

6   To end the program, enter four asterisks (**\*\*\*\***).

**7**   To end the login session, enter **LOGO**.

——————————   **End of Procedure**   ——————————

## Access through the maintenance telephone

The Call Server can be accessed using a maintenance telephone.

*Note:* As the MG 1000T does not support line circuit cards, maintenance telephones cannot access the MG 1000T.

A telephone functions as a maintenance telephone when the class-of-service is defined as Maintenance Telephone Allowed (MTA) in LD 11.

A maintenance telephone enables the user to send a subset of commands. The maintenance telephone takes priority over a system terminal and will log the terminal out.

Specific commands for testing tones and outpulsing through the maintenance telephone are given in the Tone and Digit Switch and Digitone Receiver Diagnostic (LD 34).

Specific commands for testing trunk connections through the maintenance telephone are given in the Trunk Diagnostic (LD 36).

The following Maintenance Overlays are accessible from an IP Phone operating as a maintenance telephone: 30, 32, 33, 34, 36, 37, 38, 42, 43, 45, 46, 60, and 62.

*Note:* The above maintenance overlay operations are supported on IP Phones except for the Tone and Digit Switch (TDS) commands of LD 34 and TONE commands of LD 46.

To use the maintenance telephone, the Terminal Number (TN) for that telephone must be operating.

To access the system using the maintenance telephone, a Special Service Prefix (SPRE) code (defined in the customer data block) is entered followed by "91" (see Procedure 2 on for details). To enter commands, press

the keys that correspond to the letters and numbers of the command (for example, to enter *LD 42 return*, key in *53#42##*). Table 1 shows the translation from a terminal keyboard to a telephone dial pad.

**Table 1**
**Translation from keyboard to dial pad**

| Keyboard | | | | Dial Pad |
|---|---|---|---|---|
| | | | 1 | 1 |
| A | B | C | 2 | 2 |
| D | E | F | 3 | 3 |
| G | H | I | 4 | 4 |
| J | K | L | 5 | 5 |
| M | N | O | 6 | 6 |
| P | R | S | 7 | 7 |
| T | U | V | 8 | 8 |
| W | X | Y | 9 | 9 |
| | | | 0 | 0 |
| | | Space or # (pound symbol) | | # |
| | | Return | | ## |
| *Note:* Q = 7 and Z = 9 on the dial pad. | | | | |

### Accessing the maintenance telephone

To access the maintenance telephone, follow the steps in Procedure 2.

**Procedure 2**
**Accessing the maintenance telephone**

**1**   Press the prime DN key.

**2**   Place the telephone in maintenance mode by entering `xxxx91` (where xxxx represents the customer SPRE code. It is defined in the Customer Data Block and can be printed in LD 21).

   *Note:* The SPRE code is typically 1, which means the user typically enters 191.

**3**   To check for busy tone, enter Return (`##`)

   •   If there is no busy tone, go to step 4.

   •   If there is a busy tone, a program is active. To end an active program and access the system, enter four asterisks (`****`).

**4**   Load a program by entering `53#xx##` (where xx represents the number of the program).

**5**   Perform tasks.

**6**   Press the release key to return the telephone to call processing mode. Background routines are then loaded automatically.

──────────────── **End of Procedure** ────────────────

# Hardware maintenance tools

## Contents

This section contains information on the following topics:

## Introduction

Fault indicators and hardware features help perform maintenance tasks (particularly identifying and clearing faults). These maintenance tools include:

- circuit card features that include self-tests and status indicators

- LED indicators that identify Call Server power and temperature faults

- system alarms that categorize the severity of component failure

# Alarm/fan module features

The NTDU64 alarm/fan module provides cooling for the Call Server. It also provides a thermostat to monitor the Call Server temperature.

If the Call Server temperature reaches $42^{o}$C ($107^{o}$F), the fan units switch into high-speed mode. The fans revert to normal speed when the Call Server temperature falls below $37^{o}$C ($98^{o}$F). Also, if one fan fails, the remaining two fans switch into high-speed mode indefinitely.

If the Call Server temperature exceeds $60^{o}$C ($140^{o}$F), it triggers a major alarm. The Call Server continues to operate, provided it does not lose power.

## Alarm/fan LEDs

The alarm/fan module also provides status light emitting diode (LED) indicators for the following:

- system

- fans

- power

- temperature

For each LED, green indicates normal operations. A red LED indicates faulty or disabled equipment.

Figure 3 shows the alarm/fan module green status LEDs during normal operations.

**Figure 3**
**Alarm/fan module status LEDs**
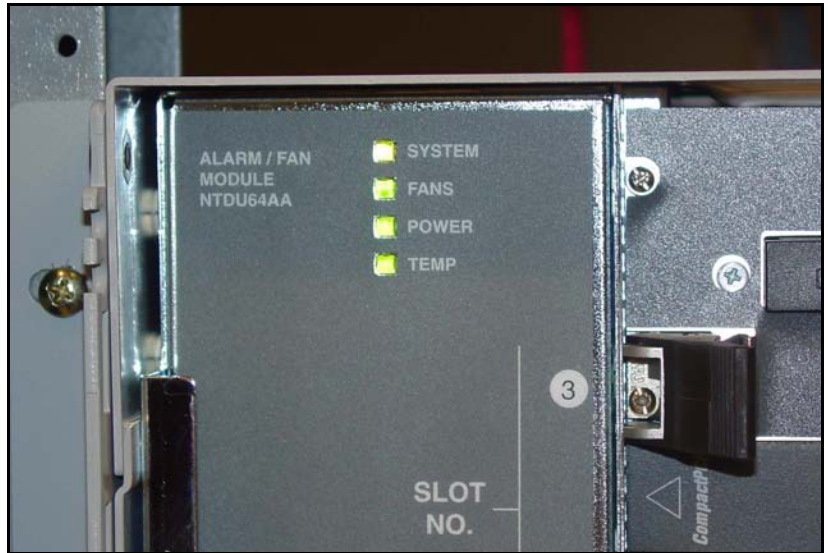


The system LED consolidates the status of the other three LEDs. That is, if the fans, power, and temperature are all within normal operating parameters, then the system LED is green. If any of the three other LEDs is red, indicating trouble, then the system LED also appears red.

Figure 4 shows the alarm/fan Module LEDs indicating fan trouble.

**Figure 4**
**Fan trouble LEDs**
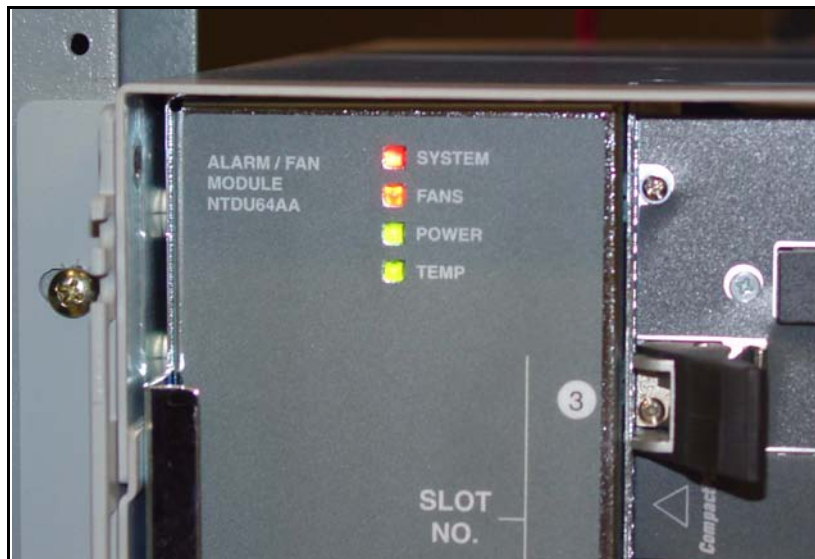


As the system LED shows the status of the other three LEDs, it is used to determine the overall status of the Call Server. It is visible through a light pipe in the Call Server front cover.

For information on replacing Call Server components, including the alarm/fan module and power module, see "Replacing equipment" on .

# Circuit card features

Circuit card features include:

- self-tests
- LED indicators

- faceplate displays

- enable/disable switches

## Self-tests

A self-test checks to see that a card is working correctly. Many cards perform a self-test on power-up. The software commands Disable and Enable force a card to self-test. The results of a self-test generally show whether or not there is a problem with the card.

## NT4N64 PII and NT4N39 PIV Call Processor features

Buttons on the NT4N64 PII and NT4N39 PIV Call processor cards allow the administrator to initialize and reset the system.

### Initialize button

The manual initialize (Init) button associated with the active Call Server starts the Initialize program. The Initialize program can clear some equipment faults. It then rebuilds call-dependent data and generates system messages indicating the status of the system. This process is called an initialization.

**CAUTION — SERVICE INTERRUPTION**

Call processing is briefly interrupted during an initialization.

### Reset button

The Reset button allows the user to cold restart the processor card. This is equivalent ot a full power start up of the processor card. The System Loader

initiates call processing and starts memory-checking diagnostics. This process is called a system reload or sysload.

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**CAUTION — SERVICE INTERRUPTION**

During a sysload, active calls are disconnected and the system goes into an emergency line transfer state. Use the reset button only when specifically instructed to do so in an NTP.

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## CP PIV Faceplate LEDs

The CP PIV faceplate features the following 5 LEDs:

- PWR – Solid Green – Power Good
- CF - Flashing Green shows activity on Compact Flash cards CF1 or CF2.
- HDD – Flashing Green shows activity on secondary IDE bus (not used)
- LAN1 – ELAN Activity
- LAN2 – HSP Activity
  — Flashing Yellow – 10 MB
  — Flashing Green - 100 MB
  — Flashing Amber – 1000 MB (1 GB)

## System Utility card features

The System Utility card maintenance display indicates the status of the Call Server, either active or standby. The display also provides an indication of normal and fault conditions as well as the progress of software upgrades and backups.

Figure 5 shows the System Utility card display for a standby Call Server.

**Figure 5**
**System Utility card display for standby Call Server**
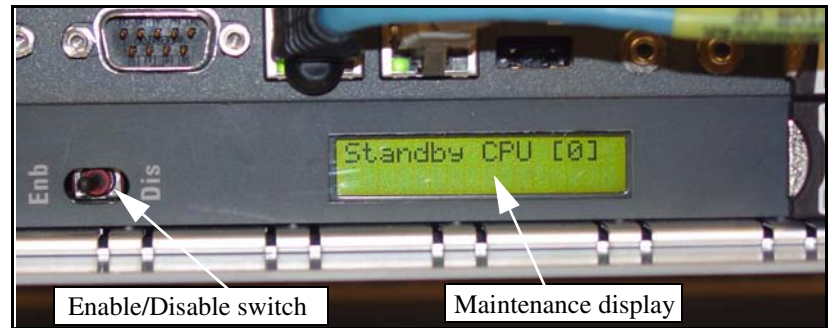


Interpretations of the maintenance display codes are listed in the *Software Input/Output: System Messages* (553-3001-411). Examine previous codes, system messages, and visual indicators with any current maintenance display codes to properly analyze faults.

Each new code shown on a maintenance display overwrites the one before it. However, all codes displayed are recorded. You can review them by printing the History File (in LD 22).

Figure 5 also shows the location of the Enable/Disable (Enb/Dis) switch on the card. This switch enables and disables the hardware for that card.

**Table 2**
**Core module ID switch settings (System Utility card)**

|        | Position 1 | Position 2 |
|--------|------------|------------|
| Core 0 | On         | On         |
| Core 1 | Off        | On         |

The System Utility card also contains DIP switches that specify the address of the card for Call Server 0 or Call Server 1. The Core ID switches are set in the factory.

Confirm that these settings match the identification labels for the module into which they will be installed. See Table 2 on and Figure 6.

**Figure 6**
**Core Module ID switch**

## Circuit card LEDs

Many circuit cards have one or more LEDs on the faceplate. The LED gives a visual indication of the status of the card or of a unit on a card.

When a *green* LED is steadily lit, it indicates the card is operating normally. When a green LED is off, it indicates the card is disabled or faulty.

When a *red* LED is steadily lit, it indicates the card, or a unit on it, is disabled or faulty or unequipped. When a red LED is off and power is available to the card, it indicates the card is operating normally.

## Media Card LEDs

The Media Card faceplate provides the following LEDs.

### Status LED

The Media Card faceplate red LED indicates the following:

- the enabled/disabled status of the card

- the self-testing result during power up or card insertion into an operational system

### Ethernet activity LEDs

The Media Card faceplate contains Ethernet activity LEDs for each subnet. The faceplate contains six Ethernet activity LEDs, three for the ELAN subnet and three for the TLAN subnet. The LEDs indicate the following links on the ELAN and TLAN subnets (in order from the top):

- 100 (100BaseT)

- 10 (10BaseT)

- A (Activity)

### Maintenance hex display

This is a four-digit LED-based hexadecimal display that provides the status of the Media Card at all times. The hex display provides an indication of fault conditions and the progress of PC Card-based software upgrades or backups. Refer to Table 29 on page 150 for a description of the hex display codes.

The Maintenance display also indicates the progress of the internal self-test in the form of T:xx.

## NTAK10 faceplate LEDs

The NTAK10 2 Mbit DTI circuit card has a total of six faceplate LEDs. Five of the LEDs are directly associated with the operation of the NTAK10 2 Mbit DTI circuit card. The remaining LED is associated with the on-board clock controller.

The LEDs on the NTAK10 are described in Table 3.

**Table 3**
**NTAK10 LEDs (Part 1 of 2)**

| LED | State | Definition |
|-----|-------|------------|
| DIS | On (Red) | The NTAK10 2 Mbit DTI circuit card is disabled. |
| | Off | The NTAK10 2 Mbit DTI is not in disabled state. |
| OOS | On (Yellow) | The NTAK10 2 Mbit DTI circuit card is in out-of-service state. No alarm states exist, the card is not disabled, nor is it in a loopback state. |
| | Off | The NTAK10 is not in an out-of-service state. |

| NEA | On (Yellow) | A near-end alarm state has been detected. |
|-----|-------|------------|
| | Off | No near-end alarm. |
| FEA | On (Yellow) | A far-end alarm state has been detected. |
| | Off | No far-end alarm |
| LBK | On (Yellow) | The NTAK10 2 Mbit DTI is in loopback mode. |
| | Off | The NTAK10 2 Mbit DTI is not in loopback mode. |
| CC | On (Red) | The clock controller is switched on and disabled. |
| | On (Green) | The clock controller is switched on and is either locked to a reference or is in free-run mode. |

**Table 3**
**NTAK10 LEDs (Part 2 of 2)**

| LED | State | Definition |
|-----|-------|------------|
|  | Flashing (Green) | The clock controller is switched on and is attempting to lock (tracking mode) to a reference. If the LED flashes continuously over an extended period of time, check the CC STAT in LD 60. If the CC is tracking, this can be an acceptable state. Check for slips and related clock controller error conditions. If none exist, then this state is acceptable, and the flashing is identifying jitter on the reference. |
|  | Off | The clock controller is switched off. |

## NTAK79 Faceplate LEDs

The NTAK79 2 Mbit PRI circuit card has a total of seven faceplate LEDs. Five of the LEDs are directly associated with the operation of the Primary Rate interface (PRI). The remaining two LEDs are associated with the on-board Clock Controller and the on-board D-channel interface (DCHI).

The NTAK79 faceplate LEDs are described in Table 4.

**Table 4**
**NTAK79 LEDs (Part 1 of 3)**

| LED | State | Definition |
|-----|-------|------------|
| OOS | On (Red) | The NTAK79 2 Mbit PRI circuit card is either disabled or out-of-service state. |
|  | Off | The NTAK79 2 Mbit PRI is not in disabled state. |
| ACT | On (Green) | The NTAK79 2 Mbit PRI circuit card is in active state. |
|  | Off | NTAK79 2 Mbit PRI is not in disabled state. The OOS LED will be red. |

**Table 4**
**NTAK79 LEDs (Part 2 of 3)**

| LED | State | Definition |
|-----|-------|------------|
| RED | On (Red) | A red alarm state has been detected. This represents a local alarm state of: Loss of Carrier (LOS) Loss of Frame (LFAS), or Loss of CRC Multi-frame (LMAS). |
|     | Off | No red (local) alarm. |
| YEL | On (Yellow) | A yellow-alarm state has been detected. This represents a remote alarm indication from the far end. The alarm can be either Alarm Indication (AIS) or Remote Alarm (RAI). |
|     | Off | No yellow (remote) alarm. |

**Table 4**
**NTAK79 LEDs (Part 3 of 3)**

| LED | State | Definition |
|-----|-------|------------|
| LBK | On (Green) | The NTAK79 2 Mbit PRI is in loopback mode. |
|     | Off | The NTAK79 2 Mbit PRI is not in loopback mode. |
| CC | On (Red) | The clock controller is switched on and disabled. |
|    | On (Green) | The clock controller is switched on and is either locked to a reference or is in free run mode. |
|    | Flashing (Green) | The clock controller is switched on and is attempting to lock (tracking mode) to a reference. If the LED flashes continuously over an extended period of time, check the CC STAT in LD 60. If the CC is tracking, this can be an acceptable state. Check for slips and related clock controller error conditions. If none exist, then this state is acceptable, and the flashing is identifying jitter on the reference. |
|    | Off | The clock controller is switched off. |
| DCH | On (Red) | The DCHI is equipped and disabled. |
|     | On (Green) | The DCHI is equipped and enabled, but not necessarily established. |
|     | Off | The DCHI is switched off. |

## NTBK50 Faceplate LEDs

The NTBK50 circuit card has a total of seven faceplate LEDs. Five of the LEDs are directly associated with the operation of the PRI. The remaining two LEDs are associated with the Clock Controller and DCHI/DDCH daughterboard.

The NTBK50 2 Mbit PRI circuit card LEDs are described in Table 5.

**Table 5**
**NTBK50 faceplate LEDs (Part 1 of 2)**

| LED | State | Definition |
|-----|-------|------------|
| OOS | On (Red) | The NTBK50 2 Mbit PRI circuit card is either disabled or out-of-service. Also, the state of the card after power-up, completion of self-test, and exiting remote loopback. |
|  | Off | The NTBK50 2 Mbit PRI is not in disabled state. |
| ACT | On (Green) | The NTBK50 2 Mbit PRI circuit card is in active state. |
|  | Off | The NTBK50 2 Mbit PRI is in disabled state. The OOS LED is red. |
| RED | On (Red) | A red-alarm state has been detected. This represents a local alarm state of Loss of Carrier (LOS), Loss of Frame (LFAS) or Loss of CRC Multi-frame (LMAS). |
|  | Off | No red (local) alarm. |
| YEL | On (Yellow) | A yellow-alarm state has been detected. This represents a remote alarm indication from the far end. The alarm can be either Alarm Indication (AIS) or Remote Alarm (RAI). |
|  | Off | No yellow (remote) alarm. |
| LBK | On (Green) | The NTBK50 2 Mbit PRI is in loopback mode. |
|  | Off | The NTBK50 2 Mbit PRI is not in loopback mode. |
| CC | On (Red) | The clock controller is software disabled. |
|  | On (Green) | The clock controller is enabled and is either locked to a reference or is in free-run mode. |

**Table 5**
**NTBK50 faceplate LEDs (Part 2 of 2)**

| LED | State | Definition |
|---|---|---|
| CC | Flashing (Green) | The NTAK20 is equipped and is attempting to lock (tracking mode) to a reference. If the LED flashes continuously over an extended period of time, check the CC STAT in LD 60. If the CC is tracking, this can be an acceptable state. Check for slips and related clock controller error conditions. If none exist, then this state is acceptable, and the flashing is identifying jitter on the reference. |
| | Off | The clock controller is not equipped. |
| DCH | On (Red) | The DCH is disabled. |
| | On (Green) | The DCH is enabled, but not necessarily established. |
| | Off | The DCH is not equipped. |

## NTRB21 Faceplate LEDs

The NTRB21 1.5 Mbit DTI/PRI/DCH circuit card has a total of seven faceplate LEDs. Five of the LEDs are directly associated with the operation of the NTRB21 circuit card. The remaining two LEDs are associated with the optional daughterboards. The first of these LEDs is used to indicate the status of the NTAK20 Clock Controller daughterboard. The second LED indicates the status of the D-channel interface.

The LEDs found on the NTRB21 DTI/PRI/DCH circuit card are described in
Table 6. Only one of the five NTRB21-related LEDs should be on at any one
time.

**Table 6**
**NTRB21 LEDs (Part 1 of 2)**

| Affected circuit card | LED | State | Definition |
|---|---|---|---|
| NTRB21 | DIS | On (Red) | The NTRB21 circuit card is disabled. |
| | | Off | The NTRB21 is not in disabled state. |
| | ACT | On (Green) | The NTRB21 circuit card is in active state. No alarm states exist, the card is not disabled, nor is it in a loopback state. |
| | | Off | An alarm state or loopback state exists, or the card has been disabled. See other faceplate LEDs for more information. |
| | RED | On (Red) | A red-alarm state is detected. |
| | | Off | No red alarm. |
| | YEL | On (Yellow) | A yellow-alarm state is detected. |
| | | Off | No yellow alarm. |
| | LBK | On (Green) | The NTRB21 is in loopback mode. |
| | | Off | The NTRB21 is not in loopback mode. |
| | DCH | On (Red) | The D-channel is equipped and disabled. |
| | | On (Green) | The D-channel is equipped and enabled. |
| | | Off | The D-channel is not equipped. |

**Table 6**
**NTRB21 LEDs (Part 2 of 2)**

| Affected circuit card | LED | State | Definition |
|---|---|---|---|
| NTAK20 | CC | On (Red) | The NTAK20 is equipped and disabled. |
| | | On (Green) | The NTAK20 is equipped and is either locked to a reference or is in free-run mode. |
| | | Flashing (Green) | The NTAK20 is equipped and is attempting to lock (tracking mode) to a reference. If the LED flashes continuously over an extended period of time, check the CC STAT in LD 60. If the CC is tracking, this can be an acceptable state. Check for slips and related clock controller error conditions. If none exist, then this state is acceptable, and the flashing is identifying jitter on the reference. |
| | | Off | The NTAK20 is not equipped. |

## Monitor jacks

The NTAK10, NTAK79, NTBK50, and NTRB21 have two bantam jacks (RCV and XMT) located on the faceplate. They are used to monitor the performance of the carrier in the receive and transmit direction. The jacks allow the convenient connection of external T1/E1 test equipment and ISDN protocol analyzers.

## NTDK20 SSC card Faceplate LEDs

*Note:* The NTDK20 SSC card is installed in all Media Gateways.

The NTDK20 SSC card has either three or five faceplate LEDs, depending on the version of the card.

The SSC/PC Card LED indicates the following, if the LED is:

- Off, the SSC is in normal operation

- Yellow, the SSC is disabled

- Red, the SSC is running self-test

- Red and flashes three times, the self-test passed

- Green steady or flashing, the PC Card is accessed

The Layer 7 Port LEDs indicate the following, if the Port LEDs are:

- Red, the link is disabled and voice is disabled

- Amber, the link is established and voice is disabled

- Green, the link and voice are established

The IP daughterboard network interface port Layer 2 Link LEDs indicate the following, if the Link LEDs are:

- green, the link is established

- red (receive) and yellow (transmit) flashing, show network activity

Figure 7 on shows the SSC card faceplate features.

**Figure 7**
**SSC card faceplate**
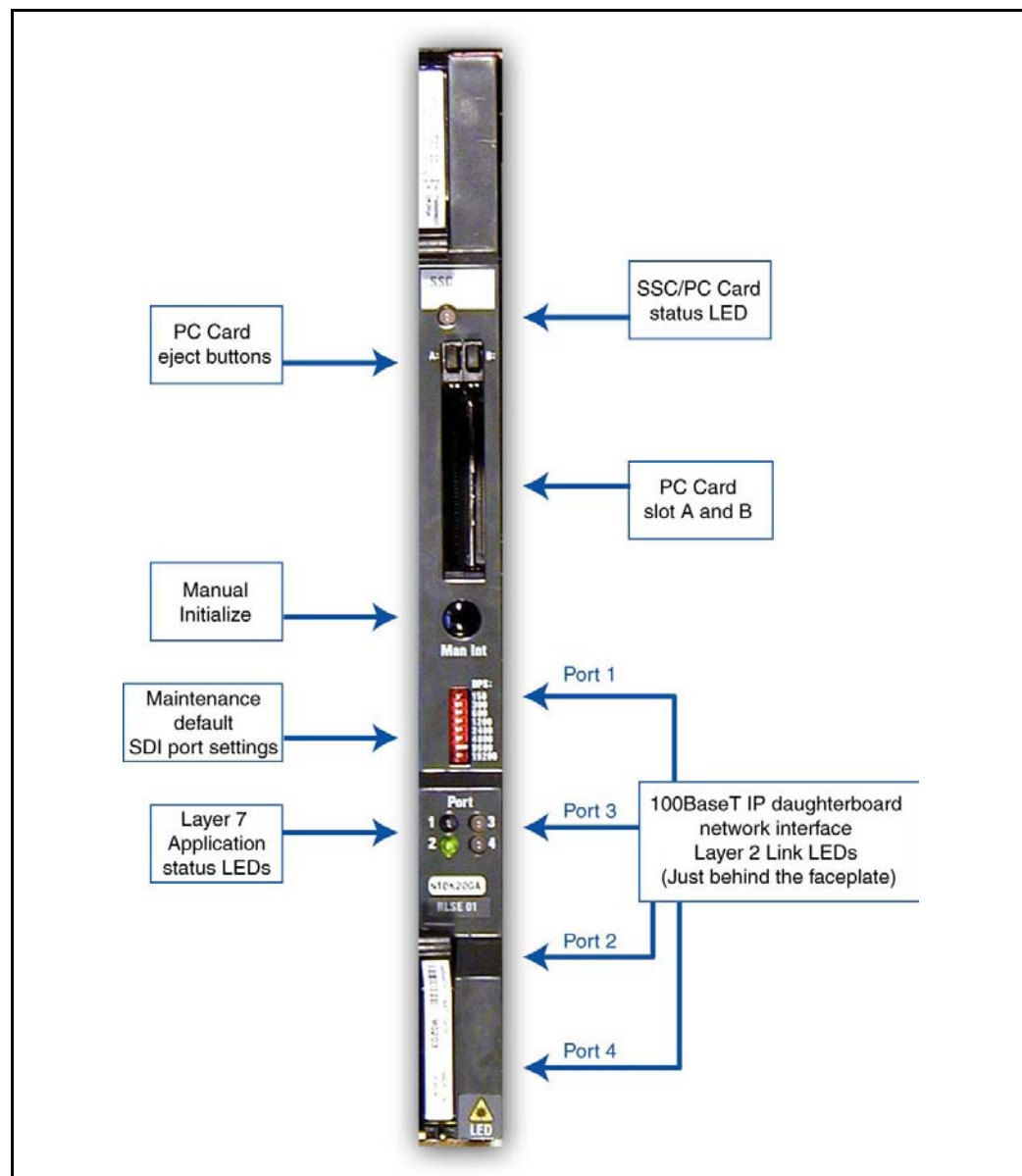
### Initialize button

Similar to the Init button on the CS 1000E Core Call Server, the manual initialize (Man Int) button on the SSC card starts the Initialize program. The Initialize program can clear some equipment faults. It then rebuilds call-dependent data, and generates system messages indicating the status of the system. This process is called an initialization.

> ⚠️ **CAUTION — SERVICE INTERRUPTION**
>
> Call processing is briefly interrupted during an initialization.

## NTDK83 and NTDK99 IP daughterboard LEDs

The NTDK83 and NTDK99 IP daughterboard network interfaces each have three LEDs for each IP network interface they contain. The LEDs provide the status of the Layer2 network link to the IP daughterboards. Figure 8 and Table 7 provide further descriptions of these LEDs.

**Figure 8**
**NTDK83 and NTDK99 card circuit board LEDs**



RX - Red
TX - Yellow
Link - Green

For the NTDK83, these link LEDs indicate the status of network interface when installed in the upper position of the NTDK20 SSC, or network interface 2 when installed in the lower position of the NTDK20

These link LEDs indicate the status of network interface 3 when installed upper position of the NTDK20 SSC, or network interface 4 when installed lower position of the NTDK20 SSC.

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**Table 7**
**NTDK83 and NTDK99 daughterboards LEDs**

| LED | State | Definition |
|---|---|---|
| Receive | Red | The information/data is being received. |
| | Off | No information/data is being received. |
| Transmit | Yellow | Information/data is being transmitted. |
| | Off | No information/data is being transmitted. |
| Link | Green | A physical connection with link pulses exists between the card and the customer's data equipment. |
| | Off | No connection exists. |

Figure 9 shows the IP daughterboard LED locations for the SSC card in the MG 1000T Core, and Figure 10 on shows the IP daughterboard LED locations for MG 1000Es and MG 1000T Expansions.

**Figure 9**
**MG 1000T Core SSC IP daughterboard LEDs**
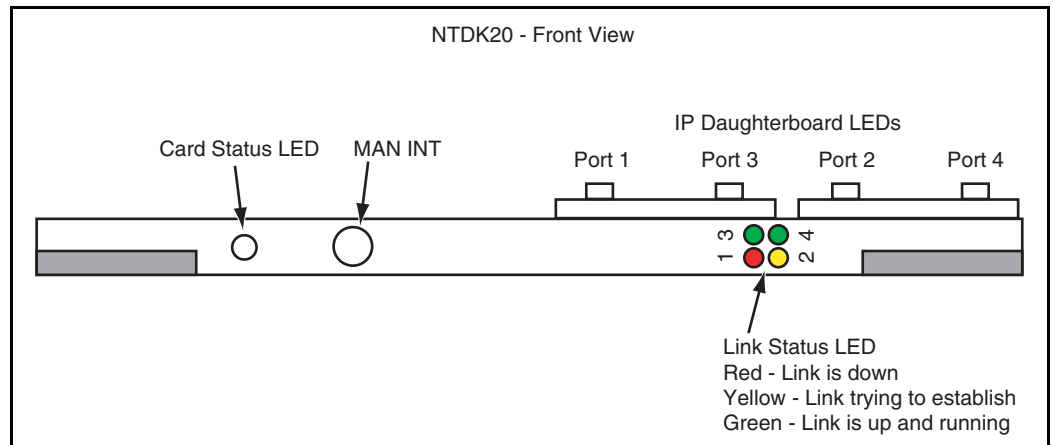
**Figure 10**
**Media Gateway SSC IP daughterboard link LED**



## ELAN network interface LEDs

The NTDK20 SSC card also has three LEDs to indicate the status of the
ELAN network interface. See Figure 11 on for the location and a
description of the LEDs.

**Figure 11**
**ELAN network interface LEDs on SSC**
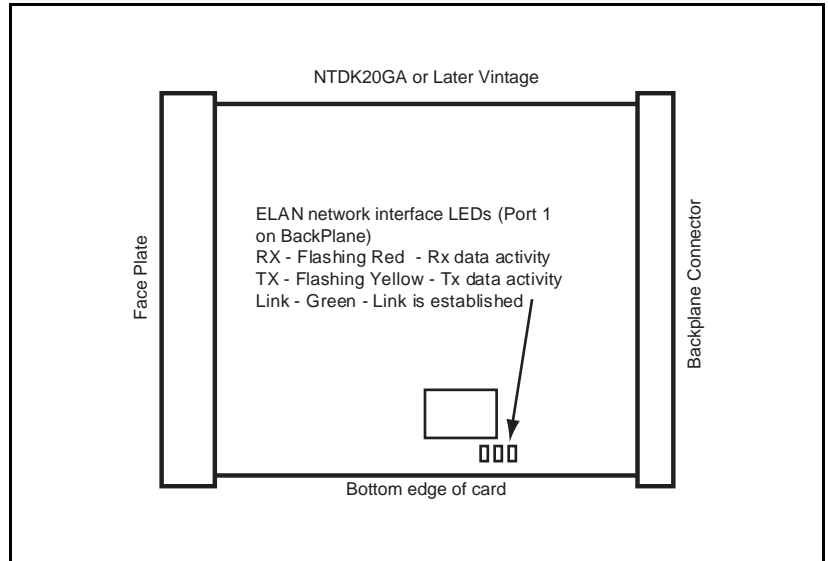


## Signaling Server LEDs

Refer to Figure 12 on page 54 and the following for the status of the Signaling Server LEDs:

- Power – LED Green power is on, LED OFF power is off.

  *Note:* When the power is turned off on a Signaling Server that is operational, the two Link LEDs for Port 0 and Port 1 continue to flash.

- Status – LED off indicates CPU is running. Red LED indicates CPU has halted.

- Drive – Flashing Green means hard drive or CD-ROM is active.

- Link – Green LED indicates an active link for either network interface Port 1 or Port 2.

- 100 Mbps – Green LED indicates the network interface Port 0 or Port 1 is running at 100Mbps. Off indicates 10Mbps.

- U1 and U2 are not used.

**Figure 12**
**Signaling Server LEDs**
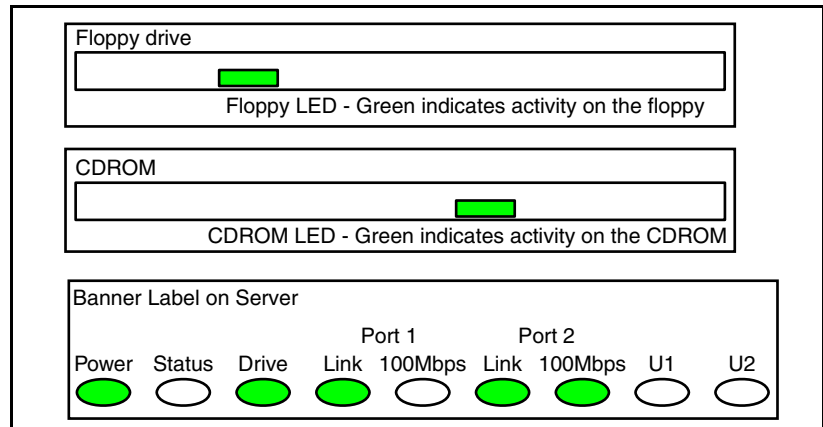


## System alarms

Major and minor alarms can be displayed on the attendant console when connected to the system.

*Note:* Attendant consoles cannot be connected to an MG 1000T and therefore cannot display MG 1000T alarms.

### Major alarms

A major alarm indicates a fault which seriously interferes with call processing. The causes of major alarms are listed in Table 8 on page 55.

When an MG 1000E is equipped with a power fail transfer unit (PFTU), a major alarm causes designated analog (500/2500-type) telephones to connect directly to Central Office trunks. This is called a line transfer.

**Minor alarms**

A minor alarm indicates that the system hardware or software has detected a fault requiring attention. The causes of minor alarms are listed in Table 8 on page 55.

A minor alarm displays an alarm on attendant consoles in customer groups affected by the fault. A minor alarm indication on the console is an optional feature, enabled and disabled on a customer basis through data administration procedures.

**Table 8**
**Causes of major and minor alarms**

| Alarm | Cause |
|-------|-------|
| Major | CPU or control bus failure |
|       | Program failure when attempting to load the system |
|       | System power faults |
|       | Temperature fault (excessive heat) |
| Minor | Conference failure |
|       | Digitone receiver failure |
|       | More than one fault on different cards in one MG 1000E (indicated on affected customer's console only) |
|       | Serial Data Interface failure |

# Line transfer

As an option, connect one or more PFTUs to the MG 1000Es. Each PFTU connects designated analog (500/2500-type) telephones to Central Office trunks. If call processing stops, those analog (500-2500-type) telephones are transferred through the PFTU to the Central Office so the outside connections are still available. A line transfer occurs:

- during a sysload (system reload)

- if there is a major power failure

- if call processing stops due to a Call Server failure

- if there is a loss of power to the MG 1000E

- if there is a loss of power to the PFTU

- if a line transfer switch on the attendant console is turned on

# External power loss

You can connect reserve (backup) power supplies to the system, that is, uninterruptible power supplies (UPS) for AC-powered systems. If the main source of external power is lost, power to the system is maintained by the UPS.

# Software maintenance tools

## Contents

This section contains information on the following topics:

## Introduction

Software maintenance tools help to identify and clear faults, and provide self-checking capabilities. Various software maintenance tools are available for the CS 1000E:

- Diagnostic programs monitor a variety of operations, detect faults, and initiate a corrective action during normal call processing.

- Interactive diagnostics test hardware, isolate faults, and verify fault clearing.

- Element Manager provides status and allows you to issue a variety of commands.

- Optivity Telephony Manager (OTM) alarm management, with the following components:

    — a web-based alarm browser

    — a Microsoft ® Windows ® alarm browser (Event Monitor)

　　　　　— an Alarm Notification

　　　　　— a PC Event Log and Viewer

　　　• OTM maintenance applications

# Maintenance applications

CS 1000E systems have over 600 overlay-based maintenance commands that support their powerful capabilities. To maintain a CS 1000E system using system terminals, the user must remember (or look up) which overlay has the appropriate commands and the syntax of each command.

OTM enables a certain subset of the overlay functions to be performed for maintenance of the Call Server, MG 1000Es, MG 1000T Core and Expansions, Signaling Servers, and Voice Gateway Media Cards.

*Note:*  There are two versions of the OTM Maintenance applications: Maintenance Windows (windows based) and Maintenance Pages (web based). Both provide the same functionality.

With OTM Maintenance Windows, there are 37 Maintenance Overlays grouped into hardware-related windows to allow users to perform all the maintenance tasks without having to remember or look up any overlay-based commands. The OTM interface provides a comprehensive view of the CS 1000E system hardware configuration with the following benefits:

• See the equipped hardware quickly. The hardware list works like a spreadsheet data view. Users can scroll through the list, sort the list, and select items for changing.

• Select an item from the list and apply a Maintenance command from the right-mouse button pop-up menu.

• Print the list or copy it to a spreadsheet.

• Select a TN or DN and print the TN/DN block.

• See enabled/disabled status in real time.

*Note:*  In OTM, the CS 1000E system appears as a CS 1000M MG system, and the MG 1000T appears as a CS 1000S system.

## Maintenance Windows applications

The OTM Maintenance Windows include the following:

### SSC

The Small System Controller (SSC) window displays the status of the Media Gateway SSC cards. Users perform actions and tasks on the SSC cards in the SSC window.

### I/O Ports

The I/O (Input/Output) Ports window displays the status of I/O ports on the system and allows users to execute actions and tasks on a selected port.

### Network Loops

The Network Loops window lists the network loops on the system. It allows users to execute actions and tasks on a selected loop by choosing commands from the Maintenance menu.

### PE Cards

The PE Cards window displays the status of all Intelligent Peripheral Equipment (IPE)-type cards associated with each Media Gateway on the system and allows users to execute actions and tasks on a selected card.

### PE Units

The PE Units window displays information for PE units and Directory Numbers (DN) on the system and allows users to execute actions and tasks on a selected unit.

### B- and D-channels

On the MG 1000T, the PRI/PRI2 B- and D-channels window displays the B- and D-channels on the selected digital trunk (for example, PRI loop) and allows users to execute actions and tasks on a selected channel.

For detailed information on each Maintenance Windows function, see the Maintenance Applications chapter in *Optivity Telephony Manager: System Administration* (553-3001-330).

# Diagnostic programs

Diagnostic software programs monitor system operations, detect faults, and clear faults. Some programs run continuously, while some are scheduled.

Diagnostic programs are resident or non-resident software programs. Resident programs, such as the Error Monitor and Resident Trunk Diagnostic, are always present in system memory. Non-resident programs, such as the Input/Output Diagnostic and Core Equipment Diagnostic, are used as Midnight and Background Routines or for interactive diagnostics. Non-resident programs are loaded from the system disk and are run as scheduled or upon request.

See the *Software Input/Output: Maintenance* (553-3001-511) and *Software Input/Output: System Messages* (553-3001-411) for detailed information on all diagnostic programs.

## Overlays

Non-resident programs are also called overlays or loads. They are identified by a title and a number preceded by the mnemonic for load (for example, Trunk Diagnostic — LD 36).

### MG 1000T

The MG 1000T platform supports the same overlay commands and associated TN format (c u) as the CS 1000S system.

### CS 1000E

The CS 1000E Core Call Server and MG 1000Es support the overlay commands and TN format (l s c u) associated with Large Systems.

The Call Server also supports additional maintenance functions in Overlays 30, 31, 32, 34, 36, 38, 45, 46, 77, and 80 in the same manner as CS 1000S systems, while maintaining the l s c u TN format.

However, a number of maintenance commands are either not supported or not applicable to the MG 1000Es. Table 9 lists the commands that are not supported in the MG 1000Es.

**Table 9**
**Unsupported Overlay commands for MG 1000E**

| LD | Unsupported commands |
|---|---|
| 30 | CPED, DISL, ENLL, LDIS, LENL, LOOP, RPED, SLFT, STEI, TIET, TTSM, and TTWI |
| 32 | DISL, DISN, DLIF, DSCT, DSNW, DSPS, DSRB, DSTS, DSXP, ENLG, ENLL, ENLN, ENNW, ENPS, ENRB, ENTS, ESTU, FDIS, PCON, PERR, PLOG, PMES, PTAB, PTRF, RLBT, RLSU, SDLC, STAT NCAL, STAT loop, STAT NWK, STAT PER, IDC loop, IDCS, SUPL, XNTT, XPCT and XPEC |
| 34 | DTR and TDS |
|  | Also, the following Maintenance Telephone commands are not supported: CDT, CMP, CUST, CWG, DRNG, DTD, ITN, JDRG, JIDT, ORD, PCRT and TST |
| 38 | DISX and ENLX |
| 45 | TEST |
| 46 | DISL, DISX, ENLL, ENLX and MFS |
| 92 | No supported commands (the Automatic Trunk Maintenance feature is not supported in CS 1000E) |

## Error Monitor

The Error Monitor is a resident program which continuously tracks call processing. The Error Monitor generates system messages if it detects invalid or incorrectly formatted call processing information.

System messages generated by the Error Monitor are preceded by the mnemonic ERR, which usually indicates hardware faults, or the mnemonic BUG, which usually indicates software problems.

With prompt ERRM in the Configuration Record (LD 17), instruct the system to print or not print ERR or BUG messages. If many similar BUG messages occur, consult the Technical Assistance Center.

## Initialize Program

The Initialize Program momentarily interrupts call processing as it clears Core Equipment faults. It then rebuilds call-dependent data and generates system messages, with the mnemonic INI, which indicate the status of the system. This process is called an initialization (or INI).

<table>
<tr>
<td>⚠</td>
<td><strong>CAUTION — SERVICE INTERRUPTION</strong><br><br>Call processing is briefly interrupted during an initialization.</td>
</tr>
</table>

To activate an initialization on the Call Server, press the initialize button (Init) on the CP card. To activate an initialization on the MG 1000T platform, press the manual initialize (Man Int) button on the MG 1000T Core SSC card.

An initialization occurs automatically after the System Loader program runs, when a software or firmware fault is detected, and when a Core Equipment hardware fault is detected.

## Midnight and Background Routines

In the Configuration Record (LD 17), select the non-resident software programs which will run in the Midnight Routine and Background Routine. These routines automatically perform maintenance checks. Programs included in the Midnight Routine are defined with the prompt DROL (derived from "daily routine overlay"). Programs included in the Background Routine are defined with the prompt BKGD.

The Midnight Routine runs once every 24 hours. This routine is preset to run at midnight when a system is shipped. Assign a different time in the Configuration Record. When the Midnight Routine starts, the system cancels any other program.

A memory test runs once a day. The Core Equipment Diagnostic (LD 35) runs as part of the Midnight Routine, even if it is not programmed.

The Background Routine runs when no other program is loaded in the overlay area. The programs included in the Background Routine run in sequence repeatedly until there is another request to use the overlay area (for example, if users log on to check the status of a circuit card) or the Midnight Routine runs.

For the CS 1000E system, include the programs listed in Table 10 in Midnight and Background Routines. Software Audit (LD 44), and Network and Signaling Diagnostic (LD 30) should always be used in the Background Routine.

The maintenance requirements and the configuration of the system determine the other programs included in Midnight and Background Routines.

**Table 10**
**Programs used in Midnight and Background Routines (Part 1 of 2)**

| LD | Program function |
|---|---|
| 30 | Network and Signaling Diagnostic |
| 33 | 1.5 Mbit/s Remote Peripheral Equipment Diagnostic |
| 35 | Core Equipment Diagnostic |
| 36 | Trunk Diagnostic 1 |
| 37 | Input/Output Diagnostic |
| 38 | Conference Circuit Diagnostic |
| 40 | Call Detail Recording Diagnostic |
| 43 (Midnight only) | Data Dump |
| 44 | Software Audit |
| 46 | Multi-frequency Sender Diagnostic |
| 60 (Midnight only) | Digital Trunk Interface Diagnostic |
| 61 (Midnight only) | Message Waiting Lamp |

**Table 10**
**Programs used in Midnight and Background Routines (Part 2 of 2)**

| LD | Program function |
|:---:|---|
| 135 | Core Equipment Diagnostic |
| 137 | Input/Output Diagnostic |

## Overlay Loader

This resident program locates, loads, and checks all non-resident software programs. It automatically activates the Midnight and Background Routines. Load the Overlay programs manually by entering the commands through the system terminal or maintenance telephone. Once the program is loaded, the program mnemonic (such as, TRK for Trunk Diagnostic) appears on the system terminal.

## Overload Monitor

The volume of system messages is continuously monitored by the system. If too many error messages are detected from a line or trunk card, the system activates the Overload Monitor program. The Overload Monitor disables the faulty card and generates system messages with the mnemonic Overlay.

## Resident Trunk Diagnostic

This program automatically monitors all trunk calls and records apparent faults on each trunk. If the number of faults on a trunk exceeds the threshold for that trunk, the program generates a system message identifying the trunk and the type of fault.

A failure on a trunk can keep the trunk from detecting incoming calls. The threshold mechanism cannot detect such a failure, so this program also records how many days it has been since each trunk received an incoming call. If some incoming calls are not being processed, use the command LMAX in Trunk Diagnostic 1 (LD 36) to identify the trunk with the maximum idle days.

### System Loader

The System Loader program loads all call processing programs and data and starts memory-checking diagnostics. After all required programs and data have been loaded and all checks performed, the System Loader is erased from system memory, the Initialize Program runs, and normal call processing begins. This process is called a sysload (or system reload).The System Loader operates automatically on system power-up or if a core equipment or power fault destroys information in the system memory.

# OTM alarm management

## Web-based alarm browser

The web-based alarm management provides a list of alarms and events from multiple systems and devices. The Alarm Browser page is used to retrieve, view, sort, and view help on alarms received by the OTM server.

## Microsoft ® Windows ® alarm browser (Event Monitor)

The alarm management consists of a number of components that improve handling of system-generated alarms and events. The alarm management is only available for systems configured with the alarm management package (296).

The CS 1000E alarm management components are:

- Text Handler
- Alarm Banner dialog box

## PC Event Log and viewer

The Events Monitor window displays the CS 1000E system Event Log, showing all recent system alarms and events previously stored in the CS 1000E system's history file.

The Events Monitor window displays active events in a way that lets users quickly view the most important events. System events with a severity of critical, major, or minor are considered alarms. These alarms are events

which can require some corrective action. System events with a severity of Info are for informational purposes only and are not considered alarms.

## Alarm Notification

The Alarm Notification application receives SNMP events from designated network equipment over an Ethernet network and sends out alarm notifications when specified event conditions are detected. Received events are compared to a set of rules which can activate notifications of different types. These notifications include:

- SNMP traps or events transmitted to predefined destinations

- text notification over a modem

- pager notification to alpha or numeric pagers

- e-mail using Simple Mail Transfer Protocol (SMTP)

- log

For detailed information on Alarm Management, see *Optivity Telephony Manager: System Administration* (553-3001-330) and *Simple Network Management Protocol: Description and Maintenance* (553-3001-519).

# Interactive diagnostics

Load non-resident software programs into the memory through the OTM System Terminal or an SDI terminal. These programs, also called overlays or loads, are identified by a title and a number which is preceded by the mnemonic for load (for example, Trunk Diagnostic — LD 36).

The programs used in Midnight and Background Routines are also used manually as interactive diagnostic programs. See Table 10 on .

Non-resident programs are used interactively with a command and response format. In this format, enter a command that tells the system to perform a specific task. The system then performs the task and sends system messages indicating status or errors back to the user.

With interactive diagnostics the user can:

• Disable, test, and enable specific equipment.

• Verify that a reported fault still needs to be cleared.

• Verify that a repair procedure has cleared a fault.

All maintenance programs, commands, and system messages are described in detail in *Software Input/Output: Maintenance* (553-3001-511) and in *Software Input/Output: System Messages* (553-3001-411).

# Clearing faults

## Contents

This section contains information on the following topics:

# Fault clearing process

To clear a fault in the CS 1000E, follow the steps in Procedure 3.

**Procedure 3**
**Clearing a fault in the CS 1000E**

1   Observe and record all fault indicators, system messages, and user
    reports.

2   Look up all system messages in *Software Input/Output: System
    Messages* (553-3001-411).

    The interpretation of the message can identify faulty equipment and tell
    the user what action to take to clear the problem. If the user cannot clear
    the fault using a Maintenance Application or through information in the
    *Software Input/Output: Maintenance* (553-3001-511)*,* follow the process
    in this chapter to isolate and clear the fault.

3   If the system messages are not current or seem incomplete, review
    previous messages or initialize the system for information on the current
    status, as required.

4   Try to enable or test disabled equipment.

5   Software re-enable cards by disabling and then re-enabling them. When
    the cause of a fault is not clearly evident, perform a software test to help
    identify the problem.



**CAUTION WITH ESDS DEVICES**
Wear an antistatic wrist strap when handling circuit
cards to prevent damage caused by static discharge.

6   Software disable the circuit cards, then hardware re-enable them by
    unseating and then reinstalling the cards.

    *Note:* To unseat a circuit card, unscrew all faceplate screws holding the
    card in place. (Each circuit card has two screws except for the Drive
    Carrier card, which has four). Then use the faceplate latches to eject the
    card. When reseating a circuit card, ensure to latch it, then retighten all
    screws.

**7** Replace equipment as necessary.

———————————— **End of Procedure** ————————————

## Verification

To verify that the CS 1000E is operating properly and there are no remaining faults, follow the steps in Procedure 4.

**Procedure 4**
**Verifying operation**

**1** Ensure all LEDs on the alarm/fan module are green.

**2** Make sure all circuit cards that could have been removed are reinserted in their assigned location and enabled.

**3** Ensure the system utility card has the correct DIP switch settings for CPU 0 or CPU 1 as required. Also ensure that the enable/disable switch is configured to enable.

**4** Make sure all wiring and connectors that could have been disconnected are reconnected.

**5** Configure the midnight routine to run after logging out of the system by entering:

```
LD 135
```
**MIDN**

End the session in LD 135 and log out of the system by entering:

\*\*\*\* (four asterisks)
**LOGO**

The midnight routine will now run.

**6** Check system messages produced when the midnight routine runs. Clear any faults indicated.

7   If there was a sysload while clearing a fault, reset the correct time and date by entering:

```
LD 2
```
**STAD (day) (month) (year) (hour) (minute) (second)**

Check the time and date entered:

**TTAD**

End the session in LD 2 and log out of the system:
\*\*\*\* (four asterisks)
**LOGO**

8   Replace any covers that were removed.

9   Tag defective equipment with a description of the fault and return it to a repair center.

—————— **End of Procedure** ——————

# Fault indicators

When there is a fault in the system, the user can be notified by any combination of the following indicators:

- system messages
- visual fault indicators
- user reports

## System messages

System messages are codes with a mnemonic and number, such as OVD0021. The mnemonic identifies a software program or a type of message (in this case, OVD indicates a message related to the Overload Monitor program). The number identifies the specific message.

Use system messages with other indicators, such as visual indicators, to identify and clear faults.

Table 11 lists the most common fault-indicating messages and the type of fault they indicate. For a complete list and interpretation of system messages, see the *Software Input/Output: System Messages* (553-3001-411).

The user can view system messages in the OTM PC Event Log. Right-clicking on the system message in the Event Log list shows a description and a maintenance action for system messages.

Each type of fault indicator is described in Table 11.

**Table 11**
**System message fault indicators and related fault types (Part 1 of 2)**

| System messages | Type of fault |
|---|---|
| CCED messages<br>CED messages<br>CIOD messages<br>HWR messages<br>INI001, 002, 004, 005, 007<br>IOD006, 007, 060, 061, 291—297<br>NWS030, 102, 103, 142<br>SYS messages<br>SRPT 181, Major failure | Call Server |
| CNF messages<br>DTA, DTC, DTI messages<br>ERR020, 120, 4060<br>INI003, 008—012<br>NWS101, 141, 201—204, 301, 401<br>OVD021, 022, 023, 031<br>SYS4696<br>TDS messages<br>XMI messages | System resources |
| ERR4062<br>NWS301, 401, 501<br>OVD001—010, 024<br>XMI messages | Peripheral Equipment |

**Table 11**
**System message fault indicators and related fault types (Part 2 of 2)**

| System messages | Type of fault |
|---|---|
| ERR090, 220, 270<br>OVD001—010<br>TRK messages | Trunk |
| ERR500<br>MWL500<br>NWS501<br>OVD001—010 | Telephone |

### Visual fault indicators

Users can identify faults by using the following visual indicators:

- A major alarm display indicates a possible power, Call Server, or Small System Controller (SSC) card fault.

- Circuit card Light Emitting Diodes (LED) indicate a circuit card or a unit on a circuit card is disabled. For details on circuit card LEDs, see "Circuit card features" on page 34. For Media cards, refer to "Media Card LEDs" on page 39. For Signaling Server LEDs, refer to "Signaling Server LEDs" on page 53.

## Clearing CS 1000E Core Call Server faults

CS 1000E Core Call Server faults can disable the CP card and stop call processing. In addition, other equipment may not operate properly while there is a Call Server fault in the system.

When call processing has stopped on the Call Server, you may need to replace the following equipment:

- CP PII Call Processor card (NT4N46)

- CP PIV Call Processor card (NT4N39)

- System Utility card (NT4N48)

- Drive Carrier card (NTDU67)

- CS 1000E Core Call Server (NTDU63)

- Alarm/Fan module (NTDU64)

- Power Supply module (NTDU65) or air filter

- Main power cord

- Uninterruptible power supply (UPS)

Table 12 shows common Call Server fault indicators.

**Table 12**
**Call Server fault indications**

| Indicator | Possible indications |
| --- | --- |
| System messages | BSD080, 085, 086, 103<br>CCED messages<br>CED messages<br>CIOD messages<br>HWR messages<br>INI001, 002, 004, 005, 007<br>IOD006, 007, 060, 061, 291—297<br>NWS030, 102, 103, 142<br>SYS messages<br>SRPT 181, Major failure |
| Visual indicators | Major alarm on attendant console |
| | Red LED lit on Call Server alarm/fan module. (See "Alarm/fan module features" on page 32 for details). |
| Maintenance displays | The System Utility card liquid crystal display (LCD) provides system messages indicating normal and fault conditions. Interpretations of the maintenance display codes are listed in the *Software Input/Output: System Messages* (553-3001-411). |
| User reports | Major alarm reported by attendant |

## Call Server fault indications and actions

Table 13 lists Call Server fault indications and associated actions. Refer to "Fault clearing process" on for a complete fault-clearing process. If equipment must be replaced to clear a fault, refer to "Replacing equipment" on for the necessary instructions.

**Table 13**
**Call Server faults  (Part 1 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| Software Installation Tool does not load | Mismatch between the Security Device and keycode | Positively identify the NT SDID (eight digits engraved on the face of the Security Device beneath the Nortel logo) with the NT SDID contained on the keycode floppy disk label, and verify the NT SDIDs match. |
|  | Incorrect Install Program disk | Verify that the correct Install Program disk is being used for your system. |
| Data dump error, or no access to overlays and OVL005 message is displayed | Manual initialize button pressed during a backup using the Customer Configuration Backup and Restore feature | Issue the **ENLT** command at the TTY. |
| System Utility card LED is red and no TTY output on Com 1 | Defective CP card | Unseat the CP card, and then reinstall it. Make sure all cables are securely connected. If the fault remains, continue with this procedure. |
|  |  | Replace the cable to the Com 1 port. If the fault remains, replace the CP PII card. |
| System constantly rebooting |  | If the CP card is replaced and the symptoms persist, replace the Call Server. |

**Table 13**
**Call Server faults  (Part 2 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| System Utility card LED is red and TTY output on Com 1 | Defective System Utility card | Ensure the Enable/Disable switch is in the enabled position. If the LED remains red, test the card by entering: <br><br>`LD 135`<br>`TEST SUTL C 15`<br><br>where C represents the affected Call Server, either 0 or 1.<br><br>If the fault remains, then replace the System Utility card. |
| Defective RMD | Defective CFcard | Stat RMD in LD 135 to obtain partition status. Repartition if partition is corrupted or unreadable or replace CF card. |
| FMD not responding | Defective or unprogrammed CF card | Re-install software or replace FMD |
| Ethernet port LEDs are off | Bad cable or cable not connected | Test cable, replace cable if necessary, and make sure power is on all equipment |
| Ethernet ports unable to communicate | Auto-negotiation failed | Check configuration of LAN equipment (must be set to auto negotiate). |

**Table 13**
**Call Server faults  (Part 3 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| Drive Carrier card not operating (CS 1000E CP PII only) | Defective Drive Carrier card | Unseat the Drive Carrier card, then reinstall it. If the Drive Carrier card does not recover, continue with this procedure. |
| | | Test the card by entering: |
| | | **LD  137**<br>**STAT CMDU**<br>**TEST CMDU** |
| | | If the problem continues, a CIOD system message appears. If the fault remains, then replace the Drive Carrier card. |
| Floppy drive not operating (CP PII only) | Defective floppy drive | Remove the floppy disk from the floppy drive, place it in the floppy drive of the other Call Server, and test operation. |
| | | If the floppy disk is operational, replace the Drive Carrier card containing the faulty floppy drive. |
| CD-ROM drive not reading disk (CP PII only) | CD-ROM disk is damaged | If you have another CD-ROM disk, insert that CD-ROM disk into a known operational Drive Carrier card, and load the Software Installation Tool from the correct Install Program diskette. |
| | | In the Software Installation Tool, go to the Tools Menu and select option:<br>**<j> -To check the customer-specific part of the CD-ROM** |
| | | If the test is successful, it is unlikely the CD-ROM disk is damaged. |
| | | However, if the test indicates a failure to read all files on the CD-ROM disk, then the CD-ROM disk is damaged and must be replaced. |

**Table 13**
**Call Server faults  (Part 4 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| CD-ROM drive not operating (CP PII only) | Defective CD-ROM drive | Remove the CD-ROM disk from the CD-ROM drive, place it in the CD-ROM drive of the other Call Server, and test operation. |
| | | If the CD-ROM disk is operational, replace the Drive Carrier card containing the faulty CD-ROM drive. |
| Fan LED or temperature LED is red | High room temperature | Adjust room temperature as necessary. Allow the system to cool for a few minutes, then reset the system. |
| | Defective alarm/fan module | Verify that the fans in the alarm fan/module are operational. |
| | | Unseat and re-install alarm/fan module. If the fault continues, replace the alarm/fan module. |
| | Power supply air filter is obstructed | Check filter to ensure it is clean. If the filter is dirty or damaged, clean or replace the filter as described in "Cleaning and replacing the power supply air filter" on page 133. |
| The power LED is red | Power fault or defective power supply module | Turn off the power switch at the rear of the Call Server and remove the power cord. Loosen the locking screw at the front of the module, then unseat and reseat the module firmly. Tighten the locking screw and replace the power cord. Turn on the power switch and observe if failure has cleared. |
| | | If the fault continues, replace the power supply module. |
| | | *Note:* When in shutdown mode, the power supply continues to power the LEDs on the alarm/fan module that indicate a power supply failure. |

**Table 13**
**Call Server faults  (Part 5 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| All LEDs in the Call Server are off | Power switch is off | Turn the power switch on. |
| | Disconnected power cable | Check the power cable connection to the power supply module. Ensure that it is firmly connected. |
| | | If the cable is connected, check the power cable connection to the other Call Server. |
| | | If all power cables are firmly connected, go to the next possible cause. |
| | Defective power cable | Replace power cable. |
| | **WARNING** **The following tests are performed on a live power connection.** | |

**Table 13**
**Call Server faults  (Part 6 of 6)**

| Condition | Possible cause | Action |
|---|---|---|
| All LEDs in the Call Server are off | No power at outlet | With a meter or test lamp, test for AC power at the outlet. |
| | | If there is no power at the outlet when AC power is supplied through a UPS unit, repair or replace the UPS following the manufacturer's instructions. |
| | | If there is no power at the outlet when AC power is supplied through commercial service (not through a UPS), take the necessary steps to have the commercial power restored. |
| | | If there is power at the outlet, go to the next possible cause. |
| | Defective power supply | Configure the power switch located on the back of the power supply to OFF (down), wait at least 60 seconds, then configure the switch back to ON (up). |
| | | Ensure power supply is well-seated and the locking screw is tightened. |
| | | If all LEDs are still off, or the power LED on the alarm/fan module is red, replace the power supply. |
| | Defective alarm/fan module | If the Nortel display remains lit and the alarm/fan LEDs are all off, ensure that the alarm/fan module is well-seated and the locking screw is tightened. |
| | | If it is still not operating properly, replace the alarm/fan module. |
| | Defective Call Server | If the power supply and alarm/fan module are replaced and the symptoms persist, replace the Call Server. |

# Clearing Signaling Server faults

The Signaling Server is a commercial 1U server that provides signaling for the CS 1000E system. It has ELAN and TLAN network interfaces, which are connected to an Ethernet switch through CAT5 cables. It has two serial ports and visual indicators for maintenance. It has three push buttons, one each for power, reset, and INI (initialization). The INI button, USB ports, keyboard port, and mouse port are not supported.

**Table 14**
**Signaling Server Diagnosis (Part 1 of 2)**

| Condition | Possible Cause | Action |
|---|---|---|
| Signaling Server not running. All LEDs off. | No power to system | Check power cable |
| | Power supply failed | Replace Signaling Server |
| Signaling Server running with no fan noise | Fan failed | Replace Signaling Server |
| Floppy drive tries accessing floppy but fails (CP PII only) | Floppy media is corrupted | Replace floppy |
| | Floppy not formatted | Format floppy |
| Floppy drive not accessing floppy & green light not illuminating.(CP PII only) | Floppy drive failed | Replace Signaling Server |
| CD-ROM drive tries to access CD-ROM but stops (CP PII only) | CD-ROM media is corrupted | Replace CD-ROM disk |
| CD-ROM drive not accessing CD-ROM. No green light.(CP PII only) | CD-ROM Drive failed | Replace Signaling Server |
| 100BT light not on | Auto Negotiate Failed | Provision Ethernet Switch to 100MB. Switch Auto Negotiate off. |

**Table 14**
**Signaling Server Diagnosis (Part 2 of 2)**

| Condition | Possible Cause | Action |
|---|---|---|
| ELAN or TLAN network interface Link light not active | Bad connection to Ethernet switch | Check power on Ethernet switch. |
| | | Check CAT5 Ethernet cable |
| | | Check Ethernet switch port |
| | Failed network interface | Replace Signaling Server |
| Signaling Server unable to boot from hard drive | Hard drive not formatted | Install software. Refer to *Communication Server 1000E: Installation and Configuration* (553-3041-210). |
| | Hard drive with bad sectors | Install software and use disk check option. Replace Server if disk check fails. |
| | Hard drive failed | Replace Signaling Server |
| Signaling Server not responding through serial port. | Software failed | Reset Signaling Server |
| Signaling Server boots then stops. | No software loaded | Load software. Refer to *Communication Server 1000E: Installation and Configuration* (553-3041-210). |

# Clearing MG 1000E faults

## Clearing ELAN network interface faults

On each MG 1000E, the SSC card connects to the ELAN subnet through the ELAN network interface. A CAT5 Ethernet cable connects the ELAN

network interface to a Layer 2 switch on the ELAN subnet. This provides
speech path switching and transmit and receive signaling messages.

Faults related to the ELAN network interface can cause system initializations,
disable conference capability, or disable all terminal connections (such as
trunks and telephones) on a card. ELAN network interface faults can also
make functional equipment appear faulty.

Table 15 provides fault indicators for MG 1000E ELAN network interface
faults.

**Table 15**
**ELAN network interface fault indicators**

| Indicator | Possible indications |
|---|---|
| System messages | CNF messages |
| | ERR020, 120, 4060 |
| | INI003, 008—012 |
| | NWS101, 141, 201—204, 301, 401 |
| | OVD021, 022, 023, 031 |
| | SYS messages |
| | TDS messages |
| | XCT messages |
| | XMI messages |
| Visual indicators | Red LEDs lit or flashing on circuit cards |

### Isolating MG 1000E ELAN network interface faults

Troubleshooting MG 1000E ELAN network interface faults is required when
there is no connection or the connection is dropped between the ELAN
network interface and the IP network.

*Note:*  Use a Serial Data Interface (SDI) terminal to perform the
following procedures using overlay commands.

To troubleshoot faults with the MG 1000E ELAN network interface, follow the steps in Procedure 5.

**Procedure 5**
**Troubleshooting for MG 1000E ELAN network interface**

1   Verify that the green Link LED on the daughterboard in the MG 1000E SSC is on (indicating that the physical connection is operational). If the Link LED is off, check the physical connection by verifying that the daughterboard and cables are properly installed.

2   Use the LD 32 command `DISS l s` (where l s are the loop and shelf numbers of the MG 1000E) to disable the link for testing.

3   Test the IP connectivity between the CS 1000E Core Call Server and the Layer 2 switch by pinging the IP address of the Layer 2 switch. Perform the same test between the MG 1000E and the Layer 2 switch. Consult the local IS department for the appropriate IP address.

4   Use the **PING <ip address of the MG 1000E>** command in LD 117 to verify network connection.

5   Re-enable any disabled components. Verify the 100BaseT connection between the Call Server and the MG 1000E is operating by pinging the IP address of the MG 1000E(s) configured.

*Note:* The MG 1000E supports only Layer 2 and Layer 3 switches. Software-based routers are not recommended.

──────────  **End of Procedure**  ──────────

## MG 1000E faults

The MG 1000E provides the interface between network switching and terminal equipment (such as trunks and telephones). MG 1000E faults can disable network and terminal equipment. Refer to Table 16 on page 86 for MG 1000E fault indicators.

An overload (OVD) message on an MG 1000E indicates a network loop is disabled and that all connections on the loop are disabled. The network loop number corresponds to a specific card number in the MG 1000Es (see "MG 1000E and MG 1000E Expander card slot assignment" on page 113 for details). System messages can also indicate that one or more cards is defective or disabled without producing an OVD message. In either case, look up all

system messages in *Software Input/Output: System Messages* (553-3001-411) and follow the instructions given.

Manual continuity tests can also be used to isolate Network and Intelligent Peripheral Equipment (IPE) faults. See *Software Input/Output: Maintenance* (553-3001-511) for details on performing the tests.

If the fault does not clear, or when call processing has stopped on the MG 1000E, you may need to replace the following equipment:

- NTDK20 SSC card
  - NTTK25 Software Daughterboard
  - NTDK83 100BaseT dual-port IP Daughterboard
- NTDU0606 CAT5 ethernet cable used to connect the NTDK99 IP daugtherboard to the bulkhead connectors
- CAT 5 IP cables
- NTDU14 Media Gateway
- NTDU15 Media Gateway Expander
- NTDK95 Expander cables

**Table 16**
**MG 1000E fault indicators**

| Indicator | Possible indications |
|---|---|
| Sample system messages | ERR4062 |
|  | NWS301, 401, 501 |
|  | OVD001—010, 024 |
|  | XMI messages |
| Visual indicators | Red LEDs lit on circuit cards |

Table 17 provides additional instructions for isolating faults in an MG 1000E. Refer to "Fault clearing process" on for complete fault clearing process.

*Note:* Call processing on the affected MG 1000E is interrupted when the NTDK20 SSC circuit card is unseated.

**Table 17**
**MG 1000E fault causes and actions (Part 1 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| Software does not load | Improper Security Device | Ensure that a generic MG 1000E Security Device is installed. |
| Layer 7 LED is Red<br><br>Link LED is off or flickering | Defective NTDU0606 cable or CAT5 IP cable to switch. | Inspect the cable connections visually and check them physically. Replace defective cables as required. |
| Red LED on SSC card | Defective NTDK20 SSC card in MG 1000E | Disable the MG 1000E by entering:<br>**LD 32**<br>**DISS l s** (where l s are the MG 1000E loop and shelf numbers)<br><br>Replace the SSC card.<br><br>Enable the MG 1000E by entering:<br>**LD 32**<br>**ENLS l s** (where l s are the MG 1000E loop and shelf numbers). |
|  | Improperly installed NTTK25 Software Daughterboard | Power down the system, remove the NTDK20 SSC card.<br>Unseat the software daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the system. |

**Table 17**
**MG 1000E fault causes and actions (Part 2 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| | Improperly installed NTDK83 IP Daughterboard | Power down the system, remove the NTDK20 SSC card.<br>Unseat the daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the system. |
| | Defective NTDK83, NTDK99 daughterboard | Unseat the NTDK20 SSC circuit card and replace the daughterboard. |
| | | Reinsert the NTDK20 SSC circuit card. |
| | Defective Media Gateway or Expander | Replace the defective Media Gateway or Expander. |
| Red LED on circuit card and system message | Card circuitry latched | Disable the card, unseat and reseat it, then re-enable the card.<br>If the fault persists, go to the next possible cause. |
| LED is red on circuit card<br><br>Two or more units on a circuit card are disabled<br><br>System message indicating the circuit card or units on it are disabled | Defective circuit card | Enable the circuit card by entering:<br>**LD 32**<br>**ENLC l s c u** (where l s c u represents the card number)<br><br>If the fault persists, replace the affected circuit card. |
| Common visual indication and system messages on MG 1000E Expander | Defective NTDK95 Expander cable | Replace the NTDK95 cable connecting the MG 1000E to the MG 1000E Expander. |
| Multiple cards exhibit problems | Defective Media Gateway | Replace the Media Gateway. |

**Table 17**
**MG 1000E fault causes and actions (Part 3 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| Nortel logo is not lit or fan is not running | Loss of AC power Defective Media Gateway | Restore AC power. Replace the Media Gateway. |
| MG 1000E constantly rebooting | Defective SSC card or Media Gateway or Expander | Replace the SSC card, Media Gateway, or Expander. |
| Red LED on SSC card and system messages<br><br>Media quality has deteriorated<br><br>Intermittent trunk or line problems<br><br>Multiple system messages about this MG 1000E | Defective IP Links | View the status of the IP links by entering:<br>**LD 135**<br>**STAT IPL x** (x is the number for the MG 1000E, 1 through 128)<br><br>Enable the MG 1000E by entering:<br>**LD 32**<br>**ENLS l s** (where l s are the MG 1000E loop and shelf numbers)<br><br>If the fault remains, go to the next possible cause. |
| | Defective NTDK83 IP Daughterboard in MG 1000E | Disable the MG 1000E by entering:<br>**LD 32**<br>**DISS l s**  (where l s are the MG 1000E loop and shelf number)<br><br>Replace the IP daughterboard on the NTDK20 SSC circuit card.<br><br>If the fault remains, replace the SSC card. |

### MG 1000E Problems with transferring, placing conference calls, or Music-on-Hold

If several users cannot transfer or place conference calls, or calls do not receive Music-on-Hold (MOH), a circuit card that provides conference

capability can be disabled. Look up all system messages in the *Software Input/Output: System Messages* (553-3001-411) and follow the instructions.

Also, ensure that sufficient DSP resources have been provisioned for Music, conference, and RAN (see *Communication Server 1000E: Planning and Engineering* (553-3041-120) for details).

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### IMPORTANT!

Currently, the CS 1000E only supports Recorded Announcement Broadcast and Music Broadcast.

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If the fault does not clear, users may need to replace some of the following equipment:

- NTDK20 SSC card

- NTDK99 IP Daughterboard

- NTDK83 IP Daughterboard

  *Note:* In addition to the conference channels on the SSC, the NTDK83 and the NTDK99 IP Daughterboards each provide an additional 16 conference channels per port when installed on the MG 1000E SSC.

Table 18 provides additional instructions for isolating conference channel faults in an MG 1000E.

*Note:* Call processing on the affected MG 1000E is interrupted when the NTDK20 SSC circuit card is unseated.

**Table 18**
**Conference channels causes and actions (Part 1 of 2)**

| Condition | Possible cause | Action |
|---|---|---|
| Several users cannot place conference calls when links and phones are operational. | Defective IP links | View the status of the IP Links by entering: **LD 135** **STAT IPL x** (where x is the number for the MG 1000E 1 through 128) |
| | | If the fault remains, check the IP daughterboard conference loops. |
| | | If the fault remains, check the NTDK20 SSC conference loops. |
| System message indicates conference loop is defective. | Defective IP daughterboard on SSC card | If a fault is indicated on a conference loop, replace the daughterboard on the affected MG 1000E. |
| System message indicates conference loop is defective. | Defective SSC circuit card | If a fault is indicated on conference loop, replace the NTDK20 SSC circuit card. |
| | | Reuse the daughterboards and security device installed on the original NTDK20 SSC circuit card. |
| | | *Note:* Call processing on the entire system will be interrupted while the NTDK20 SSC circuit card is being replaced. |

**Table 18**
**Conference channels causes and actions (Part 2 of 2)**

| Condition | Possible cause | Action |
|---|---|---|
| Defective conference loop with no system message | Defective IP daughterboard or SSC circuit card | If there are no messages indicating a fault on any conference loop, test each conference loop in the system by entering:<br>**LD 38**<br>**CNFC loop** ("loop" represents the conference loop number)<br><br>If the conference loop is disabled, try to enable it by entering:<br>**LD 38**<br>**ENLL loop** ("loop" represents the conference loop number) |
| | Defective NTDK20 SSC card | Install a new NTDK20 SSC card.<br><br>Reuse the daughterboards and security device attached to the original NTDK20 SSC circuit card.<br><br>*Note:* Call processing on the system will be interrupted while the NTDK20 SSC circuit card is being replaced.<br><br>If the card tests "OK", the NTDK20 SSC circuit card was defective.<br><br>If after a few minutes the problem reoccurs, replace the Media Gateway. |

# Clearing MG 1000T faults

The MG 1000T platform provides the interface between network switching and digital trunks. MG 1000T faults can disable network equipment.

An OVD message indicates a network loop is disabled and all connections on the loop are disabled. The network loop number corresponds to a specific card number in the MG 1000T (see "MG 1000E and MG 1000E Expander card slot assignment" on for details). System messages can also indicate that one or more cards are defective or disabled without producing an OVD message. In either case, look up all system messages in *Software Input/Output: System Messages* (553-3001-411) and follow the instructions given.

Manual continuity tests can be used to isolate faults. See LD 30 in *Software Input/Output: Maintenance* (553-3001-511) for details on performing the tests.

If the fault does not clear, or if call processing has stopped on the MG 1000T, you may need to replace the following equipment:

- NTDK20 SSC card

    — NTTK25 Software Daughterboard

    — NTDK99 single-port 100BaseT IP Daughterboard

    — NTDK83 dual-port 100BaseT IP Daughterboard

- NTDU0606 CAT5 ethernet cable used to connect the NTDK99 IP daugtherboard to the bulkhead connectors

- NTTK34 UTP 100BaseT CAT5 Cross-over cables

- NTDU14 Media Gateway

- NTDU15 Expander

- NTDK95 Expander cables

- NTVQ01 Media Card

Refer to Table 19 for MG 1000T fault indicators.

**Table 19**
**MG 1000T fault indicators**

| Indicator | Possible indications |
|---|---|
| Sample system messages | ERR4062 |
| | NWS301, 401, 501 |
| | OVD001—010, 024 |
| | XMI messages |
| Visual indicators | Red LEDs lit on circuit cards |

## Clearing MG 1000T Core faults

The SSC card in the MG 1000T Core is the primary processor for the MG 1000T platform. It performs system control and switching for the MG 1000T Core and Expansions.

Faults on the MG 1000T Core can stop call processing on the MG 1000T. In addition, other equipment may not operate properly while there is an MG 1000T Core fault in the system.

Table 20 lists common fault indications for the MG 1000T Core.

**Table 20**
**MG 1000T Core fault indications**

| Indicator | Possible indications |
|---|---|
| System messages | CCED messages<br>CED messages<br>CIOD messages<br>HWR messages<br>INI001, 002, 004, 005, 007<br>IOD006, 007, 060, 061, 291—297<br>NWS030, 102, 103, 142<br>SYS messages |
| Visual indicators | Red LED lit on NTDK20 SSC circuit card |

### Fault indicated on the MG 1000T Core

Table 21 lists fault indications and associated actions for the MG 1000T Core. Refer to "Fault clearing process" on for complete fault clearing process.

*Note:* Call processing on the MG 1000T platform is interrupted when the MG 1000T Core SSC card is unseated.

**Table 21**
**MG 1000T Core fault causes and actions  (Part 1 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| Software Installation Tool does not load | Mismatch between the Security Device and keycode | Positively identify the NT SDID on the MG 1000T Core (eight digits engraved on the face of the Security Device beneath the Nortel logo) with the NT SDID contained on the keycode floppy disk label, and verify the NT SDIDs match. |
| Data dump error | Corrupt data on software daughterboard | Perform an **EDD NBK** command in LD 43 to restore the data. |

**Table 21**
**MG 1000T Core fault causes and actions  (Part 2 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| | Security failure during an upgrade | Re-enter the keycodes.<br><br>***Note:*** Up to three invalid keycodes can be entered. After the third invalid keycode is entered, all current changes are lost and the Setup Program returns to the main menu. |
| Data dump error, or no access to overlays while OVL005 message is displayed | Manual initialize button pressed when performing a backup using the Customer Configuration Backup and Restore feature | Issue the **ENLT** command at the TTY. |
| Red LED is lit on SSC card | Card circuitry latched | Disable the SSC card, unseat and reseat the card, then re-enable it.<br>If the fault persists, go to the next possible cause. |
| | Improperly installed NTTK25 Software Daughterboard | Power down the system and remove the NTDK20 SSC card.<br>Unseat the software daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the system. |
| Red LED is lit on SSC card | Defective NTTK25 Software Daughterboard | Unseat the NTDK20 SSC circuit card and replace the software daughterboard.<br><br>Reinsert the NTDK20 SSC circuit card. |
| | Improperly installed NTDK83 IP Daughterboard | Power down the system and remove the NTDK20 SSC card.<br>Unseat the IP daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the system. |

**Table 21**
**MG 1000T Core fault causes and actions  (Part 3 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| | Defective NTDK83 IP Daughterboard | Unseat the NTDK20 SSC circuit card and replace the IP daughterboard. |
| | | Reinsert the NTDK20 SSC circuit card. |
| | Defective NTDK20 SSC card | If the fault persists, replace the NTDK20 SSC card. Reuse all daughterboards and the security device installed on the original NTDK20 SSC circuit card. |
| | | Enable and test the card by entering: **LD 30** **TEST** |
| | | If the new card passes the test, the original NTDK20 SSC circuit card was defective. |
| | | If after a few minutes the problem reoccurs, replace the Media Gateway. |
| System constantly rebooting | Defective SSC card or Media Gateway | Replace the SSC card or Media Gateway. |
| Nortel logo is not lit or fan is not running | Loss of AC power Defective Media Gateway | Restore AC power. Replace the Media Gateway. Enable and test the cards by entering: **LD 30** **TEST** |
| Perceived one way speech path, broken speech or static on the line | MG 1000T Core SSC has lost synchronization with its clock reference | Ensure that zero bandwidth parameter is configured to NO `LD 117` `PRT IPR <port>` `LD 117` `CHG IPR <port> <MAC address> [<IP address> <subnet mask> <zero bandwidth>]` |

## Clearing MG 1000T Expansion faults

Table 22 provides additional instructions for isolating faults in an MG 1000T Expansion. Initial indicators can be red LEDs on the circuit cards or a system message indicating a circuit card or units on it are disabled. Look up all system messages in the *Software Input/Output: System Messages* (553-3001-411) and follow the instructions given.

**Table 22**
**MG 1000T Expansion fault causes and actions (Part 1 of 4)**

| Condition | Possible cause | Action |
|---|---|---|
| Software does not load | Improper Security Device | Positively identify the NT SDID on the MG 1000T Expansion (eight digits engraved on the face of the Security Device beneath the Nortel logo). Verify that it matches the NT SDID contained on the MG 1000T Core Security Device. |
| Layer 7 LED is Red<br><br>Link LED is off or flickering | Defective NTDU0606, NTTK34, or CAT5 IP cable | Inspect the cable connections visually and check them physically. Replace defective cables as required. |

**Table 22**
**MG 1000T Expansion fault causes and actions (Part 2 of 4)**

| Condition | Possible cause | Action |
|---|---|---|
| Red LED on SSC<br><br>Intermittent trunk problems<br><br>Multiple system messages about an MG 1000T Expansion | Defective NTDK20 SSC card in MG 1000T | Disable the MG 1000T Expansion by entering:<br>**LD 32**<br>**DISS x** (where x is the number for the MG 1000T Expansion, 1 through 4) |
|  |  | Replace the SSC card. |
|  |  | Enable the MG 1000T Expansion by entering:<br>**LD 32**<br>**ENLS x** (where x is the number for the MG 1000T Expansion, 1 through 4) |
|  |  | Perform a circuit card test by entering:<br>**LD 30**<br>**TEST**<br>(this command ensures that all circuit cards are re-enabled in the MG 1000T). |
| Red LED on SSC card | Improperly installed NTTK25 Software Daughterboard | Power down the MG 1000T and remove the NTDK20 SSC card.<br>Unseat the software daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the MG 1000T. |
|  | Improperly installed NTDK99 IP Daughterboard | Power down the MG 1000T and remove the NTDK20 SSC card.<br>Unseat the daughterboard and then reseat it.<br>Reinsert the NTDK20 SSC circuit card.<br>Power up the MG 1000T. |
|  | Defective NTDK99 IP Daughterboard | Unseat the NTDK20 SSC circuit card and replace the daughterboard. |
|  |  | Reinsert the NTDK20 SSC circuit card. |

**Table 22**
**MG 1000T Expansion fault causes and actions (Part 3 of 4)**

| Condition | Possible cause | Action |
|---|---|---|
| | Defective Media Gateway or Expander | Replace the defective Media Gateway or Expander. |
| Red LED on circuit card<br><br>Two or more units on a circuit card are disabled<br><br>System message indicating the circuit card or units on it are disabled | Defective circuit card | Enable the circuit card by entering:<br>**LD 32**<br>**ENLC c** (where c represents the card number)<br><br>Test the card by entering:<br>**LD 30**<br>**UNTT c** (where c represents the card number).<br><br>If the fault persists, replace the affected circuit card. |
| Common visual indication and system messages on MG 1000T Expander | Defective NTDK95 Expander cable | Replace the NTDK95 cable connecting the MG 1000T Expansion to the MG 1000T Expander. |
| Multiple cards exhibit problems | Defective Media Gateway | Replace the Media Gateway.<br>Enable and test the cards by entering:<br>`LD 30`<br>`TEST` |
| Nortel logo is not lit or fan is not running | Defective Media Gateway | Replace the Media Gateway |

**Table 22**
**MG 1000T Expansion fault causes and actions (Part 4 of 4)**

| Condition | Possible cause | Action |
|---|---|---|
| Media quality has deteriorated | Defective IP links | To view the status of the IP links, enter:<br>**LD 135**<br>**STAT IPL x** (where x is the number for the MG 1000T Expansion, 1through 4) |
| | | Perform Local and Remote Loop-back tests on the IP links by entering:<br>**LD 135**<br>**LLBK IPL x** (where x is the number for the MG 1000T Expansion, 1through 4) |
| | | Enable the MG 1000T by entering:<br>**LD 32**<br>**ENLS x** (where x is the number for the MG 1000T Expansion, 1 through 4) |
| | | If the fault remains, go to the next possible cause. |
| | Defective NTDK99 IP Daughterboard in MG 1000T | Disable the MG 1000T Expansion by entering:<br>**LD 32**<br><br>**DISS x** (where x is the number for the MG 1000T Expansion, 1 through 4) |
| | | Replace the IP daughterboard on the NTDK20 SSC circuit card. |
| | | If the fault remains, replace the SSC card. |

> ⚠️ **CAUTION — Service Interruption**
>
> If you are running the MG 1000T Core and Expansions using Point to Point Protocol (PPP), zero bandwidth must be NO.
>
> If a Clock Controller (T1 or E1) is in the MG 1000T, zero bandwidth must be NO for that link. This allows the MG 1000T Core to have a clock reference.

## Clearing MG 1000T Core-to-Expansion link faults

The Core-to-Expansion links in the MG 1000T are an integral part of the MG 1000T functionality. A Core-to-Expansion link refers to the 100BaseT connection between the SSC card in the MG 1000T Core and the SSC card in an MG 1000T Expansion. The link provides speech path switching and transmit and receive signaling messages between the SSC cards.

Core-to-Expansion link faults can cause system initializations, disable conference capability, or disable all trunk connections on a card. The Core-to-Expansion link faults can also make functional equipment appear faulty.

Table 23 provides fault indicators for MG 1000T Core-to-Expansion link faults.

**Table 23**
**IP Network fault indicators**

| Indicator | Possible indications |
|---|---|
| System messages | CNF messages |
| | DTA, DTC, DTI messages |
| | ERR020, 120, 4060 |
| | INI003, 008—012 |
| | NWS101, 141, 201—204, 301, 401 |
| | OVD021, 022, 023, 031 |
| | SYS messages |
| | TDS messages |
| | XCT messages |
| | XMI messages |
| Visual indicators | Red LEDs lit or flashing on circuit cards |

### Troubleshooting Core-to-Expansion link connectivity faults

Troubleshooting the Core-to-Expansion 100BaseT link is required when there is no connection or the connection is dropped between the MG 1000T Core and an MG 1000T Expansion. Procedure 6 on page 104 provides troubleshooting procedures for a Point-to-Point connection, and Procedure 7 on page 105 provides troubleshooting procedures for Layer 2 and Layer 3 connections.

*Note:* Use a SDI terminal to perform the following procedures using overlay commands.

### Point-to-Point connection

To troubleshoot for a Point-to-Point connection, follow the steps in
Procedure 6.

**Procedure 6**
**Troubleshooting a Point-to-Point connection for MG 1000T**

1    Verify that the green Link LED on the daughterboard in the MG 1000T
     Core SSC is on (this indicates that the physical connection is functioning).
     If the Link LED is off, check the physical connection by verifying that the
     daughterboard and cables are properly installed.

     *Note:* See *Communication Server 1000E: Installation and Configuration*
     (553-3041-210) for details.

2    Use the LD 32 command `DISS <n> (n = IP daughterboard`
     `port#)` to disable the link for testing. Use the LD 135 command
     `LLBK <link #>` to test the signaling and voice path of the
     daughterboard. If the card fails the LLBK test, replace the IP
     daughterboard.

3    Verify that the MAC address of the MG 1000T Expansion is correctly
     configured on the MG 1000T Core. Use the PRT IPR command in LD 117
     to access the MAC data.

4    Use the **PING <ip address of the MG 1000T Expansion>** command in
     LD 117 to verify network connection.

5    Re-enable any disabled components. Verify that the 100BaseT
     connection between the MG 1000T Core and the MG 1000T Expansion
     is operating by pinging the IP address of the MG 1000T Expansion(s)
     configured.

     *Note:* MG 1000T Expansions using a Point-to-Point connection cannot
     be pinged from other data network nodes. However, the MG 1000T Core
     can ping MG 1000T Expansions, and the MG 1000T Expansions can ping
     the MG 1000T Core.

––––––––––––––––––––––––– **End of Procedure** –––––––––––––––––––––––––

### Layer 2 and Layer 3 LAN connections

To troubleshoot for Layer 2 and Layer 3 LAN connection, follow the steps in Procedure 7.

**Procedure 7**
**Troubleshooting Layer 2 and Layer 3 LAN connections for MG 1000T**

1  Verify that the green Link LED on the daughterboard in the MG 1000T Core SSC is on (this indicates that the physical connection is functioning). If the Link LED is off, check the physical connection by verifying that the daughterboard and cables are properly installed.

2  Test the LAN connectivity between the MG 1000T Core and the Layer 2/3 switch by pinging the IP address of the Layer 2/3 switch. Perform the same test between the MG 1000T Expansion and the Layer 2/3 switch. Consult the local IS department for the appropriate IP address.

3  To disable the link for testing, in LD 32, enter `DISS <n>` (where n = IP daughterboard port#).

4  To test the signaling and voice path of the daughterboard, in LD 135, enter `LLBK <link #>` . If the card fails the LLBK test, replace the IP daughterboard.

5  Verify that the MAC address of the MG 1000T Expansion is correctly configured on the MG 1000T Core. In LD 117, enter `PRT IPR` to access the MAC data.

6  In LD 117, enter **PING <ip address of the MG 1000T Expansion>** to verify the network connection.

7  Re-enable any disabled components. Verify that the 100BaseT connection between the MG 1000T Core and the MG 1000T Expansion is operating by pinging the IP address of the MG 1000T Expansion(s) configured.

*Note:* The MG 1000T platform supports only Layer 2 and Layer 3 switches. Software routers are not recommended.

———— **End of Procedure** ————

# Monitoring 100BaseT link voice Quality of Service

Behavioral characteristics of the network are dependent on factors like Round Trip Delay (RTD), queueing delay in the intermediate nodes, packet loss, and available bandwidth.

The service level of each IP link is measured and maintained on the Call Server for the operation of the MG 1000Es, and on the MG 1000T Core for the operation of the MG 1000T Expansions. Information for latency and packet loss is collected from the hardware and processed. Based on system-configured thresholds, the level of service is derived and reported automatically or when the technician requests a report with the **PRT QOS <cab#>** command in LD 117. See *Software Input/Output: Administration* (553-3001-311) and *Software Input/Output: Maintenance* (553-3001-511).

Data Network Ratings (Excellent, Good, Fair, and Poor) are calculated along with the actual parameter values for the network delay. See Table 24 for the Data Network Ratings parameters for specific values of Packet Delay Variation (PDV) and packet loss.

**Table 24**
**Campus data network voice quality measurements**

|  | PDV Max<br>7.8 ms | PDV Min<br>0.5 ms | Packet loss |
|---|---|---|---|
| **Excellent** | <5 ms | <12 ms | < 0.5% |
| **Good** | 5 - 25 ms | 12 - 32 ms | 0.5 - 1% |
| **Fair** | 25 - 45 ms | 32 - 52 ms | 1 - 1.5% |
| **Poor** | >45 ms | >52 ms | > 1.5% |

The values presented in Table 24 assume that there is no echo cancellation mechanism and no particular mechanism for recovering lost packets.

The command **PRT PDV <cab#>** in LD 117 displays both the current size of the PDV buffer and the number of PDV underflows.

In addition, a warning message is printed when a parameter threshold or a combination of thresholds is reached. The user cannot configure the thresholds.

In LD 117, the command **CHG PDV <port#> <delay>** is used to configure a PDV buffer size for each link basis. The **<delay>** parameter can take values from 0.5 ms to 8 ms. This value should be initially tested at default settings. Increase the <delay> parameter value by 0.5 ms increments if an unacceptable level of voice quality is experienced ("pops and clicks"). Decrease this value if an echo is experienced. The goal is to operate with the smallest buffer possible.

The PDV buffer size for each IP connection is configured at the Call Server for the MG 1000Es and at the MG 1000T Core for the MG 1000T Expansions.

*Note:* The CS 1000E and MG 1000T must meet the minimum data networking requirements from *Converging the Data Network with VoIP* (553-3001-160).

# Clearing trunk faults

This section deals with trunk faults on either the MG 1000Es or MG 1000T. Trunk circuit cards provide the interface between the system and Central Office (CO) trunks, or between PBXs. The maintenance telephone can be used to test trunks. Two types of trunk cards are considered:

- E&M Trunk: provides four trunk units, each of which can be connected to a trunk configured to operate as one of the following:

    — E&M signaling trunk

    — Two-wire Tie trunk

    — Four-wire Tie trunk

    — Paging trunk

- Universal Trunk: provides eight trunk units, each of which can be connected to a trunk configured to operate as one of the following:

    — CO trunk

    — Direct Inward Dialing (DID) trunk

    — Two-way Tie, Dial Repeating (2DR)

    — Two-way Tie, Outgoing Automatic Incoming Dial (OAID) trunk

    — Recorded Announcement (RAN) trunk

    — Music trunk

    — Paging trunk

Trunk faults can cause problems (such as noise) on outside calls and can keep calls from entering or leaving the CS 1000E system.

## Fault clearing procedures using an SDI terminal

Refer to Table 25 for trunk fault indicators.

**Table 25**
**Trunk fault indicators**

| Indicator | Possible indications |
|-----------|---------------------|
| System messages | ERR090, 220, 270<br>OVD001—010<br>TRK messages |
| Visual indicators | Red LED lit on trunk circuit card |

### Trunk cannot make or receive calls

A user cannot make or receive calls over a trunk. An OVD system message may be received, indicating that this trunk has been disabled. Look up all system messages in the *Software Input/Output: System Messages* (553-3001-411) and follow the instructions.

If the fault does not clear, manual continuity tests can be used to isolate faults to peripheral equipment, such as E&M or Universal Trunk circuit cards. See the *Software Input/Output: Maintenance* (553-3001-511) for details on performing the tests in LD 30.

Trunk connections from the main frame to the trunk cards can be checked with a butt telephone or test telephone. Check the trunk wiring at the entry point for dial tone and progress toward the Media Gateway.

Constantly observe and look up system messages as you replace equipment.

You may need to replace:

- E&M Trunk circuit card: NT8D15

- Universal Trunk circuit card: NT8D14

- any other trunk circuit card

- NTDK20 SSC card

- trunk equipment (such as music source or paging equipment)

Table 26 provides additional instructions for isolating trunk faults in an MG 1000E or MG 1000T

**Table 26**
**Trunk cannot make or receive calls (Part 1 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| Trunk cannot make or receive calls (OVD message may be received) | Excessive traffic in the system | Additional trunk circuit cards may be required to handle the traffic in the system. |
| | Defective trunk circuit card | If the indicated circuit card is an E&M or Universal Trunk circuit card, hardware-disable then re-enable the circuit card to initiate a self-test. |
| | | If the test fails, replace the circuit card. If the test passes, perform the following: |
| | | Disconnect the wiring between the circuit card and the cross-connect terminal. |

**Table 26**
**Trunk cannot make or receive calls (Part 2 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
| | | Enable the TN by entering the following: |
| | | For MG 1000T:<br>**LD 32**<br>**ENLU c u** (where c u represent card and unit numbers) |
| | | For MG 1000E:<br>**LD 32**<br>**ENLU l s c u** (where l s c u represent loop, shelf, card and unit numbers) |
| | | Wait for an OVD message. |
| | | If an OVD message appears, replace the circuit card. |
| | | If there is no OVD message, reconnect the wiring and go to the next possible cause. |
| | Disabled or defective TN | Test the TN by entering:<br>**LD 30**<br>**UNTT c u** ("c u" represents card and unit numbers) |
| | | Test other TNs by entering:<br>**TEST** |
| | | If the test fails, replace the indicated item and test again. Otherwise, go to the next possible cause. |

**Table 26**
**Trunk cannot make or receive calls (Part 3 of 3)**

| Condition | Possible cause | Action |
|---|---|---|
|  | Defective wiring | At the main cross-connect terminal, disconnect the wiring to the CO or other trunk equipment (such as a music source or paging equipment). |
|  |  | Enable the TN and wait for an OVD message. If an OVD message appears, repair or replace the wiring to the Media Gateway. |
|  |  | If there is no OVD message, repair or replace the wiring from the cross-connect terminal to the telephone. |
|  |  | If the trunk circuit card still will not enable or there is still a trunk problem, reconnect the wiring and go to the next possible cause. |
|  | Defective trunk equipment | Make sure the CO equipment or other trunk equipment is not defective. |
|  |  | If there is no problem with this equipment, go to the next possible cause. |

# MG 1000E and MG 1000E Expander card slot assignment

Table 27 shows the TN assignments for the MG 1000E and MG 1000E Expander.

**Table 27**
**TN assignments for MG 1000E and MG 1000E Expander  (Part 1 of 4)**

| | MG 1000E | | | | MG 1000E Expander | | | |
|---|---|---|---|---|---|---|---|---|
| **Slots** | **1** | **2** | **3** | **4** | **7** | **8** | **9** | **10** |
| **TN** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** |
| MG 1000E | | | | | | | | |
| 1 | 000 0 01 | 000 0 02 | 000 0 03 | 000 0 04 | 000 0 07 | 000 0 08 | 000 0 09 | 000 0 10 |
| 2 | 000 1 01 | 000 1 02 | 000 1 03 | 000 1 04 | 000 1 07 | 000 1 08 | 000 1 09 | 000 1 10 |
| 3 | 004 0 01 | 004 0 02 | 004 0 03 | 004 0 04 | 004 0 07 | 004 0 08 | 004 0 09 | 004 0 10 |
| 4 | 004 1 01 | 004 1 02 | 004 1 03 | 004 1 04 | 004 1 07 | 004 1 08 | 004 1 09 | 004 1 10 |
| 5 | 008 0 01 | 008 0 02 | 008 0 03 | 008 0 04 | 008 0 07 | 008 0 08 | 008 0 09 | 008 0 10 |
| 6 | 008 1 01 | 008 1 02 | 008 1 03 | 008 1 04 | 008 1 07 | 008 1 08 | 008 1 09 | 008 1 10 |
| 7 | 012 0 01 | 012 0 02 | 012 0 03 | 012 0 04 | 012 0 07 | 012 0 08 | 012 0 09 | 012 0 10 |
| 8 | 012 1 01 | 012 1 02 | 012 1 03 | 012 1 04 | 012 1 07 | 012 1 08 | 012 1 09 | 012 1 10 |
| 9 | 016 0 01 | 016 0 02 | 016 0 03 | 016 0 04 | 016 0 07 | 016 0 08 | 016 0 09 | 016 0 10 |
| 10 | 016 1 01 | 016 1 02 | 016 1 03 | 016 1 04 | 016 1 07 | 016 1 08 | 016 1 09 | 016 1 10 |
| 11 | 020 0 01 | 020 0 02 | 020 0 03 | 020 0 04 | 020 0 07 | 020 0 08 | 020 0 09 | 020 0 10 |
| 12 | 020 1 01 | 020 1 02 | 020 1 03 | 020 1 04 | 020 1 07 | 020 1 08 | 020 1 09 | 020 1 10 |
| 13 | 024 0 01 | 024 0 02 | 024 0 03 | 024 0 04 | 024 0 07 | 024 0 08 | 024 0 09 | 024 0 10 |
| 14 | 024 1 01 | 024 1 02 | 024 1 03 | 024 1 04 | 024 1 07 | 024 1 08 | 024 1 09 | 024 1 10 |
| 15 | 028 0 01 | 028 0 02 | 028 0 03 | 028 0 04 | 028 0 07 | 028 0 08 | 028 0 09 | 028 0 10 |
| 16 | 028 1 01 | 028 1 02 | 028 1 03 | 028 1 04 | 028 1 07 | 028 1 08 | 028 1 09 | 028 1 10 |
| 17 | 032 0 01 | 032 0 02 | 032 0 03 | 032 0 04 | 032 0 07 | 032 0 08 | 032 0 09 | 032 0 10 |
| 18 | 032 1 01 | 032 1 02 | 032 1 03 | 032 1 04 | 032 1 07 | 032 1 08 | 032 1 09 | 032 1 10 |
| 19 | 036 0 01 | 036 0 02 | 036 0 03 | 036 0 04 | 036 0 07 | 036 0 08 | 036 0 09 | 036 0 10 |
| 20 | 036 1 01 | 036 1 02 | 036 1 03 | 036 1 04 | 036 1 07 | 036 1 08 | 036 1 09 | 036 1 10 |
| 21 | 040 0 01 | 040 0 02 | 040 0 03 | 040 0 04 | 040 0 07 | 040 0 08 | 040 0 09 | 040 0 10 |
| 22 | 040 1 01 | 040 1 02 | 040 1 03 | 040 1 04 | 040 1 07 | 040 1 08 | 040 1 09 | 040 1 10 |
| 23 | 044 0 01 | 044 0 02 | 044 0 03 | 044 0 04 | 044 0 07 | 044 0 08 | 044 0 09 | 044 0 10 |
| 24 | 044 1 01 | 044 1 02 | 044 1 03 | 044 1 04 | 044 1 07 | 044 1 08 | 044 1 09 | 044 1 10 |
| 25 | 048 0 01 | 048 0 02 | 048 0 03 | 048 0 04 | 048 0 07 | 048 0 08 | 048 0 09 | 048 0 10 |
| 26 | 048 1 01 | 048 1 02 | 048 1 03 | 048 1 04 | 048 1 07 | 048 1 08 | 048 1 09 | 048 1 10 |
| 27 | 052 0 01 | 052 0 02 | 052 0 03 | 052 0 04 | 052 0 07 | 052 0 08 | 052 0 09 | 052 0 10 |
| 28 | 052 1 01 | 052 1 02 | 052 1 03 | 052 1 04 | 052 1 07 | 052 1 08 | 052 1 09 | 052 1 10 |
| 29 | 056 0 01 | 056 0 02 | 056 0 03 | 056 0 04 | 056 0 07 | 056 0 08 | 056 0 09 | 056 0 10 |
| 30 | 056 1 01 | 056 1 02 | 056 1 03 | 056 1 04 | 056 1 07 | 056 1 08 | 056 1 09 | 056 1 10 |
| 31 | 060 0 01 | 060 0 02 | 060 0 03 | 060 0 04 | 060 0 07 | 060 0 08 | 060 0 09 | 060 0 10 |
| 32 | 060 1 01 | 060 1 02 | 060 1 03 | 060 1 04 | 060 1 07 | 060 1 08 | 060 1 09 | 060 1 10 |

**Table 27**
**TN assignments for MG 1000E and MG 1000E Expander  (Part 2 of 4)**

| | MG 1000E | | | | MG 1000E Expander | | | |
|---|---|---|---|---|---|---|---|---|
| Slots | 1 | 2 | 3 | 4 | 7 | 8 | 9 | 10 |
| TN | l s c | l s c | l s c | l s c | l s c | l s c | l s c | l s c |
| MG 1000E | | | | | | | | |
| 33 | 064 0 01 | 064 0 02 | 064 0 03 | 064 0 04 | 064 0 07 | 064 0 08 | 064 0 09 | 064 0 10 |
| 34 | 064 1 01 | 064 1 02 | 064 1 03 | 064 1 04 | 064 1 07 | 064 1 08 | 064 1 09 | 064 1 10 |
| 35 | 068 0 01 | 068 0 02 | 068 0 03 | 068 0 04 | 068 0 07 | 068 0 08 | 068 0 09 | 068 0 10 |
| 36 | 068 1 01 | 068 1 02 | 068 1 03 | 068 1 04 | 068 1 07 | 068 1 08 | 068 1 09 | 068 1 10 |
| 37 | 072 0 01 | 072 0 02 | 072 0 03 | 072 0 04 | 072 0 07 | 072 0 08 | 072 0 09 | 072 0 10 |
| 38 | 072 1 01 | 072 1 02 | 072 1 03 | 072 1 04 | 072 1 07 | 072 1 08 | 072 1 09 | 072 1 10 |
| 39 | 076 0 01 | 076 0 02 | 076 0 03 | 076 0 04 | 076 0 07 | 076 0 08 | 076 0 09 | 076 0 10 |
| 40 | 076 1 01 | 076 1 02 | 076 1 03 | 076 1 04 | 076 1 07 | 076 1 08 | 076 1 09 | 076 1 10 |
| 41 | 080 0 01 | 080 0 02 | 080 0 03 | 080 0 04 | 080 0 07 | 080 0 08 | 080 0 09 | 080 0 10 |
| 42 | 080 1 01 | 080 1 02 | 080 1 03 | 080 1 04 | 080 1 07 | 080 1 08 | 080 1 09 | 080 1 10 |
| 43 | 084 0 01 | 084 0 02 | 084 0 03 | 084 0 04 | 084 0 07 | 084 0 08 | 084 0 09 | 084 0 10 |
| 44 | 084 1 01 | 084 1 02 | 084 1 03 | 084 1 04 | 084 1 07 | 084 1 08 | 084 1 09 | 084 1 10 |
| 45 | 088 0 01 | 088 0 02 | 088 0 03 | 088 0 04 | 088 0 07 | 088 0 08 | 088 0 09 | 088 0 10 |
| 46 | 088 1 01 | 088 1 02 | 088 1 03 | 088 1 04 | 088 1 07 | 088 1 08 | 088 1 09 | 088 1 10 |
| 47 | 092 0 01 | 092 0 02 | 092 0 03 | 092 0 04 | 092 0 07 | 092 0 08 | 092 0 09 | 092 0 10 |
| 48 | 092 1 01 | 092 1 02 | 092 1 03 | 092 1 04 | 092 1 07 | 092 1 08 | 092 1 09 | 092 1 10 |
| 49 | 096 0 01 | 096 0 02 | 096 0 03 | 096 0 04 | 096 0 07 | 096 0 08 | 096 0 09 | 096 0 10 |
| 50 | 096 1 01 | 096 1 02 | 096 1 03 | 096 1 04 | 096 1 07 | 096 1 08 | 096 1 09 | 096 1 10 |
| 51 | 100 0 01 | 100 0 02 | 100 0 03 | 100 0 04 | 100 0 07 | 100 0 08 | 100 0 09 | 100 0 10 |
| 52 | 100 1 01 | 100 1 02 | 100 1 03 | 100 1 04 | 100 1 07 | 100 1 08 | 100 1 09 | 100 1 10 |
| 53 | 104 0 01 | 104 0 02 | 104 0 03 | 104 0 04 | 104 0 07 | 104 0 08 | 104 0 09 | 104 0 10 |
| 54 | 104 1 01 | 104 1 02 | 104 1 03 | 104 1 04 | 104 1 07 | 104 1 08 | 104 1 09 | 104 1 10 |
| 55 | 108 0 01 | 108 0 02 | 108 0 03 | 108 0 04 | 108 0 07 | 108 0 08 | 108 0 09 | 108 0 10 |
| 56 | 108 1 01 | 108 1 02 | 108 1 03 | 108 1 04 | 108 1 07 | 108 1 08 | 108 1 09 | 108 1 10 |
| 57 | 112 0 01 | 112 0 02 | 112 0 03 | 112 0 04 | 112 0 07 | 112 0 08 | 112 0 09 | 112 0 10 |
| 58 | 112 1 01 | 112 1 02 | 112 1 03 | 112 1 04 | 112 1 07 | 112 1 08 | 112 1 09 | 112 1 10 |
| 59 | 116 0 01 | 116 0 02 | 116 0 03 | 116 0 04 | 116 0 07 | 116 0 08 | 116 0 09 | 116 0 10 |
| 60 | 116 1 01 | 116 1 02 | 116 1 03 | 116 1 04 | 116 1 07 | 116 1 08 | 116 1 09 | 116 1 10 |
| 61 | 120 0 01 | 120 0 02 | 120 0 03 | 120 0 04 | 120 0 07 | 120 0 08 | 120 0 09 | 120 0 10 |
| 62 | 120 1 01 | 120 1 02 | 120 1 03 | 120 1 04 | 120 1 07 | 120 1 08 | 120 1 09 | 120 1 10 |
| 63 | 124 0 01 | 124 0 02 | 124 0 03 | 124 0 04 | 124 0 07 | 124 0 08 | 124 0 09 | 124 0 10 |
| 64 | 124 1 01 | 124 1 02 | 124 1 03 | 124 1 04 | 124 1 07 | 124 1 08 | 124 1 09 | 124 1 10 |
| 65 | 128 0 01 | 128 0 02 | 128 0 03 | 128 0 04 | 128 0 07 | 128 0 08 | 128 0 09 | 128 0 10 |
| 66 | 128 1 01 | 128 1 02 | 128 1 03 | 128 1 04 | 128 1 07 | 128 1 08 | 128 1 09 | 128 1 10 |
| 67 | 132 0 01 | 132 0 02 | 132 0 03 | 132 0 04 | 132 0 07 | 132 0 08 | 132 0 09 | 132 0 10 |
| 68 | 132 1 01 | 132 1 02 | 132 1 03 | 132 1 04 | 132 1 07 | 132 1 08 | 132 1 09 | 132 1 10 |
| 69 | 136 0 01 | 136 0 02 | 136 0 03 | 136 0 04 | 136 0 07 | 136 0 08 | 136 0 09 | 136 0 10 |
| 70 | 136 1 01 | 136 1 02 | 136 1 03 | 136 1 04 | 136 1 07 | 136 1 08 | 136 1 09 | 136 1 10 |

**Table 27**
**TN assignments for MG 1000E and MG 1000E Expander  (Part 3 of 4)**

| Slots | MG 1000E | | | | MG 1000E Expander | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **7** | **8** | **9** | **10** |
| **TN** | l s c | l s c | l s c | l s c | l s c | l s c | l s c | l s c |
| MG 1000E | | | | | | | | |
| 71 | 140 0 01 | 140 0 02 | 140 0 03 | 140 0 04 | 140 0 07 | 140 0 08 | 140 0 09 | 140 0 10 |
| 72 | 140 1 01 | 140 1 02 | 140 1 03 | 140 1 04 | 140 1 07 | 140 1 08 | 140 1 09 | 140 1 10 |
| 73 | 144 0 01 | 144 0 02 | 144 0 03 | 144 0 04 | 144 0 07 | 144 0 08 | 144 0 09 | 144 0 10 |
| 74 | 144 1 01 | 144 1 02 | 144 1 03 | 144 1 04 | 144 1 07 | 144 1 08 | 144 1 09 | 144 1 10 |
| 75 | 148 0 01 | 148 0 02 | 148 0 03 | 148 0 04 | 148 0 07 | 148 0 08 | 148 0 09 | 148 0 10 |
| 76 | 148 1 01 | 148 1 02 | 148 1 03 | 148 1 04 | 148 1 07 | 148 1 08 | 148 1 09 | 148 1 10 |
| 77 | 152 0 01 | 152 0 02 | 152 0 03 | 152 0 04 | 152 0 07 | 152 0 08 | 152 0 09 | 152 0 10 |
| 78 | 152 1 01 | 152 1 02 | 152 1 03 | 152 1 04 | 152 1 07 | 152 1 08 | 152 1 09 | 152 1 10 |
| 79 | 156 0 01 | 156 0 02 | 156 0 03 | 156 0 04 | 156 0 07 | 156 0 08 | 156 0 09 | 156 0 10 |
| 80 | 156 1 01 | 156 1 02 | 156 1 03 | 156 1 04 | 156 1 07 | 156 1 08 | 156 1 09 | 156 1 10 |
| 81 | 160 0 01 | 160 0 02 | 160 0 03 | 160 0 04 | 160 0 07 | 160 0 08 | 160 0 09 | 160 0 10 |
| 82 | 160 1 01 | 160 1 02 | 160 1 03 | 160 1 04 | 160 1 07 | 160 1 08 | 160 1 09 | 160 1 10 |
| 83 | 164 0 01 | 164 0 02 | 164 0 03 | 164 0 04 | 164 0 07 | 164 0 08 | 164 0 09 | 164 0 10 |
| 84 | 164 1 01 | 164 1 02 | 164 1 03 | 164 1 04 | 164 1 07 | 164 1 08 | 164 1 09 | 164 1 10 |
| 85 | 168 0 01 | 168 0 02 | 168 0 03 | 168 0 04 | 168 0 07 | 168 0 08 | 168 0 09 | 168 0 10 |
| 86 | 168 1 01 | 168 1 02 | 168 1 03 | 168 1 04 | 168 1 07 | 168 1 08 | 168 1 09 | 168 1 10 |
| 87 | 172 0 01 | 172 0 02 | 172 0 03 | 172 0 04 | 172 0 07 | 172 0 08 | 172 0 09 | 172 0 10 |
| 88 | 172 1 01 | 172 1 02 | 172 1 03 | 172 1 04 | 172 1 07 | 172 1 08 | 172 1 09 | 172 1 10 |
| 89 | 176 0 01 | 176 0 02 | 176 0 03 | 176 0 04 | 176 0 07 | 176 0 08 | 176 0 09 | 176 0 10 |
| 90 | 176 1 01 | 176 1 02 | 176 1 03 | 176 1 04 | 176 1 07 | 176 1 08 | 176 1 09 | 176 1 10 |
| 91 | 180 0 01 | 180 0 02 | 180 0 03 | 180 0 04 | 180 0 07 | 180 0 08 | 180 0 09 | 180 0 10 |
| 92 | 180 1 01 | 180 1 02 | 180 1 03 | 180 1 04 | 180 1 07 | 180 1 08 | 180 1 09 | 180 1 10 |
| 93 | 184 0 01 | 184 0 02 | 184 0 03 | 184 0 04 | 184 0 07 | 184 0 08 | 184 0 09 | 184 0 10 |
| 94 | 184 1 01 | 184 1 02 | 184 1 03 | 184 1 04 | 184 1 07 | 184 1 08 | 184 1 09 | 184 1 10 |
| 95 | 188 0 01 | 188 0 02 | 188 0 03 | 188 0 04 | 188 0 07 | 188 0 08 | 188 0 09 | 188 0 10 |
| 96 | 188 1 01 | 188 1 02 | 188 1 03 | 188 1 04 | 188 1 07 | 188 1 08 | 188 1 09 | 188 1 10 |
| 97 | 192 0 01 | 192 0 02 | 192 0 03 | 192 0 04 | 192 0 07 | 192 0 08 | 192 0 09 | 192 0 10 |
| 98 | 192 1 01 | 192 1 02 | 192 1 03 | 192 1 04 | 192 1 07 | 192 1 08 | 192 1 09 | 192 1 10 |
| 99 | 196 0 01 | 196 0 02 | 196 0 03 | 196 0 04 | 196 0 07 | 196 0 08 | 196 0 09 | 196 0 10 |
| 100 | 196 1 01 | 196 1 02 | 196 1 03 | 196 1 04 | 196 1 07 | 196 1 08 | 196 1 09 | 196 1 10 |
| 101 | 200 0 01 | 200 0 02 | 200 0 03 | 200 0 04 | 200 0 07 | 200 0 08 | 200 0 09 | 200 0 10 |
| 102 | 200 1 01 | 200 1 02 | 200 1 03 | 200 1 04 | 200 1 07 | 200 1 08 | 200 1 09 | 200 1 10 |
| 103 | 204 0 01 | 204 0 02 | 204 0 03 | 204 0 04 | 204 0 07 | 204 0 08 | 204 0 09 | 204 0 10 |
| 104 | 204 1 01 | 204 1 02 | 204 1 03 | 204 1 04 | 204 1 07 | 204 1 08 | 204 1 09 | 204 1 10 |
| 105 | 208 0 01 | 208 0 02 | 208 0 03 | 208 0 04 | 208 0 07 | 208 0 08 | 208 0 09 | 208 0 10 |
| 106 | 208 1 01 | 208 1 02 | 208 1 03 | 208 1 04 | 208 1 07 | 208 1 08 | 208 1 09 | 208 1 10 |
| 107 | 212 0 01 | 212 0 02 | 212 0 03 | 212 0 04 | 212 0 07 | 212 0 08 | 212 0 09 | 212 0 10 |
| 108 | 212 1 01 | 212 1 02 | 212 1 03 | 212 1 04 | 212 1 07 | 212 1 08 | 212 1 09 | 212 1 10 |

**Table 27**
**TN assignments for MG 1000E and MG 1000E Expander  (Part 4 of 4)**

| Slots | MG 1000E | | | | MG 1000E Expander | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **7** | **8** | **9** | **10** |
| **TN** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** | **l s c** |
| MG 1000E | | | | | | | | |
| 109 | 216 0 01 | 216 0 02 | 216 0 03 | 216 0 04 | 216 0 07 | 216 0 08 | 216 0 09 | 216 0 10 |
| 110 | 216 1 01 | 216 1 02 | 216 1 03 | 216 1 04 | 216 1 07 | 216 1 08 | 216 1 09 | 216 1 10 |
| 111 | 220 0 01 | 220 0 02 | 220 0 03 | 220 0 04 | 220 0 07 | 220 0 08 | 220 0 09 | 220 0 10 |
| 112 | 220 1 01 | 220 1 02 | 220 1 03 | 220 1 04 | 220 1 07 | 220 1 08 | 220 1 09 | 220 1 10 |
| 113 | 224 0 01 | 224 0 02 | 224 0 03 | 224 0 04 | 224 0 07 | 224 0 08 | 224 0 09 | 224 0 10 |
| 114 | 224 1 01 | 224 1 02 | 224 1 03 | 224 1 04 | 224 1 07 | 224 1 08 | 224 1 09 | 224 1 10 |
| 115 | 228 0 01 | 228 0 02 | 228 0 03 | 228 0 04 | 228 0 07 | 228 0 08 | 228 0 09 | 228 0 10 |
| 116 | 228 1 01 | 228 1 02 | 228 1 03 | 228 1 04 | 228 1 07 | 228 1 08 | 228 1 09 | 228 1 10 |
| 117 | 232 0 01 | 232 0 02 | 232 0 03 | 232 0 04 | 232 0 07 | 232 0 08 | 232 0 09 | 232 0 10 |
| 118 | 232 1 01 | 232 1 02 | 232 1 03 | 232 1 04 | 232 1 07 | 232 1 08 | 232 1 09 | 232 1 10 |
| 119 | 236 0 01 | 236 0 02 | 236 0 03 | 236 0 04 | 236 0 07 | 236 0 08 | 236 0 09 | 236 0 10 |
| 120 | 236 1 01 | 236 1 02 | 236 1 03 | 236 1 04 | 236 1 07 | 236 1 08 | 236 1 09 | 236 1 10 |
| 121 | 240 0 01 | 240 0 02 | 240 0 03 | 240 0 04 | 240 0 07 | 240 0 08 | 240 0 09 | 240 0 10 |
| 122 | 240 1 01 | 240 1 02 | 240 1 03 | 240 1 04 | 240 1 07 | 240 1 08 | 240 1 09 | 240 1 10 |
| 123 | 244 0 01 | 244 0 02 | 244 0 03 | 244 0 04 | 244 0 07 | 244 0 08 | 244 0 09 | 244 0 10 |
| 124 | 244 1 01 | 244 1 02 | 244 1 03 | 244 1 04 | 244 1 07 | 244 1 08 | 244 1 09 | 244 1 10 |
| 125 | 248 0 01 | 248 0 02 | 248 0 03 | 248 0 04 | 248 0 07 | 248 0 08 | 248 0 09 | 248 0 10 |
| 126 | 248 1 01 | 248 1 02 | 248 1 03 | 248 1 04 | 248 1 07 | 248 1 08 | 248 1 09 | 248 1 10 |
| 127 | 252 0 01 | 252 0 02 | 252 0 03 | 252 0 04 | 252 0 07 | 252 0 08 | 252 0 09 | 252 0 10 |
| 128 | 252 1 01 | 252 1 02 | 252 1 03 | 252 1 04 | 252 1 07 | 252 1 08 | 252 1 09 | 252 1 10 |

*Note:* The bottom most card slot in the Media Gateway is reserved for the SSC card.

# MG 1000T and MG 1000T Expander card slot assignment

Table 28 shows the slot assignments for the MG 1000T and MG 1000T Expander

**Table 28**
**MG 1000T and MG 1000T Expander card slot assignments**

|  | MG 1000T Core (MG 1000T 0) | | MG 1000T Expansion 1 | | MG 1000T Expansion 2 | | MG 1000T Expansion 3 | | MG 1000T Expansion 4 | |
|---|---|---|---|---|---|---|---|---|---|---|
|  | Physical card slot | Logical card slot | Physical card slot | Logical card slot | Physical card slot | Logical card slot | Physical card slot | Logical card slot | Physical card slot | Logical card slot |
| MG 1000T | 1 | 1 | 1 | 11 | 1 | 21 | 1 | 31 | 1 | 41 |
|  | 2 | 2 | 2 | 12 | 2 | 22 | 2 | 32 | 2 | 42 |
|  | 3 | 3 | 3 | 13 | 3 | 23 | 3 | 33 | 3 | 43 |
|  | 4 | 4 | 4 | 14 | 4 | 24 | 4 | 34 | 4 | 44 |
| MG 1000T Expander | 7 | 7 | 7 | 17 | 7 | 27 | 7 | 37 | 7 | 47 |
|  | 8 | 8 | 8 | 18 | 8 | 28 | 8 | 38 | 8 | 48 |
|  | 9 | 9 | 9 | 19 | 9 | 29 | 9 | 39 | 9 | 49 |
|  | 10 | 10 | 10 | 20 | 10 | 30 | 10 | 40 | 10 | 50 |

*Note:* The bottom most card slot in the Media Gateway is reserved for the SSC card.

# Clearing Terminal Server faults

One potential fault that can occur with the MRV Terminal Server is database corruption. When there is a database fault, all Terminal Server LEDs flash and the console port does not respond.

To correct this fault, configure all parameters to factory default as described in MRV procedures.

*Note:* In order to prevent database corruption from occurring in the MRV Terminal Server, never remove the Flash card or power down the Terminal Server while the Flash card LED is illuminated.

# Clearing IP Phone faults

For IP Phone fault clearing procedures, refer to *IP Phones: Description, Installation, and Operation* (553-3001-368) and *IP Line: Description, Installation, and Operation* (553-3001-365).

# Replacing equipment

## Contents

This section contains information on the following topics:

*Note 1:*  The NTAK02, NTAK10, NTAK79, NTBK50, and NTRB21 circuit cards can only be installed on the MG 1000T platform.

*Note 2:*  For detailed instructions for replacing a Media Card, refer to "Media Card maintenance" on .

# Removing CS 1000E Core Call Server cover

> **WARNING**
>
> The Call Server cover contains fragile light pipes. Be sure to remove with care. Once removed, place the cover face down to protect the light pipes.

**Procedure 8**
**Removing Call Server cover**

**1**   Simultaneously push in the spring-loaded latches located at either side of the cover and pull forward.

**2**   Be cautious of the cover's light pipes, as they are fragile. Set the cover down face first to avoid damage to the light pipes.

——— **End of Procedure** ———

## Performing a data dump (CP PII)

Before starting this procedure, make a backup copy of the customer database on a 2MB diskette using the data dump routine:

**Procedure 9**
**Performing a data dump**

**1**   Log into the system.

**2**   Load the Equipment Data Dump Program (LD 43). At the prompt, enter:

   **LD 43**        Load program

**3**   When "EDD000" appears on the terminal, enter:

   **EDD**         Begin the data dump

> **CAUTION**
>
> **Loss of Data**
>
> If the data dump does not succeed, do not continue. Contact your technical support organization. You must correct a data dump problem before the system can be upgraded.

**4**    The messages "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" will appear once the data dump is complete.

**\*\*\*\***            Exit program

——— **End of Procedure** ———

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

To access the Call Server during the replacement procedure, you can connect a terminal to the Com 1 port of the inactive CP PII Call Processor card. To communicate with the processor, you must use the following settings on the terminal:

**9600 baud, 8 data, parity none, 1 stop bit, full duplex, XOFF**

If you are using only one terminal, switch the connection from Core to Core as needed.

Alternatively, you can connect to either Call Server through the Terminal Server.

## Performing a data dump (CP PIV)

**Procedure 10**
**Performing a data dump to backup the customer database:**

**1**    Log into the system.

**2**    Insert a CF card into the active Call Server RMD slot to back up the database.

**3**    Load the Equipment Data Dump Program (LD 43). At the prompt, enter:

   **LD 43**         Load program.

   **.**             EDD

**4**    When "EDD000" appears on the terminal, enter:

   **EDD**           Begin the data dump.

> ⚠️ **CAUTION**
>
> **Loss of Data**
>
> If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

**5**    When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter:

   **\*\*\*\***         Exit program

———————— **End of Procedure** ————————

# Replacing the NT4N64 CP PII Call Processor card

This section describes how to replace the NT4N64 CP PII Call Processor card.

**Procedure 11:**
**Replacing the NT4N64 CP PII Call Processor card**

1   Check the System Utility card maintenance display to verify that the Call Server containing the CP PII card to be replaced is inactive.

    **a.**  If the Call Server containing the CP PII card is active, switch Call Servers in LD 135:

| | |
|---|---|
| **LD 135** | To load the program. |
| **SCPU** | Switch Core (if necessary). |

2   In LD 135, split the CPU Cores:

    **SPLIT**

3   Remove all cables connected to the CPU being replaced.

4   Use a small-bladed screwdriver to remove the screws from the CP PII card.

5   To remove the card, hold the card by the faceplate latches and gently pull it out of the slot.

6   To install the replacement card, hold it by the faceplate latches and gently push it into the slot until the connectors make contact with the backplane.

7   Gently push the latches forward to set the card and lock it in place.

---

⚠️ **CAUTION**
**Damage to Equipment**
Never force the card into the slot. It the card gets stuck, remove it and try again.

---

8   Use a small-bladed screwdriver to replace the screws on the card.

**9**    Replace all cables on the replaced CP PII card.

---

### IMPORTANT!

Before you continue with this procedure, you must reinstall the software from CD-ROM. For more information about reinstallation of this software, see *Communication Server 1000E: Installation and Configuration* (553-3041-210), Release 4.0.

---

**10**    After the inactive Call Server reloads, check status in LD 135:

　　**STAT CPU**

**11**    In LD 135, on the active Call Server, rejoin the two CP PII cards:

　　**JOIN**

**12**    After the disk sync and memory sync complete, enter the following in LD 135:

　　**STAT CPU**　　To check for normal system operation.

**13**    In LD 135, verify that the replaced CP PII card can control call processing:

　　**SCPU**　　　To check replaced CP PII.

**14**    Switch Call Server back, if necessary.

───────────── **End of Procedure** ─────────────

# Replacing the NT4N39AA CP PIV Call Processor card

This section describes how to replace the NT4N39AA CP PIV Call Processor card.

**Procedure 12:**
**Replacing the NT4N39AA CP PIV Call Processor card**

**1**    Check the System Utility card maintenance display to verify that the Call Server containing the CP PIV card to be replaced is inactive.

    **a.**    If the Call Server containing the CP PIV card is active, switch Call Servers in LD 135:

|  |  |
|---|---|
| **LD 135** | To load the program. |
| **SCPU** | Switch Core (if necessary). |

**2**    In LD 135, split the CPU Cores:

    **SPLIT**

**3**    Remove all cables connected to the CPU being replaced.

**4**    Use a small-bladed screwdriver to remove the screws from the CP PIV card.

**5**    To remove the card, hold the card by the faceplate latches and gently pull it out of the slot.

**6**    To install the replacement card, hold it by the faceplate latches and gently push it into the slot until the connectors make contact with the backplane.

**7**    Gently push the latches forward to set the card and lock it in place.

| | |
|---|---|
| ⚠ | **CAUTION**<br>**Damage to Equipment**<br>Never force the card into the slot. It the card gets stuck, remove it and try again. |

**8**    Use a small-bladed screwdriver to replace the screws on the card.

**9**    Replace all cables on the replaced CP PIV card.

---

### IMPORTANT!

Before you continue with this procedure, you must reinstall the software from compact flash. For information about reinstallation of this software, see *Communication Server 1000E: Installation and Configuration* (553-3041-210), Release 4.5.

---

**10**    After the inactive Call Server reloads, check the CPU status in LD 135:

   **STAT CPU**

**11**    In LD 135, on the active Call Server, rejoin the two CP PIV cards:

   **JOIN**

**12**    After the disk sync and memory sync complete, enter the following in LD 135:

   **STAT CPU**        To check for normal system operation.

**13**    In LD 135, verify that the replaced CP PIV card can control call processing:

   **SCPU**            To check replaced CP PIV.

**14**    Switch Call Server back, if necessary.

——————————— **End of Procedure** ———————————

# Replacing the NT4N48 System Utility card

This section describes how to replace the NT4N48 System Utility card.

---

**IMPORTANT!**

With CS 1000E, the System Utility card minimum vintage is
NT4N48BA.

---

**Procedure 13:**
**Replacing the NT4N48 System Utility card**

**1**    Check the System Utility card maintenance display to verify that the Call
Server containing the CP PII card to be replaced is inactive.

    **a.**    If the Call Server containing the System Utility card is active, switch
Call Servers in LD 135:

        **LD 135**       To load the program.

        **SCPU**        Switch Core (if necessary).

**2**    In LD 135, split the Call Servers:

    **SPLIT**

**3**    In LD 135, on the inactive Call Server, software-disable the System Utility
card:

    **DIS SUTL c 15**  Disable the System Utility card, where:
                             $c$ = Call Server number (0 or 1)

**4**    Hardware-disable the System Utility card: configure the faceplate switch
to DIS.

**5**    Use a small-bladed screwdriver to remove the screws from the System
Utility card.

**6**    To remove the card, hold the card by the faceplate latches and gently pull
it out of the slot.

**7**    Before you install the new System Utility card, hardware-disable it:
configure the faceplate switch to Dis.

**8**    Ensure the security device has been installed on the card.

**9**    Ensure the switch setting for core side is configured appropriately (for Call Server 0 or Call Server 1).

**10**    To install the replacement card, hold the card by the faceplate latches and gently push it into the slot until the connectors make contact with the backplane.

**11**    Gently push the latches forward to set the card and lock it in place.

> ⚠️ **CAUTION**
> **Damage to Equipment**
> Never force the card into the slot. It the card gets stuck, remove it and try again.

**12**    Use a small-bladed screwdriver to tighten the screws on the card.

**13**    Hardware-enable the System Utility card: configure the faceplate switch to ENB.

**14**    In LD 135, software-enable the System Utility card:

**ENL SUTL c 15**   Enable the System Utility card, where:
c = Call Server number (0 or 1)

**15**    In LD 135, check status:

**STAT SUTL c 15**   Check the System Utility card status, where:
c = Call Server number (0 or 1)

**16**    In LD 135, on the active Call Server, rejoin the two Call Servers:

**JOIN**

——————————— **End of Procedure** ———————————

# Replacing the NTDU67 Drive Carrier card (CP PII only)

This section describes how to replace the NTDU67 Drive Carrier card.

See *Software Input/Output: Administration* (553-3001-311) for a description of all maintenance commands, and *Software Input/Output: System Messages* (553-3001-411) for interpreting system messages.

> **CAUTION**
> **Service Interruption**
> At some point in this procedure, the system will warm start, causing a momentary interruption in call processing.

**Procedure 14**
**Replacing the NTDU67 Drive Carrier card**

**1** Check the Drive Carrier card maintenance display to verify that the Call Server containing the Drive Carrier card to be replaced is inactive.

   **a.** If the Call Server containing the Drive Carrier card is active, switch cores in LD 135:

   **LD 135**          To load the program.

   **SCPU**           Switch Core (if necessary).

**2** In LD 135, split the CPU Cores:

   **SPLIT**

**3** Power down the Call Server using the power switch at the right rear of the Call Server.

**4** Use a small-bladed screwdriver to remove the four screws from the Drive Carrier card.

**5** Unhook the locking devices and remove the Drive Carrier card.

**6** Put the Drive Carrier card being replaced into a static bag and box.

**7** Insert the new Drive Carrier card into the Call Server slot.

**8** Lock the locking devices by pushing them gently towards the faceplate.

**9** Use a small-bladed screwdriver to tighten the screws on the Drive Carrier card.

10  Press the Reset button on the CP PII Call Processor card.

Once the keycode is validated against the Security Device, the Install menu is displayed.

11  Choose **<b> - To Install Software, Database, CP-BOOTROM** from the Install Menu.

12  Install the Operating Software from the Install Disk. See *Communication Server 1000E: Upgrade Procedures* (553-3041-258). Then install the Customer Database.

13  In LD 135, check status:

**STAT CMDU**        This checks the Drive Carrier card status

14  In LD 135, on the active Call Server, rejoin the two Call Servers:

**JOIN**

———————— **End of Procedure** ————————

# Replacing the NTDU64 alarm/fan module

This section describes how to replace the alarm/fan module.

**Procedure 15:**
**Replacing the NTDU64 alarm/fan module**

*Note:* The alarm/fan module can be replaced without powering down the Call Server.

1  Unhook the locking devices on the alarm/fan module.

2  Pull the alarm/fan module out of the Call Server. (See Figure 13 on page 131).

**Figure 13**
**Alarm/fan module**



3   Insert the replacement alarm/fan module into the vacated slot and hook
     the locking devices.

4   Use a Phillips screwdriver to tighten the screws on the alarm/fan module.

———————    **End of Procedure**    ———————

# Replacing the NTDU65 power supply module

This section describes how to replace the Call Server power supply module.

**Procedure 16**
**Replacing the NTDU65 power supply module**

1   Turn off power to the Call Server using the switch located at the rear right
     of the Call Server.

2   Also at the rear of the Call Server, unplug the power cord.

3   Loosen the locking screw located on the front of power supply.

4   Unseat the power supply module by pulling on the module handle.

5    Pull the power supply out of the Call Server. (See Figure 14)

**Figure 14**
**Power supply module**
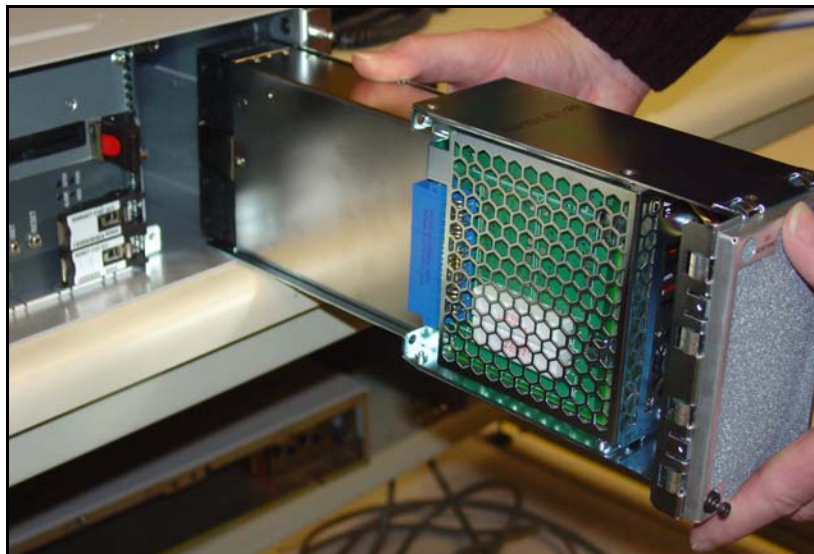


6    Before you insert the power module into the Call Server, configure the power supply switch on the rear of the module to OFF (down).

7    Insert the replacement power supply into the vacated slot and ensure it is well-seated.

8    Use a Phillips screwdriver to tighten the locking screw on the power supply.

9    Reattach the power cord at the rear of Call Server and reconnect to the power source. Turn on power to the power supply module.

10   Tag defective equipment with a description of the problem, and package it for return to a repair center.

——————————————— **End of Procedure** ———————————————

Figure 15 shows the Call Server power module air filter (P06094950). It consists of one aluminium frame and foam insert. The air filter foam kit (N0003712) contains ten replacement foam inserts.

**Figure 15**
**CS 1000E power supply air filter**



Procedure 17 describes how to clean and replace the air filter.

**Procedure 17**
**Cleaning and replacing the power supply air filter**

> *Note:*  The power supply can remain powered on during this procedure.

1    To remove the power supply air filter, gently unsnap the filter from the front of the power supply module. If the aluminium frame is damaged, then replace the filter.

2    To remove the air filter foam, unsnap the frame that contains the filter foam insert and gently pull the foam insert loose from the frame. If the foam is damaged, then replace the foam insert.

3    To clean the foam insert, rinse it with clean water under a tap or carefully vacuum it. After rinsing, allow the foam to dry thoroughly before reinstalling in the frame.

4    To re-install the air filter, replace the foam insert into the aluminium frame and gently snap the aluminium frame back into the small slots on the front of the power supply module.

———————————— **End of Procedure** ————————————

# Accessing Media Gateway internal components

This procedure describes how to access components in the Media Gateway and Expander. To remove the front cover for access to terminal components, follow the steps in Procedure 18.



**CAUTION WITH ESDS DEVICES**
To avoid card damage from static discharge, wear a properly connected antistatic wrist strap.

**Procedure 18**
**Removing the front cover for access to internal components**

1    If the front cover lock latches are in their locked position, use a flat screwdriver to slide the icon away from the latch. Refer to Figure 16.

**Figure 16**
**Inserting screwdriver in slot**
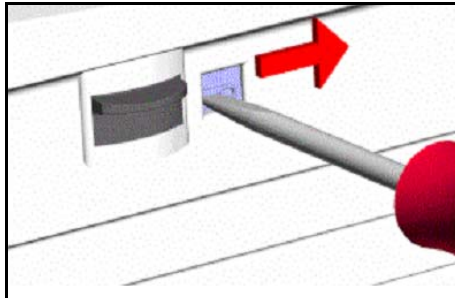


2    Simultaneously slide both spring-loaded latches toward the bottom of the cabinet and pull forward. Then lift the cover upward to remove it from the cabinet. Refer to Figure 17 on .

*Note:* The bottom of the front cover is supported but not secured to the cabinet. Be careful not to drop it.

**Figure 17**
**Depressing latches and pulling back on front cover**



———— **End of Procedure** ————

# Replacing the NTAK02 SDI/DCH circuit card

To replace the NTAK02 SDI/DCH circuit card, follow the steps in Procedure 19.

**Procedure 19**
**Replacing the NTAK02 SDI/DCH circuit card**

1   If the following circuit cards are configured, disable them in the following overlays:

    SDI    **LD 48**

    DCHI   **LD 96**

    The system can initialize if users do not perform this step.

2   Hold the SDI/DCH circuit card by the lock latches, unlock the latches, and slide the circuit card out of the Media Gateway.

3   Verify the settings of the switches and jumper plugs on the replacement circuit card and correct any settings that need to be changed.

    Ensure the settings are the same as the existing circuit card. For information about settings refer to the *Communication Server 1000E: Installation and Configuration* (553-3041-210).

4   Hold the SDI/DCH circuit card by the lock latches and slide it into its assigned slot until it connects with the backplane.

5   Secure the lock latches on the circuit card.

6   If the following circuit cards have been previously disabled, enable them in the following overlays:

    SDI    **LD 48**

    DCHI   **LD 96**

──────────────── **End of Procedure** ────────────────

# Replacing the NTAK79 or NTBK50 2.0 Mbit PRI card

To replace the NTAK79 or NTBK50 2.0 Mbit PRI card, follow the steps in Procedure 20.

**Procedure 20**
**Replacing the NTAK79 or NTBK50 2.0 Mbit PRI card**

**1**   If the card is an NTAK79, or is an NTBK50 with the NTAK93 DCHI daughterboard attached, disable the associated D-channel using the following overlay and commands:

   **LD 96**       **DIS DCH X**

   If the card is an NTBK50 with the NTBK51 DDCH daughterboard attached, disable the associated downloadable D-channel using the following overlay and commands:

   **LD 96**       **DIS DCH X**

   **LD 96**       **DIS MSDL X**

**2**   Disable the Clock Controller using these commands:

   **LD 60**       **DIS CC 0**

**3**   Disable the PRI pack using these commands:

   **LD 60**       **DIS L X**

   *Note:*  The LEDs on the front of the card change from green (enabled) to red (disabled.) In order for this to happen, the DIS MSDL command must be used, as in step 1.

**4**   Hold the circuit card by the lock latches, unlock the latches, and slide the circuit card out of the Media Gateway. If required, remove any daughterboards which can be attached. See Procedure 21 on .

**5**   On the replacement PRI circuit card, configure any switches and install any daughterboards as required. Hold the card by the lock latches and slide it into its assigned slot until it connects with the backplane.

**6**   Enable the Clock Controller and the PRI in their corresponding overlays:

   **LD 60**       **ENL CC 0**

   **LD 60**       **ENLL X**

   The associated DCHI/DDCH will automatically enable.

**7**  Check the tracking of the Clock Controller with the following overlay:

**LD 60        SCK 0**

If it is not tracking or is not locked, use the following commands to track:

**LD 60        TRCK PCK/SCLK**

————————————— **End of Procedure** —————————————

## Removing daughterboards from the NTBK50 card

Because of the physical layout of the motherboards and daughterboards, remove the NTAK20 before the NTAK93/NTBK51. To remove the NTAK20 and NTAK93/NTBK51 from the NTBK50 card, follow the steps in Procedure 21.

**Procedure 21**
**Removing the NTAK20 and NTAK93/NTBK51 from the NTBK50 card**

**1**  Starting at the two corners opposite the connector, gently lift each corner out of the locking groove of the standoff.

**2**  At the two corners adjacent to the connector, gently lift the entire side until the mounting holes are clear of the locking groove of the standoff.

**3**  To remove the connector pins, grasp the edge of the board adjacent to the connector and lift gently.

————————————— **End of Procedure** —————————————

If more than one NTBK50 card is installed, the additional cards may not carry daughterboards, depending on the system configuration. At least one NTAK20 for each system is required.

## Mounting the daughterboards

Work on a flat, static-free surface when mounting or removing daughterboards. To install the NTAK93 and NTBK51 daughterboard before the NTAK20 daughterboard, follow the steps in Procedure 22.

**Procedure 22**
**Installing the NTAK93/NTBK51 daughterboard before the NTAK20 daughterboard**

1   Visually inspect the connector pins on the underside of the daughterboard. Realigned bent pins prior to mounting.

2   Place the NTBK50 down flat on an antistatic pad.

3   From an overhead view, with the daughterboard parallel above the NTBK50 and the connector pins aligned over the connector sockets, line up the mounting holes on the daughterboard with the tops of the standoffs on the NTBK50.

4   Lower the daughterboard onto the NTBK50, keeping the standoffs in line with all four holes, until the holes rest on the tops of the four standoffs.

5   If more than a very slight amount of pressure is required at this point, the connector pins may not be aligned with the connector socket. If so, lift the daughterboard off the NTBK50 and return to step 2.

6   Apply pressure along the edge of the board where the connector is located until the standoffs at the two corners adjacent to the connector snap into a locked position. Then press down on the two corners on the opposite until they lock into place.

—————————————— **End of Procedure** ——————————————

# Replacing the NTAK10 or NTRB21 circuit cards (DTI applications)

To replace the NTAK10 or NTRB21 when configured as a Digital Trunk Interface (DTI), follow the steps in Procedure 23.

**Procedure 23**
**Replacing the NTAK10 or NTRB21 when configured as a DTI**

**1**    Disable the Clock Controller by using the command:

    **LD 60**        **DIS CC 0**

**2**    Disable the DTI pack by using the command:

    **LD 60**        **DISL X**

**3**    Hold the circuit card by the lock latches, unlock the latches, and slide the circuit card out of the Media Gateway. If required, remove any daughterboards attached to the card.

**4**    On the replacement DTI circuit card, configure any switches and install any daughterboards as required. Hold the replacement DTI circuit card by the lock latches and slide it into its assigned slot until it connects with the backplane.

**5**    Enable the Clock Controller (if on the DTI) and the DTI in their corresponding overlays:

    **LD 60**        **ENL CC 0**

    **LD 60**        **ENLL  X**

**6**    Check the tracking of the Clock Controller with the following overlay:

    **LD 60**        **SSCK 0**

If it is not tracking or is not locked, use the following commands to start tracking.

    **LD 60**        **TRCK PCK/SCLK**

———————————— **End of Procedure** ————————————

# Replacing equipment cards

Use Procedure 24 to replace Intelligent Peripheral Equipment (IPE) cards, including the following:

- NT8D02 Digital Line Card

- NT8D09 Analog Message Waiting Line Card

- NT8D14 Universal Trunk Card

- NT8D15 E&M Trunk Card

See the *Software Input/Output: Maintenance* (553-3001-511) and the *Software Input/Output: System Messages* (553-3001-411) for a description of all maintenance commands and system messages.

To replace equipment cards, follow the steps in Procedure 24.

**Procedure 24**
**Replacing equipment cards**

1  Software-disable the card by using these commands:

   **LD 32**

   **DISC c** ("c" is the card number)

2  Unhook the locking devices on the card; pull it out of the card cage.

3  Configure option switches or jumper plugs to the same settings as those on the card you removed:

4  Insert the replacement card into the vacated slot and hook the locking devices.

   When cards are installed, the red LED on the faceplate flashes as a self-test runs. If the self-test completes successfully, the card is automatically enabled (if it is configured in software) and the LED goes out. If the self-test fails, the LED lights steadily and remains lit.

**5**    Software-enable the card by entering:
     **ENLC c**
     When the process is complete, a system response will appear.
     End the session:
     **\*\*\*\* (star symbols)**

─────────── **End of Procedure** ───────────

# Replacing the NTDK20 SSC card

To replace the NTDK20 SSC card, minimum vintage HA, follow the steps in Procedure 25.

**Procedure 25**
**Replacing the NTDK20 SSC card**

**1**    Perform an **EDD** backup in **LD 43**.

**2**    Turn the Media Gateway power supply off.

**3**    Hold the NTDK20 SSC circuit card by the lock latches, unlock the latches, and slide the circuit card out of the Media Gateway.

**4**    Remove the software daughterboard. Install the software daughterboard and the security device on the replacement NTDK20 SSC card.

     Refer to "Replacing the NTTK25 Software Daughterboards" on .

**5**    Transfer any IP daughterboards used to the replacement NTDK20 SSC:

     • NTDK83

     • NTDK99

     Refer to "Replacing IP daughterboards" on .

**6**    Hold the NTDK20 SSC circuit card by the lock latches and slide it into slot 0 of the Media Gateway until it connects with the backplane.

**7**    Secure the lock latches on the circuit card.

**8**    Set the breaker on the Media Gateway power supply to the on position.

─────────── **End of Procedure** ───────────

# Replacing the NTTK25 Software Daughterboards

This procedure is equivalent to a new system installation. It requires a PC Card or an external PC Card drive to back up the configuration files, the current keycodes, feature set, License parameters, and a Software Delivery Card with the current version of software.

> **WARNING**
>
> Do not format the PC Card using a Windows application. As well, only format the PC Card using the type of card on which it will be running. For example, a PC Card formatted using an SSC card is only readable by the SSC card. It is not readable by a Media Card.

## Software daughterboard compatibility

There are two types of software daughterboards:

- NTTK25 - provided with the system

- NTTK13 - still supported

### Replacement of a software daughterboard

To replace the software daughterboard, follow the steps in Procedure 26.

**Procedure 26**
**Replacing the software daughterboard**

1   Log in and back up the configuration files.

2   If required, update the Boot Code on the SSC card.

3   Power down the system.

4   Remove the NTDK20 SSC card from the Media Gateway.

5   Lift the daughterboard up, and away from the NTDK20 SSC card until it is clear of the connector assembly.

6   Position the replacement software daughterboard.

7   Seat the software daughterboard on the NTDK20 SSC card.

8   Reinstall the NTDK20 SSC card into slot 0 of the Media Gateway.

**9**    Power up the system.

**10**    Complete the steps required to perform a "New System Installation".

**11**    Restore the backup configuration files.

——————————    **End of Procedure**    ——————————

## Unscheduled replacement of a software daughterboard

To replace a failed software daughterboard, follow the steps in Procedure 27.

Configuration files will only be as current as the last Data Dump (EDD).

**Procedure 27**
**Replacing a failed software daughterboard**

**1**    **Decision Point**. If the system is down, go to step 6.
If the system is operating, go to step 2.

**2**    If users back up to a PC, use the XBK command in LD 143.

**3**    Perform a Data dump.

   •    Use LD 43.

   •    Enter command EDD.

**4**    Disable all DCH using LD 60.

**5**    Disable all AML links using LD 48.

**6**    To change the software daughterboard:

   **a.**    Power down the system.

   **b.**    Remove the SSC from the Media Gateway.

   **c.**    Remove the software daughterboard from the SSC card and replace
with a replacement software daughterboard of the same family.
Example: The NTSK11AF, providing the vintage is the same.

   **OR**

   If the new card is not the same vintage but the same base board, use
a Software Delivery Card to install the software daughterboard.
Proceed to step 7 after system power up.

**7**  If the new software daughterboard is the same vintage as the old one, a Software Delivery Card is not needed for the install. After power up, the card will come up in the main menu. From the Install menu, select item 1 "New System Installation - From software daughterboard". Proceed to step 10.

**8**  If an NTTK25 or a programmed daughterboard of a different vintage is being used, insert a Software Delivery card with the same release and issue of software as is being replaced into slot A of the SSC card. The user can then log into the system.

**9**  From the main menu, select item 4 "New System Installation - From Software Delivery Card".

**10**  Proceed with the Installation Menu choices as described in *Communication Server 1000E: Installation and Configuration* (553-3041-210). When prompted for the choice of database, select item 2 "Basic Configuration".

   *Note:*  It is important to choose "Basic Configuration", otherwise the system can invoke an EDD after loading the new software which can overwrite the customer data stored on the CPU.

**11**  Once the software is installed and the system is rebooted, the customers' backup configuration files must be restored:

- If you use a PC to restore, use the RBK command in LD 143.

- Login and load LD 143.

- Need to perform an upgrade.

- From the Main Menu, select item 3 "Utilities".

- Select item 1 "Restore".

- Select item 1 "Backup Flash Drive".

- Confirm Restore database from the Backup Flash drive.

- Reboot system by setting the power supply off, and then on.

———————————— **End of Procedure** ————————————

# Replacing IP daughterboards

To replace the NTDK83 or NTDK99 IP Daughterboards, follow the steps in Procedure 28.

**Procedure 28**
**Replacing the NTDK83 or NTDK99 IP Daughterboard**

1   Turn the power supply and reserve power off.

2   Unplug the IP cable from the Media Gateway bulkhead.

3   Unplug and remove the NTDK20 SSC from the Media Gateway and place on a clean flat surface.

4   Disconnect the cable from the IP daughterboard and the LED connector if used.

5   Detach the IP daughterboard.

6   Position the replacement IP daughterboard.

7   Seat the replacement IP daughterboard into the same slot you removed the defective IP daughterboard from on the NTDK20 SSC card.

8   Reconnect the IP cable. Ensure that the cable is fully inserted into the connector. A click should be heard when the cable is fully engaged.

9   Reconnect the LED connector that was disconnected in step 4 if necessary.

10  Record the MAC address of the new IP daughterboard installed on the SSC in the Media Gateway. When necessary use LD 117 to configure the new MAC address for the Media Gateway. See *Communication Server 1000E: Installation and Configuration* (553-3041-210).

11  Reinstall the NTDK20 SSC circuit card in slot 0 of the Media Gateway.

12  Reconnect the IP cable to the Media Gateway bulkhead.

13  Power up the system.

———————————    **End of Procedure**    ———————————

# Media Card maintenance

## Contents

This section contains information on the following topics:

## Introduction

This chapter provides information on the maintenance functions of the Media Card. Where reference is made to Optivity Telephone Management (OTM), the latest version, OTM 2.2 (or later), is required.

*Note:* Check the Nortel web site for information on the latest software, firmware and application releases. Refer to *IP Line: Description, Installation, and Operation* (553-3001-365) for verification steps.

## Faceplate maintenance display codes

The Media Card maintenance display provides the diagnostic status of the card during power-up, its operational state when in service, and error information on the functional state of the card.

During power-up, the card performs multiple self-tests, including:

- internal RAM test

- ALU test

- address mode test

- Boot ROM test, timer test

- external RAM test

If any of these tests fail, the card enters a maintenance loop, and no further processing is possible. A failure message is printed on the display to indicate which test failed. For more information and a list of the maintenance display codes, see *IP Line: Description, Installation, and Operation* (553-3001-365).

If the maintenance display shows a persistent T:20, indicating a software failure, and this occurs after the card is reset during a software download procedure, call the Nortel technical support for assistance in downloading new software onto the card.

If a test fails on the Media Card, F:XX appears on the Hex display for three seconds after the T:13 (Testing SEEPROM) message. For example, if the 8051 co-processor test failed, F:05 is displayed on the Media Card faceplate. If more than one test fails, the message indicates the first failure.

Table 29 provides a list of related normal and fault display codes for the Media Card.

**Table 29**
**Media Card faceplate maintenance display codes (Part 1 of 2)**

| Normal code | Corresponding Fault code | Message |
|:---:|:---:|---|
| T:00 | F:00 | Initialization |
| T:01 | F:01 | Testing Internal RAM |
| T:02 | F:02 | Testing ALU |
| T:03 | F:03 | Testing address modes |

**Table 29**
**Media Card faceplate maintenance display codes (Part 2 of 2)**

| Normal code | Corresponding Fault code | Message |
|---|---|---|
| T:04 | F:04 | Testing watchdog |
| T:05 | F:05 | Testing 8051 co-processor |
| T:06 | F:06 | Testing timers |
| T:07 | F:07 | Testing external RAM |
| T:08 | F:08 | Testing security device |
| T:09 | F:09 | Programming timeswitch FPGA |
| T:10 | F:10 | Programming ISPDI FPGA |
| T:11 | F:11 | Testing host dual port RAM |
| T:12 | F:12 | Testing DS-30 dual port RAM |
| T:13 | F:13 | Testing SEEPROM |
| T:14 | F:14 | Booting Host processor, waiting for response with self-test information |
| T:15 | F:15 | Not used at present |
| T:16 | F:16 | Not used at present |
| T:17 | F:17 | Not used at present |
| T:18 | F:18 | Not used at present |
| T:19 | F:19 | Not used at present |
| T:20 | F:20 | Waiting for application start-up message from Host processor |
| T:21 | F:21 | CardLAN enabled, waiting for request configuration message |
| T:22 | F:22 | CardLAN operational, A07 enabled, display now under host control |

If the IXP encounters any failures during its initialization, an H:XX error code is displayed. Table 30 shows the list of error codes:

**Table 30**
**List of error codes for the Media Card**

| Code | Description |
|------|-------------|
| H:00 | Host Processor not booting |
| H:01 | SDRAM test failure |
| H:02 | SRAM test failure |
| H:04 | PC Card device failure |
| H:08 | Network interface failure |
| H:10 | CS 1000E interface failure |
| H:20 | DSP interface failure |
| H:40 | NVRAM/EEPROM interface failure |
| H:80 | PCM connector failure |

## Media Card error messages

When an error or specific event occurs, SNMP sends an alarm trap to OTM or any SNMP manager that is configured in the SNMP Manager's list in the ITG Card properties. It also puts the system error message into the error log file containing error messages.

View the error log in OTM IP Line 3.0 application by clicking the **Open Log File** button on the **Maintenance** tab of the **ITG Card Properties**. You can also view the log file in any text browser after uploading it to an FTP host using the LogFilePut command.

Error messages with a severity category of "Critical" are displayed on the maintenance faceplate in the form: "**Gxxx**" or "**Sxxx**", where **xxx** is the last three digits of the ITG or ITS message. Table 31 lists the critical ITG messages and Table 32 on page 155 lists the critical ITS messages.

For a complete listing of other error messages, see *Software Input/Output: System Messages* (553-3001-411).

**Table 31**
**Critical ITG Error messages (Part 1 of 3)**

| Maintenance Display | Corresponding Critical Error Message | Description |
|---|---|---|
| G000 | ITG1000 | Card (re)booted. |
| G001 | ITG1001 | Task spawn failure <name>. |
| G002 | ITG1002 | Memory allocation failure. |
| G003 | ITG1003 | File IO error <operation> <object> <errno> <errtext>. |
| G004 | ITG1004 | Network IO error <operation> <object> <errno> <errtext>. |
| G005 | ITG1005 | Message queue error <operation> <object> <errno> <errtext>. |
| G006 | ITG1006 | Unexpected state encountered <file> <line> <state>. |
| G007 | ITG1007 | Unexpected message type <file> <line> <msg>. |
| G008 | ITG1008 | Null pointer encountered <file> <line> Name of pointer. |
| G009 | ITG1009 | Invalid block <file> <line> Type of block. |
| G010 | ITG1010 | Unable to locate data block <file> <line> Type of block. |
| G011 | ITG1011 | File transfer error: <operation> <file> <host>. |
| G012 | ITG1012 | Module initialization failure: <moduleName>. |
| G013 | ITG1013 | Ethernet receiver buffer unavailable, packet(s) discarded. |
| G014 | ITG1014 | Ethernet carrier: <ifName> <state>. |

**Table 31**
**Critical ITG Error messages (Part 2 of 3)**

| Maintenance Display | Corresponding Critical Error Message | Description |
|---|---|---|
| G015 | ITG1015 | Ethernet device failure: <ifName>. |
| G016 | ITG1016 | Unused alarm value: 16. |
| G017 | ITG1017 | Invalid or unknown SSD message: <ssdType> <TN> <msg>. |
| G018 | ITG1018 | Unused alarm value: 18. |
| G019 | ITG1019 | DSP channel open failure <channel>. |
| G020 | ITG1020 | Configuration error <param> <value> <reason>. |
| G021 | ITG1021 | DSP successfully reset <dsp>. |
| G022 | ITG1022 | DSP channel not responding, channel disabled <channel>. |
| G023 | ITG1023 | DSP device failure: <dsp> <errnum> <errtext>. |
| G024 | ITG1024 | Unused alarm value: 24. |
| G025 | ITG1025 | DSP download: <dsp> <reason>. |
| G026 | ITG1026 | Unused alarm value: 26. |
| G027 | ITG1027 | DSP memory test: <dsp> <reason>. |
| G028 | ITG1028 | Voice packet loss: <channel> <%packetLoss> <direction> <dstAddr>. |
| G029 | ITG1029 | Error in DSP task <file> <line> <errno> <errtext>. |
| G030 | ITG1030 | Allocation failure in DSP memory pool. |
| G031 | ITG1031 | Invalid codec number: <codec>. |
| G032 | ITG1032 | Attempt to open a DSP that is already open: <channel>. |

**Table 31**
**Critical ITG Error messages (Part 3 of 3)**

| Maintenance Display | Corresponding Critical Error Message | Description |
|---|---|---|
| G033 | ITG1033 | Failed to send data to DSP channel: <channel>. |
| G034 | ITG1034 | DSP channel unexpectedly closed: <channel>. |
| G035 | ITG1035 | Encountered and unexpected open DSP channel, closed it: <channel>. |
| G036 | ITG1036 | Call Server communication link. |
| G037 | ITG1037 | Wrong image downloaded. Binary was created for <cardType> card. |
| G038 | ITG1038 | IPLlogin protection (login available/locked). |
| G039 | ITG1038 | Bad DSP channel <channel id>. |
| G040 | ITG1040 | Last reset reason for card: <reasonString> where the reason String can be: Reboot command issued; Watchdog Timer Expired; Manual reset; Internal XA problem; or Unkown. |

**Table 32**
**Critical ITS Error messages (Part 1 of 2)**

| Maintenance Display | Corresponding Critical Error Message | Description |
|---|---|---|
| S000 | ITS1000 | VTI function call timeout. |
| S001 | ITS1001 | User terminal registration failed. <ip> <hwid> <errno> <errtext>. |
| S002 | ITS1002 | Connect service activation error <reason>. |
| S003 | ITS1003 | Duplicate master <node> <ip1> <ip2>. |
| S004 | ITS1004 | Invalid node ID <ip> <hwid>. |

**Table 32**
**Critical ITS Error messages (Part 2 of 2)**

| Maintenance Display | Corresponding Critical Error Message | Description |
|---|---|---|
| S005 | ITS1005 | Corrupted node ID/TN field <ip> <hwid>. |
| S006 | ITS1006 | Received corrupted UNIStim message <message dump>. |
| S007 | ITS1007 | Received unknown UNIStim message <message dump>. |
| S008 | ITS1008 | Terminal connection status: <ip> <status>. |
| S009 | ITS1009 | Call Server communication link:<state>. |
| S010 | ITS1010 | Terminal doesn't support Codec:<ip><codec>. |
| S011 | ITS1011 | <IP Address>: Last reset reason for phone: <reasonID> (<reasonString>). |

# Replacing a Media Card

Replace the Media Card when the following conditions occur:

- After a reboot, if the Media Card displays a fault code of the form F:xx on the faceplate LED display and the card cannot register with the CS 1000E, this indicates an unrecoverable hardware failure.

  *Note:* If the Media Card displays the F:08 code, this can merely indicate that the Security Device is missing from the card.

- If the management Ethernet interface or the voice Ethernet interface on the Media Card fails. The failure can be indicated as follows:

  — No link pulse on the Media Card voice IP interface status LED and on the associated hub.

  — The maintenance terminal continuously prints **lnIsa0 Carrier Failure** messages.

*Note:* To ensure that the failure is originating from the Media Card, verify that its associated hub port and TLAN network interface cable are operational.

• If a voice channel on the Media Card has a consistent voice quality fault, such as persistent noise or lack of voice path, even after resetting the card and retransmitting the card properties.

To replace a Media Card, refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

# Verify Media Card software and firmware

To verify the Media Card software and firmware, refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

# IP Line and IP Phone maintenance and diagnostics

For Nortel IP Phones, there are two kinds of Terminal Numbers (TNs) to consider:

• A physical TN, which represents a physical unit of the Media Card.

• A virtual TN, which is configured on a virtual superloop and represents an IP Phone.

The physical TNs are seen as trunk units and are managed using existing LD 32 commands. These commands do not apply to virtual TNs. Use Element Manager for virtual TN maintenance. See *Element Manager: System Administration* (553-3001-332) for details.

LD 32 supports STAT, DISU, ENLU, and IDU commands on an IP Phone virtual TN. All other commands generate an NPR047 message.

The IDU command provides the usual information, such as:

• TN

• TNID

- NT code

- color code

- release code

- serial number

- IP address of the IP Phone

- IP address of the Media Card that acts as the terminal proxy

The serial number is the last three bytes of the IP Phone's MAC address, printed in ASCII hex format.

As the system must obtain the requested information from the IP Phone, IDU is effectively a "ping" command. Consequently, it can be used to test the end-to-end IP connectivity of the IP Phone.

If the IP Phone is not registered with the CS 1000E, an NPR0048 message is generated. If the IP Phone is registered but idle, the system prints the IP Phone IP address and Media Card IP address and generates an NPR0053 message.

For additional information on the output format of the IDU command in LD 32 and the maintenance commands in LD 32 for the IP Phone, refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

## Lamp Audit

The Lamp Audit function provides a continuous source of heartbeat messages to ensure the IP Phone is powered and the IP connection is active. Since there is a reliable UDP connection from the Call Server through to the IP Phones, any failure in the IP Phones, the Voice Gateway Media Card, or the IP connections is detected. In addition to Lamp Audit, Network Signaling Diagnostics can be run as part of the midnight routines:

- When the Voice Gateway Media Card detects the IP Phone is disconnected, the card logs the event and sends an unregistered message to the Call Server for that telephone.

- When the Call Server detects a loss of connection with the Voice Gateway Media Card, it logs a message and unregisters all of the telephones and gateway channels associated with that card.

# IP line shell commands

The IP Line shell commands are designed to supplement overlay commands and to manage features specific to the IP Line platform.

The IP Line shell commands are accessed by connecting a TTY to the MAINT port on the Media Card faceplate. Alternatively, the OTM ITG "Telnet" command can be used to access the IP Line shell.

Commands are grouped into six categories:

- General purpose commands

- File transfer commands

- IP configuration commands

- Reset commands

- DSP commands

To view a list of the ITG shell commands applicable to the Media Card refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

## Invoking alarm and log files

Alarm and log file output is turned on using the IP Line shell. The following commands are entered at the IP Line shell prompt:

- To turn on/off the error log file, type: **logFileOn** or **logFileOff**.

- To display the modes of all log files/alarms, type: **logFileShow**.

# Technical Assistance service

## Contents

This section contains information on the following topics:

## Nortel Technical Assistance Centers

To help customers obtain maximum benefit, reliability, and satisfaction from their CS 1000E systems, Nortel provides technical assistance in resolving system problems. Table 33 lists the centers that provide this service.

**Table 33**
**Customer Technical Services (CTS) (Part 1 of 3)**

| Location | Contact |
|----------|---------|
| Nortel<br>Global Enterprise Technical Support (GETS)<br>PO Box 833858<br>2370 Performance Drive<br>Richardson, TX<br>75083 USA | North America<br><br>Telephone: 1 800 4NORTEL |

**Table 33**
**Customer Technical Services (CTS) (Part 2 of 3)**

| Location | Contact |
|---|---|
| Nortel Corp.<br>P.O. Box 4000<br>250 Sydney Street<br>Belleville, Ontario<br>K8N 5B7 Canada | North America<br><br>Telephone: 1 800 4NORTEL |
| Nortel Service Center - EMEA | EMEA<br><br>Telephone: 00 800 8008 9009 or<br>+44 (0)870 907 9009<br><br>E-mail: emeahelp@nortel.com |
| Nortel<br>1500 Concord Terrace<br>Sunrise, Florida 33323<br>USA | Brazil<br>Telephone: 5519 3705 7600<br>E-mail: entcts@nortel.com<br><br>English Caribbean<br>Telephone: 1 800 4NORTEL<br><br>Spanish Caribbean<br>Telephone: 1 954 858 7777<br><br>Latin America<br>Telephone: 5255 5480 2170 |

**Table 33**
**Customer Technical Services (CTS) (Part 3 of 3)**

| Location | Contact |
|---|---|
| Network Technical Support (NTS) | Asia Pacific<br>Telephone: +61 28 870 8800<br><br>Australia<br>Telephone:1800NORTEL (1800 667835) or<br>+61 2 8870 8800<br>E-mail: asia_support@nortel.com<br><br>People's Republic of China<br>Telephone: 800 810 5000<br>E-mail: chinatsc@nortel.com<br><br>Japan<br>Telephone: 010 6510 7770<br>E-mail: supportj@nortel.com<br><br>Hong Kong<br>Telephone: 800 96 4199<br>E-mail: chinatsc@nortel.com<br><br>Taiwan<br>Telephone: 0800 810 500<br>E-mail: chinatsc@nortel.com<br><br>Indonesia<br>Telephone: 0018 036 1004<br><br>Malaysia<br>Telephone: 1 800 805 380<br><br>New Zealand<br>Telephone: 0 800 449 716<br><br>Philippines<br>Telephone: 1 800 1611 0063 or 632 917 4420<br><br>Singapore<br>Telephone: 800 616 2004<br><br>South Korea<br>Telephone: 0079 8611 2001<br><br>Thailand:<br>Telephone: 001 800 611 3007 |

# Services available

Services available through the Technical Assistance Centers include:

- diagnosing and resolving software problems not covered by support documentation

- diagnosing and resolving hardware problems not covered by support documentation

- assisting in diagnosing and resolving problems caused by local conditions

There are several classes of service available. Emergency requests (Class E1 and E2) receive an immediate response. Service for emergency requests is continuous until normal system operation is restored. Non-emergency

requests (Class S1, S2, and NS) are serviced during normal working hours. Tables 34 and 35 describe the service classifications.

**Table 34**
**Technical service emergency classifications**

| Class | Degree of failure | Symptoms |
|---|---|---|
| E1 | Major failure causing system degradation or outage | System out-of-service with complete loss of call-processing capability.<br><br>Loss of total attendant console capability.<br><br>Loss of incoming or outgoing call capability.<br><br>Loss of auxiliary Call Detail Reporting (CDR) in resale application.<br><br>Call processing degraded for reasons such as trunk group out-of-service:<br><br>• 10% or more lines out-of-service<br><br>• frequent initializations (seven per day or more)<br><br>• inability to recover from initialization or SYSLOAD<br><br>• consistently slow dial tone (eight seconds or more delay) |
| E2 | Major failure causing potential system degradation or outage | Standby CPU out-of-service.<br><br>Frequent initializations (one per day or more).<br><br>Disk drive failure.<br><br>Two sets of disks inoperative. |

**Table 35**
**Technical services non-emergency classifications**

| Class | Degree of failure | Symptoms |
|---|---|---|
| S1 | Failure that affects service | Software or hardware trouble directly and continuously affecting user's service or customer's ability to collect revenue.<br><br>Problem that will seriously affect service at in-service or cut-over date. |
| S2 | Intermittent failure that affects service | Software or hardware faults that only intermittently affect service.<br><br>System-related documentation errors that directly result in or lead to impaired service. |
| NS | Failure that does not affect service | Documentation errors.<br><br>Software inconsistencies that do not affect service.<br><br>Hardware diagnostic failures (not defined above) that cannot be corrected by resident skills.<br><br>Test equipment failures for which a backup or manual alternative can be used.<br><br>Any questions concerning products. |

Except as excluded by the provisions of warranty or other agreements with Nortel, a fee for technical assistance may be charged, at rates established by Nortel. Information on rates and conditions for services are available through Nortel sales representatives.

# Requesting assistance

Collect the information listed in Table 36 before you call for service.

**Table 36**
**Checklist for service requests**

| | |
|---|---|
| Name of person requesting service | |
| Company represented | |
| Telephone number | |
| System number/identification | |
| Installed software generic and issue (located on data disk) | |
| Modem telephone number and password (if applicable) | |
| Seriousness of request (see Tables 34 and 35) | |
| Description of assistance required | |

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