Carrier VoIP

Call Agent Fault Management

NN10087-911

Document status: Standard
Document version: 07.02
Document date: 20 October 2006

The information in this document is sourced in Canada, the United States of America, and the United Kingdom.

Call Agent Fault Management

This document describes fault management strategies for diagnosing and resolving faults on the Call Agent. This document also provides references to other fault management documents for diagnosing faults on other equipment in the CS 2000 - Compact.

New in this release

Feature changes

See the following section for information about feature changes.

Gigabit Ethernet interface for sparing for Compact Call Agent cards

This feature is applicable only to the CS2100 for the enterprise market.

In this release, feature A00012478 introduces the Gigabit Ethernet interface for sparing for MCPN905-based Compact Call Agent (CCA) cards. (MCPN765-based CCA cards continue to use fiber channel sparing.) The introduction of Gigabit Ethernet sparing causes the following changes in the user interface:

- On MAP screens and in log messages, “sparing link” or “SL” appears where “fiber channel” or “FC” formerly appeared.
- Under Compact Call Agent Maintenance (CCAMTC) in the MAP interface, there is a new command to query the sparing link. The command is “16 QuerySL”. You can use the command to find out whether the fiber channel interface or the Gigabit Ethernet interface is selected for sparing.

These changes appear in the map screens and log examples in this document.

Other changes

In the module "Network fault management strategy" (page 5), we made the following changes.

- In the table "System response summaries" (page 13), in the part of the table describing responses to optical frame failures, we have updated the second and sixth items in the bulleted list of responses.
- In the section "Limitations and restrictions" (page 17), we added the third sentence in the second item in the bulleted list.
- We added the procedure titled "Replacing a Call Agent transition module" (page 27).

Network fault management strategy

Faults on the Call Agent and the call processing application generate alarms and logs. Hardware and software platform alarms are accessible through the Call Agent Manager. Call processing alarms are accessible through the MAP. Logs for the platform are available through the Call Agent Manager. Logs for the call processing application are available though the MAP. Both types of logs are also transferred to the CS 2000 Core Manager or CBM for Operations Support System (OSS) transfer.

In the event of a platform software error that prevents the Call Agent from providing service, software attempts to automatically restore service. In this event, the Call Agent Manager immediately indicates the mate failure. A periodic shelf audit by the SAM21 Shelf Controller reports the Call Agent state to the CS 2000 SAM21 Manager when the audit runs. If the Call Agent has a platform failure, the CS 2000 SAM21 Manager indicates that the Call Agent state is unlocked-enabled but the software on the card is actually disabled. The Call Agent card enters an automatic recovery sequence to restore service. The automatic recovery has two stages:

1. Motorola firmware on the card performs a Network Autoboot
2. If the Network Autoboot fails and does not restore service, the SAM21 Shelf Controller performs an autoboot on the Call Agent card.

As the Call Agent card recovers, the SAM21 Shelf Controller generates SM21500 log reports during each state transition. Refer to *SAM21 Shelf Controller Fault Management*, NN10089-911, for more information about the recovery. Refer to "Card icons" (page 176) for information about card icons and states at the CS 2000 SAM21 Manager client.

In the event that Ethernet connectivity between the Call Agent cards is lost, activity is switched to the Call Agent with Ethernet connectivity and the inactive Call Agent is reset. Loss of Ethernet connectivity can be caused by an Ethernet link pull, router misconfiguration, or a router problem. Refer to the following table for the conditions and reset method. If the backup link (BLnk) is available, it is used to message the activity change request and the reset request.

Call Agent activity	BLnk state	Reset method
Active	InSv	The active Call Agent has lost Ethernet connectivity and uses the BLnk to switch activity (SWACT). The newly inactive issues a reset request to the newly active and starts a 60 second reset timer. The active accepts the request and starts a 20 second reset timer. After 20 seconds, the active sends a reset

Call Agent activity	BLnk state	Reset method
		request to the inactive Call Agent's SAM21 Shelf Controller. If the reset does not occur before the inactive's 60 second timer, the inactive resets itself.
Active	OOS	A SWACT takes place and the newly inactive Call Agent resets itself in 130 seconds.
Inactive	InSv	Activity does not switch and the inactive Call Agent starts a 60 second reset timer. The inactive sends a reset request message over the BLnk to the active. The active accepts the request and starts a 20 second timer. When the 20 second timer expires, the active sends a reset request to the inactive's SAM21 Shelf Controller. If the SAM21 Shelf Controller does not reset the inactive within the 60 second timer, the inactive resets itself.
Inactive	OOS	The inactive sets a 60 second reset timer and resets itself when the timer expires.

SWACT

Under a fault condition where the active Call Agent fails or is isolated, the previously inactive mate Call Agent takes activity. When the SWACT occurs, the mate Call Agent taking activity performs a warm restart. When the SWACT is initiated, stable (answered) calls survive and calls still in the setup process terminate. The Call Agent taking activity is ready to process new calls after the restart completes. A Call Agent SWACT can be initiated manually as a maintenance action.

When the restart completes, state mismatches exist between the Call Agent and the line and trunk gateways for surviving calls that terminated naturally during the restart. The mismatches must be cleared. The number of mismatches and time required to clear them depends on the number of lines and trunks, the traffic rate at the time of the SWACT and the duration of the restart period.

The restart period is approximately 30 seconds for the NTRX51GZ Call Agent card with the MCPN765 processor. The NTRX51HZ card with the MCPN905 processor reduces the restart period to approximately 20 seconds, which also reduces the number of state mismatches. The restart period is reduced to less than three seconds for controlled hot SWACTs of both the MCPN765 and the MCPN905 processors.

Controlled SWACT

The user can initiate a controlled SWACT from the linux CCAMTC MAP level. The system can initiate a controlled SWACT following a REX test.

Aontrolled SWACT of the CallAgent uses a warm restart. Existing calls are preserved and new calls can be processed after the warm restart completes.

Controlled hot SWACT

Starting in release (I)SN09, there is a controlled hot SWACT capability for the Call Agent to the same load on the inactive side. A controlled hot SWACT reduces the restart period to less than three seconds. With the reduced restart period, the controlled hot SWACT introduces the following changed behavior.

- It eliminates the warm restart if the controlled SWACT is to the inactive Call Agent in hot sync with its mate on the same load.
- It initiates a SWACT after FULL REx tests.
- It allows the user to set the day of the system-initiated FULL REx test. To set the day, use the CMREXFULL command increment in the MAP. Within the command increment the **`set <day>`** command sets the day, where <day> is one of the following: MON, TUE, WED, THU, FRI, SAT, SUN. To display the current setting, use the **`query`** command.

The following limitations apply to controlled hot SWACT.

- The feature is initiated only from the CCAMTC MAP and after a REx test. It is not initiated for SWACTs caused by the following conditions:
  - hardware or software failures
  - locking of the active card on the SAM21 Manager
  - using the SWACT FORCE option in CCAMTC
- The CCAMTC MAP does not display whether the switch is in warm or hot sync. To display the information, use the CAPCI tool in the SOS.

If a SWACT is selected and the Call Agent is in hot sync, a warm restart could occur instead of a hot (no-restart) SWACT.

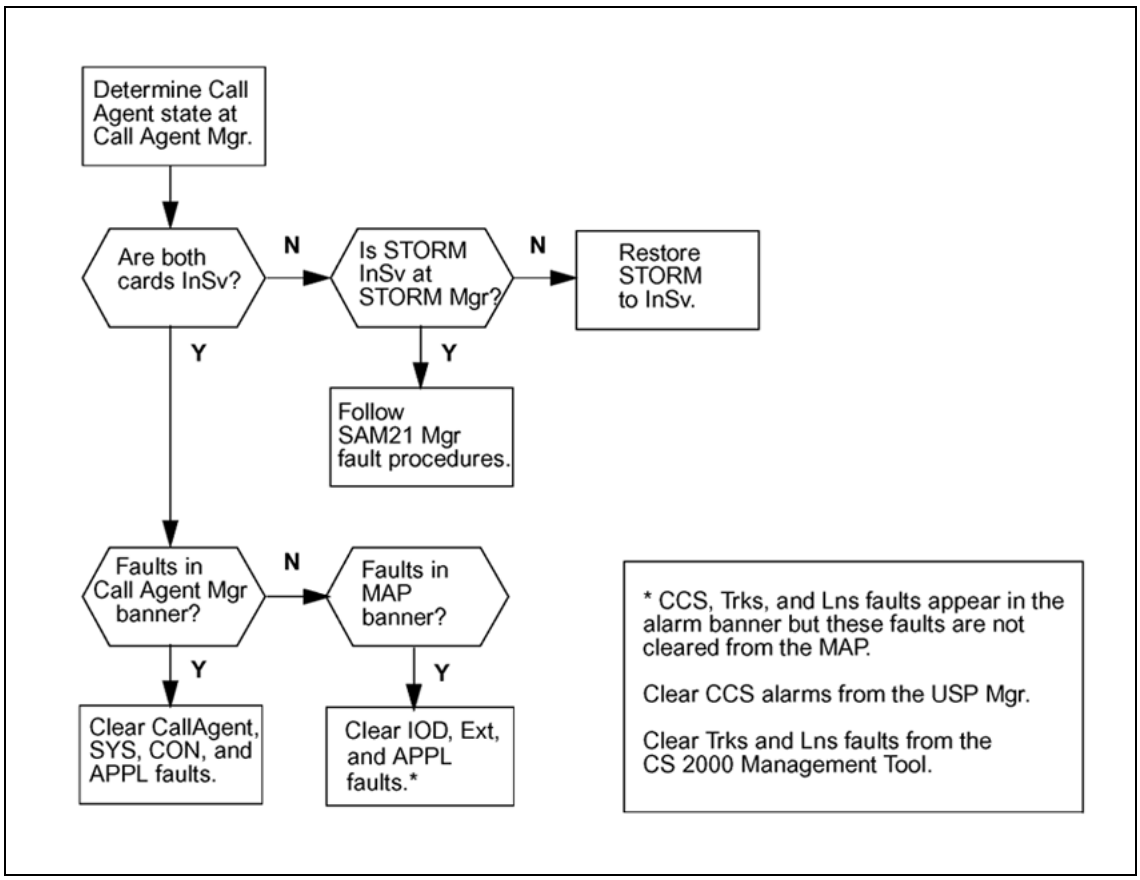
Clearing state mismatches

The following methods are used to clear state mismatches:

- A line or trunk state mismatch that exists on the originating half of a new call is cleared automatically during call setup.
- The Call Agent initiates line and trunk audits to clear residual state mismatches.

Fault management taskflow

Use the following flowchart as a guideline to diagnosing a fault and locating trouble clearing procedures.



- Determine the state of the Call Agent with Call Agent Manager.

  Refer to procedure "Call Agent Manager alarm clearing" (page 66).
- Determine if STORM is in service at the STORM Manager.

  If the STORM unit is based on STORM cPCI, refer to procedure "CS 2000 SAM21 Manager procedures" (page 175). If the STORM unit is based on the SAM-XTS hardware platform (STORM-IA), refer to *STORM Fault Management*, NN10088-911.
- Determine if there are faults in the Call Agent Manager alarm banner.

  Refer to procedure "Call Agent Manager alarm clearing" (page 66).
- Determine if there are faults in the MAP alarm banner.

  Refer to procedure "Call Agent Manager alarm clearing" (page 66).

Fault management tools and utilities

The following tools are used to manage faults on the Call Agent:

- CS 2000 SAM21 Manager client

If the Call Agent does not boot, the CS 2000 SAM21 Manager client is used as a diagnostic tool.

- Call Agent Manager

  Platform faults such as simplex operation, Central Processing Unit (CPU) and memory threshold crossing, connectivity, and call processing application synchronization are reported to this interface.

- MAP

  Call processing and billing faults are reported to this interface.

This document is structured so that all procedures available at each interface are grouped together. Use the following taskflow to begin diagnosing faults and follow links and references to specific procedures.

Tools, utilities, and interfaces

Fault management for the Call Agent is completed through three interfaces. The MAP is the interface to the call processing application and is command line and console oriented. Once the MAPCI command is entered at the MAP command prompt, the interface remains console oriented, but is navigated by menu commands.

MAP at the CI level

```
2003/04/03 10:48 <office message>
CI:
>
```

MAP at the MAPCI level

```
MAPCI        MAPCI:
 0 Quit
 2 Mtc
 3 SASelect
 4 NWM
 5 CPSys
 6 IBNMEAS
 7
 8 FPE
 9 TESTTOOL
10
11
12
13
14
15
16
17
18
  username
Time  14:49  >
```

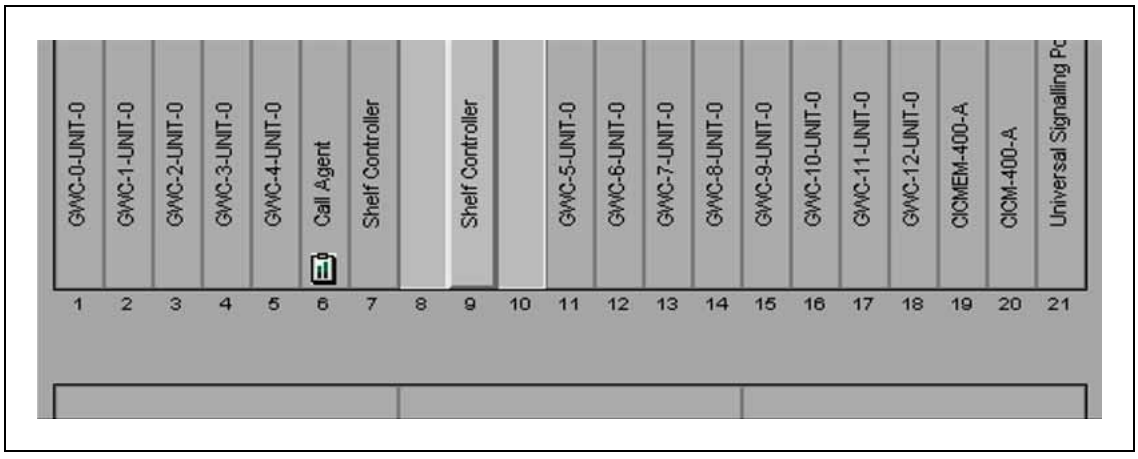
The second interface is the Call Agent Manager. This interface is console oriented and is navigated by menu commands. The Call Agent Manager provides access to the hardware and software platform when the software is in-service. The current menu level is displayed in the circled area in the figure below.

Call Agent Manager

```
CallAgent       SYS       CON       APPL          Unit: 0
   .             .         .         .

CCAMtc
 0 Quit
 2 CoreMtc
 3 Admin
 4
 5
 6
 7
 8
 9
10
11
12
13 LogQuery
14 Alarm
15
16
17 Help
18 Refresh
  mtc
Time  17:10  >
```

The third interface is the CS 2000 SAM21 Manager. This graphical user interface (GUI) is used to perform out of service maintenance on the Call Agent hardware platform.

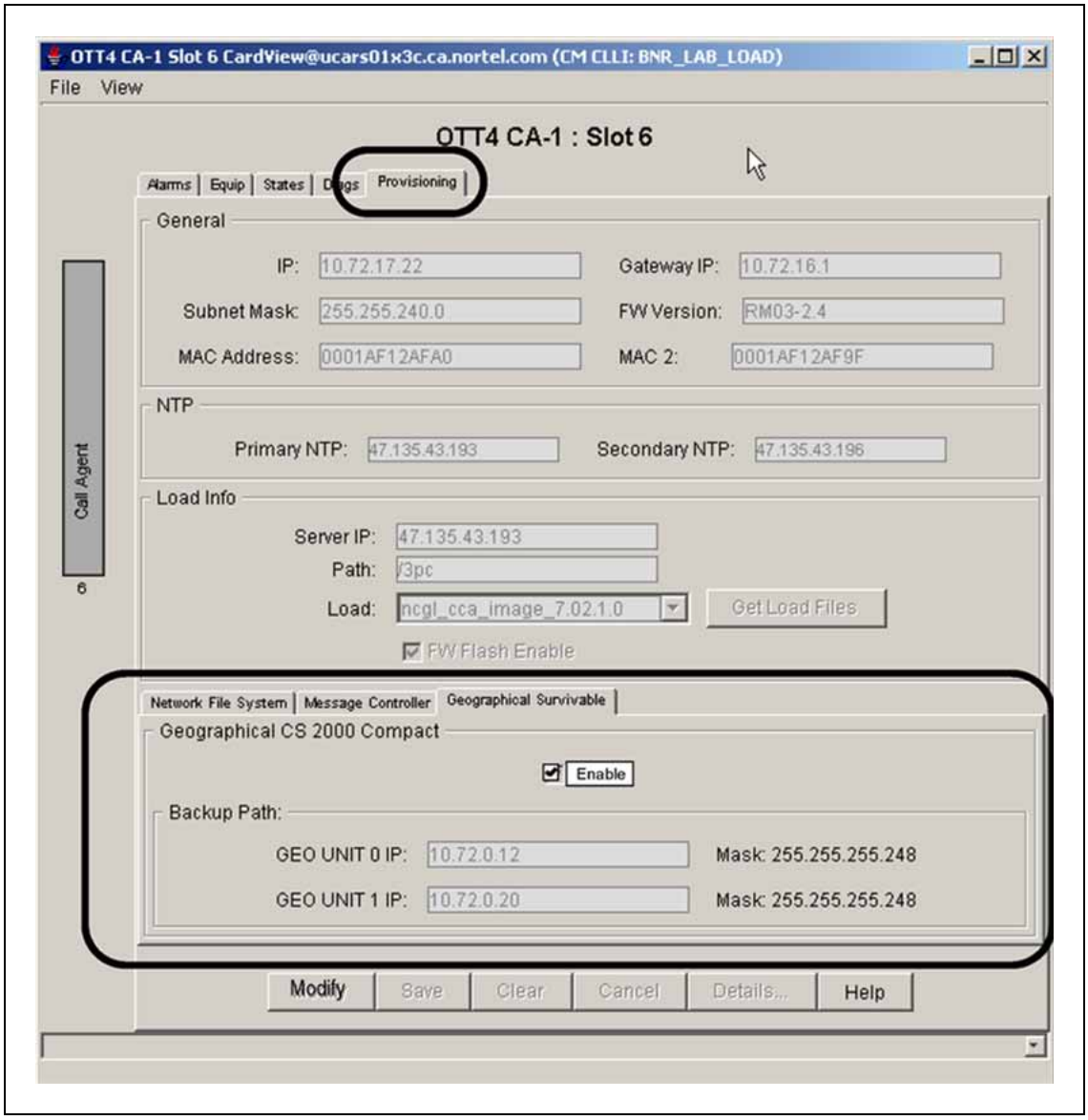
CS 2000 SAM21 Manager



Geographic Survivability impacts to Call Agent

The Geographic Survivability feature allows services to continue in the event of a natural or man-made disaster. A new sub-panel is added to the Call Agent Card View Provisioning panel (tab) that allows you to either enable or disable the feature. The following figure shows an example configuration with Geographic Survivability enabled.

Call Agent Card View Provisioning panel: Geographic Survivability enabled



Failure scenarios

The following table provides summaries of system responses during various failure scenarios when Geographic Survivability is enabled. The scenarios assume redundant configurations are located at two separate sites.

System response summaries

Scenario	Response
Ethernet Routing Switch 8600 failure in one building	***In the building with the failed routing switch...*** • All nodes lose mate connectivity via Ethernet. • The Call Agent loses WAN backup connectivity. • If the backup and data sync link between the Compact Call Agent cards is an fiber channel (FC) link, the FC link remains up. • If the backup and data sync link between the Compact Call Agent cards is a Gigabit Ethernet link, and if the link goes through an 8600 switch, the Gigabit Ethernet link fails if the 8600 switch fails. (The Gigabit Ethernet link goes through an 8600 switch if the CS 2000 Compact is geographically survivable.) The feature supporting the use of the Gigabit Ethernet interface is applicable only to the CS2100 for the enterprise market. • If the backup and data sync link between the Compact Call Agent cards is a Gigabit Ethernet link, and if the link goes directly from card to card, the Gigabit Ethernet link remains up. (The Gigabit Ethernet link goes directly from CCA card to CCA card if the CS 2000 Compact is geographically non-survivable.) The feature supporting the use of the Gigabit Ethernet interface is applicable only to the CS2100 for the enterprise market. • The Call Agent detects IST loss, but cannot disable OSPF ERS 8600 routing. • USPc detects isolation and takes down SS7 links at the site with the 8600 failure. ***In the building with the in-service routing switch...*** • The Call Agent remains active if it is already active. No outage occurs. If the Call Agent was not active, it takes activity within 2 seconds. • SOS goes through a warm or cold restart (approximately 20 seconds for the NTRX51HZ card with the MCPN905 processor, and 30 seconds for the NTRX51GZ card with the MCPN765 processor). • Other nodes go active and follow the Call Agent example after losing mate connectivity.

Scenario	Response
	• If Site B has the in-service router, the standby CS 2000 Management Tools (CMT) server must be brought into service. (See ***Note***) • If Site A has the in-service router, the standby Core Billing Manger (CBM) must be brought in to service. (See ***Note***) ***Note:*** Consider using this option based on the estimated time to recover the fault or failure of the CS LAN versus time and effort to bring up the standby system and recover the high availability (HA) pair afterward. For example, if the time to recover the CS LAN is estimated to be 10 hours, it might not be worth activating the standby CMT server or CBM.
Optical frame failure	• All nodes lose mate connectivity via Ethernet. • The Call Agent loses fiber channel or Gigabit Ethernet call data link connectivity. • WAN backup remains up. • The active Call Agent remains active, but without sync. No outage occurs. • If not already active, other nodes co-located with the active Call Agent are expected to go active after losing mate connectivity. If not already inactive, other nodes co-located with the inactive Call Agent are expected to go inactive after losing mate connectivity. (Done without mate connectivity.) • The inactive Call Agent detects IST loss, and disables OSPF. For an ERS 8600 CS LAN using OSPF, the Call Agent will disable OSPF. For an ERS 8600 CS LAN using border gateway routing protocol (BGP), or for a third party CS LAN using either OSPF or BGP, manual action should be taken to disable routing at the site with the inactive Call Agent. • The USPc in the building with the inactive Call Agent detects isolation from the active Call Agent and takes down the SS7 links to that site. • If Site B has the failed optical frame, the standby CBM must be brought into service at Site A. (See Note) • If Site A has the failed optical frame, the standby CMT must be brought into service at Site B. (See Note)

Scenario	Response
	Note: Consider using this option based on the estimated time to recover the fault or failure of the CS LAN versus time and effort to bring up the standby system and recover the high availability (HA) pair afterward. For example, if the time to recover the optical frame is estimated to be 10 hours, it might not be worth activating the standby CMT server or CBM.
One building is destroyed in a catastrophic event	***In the building that is destroyed...*** • There is no activity. • The SS7 network takes down the links to the destroyed building. ***In the building that is not destroyed...*** • All nodes lose mate connectivity. • The Call Agent loses all mate connectivity, including the backup WAN link, and drops sync. • If the Call Agent is active, it remains active. No outage occurs. If the Call Agent is not active, it takes activity within 2 seconds. • If the Call Agent is inactive, it takes activity within 2 seconds followed by a warm or cold SOS restart (approximately 20 seconds for the NTRX51HZ card with the MCPN905 processor, and 30 seconds for the NTRX51GZ card with the MCPN765 processor). • Other nodes go active, and follow the Call Agent example after losing mate connectivity. • If Site B was destroyed, the standby CBM must be brought into service at Site A. • If Site A was destroyed, the standby CMT must be brought into service at Site B.
Active Call Agent card fails in one building	***In the building with the failed Call Agent...*** • All nodes in the site can communicate with their mates. ***In the building with the mate Call Agent...*** • All nodes in the site can communicate with their mates. • The (inactive) Call Agent detects loss of connectivity with the mate, detects local and WAN connectivity, takes activity, and restarts the SOS.

Scenario	Response
	• Other nodes experience disconnection from the SOS for approximately 20 seconds for the NTRX51HZ card with the MCPN905 processor, and 30 seconds for the NTRX51GZ card with the MCPN765 processor (normal restart behavior).
Inactive Call Agent card fails in one building	***In the building with the failed inactive Call Agent...*** • All nodes in the site can communicate with their mates. ***In the building with the mate Call Agent...*** • All nodes in the site can communicate with their mates. • The (active) Call Agent detects loss of connectivity with the mate, detects local and WAN connectivity, and stays active. • No SWACT or restart is required.
Recovery from isolation split brain (Active/Inactive)	***In both buildings...*** • Once the Call Agents can communicate with their mates, they recognize that both are active. The Call Agent that was inactive backs down, leaving the other Call Agent active. The fallout is to force Unit 0 active and Unit 1 inactive. • Other nodes can communicate with their mates, negotiate activity, and resume normal operations.

System impact of failures

Failures could cause the following system impacts:

- When negotiating activity, the Call Agent preference is always to remain on the same side, if that side supports activity.
- If failover of the Call Agent is necessary, the Call Agent switches activity in less than two seconds. When the Callp Application performs a restart, call processing is interrupted for approximately 20 seconds for the NTRX51HZ card with the MCPN905 processor, and 30 seconds for the NTRX51GZ card with the MCPN765 processor (normal restart behavior). Failovers of other Callp nodes follow the Call Agent failover within two seconds.
- In configurations where the solution contains Message Controller (MC) cards connected to Message Switches (MS), ENET and TDM peripherals, the MC cards and MSes are co-located in one of the main geographically redundant sites.

  During building isolation, when determining the appropriate master site, preference is given to the site that contains the MC cards. This assumes that the site is able to take activity. If necessary, activity is switched to this side during the activity negotiation.

  This configuration is supported only in Enterprise (CS2100) solutions.

Recovery scenarios

The following table provides a summary of system responses during recovery.

System response summary

Scenario	Response
Recovery from isolation split brain (Active/Inactive)	1. When Call Agents can communicate with their mates, they recognize that both are active. The Call Agent that was inactive before the failure backs down, leaving the other Call Agent active. The fallout is to force Unit 0 active, and Unit 1 inactive. 2. Other nodes can communicate with their mates, negotiate activity and resume normal operations.
General recovery behavior	All elements: • continually monitor connections with their mates, and with other network elements with which they normally communicate. When connectivity is not present, they continue to monitor the connections for restored connectivity. (The elements continue monitoring regardless of their activity state.) • negotiate activity and services when connectivity recovers, and resume normal operations.

System impact of recovery

Recovery could cause the following system impacts:

- When negotiating activity, the Call Agent preference is always to leave activity on the same side. When recovering to a full system configuration, activity remains on the same unit, without impact.
- During recovery from a split system (caused by incorrect message routing), node activity resolves in a few seconds. Call processing could require up to 15 minutes to recover completely.

Limitations and restrictions

Please note the following restrictions for the Geographic Survivability feature:

- In hybrid configurations (with TDM equipment homed at one site), the TDM equipment is not geographically redundant. In determining the master site, preference is given to the TDM side only when either side can support Callp. If necessary, a SWACT is performed to the TDM side to allow Callp on that side.

  This configuration is supported only in Enterprise (CS2100) solutions.

- Because the Call Agent must interact with the Ethernet Routing Switch 8600, the feature requires that each site have only one routing switch and IST links configured between sites. Dual 8600's at each site and SMLT links between sites are not supported. Interactions between the Call Agent and the CS LAN are supported to prevent split brain scenarios (by disabling OSPF) when the Ethernet Routing Switch 8600's are used for the CSLAN. Upgrades from previous releases in the geographically redundant configurations (which have dual 8600's at each site) require that the dual 8600's be migrated to a single Ethernet Routing Switch 8600 site.
- When a total loss of communication between sites occurs (that is, all three master links are down), the two Call Agents cannot negotiate activity decision. The decision is based on connectivity check from each site to the WAN network.
  - — While unlikely, it could be possible to have an active/active (split brain) scenario, or an inactive/inactive scenario (no processing).
  - — The WAN backup path mitigates the risk of optical ring failure. The WAN connection check helps resolve activity when the backup path is down.
- CS 2000 - Compact supports only a single time zone setting. If the two physical sites are in different time zones, it recommended that the time zone be set to either GMT or the time zone of one of the sites.
- Both Session Server units of a pair are located at the same site. For offices with Message Controllers, it is recommended that the Session Servers be located on the same site as the TDM components.
- For maximum redundancy, the WAN backup path must be configured separately from the optical network, as follows:
  - — special vlans configured on Ethernet Routing Switch 8600 for backup path use only
  - — vlans route over the WAN network instead of over the optical ring
  - — vlans are not disabled with OSPF disable
  - — alarm generated for lack of connectivity
- Gateways and services node components of CS 2000 - Compact are single units, and are not geographically redundant. Where the nodes are located and how they are connected to the network affects whether they survive a failure. Although the same nodes are supported in configurations with and without Geographic Survivability, there is no change in configuration or connection in the configuration with the Geographic Survivability configuration.

For more information about the feature, refer to the following documents:

- *Call Agent Basics*, NN100223-111
- *Carrier VoIP Disaster Recovery Procedures*, NN10450-900

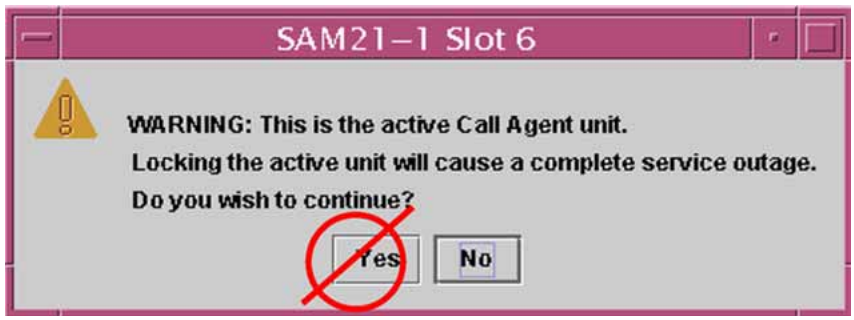
For offices configured with Message Controllers, refer to *Geographic Survivability Planning Guide*, 555-4031-901.

Replacing a Call Agent card

CAUTION
Perform this procedure at the direction of Nortel support personnel.

CAUTION
Do not lock the active Call Agent.

The CS 2000 SAM21 Manager client responds to an active Call Agent lock with the following prompt. Do not click Yes.



Note: This warning message appears for both Call Agent units for a short time after both units are brought into service. After unlocking a Call Agent card, wait 15 minutes before requesting a lock on either Call Agent.

Step	Action

At the Call Agent Manager

1 If the Call Agent to be replaced is in service and active, DpSync from the Call Agent Manager, then SWACT the call processing application. Refer to the procedure "Performing a maintenance switch of activity on a Call Agent" (page 36).

If you use DpSync in this step, do not use it in step 3

2 Jam the inactive Call Agent from the CAMtc level.

```
CoreMtc
```

```
CAMtc
Jam
```

Note: A JInact alarm appears in the alarm banner.

```
CallAgent       SYS       CON       APPL              Unit: 0
 JInact          .         .         .

CAMtc                       Jam:  Link0:  Link1:  Blnk: SL: Appl:
 0 Quit       Unit0  Act    no    . Act   . Inact  .     .   insync .
 2 Jam        Unit1  Inact  yes   . Act   . Inact  .     .   insync .
```

3 Drop synchronization of the call processing software between the two Call Agents at the Appl level.

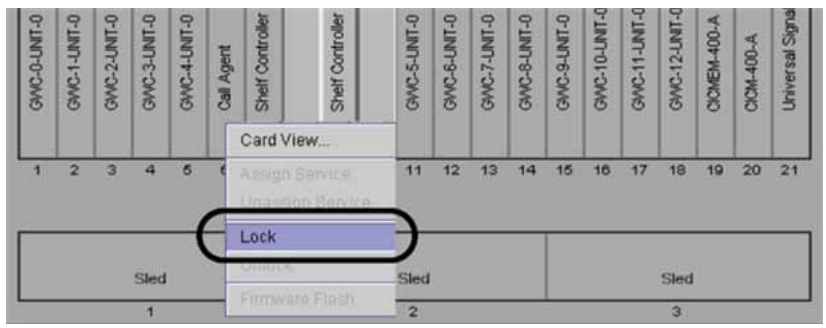
```
CoreMtc
Appl
DpSync
```

Note: A simplx alarm appears in the alarm banner and the applications report nosync.

```
CallAgent       SYS       CON       APPL              Unit: 0
 JInact          .         .       simplx
                                     M
Appl                        Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Act    no    . Act   . Inact  .     .   nosync .
 2 ImgTst     Unit1  Inact  yes   . Act   . Inact  .     .   nosync .
```

At the CS 2000 SAM21 Manager client workstation

4 From the Shelf View, right click on the card and select Lock from the context menu.



5 Wait for the lock icon to appear on the selected card.

At the SAM21 frame

6 Label and remove the fiber connection from the faceplate. Unscrew the captive screws.

7 Open the bottom ejector lever.

Note: Wait for the green LED on the faceplate to extinguish and a blue LED to light at the bottom of the faceplate.

8 Wait for the blue LED to appear at the bottom of the faceplate and the red out-of-service LED that is above the card to extinguish.

9 Press both ejector levers to eject the card from the shelf.

10

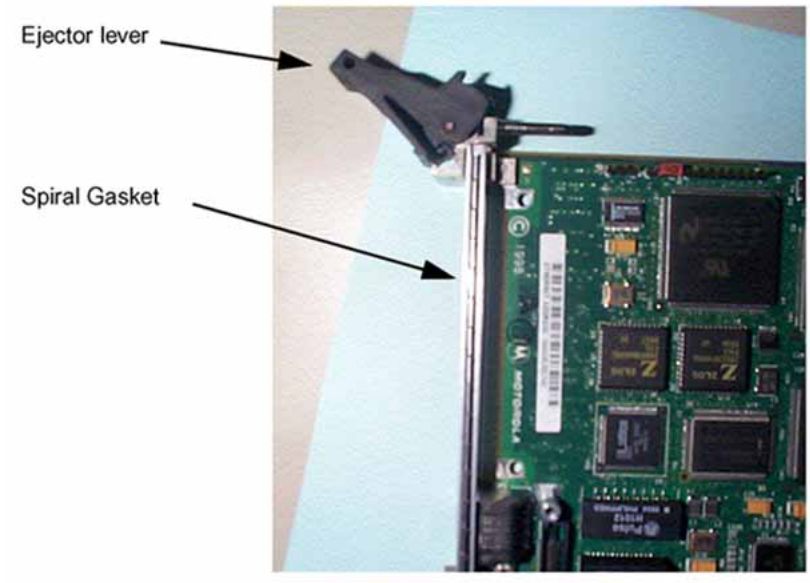
CAUTION
A service outage can occur if care is not taken while inserting the circuit pack.

The spiral gasket, located on the faceplate of the circuit pack, can become caught on an adjacent card and ripped off of the faceplate. If the spiral gasket ends up making contact with the backplane inside the chassis, an electrical short circuit can result in a service outage.

WARNING
Wear an electrostatic discharge (ESD) grounding wrist strap connected to the SAM21 Shelf Cabinet when handling the replacement card. This protects the card against damage caused by static electricity.

Hold the replacement card by the ejector levers and remove the card from the shelf.

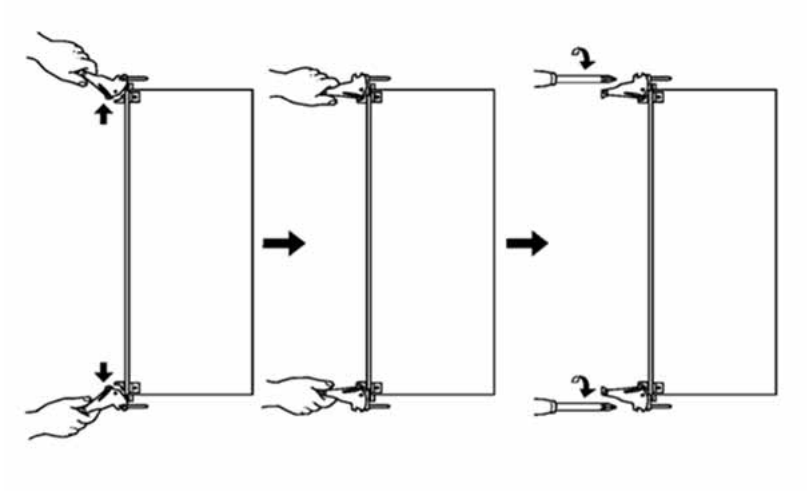
11 Examine the circuit packs before inserting them in the SAM21 chassis to ensure that the spiral gasket is seated and not loose.



12 Hold the replacement card by the ejector levers and insert the card into the shelf.

Note 1: Do not push on the faceplate to seat the card.

Note 2: Verify that the CPU LED lights. If the CPU LED does not light, reseat the card. If the CPU LED fails to light a second time, replace the card.

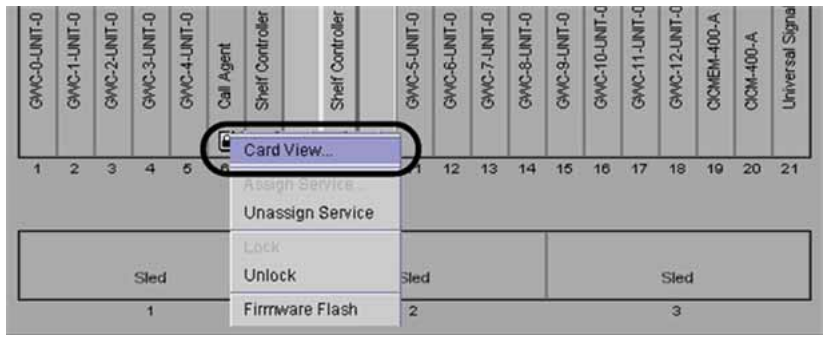


13 Secure the board by tightening the captive screws at the top and bottom of the panel.

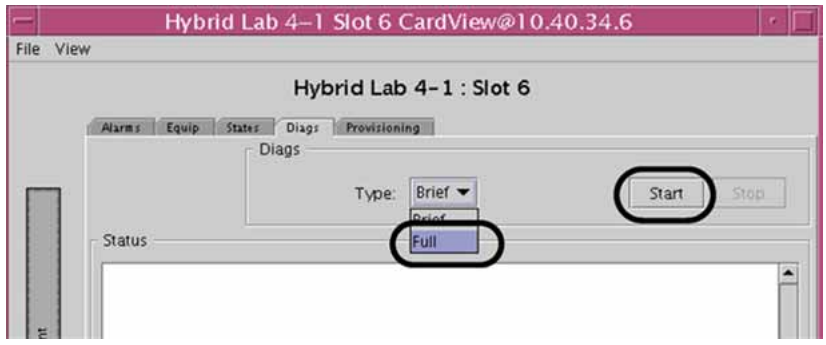
14 Replace the fiber faceplate connections.

At the CS 2000 SAM21 Manager client workstation

15 Run full diagnostics on the replacement card. Right-click on the card icon in the Shelf View and select Card View from the context menu to open the Card View window.

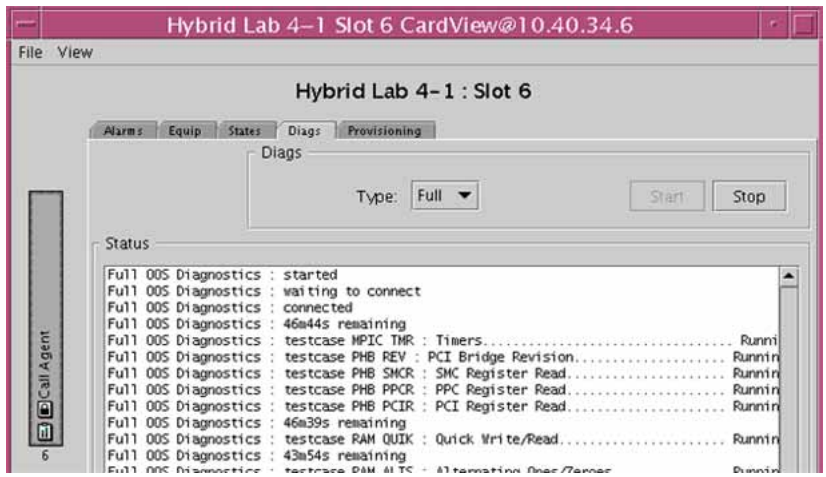


16 Click on the Diagnostics tab from the Card View, select Full, and then click Start.

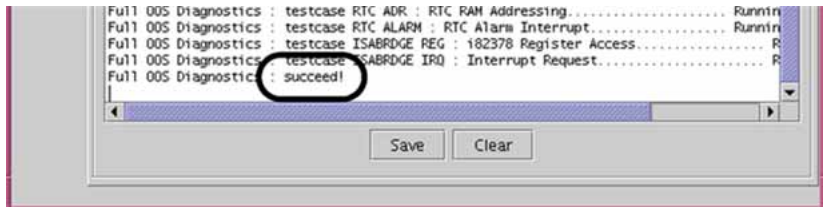


A confirmation dialog appears. Confirm the dialog.

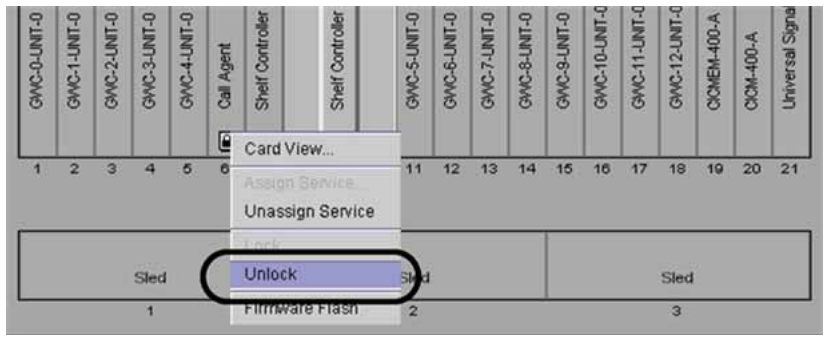
The diagnostics begin and are printed to the Status text area.



Wait for the diagnostics to complete and verify that the last line of the diagnostic output indicates "succeed!" If diagnostics do not indicate success, retry brief diagnostics and then full diagnostics. If diagnostics fail a second time, replace the card.



17 Right click on the card icon and select Unlock from the Shelf View. Optionally monitor the download from the States tab of the Card View window.



Note: If the Firmware Flash enable checkbox is checked on the Provisioning tab of the Card View, the Firmware Flash option is not available from the card context menu.

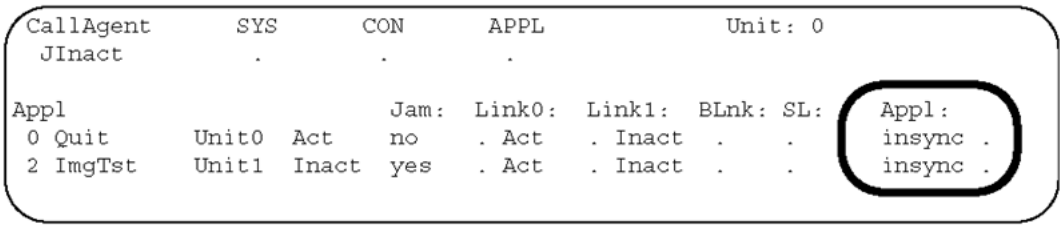
18 Wait for the lock icon to disappear from the Call Agent card on the Shelf View.

At the Call Agent Manager

19 Synchronize the call processing application images from the Appl level.

```
CoreMtc
Appl
Sync
```

Note: The simplx alarm clears from the alarm banner and the application flags indicate insync.



20 Release the jam on the inactive unit from the CAMtc level.

```
CoreMtc
CAMtc
RelJam
```

Note: The JInact alarm clears from the alarm banner.

21 This procedure is complete.

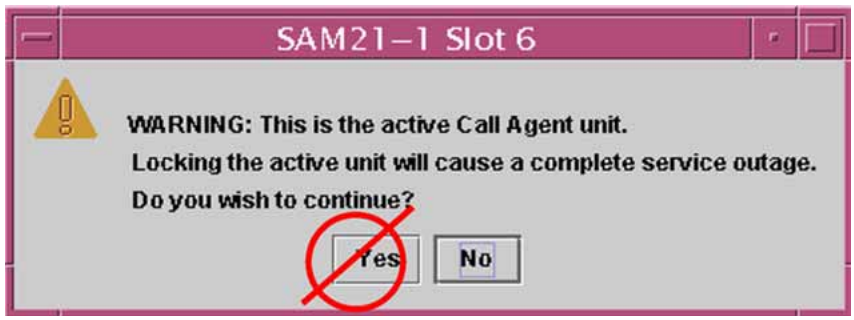
—End—

Replacing a Call Agent transition module

CAUTION
Perform this procedure at the direction of Nortel support personnel.

CAUTION
Do not lock the active Call Agent.

The CS 2000 SAM21 Manager client responds to an active Call Agent lock with the following prompt. Do not click Yes.



Note: This warning message appears for both Call Agent units for a short time after both units are brought into service. After unlocking a Call Agent card, wait 15 minutes before requesting a lock on either Call Agent.

Replacing a Call Agent transition module

Step	Action
1	Obtain a replacement Call Agent transition module (TM). Ensure that the product engineering code (PEC) of the replacement TM is NTRX51FS.
	At the Call Agent Manager
2	If the Call Agent TM to be replaced is for the Call Agent that is in service and active, DpSync from the Call Agent Manager, then

SWACT the call processing application. Refer to the procedure "Performing a maintenance switch of activity on a Call Agent" (page 36).

If DpSync is used here, do not use it in step 4.

3 Jam the inactive Call Agent from the CAMtc level.

Telnet to the active core and enter your user ID and password.

```
ccamtc
CoreMtc
CAMtc
Jam
```

Note: A JInact alarm appears in the alarm banner.

```
CallAgent       SYS       CON       APPL              Unit: 0
 JInact          .         .         .

CAMtc                       Jam:  Link0:  Link1:  Blnk: SL: Appl:
 0 Quit       Unit0  Act    no    . Act   . Inact  .     .   insync .
 2 Jam        Unit1  Inact  yes   . Act   . Inact  .     .   insync .
```

4 Drop synchronization of the call processing software between the two Call Agents at the Appl level.

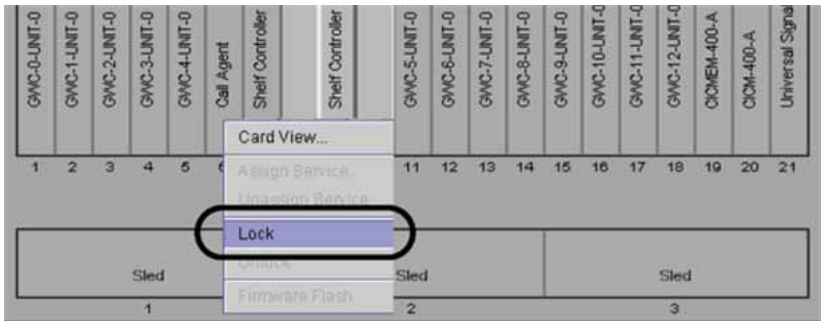
```
CoreMtc
Appl
DpSync
```

Note: A simplx alarm appears in the alarm banner and the applications report nosync.

```
CallAgent       SYS       CON       APPL              Unit: 0
 JInact          .         .       simplx
                                     M
Appl                        Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Act    no    . Act   . Inact  .     .   nosync .
 2 ImgTst     Unit1  Inact  yes   . Act   . Inact  .     .   nosync .
```

At the CS 2000 SAM21 Manager client workstatio

5 From the Shelf View, right click on the card and select Lock from the context menu.



6 Wait for the lock icon to appear on the selected card.

At the SAM21 frame

WARNING
Wear an electrostatic discharge (ESD) grounding wrist strap connected to the wrist strap grounding point, which is located on the local craft access panel (LCAP), when handling cards. This protects the cards against damage caused by static electricity.

7 Unscrew the captive screws on the Call Agent card.

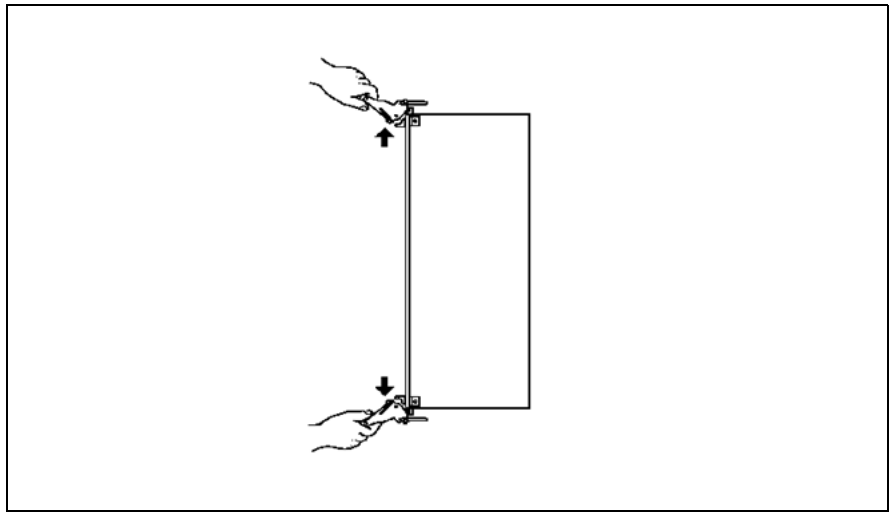
Note: Power to the Call Agent TM is removed by unseating the Call Agent card at the front.

8 Open the bottom ejector lever.

Note: Wait for the green LED on the faceplate to extinguish and a blue LED to light at the bottom of the faceplate.

9 Wait for the blue LED to appear at the bottom of the faceplate and the red out-of-service LED that is above the card to extinguish.

10 Push the top ejector lever up and bottom ejector lever down as shown in the figure that follows, to eject the card from the shelf, and slide the card out slightly.



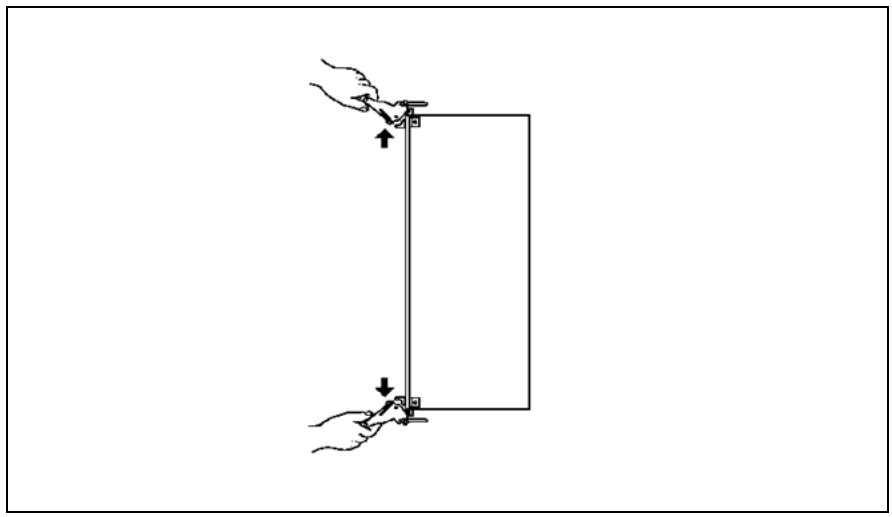
At the rear of the SAM21 frame

WARNING
Wear an electrostatic discharge (ESD) grounding wrist strap connected to the wrist strap grounding point, which is located on the local craft access panel (LCAP), when handling cards. This protects the cards against damage caused by static electricity.

11 Label and remove all connections from the faceplate of the transition module.

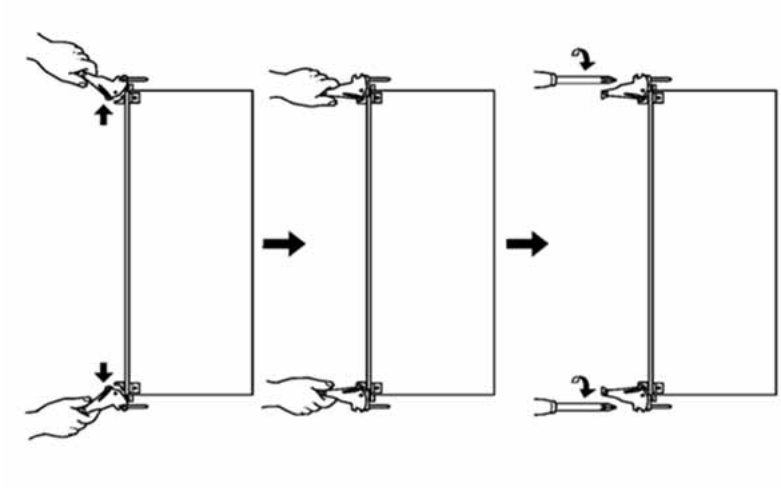
12 Loosen the attaching screws on the faulty Call Agent TM using a Phillips screwdriver.

13 Push the top ejector lever up and bottom ejector lever down as shown in the figure that follows, to eject the card from the shelf, and slide the card out slightly.



14 Insert the replacement Call Agent TM into the chassis slot, ensuring the the J3, J4, and J5 connector pins are aligned with the backplane connector pins, and tighten the attaching screws using a Phillips screwdriver as shown in the figure that follows.

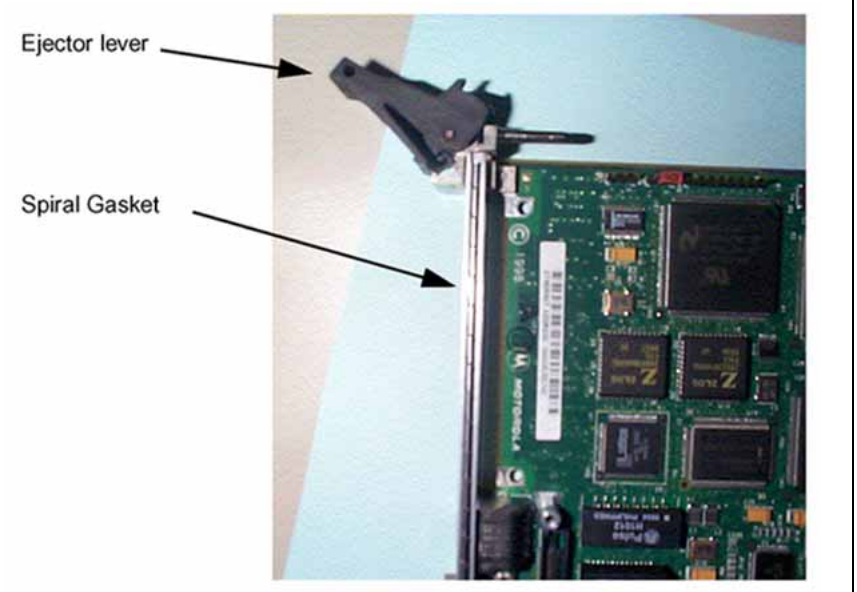
Note: Do not push on the faceplate to seat the card.



15 Replace all faceplate connections.

At the front of the SAM21 frame

16 Examine the Call Agent card before inserting it back into the SAM21 chassis to ensure that the spiral gasket is seated and not loose.



CAUTION
A service outage can occur if care is not taken while inserting the circuit pack.

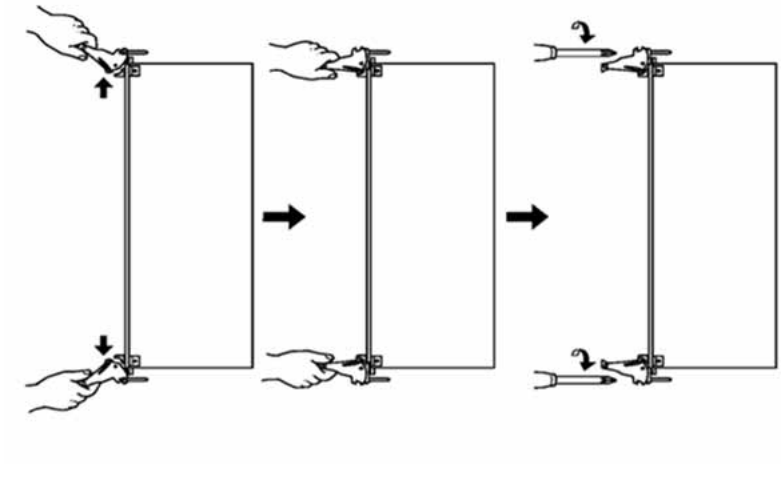
The spiral gasket, located on the faceplate of the circuit pack, can become caught on an adjacent card and ripped off of the faceplate. If the spiral gasket ends up making contact with the backplane inside the chassis, an electrical short circuit can result in a service outage.

17 Hold the Call Agent card by the ejector levers and insert the card back into the shelf.

Note 1: Do not push on the faceplate to seat the card.

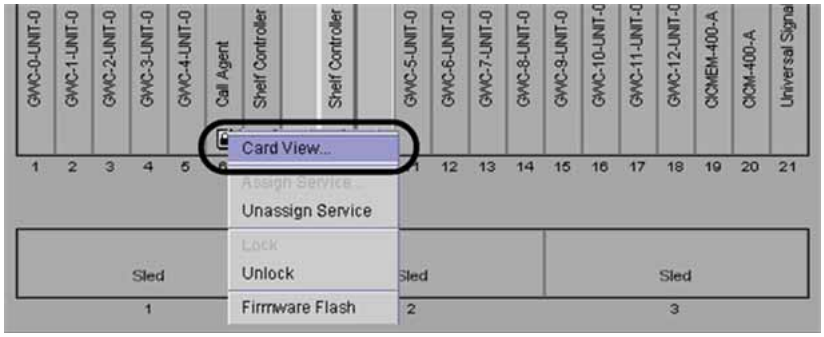
Note 2: Verify that the CPU LED lights. If the CPU LED does not light, reseat the card. If the CPU LED fails to light a second time, replace the card.

18 Secure the card by tightening the captive screws at the top and bottom of the panel as shown in the figure that follows.

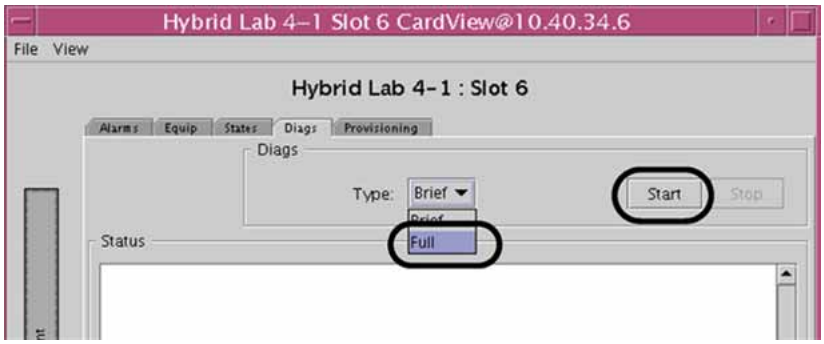


At the CS 2000 SAM21 Manager client workstation

19 Run full diagnostics on the replacement card. Right-click on the card icon in the Shelf View and select Card View from the context menu to open the Card View window.



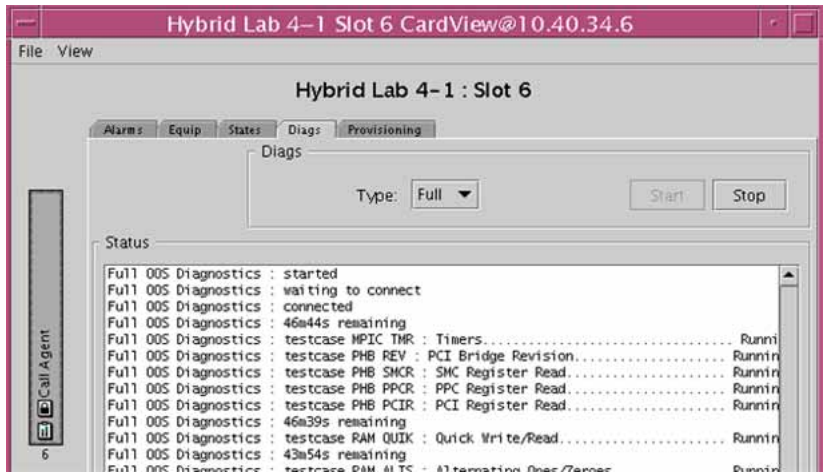
20 Click on the Diagnostics tab from the Card View, select Full, and then click Start.



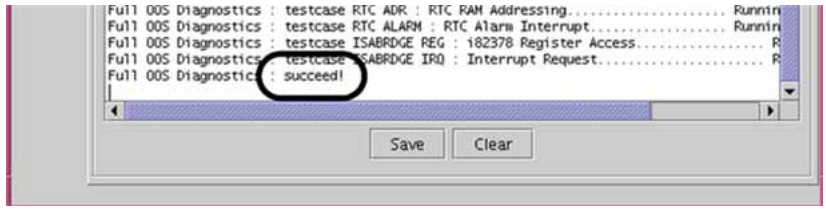
A confirmation dialog appears.

Click Yes to confirm you want to continue.

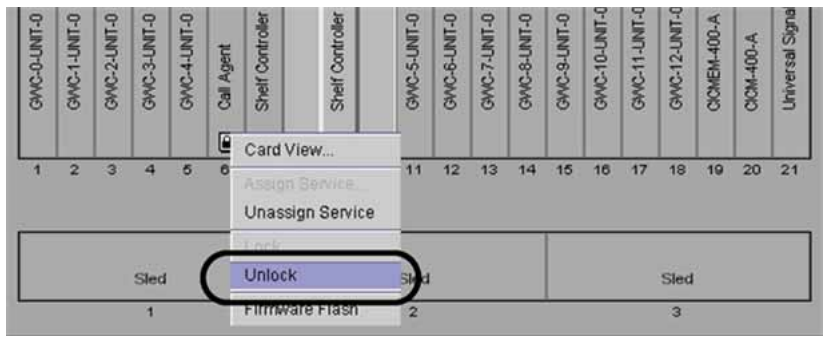
The diagnostics begin and are printed to the Status text area.



Wait for the diagnostics to complete and verify that the last line of the diagnostic output indicates "succeed!" If diagnostics do not indicate success, retry brief diagnostics and then full diagnostics. If diagnostics fail a second time, replace the card.



21 Right click on the card icon and select Unlock from the Shelf View. Optionally monitor the download from the States tab of the Card View window.



Note: If the Firmware Flash enable checkbox is checked on the Provisioning tab of the Card View, the Firmware Flash option is not available from the card context menu.

22 Wait for the lock icon to disappear from the Call Agent card on the Shelf View.

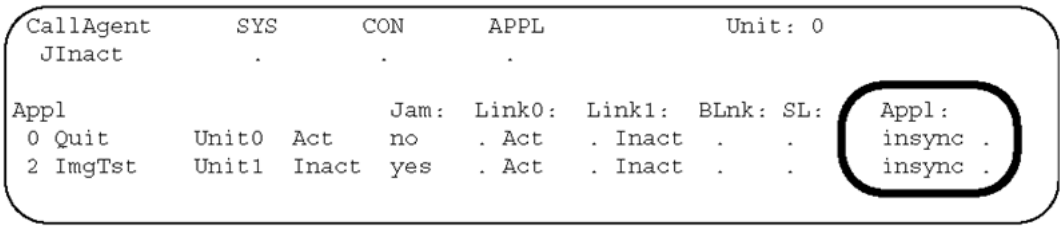
At the Call Agent Manager

23 Synchronize the call processing application images from the Appl level.

Telnet to the active core and enter your user ID and password.

```
ccamtc
CoreMtc
Appl
Sync
```

Note: The simplx alarm clears from the alarm banner and the application flags indicate insync.



24 Release the jam on the inactive unit from the CAMtc level.

```
CoreMtc
CAMtc
RelJam
```

Note: The JInact alarm clears from the alarm banner.

25 Check the JF and Dlog status, and restart the subsystems if necessary.

26 This procedure is complete.

—End—

Performing a maintenance switch of activity on a Call Agent

Use this procedure to execute a switch of activity on a Call Agent.

Performing a maintenance switch of activity on a Call Agent

Step	Action

At the active Call Agent Manager

1 Access the CoreMtc level by typing

```
>CoreMtc
```

2 Access the Appl level by typing

```
> Appl
```

3 Drop call processing application synchronization by typing

```
> DpSync
```

```
CallAgent       SYS       CON       APPL              Unit: 0
    .            .         .       simplx
                                      M
Appl                          Jam:  Link0:  Link1:  Ser: SL: Appl:
 0 Quit       Unit0  Act     no     . Inact . Act     .   NA  nosync .
 2 ImgTst     Unit1  Inact   no     . Act   . Inact   .   NA  nosync /restart
 3 Sync
 4 DpSync
 5
 6
 7
 8
 9
10
11
12
13 LogQuery
14 Alarm
15 QueryIP    DpSync:   Drop application synchronization.
16 QuerySL              Parms: [RestartType]
17 Help                    Restart    - ( WARM | COLD | RELOAD | NORESTART )
18 Refresh                 (default) -  COLD
  mtc
Time  12:25
```

At the MAP

4 Execute LIMITED_PRESWACT:

```
> BCSUPDATE; LIMITED_PRESWACT
```

The LIMITED_PRESWACT command presents a warning:

```
Limited_Preswact should not be used for BCSUPGRADE
SWACTs.  Do you wish to continue?
Please confirm ("YES", "Y", "NO", or "N"):
```

5 Confirm the warning with a Y.

The inactive unit indicates /restart at the Call Agent Manager. Several more steps execute and complete at the MAP. Successful completion is indicated as follows:

```
Total execution time for all complete procedures
00:07:31.362
All LIMITED_PRESWACT steps completed successfully.
```

CAUTION
Possible loss of service
NORESTARTSWACT does not check if the inactive Call Agent is unjammed. If the inactive Call Agent is jammed and a NORESTARTSWACT is requested, service is affected. Verify that the inactive Call Agent is not jammed.

CAUTION
Possible loss of service
Use the Call Agent Manager to verify that the inactive Call Agent does not have any critical alarms. A critical alarm causes the NORESTARTSWACT to fail. Check the GUIs for CCA, SAM21 EM and Ethernet Routing Switch 8600, and clear any alarms for those devices before proceding with NORESTARTSWACT.

6 Check status:

```
> BCSUPDATE;SWACTCI;STATUSCHECK
```

Success is indicated as follows:

```
SWACTCI:
Checking Nodes Status
STATUSCHECK successful
```

7 Execute the NORESTARTSWACT:

```
> NORESTARTSWACT
```

Note 1: Only simple two-port and echo calls that are in a stable talking state (that is, not in a transition state such as dialing) survive a CC WarmSWACT. Survival means that the call is kept up until the next signaling message is received (usually, for

example, a terminate message, but on any other message as well, such as an attempt to use the conference feature).

Note 2: Attendant Consoles will be in night service after the SWACT if the INSV field is set to Y in table ATTCONS (Attendant Consoles).

Progress is printed and the process stops to verify that the inactive Call Agent is not jammed:

```
Beginning SWACT checks:
All the SWACT checks have finished successfully.
The VR_PRESWACT_TRANSFER step completed successfully.
All INSV and ISTB series 1 PMs will have execs loaded
after the SWACT.
Device Checking Status:
NOMATCH option is set to OFF <default setting>.
Device matching during CC WARM SWACT Enabled.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", or "N"):
```

8 Confirm the warning with a Y if the only alarm is an APPL simplx.

The final progress follows. Activity also switches at the Call Agent Manager.

```
Please confirm ("YES", "Y", "NO", or "N"):
>Y
All Pre-SWACT checks completed.  Starting Warm SWACT
now.
*****The cursor will not be returned *****
***** unless a critical failure occurs.  *****
***** Now monitoring Warm SWACT messages.*****
Pre-initialization done
Communication established
Exchange of data with the mate done
Transfer of data done (FASPECT)
Data estimation done
```

9 The telnet session to the active call processing application is lost. Reestablish the connection.

10 Execute POSTSWACT:

```
> BCSUPDATE;POSTSWACT
```

POSTSWACT begins, steps execute, and complete. POSTSWACT stops at step BEGIN_TESTING:

```
REACTIVATE_TRIGASGN executing
REACTIVATE_TRIGASGN complete
DIRP_RECOVERY executing
DIRP_RECOVERY complete ...
```

```
BEGIN_TESTING executing
BEGIN_TESTING complete
Enter Postswact after office testing has been completed
```

11 Enter the POSTSWACT command again:

```
> BCSUPDATE;POSTSWACT
```

```
CCA_SYNC executing
Do you want to sync the Call Agent at this time?
Please confirm ("YES", "Y", "NO", or "N"):
```

12 Confirm you want to sync the Call Agent with a Y.

A series of steps execute and complete following the SYNCing of the Call Agents.

The final warning is printed:

```
Do you wish to erase all SFDEV file(s) ending in
'$PATCH' ?
Please confirm ("YES", "Y", "NO", "N"):
```

13 Reject deleting patch files from sfdev with an N.

14 You have completed this procedure.

—End—

Returning a Call Agent card to Nortel

Application

Use this procedure to return a card to Nortel for repair or replacement in North America.

Different telephone operating companies may have different service level agreements with Nortel. Contact your Nortel account representative to determine your service level.

Nortel Global Repair Services is available in North America:

- **phone**

  Call 1-800-4NORTEL (1-800-466-7835). Listen carefully to the menu prompts. Input 1 for ERC (Express Routing Code), and then input the ERC for the repair destination. The ERC for the United States of America is 181. The ERC for Canada is 1142.

- **FAX**

  In the United States of America, 972-685-8862. In Canada, 1-877-618-2204.

  All FAX orders are returned with an RMA # by the next business day. Faxed emergency orders must also be called in to ensure the receipt of FAX.

- **electronic mail**

  In the United States of America, rich.repair@nortel.com. In Canada, canentry@nortel.com.

  To obtain an E-mail Parts Request Form, send an E-mail to one of the above addresses and include "PRF" in the subject/title field and a form will be sent automatically. Record the customer PO in the subject/title field when E-mailing the completed Parts Request Form. All E-mail orders are returned with an RMA # by the next business day.

Interval

Perform this procedure as required.

Common procedures

There are no common procedures.

Action

Contact Nortel by one of the methods above, and follow the instructions provided.

Replacing a BIP alarm module

Application

Use this procedure to replace a breaker interface panel (BIP) alarm module.

The following frames contain an alarm module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Replace a BIP alarm module when the module fails.

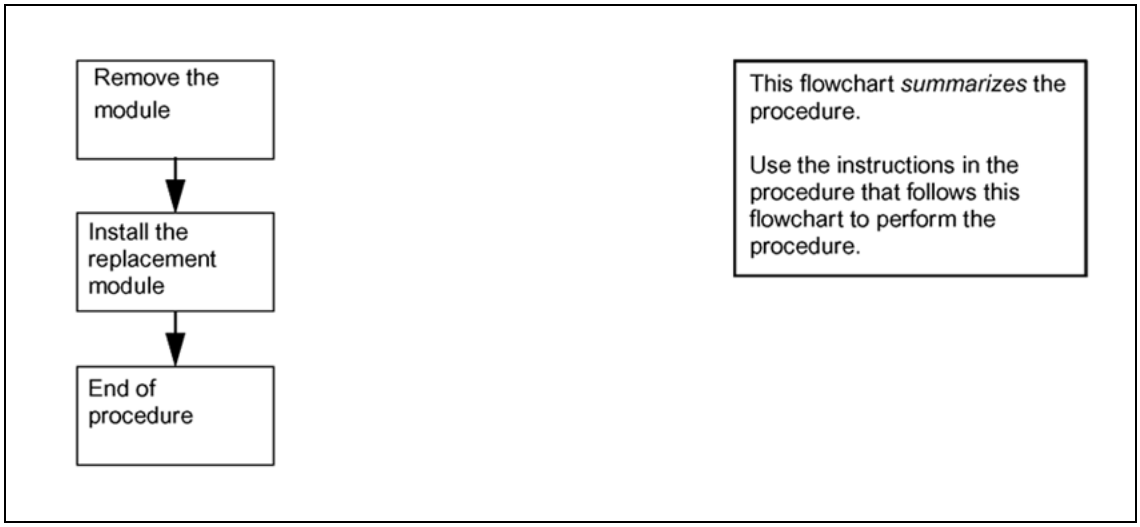
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Replacing a BIP alarm module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before replacing the BIP alarm module. While the module is removed, alarm reporting is temporarily suspended.

Step	Action

At the front of the BIP

1 Remove the failed BIP alarm module. To remove the module, use the procedure "Removing a BIP alarm module" (page 43). When the module has been removed, proceed to step 2 of this procedure.

2 Install the replacement BIP alarm module. To replace the module, use the procedure "Installing a BIP alarm module" (page 46).

3 This procedure is complete.

—End—

Removing a BIP alarm module

Application

Remove a BIP alarm module to replace it due to a failure or to ensure safe removal of the BIP.

The following frames contain an alarm module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Remove a BIP alarm module when the module fails.

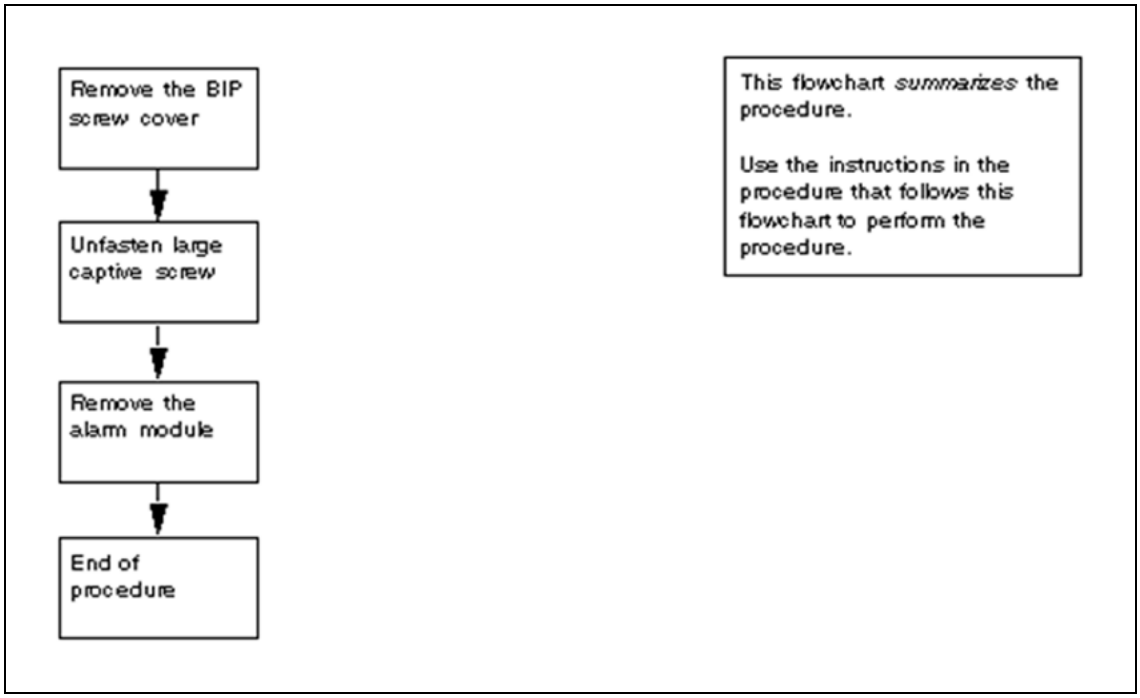
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Removing a BIP alarm module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before removing the BIP alarm module. While the module is removed, alarm reporting is temporarily suspended.

Step	Action

At the front of the BIP

1 Grasp the BIP screw cover and pull it out of the snap-in posts on the BIP chassis.

2 Unfasten the large captive screw of the BIP alarm module.

3 While pinching the lower front lip of the module with your thumb and finger tips, pull gently but firmly straight out until the alarm disengages. Stop pulling when the front of the module is past the front of the BIP.

DANGER
Allow 15 seconds before removing the breaker module. Capacitors on the breaker module must be allowed to discharge.

4 Pull the module straight out of the BIP.

5 This procedure is complete.

—End—

Installing a BIP alarm module

Application

The BIP alarm module indicates hardware alarms, drives the alarm light-emitting diode (LED) board and monitors the state of the power breakers.

The following frames contain an alarm module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Install a BIP alarm module as part of a replacement or initial installation task.

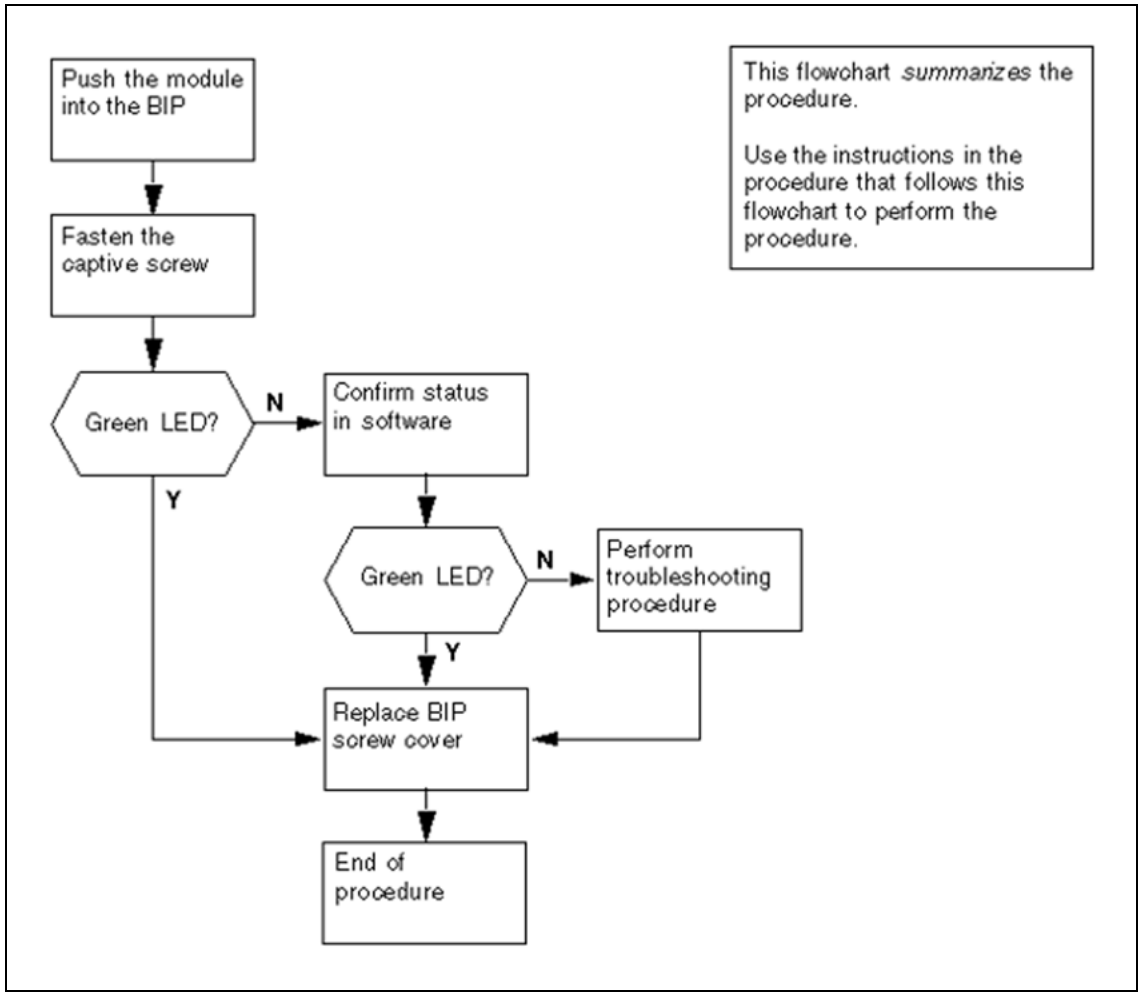
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Installing a BIP alarm module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before removing the BIP alarm module. To minimize the effect of removing an alarm module, insert the replacement immediately. Once the alarm module is installed, software alarms stop.

Step	Action

At the front of the BIP

1 Get a BIP alarm module PEC NTRX51HC.

2 Grip the replacement alarm module with the fingers and thumb of one hand on the lower front lip (the screw end) and use the other hand to align the rear of the module with the opening in the BIP.

3 Push the module gently but firmly straight in until it engages. Stop pushing when the front of the module is flush with the front of the BIP.

4 Engage and fasten the large slotted captive screw of the alarm module. Do not strip the threads or the hole because the module cannot seat properly.

5 Check the alarm module status LEDs.

If the color is	Do
green	step 7
other than green	step 6

6 Have the network operator confirm the status in the software.

If the color is	Do
green	step 7
other than green	Perform troubleshooting procedures to clear the problem, and continue to step 7.

7 Replace the BIP screw cover by aligning the screw cover with the BIP chassis and pushing it into place. The BIP screw cover snaps into the snap-in posts.

8 This procedure is complete.

—End—

Replacing a breaker module

Application

Use this procedure to replace a breaker module in the breaker interface panel (BIP).

The following frames contain an alarm module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Replace a breaker module when the breaker module fails.

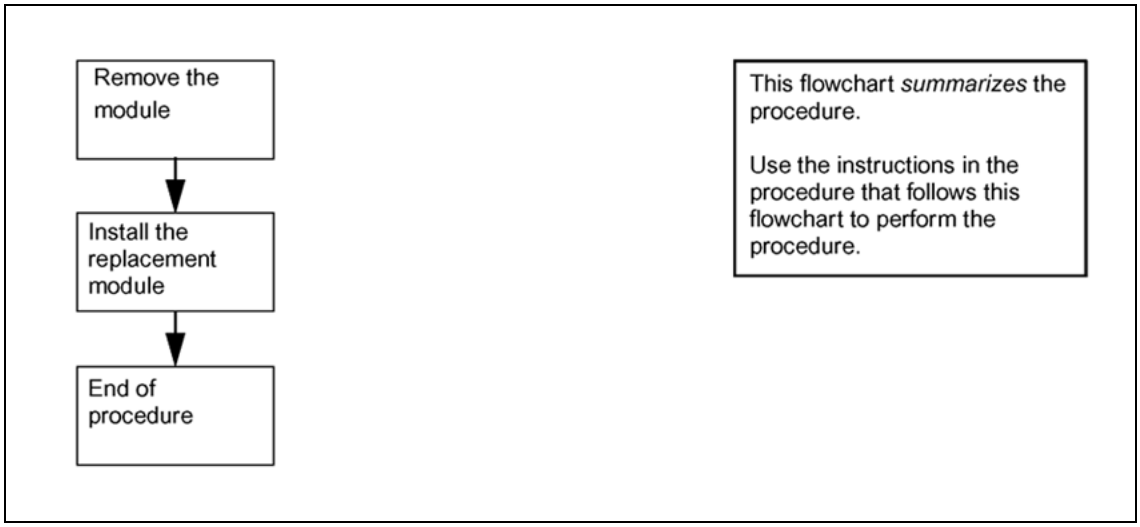
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Replacing a breaker module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before replacing the BIP alarm module. While the module is removed, alarm reporting is temporarily suspended.

Step	Action

At the front of the BIP

1 Remove the failed breaker module. To remove the breaker module, use the procedure "Removing a breaker module" (page 51). When the module has been removed, proceed to step 2 of this procedure.

2 Install the replacement breaker module. To replace the module, use the procedure "Installing a breaker module" (page 54).

3 This procedure is complete.

—End—

Removing a breaker module

Application

Remove a breaker module to replace it due to a failure or to ensure safe removal of the breaker interface panel (BIP).

The following frames contain an alarm module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Remove a breaker module when the breaker module fails.

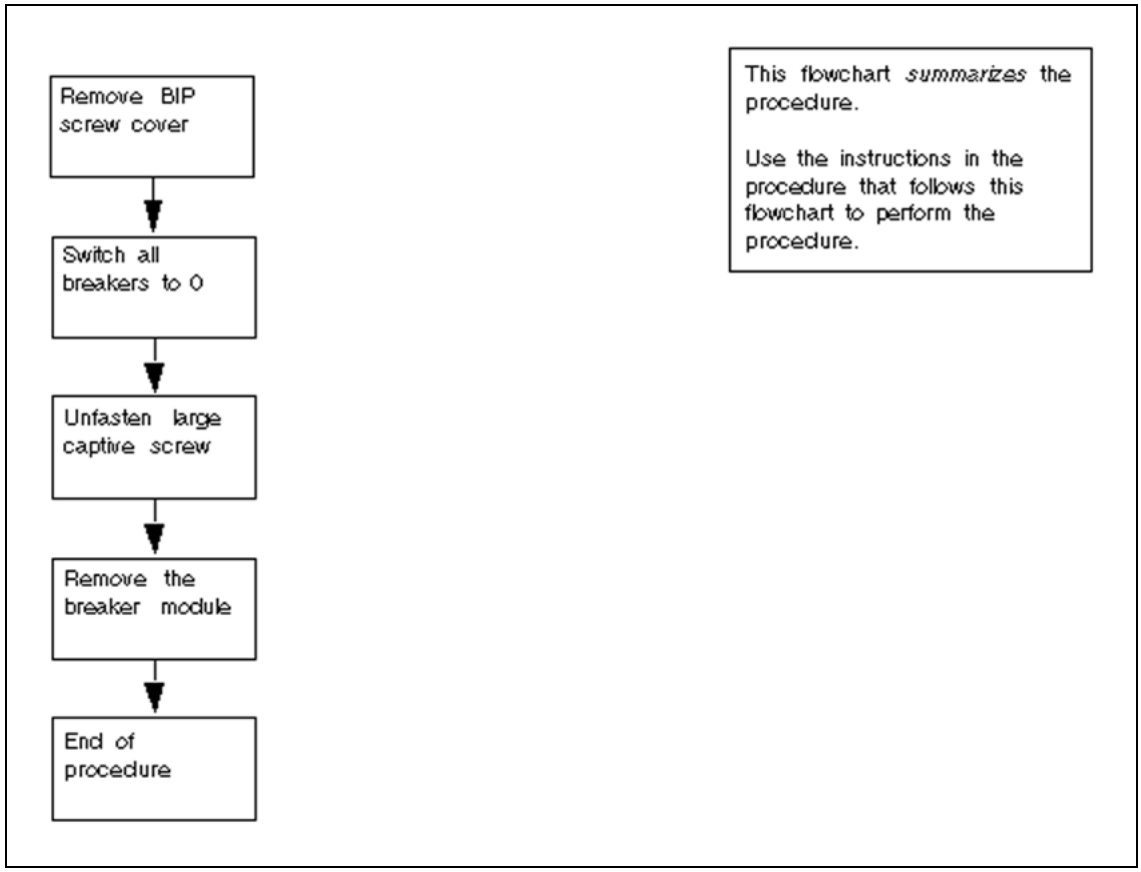
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Removing a breaker module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before removing the BIP alarm module. While the module is removed, alarm reporting is temporarily suspended.

Step	Action

At the front of the BIP

1 Grasp the BIP screw cover and pull it out of the BIP chassis.

2 Switch all breakers to 0.

3 Unfasten the large captive screw of the breaker module.

4 While pinching the lower front lip of the module with your thumb and finger tips, pull gently but firmly straight out until the alarm disengages. Stop pulling when the front of the module is past the front of the BIP.

DANGER
Allow 15 seconds before removing the breaker module. Capacitors on the breaker module must be allowed to discharge.

5 Pull the module straight out of the BIP.

6 This procedure is complete.

—End—

Installing a breaker module

Application

The breaker module distributes up to five power feeds to shelves in the frame. The following frames contain a breaker module:

- Services Application module Frame (SAMF) for CS 2000 and CS 2000 Compact
- Cabinetized Operations Administration and Maintenance (COAM) frame for CS 2000 and CS 2000 Compact
- Call Control Frame (CCF) for CS 2000 Compact only
- Ethernet Routing Switch (ERS) 8600 Carrier Voice over IP Frame, which is also referred to as the CS LAN Frame, for CS 2000 and CS 2000 Compact
- Universal Signaling Point (USP), which can be one of USP Compact CCF, USP Frame with a Control Application Module (CAM) shelf, or USP in a COAM

Interval

Install a breaker module as part of a replacement or initial installation task.

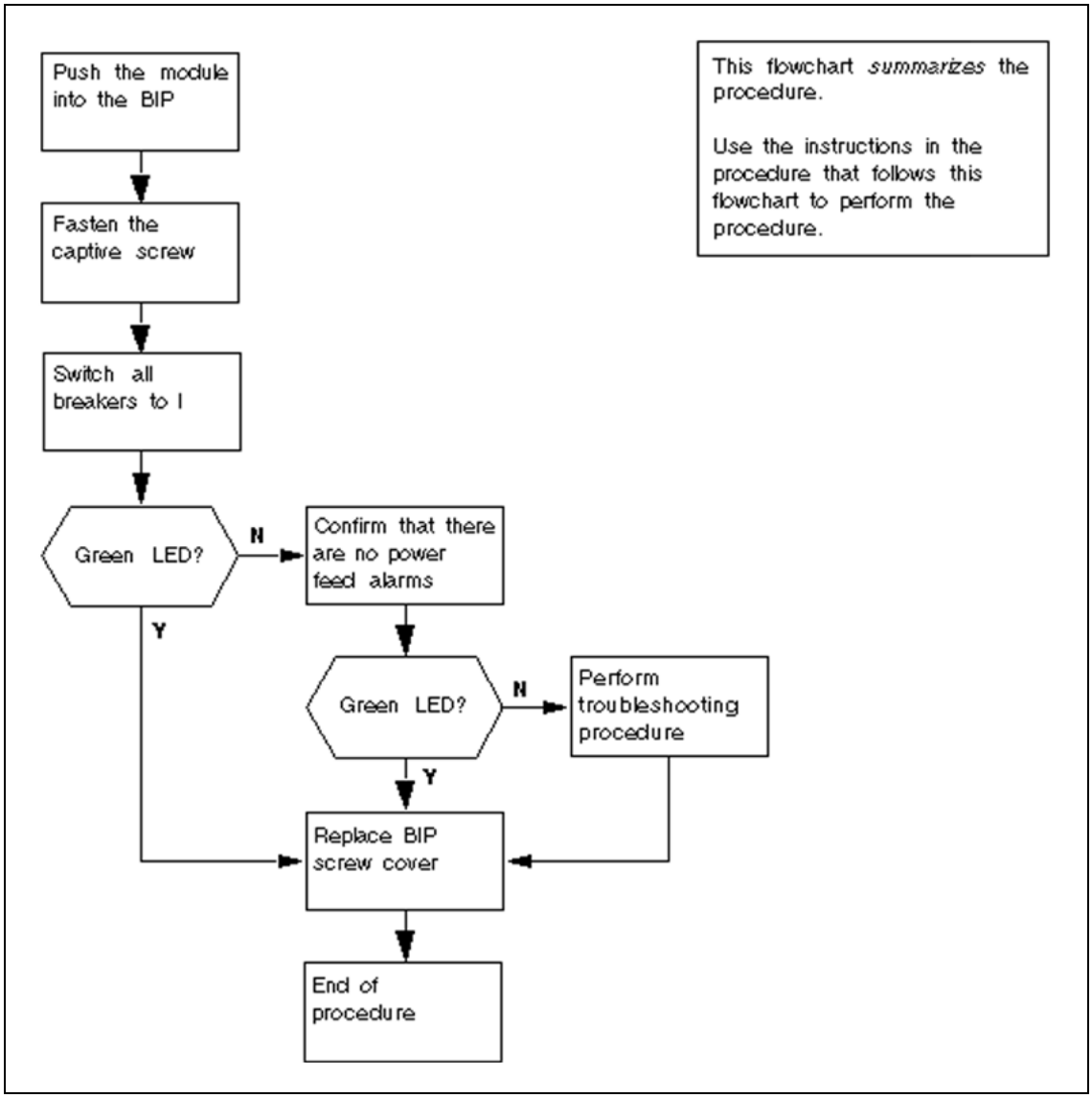
Common procedures

You must be familiar with the safety considerations and best practices for your location.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Installing a breaker module



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before removing the BIP alarm module. To minimize the effect of removing an alarm module, insert the replacement immediately. Once the alarm module is installed, software alarms stop.

Step Action

At the front of the BIP

1 Get the correct breaker module for the application and frame. For a replacement breaker module, ensure that the PEC of the replacement breaker module is the same as the failed breaker module.

2 Grip the replacement breaker module with the fingers and thumb of one hand on the lower front lip (the screw end) and use the other hand to align the rear of the breaker module with the opening in the BIP.

3 Push the breaker module gently but firmly straight in until it engages. Stop pushing when the front of the module is flush with the front of the BIP.

4 Engage and fasten the large slotted captive screw of the alarm module. Do not strip the threads or the hole because the module cannot seat properly.

5 Switch all breakers to |.

6 Check the breaker module status LEDs.

If the color is	Do
green	step 7
red	Obtain another breaker module. Return to "Removing a breaker module" (page 51).

7 Have the network operator confirm that there are no power feed alarms in the frame.

If there are	Do
no power feed alarms	step 8
power feed alarms	Perform troubleshooting procedures to clear the problem, and continue to step 8.

8 Replace the BIP screw cover by aligning the screw cover with the BIP chassis and pushing it into place. The screw cover snaps into the snap-in posts.

9 This procedure is complete.

—End—

Replacing cooling unit fan filters

Application

Use this procedure to replace cooling unit fan filters for the SAM21 shelf. The part number of the cooling unit fan filter is A0828397.

The cooling unit fan filter is foam. Access the cooling unit fan filter from the front of the SAM21 shelf. Cooling units are in the lower front section of the SAM21 shelf.

Interval

Replace the cooling unit fan filters every 10 000 hours.

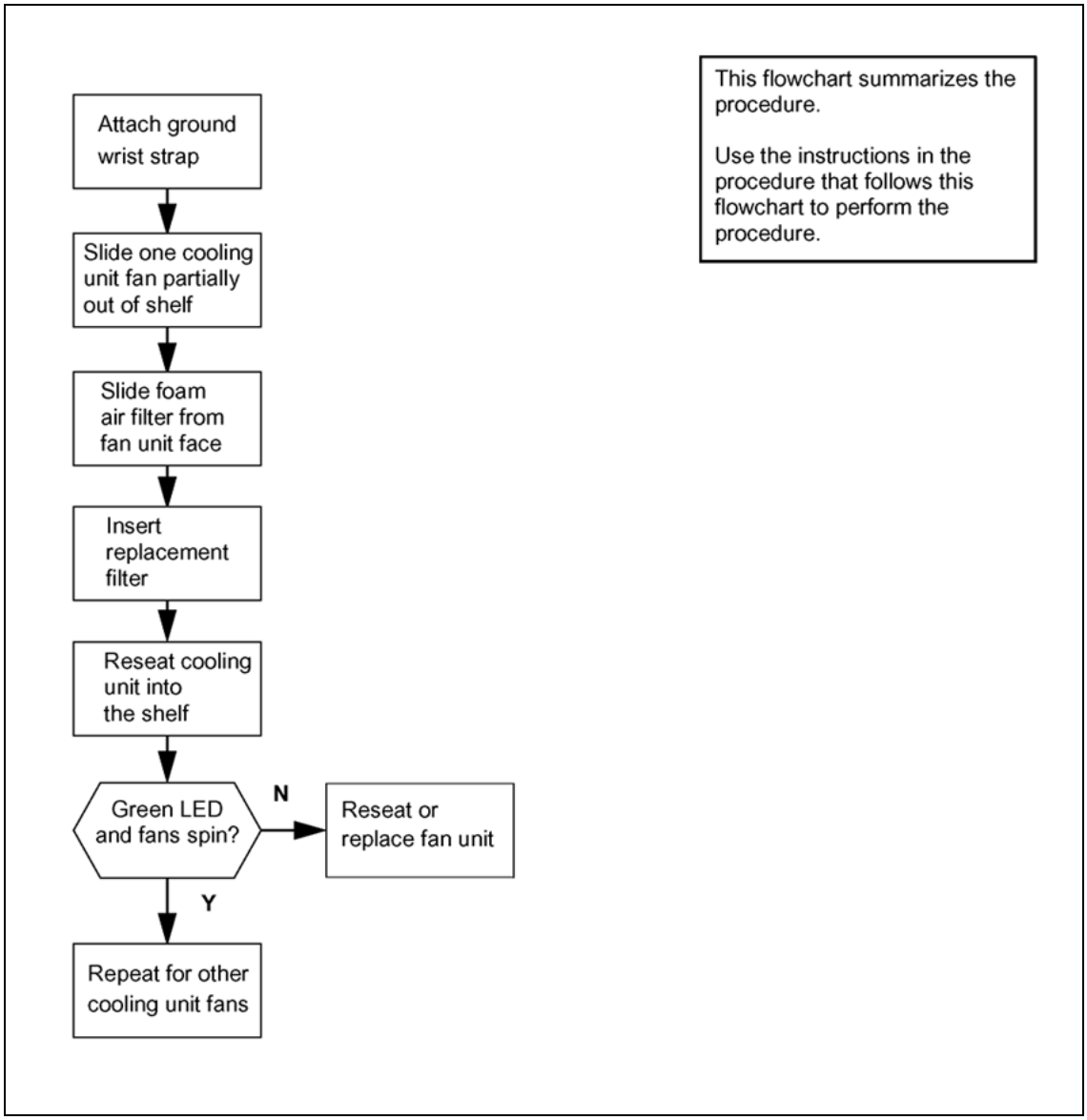
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Replacing cooling unit fan filters



WARNING
Make sure that you have protection against electrostatic discharge (ESD). Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP).

CAUTION
Read and make sure you thoroughly understand the instructions in this procedure before performing the filter replacement. Do not allow the cooling unit to remain without power for more than one minute. Do not unseat more than one cooling unit at a time.

Step	Action

At the SAM21 shelf

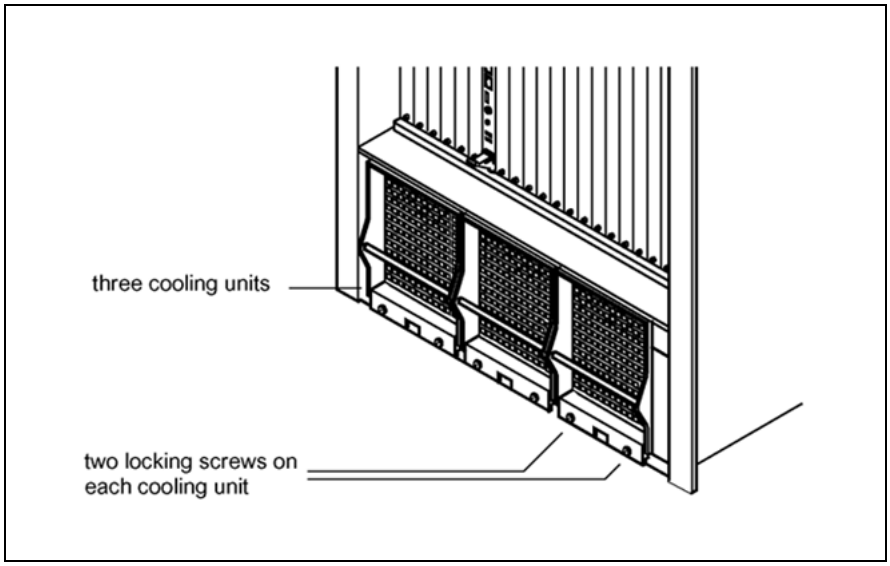
1 Get a new, replacement cooling unit fan filter (part number A0828397). Do not re-use old filters.

2 Open any doors on the cabinet completely.

3 Locate the following in the lower front section of the cabinet.

- Three cooling units for each SAM21 shelf.
- One foam cooling unit fan filter on the face of each cooling unit.

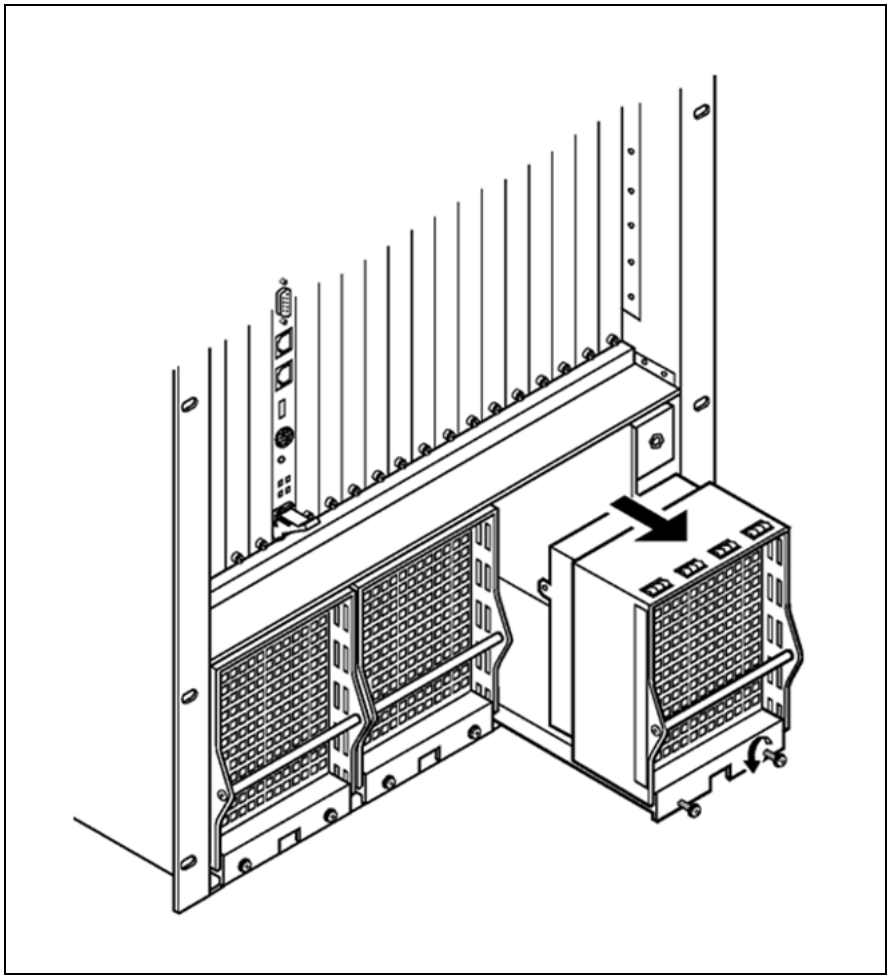
SAM21 shelf cooling unit fan locations



4 Pull one of the three cooling units partially away from the shelf. Wait 30 seconds to allow the fan to spin down.

Note: The FSP blower LED will light. A major alarm appears on CS 2000 SAM21 Manager client. Two of the cooling units also supply power to the shelf. An additional major alarm is raised when either of these cooling units is removed.

Unseat one cooling unit

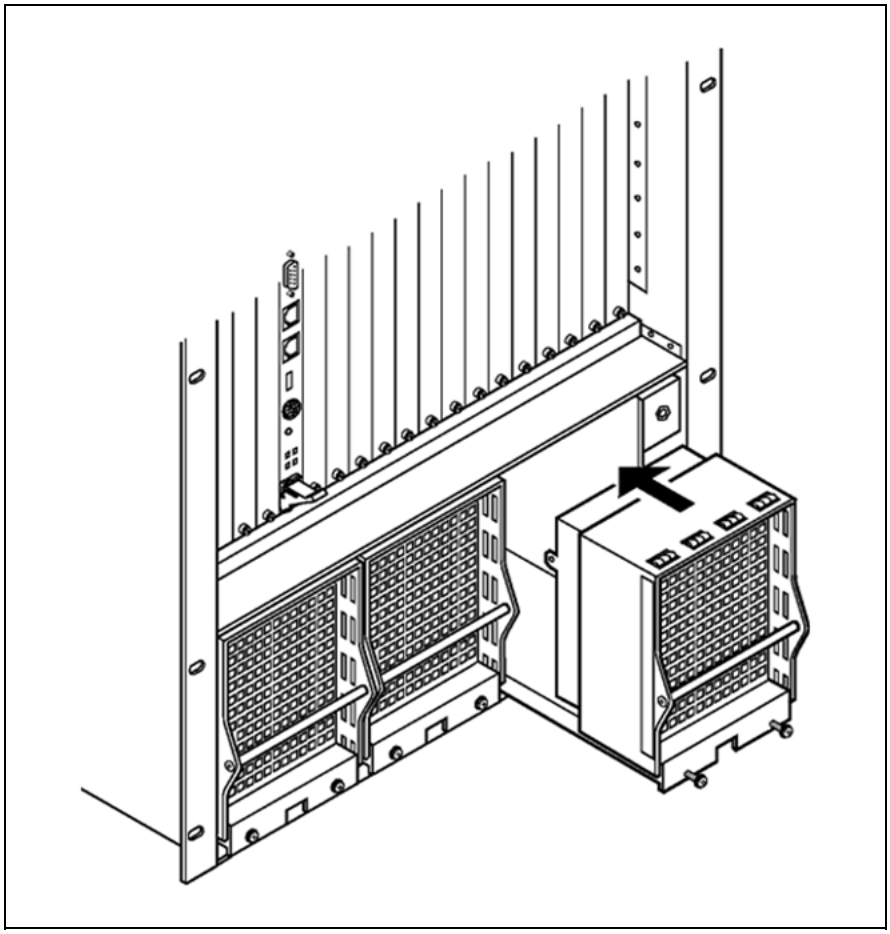


5 Remove the foam air filter by pinching the filter in the center so that the edges of the filter slip out of the filter retainer. Lift the foam air filter out and over the cooling unit handle.

6 Insert the replacement cooling unit filter. Tuck the edges of the foam air filter behind the filter retainer.

7 Reseat the cooling unit.

Reseat the cooling unit



8 Make sure that the fan powers up. Make sure that the green LED lights on the cooling unit.

If the green LED does not light or the fan does not spin, reseat the cooling unit. If the green LED does not light or the fan does not spin a second time, replace the cooling unit. If the green LED does not light or fan does not spin on the replacement unit, contact Nortel support personnel.

9 Tighten the locking screws on the cooling unit. Turn the locking screws in a clockwise direction.

10 Repeat for each cooling unit. Disconnect the wrist strap lead from the FSP when all air filters are replaced.

11 This procedure is complete.

—End—

Testing wrist-strap grounding cords

Application

Use this procedure to test the resistance of wrist-strap grounding cords. The resistance must have minimum and maximum values as follows:

- resistance must be low enough to allow static electricity to discharge from the human body
- resistance must be high enough to prevent electrocution if the equipment develops a short circuit

Interval

Perform this procedure every 30 days (monthly).

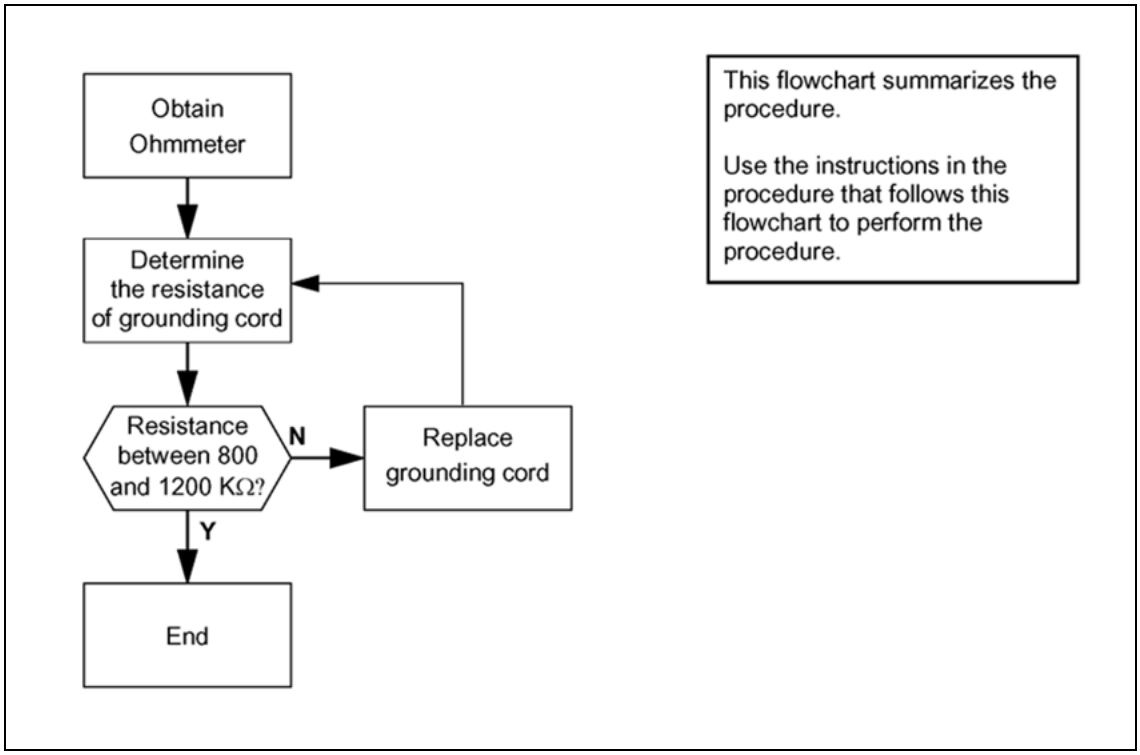
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Testing wrist-strap grounding cords



DANGER
Do not use a grounding cord with a resistance less than 800K ohm. A resistance lower than 800K ohm opens you to the risk of electrocution. Electrocution can occur if the equipment short-circuits while you are wearing the wrist strap.

WARNING
Do not use a grounding cord with a resistance greater than 1200K ohm. A resistance greater than 1200K ohm cannot conduct static charges correctly to ground nor protect electronic equipment against possible damage from electrostatic discharge.

Step	Action

At the equipment frame

1 Get an ohmmeter.

2 Disconnect the grounding cord from the wrist strap.

3 Use the ohmmeter to measure the resistance between the opposite ends of the grounding cord.

If the resistance is	Do
between 800K ohm and 1200K ohm	step 7
less than 800K ohm or greater than 1200K ohm	step 4

4 Discard the grounding cord that has faults.

5 Get a new grounding cord.

6 Test the new grounding cord.

If the resistance is	Do
between 800K ohm and 1200K ohm	step 7
less than 800K ohm or greater than 1200K ohm	step 4

7 Connect the wrist strap to the grounding cord again.

8 You have completed this procedure.

—End—

Call Agent Manager alarm clearing

Use this procedure to begin diagnosis of the Call Agent from the Call Agent Manager.

To use the Call Agent Manager, ensure that the PassThru feature is provisioned on the CS 2000 Core Manager.

Step	Action

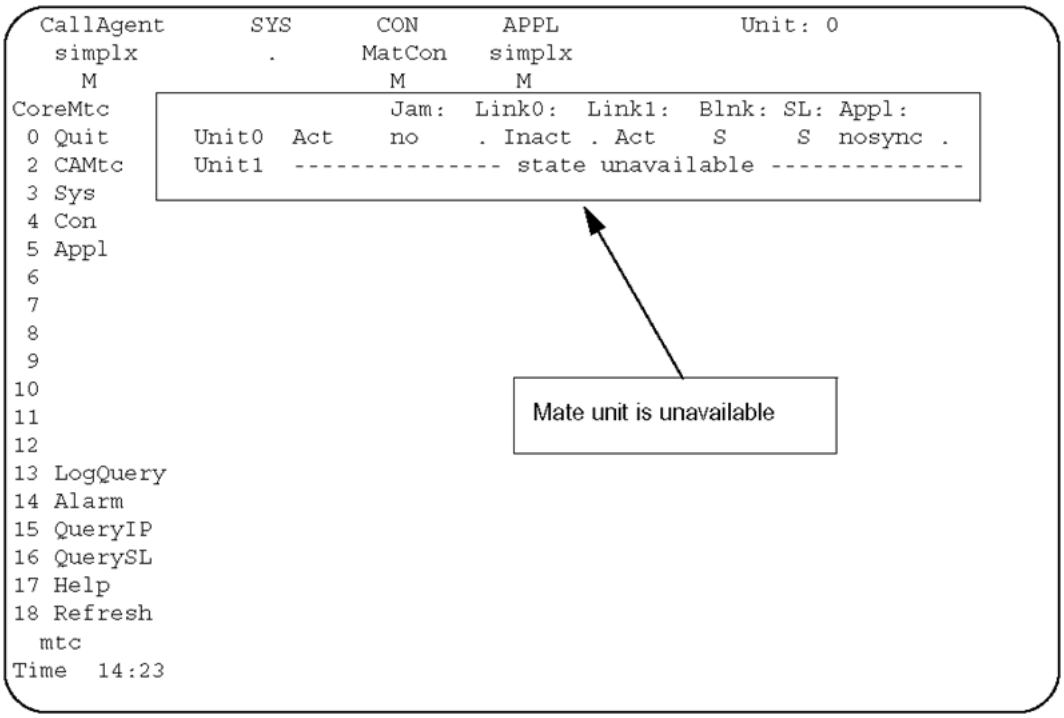
At the Call Agent Manager

1 Enter the CoreMtc level.

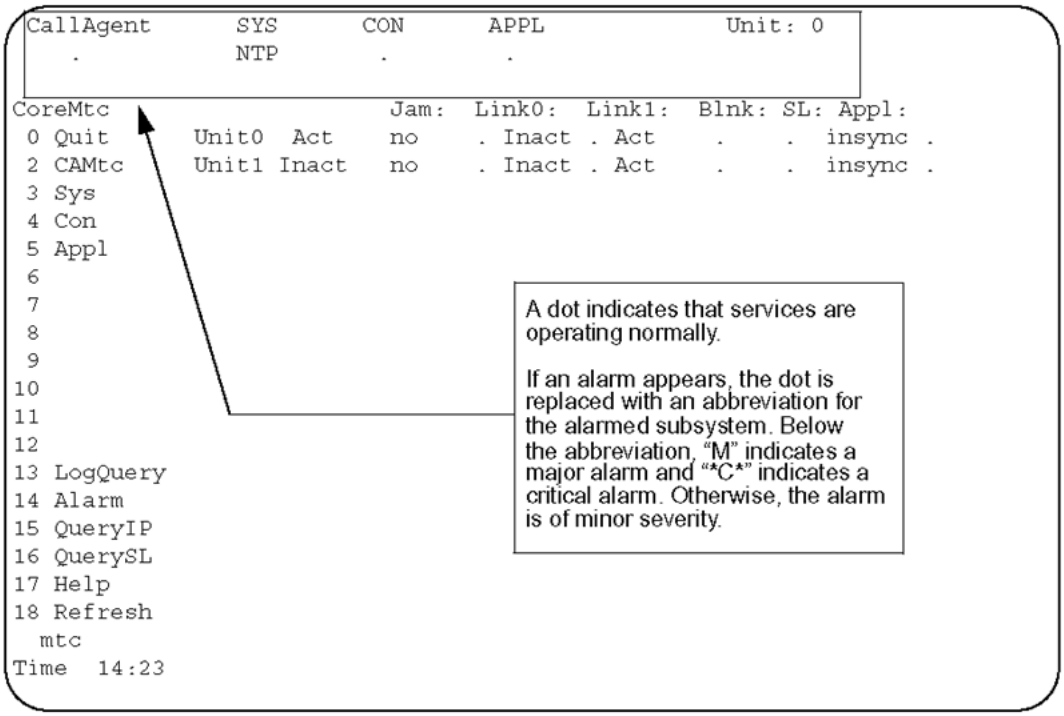
```
CoreMtc
```

2 Review the following figures to determine if the mate unit is available.

Call Agent Manager screen when mate unit is unavailable



Call Agent Mgr screen when mate is available and alarms are active



If	Do
the mate unit is unavailable	Proceed to "CS 2000 SAM21 Manager procedures" (page 175)
alarms are in the alarm banner	go to step 3

3 Clear Call Agent alarms.

4 Clear SYS alarms.

5 Clear CON alarms.

6 Clear APPL alarms.

7 This procedure is complete.

—End—

Additional information

The alarm banner shows the most severe faults and can mask lesser faults. To determine all faults in a level enter the alarm command with the level:

```
Alarm con
```

Call Agent Mgr screen with masked alarms

```
CallAgent       SYS       CON       APPL              Unit: 0
    .             .     MatCon    simplx
                          M         M
CCAMtc
 0 Quit
 2 CoreMtc
 3 Admin
 4          CON alarms for unit 0:
 5
 6           Alarm Severity Description
 7           LnkCon major  Link0: INSV, mateCon: UNAVAIL, netCon: AVAIL;
 8                         Link1: INSV, mateCon: UNAVAIL, netCon: AVAIL;
 9                         BLink: SYSB, mateCon: UNAVAIL;
10                         SL: SYSB;
11
12           MatCon major  Link0: INSV, mateCon: UNAVAIL, netCon: AVAIL;
13 LogQuery               Link1: INSV, mateCon: UNAVAIL, netCon: AVAIL;
14 Alarm                  BLink: SYSB, mateCon: UNAVAIL;
15                         SL: SYSB;
16 QuerySL
17 Help     CON alarms for unit 1: none
18 Refresh
  mtc
Time  10:34  >
```

In the figure above, a mate connectivity alarm masked a linked connectivity alarm. However, the alarm banner indicates the most severe alarm. Clear the most severe alarm first.

Retrieve logs

Use this procedure to retrieve platform log reports.

Step	Action

At the Call Agent Manager

1 Enter the LogQuery command.

```
LogQuery [numLogs|ALL][MATE]
```

[numLogs|ALL]

Use this optional parameter to specify the number of log reports to display, 1 to 50. The ALL parameter displays up to 50 log reports. The default behavior is to display 20 log reports.

[MATE]

Use this optional parameter to display the log reports for the mate unit.

```
CallAgent       SYS       CON       APPL              Unit: 0
    .           NTP         .       simplx
                 M                     M
CCAMtc            CCA631 JUL25 10:46:49 INFO Mate Connectivity Restored
 0 Quit           Unit Number : 0, ACTIVE
 2 CoreMtc        Description : Link0: INSV, mateCon: AVAIL, netCon: AVAIL;
 3 Admin                        Link1: INSV, mateCon: AVAIL, netCon: AVAIL;
 4                              BLink: INSV, mateCon: AVAIL; SL: INSV;
 5
 6                CCA651 JUL25 10:46:49 INFO Mate Communication Restored
 7                Unit Number : 0, ACTIVE
 8                Description : Mate unit is available.
 9
10           *    CCA331 JUL25 10:46:48 FLT  Mate Connectivity
11                Unit Number : 0, ACTIVE
12                Description : Link0: INSV, mateCon: AVAIL, netCon: AVAIL;
13 LogQuery                    Link1: INSV, mateCon: AVAIL, netCon: AVAIL;
14 Alarm                       BLink: SYSB, mateCon: UNAVAIL; SL: INSV;
15
16 QuerySL        CCA635 JUL25 10:46:47 INFO Link Connectivity Restored
17 Help           Unit Number : 0, ACTIVE
18 Refresh       Description : Link0: INSV, mateCon: UNAVAIL, netCon: AVAIL;
  mtc                         Link1: INSV, mateCon: UNAVAIL, netCon: AVAIL;
Time  10:46  MORE... (19%)
```

2 This procedure is complete.

—End—

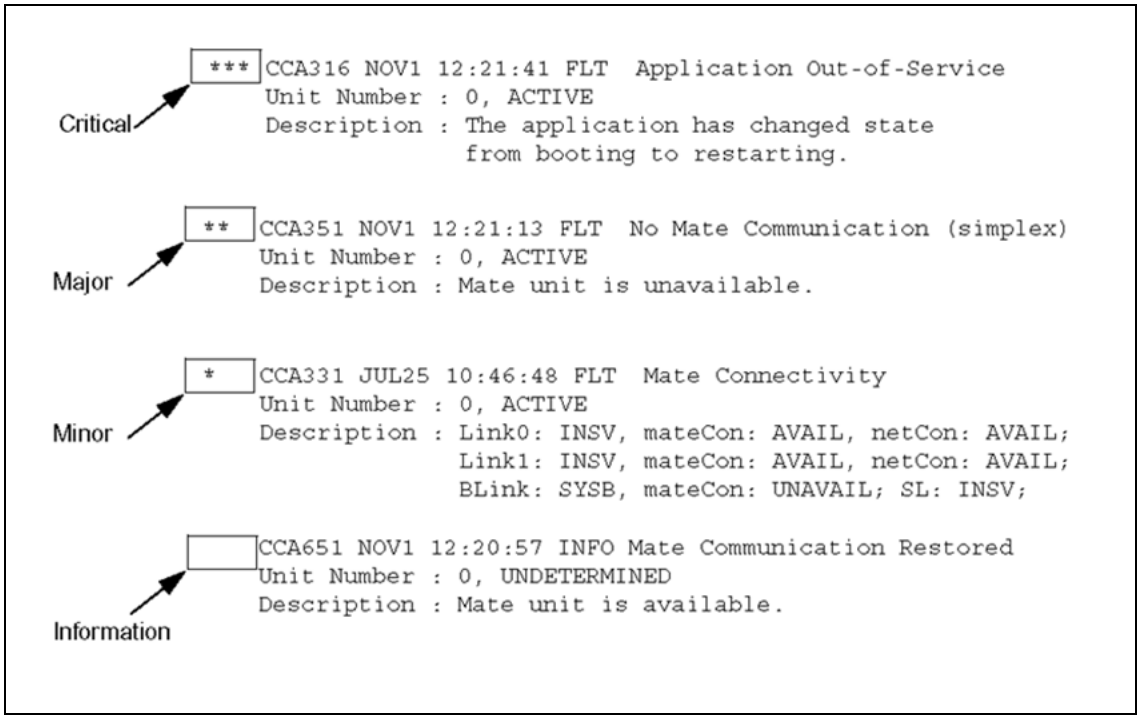
Additional information

Logs are available from the platform, the call processing application, and the Operations Support System (OSS) network.

Platform access

The procedure above shows how to retrieve platform logs from the Call Agent Manager.

Logs are categorized into four categories: critical, major, minor, and information. Refer to the following figure for examples.



Logs are also categorized by number. Refer to the figure above and the following table for more information.

Event number	Range	Description
Trouble	300 to 399	These logs indicate abnormal operation. They can be alarms or alerts.
Information	600 to 699	These logs provide information about system events.

Call processing application access

Call processing logs are available with the **LOGUTIL** tool within the call processing application. These logs and the platform logs are transferred to the OSS network.

Call Agent alarm and log matrix

The following table provides a cross reference to the alarms, logs, and fault severities for the Call Agent. Alarm severities are critical (C), major (M), and minor (m).

Alarm name and clearing procedure	Severity			Related log reports
	C	M	m	
"CallAgent RExTstminor" (page 79)			x	See "CallAgent RExFltminor" (page 76)
"Call Agent RExSchminor" (page 80)			x	**CCA365** System REx has not started for over 7 days **CCA665** RExSch alarm has cleared
"Call Agent Configminor" (page 85)			x	**CCA375** One unit has a different CPU type than the other unit **CCA675** config alarm has cleared
"CallAgent simplxmajor" (page 82)		x		**CCA351** Node simplex **CCA651** Node duplex
"CallAgent JInactminor" (page 75)			x	**CCA355** Inactive unit jammed **CCA655** Jam released on inactive unit
"CallAgent RExFltminor" (page 76)			x	**CCA362** Rex test failed **CCA660** Rex test started **CCA661** Rex test finished **CCA663** Rex test rejected
"CallAgent C_MisMminor" (page 84)			x	**CCA380** Committed loads mismatch **CCA680** Committed loads equal ***Note:*** These log reports were listed as 3PC372 and 3PC672 for SN04.
"SYS HW Fltcritical or major" (page 103)	x	x		**CCA309** Board fault **CCA609** Board fault cleared
"SYS NFScritical, major or minor" (page 93)	x	x	x	**CCA304** NFS mounts not accessible **CCA604** All NFS mounts accessible
"SYS Memorycritical, major or minor" (page 91)	x	x	x	**CCA300** Memory usage threshold exceeded **CCA600** Memory usage threshold not exceeded

Alarm name and clearing procedure	Severity			Related log reports
	C	M	m	
"SYS NTPmajor or minor" (page 96)		x	x	**CCA305** Unable to sync to properly to NTP server or drift is excessive **CCA605** Synced properly to NTP server
"SYS CPU Ldcritical, major or minor" (page 87)	x	x	x	**CCA301** CPU load average threshold exceeded **CCA601** CPU load average threshold not exceeded
"SYS Diskcritical, major or minor" (page 90)	x	x	x	**CCA302** Disk usage threshold exceeded **CCA602** Disk usage threshold not exceeded
"SYS Zombiecritical, major or minor" (page 99)	x	x	x	**CCA303** Zombie process threshold exceeded **CCA603** Zombie process threshold not exceeded
"SYS CpuUtlcritical, major or minor" (page 100)	x	x	x	**CCA306** CPU utilization threshold exceeded **CCA606** CPU utilization threshold not exceeded
"CON MatCon critical or major" (page 104)	x	x		**CCA331** Unable to talk to mate via Ethernet/fiber **CCA631** Able to talk to mate via Ethernet/fiber
"CON LnkConcritical or major" (page 108)	x	x		**CCA335** Ethernet interface down **CCA635** Ethernet interface okay
"CON NetConmajor or minor" (page 111)		x	x	**CCA336** Unable to talk to network **CCA636** Able to talk to network
"APPL NoApplcritical or minor" (page 114)	x		x	**CCA316** Application OOS **CCA616** Application INSV
"APPL ImgTstminor" (page 115)			x	See "APPL Image major" (page 116)
"APPL Image major" (page 116)		x		**CCA322** Image test failed **CCA620** Image test started **CCA621** Image test finished
"APPL simplxmajor" (page 118)		x		**CCA315** Application simplex **CCA615** Application duplex
"APPL Memorymajor or minor" (page 120)		x	x	**CCA314** Application Memory **CCA614** Application Memory Alarm Cleared

The log reports and alarms in the following table are available if the CS 2000 - Compact is configured with Message Controller cards.

Alarm name and clearing procedure	Severity C	M	m	Related log reports
"CallAgent NIIKEYminor" (page 86)			x	**CCA352** NIIKEY Detected **CCA652** NIIKEY Removed
"MC ATMminor, major or critical" (page 209)	x	x	x	**CCA340** MC ATM Connectivity **CCA640** MC ATM Alarm Cleared
"MC ETHmajor or minor" (page 214)		x	x	**CCA345** MC Ethernet Connectivity **CCA645** MC Ethernet Connectivity Restored
"MC MCTblmajor or minor" (page 217)		x	x	**CCA344** MC Trouble **CCA644** MC Trouble Alarm Cleared

The following log reports are not correlated with alarms or alarm clearing:

- CCA390 -- Process panic (Trap)
- CCA670 -- SwAct failover started
- CCA671 -- SwAct failover finished
- CCA685 -- CCA Geo OSPF Disable
- CCA686 -- CCA Geo OSPF Enable

CallAgent JInact minor

Alarm display

```
CallAgent      SYS      CON      APPL            Unit: 0
  JInact         .        .        .
```

Indication

The Call Agent generates a CCA355 log report in addition to the alarm. The Call Agent generates a CCA655 log report when the alarm clears.

Meaning

The inactive unit is jammed to prevent a Switch of Activity (SWACT).

Action

This alarm is expected during an upgrade or Call Agent card replacement. No action is required.

```
  CallAgent       SYS       CON       APPL              Unit: 0
    JInact          .         .       simplx

Sys                         Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  yes    . Act    . Inact  .     .   insync .
 2 QryCPU     Unit1  Act    no     . Act    . Inact  .     .   insync .
 3 QryDsk
 4 QryMem
 5 QryZmb
 6 QryNFS
 7 QryLd
 8 QryNTP
 9 QryCpUtl
10
11
12
13 LogQuery
14 Alarm
15 QueryIP
16 QuerySL
17 Help
18 Refresh
  mtc
Time  14:56  >
```

CallAgent RExFlt minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
  RExFlt         .         .          .
```

Indication

The Call Agent generates a CCA362 log report in addition to the alarm. The log report indicates at what point the test failed.

Meaning

One or more tests failed. This alarm is also raised if a user manually aborts a RExTst.

The routine exercise test (RExTst) has four stages:

1. image test
2. hardware diagnostic test
3. reset and reboot
4. call processing application synchronization

The inactive Call Agent is enabled during stages 1, and 4. The inactive Call Agent is disabled for stage 2 and the beginning of stage 3. If the RExTst fails during stage 2 or stage 3, the inactive Call Agent is recovered by the Shelf Controller.

If the CS 2000 - Compact is configured with Message Controller cards, one Message Controller card is selected for diagnostics. The Message Controller is removed from service by a Call Agent request and then hardware diagnostics are run on the Message Controller, followed by a reset on the Message Controller. The results of the diagnostics are available in the RExTst QUERY report. If diagnostics are successful, the other Message Controller is selected for diagnostics on the next RExTst.

Action

Step	Action
	At the Call Agent Manager

1 Review office records to determine if the fault has occurred in the past.

2 Enter the CoreMtc level.

```
CoreMtc
```

3 Enter the CAMtc level.

```
CAMtc
```

4 Query the results for the last RExTst.

```
RExTst QUERY
```

```
 CallAgent      SYS      CON      APPL             Unit: 0
  RExFlt         .        .         .

CAMtc                     Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit      Unit0  Inact  no    . Act   . Inact  .    .   insync .
 2 Jam       Unit1  Act    no    . Act   . Inact  .    .   insync .
 3 RelJam
 4 RExTst
 5 SwAct
 6
 7
 8
 9
10
11           Results for QUERY LAST REX TEST:
12
13 LogQuery
14 Alarm               Initiator: MANUAL
15 QueryIP                Class: FULL
16 QuerySL   CA REx Last Run On: Thu Apr 10 20:07:53 2003
17 Help          CA Unit Tested: 1
18 Refresh              Result: PASSED
  mtc
Time  17:45  >
```

Note: If Call Agent cards are provisioned with Message Controller cards, the results for the last Message Controller RExTst are reported below the Call Agent information.

5 Run a manual RExTst during a period of low traffic to determine if the fault is intermittent.

```
CoreMtc
CAMtc
RExTst RUN
```

6 Determine the next action.

If	Do
the fault does not reappear	record the fault in office records
the fault does appear	Gather TRAP, SWER, footprint buffer information and contact Nortel support personnel.

7 This procedure is complete.

—End—

Additional information

Use the following procedure to gather TRAP log reports, SWER log reports, and footprint buffer information.

Step	Action

At the MAP interface

1 Record the session.

```
CI:> RECORD START ONTO SD00TEMP
```

2 Enter the log utilities level and print TRAP and SWER log reports.

```
CI:> LOGUTIL;OPEN TRAP;BACK ALL;OPEN SWER;BACK ALL;QUIT
```

3 Enter the footprint level and print the active buffers for the active and inactive call processing applications.

```
CI:> FOOTPRT;FPBUF ACTIVE T;FPBUF ACTIVE M;QUIT
```

4 Stop recording.

```
CI:> RECORD STOP ONTO SD00TEMP
```

5 This procedure is complete.

—End—

CallAgent RExTst minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
 RExTst          .         .       ImgTst
```

Indication

The Call Agent generates a CCA660 log report to indicate that the RExTst started. The Call Agent generates a CCA661 to indicate that the RExTst finished, and whether the RExTst passed, aborted, or failed.

Meaning

This alarm indicates a RExTst is in progress.

Action

No action is required.

```
  CallAgent       SYS       CON       APPL              Unit: 0
   RExTsT          .         .         .

Sys                         Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no     . Act   . Inact  .     .   insync .
 2 QryCPU     Unit1  Act    no     . Act   . Inact  .     .   insync .
 3 QryDsk
 4 QryMem
 5 QryZmb
 6 QryNFS
 7 QryLd
 8 QryNTP
 9 QryCpUtl
10
11
12
13 LogQuery
14 Alarm
15 QueryIP
16 QuerySL
17 Help
18 Refresh
  mtc
Time  14:56  >
```

Call Agent RExSch minor

Alarm display

```
CallAgent      SYS      CON      APPL          Unit: 0
  RExSch         .        .        .
```

Indication

The Call Agent generates a CCA365 log report in addition to the alarm. The Call Agent generates a CCA665 log report when a Routine Exercise Test (RExTst) is run.

Meaning

A RExTst has not been run in the last seven days. Once a RExTst is run, the alarm clears. The RExTst must be a system initiated RExTst scheduled through table REXSCHED.

Action

Step	Action

At the MAP

1 Open IOAU112 log reports to determine if maintenance personnel have intentionally disabled RExTsts.

```
> LOGUTIL;OPEN IOAU
```

2 Determine the next action.

If RExTsts	Do
are intentionally disabled	This procedure is complete.
are not intentionally disabled	step 3

3 Enter table REXSCHED.

```
> QUIT ALL;TABLE REXSCHED
```

4 Use the POSITION and CHANGE commands to populate the table similar to the example.

```
TOP
       REXTSTID ENABLE PERIOD PARALLEL                    DAYSDSBL
-------------------------------------------------------------------
    MS_REX_TEST      Y      1        1                        NONE
XACORE_REX_TEST      Y      1        1                        NONE
BOTTOM
>
```

5 This procedure is complete.

—End—

Additional information

For more information about configuring system routine exercise tests, refer to table REXSCHED in *DMS-100 Customer Data Schema References Manual*, 297-8001-351 (NA) or 297-9051-351 (EMEA), and office parameter NODEREXCONTROL in *DMS-100 Office Parameters Reference Manual*, 297-8001-855 (NA) or 297-9051-855 (EMEA).

CallAgent simplx major

Alarm display

```
CallAgent      SYS      CON      APPL              Unit: 0
 simplx          .     MatCon    simplx
   M                      M        M
```

Indication

Since the mate Call Agent is unavailable, several CON and APPL alarms are generated. The Call Agent generates a CCA351 log report in addition to the alarm. The Call Agent generates a CCA651 log report when duplex operation is restored.

Status information for the mate unit is unavailable at the Call Agent Manager.

If a Call Agent card is locked by user action at the CS 2000 SAM21 Manager client, the Call Agent enters the locked-disabled-none state and appears with a hashed outline and a lock icon at the CS 2000 SAM21 Manager client. Duplex operation is restored after unlocking the card at the CS 2000 SAM21 Manager client and successful completion of application synchronization.

If a Call Agent card experiences a platform software error that prevents the Call Agent from providing service, the SAM21 Shelf Controller recovers the Call Agent. As the SAM21 Shelf Controller recovers the Call Agent, the Call Agent card icon appearance at the CS 2000 SAM21 Manager client changes. Refer to the introduction to this document and *SAM21 Shelf Controller Fault Management*, NN10089-911 for more information about SAM21 Shelf Controller automatic recovery.

Meaning

The mate Call Agent unit is unavailable.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. `CoreMtc`

```
CallAgent       SYS       CON       APPL              Unit: 1
  simplx                MatCon    simplx
     M                    M         M
CoreMtc                   Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  ------------------- state unavailable ---------------
 2 CAMtc      Unit1  Act    no     . Act    . Inact  S    S   nosync .
 3 Sys
 4 Con
 5 Appl
 6
 7
 8
 9
10
11
12
13 LogQuery
14 Alarm
15 QueryIP
16 QuerySL
17 Help
18 Refresh
  mtc
Time  13:10  >
```

2 Check the following items to clear this alarm:

- Mate Call Agent is in service

  Check this at the CS 2000 SAM21 Manager client
- Physical connections to the mate Call Agent are intact

3 This procedure is complete.

—End—

CallAgent C_MisM minor

Alarm display

```
CallAgent      SYS      CON      APPL            Unit: 0
 C_MisM         .        .        .
```

Indication

The Call Agent generates log report CCA380 to indicate that the committed load mismatch alarm is raised. The Call Agent generates log report CCA680 to indicate that the alarm clears.

Note: This log report number was 372 and 672 in the SN04 and ISN04 releases.

Meaning

One Call Agent card has a different committed patch file version than the other card. This alarm clears when the same patch file version is committed on the second Call Agent card.

Action

Commit the patch file on the second Call Agent card. For more information, see *Upgrading the Carrier Voice over IP Network*, NN10440-450.

This alarm may appear temporarily during an upgrade while the two Call Agent cards have different patch files committed.

ATTENTION

Failure to correct a committed load mismatch alarm can result in the two Call Agent cards running different platform software versions in the event of an uncontrolled reboot.

Call Agent Config minor

```
CallAgent       SYS       CON       APPL              Unit: 0
  Config         .         .         .
```

Indication

The Call Agent generates a CCA375 log report in addition to the alarm. The Call Agent generates a CCA675 log report once the alarm is cleared.

Meaning

This alarm indicates that the two Call Agent cards are different card types with differences such as different processors. The alarm is expected during a Call Agent card upgrade and the alarm clears once the two Call Agent cards are of the same card type.

Action

No action is required.

CallAgent NIIKEY minor

Alarm display

```
CallAgent      SYS      CON      APPL      MC       Unit: 0
 NIIKEY         .        .         .        .
```

Indication

A CCA352 log report is generated when the alarm is raised. A CCA652 log report is generated when the alarm clears. This alarm is applicable to offices with Message Controllers only.

Meaning

This alarm indicates that a Network Filesystem (NFS) Inactive core Indicator Key (NIIKEY) file was detected in the `/TAPE` or `/TAPE1` directory. If a call processing application restart occurs with the NIIKEY file present, the NIIKEY file prevents the call processing application from becoming the active instance.

The NIIKEY file is used by Nortel Installation Services personnel during a cutover procedure. If this alarm appears, contact Nortel support personnel.

Action

Contact Nortel support personnel.

SYS CPU Ld critical, major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
    .         CPU Ld      .          .
```

Indication

The Call Agent generates a CCA301 log report in addition to the alarm.

The Call Agent generates a CCA601 log report when the alarm clears.

Meaning

The CPU load average for one or more time segments has exceeded the threshold.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. **`CoreMtc`**
2	Enter the Sys level. **`Sys`**
3	Check the CPU usage by issuing the QryCPU command.

```
 CallAgent       SYS       CON       APPL              Unit: 0
    .          CPU Ld      .         .

Sys                        Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no    . Act   . Inact  .    .   insync .
 2 QryCPU     Unit1  Act    no    . Act   . Inact  .    .   insync .
 3 QryDsk
 4 QryMem
 5 QryZmb
 6 QryNFS
 7 QryLd      CPU report retrieved on Tue Jul  2 13:28:50 2003:
 8 QryNTP
 9 QryCpUtl         1 min Load Avg: 5.25
10                  5 min Load Avg: 3.01
11                 15 min Load Avg: 2.95
12
13 LogQuery    Number of Processes: 52
14 Alarm
15 QueryIP       Alarm Description: 1 minute load average
16 QuerySL         Minor threshold: 10.00
17 Help            Major threshold: 20.00
18 Refresh      Critical threshold: 40.00
  mtc
Time  13:30  >
```

If	Do
the alarm is critical	Use the QryNFS command to determine if all mount points are accessible. If some mount points are unavailable, use the DISKADM utility from the MAP to busy the missing volumes and troubleshoot STORM from the STORM Manager. Refer to *STORM Fault Management*, NN10088-911. If all mount points are available, monitor call processing performance.
otherwise	Monitor the call processing performance. For procedures, refer to *Call Agent Performance Management*, NN10153-711.

4 This procedure is complete.

—End—

SYS Disk critical, major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .            Disk       .          .
```

Indication

The Call Agent generates a CCA302 log report in addition to the alarm. The Call Agent generates a CCA602 log report when the alarm clears.

Meaning

The root file system for the Call Agent is a RAMDISK. Free space on the root file system is low. This alarm does not indicate that disk space on the STORage Management (STORM) unit is low.

Note: Do not store files in the local file system.

Action

Step	Action

At the Call Agent Manager

1 Use the alarm sys command to determine which unit is alarmed.

```
Alarm Sys

SYS alarms for unit 0:
   Alarm Severity Description
   Disk critical Percentage of root free disk
                 space is less than or equal to
                 5.00; critical threshold
                 reached.
SYS alarms for unit 1:  none
```

2 Contact Nortel support personnel.

3 This procedure is complete.

—End—

SYS Memory critical, major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
    .          Memory      .         .
```

Indication

The Call Agent generates a CCA300 log report in addition to the alarm. The Call Agent generates a CCA600 log report when the alarm clears.

Meaning

Free space in Random Access Memory (RAM) is low.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. **`CoreMtc`**
2	Enter the Sys level. **`Sys`**
3	Check the memory usage by issuing the QryMem command.

```
CallAgent      SYS       CON       APPL              Unit: 0
    .          Memory     .         .

Sys                        Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no     . Act    . Inact  .     .   insync .
 2 QryCPU     Unit1  Act    no     . Act    . Inact  .     .   insync .
 3 QryDsk
 4 QryMem
 5 QryZmb     Memory report retrieved on Wed Aug 27 09:07:45 2003:
 6 QryNFS
 7 QryLd            Total Memory: 986.54MB
 8 QryNTP            Free Memory: 141.55MB
 9 QryCpUtl        Cached Memory: 116.23MB
10                 Shared Memory:   0.00MB
11                 Buffer Memory:   0.78MB
12               Reserved Memory:  20.27MB
13 LogQuery     Available Memory: 238.29MB  (free+cached+buffer-reserved)
14 Alarm
15 QueryIP      Alarm Description: Based on the amount of avail memory remain
16 QuerySL         Minor threshold:    150MB
17 Help            Major threshold:    125MB
18 Refresh      Critical threshold:    100MB
  mtc
Time  09:07  >
```

4 Determine the next action.

If	Do
the alarm is minor severity	Record the alarm in office records. Monitor the system to determine if the problem escalates to major severity.
the alarm is major or critical severity	Contact Nortel support personnel.

5 This procedure is complete.

—End—

SYS NFS critical, major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .            NFS        .         .
```

Indication

The Call Agent generates a CCA304 log report in addition to the alarm. The Call Agent generates a CCA604 log report when the alarm clears.

Meaning

One or more of the Network File System (NFS) mounted file systems is inaccessible. Each Call Agent mounts three file systems from each STORage Management (STORM) unit.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. **`CoreMtc`**
2	Enter the Sys level. **`Sys`**
3	Check that no other alarms are masked by issuing the following command: **`Alarm Sys`**

```
CallAgent       SYS       CON       APPL              Unit: 0
    .           NFS        .         .

Sys
 0 Quit
 2 QryCPU    SYS alarms for unit 0:
 3 QryDsk
 4 QryMem      Alarm  Severity Description
 5 QryZmb       NTP   minor    Host lost synchronization to one or more
 6 QryNFS                     servers; No. of configured server(s): 2; No.
 7 QryLd                     accessible server(s): 2; Host synchronized to:
 8 QryNTP                      1 server(s).
 9 QryCpUtl
10             NFS   minor    Number of accessible mounts is between 1 and 5
11                            minor threshold reached.
12
13 LogQuery  SYS alarms for unit 1:
14 Alarm
15 QueryIP     Alarm  Severity Description
16 QuerySL     NFS   minor    Number of accessible mounts is between 1 and 5
17 Help                       minor threshold reached.
18 Refresh
  mtc
Time  19:05 >
```

Note: An NTP alarm was masked by the NFS alarm.

4 To determine the cause of the NFS alarm, issue the QryNFS command.

```
CallAgent       SYS       CON       APPL              Unit: 0
    .           NFS         .         .

Sys                        Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no     . Act    . Inact  .     .   insync .
 2 QryCPU     Unit1  Act    no     . Act    . Inact  .     .   insync .
 3 QryDsk
 4 QryMem     NFS mount report retrieved on Tue Jul  2 19:16:14 2002:
 5 QryZmb
 6 QryNFS      Number of accessible mounts: 3 / 6
 7 QryLd
 8 QryNTP       Local Name                                    Accessible
 9 QryCpUtl     /TAPE                                            Y
10              /TAPE1                                           N
11              /3PC/sd00                                        Y
12              /var/log                                         N
13 LogQuery     /var/log_mate                                    Y
14 Alarm        /3PC/sd01                                        N
15 QueryIP
16 QuerySL      Alarm Description: Number of accessible mounts
17 Help           Minor threshold: 5
18 Refresh        Major threshold: 3
  mtc           Critical threshold: 2
Time  19:18  >
```

5 Since half the mounts are inaccessible, check the following items as possible causes:

- STORM unit is out of service

  Check this at the CS 2000 SAM21 Manager client or STORM Manager.

- STORM fiber channel connection is unplugged on STORM faceplate or Redundant Array of Inexpensive Disks (RAID) device

- STORM unit is misconfigured

  Check this at the STORM Manager.

Refer to *STORM Fault Management*, NN10088-911.

6 This procedure is complete.

—End—

SYS NTP major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .            NTP        .         .
```

Indication

The Call Agent generates a CCA305 log report in addition to the alarm. The Call Agent generates a CCA605 log report when the alarm clears.

Meaning

The platform software lost time synchronization to one or more Network Time Protocol (NTP) servers or the drift is excessive.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. **`CoreMtc`**
2	Enter the Sys level. **`Sys`**
3	Check the NTP status by issuing the QryNTP command.

```
CallAgent       SYS       CON       APPL              Unit: 0
    .           NTP         .         .

Sys                         Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no     . Act    . Inact  .     .   insync .
 2 QryCPU     Unit1  Act    no     . Act    . Inact  .     .   insync .
 3 QryDsk
 4 QryMem
 5 QryZmb
 6 QryNFS
 7 QryLd
 8 QryNTP
 9 QryCpUtl
10
11
12
13 LogQuery  NTP report retrieved on Tue Jul  2 20:24:22 2003:
14 Alarm
15 QueryIP     Total number of time servers: 2
16 QuerySL     Number of accessible servers: 2
17 Help       Number of synchronized servers: 1
18 Refresh    Time Offset from server 47.142.226.247: 6(ms)
  mtc
Time  20:25  >
```

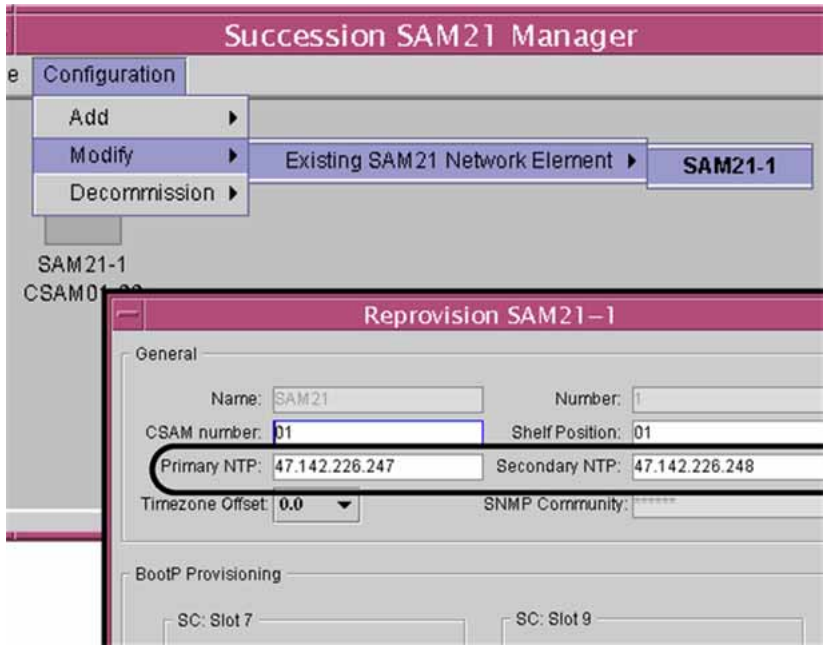
4 To determine the NTP servers, exit the Call Agent Manager and check NTP provisioning on the Call Agent:

```
> 0 ALL
[mtc@ipaddress mtc]$ ntpq -n -p
```

The provisioned NTP information is displayed. Ensure that the IP addresses in the remote column match the NTP servers provisioned at the CS 2000 SAM21 Manager.

```
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*47.142.226.247  47.129.242.21  3 u   31   64  377    1.637    6.550   0.413
+47.142.226.248  47.129.242.23  4 u   40   64  377    0.687    6.549   0.712
```

5 Check provisioning from the CS 2000 SAM21 Manager client:



6 Determine next action.

If	Do
the time server is the CS 2000 Core Manager	Check the NTP service at the NTP level of sdmmtc.
primary and secondary server are the same server	Provision the Secondary NTP server to a new NTP server.
the time server is some other equipment	Refer to the product documentation.

7 This procedure is complete.

—End—

SYS Zombie critical, major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
    .          Zombie      .         .
```

Indication

The Call Agent generates a CCA303 log report in addition to the alarm. The Call Agent generates a CCA603 log report when the alarm clears.

Meaning

One or more software process has terminated abnormally and may retain system resources such as memory space or CPU usage.

Action

ATTENTION

Contact Nortel support personnel for assistance with zombie alarms. Failure to contact Nortel support personnel can result in a service interruption if system resources are consumed by many zombie processes.

SYS CpuUtl critical, major or minor

Alarm display

```
CallAgent      SYS       CON      APPL            Unit: 0
    .        CpuUtl       .        .
```

Indication

The Call Agent generates a CCA306 log report in addition to the alarm. The Call Agent generates a CCA606 log report when the alarm clears.

Meaning

The CPU utilization for one or more time segments has exceeded the threshold.

Action

Step	Action
	At the Call Agent Manager
1	Enter the CoreMtc level. **`CoreMtc`**
2	Enter the Sys level. **`Sys`**
3	Check the CPU utilization by issuing the QryCpUtl command.

```
CallAgent       SYS       CON       APPL              Unit: 0
    .         CpuUtl       .         .

Sys                         Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Inact  no     . Inact . Act     .     .  insync .
 2 QryCPU     Unit1  Act    no     . Inact . Act     .     .  insync .
 3 QryDsk
 4 QryMem
 5 QryZmb
 6 QryNFS
 7 QryLd
 8 QryNTP
 9 QryCpUtl
10            CPU Utilization report retrieved on Mon Mar  3  8:54:52 2003:
11
12                  5 min Util Avg:100.00
13 LogQuery        20 min Util Avg: 89.83
14 Alarm           30 min Util Avg: 78.78
15 QueryIP       Alarm Description: cpu utilization average
16 QuerySL         Minor threshold: over 95.00% for 5 minutes
17 Help            Major threshold: over 99.00% for 20 minutes
18 Refresh      Critical threshold: over 99.00% for 30 minutes
  mtc
Time   8:55  >
```

If	Do
the alarm is critical	Use the QryNFS command to determine if all mount points are accessible. If some mount points are unavailable, use the DISKADM utility from the MAP to busy the missing volumes and troubleshoot STORM from the STORM Manager client. Refer to *STORM Fault Management*, NN10088-911. If all mount points are available, monitor call processing performance.
otherwise	Monitor the call processing performance. For procedures, refer to *Call Agent Performance Management*, NN10153-711.

4 This procedure is complete.

—End—

SYS HW Flt critical or major

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .          HW Flt       .         .
              M
```

Indication

The Call Agent generates a CCA309 log report in addition to the alarm. The Call Agent generates a CCA609 log report when the alarm clears.

Meaning

The card has a Peripheral Component Interconnect (PCI) bus fault, Error Checking and Correction (ECC) memory fault, or a parity error.

Action

If the severity is minor, Lock the card, perform diagnostics, and Unlock the card to reset it. Refer to the Lock, diagnostics, and Unlock procedures in *Call Agent Security and Administration*, NN10175-611.

If the severity is critical, replace the card. Refer to procedure "Replacing a Call Agent card" (page 20).

This procedure is complete.

CON MatCon critical or major

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .             .      MatCon       .
```

Indication

The Call Agent generates a CCA331 log report in addition to the alarm. The Call Agent generates a CCA631 log report when the alarm clears.

Meaning

A major severity alarm indicates that communication between the two Call Agent cards is unavailable over Ethernet or is unavailable over the fiber channel link. A critical severity alarm indicates communication between the two Call Agent cards is completely unavailable.

Investigate the following items when diagnosing this alarm:

- Ethernet link pull
- Fiber Channel pull
- CS LAN router misconfiguration
- inability to ping mate Call Agent from the active Call Agent
- inability to ping the active SAM21 Shelf Controller from the active Call Agent
- If the office has Message Controller cards, check for the ability to ping both Message Controller cards from the active Call Agent.

The description field of the MatCon alarm describes the connectivity map for the monitored connections. When Geographic Survivability is enabled, the description fields are extended to show enhanced connection monitoring. The fields are identical to the fields in logs CCA331 and CCA631. For description of the enhanced fields, refer to *Carrier Voice over IP Fault Management Logs Reference*, NN10275-909.

Action

Step	Action
	At the Call Agent Manager

1 View the alarms related to connectivity.

```
Alarm CON
```

Example system response:

```
  CallAgent       SYS       CON       APPL              Unit: 0
     .             .      MatCon       .
                            C
CCAMtc
 0 Quit
 2 CoreMtc
 3 Admin
 4
 5
 6
 7
 8
 9
10          CON alarms for unit 0:
11
12           Alarm  Severity Description
13 LogQuery  MatCon critical Link0: SYSB, mateCon UNAVAIL, netCon UNAVAIL
14 Alarm                     Link1: INSV, mateCon AVAIL, netCon AVAIL;
15                           BLink: INSV, mateCon AVAIL;
16 QuerySL                   SL: INSV;
17 Help     CON alarms for unit 1: none
18 Refresh
  mtc
Time  13:19  >
```

Example system response with Geographic Survivability enabled:

```
 CallAgent       SYS       CON       APPL              Unit: 0
    .              .      MatCon       .
                            M
CCAMtc
 0 Quit
 2 CoreMtc
 3 Admin
 4 RExTst
 5 SwAct
 6
 7
 8
 9
10          CON alarms reported by CA unit 0:
11
12           Alarm Severity Description
13 LogQuery  MatCon major Link0: INSV, mateCon: OK (opt: BAD, wan: OK),
14 Alarm                  netCon: OK (local: OK, wanEdge: OK);
15 QueryIP                Link1: INSV, mateCon: OK (opt: BAD, wan: OK),
16 QuerySL                netCon: OK (local: OK, wanEdge: OK);
17 Help                   BLink: SYSB, mateCon: BAD;
18 Refresh                SL: SYSB;
  mtc
Time  13:19  >
```

2 Use the following table to diagnose the mate connectivity alarm.

Mate connectivity alarm diagnosis

If	Do
Link0 or Link1 is MANB	Return to service the Ethernet link (RTSLink) from the Con level of the Call Agent Manager. **CoreMtc** **Con** **RTSLnk <0 or 1>**
Link0 or Link1 is SYSB	Verify that the Ethernet links are connected to the rear transition module of the SAM21 shelf. Verify that the Ethernet links from the rear transition module of the SAM21 shelf connect to the router that provides the Communication Server Local Area Network (CS LAN). Verify that the CS LAN router is in-service and that the ports are in-service.
SL is SYSB	Verify that the mate Call Agent is in-service.

If	Do
	If sparing for CCA cards is by way of the fiber channel (FC) interface, verify that the fiber channel connection on the faceplate of each Call Agent is connected. If sparing for CCA cards is by way of the Gigabit Ethernet interface, verify the Gigabit Ethernet connections. If the CS 2000 Compact is geographically non-survivable, the Gigabit Ethernet connections are located on the transition modules associated with the CCA cards. These connections are accessible from the rear of the SAM21 shelf. If the CS 2000 Compact is geographically survivable, the connections are as follows. At the local site, there is one connection on a transition module and one connection to an 8600 switch, and at a remote site, there is also one connection on a transition module and one connection to an 8600 switch. The feature supporting the use of the Gigabit Ethernet interface is applicable only to the CS2100 for the enterprise market.

3 If Link0, Link1, and FC links are all restored to in-service (INSV) and the alarm persists, contact Nortel support personnel.

4 This procedure is complete.

—End—

CON LnkCon critical or major

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .             .      LnkCon       .
                          M
```

Indication

The Call Agent generates a CCA335 log report in addition to the alarm. The Call Agent generates a CCA635 log report when the alarm clears.

Meaning

A major severity alarm indicates that one of the Ethernet links is unavailable or the fiber channel is unavailable. A critical severity alarm indicates that both of the Ethernet links are unavailable.

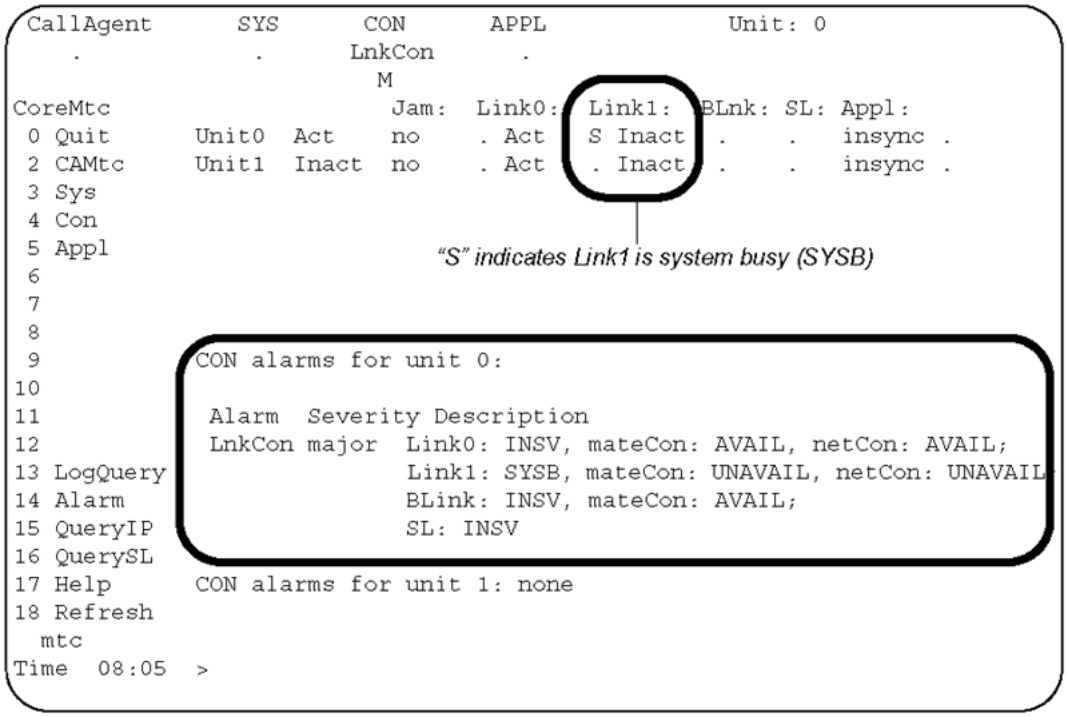
If both Ethernet links are unavailable, the Call Agent reboots. Refer to "Network fault management strategy" (page 5) for more information.

The description field of the LnkCon alarm describes the connectivity map for the monitored connections. When Geographic Survivability is enabled, the description fields are extended to show enhanced connection monitoring. The fields are identical to the fields in logs CCA335 and CCA635. For description of the enhanced fields, refer to *Carrier Voice over IP Fault Management Logs Reference*, NN10275-909.

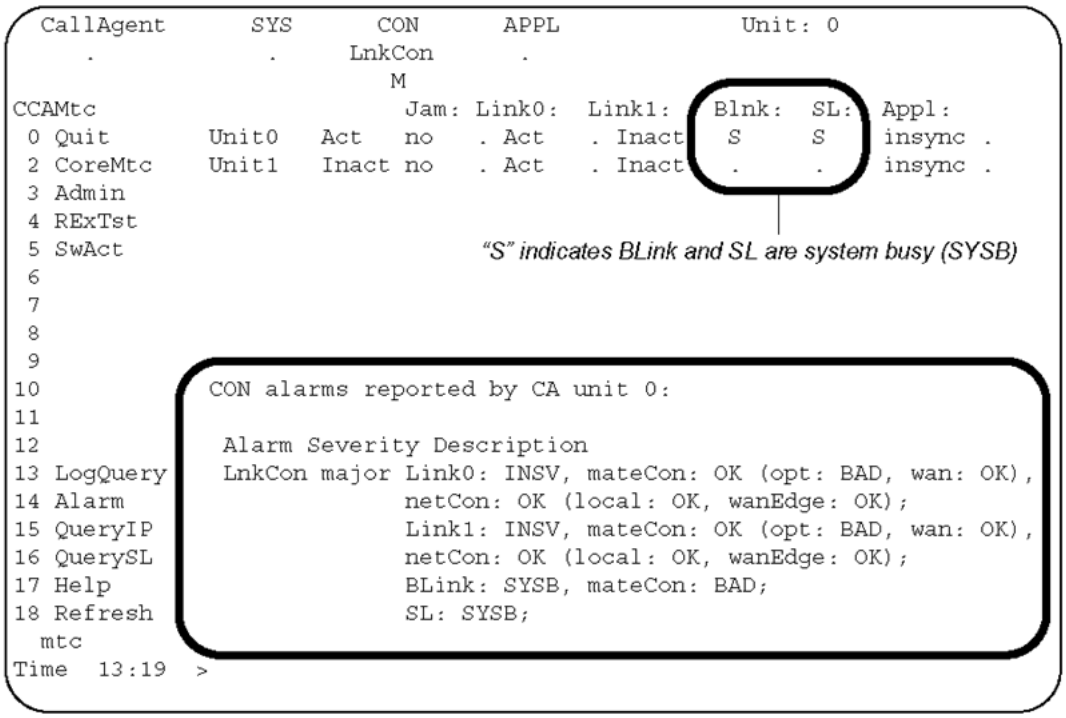
Action

Step	Action
At the Call Agent Manager	
1	View the alarms related to connectivity. **`Alarm CON`**

Example system response:



Example system response with Geographic Survivability enabled:



2 Verify Ethernet link connections. Follow the diagnostics in Step 2 of procedure "CON MatCon critical or major" (page 104).

3 If the connectivity problem is with the fiber channel connection, BLink is SYSB and FC is SYSB. Verify that the fiber channel connection is intact at each Call Agent card and then begin diagnosing failures, faults, and misconfigurations with the optical transmission equipment between the two Call Agent units.

4 If link connectivity is restored and the alarm persists, contact Nortel support personnel.

5 This procedure is complete.

—End—

CON NetCon major or minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
   .             .      NetCon       .
                          M
```

Indication

The Call Agent generates a CCA336 log report in addition to the alarm. The Call Agent generates a CCA636 log report when the alarm clears.

Meaning

A minor severity alarm indicates that one Ethernet link does not have network connectivity. A major severity alarm indicates that both Ethernet links do not have network connectivity.

> ***Note:*** In most circumstances, loss of both ethernet links causes the Call Agent to reboot. The major alarm may last only a short time because it is cleared when the Call Agent begins to reboot.

The description field of the NetCon alarm describes the connectivity map for the monitored connections. When Geographic Survivability is enabled, the description fields are extended to show enhanced connection monitoring. The fields are identical to the fields in logs CCA336 and CCA636. For description of the enhanced fields, refer to *Carrier Voice over IP Fault Management Logs Reference*, NN10275-909.

Action

Step	Action
	At the Call Agent Manager
1	View the alarms related to connectivity. **`Alarm CON`**

Example system response:

```
CallAgent       SYS       CON       APPL              Unit: 0
    .             .      NetCon      .
                           m
CoreMtc                     Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Act    no     . Act    . Inact  .     .   insync .
 2 CAMtc      Unit1  Inact  no     . Act    . Inact  .     .   insync .
 3 Sys
 4 Con
 5 Appl
 6
 7
 8
 9           CON alarms for unit 0:
10
11            Alarm  Severity Description
12            NetCon minor    Link0: INSV, mateCon: AVAIL, netCon: AVAIL;
13 LogQuery                   Link1: INSV, mateCon: AVAIL, netCon: UNAVAIL
14 Alarm                      BLink: INSV, mateCon: AVAIL;
15 QueryIP                    SL: INSV;
16 QuerySL
17 Help       CON alarms for unit 1: none
18 Refresh
  mtc
Time  08:13  >
```

Example system response with Geographic Survivability enabled:

```
 CallAgent       SYS       CON       APPL              Unit: 0
    .             .      NetCon      .
                           M
CCAMtc
 0 Quit
 2 CoreMtc
 3 Admin
 4 RExTst
 5 SwAct
 6
 7
 8
 9
10           CON alarms reported by CA unit 0:
11
12            Alarm Severity Description
13 LogQuery   NetCon major Link0: INSV, mateCon: OK (opt: OK, wan: OK),
14 Alarm                   netCon: OK (local: OK, wanEdge: BAD);
15 QueryIP                 Link1: INSV, mateCon: OK (opt: OK, wan: OK),
16 QuerySL                 netCon: OK (local: OK, wanEdge: OK);
17 Help                    BLink: SYSB, mateCon: OK;
18 Refresh                 SL: SYSB;
  mtc
Time  13:19  >
```

2 Verify Ethernet link connections. Follow the diagnostics in Step 2 of procedure "CON MatCon critical or major" (page 104).

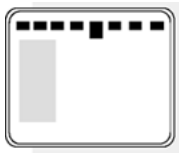
3 If link connectivity is restored and the alarm persists, contact Nortel support personnel.

4 This procedure is complete.

—End—

APPL NoAppl critical or minor

Alarm display



```
CallAgent       SYS       CON       APPL              Unit: 0
    .             .         .       NoAppl
```

Indication

The Call Agent generates a CCA316 log report in addition to the alarm. The Call Agent generates a CCA616 log report when the alarm clears.

Meaning

The call processing application software is booting or restarting. The alarm has minor severity if the alarm is raised against the inactive call processing application. The alarm has critical severity if the alarm is raised against the active call processing application.

Action

This alarm is raised during a transition state. No action is required.

APPL ImgTst minor

Alarm display

```
CallAgent       SYS       CON       APPL              Unit: 0
    .             .         .       ImgTst
```

Indication

The Call Agent generates log report CCA620 during an image test. When the image test completes, the alarm clears and the Call Agent generates log report CCA621. CCA621 indicates if the test passed successfully or failed. If the test fails, the Call Agent generates a major image alarm (Image) and a CCA322 log report.

- CCA620 -- image test started
- CCA621 -- image test completed
- CCA322 -- image test failed

Meaning

The inactive call processing application software is in test. This alarm is raised if the image test is manually run or if the image test is part of a manual or system routine exercise test (RExTst).

Action

No action is required.

APPL Image major

Alarm display

Alarm display

Indication

The Call Agent generates log report CCA322 in addition to the alarm. To clear the alarm, an image test is required. The results of the image test are indicated in a CCA621 log report.

Meaning

The inactive call processing application failed an image test.

Action

Step	Action

At the Call Agent Manager

1 Enter the image test query command at the application level.

```
CoreMtc
Appl
ImgTst QUERY
```

```
  CallAgent       SYS       CON       APPL              Unit: 0
     .             .         .       Image
                                       M
Appl                          Jam:  Link0:  Link1:  BLnk: SL: Appl:
 0 Quit       Unit0  Act     no     . Inact . Act     .    .   insync .
 2 ImgTst     Unit1  Inact   no     . Inact . Act     .    .   insync .
 3 Sync
 4 DpSync
 5
 6
 7
 8
 9
10
11
12
13 LogQuery    Results for QUERY LAST IMAGE TEST:
14 Alarm
15 QueryIP       Last run on: Thu Apr 10 13:17:57 2003
16 QuerySL   CA Unit Tested: 1
17 Help        Restart Type: ALL
18 Refresh           Result: FAILED
  mtc
Time  10:03  >
```

2 Record the results in office records.

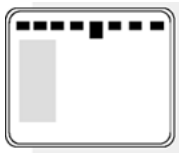
If	Do
office records indicate that the fault has occurred before	Contact Nortel support personnel.
there is no record of a previous image test failure	Run a manual image test. For information on running image tests, see *Call Agent Security and Administration*, NN10175-611. If the test fails again, contact Nortel support personnel.

3 This procedure is complete.

—End—

APPL simplx major

Alarm display



```
CallAgent       SYS       CON       APPL              Unit: 0
   .             .         .      simplx
                                     M
```

Indication

The Call Agent generates log report CCA315 in addition to the alarm. The Call Agent generates log report CCA615 when the alarm clears.

Meaning

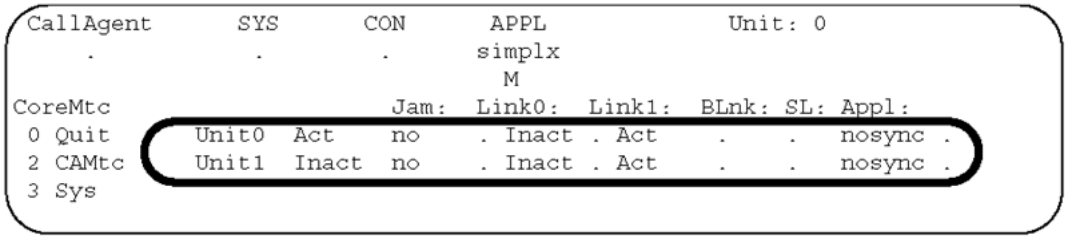
The inactive call processing application is not ready for takeover without an outage. Possible reasons for raising this alarm are listed:

- If the mate Call Agent is out of service, this alarm is raised with a CallAgent simplx alarm and additional alarms. Clear the CallAgent simplx alarm first. A switch of activity will not occur under this condition.
- If the fiber channel connection to the mate is unavailable, this alarm is raised with a minor MatCon alarm. Clear the MatCon alarm first. A switch of activity can occur under this condition and the newly active Call Agent will trigger a cold restart. A complete loss of call processing occurs during the cold restart and all calls are dropped.

If the APPL simplx alarm persists and a switch of activity does occur, any provisioning or operational data changes that occurred after the loss of synchronization are lost.

Action

Step	Action
	At the Call Agent Manager
1	Enter the maintenance level and verify that the mate Call Agent is in-service (INSV). **`CoreMtc`**



If one of the circled units indicates "state unavailable," then the mate Call Agent is unavailable. Follow to the taskflow in "Fault management taskflow" (page 7) of this document for diagnostics.

2 Enter the application level and synchronize the call processing application.

```
Appl
Sync
```

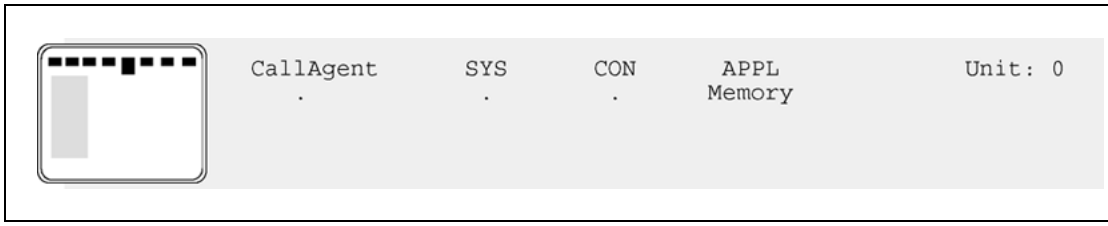
3 Contact Nortel support personnel if the alarm persists.

4 This procedure is complete.

—End—

APPL Memory major or minor

Alarm display



Indication

The Call Agent generates a CCA314 log report in addition to the alarm. The Call Agent generates a CCA614 log report when the alarm clears.

Meaning

Free space in the Data Store (DS) area of memory for the call processing application is below a threshold. The threshold is 48 megabytes for minor severity and 32 megabytes for major severity.

When the Call Agent boots, the operating system allocates memory for the call processing application. The call processing application then applies its own memory management within the allocated memory. This alarm indicates that free space in the allocated memory is low.

Because the alarm relates to the memory allocated to the call processing application, this alarm is similar, but unrelated to the SYS Memory alarm.

The call processing application audits memory usage during every image test. A platform software process initiates a memory audit every five minutes unless a maintenance process is in progress.

Action

Contact Nortel support personnel immediately.

For minor severity alarms, no new datafill should be performed to the application image until the problem is understood and a plan is in place. Proceeding with further datafill will reduce the amount of memory available and the alarm will progress to a major.

For major severity alarms, stop all datafill and use of system tools. Limit system activities to critical issues only. Contact Nortel support personnel immediately as a future upgrade is at risk of failure.

MAP alarm clearing procedures

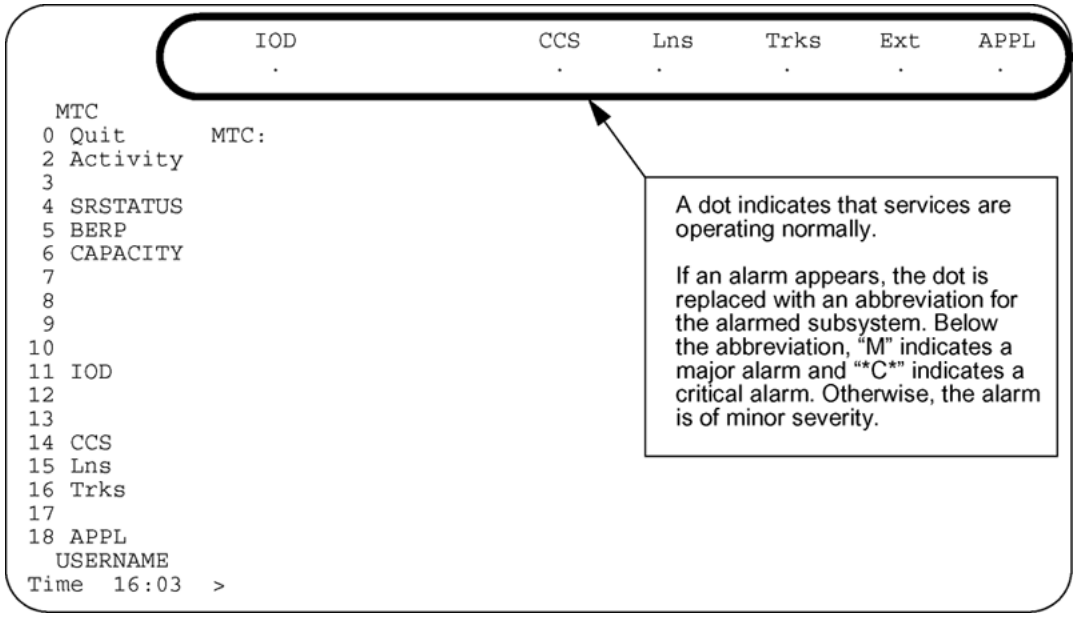
The call processing application provides the MAP.

Fault management assistance is provided from the maintenance (MTC) level of the MAP.

```
CI:
>MAPCI;MTC
```

MTC level

The MTC level provides an alarm banner for troubleshooting assistance.

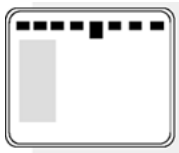


- Input/Output Device (IOD) alarms are cleared from the IOD level.
- Common Channel Signaling (CCS) alarms are cleared from the Universal Signaling Point (USP) or CS 2000 USP - Compact Manager client.
- Line (Lns) alarms are cleared from the Lines Maintenance Manager (LMM).
- Trunk (Trks) alarms are cleared from the Trunks Maintenance Manager (TMM).
- External alarm system (Ext) alarms are cleared from the Ext level.

- Application (APPL) alarms are cleared from the APPL level.

APPL alarms critical, major or minor

Alarm display



```
IOD          CCS      Lns      Trks     Ext    APPL
 .            .        .        .        .     xxxxxx
```

Additional information

Several alarms under the application (APPL) level of the MAP are related to the SuperNode Billing Application (SBA). Refer to the *CS 2000 Core Manager*, NN10082-911 for clearing the following SBA related alarms:

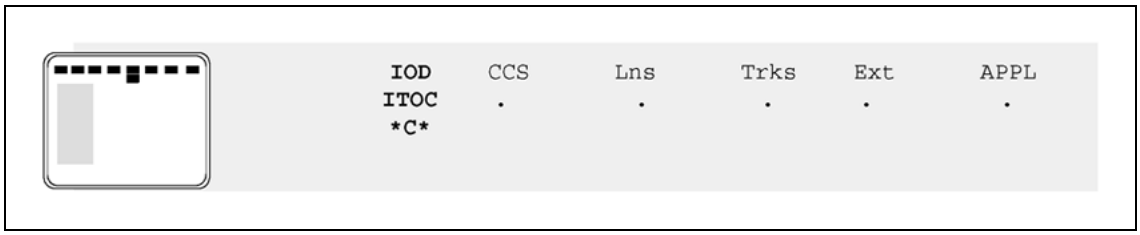
BACK50	FTPW	NOREC
BACK70	LODSK	NOSTOR
BACK90	NOBAK	NOVOL
BACKUP	NOCLNT	SBACP
DISKWR	NOCOM	SBAIF
FTP	NOFL	

Note: Many SBA alarm clearing procedures refer to CM, XACORE, SLM, and disk volumes that begin with S00D. Refer to the following chart for a cross reference.

SBA reference	Use
CM, XACORE	Call Agent
SLM	STORage Manager (STORM)
S00D<volume>, S01D<volume>, F02L<volume>, F17U<volume>	SD00<volume> or SD01<volume>

IOD ITOC major or critical

Alarm display



Indication

At the MTC level of the MAP display, ITOC appears under the Input/Output Devices (IOD) header of the alarm banner. The ITOC indicates an image table of contents (ITOC) critical alarm.

Meaning

Image files are not registered or do not exist in the computing module (CM) ITOCs. If the CS 2000 - Compact is configured with Message Controller cards, this alarm is also raised when an image file is not registered in the ITOC for the Message Switch (MS).

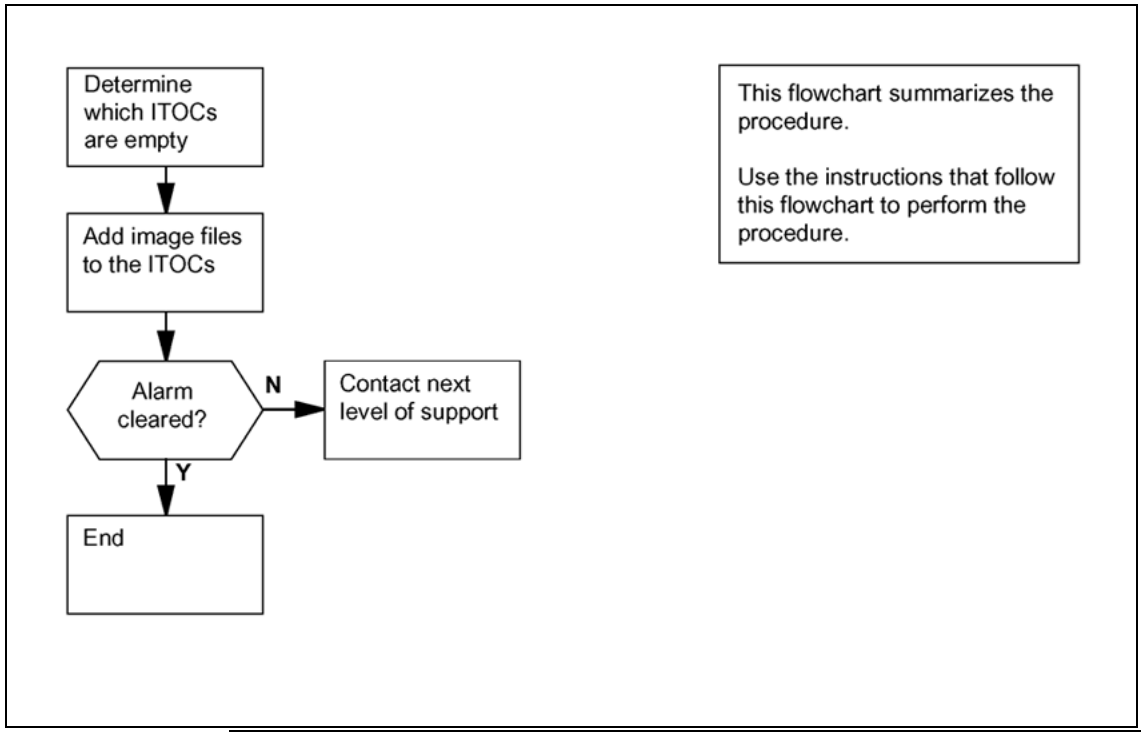
Result

A reload initiated during an ITOC critical alarm can cause a loss of service.

Action

The following flowchart is a summary of the procedure. Use the instructions in the procedure that follows the flowchart to clear the alarm.

Summary of Clearing an IOD ITOC critical alarm



Step	Action

At the MAP

1 Ensure that you are at the CI level of the MAP display.

```
>QUIT ALL
```

2 Access the disk utility.

```
>DISKUT
```

3 List the volumes.

```
>LV
```

```
>LV
Volumes found:
--------------
NAME              TYPE      TOTAL       FREE TOTAL  OPEN  ITOC    LARGEST
                            BLOCKS     BLOCKS FILES FILES FILES  FREE
-------------------------------------------------------------------------
SD00SBA                STD     819200          0   130     0     0
SD00IMAGE              STD    1638400     855040     1     0     1  855040
...
SD01IMAGE              STD    1638400     814430     3     0     0  814430
SD01PERM               STD     262144     262144     0     0     0  262144
SD01TEMP               STD     262144     262134     1     0     0  262134
Total number of volumes listed: 35.
>
```

4 Determine from office records the volumes that contain the image files (one image volume for each storage device).

5 List the file information for the image volumes.

```
>LF volume_name
```

volume_name is the name of the volume that contains the image files

```
>LF SD01IMAGE
File information for volume SD01IMAGE:
{NOTE:  1 BLOCK = 512 BYTES }
-------------------------------------------------------------------------
FILE NAME                 O R I O O V FILE   MAX    NUM OF    FILE   LAST
                          R E T P L L CODE   REC   RECORDS    SIZE MODIFY
                          G C O E D D        LEN       IN      IN   DATE
                            C N                      FILE  BLOCKS
-------------------------------------------------------------------------
.ITOC                     O F           0  1024         1       2 020309
CSNW04AY                  I F           0  1020    202152  402725 020103
```

6 Determine if a registered image file exists in the ITOC.

Note: The letter Y under the ITOC header confirms the file in the ITOC is registered. The area is blank if a registered file does not exist. The MAP response shown above does not contain an image file in the ITOC. If the office is configured with Message Controllers, ensure that an entry for the Message Switch is set to Y too.

If a CM image file	Do
is registere	step 11
is not registered	step 8
does not exist	step 7

7 Use the AUTODUMP utility to take an image.

```
>AUTODUMP MANUAL
```

Note: If table IMAGEDEV is not provisioned, use the table editor to enter a volume name and activate the volume.

8 Record the name of the current image file.

Note: In the example output shown above, the current image file is CSNW04AY.

9 Enter the ITOCCI level and add the current image file to the ITOC.

```
>ITOCCI; SBF CM file_name 1 ALR
```

file_name

is the name of the current image file

Note: Use the **SBF MS** command for the MS.

```
>SBF CM CSNW04AY 1 ALR
CSNW04AY is registered in CM ITOC.
The updated ITOC is listed directly below.
Image Table Of Contents:
   A Registered          Generic Device       File
   L Date       Time                          Name
   R MM/DD/YYYY HH:MM:SS
-- - ------------------- -------------------- -----------
 0   03/09/2002 13:02:35 SD00IMAGE            PSNNCSH04BG_CM
 1 * 03/09/2002 13:36:56 SD01IMAGE            CSNW04AY
>
```

10 Determine if the ITOC critical alarm cleared.

If the alarm	Do
cleared	step 12
did not clear	step 11

11 Contact Nortel support personnel.

12 The procedure is complete.

—End—

IOD DISK major or critical

Alarm display

```
IOD     CCS     Lns     Trks     Ext     APPL
DISK     .       .        .       .        .
*C*
```

Indication

At the MTC level of the MAP display, DISK appears under the Input/Output Devices (IOD) header in the alarm banner.

The call processing application also generates a DISK650 log report to indicate that the disk availability audit failed.

A DISK530 log report indicates that maintenance personnel manually busied (MANB) a volume. When volumes are returned to service, manually or through software processes, a DISK520 log report indicates that the volume is available.

Meaning

This alarm indicates that the call processing application cannot access one or more disk devices (SD00 or SD01) or that volumes on a disk device are unavailable (SD00AMA).

A critical level alarm indicates that both disk devices are inaccessible. A major level alarm indicates that one disk device has accessible volumes. A minor level alarm indicates that both disk devices are accessible, but one or more volumes on a disk device are inaccessible.

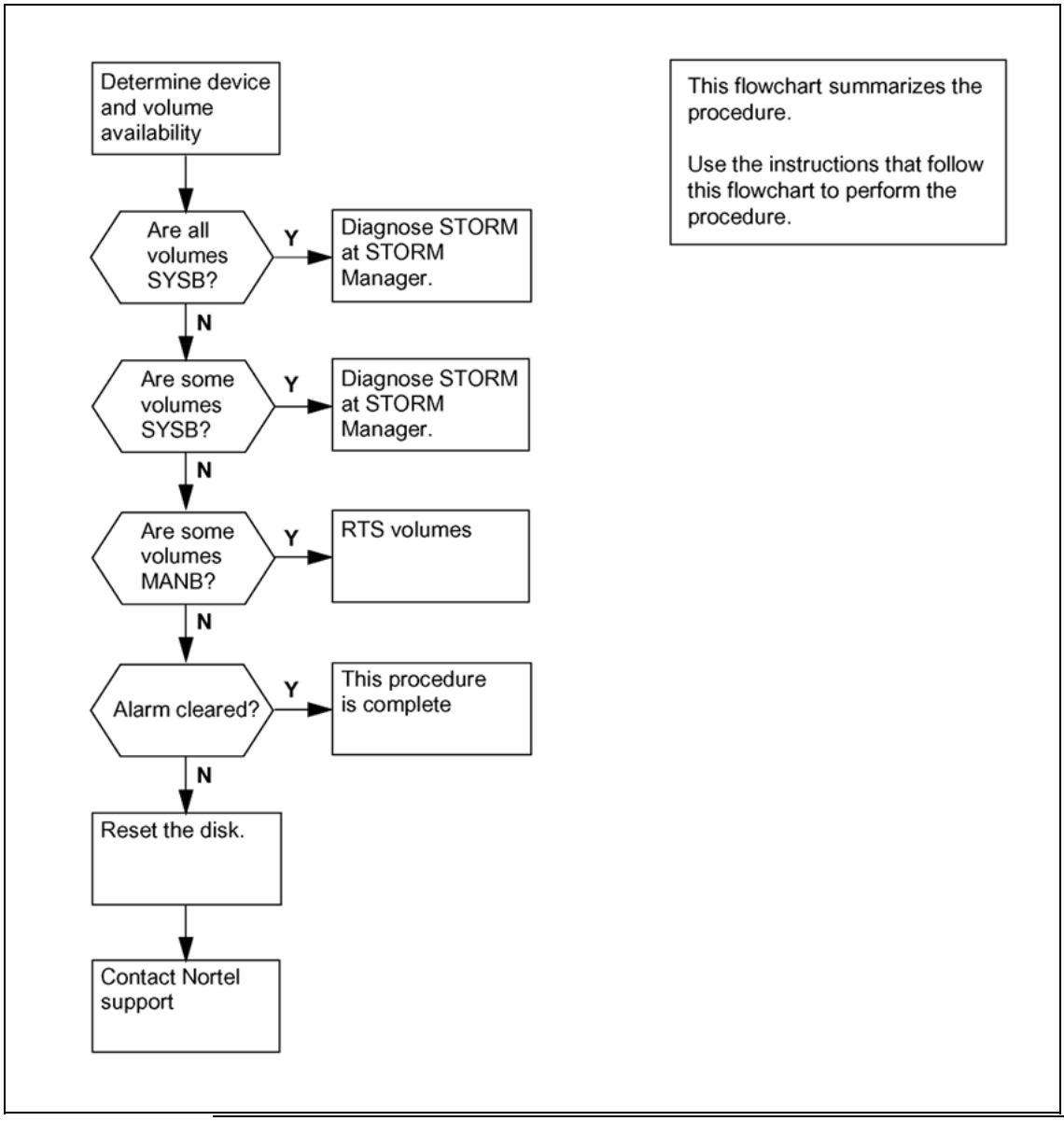
Result

If access to both disk devices fail, Device Independent Recording Package (DIRP) subsystems can backup to memory and consume memory space.

Action

Review the following flowchart for an overview of the alarm clearing procedure. Perform the procedure that follows the flowchart.

Summary of clearing an IOD DISK alarm



Step	Action

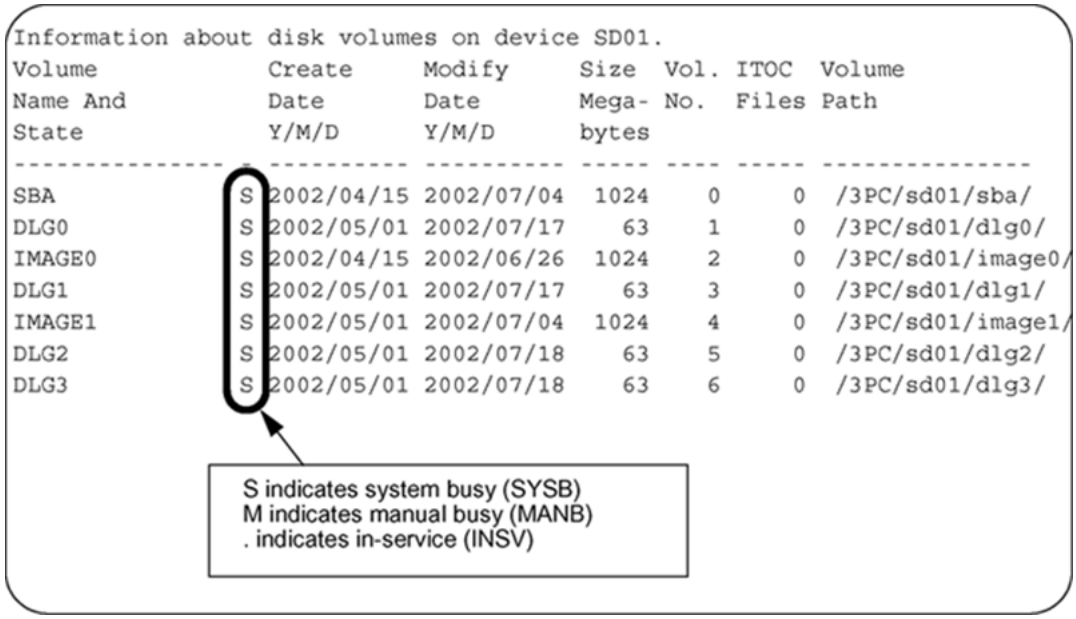
At the MAP

1 Enter the disk administration level and display the volumes for both disk devices.

```
>DISKADM SD00; DV; QUIT
```

```
>DISKADM SD01; DV; QUIT
```

2 Determine the device and volume availability.



If	Do
all volumes on a disk device (SD00 or SD01) are SYSB	Use the CS 2000 SAM21 Manager to determine if the STORM cards are unlocked-disabled or alarmed. Refer to "Card icons" (page 176) for assistance with diagnosing the STORM card states. If a STORM card is unlocked-disabled or alarmed, lock and unlock the card. If the STORM cards are unlocked-enabled and in-service, use the STORM Manager to determine if there are any connectivity or fiber channel faults to the Redundant Array of Inexpensive Disks (RAID) device.
some volumes on a disk device are SYSB	Use the STORM Manager to determine if there are connectivity faults to the RAID device or if exported file systems have been removed.
some volumes are MANB	Use the **RTS ALL** command to restore the devices.

3 If the DISK alarm does not clear, use the RESETDISK command.

```
> BSY ALL;RESETDISK;RTS ALL
```

4 If the DISK alarm does not clear, contact Nortel support personnel.

5 This procedure is complete.

—End—

Additional information

Refer to the following figure for examples of DISK log reports.

```
OFC_NAME     DISK530 JUL30 09:58:27 9900 MANB Volume MBSY
        NAME: SD00ADUMP1
        DESCRIPTION: Disk volume is no longer available.


OFC_NAME     DISK520 JUL30 10:01:33 4600 RTS  Volume RTS
        NAME: SD01DLGP
        DESCRIPTION: Disk volume is now available.

OFC_NAME     DISK650 JUL30 10:06:12 6400 INFO
       NAME: SD01
       DESCRIPTION: Audit Test Failed

                    Recovery audit failed (22): #001D 003D.
```

Creating a test volume on a disk

Application

Use this procedure to create a test volume on a disk.

The tests make sure that the communication with the STORage Management (STORM) devices is intact.

Interval

Perform this procedure after installation of a new disk in a STORM unit, a reboot of a STORM unit, and after a STORM upgrade. If performing this procedure after a disk replacement in a STORM unit, wait for the unit to rebuild the array. Array rebuild status is available at the Storage panel of the STORM Manager.

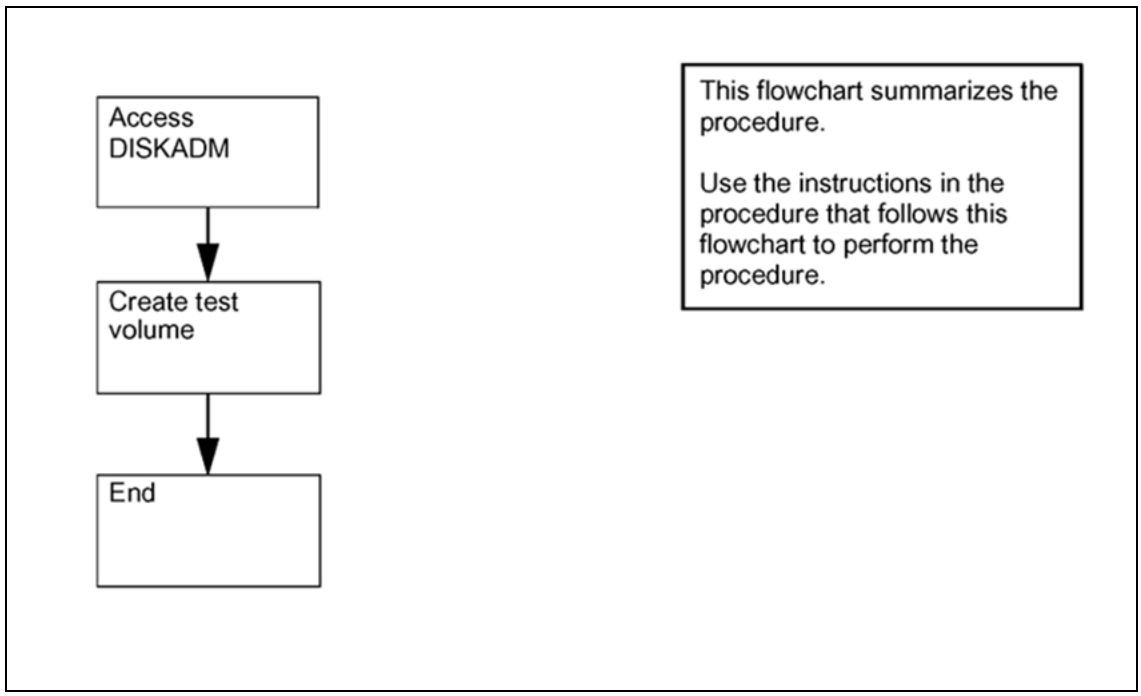
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart as a summary of the procedure. Follow the exact steps to perform this procedure.

Creating a test volume



Step	Action

At the MAP

1 Access the disk administration level:

```
>DISKADM SD<nn>
```

nn
is 00 or 01

```
>DISKADM SD00
DISKADM
Administration of device SD00 (0) is now active.
>
```

2 Display the disk space that is available:

```
>DD
```

```
>DD
Disk drive information for SD00 (0):
Number of volumes in service             :  15 of 15
Total space for volumes                  :  7992 Mbytes
Total volume space allocated             :  3704 Mbytes
Remaining free space for new volumes     :  3951 Mbytes
Composite free space reported by device  :  5712 Mbytes
Device communication:                    :  Okay
1 Mbyte = 1024*1024 bytes.
>
```

3 Create a test volume on the disk:

```
>CV <name> <size>
```

name
is a character string that of 16 or fewer characters
size
is an integer value between 16 and 16 384 and indicates the size of the volume in megabytes

```
>CV TSTVOL 128
Created volume TSTVOL (15) successfully.
Enabled volume TSTVOL (15) successfully.
Creation of the volume TSTVOL is completed on device SD00.
>
```

4 Quit the DISKADM utility:

```
>QUIT
```

5 This procedure is complete.

—End—

Additional information.

To delete the volume, use the **DDV** command in DISKADM.

Recording an office image on a disk

Application

Use this procedure to record the office image to a disk.

Interval

Perform this procedure each day if automatic image taking is not configured. Perform this procedure as required by your office if automatic image taking is configured.

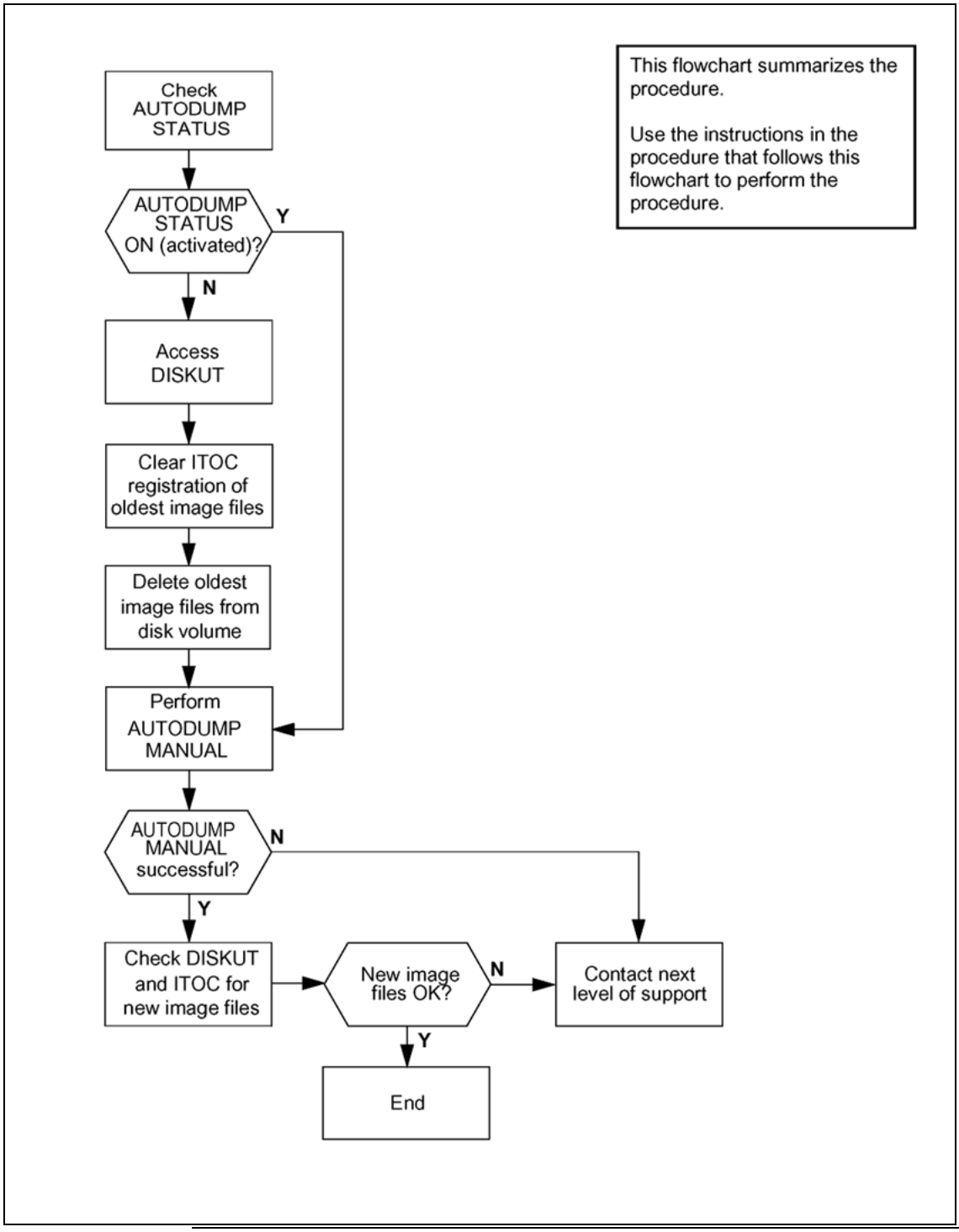
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart as a summary of the procedure. Follow the exact steps to perform this procedure.

Summary of recording an office image on a disk



Step	Action

At the MAP

1 Access the CI level:

```
> QUIT ALL
```

2 Check the status of automatic image taking:

```
> AUTODUMP STATUS
```

Example of a MAP response

```
No Successful Image Information Available.

No Last Image Information Available.

SCHEDULED-Image Dump is ON.

RETAIN option is OFF.

Next scheduled dump is MONDAY at 21:00 hours.
Next image to be dumped on SD00IMAGE1.
>
```

3 Determine if the retain option is off. In the example of a MAP response of step 2, the text `RETAIN option is OFF` indicates the retain option is off.

If RETAIN option is	Do
ON	step 4
OFF	step 5

4 To change the retain option, type:

```
> AUTODUMP RETAIN
```

The command requires a confirmation. Confirm the prompt with a 'Y.' Example of a MAP response:

```
RETAIN option is currently ENABLED.
The PRIMARY LOAD ROUTE should be currently
set per NTP.
Please refer to NTP before disabling.
The RETAIN option will be DISABLED.
Please confirm ("YES","Y","NO","N"):
>Y
RETAIN option DISABLED.
>
```

5 Determine if automatic image taking on or off. In the example of a MAP response of step 2, the text `SCHEDULED-Image Dump is ON` indicates the automatic image taking is on.

If SCHEDULED-Image Dump is	Do
ON	step 19
OFF	step 6

6 Access the MAP disk utility:

```
> DISKUT
```

7 Determine and record the disk volume to use for recording image dumps. Determine the disk volume from office records or office personnel.

8 To list the files in the disk volume that you recorded in step 7, type:

```
> LISTFL <volume_name>
```

volume_name
is a volume name like SD00IMAGE1

Example of a MAP response:

```
>LF SD00IMAGE1

File information for volume SD00IMAGE1:
{NOTE:  1 BLOCK = 512 BYTES }
-------------------------------------------------------------------------
FILE NAME                O R I O O V FILE   MAX    NUM OF    FILE   LAST
                         R E T P L L CODE   REC   RECORDS    SIZE MODIFY
                         G C O E D D        LEN        IN      IN   DATE
                             C N                     FILE  BLOCKS
-------------------------------------------------------------------------
CSNW06BU_P0726V3_CM      I F Y          0  1020    212293  422928 030730
CSNW06CD_P0806_CM        I F Y          0  1020    212358  423057 030806
.ITOC                    O F            0  1024         1       2 030917
CSNW06CD_CM              I F Y          0  1020    212358  423057 030731
CSNW06CD_P0813_CM        I F Y          0  1020    212423  423187 030813
```

9 Determine and record the file names of the oldest CM image and message switch (MS) image. The image files have a CM suffix. The MS image files have an MS suffix.

Note: In the example of a MAP response in step 8, the oldest image file is CSNW06BU_P0726V3_CM. In the example of a MAP response in step 8, there is no example for a MS image.

10 Determine if you can delete the files of the oldest image and MS image. Determine if file deletion is correct from office records or office personnel.

If file deletion of oldest CM image and MS image is	Do
correct	step 11
not correct	Contact your next level of support.

11 Access the user interface for the image table of contents (ITOC) table:

```
> ITOCCI
```

12

WARNING
The ITOC table must not be empty of image files to boot the switch. Do not clear all CM and MS image files from the ITOC.

List the CM image files in the ITOC:

```
> LISTBOOTFILE CM
```

Example of a MAP response:

```
Image Table Of Contents:
   A Registered          Generic Device       File
   L Date       Time                          Name
   R MM/DD/YYYY HH:MM:SS
-- - ------------------- -------------------- -----------
 0 * 08/13/2003 21:12:49 SD00IMAGE1           CSNW06CD_P0813_CM
 1   07/31/2003 22:48:39 SD00IMAGE1           CSNW06CD_CM
 2   07/30/2003 04:12:34 SD00IMAGE1           CSNW06BU_P0726V3_CM
 3   08/06/2003 21:31:02 SD00IMAGE1           CSNW06CD_P0806_CM
```

Note: *The example of a MAP response identifies the autoload registered (ALR) image file by an asterisk (*) in the ALR column. Each image file has an index number at the beginning of the tuple line. The ALR image in the example of a MAP response has an index number of 0. The ALR image file is selected first to boot the switch. If the ALR image file does not boot the switch then image file with the next index number is used*.

13 Determine if the ITOC table has more than one CM image file.

If more than one CM image file is	Do
in the ITOC table	step 14
not in the ITOC table	Contact your next level of support.

14 Clear the oldest image file from the ITOC table:

```
> CLEARBOOTFILE CM FILE <cm_image_file>
```

cm_image_file
is the name of the image file recorded in step 9

Example

```
> CBF CM FILE CSNW06BU_P0726V3_CM
```

15 If necessary, clear the oldest MS load just as for the CM:

```
> LISTBOOTFILE MS
```

```
> CLEARBOOTFILE CM FILE <cm_image_file>
```

16 Quit the ITOCCI level:

```
> QUIT
```

17 Delete the image files removed from the ITOC:

```
> DELETEFL <cm_image_file>
```

```
> DELETEFL <ms_image_file>
```

The DELETEFL command requires confirmation of the command. Confirm the prompt with a 'Y.'

18 Quit the disk utility level:

```
> QUIT
```

19 Start recording the image:

```
> AUTODUMP MANUAL
```

Example of a MAP response:

```
> AUTODUMP MANUAL
13:19  SCHEDULED Image Dump in approximately 5 minutes...
13:19  Using enhanced checksum check method ...
13:19  Please refrain from using dump unsafe commands during the CM image
13:19  Quit to CI if possible.
13:19  If you cannot refrain from using dump unsafe commands
13:19  use the STOPDUMP command to abort AUTODUMP.
13:19  Checking to see if anyone is using dump unsafe commands.
13:19  There are no users of dump unsafe commands.
>
13:22  SCHEDULED Image Dump in 2 minutes...
13:22  Use STOPDUMP command to ABORT.
13:22  Checking to see if anyone is using dump unsafe commands.
13:22  There are no users of dump unsafe commands.
13:24  Starting SCHEDULED Image Dump.
13:24  Checking to see if anyone is using dump unsafe commands.
13:24  There are no users of dump unsafe commands.
13:24  Querying image size on node: CM. Waiting for reply...
13:24  Reply received.
13:24  Checking to see if anyone using dump unsafe commands.
13:24  There are no users of dump unsafe commands.
13:24  Image Dump STARTED: 2003/09/29 13:24:08.257 MON.
13:24  Please refrain from using dump unsafe commands during the CM image
13:24  Quit to CI if possible.
13:24  If you cannot refrain from using dump unsafe commands
13:24  use the STOPDUMP command to abort AUTODUMP.
13:24  Users will be notified when dump unsafe commands are allowed to be
13:24  A CM image dump is starting.
13:24  Commands set to NOTSAFE or PS in table CMDS cannot be used.
13:25  Recent change commands (PS dump safe) can be entered now.
13:27  Image dump completed successfully.
```

20 Check the performance of the image taking record of step 19:

```
>AUTODUMP HISTORY
```

Example of a MAP response:

AUTODUMP HISTORY example

```
> AUTODUMP HISTORY
Successful Image: S030929132424_CM
Taken: 2003/09/29 13:24:08.257 MON.
On Volume: SD00IMAGE1

Last Image: S030929132424_CM
Taken: 2003/09/29 13:24:08.257 MON.
On Volume: SD00IMAGE1

Printing History File for Last Image...
Autodump begins...

Stopping Journal File...
Journal File stopped.

Beginning Dump. START time: 2003/09/29 13:24:08.261 MON.
Timeout initialized.
CM: The Checksum Check method will be used for this image dump.
CM: Unloading modules that are loaded as TEMPORARY...
CM: None found.
CM: Old autoload file: SD00IMAGE1 CSNW06CD_P0813_CM
CM: Estimated image size is 205923 Kbytes.
CM:
CM:
CM: Dumping Data Store.
CM: DS dump time 94836 records was 00:01:34
CM:
CM: Checking Data Store.
CM: DS check time was 00:00:02
CM:

Rotating Journal File...
Rotate Initiated. Check DIRP log for details.

Starting Journal File...
Failed to START Journal File.
CM:
CM: Dumping Program Store.
CM: PS dump time 111086 records was 00:01:50
```

```
CM:
CM: Dumping Entry Record.
CM:
CM: Checking Program Store.
CM: PS check time was 00:00:02
CM:
CM: Checking Entry Record.
CM:
CM: Successful DUMP and CHECK.
CM: 205923 blocks with 3446 corrections.
CM:
CM: Image from CM registered as file 15 in ITOC for CM.
CM: Active entry in ITOC for CM was updated.
Image Dump Completed.
Dump END time: 2003/09/29 13:27:44.215 MON..

Renaming CM Image File from ACTIVE to SAFE:
CM Image File Renamed.

Store Usage:
DS:    USED = 231003Kb  AVAIL =    4069Kb  TOTAL = 235072Kb    % USED =   98%
PS:    USED = 107494Kb  AVAIL =    1882Kb  TOTAL = 109376Kb    % USED =   98%
Autodump ends...
```

21 Determine if the image taking record completed correctly.

If image taking	Do
completed correctly	step 23
did not complete correctly	step 22

22 Find additional information about the error and contact the next level of support:

```
> AUTODUMP DEBUG
```

23 Access ITOCCI and verify that the images for CM and MS are set to ALR:

```
>ITOCCI; LBF CM; LBF MS
```

The ITOC is displayed. Verify that the ITOC was updated, and that the latest images are set to ALR.

24 You have completed this procedure. If telephone operating company policy requires a backup to tape, perform that procedure now.

—End—

Restoring a Call Agent

This procedure describes how to restore an archived call processing application image from tape.

CAUTION
Do not use this procedure when in an emergency situation with no stable call processing application image.

If in a situation without a restartable image, contact Nortel Global Network Product Support (GNPS) immediate. Attempting to use this method without a valid call processing application image could fail due to constant resets on the Call Agent.

Step	Action

At the SDM

1 Insert the DAT cassette with the image to restore.

At the CS 2000 Core Manager

2 Restore the image from tape. This step requires root privilege.

```
# cd /swd/3pc
# tar xvf /dev/rmt0
```

At the Call Agent Manager

3 Log in to the inactive Call Agent and change directory to the location in which to restore the image. Verify that enough disk space exists to hold the image.

```
[mtc@hostname mtc]$ cd /3PC/sd00/image0
[mtc@hostname image0]$ df -h .
Filesystem            Size  Used Avail Use% Mounted on
172.16.16.24:/nfsserv/3pc/cs/sd00
                      8.0G  6.6G  1.4G  82% /3PC/sd00
```

4 Open a file transfer protocol (FTP) session to the CS 2000 Core Manager, and transfer the image. It may be necessary to become the super user to transfer the file.

```
[mtc@hostname image0]$ su
Password:<root_password>
[root@hostname image0]# ftp <core_manager_ip>
Connected to <core_manager_ip>
220 <core_manager_ip> SFTPD Server (Version 19.0.0.0 Nov 14
Name (<core_manager_ip>:mtc): root
Password: <root_passwd>
230 User root logged in.
ftp> bin
200 Type set to I.
ftp> cd /swd/3pc   %% or location of restored image
250 CWD command successful.
ftp> get IMG_TO_RESTORE
local: IMG_TO_RESTORE remote: IMG_TO_RESTORE
227 Entering Passive Mode (10,40,44,6,195,224)
150 Opening data connection for IMG_TO_RESTORE (binary mode
226 Transfer complete.
225820860 bytes received in 332 secs (6.7e+02 Kbytes/sec)
ftp> bye
221 Goodbye.
```

At the MAP

5 Enter the DISKUT level and use the **IMPORT** command to make the image available to the call processing application.

```
CI:
>DISKUT
Disk utility is now active.
DISKUT:
>IMPORT SD00IMAGE0 IMG_TO_RESTORE IMAGE 1020
   IMG_TO_RESTORE : Failed to get record length.
Import: IMG_TO_RESTORE      size: 199 MB
    as: IMG_TO_RESTORE     lrecl: 1020         type: image.

Attempting to import 1 file selected on SD00IMAGE0.

Imported IMG_TO_RESTORE as IMG_TO_RESTORE.

Imported 1 file successfully of 1 attempt on SD00IMAGE0.
>
```

Note: If additional space is needed to import the image, the **IMPORT** command offers to expand the volume.

6 Set the image in the Image Table of Contents (ITOC).

```
>QUIT ALL
CI:
>ITOCCI
ITOC User Interface is now active.
ITOCCI:
>SBF CM IMG_TO_RESTORE 15
IMG_TO_RESTORE is registered in CM ITOC.
The updated ITOC is listed directly below.
Image Table Of Contents:
   A Registered          Generic Device    File
   L Date       Time                       Name
   R MM/DD/YYYY HH:MM:SS
-- - ------------------- ----------------- -----------
 0 * 02/21/2003 16:59:04 SD01ADUMP1        3PC_LAB1_CSNNC06
 1   02/24/2003 11:00:53 SD01ADUMP1        3PC_LAB1_CSNNC06
 2   02/28/2003 08:15:29 SD00IMAGE0        IMG_TO_RESTORE
>
```

7 The restored image is now available for booting.

This procedure is complete.

—End—

Copying files from disk to tape

Application

Use this procedure to copy office images or all the files from a disk volume to a digital audio tape (DAT) cartridge.

CAUTION
Copy no more than one volume onto a tape. To copy multiple volumes, use a separate tape for each volume.

Interval

Perform this procedure when required by your office.

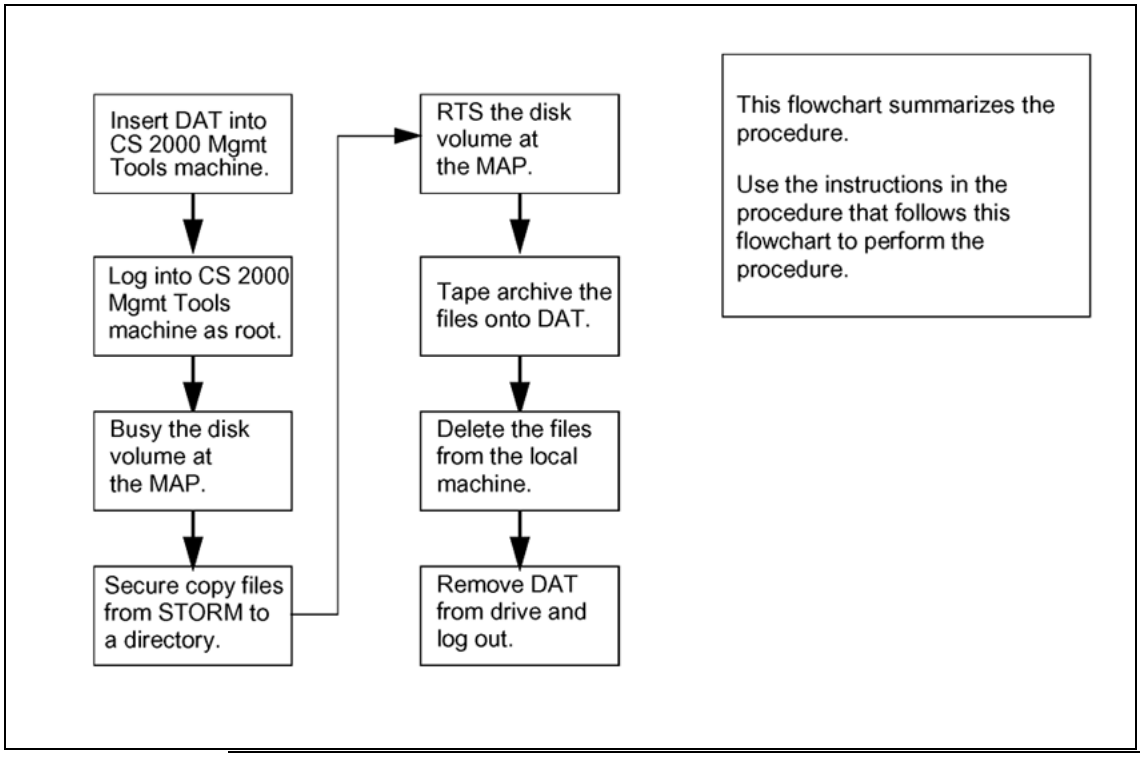
Common procedures

The DAT drive may require periodic cleaning and maintenance. Refer to the product documentation for the CS 2000 Management Tools server hardware.

Action

This procedure contains a summary flowchart as a summary of the procedure. Follow the exact steps to perform this procedure.

Summary of copying all files from a disk volume to tape



Step	Action

At the CS 2000 Management Tools server

1

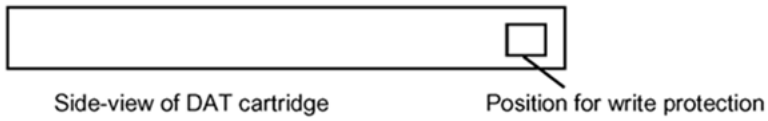
CAUTION
Copy no more than one volume onto a tape. To copy multiple volumes, use a separate tape for each volume.

Determine the volume to backup. Determine the volume from office records or from office personnel. Record the volume name.

2 Get a tape cartridge that has the approval of Nortel. All files on the tape will be destroyed. Ensure the tape does not hold valuable data.

3 Make sure the tape write protection is at the position that permits recording (closed). The tape write protection is an entrance on one side of the tape that has a sliding door. The sliding door is open for write protection and closed to allow a write to the tape.

Write protection of DAT cartridge



4

WARNING
Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) when you handle the tape. The use of the wrist strap protects against damage caused by electrostatic discharge (ESD).

Insert the DAT tape cartridge into the tape drive.

At a CS 2000 Management Tools server terminal

5 Log in as a maintenance level user. Root permissions are used later in this procedure to write the tape.

6 Change directory to **/data** and create a temporary directory to store the files:

```
$ cd /data
$ mkdir tmp
$ cd tmp
```

7 Determine the environment shell:

```
$ env | grep SHELL
SHELL=/bin/ksh
```

8 Set a file size creation limit for this instance of the shell. Choose a limit that is applicable to your shell. (The default shell is /bin/ksh.)

for /bin/ksh:

```
$ ulimit -f 2929688
```

for /bin/bash:

```
$ ulimit -f 1464844
```

for /bin/csh:

```
$ limit filesize 1500 megabytes
```

At the MAP

9 Enter the DISKADM level and busy the volumes to copy:

```
> DISKADM <sd0x>; BSY <volname>
> QUIT
```

sd0x
is SD00 or SD01
volname
is the name of the volume such as TEMP

The BSY command fails if applications have open files on any volume for the device. A busied disk may affect data recording or retrieval for applications. Consider 11 *to RTS the volume as soon as possible or convenient after copying the files*.

If applications are active and writing to the volume, determine if the application can ROTATE the disk writing activity to a backup volume. If unsure, contact your next level of support.

At a CS 2000 Management Tools server terminal

10 Use the secure copy program to copy files from the STORage Management (STORM) unit:

```
$ scp -r ¡°root@<stormip>:</path_to_files>¡± /data/tmp
```

stormip
is the IP Address of the STORM unit such as 172.18.96.6
/path_to_files
is the absolute path to the files on the STORM unit to copy such as `/nfsserv/3pc/cs/sd00/temp/*`

Note: The first time this command is issued, the secure copy program provides a prompt to exchange keys. Confirm the exchange with a "y."

The secure copy program provides a progress indicator during the copy. Wait for the copy to complete and the $ prompt to return.

At the MAP

11 Enter the DISKADM level and RTS the copied volumes:

```
> DISKADM <sd0x>;RTS <volname>
> QUIT
```

At a CS 2000 Management Tools server terminal

12 Create a file that lists the checksums for all the transferred files:

for /bin/ksh and /bin/bash:

```
$ for i in ls
> do
> cksum $i >> cksums.txt
> done
```

for /bin/csh:

```
$ foreach i (ls)
? cksum $i >> cksums.txt
? end
```

Note: After the first line, press the Return key. The prompt changes until "end" or "done" is entered and the Return key is pressed.

13 Become the root user:

```
$ su - root
```

Provide the root password at the prompt.

14 Create a tape archive of the current directory:

```
# mt rewind
# tar cvf /dev/rmt/0 .
```

The tar command prints status to the screen. Wait for the command to complete and the prompt to return.

15 To check that files were copied to the tape:

```
# mt rewind
# tar tvf /dev/rmt/0
```

16 Exit from root privilege:

```
# exit
$
```

The dollar sign command prompt returns.

17 Remove the local copies of the files:

```
$ cd ..
$ rm tmp/*
```

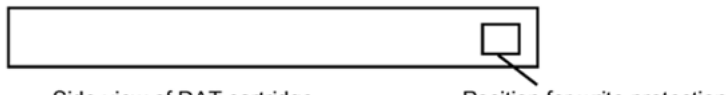
At the CS 2000 Management Tools server

18

WARNING
Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) when you handle the tape. The use of the wrist strap protects against damage caused by electrostatic discharge (ESD).

Remove the tape cartridge from the tape drive. Set the tape write protection to the position that does not permit recording (open). The tape write protection is an entrance on one side of the tape that has a sliding door. The sliding door is open for write protection and closed to allow a write to the tape.

Write protection of DAT cartridge



19 Store the tape cartridge per office procedure.

20 This procedure is complete.

—End—

Backing up files to a DVD-RW

Application

Use this procedure to copy office images or all the files from a disk volume to a digital video disk read write optical disk (DVD-RW).

Note: Rewritable DVDs (DVD+RW) will not work. Use a blank DVD-RW (write once).

CAUTION
Copy no more than one volume onto a DVD-RW. To copy multiple volumes, use a separate DVD-RW for each volume.

Interval

Perform this procedure when required by your office.

Common procedures

The UNIX commands mkisofs and cdrw are used. For information about these commands, type **`man mkisofs`** or **`man cdrw`** at a terminal prompt.

The IP addresses of the STORM units are determined in step 1. The root password for STORM is needed. The root password for the CS 2000 Management Tools server is needed.

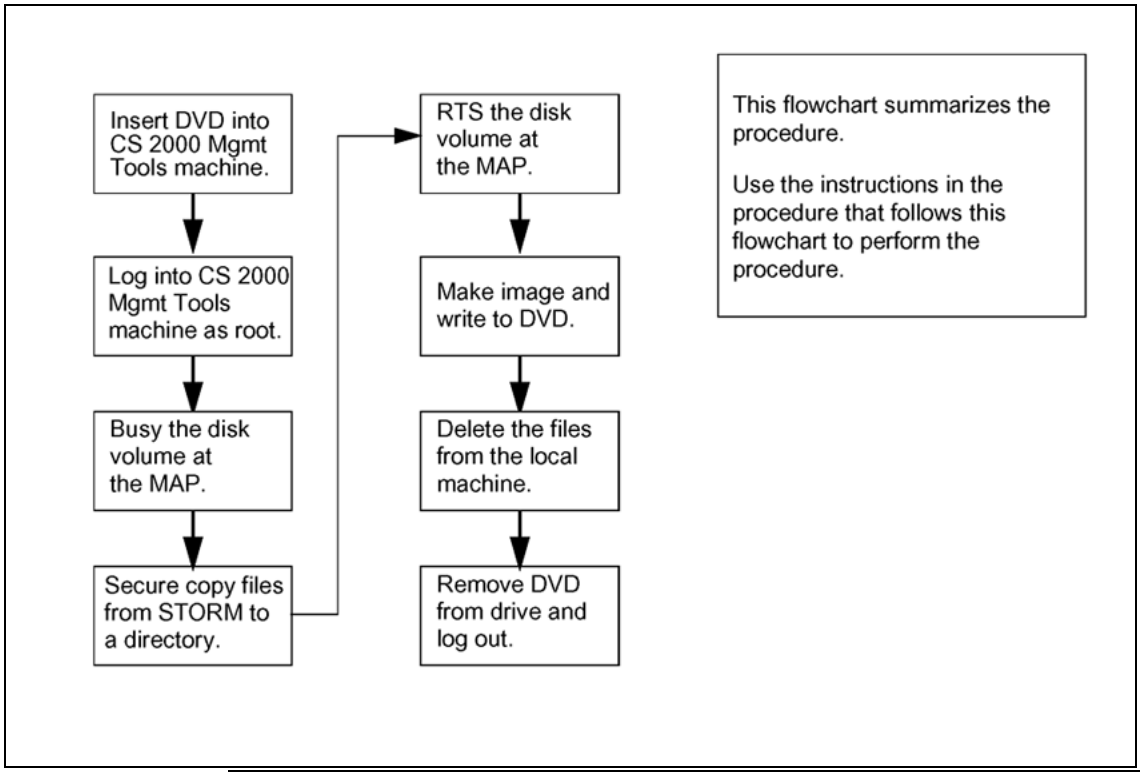
Prerequisite

You need one or more blank DVD-RW disks to store the data.

Action

This procedure contains a summary flowchart as a summary of the procedure. Follow the exact steps to perform this procedure.

Summary of backing up files to a DVD-RW



Step	Action

At the Call Agent Manager

1 Quit the maintenance application and then use the mount command to determine the IP addresses of the STORM units.

```
> quit all
[mtc@ip_address mtc]$ mount
```

Determine which STORM unit provides sd00 and which provides sd01. This information is needed in step 11.

```
[mtc@10.40.44.67 mtc]$ mount
/dev/ram0 on / type ext2 (rw)
proc on /proc type proc (rw)
devpts on /dev/pts type devpts (rw,mode=0622)
10.40.44.238:/nfsserv/3pc/mtc/tape0 on /TAPE type nfs (rw,rsize=4096...
10.40.44.239:/nfsserv/3pc/mtc/tape1 on /TAPE1 type nfs (rw,rsize=409...
10.40.44.238:/nfsserv/3pc/cs/sd00 on /3PC/sd00 type nfs (rw,rsize=409...
10.40.44.239:/nfsserv/3pc/cs/sd01 on /3PC/sd01 type nfs (rw,rsize=409...
10.40.44.238:/nfsserv/3pc/mtc/log0 on /var/log_mate type nfs (rw,rsi...
10.40.44.239:/nfsserv/3pc/mtc/log1 on /var/log type nfs (rw,rsize=409...
```

At the CS 2000 Management Tools server

2

CAUTION
Copy only one volume onto a DVD-RW. To copy multiple volumes, use a separate DVD-RW for each volume.

Determine the volume to backup. Determine the volume from office records or from office personnel. Record the volume name.

3 Insert a DVD-RW into the DVD tray. If the CS 2000 Management Tools server is a pair of Sun Microsystems Netra 240 machines, put the DVD-RW into the machine with a lit USER LED on the faceplate.

At a CS 2000 Management Tools server terminal

4 Log in as a maintenance level user such as the maint user. Root permissions are used later in this procedure to write the DVD.

5 Change directory to `/data` and create a temporary directory to store the files:

```
$ cd /data
$ mkdir tmp
```

Note: Do not change directory into tmp now. The tmp directory will hold the data to backup.

6 Determine the environment shell:

```
$ env | grep SHELL
SHELL=/bin/ksh
```

7 Set a filesize creation limit for this instance of the shell. Choose the **one** that is applicable to your shell. /bin/ksh is the default shell:

for /bin/ksh:

```
$ ulimit -f 2929688
```

for /bin/bash:

```
$ ulimit -f 1464844
```

for /bin/csh:

```
$ limit filesize 1500 megabytes
```

At the MAP

8 Determine the approximate size of the image or volume:

Data to backup	How to determine size
image	Listfile the volume that the image is in: **> DISKUT; LF <vol_name>** > LF SD00ADUMP0 File information for volume SD00ADUMP0: {NOTE: 1 BLOCK = 512 BYTES } FILE NAME — ORGCON — IOPLD — VFILE CODE — MAX REC LEN — NUM OF RECORDS IN FILE — FILE SIZE IN BLOCKS — LAST MODIFY DATE S040210135002HIS — O V — 0 — 255 — 276 — 27 — 040210 S040210135002_CM — I F Y — 0 — 1020 — 220288 — 438855 — 040210 S040210135002_MS — I F Y — 0 — 1020 — 7803 — 15546 — 040210 The approximate size of the image in megabytes is NUM OF RECORDS IN FILE / 1000: **220288 / 1000 = 220 MB**
volume	Listvols the volume with the megabyte option: **> DISKUT; LV SD00TEMP MB** Subtract FREE MBYTES from TOTAL MBYTES to determine the approximate size of the volume: **400 - 340 = 60 MB**

9 If backing up an entire volume, enter the DISKADM level and busy the volume:

```
> QUIT ALL
> DISKADM <sd0x>; BSY <volname>
```

```
> QUIT
```

sd0x
is SD00 or SD01
volname
is the name of the volume such as TEMP or ADUMP0

The BSY command fails if applications have open files on any volume for the device. A busied disk may affect data recording or retrieval for applications. RTS the volume as soon as possible or convenient after copying the files.

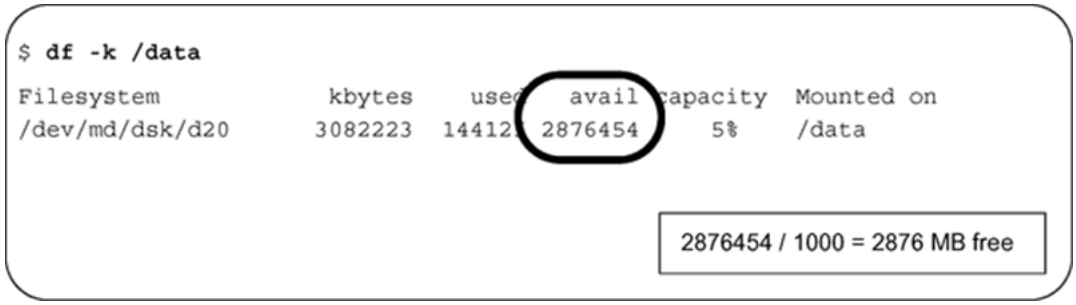
If applications are active and writing to the volume, determine if the application can ROTATE the disk writing activity to a backup volume. If unsure, contact your next level of support.

At a CS 2000 Management Tools server terminal

10 Ensure that enough disk space is available for the data to record. Twice the space determined in step 8 is needed:

```
$ df -k /data
```

The free space on the device that /data is mounted is printed. The value for "avail" is the number of free kilobytes. Divide that number by 1000 to determine the number of free megabytes. Ensure that there is free space for two times the size of the data to record.



11 Secure copy the files from the STORM unit to the `/data/tmp` directory created in step 5. Enter the root password for the STORM unit when prompted:

```
$ scp -r "root@<stormip>:</path_to_files>" /data/tmp
```

Note: There is a space before the /data/tmp argument.

stormip
is the IP Address of the STORM unit such as 10.40.44.238. Use the value determined in step 1.
/path_to_file

is the absolute path to the files on the STORM unit to copy such as `/nfsserv/3pc/cs/sd00/temp/*`

Example

Copy an office image named S040210135002_CM from SD00ADUMP0:

```
$ scp -r "root@<stormip>:/nf-
sserv/3pc/cs/sd00/adump0/S040210135002_CM"
/data/tmp
```

Note: The first time this command is issued, the secure copy program provides a prompt to exchange keys. Confirm the exchange with a "yes." The root password for the STORM unit is needed.

The secure copy program provides a progress indicator during the copy. Wait for the copy to complete and the $ prompt to return.

At the MAP

12 If the volume was busied in step 9, enter the DISKADM level and RTS the copied volumes:

```
> DISKADM <sd0x>; RTS <volname>
```

```
> QUIT
```

At a CS 2000 Management Tools server terminal

13 If only image files are transferred, and the files do not end in _CM or _MS, rename the files to include the file attributes `IMG` and `1020`:

```
$ mv <image_filename> <image_filename>.IMG1020
```

Example

```
$ mv raleigh_04wk06 raleigh_04wk06.IMG1020
```

Note: If the name of the image already ends in _CM or _MS, skip this step.

14 Change directory out of /data/tmp and make an ISO9660 image named dvdimage.iso with Rock Ridge extensions from the files in tmp:

```
$ cd /data
$ mkisofs -R -o /data/dvdimage.iso -r /data/tmp
```

Status is printed to the terminal:

Create dvdimage.iso with mkisofs command

```
$ mkisofs -R -o /data/dvdimage.iso -r /data/tmp
4.56% done, estimate finish Tue Feb 10 14:52:00 2004
9.11% done, estimate finish Tue Feb 10 14:52:00 2004
13.67% done, estimate finish Tue Feb 10 14:52:00 2004
...
95.67% done, estimate finish Tue Feb 10 14:52:05 2004
Total extents actually written = 109764
Total translation table size: 0
Total rockridge attributes bytes: 421
Total directory bytes: 0
Path table size(bytes): 10
Max brk space used 8000
109764 extents written (214 Mb)
$
```

15 Become the root user:

```
$ su - root
```

Provide the root password at the prompt.

16 Optionally verify the ISO9660 image:

```
# lofiadm -a /data/dvdimage.iso /dev/lofi/1
# mount -F hsfs /dev/lofi/1 /mnt
# ls -asl /mnt
```

The contents of the ISO 9660 image are displayed. These files will be written to the DVD-RW. Ensure the display looks similar to the following image.

Note 1: *If the lofiadm command reports the error* `"lofiadm: could not map file /data/dvdimage.iso to /dev/lofi/1: Device busy,"` *then the first loopback file driver is already in use. Reenter the command and substitute /dev/lofi/2 for /dev/lofi/1. Continue incrementing the number until the command succeeds and then use the successful value in the mount command.*

Note 2: *If the mount command reports the error* `"mount: /dev/lofi/1 is already mounted, /mnt is busy, or allowable number of mount points exceeded,"` *unmount the /mnt directory with the* **`umount /mnt`** *command and reenter the mount command.*

List contents of the ISO 9660 image

```
# lofiadm -a /data/dvdimage.iso /dev/lofi/1
# mount -F hsfs /dev/lofi/1 /mnt
# ls -asl /mnt
total 431996
   4 dr-xr-xr-x   2 root   sys       2048 Apr 20 09:48 .
   2 drwxr-xr-x  33 root   root      1024 Apr 20 11:16 ..
431990 -rw-r--r-- 1 maint  maint  221178840 Apr 20 09:47 IMG_TO_BACKUP.img1
```

17 Determine the name of the DVD-RW device:

```
# cdrw -l
```

All optical disk devices are printed.

Determine the DVD-RW device name

```
# cdrw -l
Looking for CD devices...
    Node             Connected Device              Device type
---------------------+-------------------------------+----------------
cdrom0               | TOSHIBA  DVD-ROM SD-R6012 1033 | CD Reader/Writer
```

Note: *If the command responds with* `"No CD writers found or no media in the drive,"` *and the CS 2000 Management Tools server is a cluster then verify that the DVD-RW is placed in the active unit. The active unit is identified by a lit USER LED on the face of the unit.*

18 Optionally simulate (-S flag) recording the image to verify that the ISO 9660 image can be recorded on the DVD-RW. This step requires approximately 10 minutes:

```
# cdrw -d <dvd_dev> -S -i /data/dvdimage.iso
```

Example

```
# cdrw -d cdrom0 -S -i /data/dvdimage.iso
```

The CDROM tray ejects after this simulation. **Close the CDROM tray and continue this procedure to write the DVD-RW**.

19 Record the image. This step requires approximately 10 minutes:

```
# cdrw -d <dvd_dev> -i /data/dvdimage.iso
```

Example

```
# cdrw -d cdrom0 -i /data/dvdimage.iso
```

If the error response "Media in the device is not writable" is returned, verify that the CDROM tray is closed.

Approximately two minutes pass before progress is printed to the screen. After the first 1% is written, each additional percent requires about two seconds.

CDRW command progress

```
# cdrw -d cdrom0 -i /data/dvdimage.iso
Initializing device...done.
Preparing to write DVD
Writing track 1 ... 99 %
```

Approximately nine minutes pass before the command completes.

```
done.
done.
Finalizing (Can take up to 4 minutes)...done.
$
```

The CDROM tray on the CS 2000 Management Tools server ejects. **Close the CDROM tray and continue this procedure to verify the contents of the DVD-RW**.

20 Check that ISO9660 image recorded correctly:

```
# ls -asl /cdrom/cdrom
```

The contents of the DVD-ROM are printed.

21 Unmount the DVD-RW, eject it, and exit from root privilege:

```
# eject cdrom
```

If the ISO 9660 image was verified with the lofiadm command, remove the loopback file driver device:

```
# umount /mnt
# lofiadm -d /dev/lofi/1
```

> ***Note:*** If /dev/lofi/2 was used above, substitute /dev/lofi/2 in this command.

Exit from root privilege:

```
# exit
$
```

The dollar sign command prompt returns.

22 Remove the local copies of the files:

```
$ rm /data/tmp/*
$ rm /data/dvdimage.iso
```

At the CS 2000 Management Tools server

23 Remove the DVD-RW from the tray and close the tray. Label the DVD-RW.

24 Store the DVD-RW per office procedure.

25 This procedure is complete.

—End—

Restoring files from a DVD-RW

Application

Use this procedure to restore office images from a digital video disk read write optical disk (DVD-RW). Do not restore an image and overwrite one with the same name.

To restore a volume from DVD-RW, contact Nortel support personnel.

Interval

Perform this procedure when required by your office.

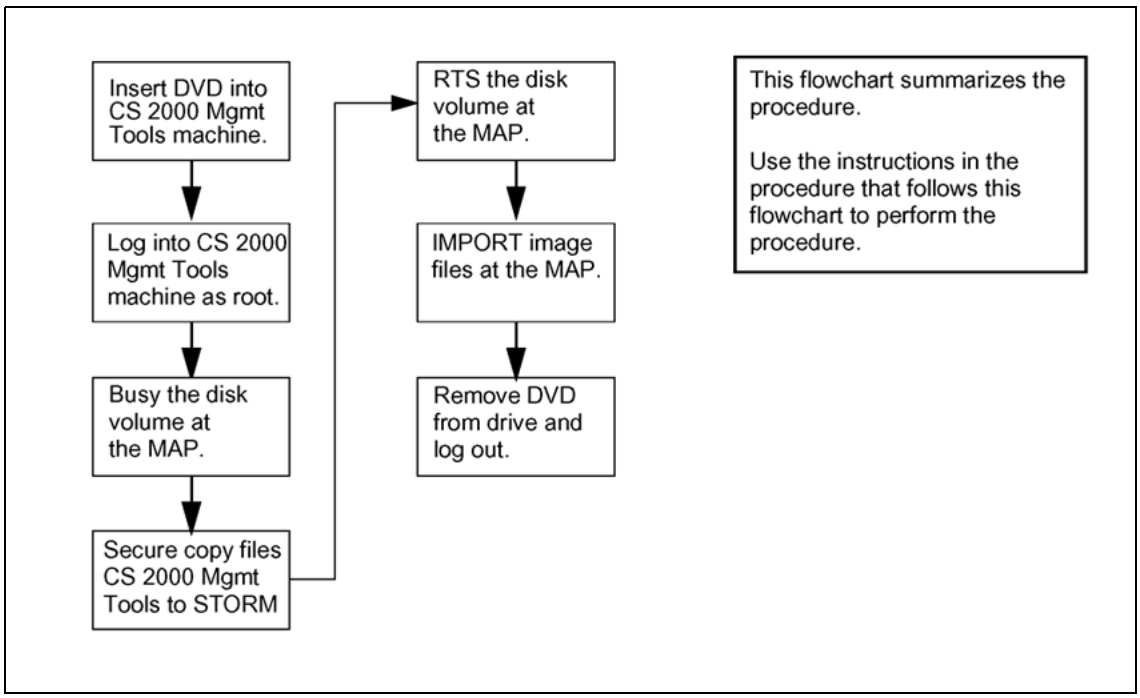
Common procedures

Understanding of the **IMPORT** command in DISKUT, **SCANF** for listing volumes, and the **CBF**, **LBF**, and **SBF** commands in ITOCCI is required. The IP addresses of the STORM units are needed. Use the **mount** command from a Call Agent card to determine the addresses.

Action

This procedure contains a summary flowchart as a summary of the procedure. Follow the exact steps to perform this procedure.

Summary of restoring files from a DVD-RW



Step	Action

At the CS 2000 Management Tools server

1 Insert the DVD-RW into the DVD tray. If the CS 2000 Management Tools server is a pair of Sun Microsystems Netra 240s, put the DVD in the unit with the USER LED lit.

Volume management software on the CS 2000 Management Tools server operating system mounts the DVD-RW.

2 List the contents:

```
$ ls -as /cdrom/cdrom0
```

The contents of the DVD are printed.

3 Change directory to the DVD-RW:

```
$ cd /cdrom/cdrom0
```

At the MAP

4 Enter the DISKADM level and busy the volumes to copy:

```
> DISKADM <sd0x>; BSY <volname>
```

```
> QUIT
```

sd0x
is SD00 or SD01
volname
is the name of the volume such as TEMP

The BSY command fails if applications have open files on any volume for the device. A busied disk may affect data recording or retrieval for applications. Consider 11 *to RTS the volume as soon as possible or convenient after copying the files*.

If applications are active and writing to the volume, determine if the application can ROTATE the disk writing activity to a backup volume. If unsure, contact your next level of support.

At a CS 2000 Management Tools server terminal

5 Secure copy the files from the DVD-RW on the CS 2000 Management Tools server to one STORage Management (STORM) unit:

```
$ scp <image_files>
¡°root@<stormip>:</path_to_files>¡±
```

image_files
is the file name for a single image file, or a wildcard expression such as "*_CM"

stormip
is the IP Address of the STORM unit such as 172.18.96.6
/path_to_files
is the absolute path to the files on the STORM unit to place the files such as `/nfsserv/3pc/cs/sd00/image1`

Example
Copy an office image named S040210135002_CM to SD00IMAGE1:

```
$ scp S040210135002_CM
"root@<stormip>:/nfsserv/3pc/cs/sd00/image1"
```

Note: The first time this command is issued, the secure copy program provides a prompt to exchange keys. Confirm the exchange with a "y."

The secure copy program provides a progress indicator during the copy. Wait for the copy to complete and the $ prompt to return.

At the MAP

6 Enter the DISKADM level and RTS the volume:

```
> DISKADM <sd0x>; RTS <volname>

> QUIT
```

7 Enter the DISKUT level and IMPORT the image files:

```
> DISKUT; IMPORT SD00IMAGE1

> QUIT
```

The status of the IMPORT command is printed.

IMPORT result

```
> IMPORT SD00IMAGE1
Attempting to import 1 file selected on SD00IMAGE1.

Imported S040210135002_CM     as S040210135002_CM      IMAGE  1020.

Imported 1 file successfully of 1 attempt on SD00IMAGE1.
```

8 List the contents of the volume so the file can be added to the Image Table of Contents (ITOC) in the next step:

```
> SCANF SD00IMAGE1
```

The contents of the volume are printed.

9 Enter ITOCCI and register the image in the ITOC:

```
> ITOCCI

> SBF CM S040210135002_CM <itoc_pos> <alr_flag>
```

itoc_pos
is an integer between 0 and 15, and is a free position in the ITOC.
alr_flag
if this image should be booted for the next restart, specify **ALR**. Otherwise, leave the field blank.

Note: To determine if a free position is available, use the **LBF CM** command. If all positions are used, clear the file in position 15. Determine which volume the position 15 is on, use **SCANF** to list that volume, and then use the **CBF CM FILE <image_name>** command.

At a CS 2000 Management Tools server terminal

10 Unmount the DVD-RW, eject it, and exit from root privilege:

```
$ eject cdrom
```

At the CS 2000 Management Tools server

11 Remove the DVD-RW from the tray and close the tray.

12 Store the DVD-RW per office procedure.

13 This procedure is complete.

—End—

Scheduling automatic image taking

Application

Use this procedure to enable and schedule automatic image taking. This procedure makes a record of the office image to a disk volume.

Interval

This procedure is a task performed on the decision of the office manager.

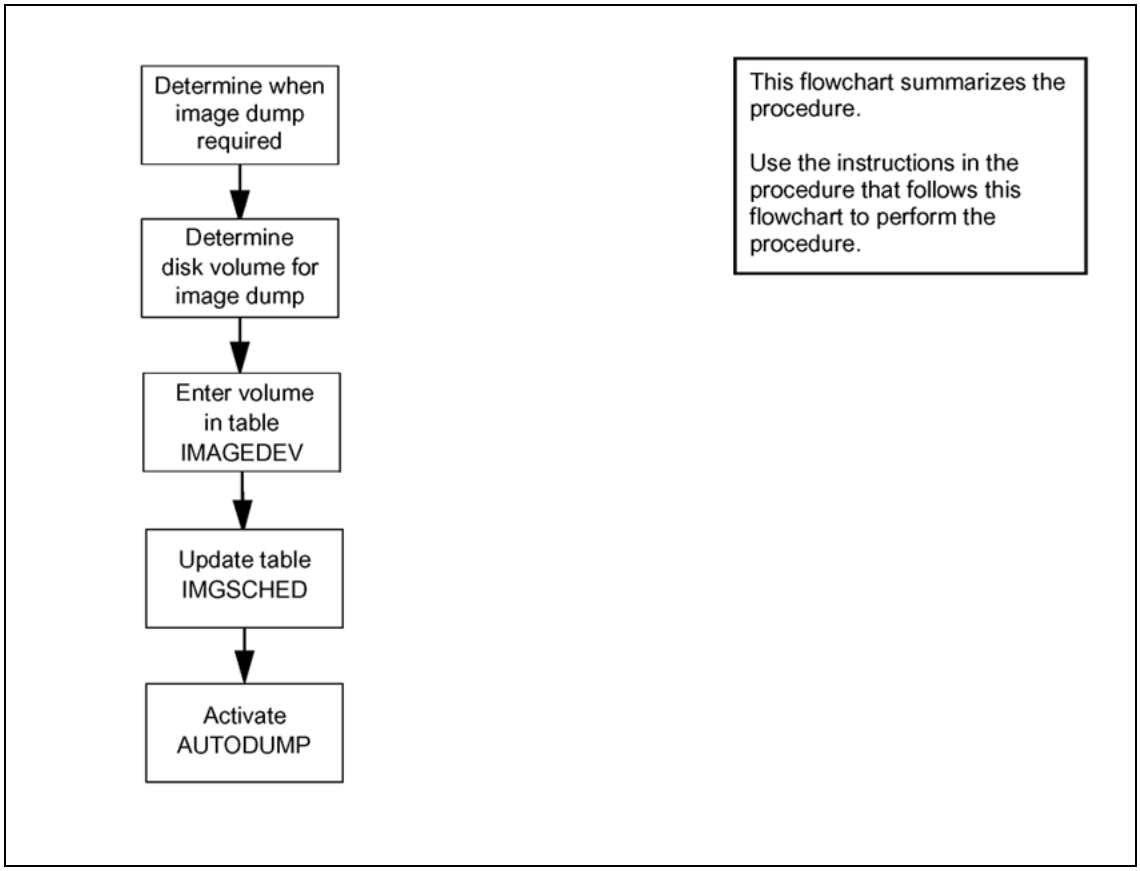
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart as an summary of the procedure. Follow the exact steps to perform this procedure.

Summary of scheduling automatic image taking



Step	Action

At your current location

1 Determine and record the days and times to have an office image dump. Determine the days and times from office personnel or office records.

2 Determine and record the volume names that store the image files. Determine the volume names from office personnel or office records.

At the MAP

3 Access the CI level of the MAP:

```
>QUIT ALL
```

4 Access the disk utility level:

```
>DISKUT
```

Example of a MAP response:

```
Disk utility is now active.
DISKUT:
```

5 List the volumes:

```
>LISTVOLS
```

Example of a MAP response:

```
>LV
Volumes found:
--------------
NAME                TYPE      TOTAL       FREE TOTAL  OPEN  ITOC    LARGEST
                              BLOCKS     BLOCKS FILES FILES FILES   FREE
SEGMENT
-------------------------------------------------------------------------------
SD00IMAGE             STD    1638400    1063334     2     0     1    1063334
SD00IMAGE1            STD    1638400     771242     3     0     4     771242
SD00PERM              STD     409600     409100     8     0     0     409100
SD00TEMP              STD     409600     406595    93     0     0     406595
SD00SBA               STD    2097152          0   323     0     0          0
SD00AMA0              STD     122880     122880     0     0     0     122880
SD00AMA1              STD     122880     122880     0     0     0     122880
...
SD01DLG2              STD     122880     122880     0     0     0     122880
SD01DLG3              STD     122880     122880     0     0     0     122880
SD01JF                STD     122880     122880     0     0     0     122880
SD01SCRATCH           STD     204800     189313    13     0     0     189313
SD01PAT               STD     204800     203250   297     0     0     203250
Total number of volumes listed: 30.
>
```

6 Determine which volume in step 5 has the volume name that stores the image files.

7 Quit the MAP disk utility level:

```
>QUIT
```

8 Access table IMAGEDEV:

```
>TABLE IMAGEDEV
```

9 List the tuples in table IMAGEDEV:

```
>LIST ALL
```

Example of a MAP response:

```
TOP
          VOLNAME        ACTIVE
 ----------------------------
          SD00IMAGE1          Y
 BOTTOM
```

Example of a MAP response to an empty table IMAGEDEV:

```
EMPTY TABLE
```

10 Check if the image volume from office records is in the list of table IMAGEDEV in step 9.

If the image volume is	Do
in table IMAGEDEV	step 15
not in table IMAGEDEV	step 11

11 To add a tuple for the image volume recorded in step 2, type.

```
>ADD volume_name Y
```

volume_name
is the name of the volume used for automatic image dumps
Y
is confirmation that the volume is active

Example
Add SD00IMAGE1 as the active volume for image dumping.

```
>ADD SD00IMAGE1 Y
```

12 Confirm the command:

```
>Y
```

Example of a MAP response:

```
TUPLE ADDED
```

13 Check the tuple addition to table IMAGEDEV:

```
>LIST ALL
```

The tuples in the table are listed. Ensure that the new tuple is listed.

14 Quit from table IMAGEDEV:

```
>QUIT
```

15 Access table IMGSCHED:

```
>TABLE IMGSCHED
```

16 List all the tuples:

```
>LIST ALL
```

Example of a MAP display:

```
>LIS ALL
TOP
              DAY    DUMPHOUR   DUMPMIN    CMMS       ISN       USESDM     ACTIVE
-------------------------------------------------------------------------------
           MONDAY          21         0       N         N            N          N
          TUESDAY          21         0       N         N            N          N
        WEDNESDAY          21         0       N         N            N          N
         THURSDAY          21         0       N         N            N          N
           FRIDAY          21         0       N         N            N          N
         SATURDAY          21         0       N         N            N          N
           SUNDAY          21         0       N         N            N          N
BOTTOM
>
```

Note 1: Fields DUMPHOUR and DUMPMIN control the time at which the dump performs. The default time is 21:00. Modify the time according to separate office requirements. Perform image dumps during hours that have minimum traffic.

Note 2: Field ACTIVE cannot be set to Y if both the CMMS and ISN fields are N.

17 Access the tuple for the first day to activate an automatic image dump:

```
>POSITION <day>
```

day
is the day for which to activate automatic image taking, for example, MONDAY

18 Edit the tuple:

```
>CHANGE
```

19 Confirm the command:

```
>Y
```

Example of a MAP response:

```
DUMPHOUR: 21
```

20 Enter the required dump hour:

```
>dump_hour
```

dump_hour
is the dump hour you must enter, for example, 21

Example of a MAP response:

```
DUMPMIN: 0
```

21 Enter the required dump minutes:

```
>dump_minutes
```

dump_minutes
is the dump minutes, for example, 30

Example of a MAP response:

```
CMMS: N
```

22 Enable the automatic image dump on nodes CM and MS, if an MS is available:

```
>Y
```

Example of a MAP response:

```
ISN: N
```

23 Do not enable the Intelligent Switch Network image dump:

```
>N
```

Example of a MAP response:

```
USESDM: N
```

24 Do not enable the USESDM option:

```
>N
```

Example of a MAP response:

```
ACTIVE: N
```

25 Make the automatic image dump active for the selected day:

```
>Y
```

Example of a MAP response:

```
TUPLE TO BE CHANGED:
           MONDAY          21      30       Y    N    Y
```

```
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

26 Confirm the tuple change:

```
>Y
```

Example of a MAP response:

```
TUPLE CHANGED
```

27 Check the tuple revisions to table IMGSCHED:

```
>LIST ALL
```

If all the tuple entries are	Do
complete	step 28
not complete	Repeat step 17 to step 26 for each day an automatic image dump is needed.

28 Quit from table IMGSCHED:

```
>QUIT
```

29 Activate the autodump facility for the days and times in table IMGSCHED:

```
>AUTODUMP ON
```

Example of a MAP response:

```
SCHEDULED-Image Dump is ON.
Next scheduled dump is MONDAY at 21:30 hours.
Next image to be dumped on SD00IMAGE1.
```

Note: *The MAP response identifies the disk and volume name that the image dumps to. The switch software selects from table IMAGEDEV the disk and volume to dump the image to.*

30 To check the status of automatic image taking:

```
>AUTODUMP STATUS
```

Example of a MAP response

```
Successful Image:  030826_CM
Taken:  2003/08/26 21:47:32:04.138 TUE.
On Volume:  SD00IMAGE1
SCHEDULED-Image Dump is ON.
RETAIN option is ON.
Next scheduled dump is MONDAY at 21:30 hours.
Next image to be dumped on SD00IMAGE1.
```

31 Check that automatic image taking is on. In the example of a MAP response of step 30, the text `SCHEDULED-Image Dump is ON` indicates the automatic image taking is on.

If SCHEDULED-Image Dump is	Do
ON	step 32
OFF	step 36

32 Check that the RETAIN option is off. In the example of a MAP response of step 30, the text `RETAIN option is ON` indicates the retain option is on.

If RETAIN option is	Do
ON	step 33
OFF	step 36

Note: Setting RETAIN to off is usually preferred. The RETAIN option determines if the boot pointer is set to the newly dumped image (RETAIN is OFF), or if it remains set to its current setting (RETAIN is ON).

33 Change the RETAIN option to OFF:

```
>AUTODUMP RETAIN
```

Example of a MAP response:

```
RETAIN option is currently ENABLED.
This option RETAINS the PRIMARY LOAD ROUTE.
The PRIMARY LOAD ROUTE should be initially
set per NTP.
The RETAIN option will be DISABLED.
Please confirm ("YES", "Y", "NO", or "N"):
```

34 Confirm the command:

```
>YES
```

Example of a MAP response:

```
RETAIN option DISABLED.
```

35 Check the status of automatic image taking, type:

```
>AUTODUMP STATUS
```

and press the enter key.

Example of a MAP response

```
Successful Image:  030826_CM
Taken:  2003/08/2621:47:32:04.138 TUE.
On Volume:  SD00IMAGE1
```

```
SCHEDULED-Image Dump is ON.
RETAIN option is OFF.
Next scheduled dump is MONDAY at 22:30 hours.
Next image to be dumped on SD00IMAGE1.
```

36 If the RETAIN option cannot be set to OFF, or table provisioning fails, call the next level of support.

37 You have completed this procedure.

—End—

CS 2000 SAM21 Manager procedures

The CS 2000 SAM21 Manager manages the hardware and hardware states of the Call Agent and all the cards in the SAM21 shelf.

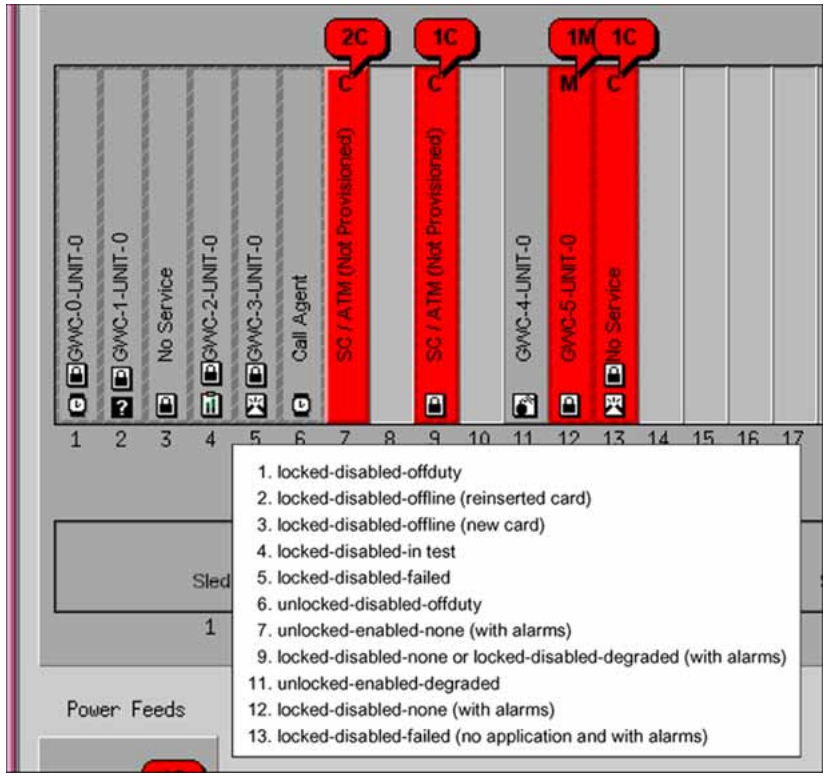
Card icons

Use this procedure to determine the state of a card through the CS 2000 SAM21 Manager client.

Step	Action

At the CS 2000 SAM21 Manager client

1 Review the following figure and determine the card icons that apply.



Note: These states also apply to SAM21 Shelf Controllers.

2 To view the card state tab, right-click on the card icon and select Card View from the card context menu. In the Card View window that opens, select the States tab.

3 Determine the next action.

State	Possible action
locked-disabled-offduty  	Wait for the firmware flash to complete. Verify that the card changes to the locked-disabled-none state. If the card transitions to locked-disabled-degraded, follow the suggestions for that state.
unlocked-disabled-offduty 	For Call Agent cards, this state also represents the restart and reload of the call processing application during a routine exercise test (RExTst). When the SAM21 Shelf Controller performs it's boot audit, any card that is not running or booting is set to this state until the SAM21 Shelf Controller recovers the card.
locked-disabled-offline(new card) 	Right-click on the card icon and select Assign Service from the card context menu. Select the correct service from the Assign Service window. If the question mark icon does not disappear, open the Card View and view the States tab. If the history text area indicates that service assignment failed because the service type is incompatible with the hardware, either replace the card with the correct hardware type, or unassign service from the shelf view and then assign the correct service type.
locked-disabled-offline (reinsertion)  	Wait for SAM21 Shelf Controller to recognize the card and reinstate the provisioning information. The question mark icon disappears and the card transitions to a new state. Refer to the suggestions for the new state. If the question mark icon does not disappear, open the Card View window and view the States tab. If the history text area indicates that service assignment failed because the service type is incompatible with the hardware, either replace the card with the correct hardware type, or unassign service from the shelf view and then assign the correct service type. If the history text area indicates that the service assignment failed because the IP address is already reserved by another unit, contact network engineering to determine if another unit is misconfigured, or if this unit should be reconfigured.

State	Possible action
locked-disabled-none or locked-disabled-degraded  	Unlock the card by right-clicking on the card icon and select Unlock from the card context menu. Rerun diagnostics if the CS 2000 SAM21 Manager client generates a "Degraded state Unlock confirmation window" (page 179) If diagnostics fail a second time, replace the card and contact Nortel support personnel. ***Note:*** The active SAM21 Shelf Controller generates 2 critical alarms when the inactive SAM21 Shelf Controller is locked. A locked-disabled- degraded state for non system slot (NSS) cards is also alarmed.
locked-disabled-failed  	This card is inaccessible. Verify the following items: • SAM21 Shelf Controllers are in service • If the SAM21 Shelf Controllers are in service, reinsert the card. If the card is not recognized, replace the card. If the replacement card does not enter unlocked-enabled-none, contact Nortel support personnel.
locked-disabled-in test  	Wait for diagnostics to complete. Verify that the card changes to the locked-disabled-none state. Optionally monitor diagnostics progress from the Card View window.
unlocked-enabled-degraded 	This card failed one or more diagnostics and was Unlocked. See "Additional information" (page 179) below. This card may not be providing service or may be unreliable. Lock and run diagnostics on this card. If the card fails diagnostics, replace this card and contact Nortel support personnel.
locked-disabled-none and alarmed 	This card has taken more than three minutes to complete a lock or unlock request. The alarm clears when the card completes the request or is removed from the shelf.
locked-disabled-failed (no application)  	The active SAM21 Shelf Controller detects a card in the slot, but cannot through the backplane to the card. Reinsert the card.

Note: Refer to the Fault Management document for the affected card type.

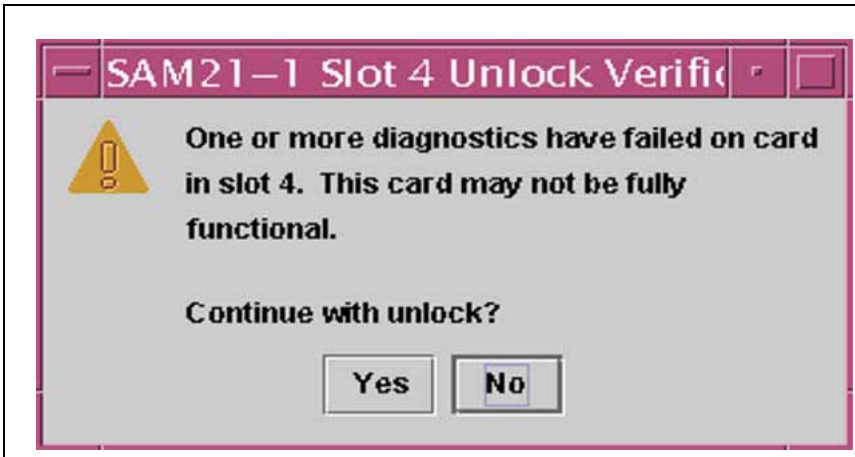
4 This procedure is complete.

—End—

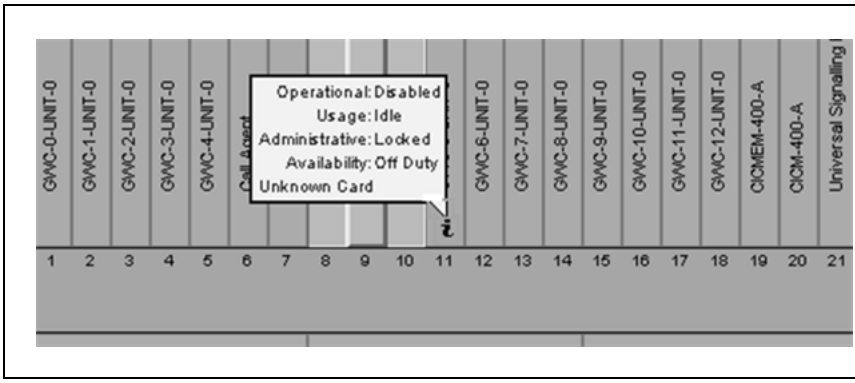
Additional information

The CS 2000 SAM21 Manager application opens the following window if a card failed a diagnostic test and an unlock request is made. Run brief and full diagnostics. If the card fails a second time, replace the card and contact Nortel support personnel.

Degraded state Unlock confirmation window



An additional shelf view card icon indicates that the CS 2000 SAM21 Manager client cannot display all the card icons. Click this information icon to view the card state information in a balloon. This icon normally indicates that the card type is not supported for the current release of the CS 2000 SAM21 Manager software.

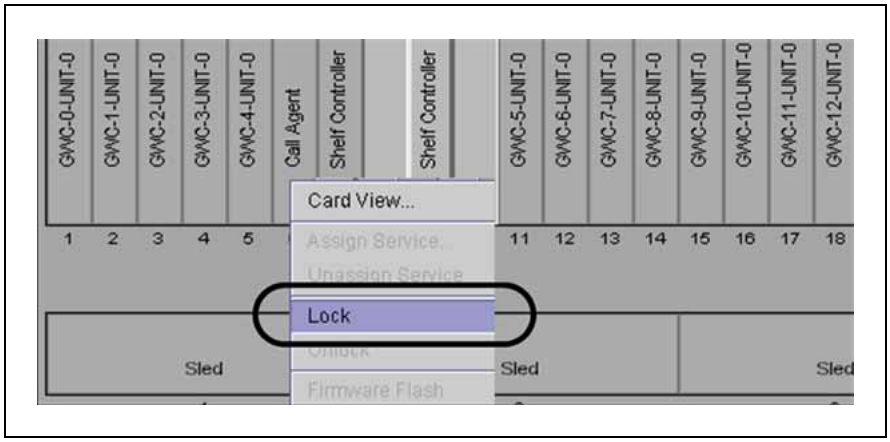


Running diagnostics

Step	Action

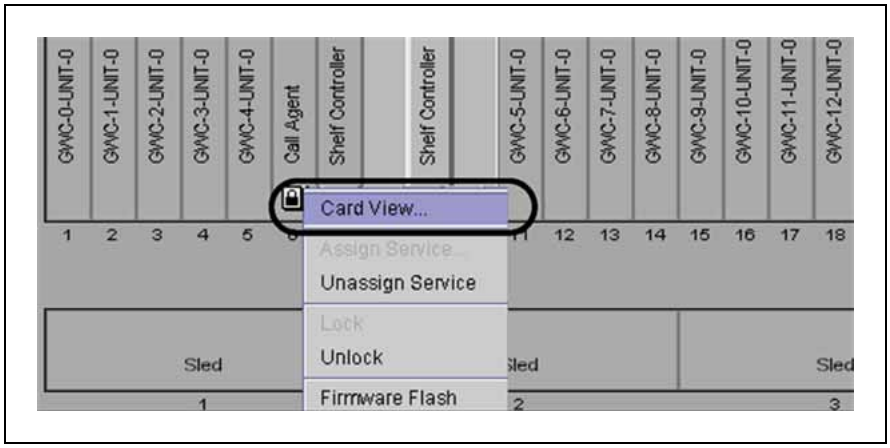
At the CS 2000 SAM21 Manager client workstation

1 Right-click on the card icon in the Shelf View and select Lock from the context menu.

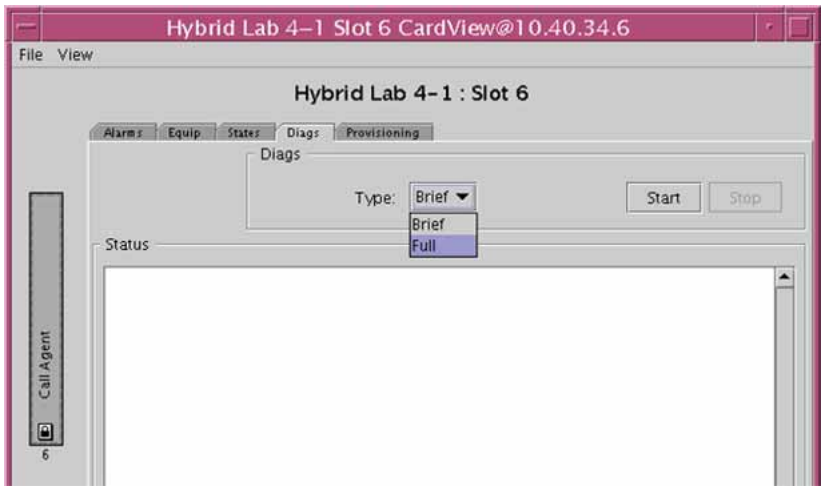


Note: Lock is also available from the States tab of the Card View window.

2 Right-click on the card icon in the Shelf View and select Card View from the context menu to open the Card View window.



3 Click on the Diagnostics tab from the Card View.



4 Select Brief or Full from the Type drop down menu and click on the Start button.

A confirmation dialog appears. Confirm the dialog.

5 Optionally monitor diagnostics. Refer to procedure "Monitoring diagnostics" (page 182).

If diagnostics do not report "succeed!", retry brief diagnostics and then full diagnostics. If either retry fails, replace the card.

6 After diagnostics complete, unlock the card from the Shelf View.

7 This procedure is complete.

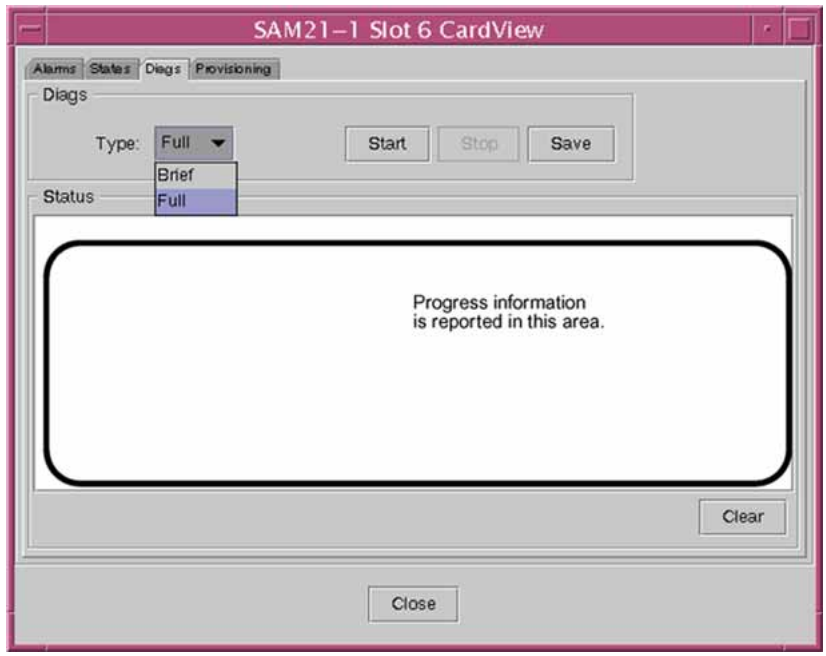
—End—

Monitoring diagnostics

Step	Action

At the CS 2000 SAM21 Manager client workstation

1 Monitor the progress of the diagnostics from the Diags panel of the Card View.



2 Determine the next action:

If	Do
diagnostics report "Success"	Optionally save the diagnostics by using the Save button. Otherwise, take no action.
diagnostics do not report "Success"	Try brief diagnostics and then full diagnostics. If either diagnostic fails, replace the card and contact Nortel support.

3 This procedure is complete.

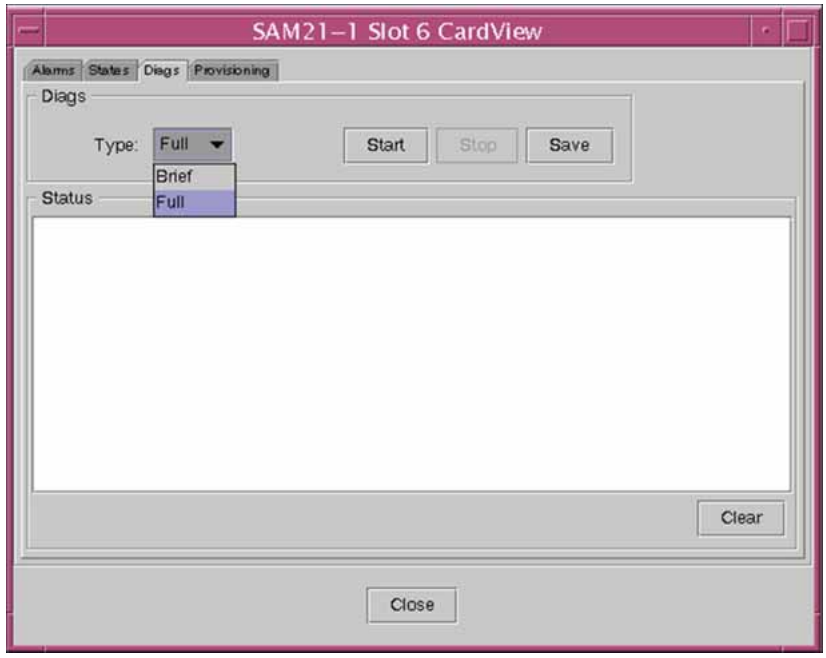
—End—

Aborting diagnostics

Step	Action

At the CS 2000 SAM21 Manager client workstation

1 While diagnostics are in progress, click the Stop button from the Card View window.



2 Unlock the card from the Shelf View.

3 This procedure is complete.

—End—

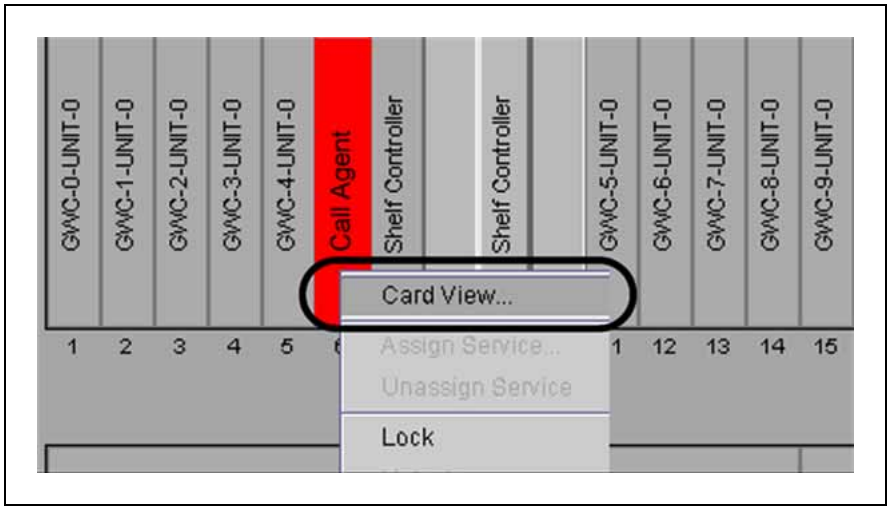
Retrieving alarms

Use this procedure to determine hardware, firmware, and other platform alarms. Call processing application alarms are not available from the CS 2000 SAM21 Manager.

Step	Action

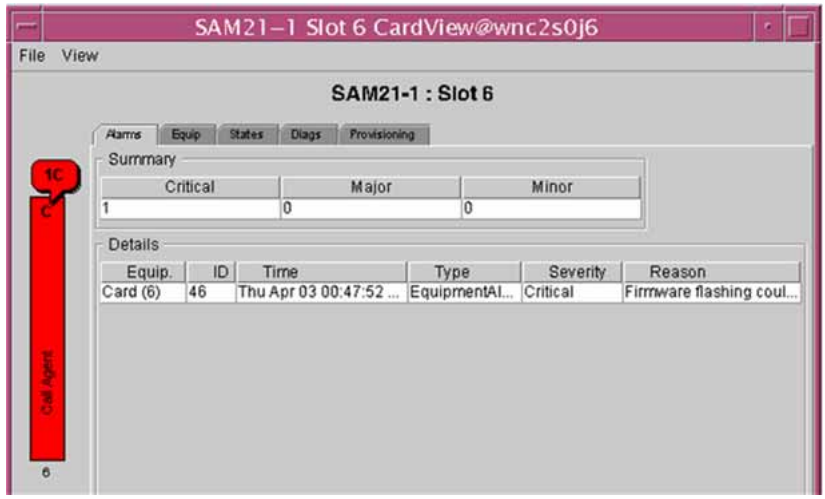
At the CS 2000 SAM21 Manager client workstation

1 Right-click on the card icon and select Card View from the context menu to open the Card View window.



Note: Alarms may disappear during recovery activities because automatic recovery of cards in the shelf is the responsibility and default behavior of the SAM21 Shelf Controller.

2 Click the Alarms tab on the Card View window.



3 This procedure is complete.

—End—

Additional information

The following table indicates alarm types and possible actions to take.

Alarm codes

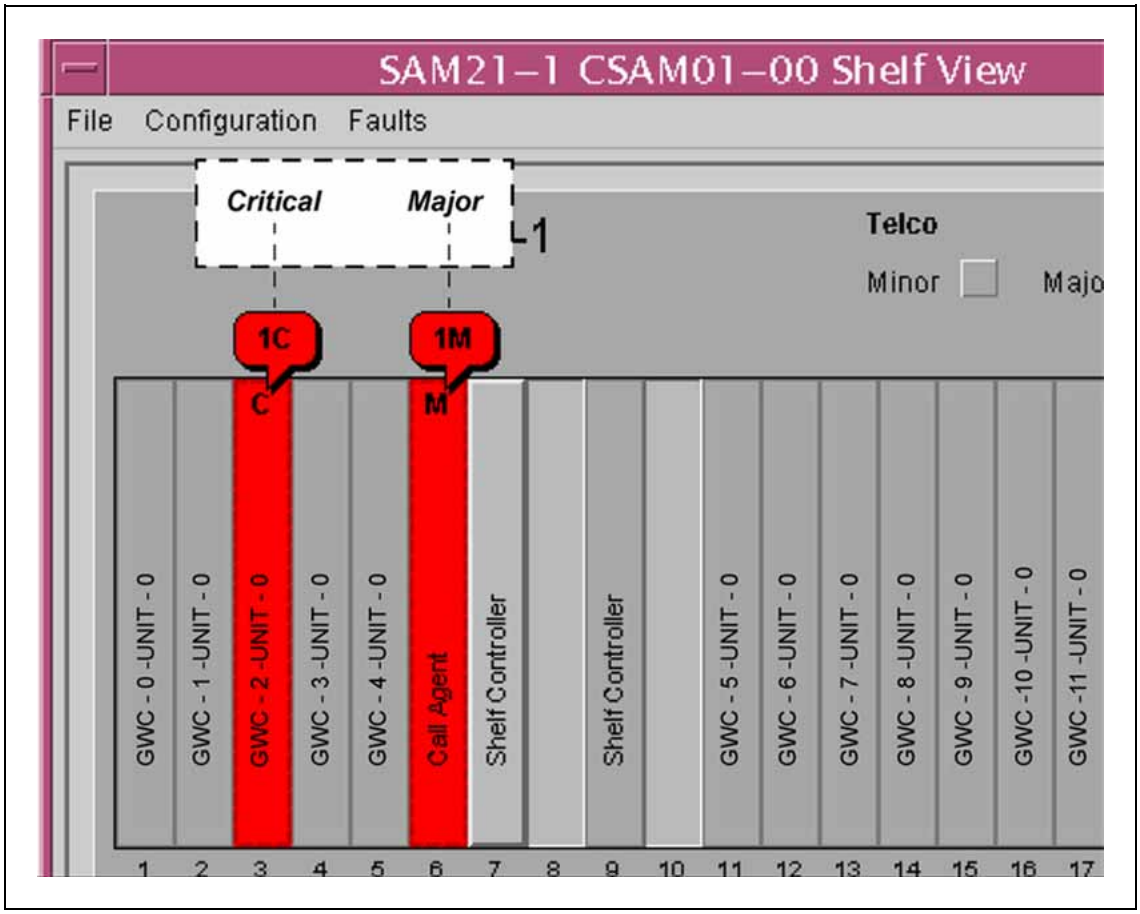
Alarm ID	Severity	Remedy
15	Major	Use the alarm text to determine which condition exists. • `Diagnostic failed at test case` Rerun diagnostics. If diagnostics fail a second time, replace the card. If no Field Replaceable Units (FRU) are available, contact Nortel support personnel. • `Diagnostics failed due to SWACT` Rerun diagnostics. • `Diagnostics failed, <msg>` *where* **<msg>** is one of the following: — due to Software error — no such device — board in wrong state — could not connect to board

Alarm ID	Severity	Remedy
		— terminated by unexpected timeout — terminated unexpectedly — at test case — terminated by user Rerun diagnostics. If diagnostics fail a second time, replace the card. • Unknown failure, board is not accessible Rerun diagnostics. If diagnostics fail a second time, replace the card.
46	Critical	Use the alarm text to determine which condition exists. • `Firmware flashing could not connect to the board` Resend provisioning data from the Provisioning tab of the Card View window. ***Note:*** Auto Flash is now disabled for cards in this slot. Optionally re-enable Auto Flash on the Provisioning tab. • `Firmware flashing failed at downloading firmware` Verify that the component software fileset is installed and APPLIED on the SWIM level of the Preside CS 2000 Core Manager. Resend the provisioning data from the Provisioning tab of the Card View window. • `Firmware flashing failed at validating firmware` The firmware file is corrupt or was corrupted in transfer. Verify that the component software fileset is installed and APPLIED at the SWIM level of the Preside CS 2000 Core Manager. Resend the provisioning data from the Provisioning tab of the Card View window. • `Firmware flashing failed at backing up firmware` If condition persists, replace the card. • `Firmware flashing failed flash` The card was inaccessible after the flash. Reseat the card and try again. If the problem persists, replace the card. ***Note:*** Auto Flash is now disabled for cards in this slot. Optionally re-enable Auto Flash on the Provisioning tab.

Alarm ID	Severity	Remedy
		• `Firmware flash failed <msg>` *where* **<msg>** is one of the following: — due to a software error — no such device — board in wrong state — terminated by unexpected timeout — board is no accessible — terminated Resend the provisioning data from the Provisioning tab of the Card View window. If this problem persists, replace the card.
48	Critical	• `Provision failed: process ended abnormally` • `Provision failed, could not connect to board` • `Provision failed to set application type` Resend the provisioning data from the Provisioning tab of the Card View window. If the problem persists and is isolated to this card, replace the card. If the problem affects more than one card, verify cabling, fileset installation at the SWIM level of the CS 2000 Core Manager, and contact Nortel support personnel. If the CS 2000 Core Manager is not part of the network, verify that the host identified as the Server IP on the provisioning panel is in service and that the bootload specified in the Path and Load fields is available.

Refer to the following figure for information about how to determine alarm severity.

Alarm severity



Note: If the Call Agent card fails, the appearance is grey with a hashed outline.

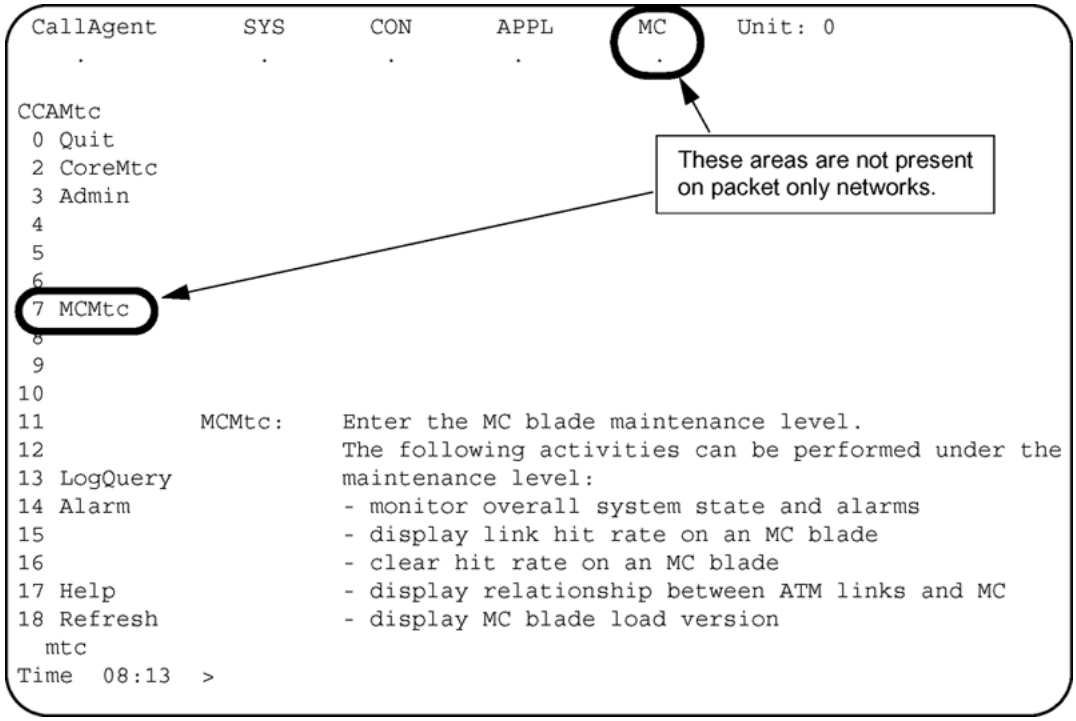
Message controller procedures

When the CS 2000 - Compact is deployed in a Time Division Multiplex (TDM) network, a pair of Message Controller cards are installed in the SAM21 shelf. These cards work between the Call Agent cards and the Message Switch (MS).

Fault management strategy

Fault management for the Message Controller is completed through the Call Agent Manager and the CS 2000 SAM21 Manager. The Call Agent Manager controls in service maintenance activities and the CS 2000 SAM21 Manager controls out of service maintenance activities.

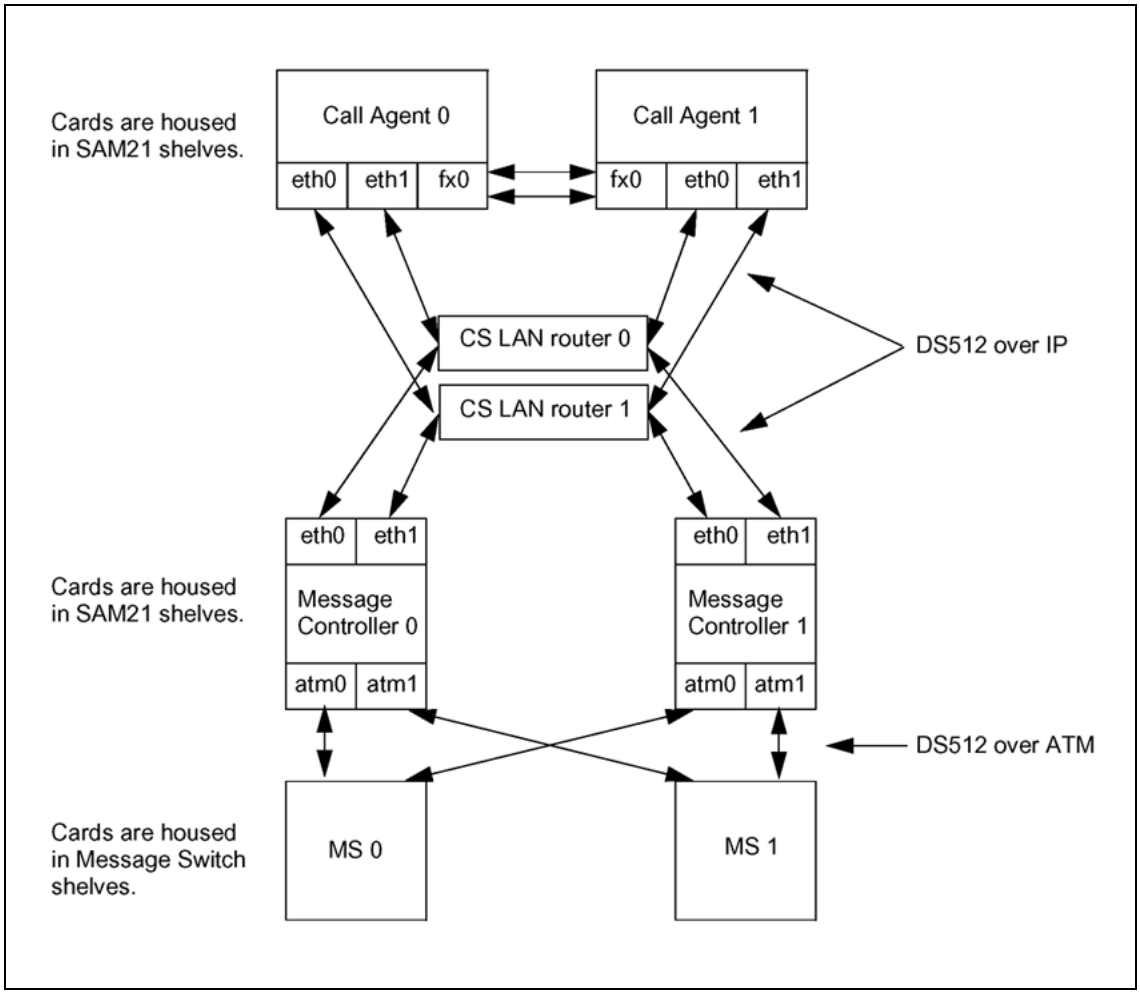
Call Agent Manager with Message Controller cards



Connectivity

Link connectivity among Call Agent cards, the Message Controller cards, and the CMIC cards in the Message Switch (MS) are indicated in the figure below.

Message Controller messaging connectivity



Eth0 and eth1 physical interfaces are implemented in software as virtual and redundant Ethernet links. CS LAN routers use virtual router redundancy protocol (VRRP) for reliability. DS512 is a proprietary signalling format used for messaging between the call processing application running on the Call Agent cards and the Message Switch. ATM interface ports are not represented in the figure because different CMIC cards on the Message Switch offer different numbers of ports.

ATM links from Message Controller cards to CMIC card ports on the Message Switch are configured according to the office configuration. Refer to the following table for SuperNode (SN) and SN Size Enhanced (SNSE) configurations.

	SN				SNSE			
Message Controller	0		1		0		1	
Message Controller ATM port	0	1	1	0	0	1	1	0
MS port	0	0	0	0	0	1	1	0
MS card	24	25	25	24	4	4	4	4
MS	0		1		0		1	

The TRNSL command reports this information from the Call Agent Manager and Shelf and Card sublevels of the MS level on the MAP.

Trnsl from Call Agent Manager

```
 CallAgent       SYS       CON       APPL       MC      Unit: 0
    .             .         .         .          .

MCMtc             Blade:    Eth0:     Eth1:      Atm0:     Atm1:
 0 Quit       MC0    .       . Act     . Inact    open      open
 2            MC1    .       . Act     . Inact    open      open
 3
 4
 5 QryLd
 6 QryHits
 7 ClrHits
 8 Trnsl
 9
10
11            Connectivity report for MC0 retrieved on:
12                 Fri Apr  4 09:44:19 2003
13 LogQuery
14 Alarm                                                Cod    Connection
15                                  MS    Card  Port  Present    Status
16            ------------------------------------------------------------
17 Help       ATM0 connected to:    0      24     0      NO        GOOD
18 Refresh    ATM1 connected to:    1      25     0      NO        GOOD
  mtc
Time  09:44   > Trnsl 0
```

Trnsl from the MAP Card level

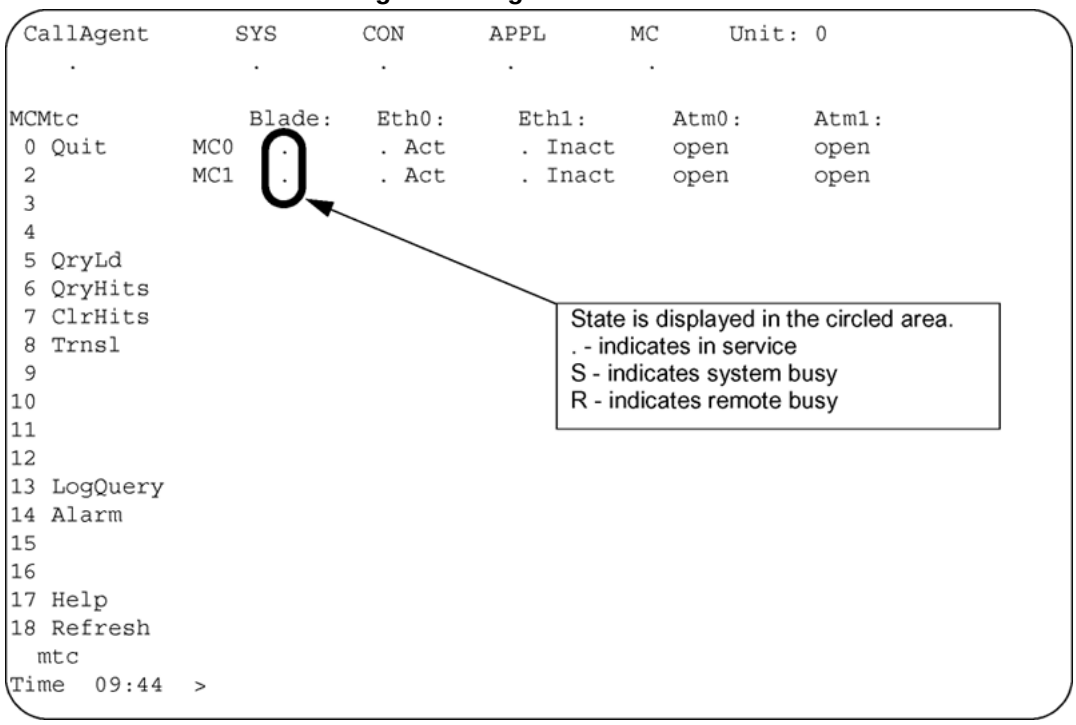
```
MS      IOD      Net       PM      CCS      Lns      Trks     Ext      APPL
.        .        .        .        .        .        .        .        .

CARD              Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Master          .                    . .
 2            MS 1       .          Slave           .                    . .
 3
 4             Shelf 0                  1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 6 Tst_        Chain           |       |
 7 Bsy_        MS 0  . . . - . . - - - . - - - - - . - - - - - . . . . . .
 8 RTS_        MS 1  . . . - . . - - - . - - - - - . - - - - - . . . . . .
 9 Offl_
10             Card 24 CMIC Interface Card        Port: 0
11 LoadCd_     MS 0          .                             .
12 QueryCd_    MS 1          .                             .
13 Card_
14 QueryMS    trnsl 0 port 0
15 Trnsl_      Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
16            HOST  01  F00  DPCC  0   39  MS 0:0:24      30       9X17AD FRNT
17 Next       HOST  01  F00  DPCC  0   39  MS 0:0:24      30       9X63AB BACK
18 Port_      Port 0=3PCore 10.40.34.72:4800 - 10.40.34.40 Open (OK:Opened)
 username
Time  09:49  >
```

IP address of the call processing application
IP address of the Message Controller card on the other end of the link

Viewing Message Controller status

The status for the Message Controller is displayed at two interfaces, the Call Agent Manager and the CS 2000 SAM21 Manager. Use the Call Agent Manager first to determine the state of the Message Controller.

State information from Call Agent Manager



- . - in service

  The Message Controller is in service.

- S - system busy

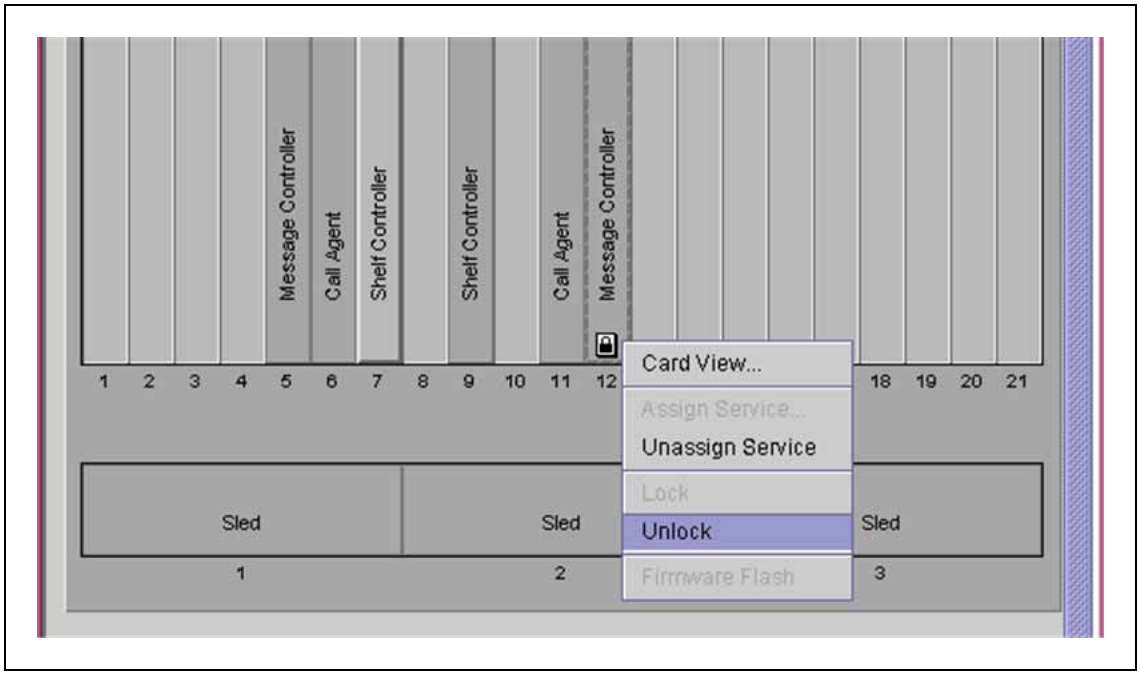
  This Message Controller does not have connectivity to either Call Agent unit. Investigate Ethernet link pulls or CS LAN router misconfiguration.

- R - remote busy

  This Message Controller was locked from the CS 2000 SAM21 Manager. When the Message Controller is unlocked from the CS 2000 SAM21 Manager, the state transitions to in service.

The state of the card is also available from the CS 2000 SAM21 Manager.

Message Controller at CS 2000 SAM21 Manager

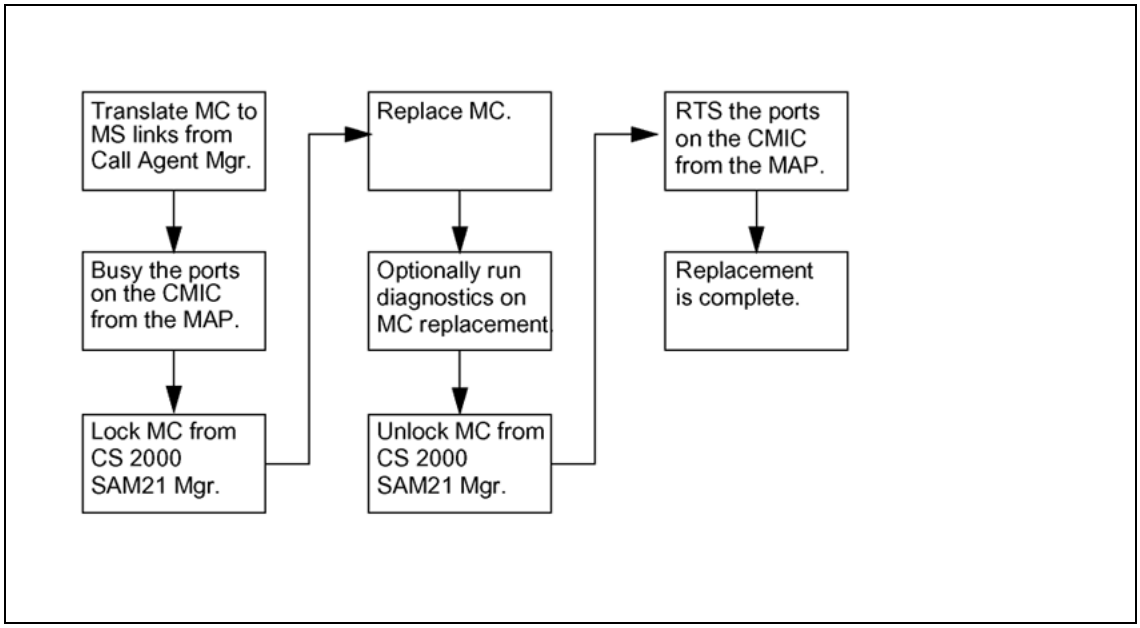


The States tab, available from the Card View window, provides information about the state of the Message Controller. For information about diagnosing the state of the Message Controller from the card icons displayed at the CS 2000 SAM21 Manager, refer to "Card icons" (page 176).

Message Controller card replacement

CAUTION
Only perform this procedure at the direction of Nortel support personnel.

The following figure summarizes the steps required to replace a Message Controller card.



The following variables are used in this procedure.

Variable	Where determined	Where used
mc_no	This is the Message Controller card number to replace, 0 or 1. Support personnel determine which Message Controller to replace.	step 1.
card_no	This is the CMIC card number on the Message Switch. It is determined from the output in step 1. If the office is in a SuperNode (SN) configuration, the card_no is either 24 or 25. If the office is in a SN Size Enhanced (SNSE) configuration, then card_no is 4.	step 2 and step 16

Variable	Where determined	Where used
ms_no	This is the Message Switch number, 0 or 1. Both are used, but the ms_no, card_no, and port_no combinations reported in step 1 identify unique links.	step 2 and step 16
port_no	This identifies the ATM link between a port on the CMIC card in the Message Switch and one of the two ATM interfaces on the Message Controller faceplate. Two port numbers are used, 0 and 1. It is determined from the output in step 1.	step 2 and step 16

Step Action

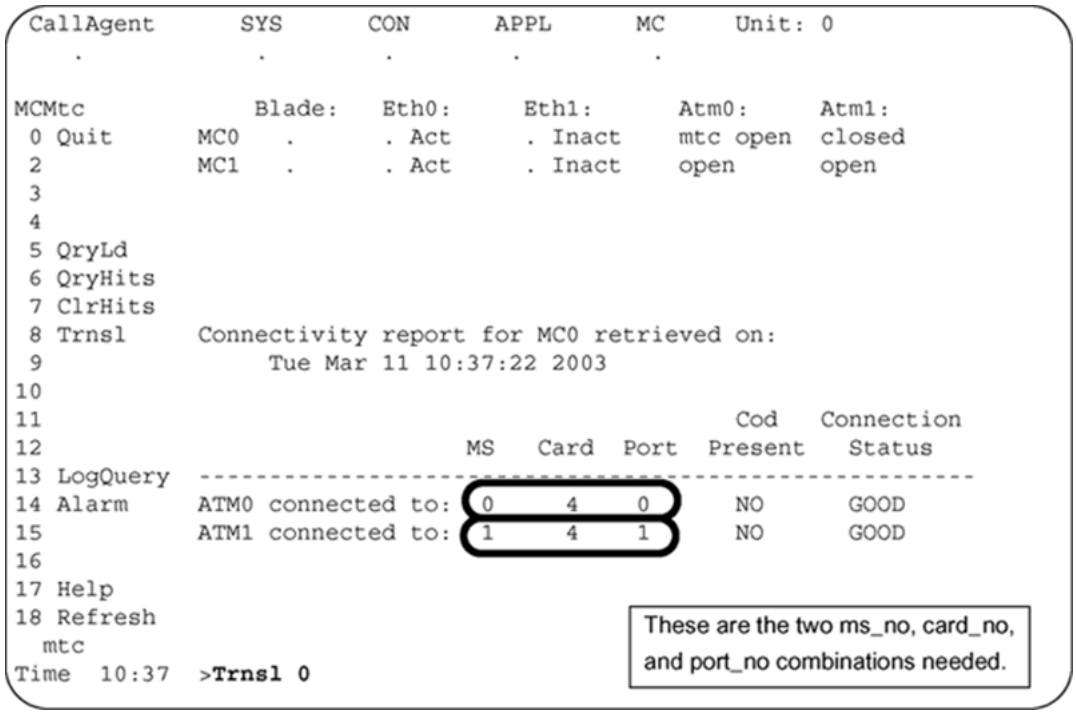
At the Call Agent Manager

1 Enter the MCMtc level and translate the Message Controller links back to the CMIC card in the Message Switch shelf.

```
MCMtc
Trnsl <mc_no>
```

Example

```
Trnsl 0
```



At the MAP

2 Enter the MS level and busy the two ports identified in step 1.

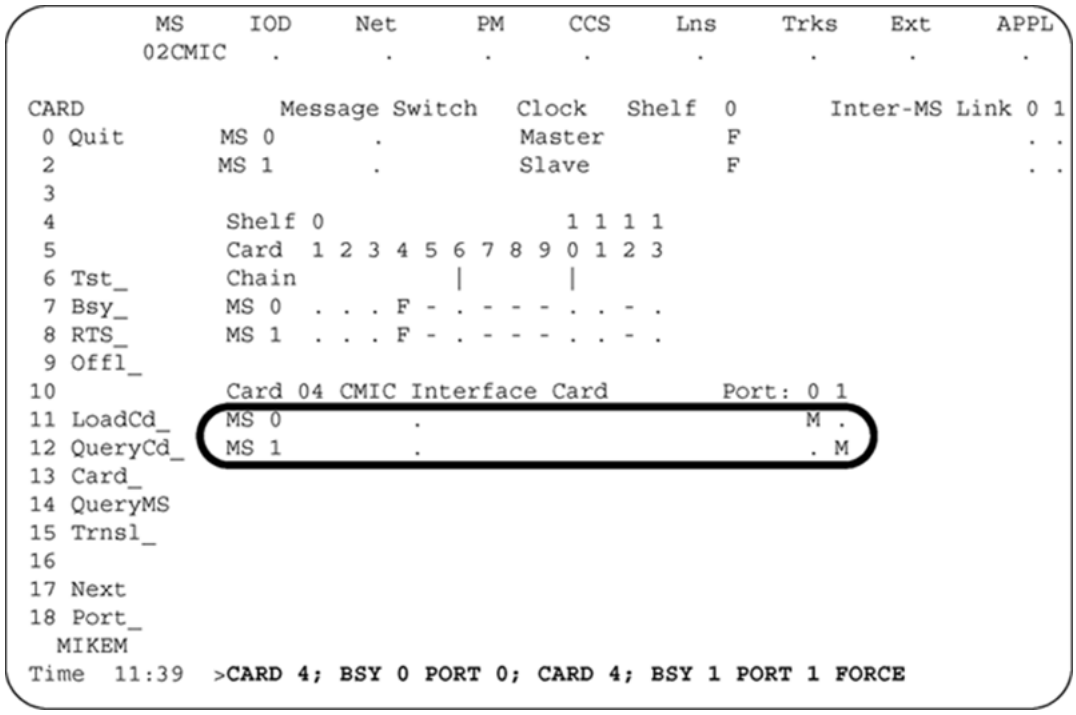
```
>MAPCI;MTC;MS;SHELF 0;CARD <card_no>;
```

```
BSY <ms_no> PORT <port_no>
```

Example

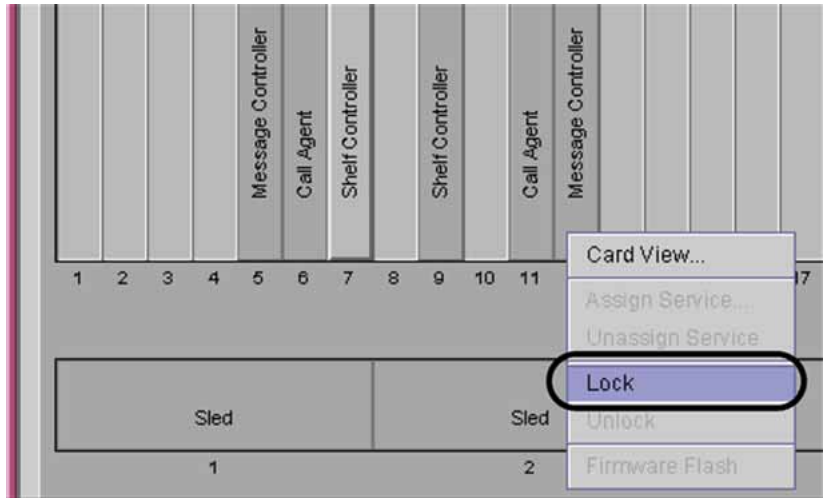
```
>CARD 4; BSY 0 PORT 0
>CARD 4; BSY 1 PORT 1 FORCE
```

Both ATM links to the Message Controller are set to manual busy. Two CMIC alarms, "02CMIC" are raised at the MAP and a major ATM alarm is raised at the Call Agent Manager. Two MS301 log reports and two CCA340 log reports are generated.



At the CS 2000 SAM21 Manager client workstation

3 From the Shelf View, right click on the card and select Lock from the context menu.



The Message Controller is removed from service. No new alarms are raised at the MAP. The Call Agent Manager reports the card as "blade out-of-service." An SCU500 log report is generated by the SAM21 Shelf Controller to indicate the state change to locked-disabled-none.

4 Wait for the lock icon to appear on the selected card.

At the SAM21 frame

5 Label and remove the fiber connections from the faceplate.

6 Open the bottom ejector lever.

Note: Wait for the green LED on the faceplate to extinguish and a blue LED to light at the bottom of the faceplate.

7 Wait for the blue LED to appear at the bottom of the faceplate and the red out-of-service LED above the card to extinguish.

8 Press both ejector levers until the card is ejected from the shelf.

9

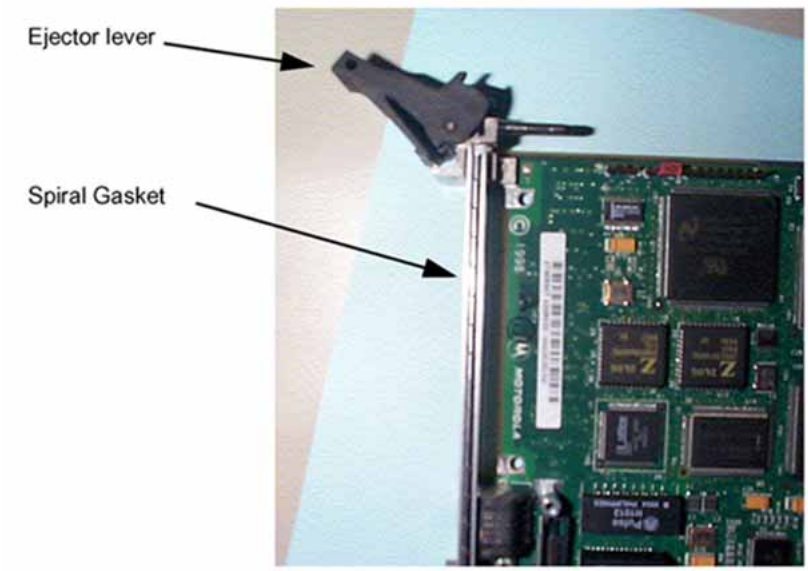
CAUTION
A service outage can occur if care is not taken while inserting the circuit pack.

The spiral gasket, located on the faceplate of the circuit pack, can become caught on an adjacent card and ripped off of the faceplate. If the spiral gasket ends up making contact with the backplane inside the chassis, an electrical short circuit can result in a service outage.

WARNING
Wear an electrostatic discharge (ESD) grounding wrist strap connected to the SAM21 Shelf Cabinet when handling the replacement card. This protects the card against damage caused by static electricity.

Hold the replacement card by the ejector levers and remove the card from the shelf.

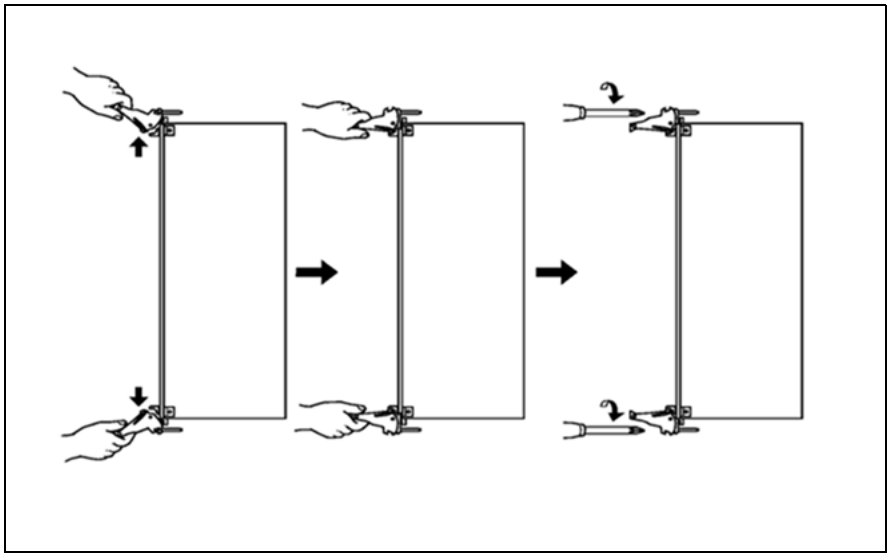
10 Examine the circuit packs before inserting them in the SAM21 chassis to ensure that the spiral gasket is seated and not loose.



11 Hold the replacement card by the ejector levers and insert the card into the shelf.

Note 1: Do not push on the faceplate to seat the card.

Note 2: Verify that the CPU LED lights. If the CPU LED does not light, reseat the card. If the CPU LED fails to light a second time, replace the card.



12 Secure the board by tightening the captive screws at the top and bottom of the panel.

13 Reconnect the fiber connections to the faceplate.

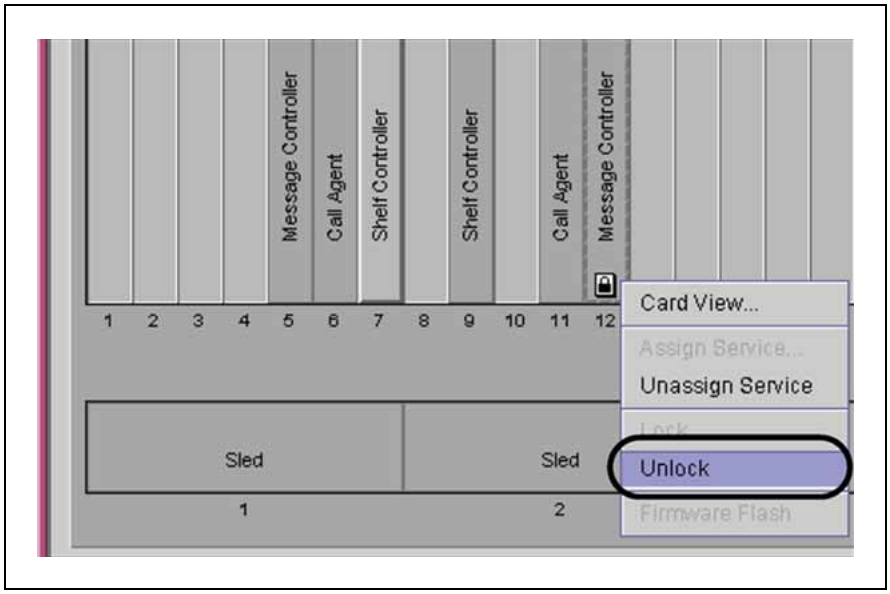
At the CS 2000 SAM21 Manager client workstation

14 Optionally run brief diagnostics on the replacement card. Refer to procedure "Running diagnostics" (page 180)

15 Right click on the card icon and select Unlock from the Shelf View. Optionally monitor the download from the States tab of the Card View window.

Wait for the lock icon to disappear from the card on the Shelf View. An SCU500 log report is generated by the SAM21 Shelf Controller to record the state change to unlocked-enabled-none.

At the Call Agent Manager, the Message Controller transitions from offline to in service and the ATM alarm clears. Two CCA640 log reports are generated.



At the MAP

16 Return to service the ports that were busied.

```
>CARD <card_no>; RTS <ms_no> PORT <port_no>
```

Example

```
>CARD 4; RTS 0 PORT0; CARD 4; RTS 1 PORT 1
```

The ports change state from manual busy (M) to in service (.) and the CMIC alarms clear from the MS area of the alarm banner. At the Call Agent Manager, the ATM ports transition from open, to maintenance open, and back to open. Two MS300 log reports are generated.

```
          MS     IOD     Net      PM     CCS     Lns     Trks     Ext     APPL
           .      .       .       .       .       .       .       .       .

CARD              Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Master          .                    . .
 2            MS 1       .          Slave           .                    . .
 3
 4             Shelf 0                    1 1 1 1
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3
 6 Tst_        Chain           |          |
 7 Bsy_        MS 0  . . . . - . - - - . . - .
 8 RTS_        MS 1  . . . . - . - - - . . - .
 9 Offl_
10             Card 04 CMIC Interface Card        Port: 0 1
11 LoadCd_     MS 0          .                             . .
12 QueryCd_    MS 1          .                             . .
13 Card_
14 QueryMS
15 Trnsl_
16
17 Next
18 Port_
  MIKEM
Time  11:39  >RTS 0 PORT 0; RTS 1 PORT 1
```

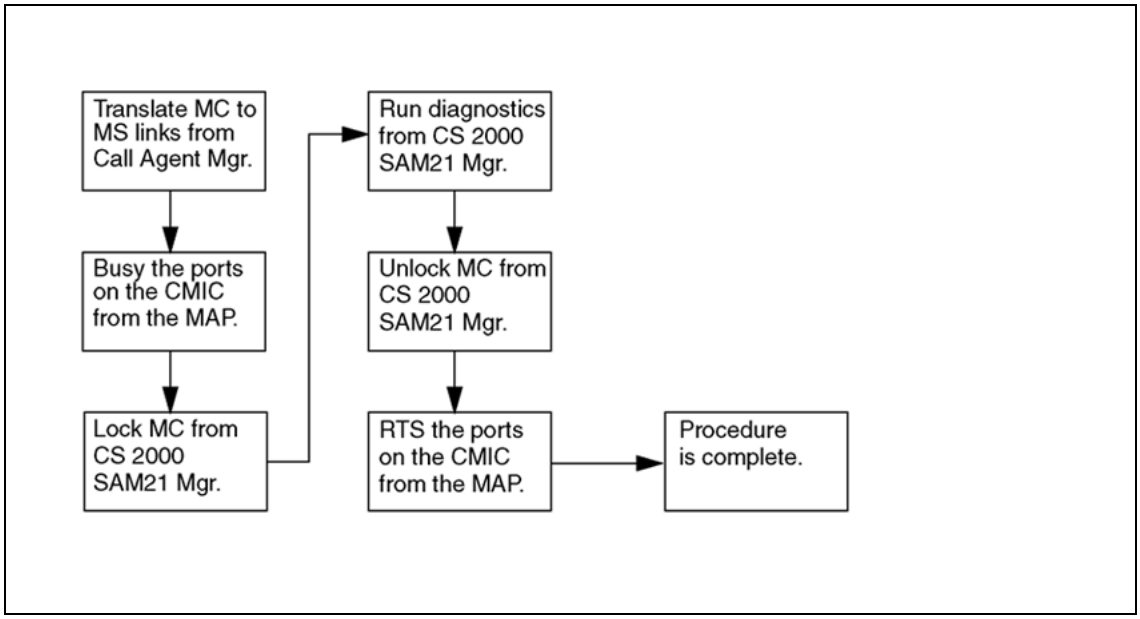
17 This procedure is complete.

—End—

Running diagnostics

ATTENTION
Running diagnostics on a Message Controller card requires removing the Message Controller from service. Redundant operation of the Message Controllers is lost until the Message Controller is returned to service.

The following figure summarizes the steps required to run diagnostics on a Message Controller card.



The following variables are used in this procedure.

Variable	Where determined	Where used
mc_no	This is the Message Controller card number on which to run diagnostics, 0 or 1. Support personnel determine the Message Controller on which to run diagnostics.	step 1 and step 9
card_no	This is the CMIC card number on the Message Switch. It is determined from the output in step 1. If the office is in a SuperNode (SN) configuration, the card_no is either 24 or 25. If the offices is in a SN Size Enhanced (SNSE) configuration, then card_no is 4.	step 2 and step 9

Variable	Where determined	Where used
ms_no	This is the Message Switch number, 0 or 1. Both are used, but the ms_no, card_no, and port_no combinations reported in step 1 identify unique links.	step 2 and step 9
port_no	This identifies the ATM link between a port on the CMIC card in the Message Switch and one of the two ATM interfaces on the Message Controller faceplate. Two port numbers are used, 0 and 1. It is determined from the output in step 1.	step 2 and step 9

Step Action

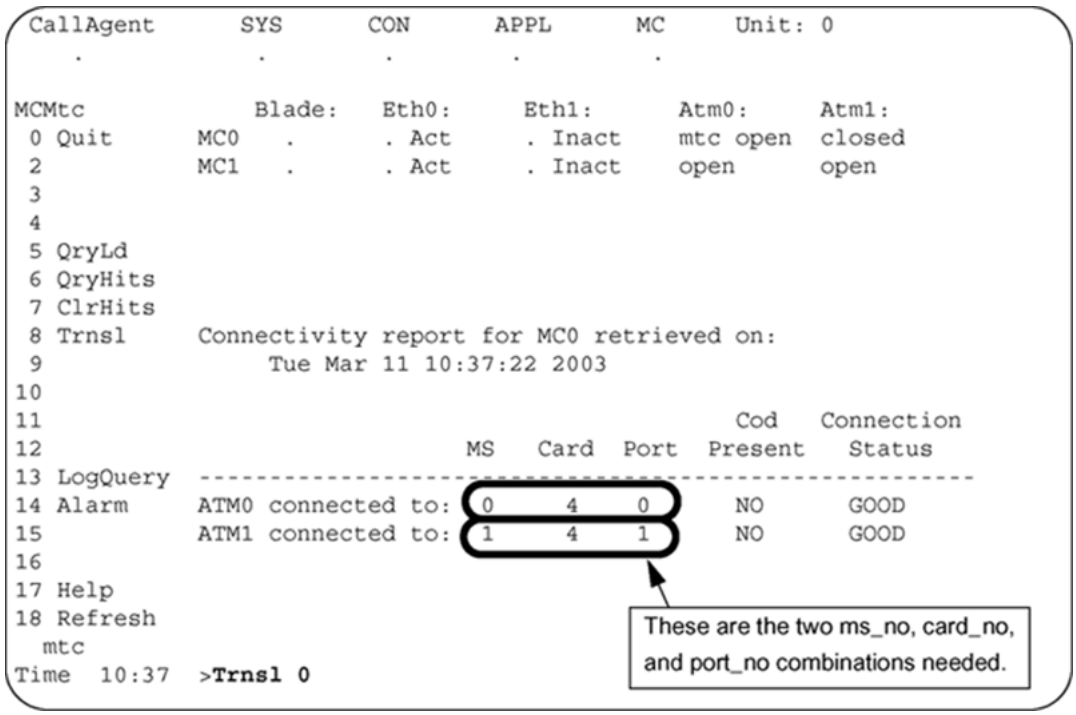
At the Call Agent Manager

1 Enter the MCMtc level and translate the Message Controller links back to the CMIC card in the Message Switch shelf.

```
MCMtc
Trnsl <mc_no>
```

Example

```
Trnsl 0
```



At the MAP

2 Enter the MS level and busy the two ports identified in step 1.

```
>MAPCI;MTC;MS;SHELF 0;CARD <card_no>;
BSY <ms_no> PORT <port_no>
```

Example

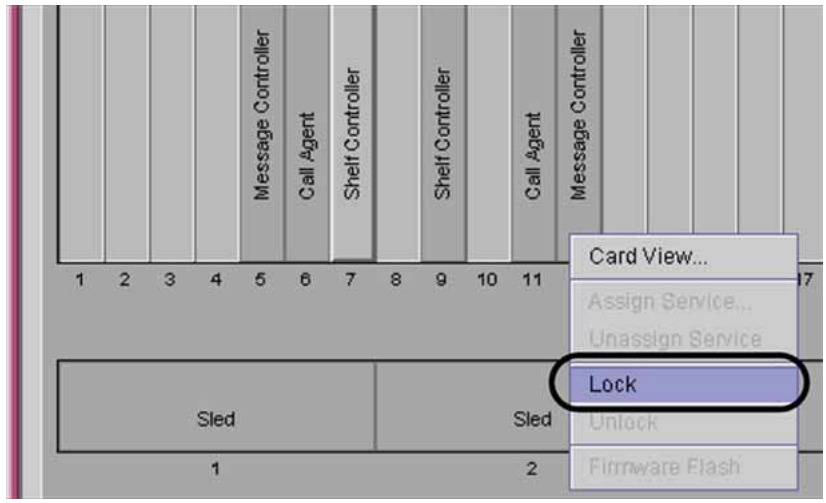
```
>CARD 4; BSY 0 PORT 0
>CARD 4; BSY 1 PORT 1 FORCE
```

Both ATM links to the Message Controller are set to manual busy. Two CMIC alarms, "02CMIC" are raised at the MAP and a major ATM alarm is raised at the Call Agent Manager. Two MS301 log reports and two CCA340 log reports are generated.

```
          MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
         02CMIC   .       .       .       .       .       .       .       .

CARD              Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Master          F                     . .
 2            MS 1       .          Slave           F                     . .
 3
 4             Shelf 0                    1 1 1 1
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3
 6 Tst_        Chain            |         |
 7 Bsy_        MS 0  . . . F - . - - - . . - .
 8 RTS_        MS 1  . . . F - . - - - . . - .
 9 Offl_
10             Card 04 CMIC Interface Card          Port: 0 1
11 LoadCd_     MS 0          .                              M .
12 QueryCd_    MS 1          .                              . M
13 Card_
14 QueryMS
15 Trnsl_
16
17 Next
18 Port_
  MIKEM
Time  11:39  >CARD 4; BSY 0 PORT 0; CARD 4; BSY 1 PORT 1 FORCE
```

At the CS 2000 SAM21 Manager client workstation

3 From the Shelf View, right click on the card and select Lock from the context menu.



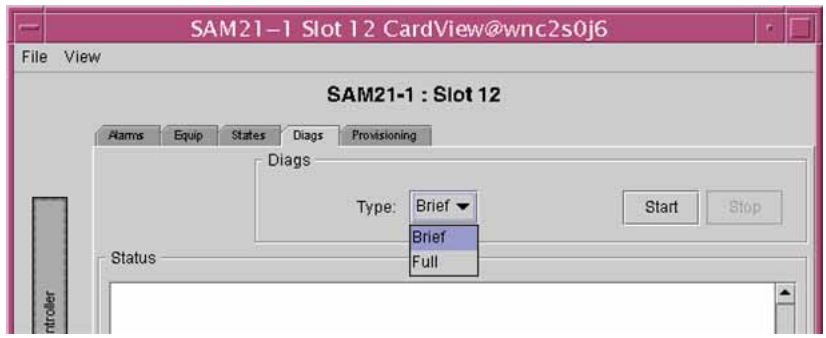
The Message Controller is removed from service. No new alarms are raised at the MAP. The Call Agent Manager reports the card as "blade out-of-service." An SCU500 log report is generated by the SAM21 Shelf Controller to indicate the state change to locked-disabled-none.

4 Wait for the lock icon to appear on the selected card.

5 Right-click on the card icon and select Card View from the card context menu.

The Card View window for the Message Controller opens.

6 Click the Diags tab on the Card View window. Select full or brief diagnostics and then click Start.



A confirmation dialog window opens.

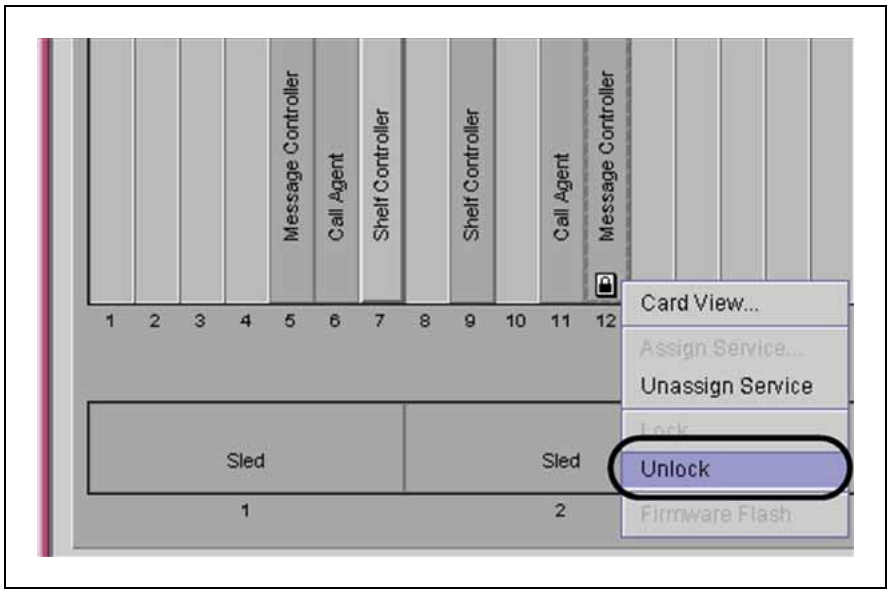
7 Confirm the diagnostics and then monitor the diagnostics in the Status window. After diagnostics complete, optionally save the results to the local workstation.

If diagnostics fail, retry brief and then full diagnostics. If either run fails, save the results and replace the card. Contact Nortel support personnel for assistance.

8 Right click on the card icon and select Unlock from the Shelf View. Optionally monitor the download from the States tab of the Card View window.

Wait for the lock icon to disappear from the card on the Shelf View. An SCU500 log report is generated by the AM21 Shelf Controller to record the state change to unlocked-enabled-none.

At the Call Agent Manager, the Message Controller transitions from offline to in service and the ATM alarm clears. Two CCA640 log reports are generated.



At the MAP

9 Return to service the ports that were busied.

```
>CARD <card_no>; RTS <ms_no> PORT <port_no>
```

Example

```
>CARD 4; RTS 0 PORT0; CARD 4; RTS 1 PORT 1
```

The ports change state from manual busy (M) to in service (.) and the CMIC alarms clear from the MS area of the MAP alarm banner. At the Call Agent Manager, the ATM ports transition from open, to maintenance open, and back to open. Two MS300 log reports are generated.

```
          MS     IOD     Net      PM     CCS     Lns     Trks     Ext     APPL
           .      .       .       .       .       .       .       .       .

CARD              Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Master          .                    . .
 2            MS 1       .          Slave           .                    . .
 3
 4             Shelf 0                    1 1 1 1
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3
 6 Tst_        Chain            |         |
 7 Bsy_        MS 0  . . . . - . - - - . . . - .
 8 RTS_        MS 1  . . . . - . - - - . . . - .
 9 Offl_
10             Card 04 CMIC Interface Card        Port: 0 1
11 LoadCd_     MS 0          .                             . .
12 QueryCd_    MS 1          .                             . .
13 Card_
14 QueryMS
15 Trnsl_
16
17 Next
18 Port_
  MIKEM
Time  11:39  >RTS 0 PORT 0; RTS 1 PORT 1
```

10 This procedure is complete.

—End—

MC ATM minor, major or critical

Alarm display

```
CallAgent      SYS      CON      APPL      MC        Unit: 0
   .            .        .         .      ATM
```

Indication

A CCA340 log report is generated when the alarm is raised. A CCA640 log report is generated when the alarm clears.

Meaning

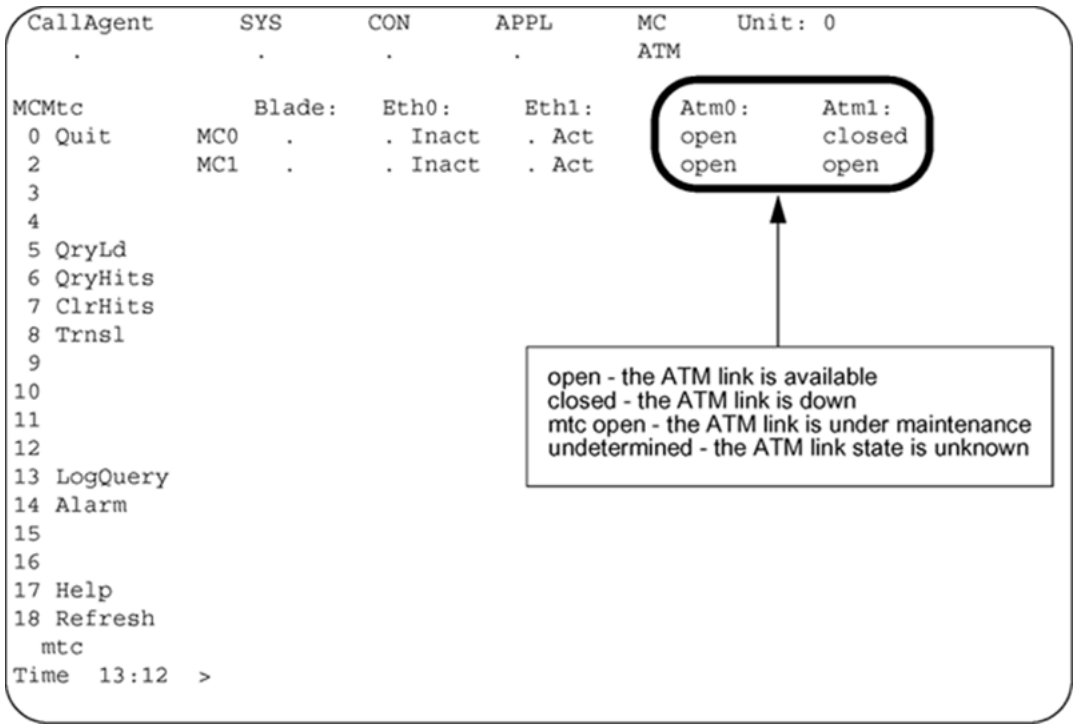
A minor severity alarm indicates that 1 or 2 ATM links are down, but that no Message Controller is isolated. Call processing is not affected. When the Message Switch executes a routine exercise test (REx), two ATM ports are set to maintenance open and a minor ATM alarm is raised.

A major severity alarm indicates that a Message Controller is isolated. Call processing is not affected.

A critical severity alarm indicates that all ATM links are down. Call processing is interrupted.

Action

Step	Action
	At the Call Agent Manager
1	Enter the MCMtc level. **`MCMtc`**
2	Determine the link status.



3 If two ports are in the maintenance open state, mtc open, determine if the Message Switch is executing a REx from the MAP. If so, the ATM alarm clears when the REx completes.

4 Translate the ATM link to the Message Switch (MS).

```
Trnsl <mc_no>
```

Example

```
Trnsl 0
```

The Message Switch number, card number, and port number are returned. Map the ATM ports in the closed state to the ms_no, card_no, and port_no on the Message Switch.

```
CallAgent       SYS       CON       APPL      MC      Unit: 0
    .             .         .         .       ATM

MCMtc             Blade:    Eth0:     Eth1:      Atm0:     Atm1:
 0 Quit       MC0    .       . Inact    . Act      open      closed
 2            MC1    .       . Inact    . Act      open      open
 3
 4
 5 QryLd
 6 QryHits
 7 ClrHits
 8 Trnsl
 9
10
11            Connectivity report for MC0 retrieved on:
12                 Mon Mar 10 13:53:16 2003
13 LogQuery
14 Alarm                                                  Cod    Connection
15                                        MS    Card  Port  Present   Status
16            ------------------------------------------------------------
17 Help       ATM0 connected to:  0       24    0       NO       GOOD
18 Refresh    ATM1 connected to:  1       25    0       NO       GOOD
  mtc
Time  13:53   > TRNSL 0
```

At the MAP

5 Enter the MS level.

```
>MAPCI;MTC;MS
```

6 Determine the correct MS shelf to use.

```
          MS      IOD      Net       PM       CCS      Lns      Trks      Ext      APPL
         01CMIC    .        .         .        .        .        .        .         .

MS                  Message Switch    Clock    Shelf   0        Inter-MS Link 0 1
 0 Quit        MS 0        .          Slave            .                    . .
 2             MS 1        .          Master           F                    . .
 3
 4
 5
 6 Tst_
 7 Bsy_
```

7 Use the Shelf command to enter the Shelf level.

```
>SHELF <shelf_no>
```

Example

```
>SHELF 1
```

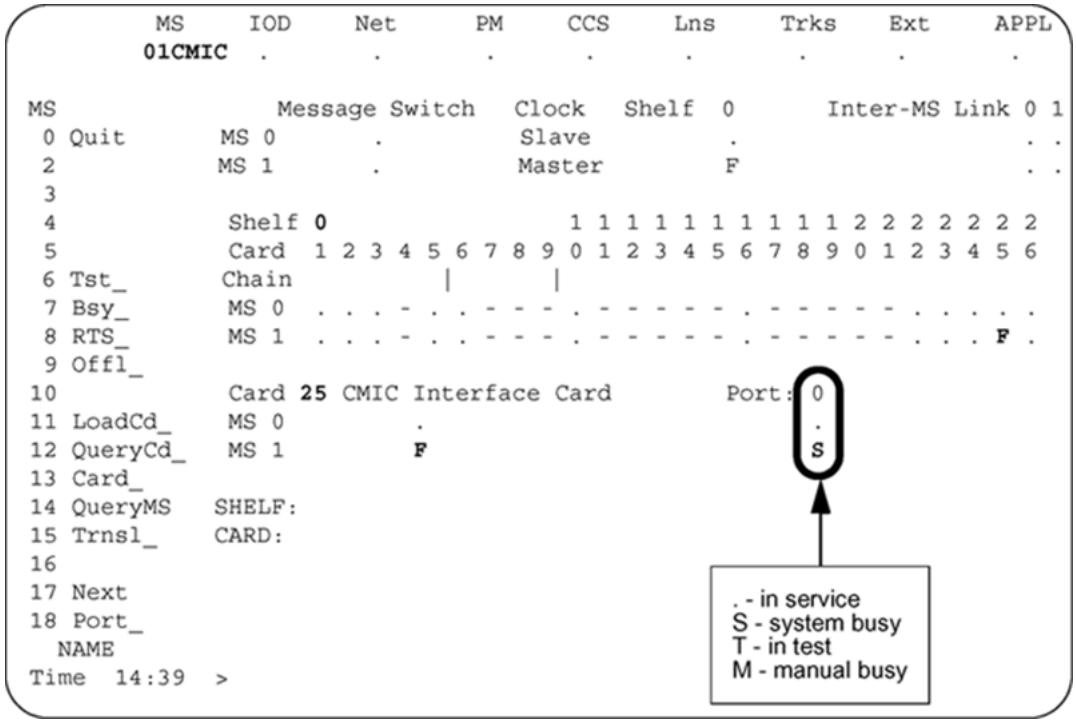
8 Use the card number from step 4 to view the card information.

```
>CARD <card_no>
```

Example

```
>CARD 25
```

9 Determine the state of the port.



10 Determine the action to take:

If	Do
the CMIC Interface card state is not in service (.)	Busy and RTS the card.
the port state is system busy	Verify that the ATM connections between the MS and the Message Card are intact. Busy and RTS the port.
the port state is manual busy	Ensure that no other personnel are performing maintenance on the link and use the RTS command to return the port to service.
the port state is in test	Wait for the maintenance activity to complete and then determine the new state.

11 This procedure is complete.

—End—

MC ETH major or minor

Alarm display

```
CallAgent      SYS      CON      APPL      MC        Unit: 0
   .            .        .        .       ETH
```

Indication

A CCA345 log report is generated when the alarm is raised. A CCA645 log report is generated when the alarm clears.

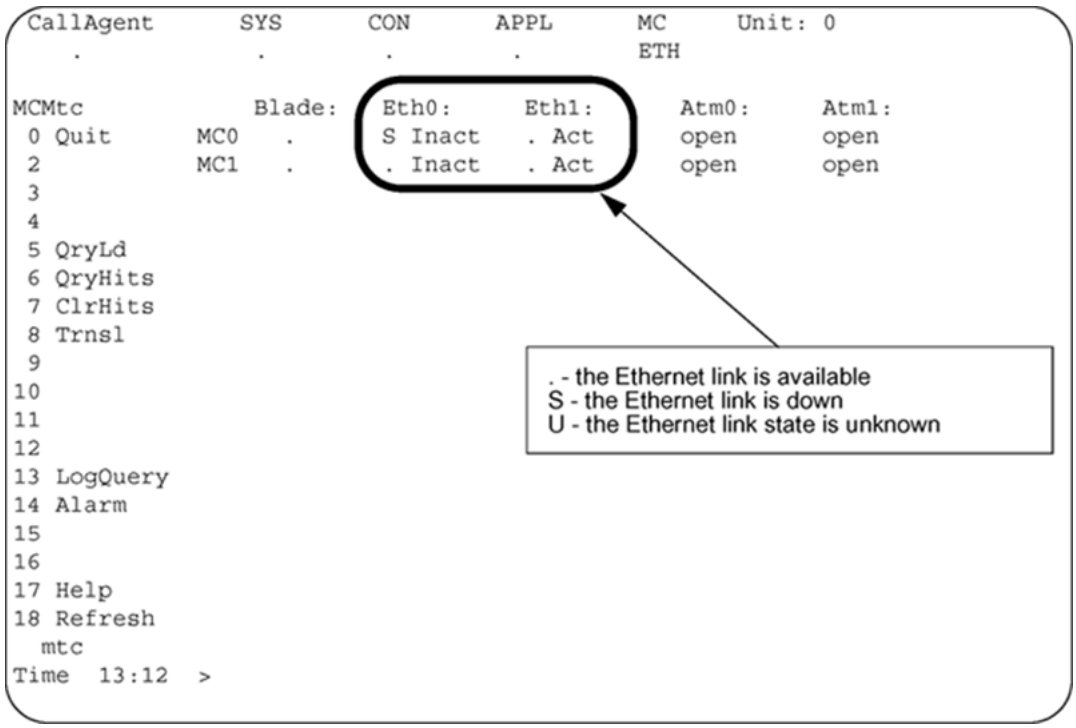
Meaning

A minor severity alarm indicates that 1 or 2 Ethernet links are down, but that no Message Controller is isolated.

A major severity alarm indicates that a Message Controller is isolated and at least 2 Ethernet links are down.

Action

Step	Action
	At the Call Agent Manager
1	Enter the MCMtc level. **`MCMtc`**
2	Determine the link status.



3 Determine the next action:

If	Do
one link is down and the alarm is minor	Verify that the cable is installed properly. Verify that the CS LAN router port is configured properly.
two links are down and the alarm is minor (one link down on each Message Controller)	No Message Controllers are isolated. Verify that the redundant CS LAN router is in service. Verify that the CS LAN router ports are configured properly. Verify that the cables are installed properly.
two links are down and the alarm is major	Both links are down to a single Message Controller. The Message Controller is isolated. Busy the isolated Message Controller and then lock and unlock the isolated Message Controller from the CS 2000 SAM21 Manager client.
the alarm is critical	At least three links are down and at least one of the Message Controllers is isolated. Contact Nortel support personnel.

4 This procedure is complete.

—End—

MC MCTbl major or minor

Alarm display

```
CallAgent       SYS       CON       APPL      MC        Unit: 0
   .              .         .         .      MCTbl
```

Indication

A CCA344 log report is generated when the alarm is raised. A CCA644 log report is generated when the alarm clears.

Meaning

This alarm is used to report Network Time Protocol (NTP), CPU usage, memory usage, disk usage, and zombie process alarms on the Message Controller.

Action

Step	Action
	At the Call Agent Manager
1	Enter the MCMtc level. **`MCMtc`**
2	Use the Alarm command to determine the alarm type.

```
 CallAgent       SYS       CON       APPL       MC      Unit: 0
    .             .         .         .        MCTbl
                                               M
MCMtc             Blade:    Eth0:     Eth1:      Atm0:     Atm1:
 0 Quit       MC0    .       . Inact    . Act      open      open
 2            MC1    .       . Inact    . Act      open      open
 3
 4
 5 QryLd
 6 QryHits
 7 ClrHits
 8 Trnsl
 9
10            MC alarms for unit 0: none
11
12            MC alarms for unit 1:
13 LogQuery
14 Alarm        Alarm  Severity Description
15 QueryIP      MCTbl  major    MC0: Host is not synchronized to any NTP
16                                server(s); No. of configured server(s): 2;
17 Help                           No. of accessible server(s): 1.
18 Refresh
  mtc
Time  14:44  >
```

3 Determine the next action:

If	Do
the alarm is related to NTP	Monitor the alarm and wait up to ten minutes to clear. If the alarm doesn't clear, continue to step 4.
otherwise	Proceed to step 4 to reset the Message Controller card.

4 Translate the ATM links from the Message Controller to the Message Switch (MS).

```
Trnsl <mc_no>
```

Example

```
Trnsl 0
```

The Message Switch number, card number, and port number are returned. Map the ATM ports to the ms_no, card_no, and port_no on the Message Switch.

```
CallAgent       SYS       CON       APPL       MC      Unit: 0
    .             .         .         .        MCTbl
                                               M
MCMtc             Blade:    Eth0:     Eth1:      Atm0:     Atm1:
 0 Quit       MC0    .       . Inact   . Act      open      open
 2 Bsy        MC1    .       . Inact   . Act      open      open
 3 Rts
 4
 5 QryLd
 6 QryHits
 7 ClrHits
 8 Trnsl
 9
10
11            Connectivity report for MC0 retrieved on:
12                 Mon Mar 10 13:53:16 2003
13 LogQuery
14 Alarm                                                  Cod    Connection
15                                  MS    Card  Port  Present    Status
16            ------------------------------------------------------------
17 Help       ATM0 connected to:    0     24    0     NO         GOOD
18 Refresh    ATM1 connected to:    1     25    0     NO         GOOD
  mtc
Time  13:53   > TRNSL 0
```

At the MAP

5 Enter the MS level.

```
>MAPCI;MTC;MS
```

6 Determine the correct MS shelf to use.

```
          MS     IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
          .      .        .        .       .        .        .        .        .

MS                  Message Switch    Clock    Shelf  0        Inter-MS Link 0 1
 0 Quit        MS 0        .          Slave             .                    . .
 2             MS 1        .          Master            .                    . .
 3
 4
 5
 6 Tst_
 7 Bsy_
```

7 Use the Shelf command to enter the Shelf level.

```
>SHELF <shelf_no>
```

Example

```
>SHELF 0
```

8 Use the information from step 4 to busy the ports to the Message Controller card.

```
>CARD <card_no>; BSY <ms_no> PORT <port_no>
```

Example

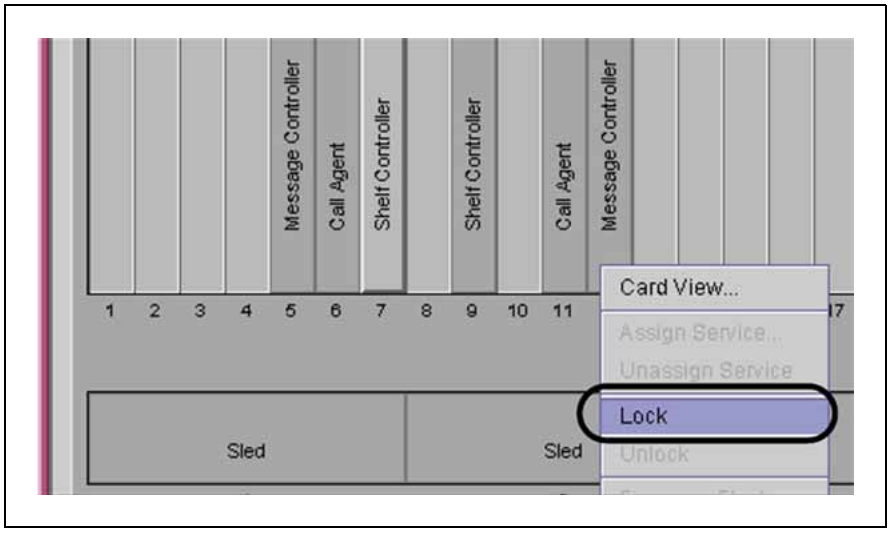
```
>CARD 24; BSY 0 PORT 0

>CARD 25; BSY 1 PORT 0 FORCE
```

Both ATM links to the Message Controller are set to manual busy. Two CMIC alarms, "02CMIC" are raised at the MAP and a major ATM alarm is raised at the Call Agent Manager. Two MS301 log reports and two CCA340 log reports are generated.

```
          MS     IOD     Net      PM      CCS     Lns     Trks     Ext     APPL
        02CMIC    .       .       .       .       .       .       .       .

MS                Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Slave          F                      . .
 2            MS 1       .          Master         F                      . .
 3
 4             Shelf 0                    1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 6 Tst_        Chain           |       |
 7 Bsy_        MS 0  . . . - . . - - - . - - - - - . - - - - - - . . F . .
 8 RTS_        MS 1  . . . - . . - - - . - - - - - . - - - - - - . . . F .
 9 Offl_
10             Card 25 CMIC Interface Card        Port: 0
11 LoadCd_     MS 0          .                          .
12 QueryCd_    MS 1          .                          M
13 Card_
14 QueryMS    SHELF:
15 Trnsl_     CARD:
16
17 Next
18 Port_
  MIKEM
Time  14:39   >CARD 24; BSY 0 PORT 0; CARD 25; BSY 1 PORT 0 FORCE
```

At the CS 2000 SAM21 Manager client workstation

9 From the Shelf View, right click on the card and select Lock from the context menu.



The Message Controller is removed from service. No new alarms are raised at the MAP. The Call Agent Manager reports the card as "blade out-of-service." An SCU500 log report is generated by the SAM21 Shelf Controller to indicate the state change to locked-disabled-none.

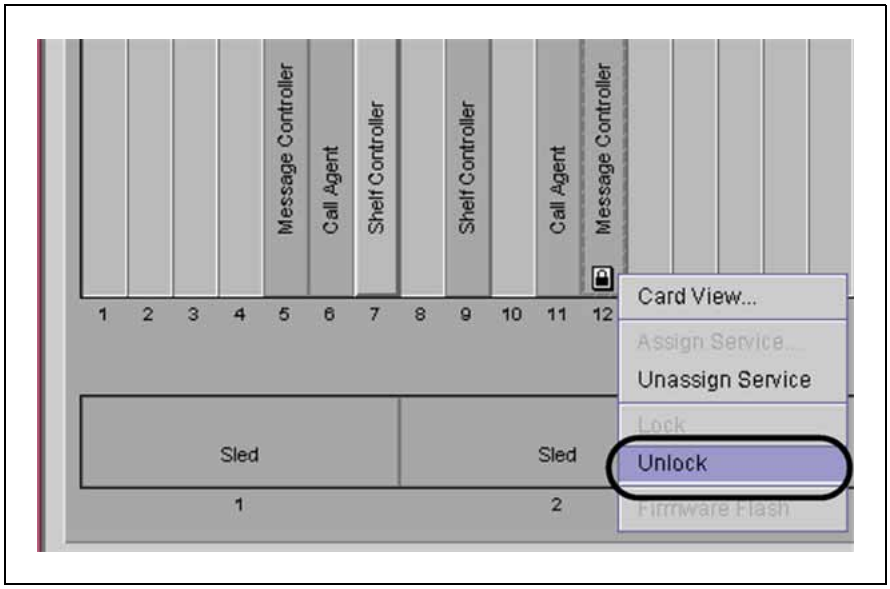
10 Wait for the lock icon to appear on the selected card.

11 Optionally run brief diagnostics on the replacement card. Refer to procedure "Running diagnostics" (page 180).

12 Right click on the card icon and select Unlock from the Shelf View. Optionally monitor the download from the States tab of the Card View window.

Wait for the lock icon to disappear from the card on the Shelf View. An SCU500 log report is generated by the SAM21 Shelf Controller to record the state change to unlocked-enabled-none.

At the Call Agent Manager, the Message Controller transitions from offline to in service and the ATM alarm clears. Two CCA640 log reports are generated.



At the MAP

13 Return to service the ports that were busied.

```
>CARD <card_no>; RTS <ms_no> PORT <port_no>
```

Example

```
>CARD 24; RTS 0 PORT 0

>CARD 25; RTS 1 PORT 1
```

The ports change state from manual busy (M) to in service (.) and the CMIC alarms clear from the MS area of the alarm banner. At the Call Agent Manager, the ATM port transition from open, to maintenance open, and back to open. Two MS300 log reports are generated.

```
          MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
           .      .       .       .       .       .       .       .       .

CARD              Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit       MS 0       .          Master          .                    . .
 2            MS 1       .          Slave           .                    . .
 3
 4             Shelf 0                    1 1 1 1
 5             Card  1 2 3 4 5 6 7 8 9 0 1 2 3
 6 Tst_        Chain            |         |
 7 Bsy_        MS 0  . . . . - . - - - . . . - .
 8 RTS_        MS 1  . . . . - . - - - . . . - .
 9 Offl_
10             Card 04 CMIC Interface Card          Port: 0 1
11 LoadCd_     MS 0          .                              . .
12 QueryCd_    MS 1          .                              . .
13 Card_
14 QueryMS
15 Trnsl_
16
17 Next
18 Port_
  MIKEM
Time  11:39  >RTS 0 PORT 0; RTS 1 PORT 1
```

14 This procedure is complete.

—End—

Carrier VoIP

Call Agent Fault Management

Publication: NN10087-911
Document status: Standard
Document version: 07.02
Document date: 20 October 2006

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