



Carrier VoIP

SAM21 Shelf Controller Fault Management

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SAM21 Shelf Controller Fault Management

New in this release

Feature changes

There are no feature changes.

Other changes

The TYPE field in the Reprovision panel of the SAM21 Network Element menu is updated to allow you to specify either the MCP750 or the MCP820 SAM21 Shelf Controller for configuration. The following figure shows an example of the SAM21 Reprovision panel with the updated TYPE field.

The screenshot displays the 'Reprovision sam21-1' window. It is divided into two main sections: 'General' and 'BootP Provisioning'.
General Section:
- Name: sam21
- Number: 1
- CSAM number: 01
- Shelf Position: 01
- Primary NTP: 192.168.50.132
- Secondary NTP: 192.168.50.27
- Timezone Offset: 8.0
- SNMP Community: *****
BootP Provisioning Section:
- SC: Slot 7
- IP: 192.168.50.6
- MAC: 0001af07a665
- TYPE: MCP750 (dropdown menu is open, showing options MCP750 and MCP820)
- SC: Slot 9
- IP: 192.168.50.7
- MAC: 0001af08ecdb
- TYPE: MCP750 (dropdown menu is open, showing options MCP750 and MCP820)
- Gateway IP and Subnet Mask fields are partially visible at the bottom.

In the procedure "[SAM21 Power Supply and Fan Unit removal or replacement](#)" (page 53), we added a step saying to wait for the fan to stop rotating.

Fault management strategy

The SAM21 Shelf Controller does not require hardware exercise tests or scheduled SWACTs to reduce faults.

Fault management software on the Shelf Controllers initiates recovery when faults occur. A loss of Ethernet connectivity on the active Shelf Controller initiates an immediate SWACT to the inactive unit. In addition to network connectivity, memory usage, CPU load, and disk usage are monitored. If any of these parameters reaches critical severity, the active Shelf Controller SWACTs to the inactive unit. The status of the newly inactive unit is then assessed.

If the inactive Shelf Controller has a critical fault (memory usage, disk usage, or CPU load average), it resets itself in 10 minutes. If the inactive Shelf Controller has two major severity faults, (memory usage, disk usage, or CPU load average), it resets itself after 60 minutes. The typical scenario is that a fault on the active unit initiates a SWACT, and the newly inactive unit resets to clear the alarm condition.

If the Shelf Controllers are equipped with ATM interfaces and more than 50% of the ATM connections are redirected over the interface on the inactive Shelf Controller, the active Shelf Controller initiates a SWACT so that most ATM connections are carried by the active Shelf Controller.

Faults on the Shelf Controller or hardware faults on cards in the shelf are reported to the CS 2000 SAM21 Manager. Some alarms are reported to additional element manager applications. For example, a hardware fault on a GWC triggers an alarm on the CS 2000 SAM21 Manager, but a fault on the GWC application triggers an alarm on the GWC Manager.

The Shelf Controllers do not associate NSS cards such as GWCs as mated pairs or monitor redundancy of the application on those NSS cards. For GWC nodes, a failure on one of the GWC cards is indicated by an unlocked-disabled state and a minor alarm at the GWC Manager, no alarm is generated at the CS 2000 SAM21 Manager.

The Shelf Controller periodically performs a boot audit of all cards in the shelf to determine if cards are running. If a card is not running but is unlocked-enabled, the Shelf Controller automatically recovers the card.

This activity transitions the affected card through three state changes and generates SCU500 log reports for each transition:

1. unlocked-disabled-offduty
2. unlocked-disabled-none
3. unlocked-enabled-none

Refer to the SCU500 log report information in procedure "SCU log reports" (page 7) in this Fault Management document for more information.

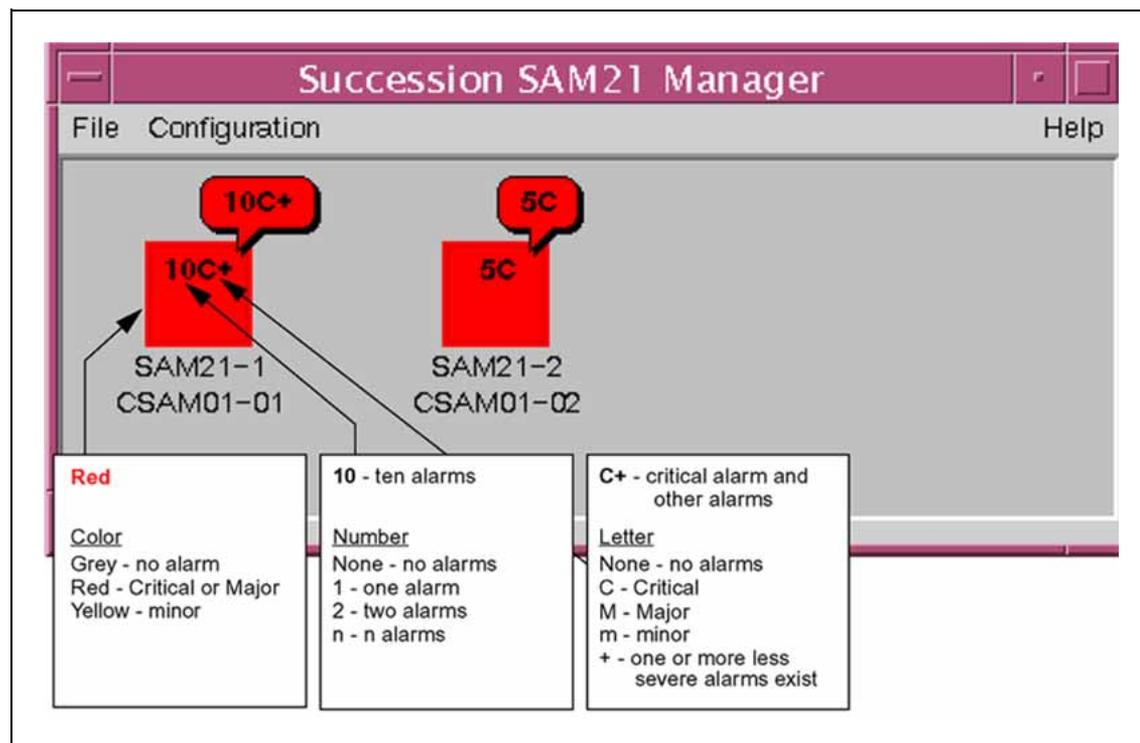
Tools and utilities

The interface to the SAM21 shelf and Shelf Controllers is through the CS 2000 SAM21 Manager client.

Note: If a Card View window is open and a task or maintenance is completed, close the window rather than minimize it. Several unused and open Card View windows can consume memory on the CS 2000 SAM21 Manager client workstation.

Access to the applications provided on NSS cards is through their respective element managers. The CS 2000 SAM21 Manager displays NSS hardware and platform alarms, but not NSS application alarms.

CS 2000 SAM21 Manager subnet view



Example

A red SAM21 icon with 1M+ indicates a SAM21 with one Major alarm and one or more less severe alarms.

Available procedures

Refer to the following fault management procedures for the SAM21 Shelf Controllers.

Procedure
"SCU log reports" (page 7)
"IPOA log reports" (page 19)
"Card icons" (page 21)
"SAM21 shelf alarms" (page 25)
"ATM Connection alarms" (page 37)
"Run diagnostics" (page 43)
"SAM21 Shelf Controller status history retrieval" (page 46)
"SAM21 Shelf Controller reload or restart" (page 48)
"SAM21 Shelf Controller removal or replacement" (page 49)

Unavailable procedures

The following procedures are unavailable for SAM21 Shelf Controllers.

Restarting element

There is no procedure for restarting all the cards in the SAM21 shelf at once except through the power up or power down of the SAM21 shelf.

Allowing/inhibiting alarm reporting

All alarms are reported to the CS 2000 SAM21 Manager. There is no procedure to silence alarms.

Configuring alarm severity profiles

There is no procedure to configure alarm severity profiles.

Log collection configuration

The LOGROUTE utility on the CS 2000 Core Manager offers distribution of logs and messages from the SAM21 Shelf Controllers. Refer to the CS 2000 Core Manager documentation for information on the LOGROUTE utility.

Log reports for card state changes, environmental alarms, and SAM21 Shelf Controller hardware faults are sent to the CS 2000 Core Manager. Refer to procedure "SCU log reports" (page 7) for information.

SCU log reports



DANGER

Risk of shock

Diagnosing faults with fans and power feeds may require inspection of the power cables.

The active SAM21 Shelf Controller gathers the status information for itself and the inactive SAM21 Shelf Controller and transmits alarms and log reports to the CS 2000 SAM21 Manager server application.

Alarms are available from the CS 2000 SAM21 Manager client in the Alarm browser or Card View windows. Log reports are available from the CS 2000 Core Manager or CBM. Use the `LOGQUERY` command on the CS 2000 Core Manager or CBM to view the logs. To view only SCU log reports, use the `OPEN SCU` command. If an OSS network is configured, the SCU log reports are transmitted to the OSS network.

For assistance with clearing alarms, refer to "[SAM21 shelf alarms](#)" (page 25).

Log report	Severity			Meaning	Action
	C	M	m		
SCU301	X			Extension bridge in Slot <x> is Up. Extension bridge in Slot <y> is down.	Verify that the extension bridges in slots 15 back and 16 back on the rear of the SAM21 shelf are seated. If the alarm persists, replace the failing extension bridge.
SCU306		X		NFS Mount GWC, 3PC, STORM and SAM21 fail.	Verify that the server is reachable and that the directories are exported.
SCU310	X	X		CPU load high. One Minute Load is <x.xx>.	If the condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.

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Log report	Severity			Meaning	Action
	C	M	m		
SCU315		X		Fan in Sled <x> has been removed.	Reinsert fan or sled. Replace if the problem persists.
		X		Fan in Sled <x> is down.	Check cables connecting fan to the power supply. Replace fan. Replace the Sled if the problem persists.
		X	X	Temperature in Sled <x> is High.	Check for fan blockage and ambient heat.
			X	Diagnostic failed at test case.	Determine the card slot from the log report and re-run the diagnostics. If diagnostics fail a second time, replace the card.
			X	Diagnostic failed due to SWACT.	
			X	Diagnostic failed, <xxxx>	There are 11 possible causes. Determine the card slot from the log report. Re-run the diagnostic. Replace the card if the diagnostic fails a second time.
			X	Could not connect to board	Reseat the card with the alarm. If the alarm persists, replace the card.
SCU329	X	X	X	Loss of Communications: <xxx>	Loss of communications can occur for several reasons. Review the problem text and refer to "SAM21 shelf alarms" (page 25).
SCU332	X	X		Memory usage high. Less than <xx> Percent free.	If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.
SCU335		X		Power Feed <x> is down.	Check power cables in back of shelf.
			X	Power Supply in Sled <x> is down.	Reinsert sled. Replace the sled if the problem persists.
			X	Power Supply in Sled <x> has been removed.	Reinsert sled. Replace the sled if the problem persists.

Log report	Severity			Meaning	Action
	C	M	m		
SCU342		X		<p>NTP server cannot be reached.</p> <p>NTP server provisioned is not serving NTP services.</p> <p>NTP daemon failed on the Shelf Controller.</p>	Check the provisioned NTP sever accessibility and verify that it is functioning as an NTP server.
SCU344		X		<p>Unlock action exceeded expected duration.</p>	<p>Open the Card View window for the affected card and select the States tab to view the status text.</p> <p>Verify Ethernet cable connections, router provisioning, BOOTP service, and that the software load is installed on the CS 2000 Core Manager.</p>
SCU346	X	X		Large Number of Process Abnormally Terminated	If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.
		X		Firmware Flashing could not connect to the board.	Review the log report to determine the card number. Reprovision the card.
		X		Firmware Flashing failed at downloading firmware.	Verify the firmware file on the CS 2000 Core Manager in /swd/sam21 and that the BOOTP service is running. Reprovision the card.
		X		Firmware Flashing failed at validating firmware.	Verify the firmware file on the CS 2000 Core Manager in /swd/sam21. Reprovision the card. Reapply the fileset if failure occurs again.
		X		Firmware Flashing failed at backing up firmware.	If problem persists, replace the card.
		X		Firmware Flashing failed flash.	Remove and reinsert the card. Reprovision the card. If provisioning fails, replace the card. Do not enable the Firmware Flash

Log report	Severity			Meaning	Action
	C	M	m		
					checkbox for other cards of this type until the problem is resolved. Contact Nortel support personnel.
SCU348	X			<p>Provision failed: process ended abnormally</p> <p>Provision failed, could not connect to board</p> <p>Provision failed, connection lost unexpectedly, please reseal/replace the car</p> <p>Provision failed to set application type</p>	<p>Reprovision the card. If the problem persists, replace the card.</p> <p>If the card is not manually recovered, the CS 2000 SAM21 Manager server automatically reprovisions the card. This action is taken only if the card was previously installed in the same slot and provisioned in the same slot; a five minute timer must also expire. After the card is recovered, an SCU500 log report is generated.</p>
SCU349	X	X		Disk usage high. Root file system has <xx> Percent free space.	If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.
SCU350		X		Temperature of equipment exceeds expected levels.	Check for blockage. If you find a blockage, clear it. Check that the fan is installed. If it is not installed, install it. Check that the fan is functioning. If it is not functioning, check that it is connected and connect it if necessary. If it is connected but is not functioning, replace it. If the problem persists, call Technical Support.
SCU356	X			<p>Mate Shelf Controller unavailable. Operating in Simplex.</p> <p>Application is out of service.</p> <p>Application is out of service and being recovered.</p>	<p>Verify that the mate SAM21 Shelf Controller is latched. If the problem persists, Lock and Unlock the inactive SAM21 Shelf Controller.</p> <p>Unlock the NSS card.</p> <p>The application is already being recovered when the alarm is raised. The alarm clears automatically.</p>
SCU398	X	X	X	A TELCO alarm is raised.	Check this shelf for other alarms.

Log report	Severity			Meaning	Action
	C	M	m		
SCU399	X			Remote Node Communication Failure.	The CS 2000 SAM21 Manager server application cannot communicate with the SAM21 Shelf Controllers and the CS 2000 SAM21 Manager client application exits. Check Ethernet connections and router configuration. Verify connectivity at the host that provides the CS 2000 SAM21 Manager server software.
SCU500				Card state change.	This is an information only log report. No action is required.
SCU501				Card insertion.	This information only log report indicates that a card has been inserted in the shelf. No action is required.
SCU502				Card removal.	This information only log report indicates that a card has been removed from the shelf. No action is required.

Examples

The following figures provides examples of some of the SCU log reports.

SCU301 log reports indicate that an alarm with an Extension Bridge is raised or cleared.

SCU301 log reports

SCU301	<pre>OFC_NAME *** SCU301 JUL30 10:50:52 5423 MAJOR FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 10:50:45 EST 2005 Reason: Extension Bridge in Slot 15 is Up, Extension Bridge in Slot 16 is Down Category:processingError Cause:adapterError</pre>
SCU301	<pre>OFC_NAME SCU301 JUL30 10:50:52 5423 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 10:50:45 EST 2005 Category:processingError Cause:adapterError</pre>

SCU306 log reports indicate failure for NFS Mount GWC, 3PC, STORM and SAM21.

SCU 306 log reports

SCU306	OFC_NAME *** SCU306 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Feb 10 16:55:32 EST 2005 Reason: NFS Mount gwc and sam21 fail Category:processingError Cause:communicationsSystemFailure
SCU306	OFC_NAME SCU306 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Feb 10 16:55:32 EST 2005 Category:processingError Cause:communicationsSystemFailure

SCU310 log reports indicate that processor usage exceeds expected levels.

SCU 310 log reports

SCU310	OFC_NAME *** SCU310 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: CPU load high. One Minute Load is 16.92 Category:equipment Cause:cpuCyclesLimitExceeded
SCU310	OFC_NAME SCU310 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:equipment Cause:cpuCyclesLimitExceeded

SCU315 log reports indicate a failure with a power feed, a fan, or that diagnostics failed on a Non System Slot (NSS) card.

SCU315 log reports

SCU315	OFC_NAME ** SCU315 JUL30 17:48:52 5000 MAJOR FLT Alarm Raised Location: sam21 1:CSAM01-02:sled 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Fan in Sled 1 is down Category:equipment Cause:equipmentMalfunction
SCU315	OFC_NAME SCU315 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:sled 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:equipment Cause:equipmentMalfunction
SCU315	OFC_NAME ** SCU315 JUL30 17:48:52 5000 MAJOR FLT Alarm Raised Location: SAM21 3:CSAM01-01:shelf 1:slot 1:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Diagnostic failed, terminated by unexpected timeout Category:equipment Cause:equipmentMalfunction

SCU329 log reports indicate trouble with communication. The SAM21 Shelf Controllers monitor Ethernet, two serial connections, and a heartbeat cable for connectivity. Any loss of connectivity results in an alarm and an SCU329 log report.

SCU329 log reports

SCU329	OFC_NAME *** SCU329 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Loss of Communications: Mate Ethernet, Serial Connection 1, Serial Connection 2 is down or unreachable Category:communications Cause:lossOfSignal
SCU329	OFC_NAME SCU329 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:communications Cause:lossofSignal

SCU332 log reports indicate that memory usage on the SAM21 Shelf Controller exceeds expected levels.

SCU332 log reports

SCU332	OFC_NAME ** SCU332 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Memory usage high. Less than 12 Percent free. Category:equipment Cause:outOfMemory
SCU332	OFC_NAME SCU332 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:equipment Cause:outOfMemory

SCU335 log reports indicate trouble with power supplies.

SCU335 log reports

SCU335	OFC_NAME *** SCU335 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:powerfeed A Time: Thu Jul 30 17:48:45 EST 2005 Reason: Power Feed A is down Category:processingError Cause:powerProblem
SCU335	OFC_NAME SCU335 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:sled 3 Time: Thu Jul 30 17:48:45 EST 2005 Category:processingError Cause:powerProblem

SCU342 log reports indicate that the NTP server is not functioning or is unavailable.

SCU342 log reports

SCU342	OFC_NAME ** SCU342 JUL30 17:48:52 5000 MAJOR FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Feb 10 16:54:32 EST 2005 Reason: NTP server is not reachable Category:communications Cause:remoteNodeTransmissionError
SCU342	OFC_NAME SCU342 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Feb 10 16:54:32 EST 2005 Category:communications Cause:remoteNodeTransmissionError

SCU344 log reports indicate that a NSS card has taken too long to complete a lock or unlock request.

SCU344 log reports

SCU344	OFC_NAME ** SCU344 JUL30 17:48:52 5000 MAJOR FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot12:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Unlock action exceeded expected duration. Please check the state window for errors Category:qualityOfService Cause:responseTimeExcessive
SCU344	OFC_NAME SCU344 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot12:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:qualityOfService Cause:responseTimeExcessive

SCU346 log reports indicate trouble with flashing firmware on a NSS card or that the number of zombie processes on the SAM21 Shelf Controller has exceeded expected levels.

SCU346 log reports

SCU346	OFC_NAME *** SCU346 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 2:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Firmware Flashing could not connect to board Category:processingError Cause:softwareError
SCU346	OFC_NAME ** SCU346 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 2:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Large Number of Processes Abnormally Terminated Category:processingError Cause:softwareError
SCU346	OFC_NAME SCU346 JUL30 17:48:52 5000 CRIT FLT Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 2:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:processingError Cause:softwareError

SCU348 log reports indicate that provisioning a NSS card failed.

SCU348 log reports

SCU348	OFC_NAME *** SCU348 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 1:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Provisioning failed, connection lost unexpectedly, please reseal/replace the card Category:processingError Cause:softwareProgramError
SCU348	OFC_NAME SCU348 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 1:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:processingError Cause:softwareProgramError

SCU349 log reports indicate that the usage of disk space in the SAM21 Shelf Controller RAMDISK exceeds expected levels.

SCU349 log reports

SCU349	<pre>OFC_NAME ** SCU349 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Disk usage high. Root file system has 4.96 Percent free space Category:equipment Cause:storageCapacityProblem</pre>
SCU349	<pre>OFC_NAME SCU349 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 9:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:equipment Cause:storageCapacityProblem</pre>

SCU350 log reports indicate that the temperature in the equipment exceeds expected levels.

SCU350 log reports

SCU350	<pre>OFC_NAME ** SCU350 JUL30 17:48:52 5000 MAJOR FLT Alarm Raised Location: sam21 1:CSAM01-02:sled 3 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Temperature in sled 3 is high Category:qualityOfService Cause:temperatureUnacceptable</pre>
SCU350	<pre>OFC_NAME SCU350 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:sled 3 Time: Thu Jul 30 17:48:45 EST 2005 Category:qualityOfService Cause:temperatureUnacceptable</pre>

SCU356 log reports indicate that communication from the active SAM21 Shelf Controller to the inactive SAM21 Shelf Controller is impossible. The active SAM21 Shelf Controller is operating in simplex, without a mate for failover protection.

SCU356 log reports

SCU356	OFC_NAME *** SCU356 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02:shelf 1:slot 7:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Mate Shelf Controller Unavailable. Operating in Simplex. Category:equipment Cause:underlyingResourceUnavailable
SCU356	OFC_NAME SCU356 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02:shelf 1:slot 7:card 1 Time: Thu Jul 30 17:48:45 EST 2005 Category:equipment Cause:underlyingResourceUnavailable

SCU398 log reports indicate that a TELCO alarm is active.

SCU398 log reports

SCU398	OFC_NAME *** SCU398 JUL30 10:50:52 5423 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02 Time: Thu Jul 30 10:50:45 EST 2005 Reason: Alarm condition on shelf Category:equipment Cause:equipmentMalfunction
SCU398	OFC_NAME SCU398 JUL30 10:50:52 5423 NONE Alarm Cleared Location: sam21 1:CSAM01-02 Time: Thu Jul 30 10:50:45 EST 2005 Category:equipment Cause:equipmentMalfunction

SCU399 log reports indicate that the CS 2000 SAM21 Manager server software cannot communicate with the SAM21 Shelf Controllers. The CS 2000 SAM21 Manager client software exits.

SCU399 log reports

SCU399	OFC_NAME *** SCU399 JUL30 17:48:52 5000 CRIT FLT Alarm Raised Location: sam21 1:CSAM01-02 Time: Thu Jul 30 17:48:45 EST 2005 Reason: Remote Node Communication Failure Category:communications Cause:unknownCause
SCU399	OFC_NAME SCU399 JUL30 17:48:52 5000 NONE Alarm Cleared Location: sam21 1:CSAM01-02 Time: Thu Jul 30 17:48:45 EST 2005 Category:communications Cause:unknownCause

SCU500, SCU501, and SCU502 log reports indicate that a NSS card has changed state, been removed from the shelf, or has been inserted into the shelf.

SCU500, SCU501, and SCU502 log reports

SCU500	OFC_NAME SCU500 JUL30 17:48:52 5000 NONE INFO State Change Location: sam21 1:CSAM01-02:shelf 1:slot 17:card 1 Time: Thu Jul 30 17:48:45 EST 2005 New state: Unlocked/Enabled/None
SCU501	OFC_NAME SCU501 JUL30 17:48:52 5000 NONE INFO Card Insert Location: sam21 1:CSAM01-02:shelf 1:slot 5:card 1
SCU502	OFC_NAME SCU502 JUL30 17:48:52 5000 NONE INFO Card Removal Location: sam21 1:CSAM01-02:shelf 1:slot 15:card 1

IPOA log reports

Alarms are available from the CS 2000 SAM21 Manager client in the Alarm browser or Card View windows. Log reports are available from the CS 2000 Core Manager or CBM. Use the `LOGQUERY` command on the CS 2000 Core Manager or CBM to view the logs. To view only IPOA log reports, use the `OPEN IPOA` command. If an OSS network is configured, the logs reports are transmitted to the OSS network.

For assistance with ATM alarms and ATM alarm clearing, refer to "ATM Connection alarms" (page 37).

Log report	Severity			Meaning	Action
	C	M	m		
IPOA301	X			Loss of cell delineation (LCD). All messages on the link are lost.	Check the fibers and connections between this node and the far end node.
IPOA302	X			SONET Alarm indication signal (AIS) alarm. This alarm is raised against the line or the path. The SONET layer link between this node and the far end node is broken.	Check the fibers and connections between this node and the far end node.
IPOA304	X			Connection members changed state and neither the active or inactive is available.	Check the fibers and connections between this node and the far end node.
				X	
IPOA305	X	X	X	An ATM interface capacity threshold was crossed.	Contact network engineering to determine if traffic can be distributed differently or if additional capacity is needed.
IPOA801			X	ATM CRC32 Threshold exceeded. A CRC calculation mismatch occurred on a cell and the cell was discarded.	Check the fiber for dirt, mis-insertion, and tight loops.
					Check the ATM interfaces for failures or dirt.

Examples

The following figure shows examples of IPOA log reports.

IPOA301

```
OFC_NAME *** IPOA301 JUL30 10:50:52 5423 CRIT FLT ATM Interface Fault Raised
Location: sam21 1:CSAM01-02
SC Slot: 9
Fault Type: LCD (Loss of Cell Delineation)
Fault Date: Tue Jul 30 09:29:29 EST 2005
```

IPOA302

```
OFC_NAME *** IPOA302 JUL30 10:50:52 5423 CRIT FLT SONET Carrier Fault Raised
Location: sam21 1:CSAM01-02
SC Slot: 9
Carrier Type: STS3CP
Fault Type: AIS (Alarm Indication Signal)
Fault Date: Tue Jul 30 08:09:54 EST 2005
```

IPOA304

```
OFC_NAME *** IPOA304 JUL30 10:50:52 5423 CRIT FLT Alarm Raised
Location: sam21 1:CSAM01-02:Connection Set:CC10 OAMP
Time: Tue Jul 30 10:50:52 EST 2005
Reason: ACT CM: FROM:Up TO:Up INACT CM: FROM:Up To:Redi
Category:communications
Cause:performanceDegraded
```

IPOA305

```
OFC_NAME *** IPOA305 JUN13 13:39:13 0184 CRIT FLT Alarm Raised
Location: SAM21 -0 0:CSAM00-00:shelf 1:slot 7:card 1:card ATMCard0
Time: Fri Jun 13 08:39:24 EDT 2005
Reason: 90% of ATM Capacity Reached
Category:communications
Cause:performanceDegraded
```

IPOA801

```
OFC_NAME * IPOA801 JUL30 10:50:52 5423 MINOR FLT ATM CRC32 Threshold
Location: sam21 1:CSAM01-02
SC Slot: 9
Connection Set: CC04 Call Control
Fault Date: Tue Jul 30 09:31:02 EST 2005
Threshold: 37
```

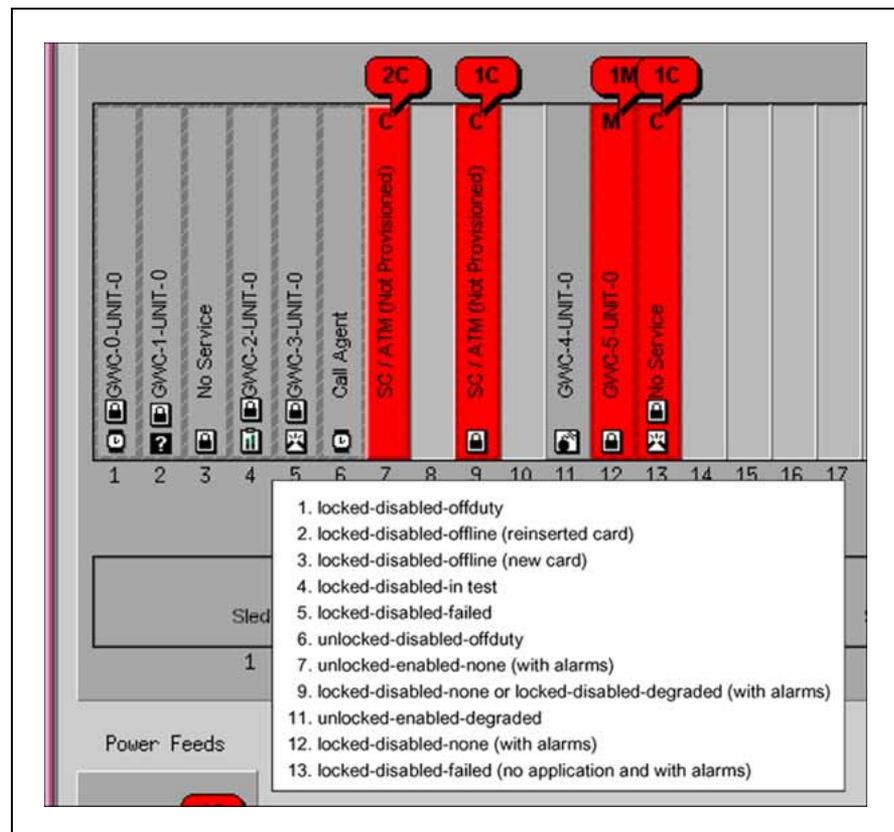
Card icons

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  	<p>Wait for the firmware flash to complete. Verify that the card changes to the locked-disabled-none state.</p> <p>If the card transitions to locked-disabled-degraded, follow the suggestions for that state.</p>
unlocked-disabled-offduty 	<p>For Call Agent cards, this state also represents the restart and reload of the call processing application during a routine exercise test (RExTst).</p> <p>When the SAM21 Shelf Controller performs its boot audit, any card that is not running or booting is set to this state until the SAM21 Shelf Controller recovers the card.</p>
locked-disabled-offline(new card) 	<p>Right-click on the card icon and select Assign Service from the card context menu. Select the correct service from the Assign Service window.</p> <p>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.</p>
locked-disabled-offline (reinsertion)  	<p>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.</p> <p>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.</p> <p>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.</p>

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 24) 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: <ul style="list-style-type: none"> • 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 24) 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.

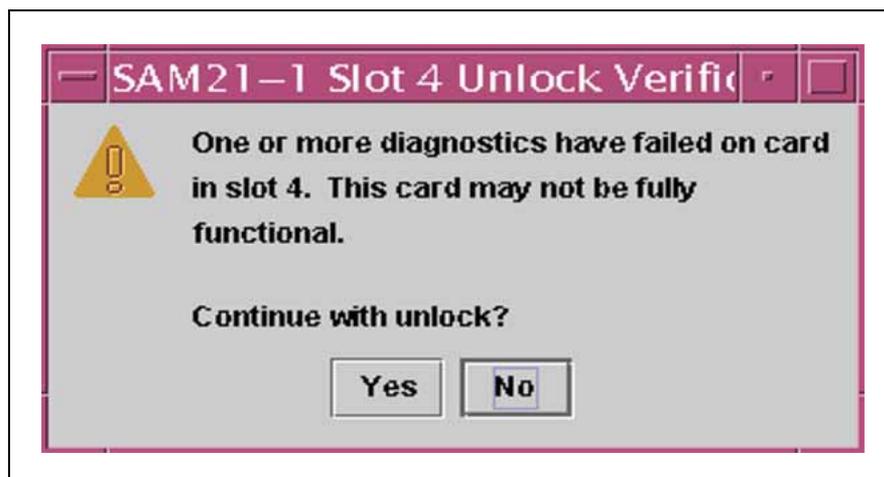
4 This procedure is complete.

—End—

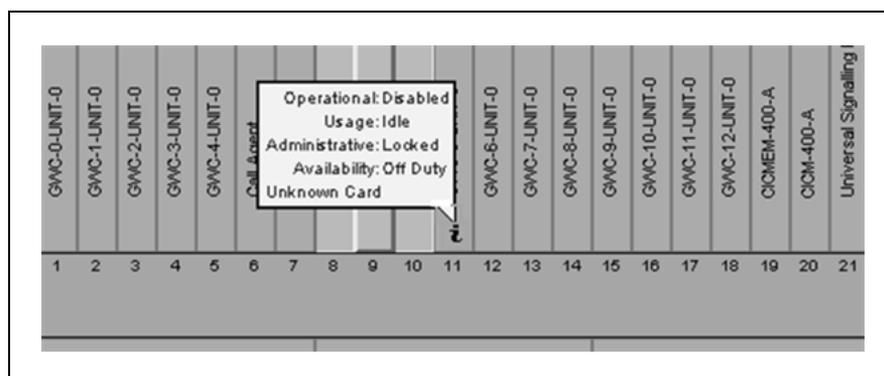
Additional information

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.

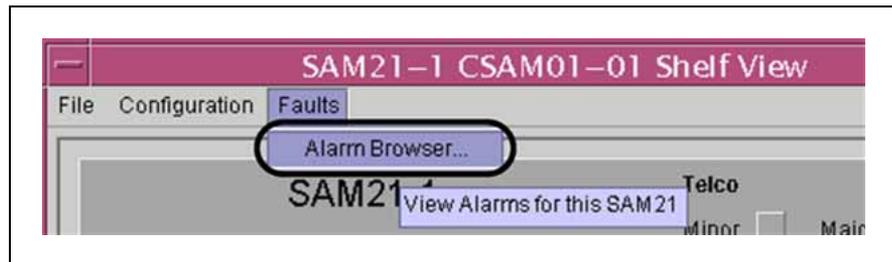


SAM21 shelf alarms

Step Action

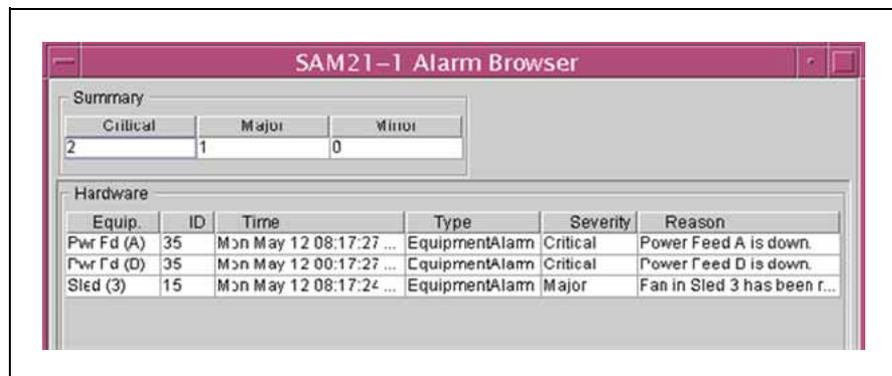
At the CS 2000 SAM21 Manager client workstation

- 1 From the Subnet View, double click on the alarmed SAM21 icon to open the Shelf View window.
- 2 From the Shelf View window, select Faults from the menu bar and Alarm Browser from the drop down menu.



- 3 The Alarm Browser window shows alarm information for all cards in the SAM21 shelf.

Note: The alarm browser window contains information about Hardware and Services on the entire SAM21 shelf.



- 4 Refer to "[Hardware alarm IDs](#)" (page 26) for information about clearing alarms. If the SAM21 Shelf Controller is installed with an ATM interface, refer to "[Services alarm IDs](#)" (page 35) for information about clearing ATM related alarms.
- 5 This procedure is complete.

—End—

Hardware alarm IDs

The following table provides hardware alarm IDs and remedy suggestions.

Hardware alarm codes

Alarm ID	Log Report	Remedy
1	SCU301	<p>Extension bridge in Slot <x> is Up. Extension bridge in Slot <y> is down.</p> <p>Verify that the extension bridges in slots 15 back and 16 back on the rear of the SAM21 shelf are seated. If the alarm persists, replace the failing extension bridge.</p>
6	SCU306	<p>NFS Mount GWC, 3PC, STORM and SAM21 fail</p> <p>Verify that the server is reachable and that the directories are exported.</p> <p>For detailed instructions, see "Clearing the SCU306 alarm" (page 31).</p>
10	SCU310	<p>CPU load high. One Minute Load is <x.xx></p> <p>If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.</p>
15	SCU315	<p>Use the alarm text to determine which condition exists:</p> <ul style="list-style-type: none"> • Fan in Sled <x> is down Fan in Sled <x> has been removed. Ensure sled is seated. Verify fan is spinning. Replace sled if problem persists. • Temperature in Sled <x> is High. Ensure ventilation to the fan is adequate and free of obstructions. Ensure that the cooling in the room is adequate. • Diagnostic failed at test case Diagnostic failed, <xxxxxxxxxxxxxxxxxx> Diagnostic failed due to SWACT.

Alarm ID	Log Report	Remedy
		<p>Attempt the brief diagnostics. If brief diagnostics succeed, attempt full diagnostics. Record the progress information. Contact Nortel support personnel if the diagnostic fails a second time.</p> <ul style="list-style-type: none"> • Could not connect to board <p>The active SAM21 Shelf Controller initiated communication with a card and failed to establish communication after six attempts. Reseat the NSS card. If the alarm persists, replace the NSS card.</p>
29	SCU329	<p>Use the alarm text to determine which condition exists.</p> <ul style="list-style-type: none"> • Loss of Communications: Serial Connection <x> is down Loss of Communications: Serial Connection 1, Serial Connection 2 is down Verify that the serial connections on the back of the shelf are intact. • Loss of Communications: Mate Ethernet is Down Verify Ethernet connectivity for the inactive SAM21 Shelf Controller. This alarm is reported only by the active SAM21 Shelf Controller. • Loss of Communications: Remote Network is Down Verify that the CS 2000 Core Manager is running. This alarm is reported by the inactive SAM21 Shelf Controller only and indicates that the inactive SAM21 Shelf Controller cannot ping the CS 2000 Core Manager. • Loss of Communications: Mate Ethernet, Serial Connection <x> is down Loss of Communications: ISCS, Mate Ethernet, Serial Connection 2 is down Loss of Communications: Mate Ethernet, Serial Connection 1, Serial Connection 2 is down These alarms are reported by the active SAM21 Shelf Controller only. Verify Ethernet and serial cabling. • Loss of Communications: Mate Ethernet, Serial Connection 1, Serial Connection 2, is down

Alarm ID	Log Report	Remedy
		<p>This alarm indicates that both serial connections and the Ethernet connection to the inactive SAM21 Shelf Controller are unavailable. Verify Ethernet and serial cabling. Lock and Unlock the inactive SAM21 Shelf Controller.</p> <ul style="list-style-type: none"> Loss of Communications: Remote Network, Serial Connection <x> is down <p>Loss of Communications: Remote Network, Serial Connection 1, Serial Connection 2 is down</p> <p>This alarm is raised by the inactive SAM21 Shelf Controller and indicates that the inactive SAM21 Shelf Controller cannot ping the CS 2000 Core Manager but it can ping the mate SAM21 Shelf Controller. Verify serial and Ethernet cabling.</p> <ul style="list-style-type: none"> Loss of Communications: Local Ethernet Interface is down <p>The inactive SAM21 Shelf Controller raises this alarm to indicate that it cannot ping the CS 2000 Core Manager or it's mate over Ethernet. Verify Ethernet cabling.</p> <ul style="list-style-type: none"> Loss of Communications: Local Ethernet Interface, Serial Connection <x> is down <p>Loss of Communications: Local Ethernet Interface, ISCS, Serial Connection <x> is down</p> <p>Verify serial and Ethernet cabling.</p> <ul style="list-style-type: none"> Loss of Communications: All Communication Paths Down <p>Verify serial and Ethernet cabling. Verify router configuration.</p> <ul style="list-style-type: none"> Loss of Communications: Boot Server is down or unreachable <p>Verify IP of the boot server, or check to see if SDM or CBM is alive or not.</p>
32	SCU332	<p>Memory usage high. Less than <xx> Percent free.</p> <p>If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.</p>

Alarm ID	Log Report	Remedy
35	SCU335	<p>Use the alarm text to determine which condition exists:</p> <ul style="list-style-type: none"> Power Supply in Sled <x> is down. Power Supply in Sled <x> has been removed. <p>Ensure sled is seated. Replace sled if problem persists.</p> <ul style="list-style-type: none"> Power Feed <x> is down. Verify electrical power feed connection.
42	SCU342	<ul style="list-style-type: none"> NTP server is not reachable NTP server is not serving NTP failed <p>Check the provisioned NTP server accessibility and verify that it is serving as an NTP server.</p>
44	SCU344	<p>Unlock action exceeds expected duration.</p> <p>A NSS card has taken too long to Unlock or Lock. Verify Ethernet cable connections, router provisioning, BOOTP service, and that the software load for the card type is installed on the CS 2000 Core Manager.</p>
46	SCU346	<p>Use the alarm text to determine which condition exists:</p> <ul style="list-style-type: none"> Firmware Flashing could not connect to the board Firmware Flashing failed at backing up firmware <p>Use the Card View window to resend provisioning information.</p> <ul style="list-style-type: none"> Firmware Flashing failed at downloading firmware <p>Verify that the firmware file exists in /swd/sam21 on the CS 2000 Core Manager and that the BOOTP service is running. Reprovision the card.</p>

Alarm ID	Log Report	Remedy
		<ul style="list-style-type: none"> Firmware Flashing failed at validating firmware Use the Card View window to resend provisioning information. Reinstall the SAM21 Platform files on the CS 2000 Core Manager if this problem persists. Firmware Flashing failed flash Remove and reinsert the card. Use the Card View window to resend provisioning information. Do not enable the Firmware Flash checkbox for other cards of this type until the problem is resolved. Contact Nortel support personnel if the problem persists. Large Number of Processes Abnormally Terminated If condition persists and reaches critical severity, ensure the SC is in an Inactive state and then Lock and Unlock the SC.
48	SCU348	<ul style="list-style-type: none"> Provision failed: process ended abnormally Provision failed, could not connect to board Provision failed to set application type <p>Reprovision the card. If the problem persists, replace the card.</p> <p>If the card is not manually recovered, the CS 2000 SAM21 Manager server automatically reprovisions the card. This action is taken only if the card was previously installed and provisioned in the same slot; a five minute time must also expire. After the card is recovered, an SCU500 log report is generated.</p>
49	SCU349	<p>Disk usage high. Root file system has <xx> Percent free space.</p> <p>If condition persists and reaches critical severity, ensure the SAM21 Shelf Controller is in an Inactive state and then Lock and Unlock the SAM21 Shelf Controller.</p>
56	SCU356	<p>Use the alarm text to determine which condition exists.</p> <ul style="list-style-type: none"> Mate Shelf Controller unavailable. Operating in Simplex.

Alarm ID	Log Report	Remedy
		<p>Verify that the mate SAM21 Shelf Controller is latched. Unlock the mate SAM21 Shelf Controller. If unable to Unlock, contact Nortel support personnel.</p> <ul style="list-style-type: none"> Application is out of service. <p>Unlock the NSS card.</p> <p>Note: The system does not raise this alarm for locked cards during upgrades and rollbacks from pre-SN08 releases to SN08 releases and higher.</p> <ul style="list-style-type: none"> Application is out of service and being recovered. <p>The application is already being recovered when the alarm is raised. The alarm clears automatically.</p>

Clearing the SCU306 alarm

Use this procedure to clear the SCU306 alarm.

Prerequisites

This procedure has the following prerequisites:

- You must know the root user's password on the server. (Depending on the network configuration, the server can be a SuperNode Data Manager or a Core and Billing Manager.) If you do not know the password, ask your system administrator.
- You must know the provisioned IP address of the alarmed Shelf Controller (that is, the Shelf Controller for which the SCU306 alarm has been raised). If you do not know the provisioned IP address of the alarmed Shelf Controller, you can find it as follows. In the SAM21 Manager, open the SAM21 Shelf View, select the alarmed Shelf Controller, and then open the Card View. In the Card View, click the Provisioning tab. The Provisioning tab displays the provisioned IP address.

Action

Clearing the SCU306 alarm

Step	Action
	<i>At your workstation</i>

- 1 Log in to the server. (Depending on the network configuration, the server can be a SuperNode Data Manager or a Core and Billing Manager.) This will indicate whether the server is alive. Type

```
> ssh <userID>@<IPaddress | hostname>
```

or type

```
> ssh -l <userID> <IPaddress } hostname>
```

and press the Enter key

where

<IPaddress> is the IP address of the server

<hostname> is the host name for the server

- 2 Select the next step as follows:

If	Do
the login failed	step 3
the login succeeded	step 4

- 3 The failure of the login suggests that the server is down. Check the server. Take corrective action if necessary. Then select the next step as follows:

If	Do
the alarm has cleared	step 21
the alarm has not cleared	start this procedure again at step 1

- 4 Use the switch-user command to become the root user. Type

```
> su -
```

and press the Enter key.

Example of system response:

Password:

- 5 Type the root user's password and press the Enter key.

- 6 To verify that the Shelf Controller has been datafilled correctly, type the following command and press the Enter key:

```
> cat /etc/hosts
```

In response, the system displays the information that has been datafilled.

Example of system response:

```
SAM21-CBM: /> cat /etc/hosts
```

```
#
# Internet host table
#
127.0.0.1      localhost
47.161.18.13  SAM21-CBM
47.161.18.13  cbm
47.161.18.12  cmt
47.161.18.188 SAM21-C-active
47.161.18.189 SAM21-C-inactive
47.161.18.190 SAM21-C-unit0
47.161.18.191 SAM21-C-unit1
```

7 Select the next step as follows:

If	Do
the alarmed Shelf Controller is not listed	step 8
the listed IP address of the alarmed Shelf Controller differs from its provisioned IP address	step 8
the alarmed Shelf Controller is listed, and its listed IP address is the same as its provisioned IP address	step 9

For instructions for finding out the provisioned IP address, see ["Prerequisites"](#) (page 31).

- 8** Your findings indicate that the Shelf Controller was provisioned improperly. Go to [step 20](#).
- 9** To verify that the Shelf Controller and the server can communicate, ping the Shelf Controller from the server.
- 10** Select the next step as follows:

If	Do
the ping action failed	step 11
the ping action succeeded	step 12

- 11 Investigate why the Shelf Controller and the server cannot communicate. Take corrective action. Then select the next step as follows:

If	Do
the alarm has cleared	step 21
the alarm has not cleared	start this procedure again at step 1

- 12 Type

```
> exportfs
```

and press the Enter key.

In response the system lists the exported directories, that is, the directories on the server that the SAM21 Shelf Controller can access.

Example of system response:

```
/data/swd/sam21 ro=SAM21-C-active:SAM21-C-inactive:
SAM21-C-
unit0:SAM21-C-unit1:SAM21-B-active:
SAM21-B-inactive: SAM21-B-
unit0:SAM21-B-unit1:SAM21B-0-active:
SAM21B-0-inactive:SAM21B-0-
unit0:SAM21B-0-unit1:SAM21C-1-active:
SAM21C-1-inactive:SAM21C-1-
unit0:SAM21C-1-unit1  ""
```

- 13 Inspect the system output, and verify whether the following directories are listed:

```
/swd/gwc
/swd/3pc
/swd/sam21
```

- 14 Select the next step as follows:

If	Do
all three directories are listed	step 19
If any of the three directories is missing	step 15

- 15 Type

```
> exportfs -a
```

and press the Enter key.

- 16 Check whether the preceding step corrected the problem. Type

Example of system response:

```

/data/swd/sam21    ro=SAM21-C-active:SAM21-C-inactive:
SAM21-C-
unit0:SAM21-C-unit1:SAM21-B-active:
SAM21-B-inactive: SAM21-B-
unit0:SAM21-B-unit1:SAM21B-0-active:
SAM21B-0-inactive:SAM21B-0-
unit0:SAM21B-0-unit1:SAM21C-1-active:
SAM21C-1-inactive:SAM21C-1-
unit0:SAM21C-1-unit1    ""
    
```

- 17** Inspect the system output, and verify whether the following directories are listed:

```

/swd/gwc
/swd/3pc
/swd/sam21
    
```

- 18** Select the next step as follows:

If	Do
all three directories are listed	step 19
any of the three directories is missing	step 20

- 19** Select the next step as follows:

If	Do
the alarm has cleared	step 21
the alarm has not cleared	step 20

- 20** Contact the next level of support.
- 21** You have completed the procedure.

—End—

Service alarm IDs

Service alarms apply to ATM networks. The following figure shows the Services section of the Alarm Browser window.

Services				
Service Name	Service ID	Time	Alarm Type	Se
CO10 OAMP	12	Fri Mar 08 08:55:5...	ATMMessagi...	Minor
CO10 Call Control	26	Fri Mar 08 08:55:5...	ATMMessagi...	Minor
CO13 Call Control	31	Fri Mar 08 08:51:5...	ATMMessagi...	Critica
CO13 OAMP	19	Fri Mar 08 08:51:5...	ATMMessagi...	Critica
CO14 Call Control	33	Fri Mar 08 08:56:0...	ATMMessagi...	Minor
CO14 OAMP	20	Fri Mar 08 08:56:0...	ATMMessagi...	Minor

Use the Service Name and Service ID to identify the Alarm.

The following table provides the service alarm IDs and remedy suggestions.

Service alarm codes

Service ID	Log Report	Remedy
7 or 9	none	<x>% of ATM Capacity Reached Review the ATM capacity Operational Measurements (OM) recorded to the host that provides the CS 2000 Management Tools. Use this data to characterize the interface usage and contact Nortel support personnel for assistance with re-engineering the network. The Service ID indicates the slot of the SAM21 Shelf Controller that exceeded the capacity threshold.
integer	none	If the alarm is for a Connection Set, refer to " ATM Connection alarms " (page 37).

Use the Reason text to determine the previous and current IP Path state for the active and inactive Connection Members (CM).

Example

```
ACT CM:FROM:Up TO:Up INACT CM:FROM:Down TO:Up
```

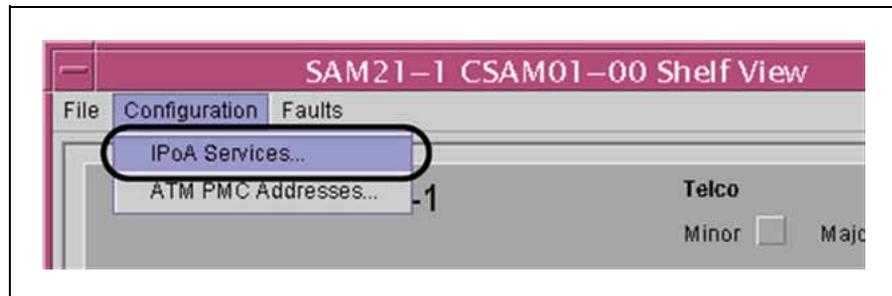
Refer to the ATM Connection alarms for more information about diagnosing ATM faults.

ATM Connection alarms

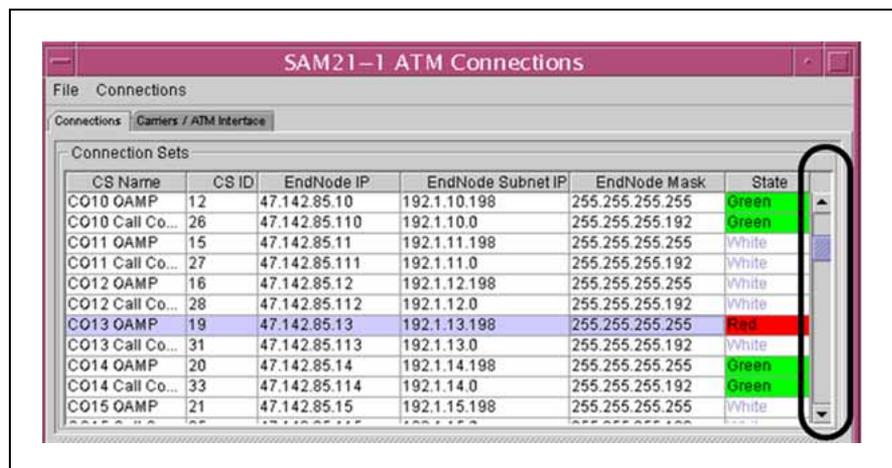
Step Action

At the CS 2000 SAM21 Manager client

- 1 Click on Configuration and then IPoA Services from the Shelf View to open the ATM Connections window.



- 2 Use the Connection Sets scroll bar to locate a Connection Set (CS) that is not Green, or use the Service ID from the Alarm Browser to locate the degraded CS and select the CS.

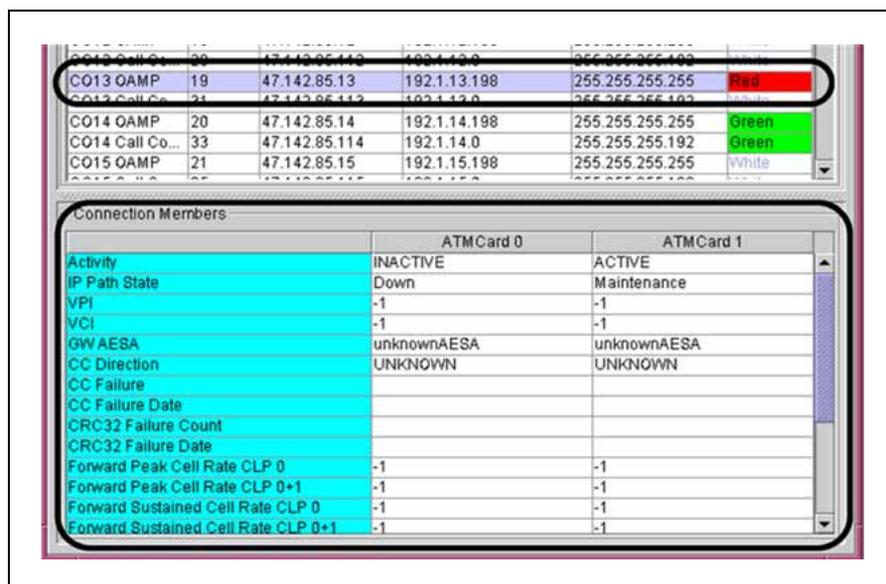


The following table provides information about the state colors.

State color	Meaning
white	The connection is in a maintenance state.
yellow	One connection member IP Path state is up and the IP Path state on the active Shelf Controller is not maintenance.

State color	Meaning
green	The IP Path state for both active and inactive Shelf Controller is up.
red	The IP Path state for the active and inactive Shelf Controllers is not up
or	
	The IP Path state for the inactive Shelf Controller is up, but the IP Path state for the active Shelf Controller is maintenance.

3 Review the data in the Connection Members area.



The following table provides information about the Connection Members area.

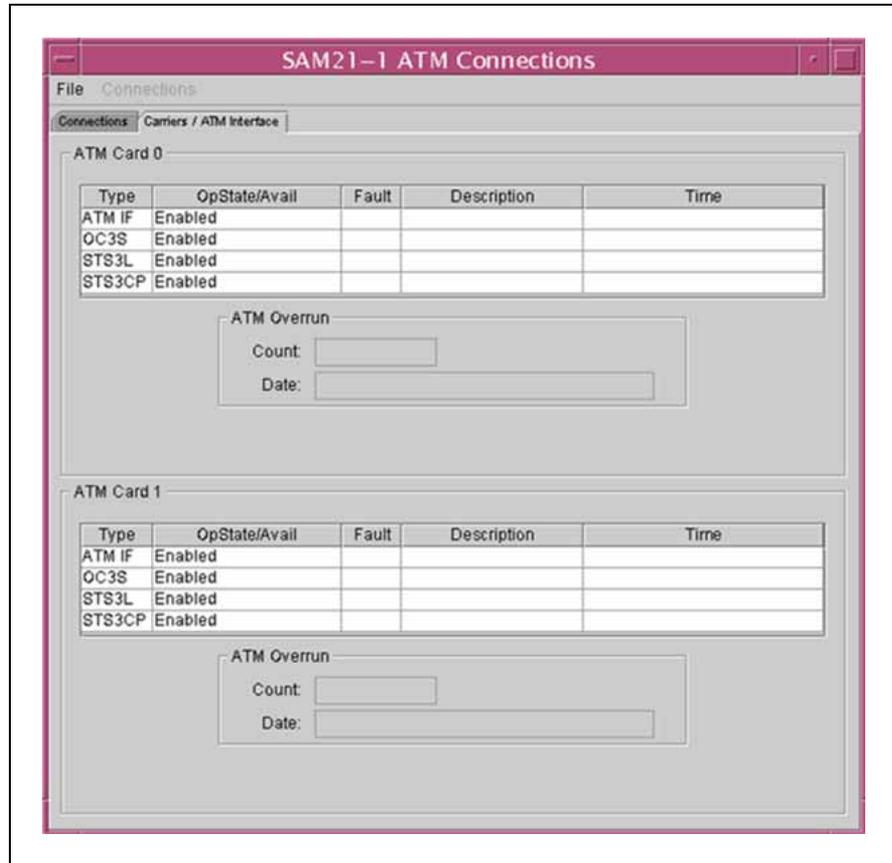
Field	Value	Meaning	Action
Activity	ACTIVE or INACTIVE	This indicates which Shelf Controller is active.	
IP Path State	Up	Connectivity is established with the far end node.	
	Down	Connectivity is not available to the far end node.	

Field	Value	Meaning	Action
	Maintenance	The Shelf Controller is locked or the far end node is not attempting to signal.	
	Redirect	Fiber connectivity between the active Shelf Controller and the far end node is lost. Signalling is carried between the inactive Shelf Controller and the far end node, but processing is completed by the active Shelf Controller.	Determine if a fiber is pulled or if a fiber repair is needed.
VPI	integer	Virtual Path Identifier	
VCI	integer	Virtual Channel Identifier	
GW AESA	20 hexadecimal pairs or unknownAESA	This is the address of the far end node. The first 14 bytes indicate the network identifier, the last 6 bytes indicate the host. "unknownAESA" indicates that connectivity is unavailable.	If the value is unknown, determine if the fiber connection is available.
CC Direction	UNKNOWN, CCinactive, CCsend, CCreceive, CCsendAndReceive	This value indicates the Continuity Checking value provisioned at the far end node.	
CC Failure	CCfailure or blank	Blank indicates no continuity check failures. CCfailure indicates that the far end node did not reply to a periodic audit.	Verify that the fiber connections are tight at the near and far end. Initiate diagnostics on the far end node interface card to verify hardware integrity.
CC Failure Date	date	This value indicates the date of the latest CC Failure.	

Field	Value	Meaning	Action
CRC Failure Count	integer	This value indicates the cumulative number of CRC32 failures.	Zero failures are expected in a lightly loaded network. If CRC failures appear, verify that the fiber connections are clean. If the network is heavily loaded, consider re-engineering the network.
CRC Failure Date	date	This value indicates the date of the latest CRC failure.	

Note: The other values on this panel are configured at the far end node and are not used for troubleshooting.

- 4 Review the data on the Carriers tab.



The following table provides information about the Carriers panel.

Fault	Action
LOS LOF	These section, line, and path faults indicate that SONET connectivity between the SAM21 Shelf Controller and the far end node is unavailable on one fiber.
AIS-L RDI-L	
AIS-P RDI-P	Check the fibers and connections between the SAM2 Shelf Controller and the far end node.
LOP	

Fault	Action
ATM Overrun Count	This field indicates the number of times cells were dropped. The cells were dropped because due to a shortage of buffer space. Verify the following items: <ul style="list-style-type: none">• the ATM network between the SAM21 Shelf Controller and the far end node is not overloaded• the network does not have a babbling NE
ATM Overrun Date	This field indicates the date of the last overrun.

5 This procedure is complete.

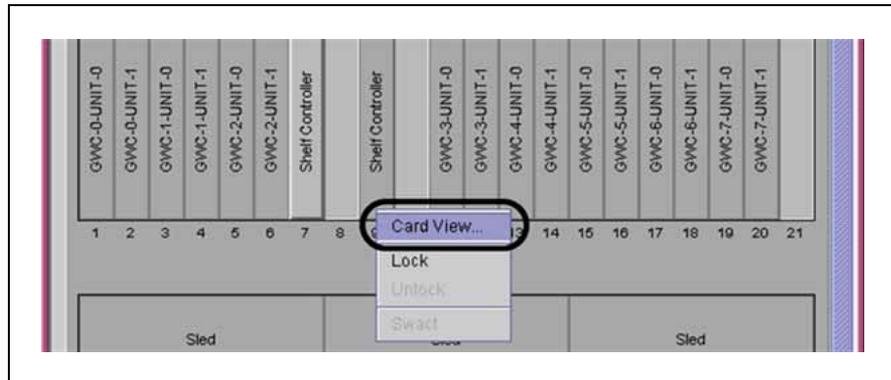
—End—

Run diagnostics

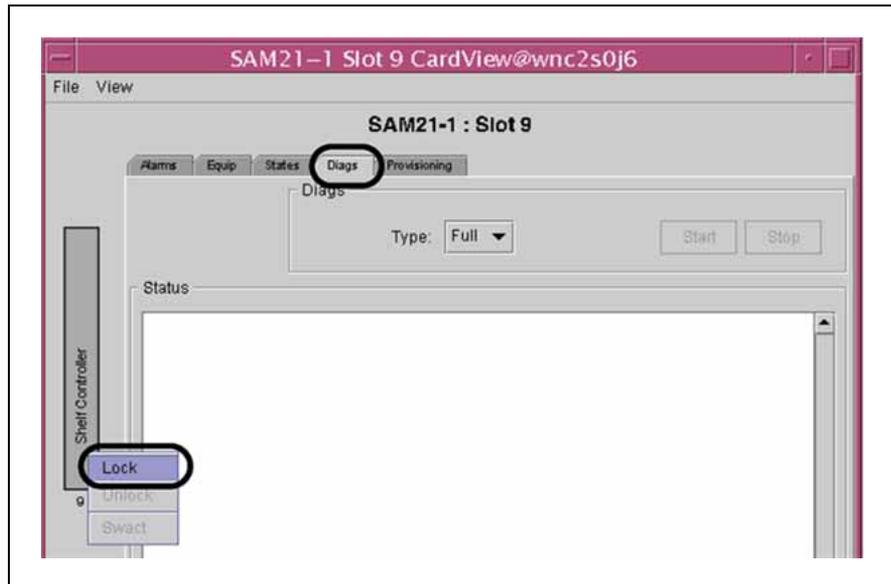
Step	Action
------	--------

At the CS 2000 SAM21 Manager client

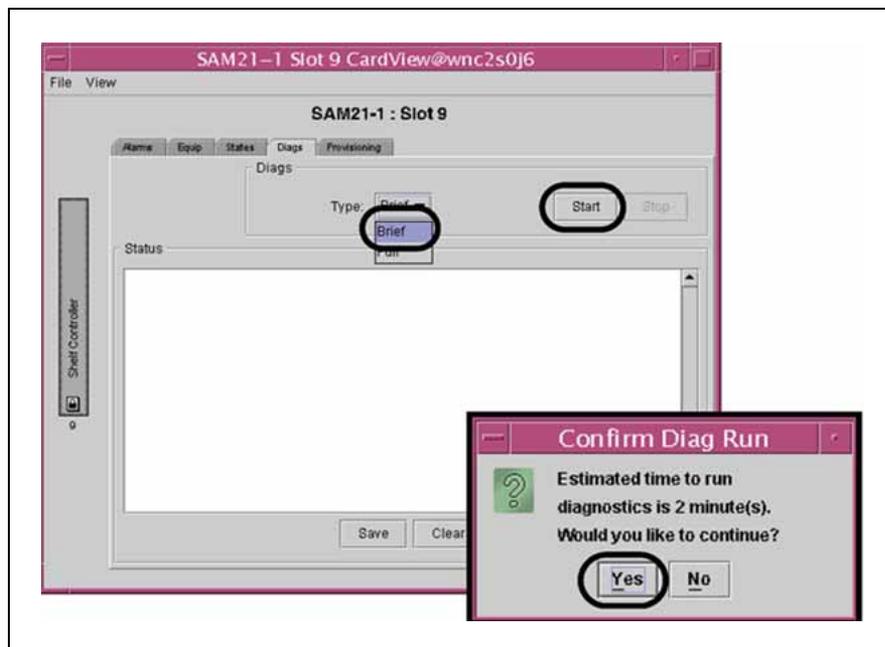
- 1 Open the Card View window for the SAM21 Shelf Controller.



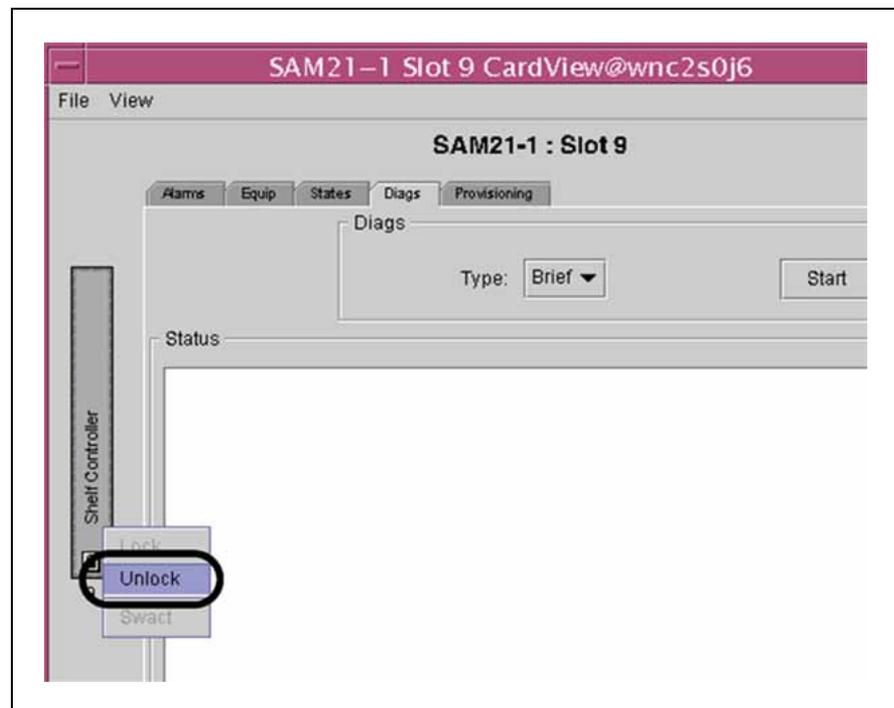
- 2 Click on the Diags tab and Lock the SAM21 Shelf Controller from the card icon.



- 3 Select Brief or Full diagnostics and then Click Start and confirm the diagnostic run prompt.



- 4 Wait for diagnostics to complete and to indicate Success.
If diagnostics fail, retry Brief and then Full. If either diagnostic fails, contact Nortel support personnel for assistance with replacing the SAM21 Shelf Controller card.
- 5 Optionally save the diagnostic messages to a file by clicking the Save button.
- 6 Unlock the SAM21 Shelf Controller.



7 This procedure is complete.

—End—

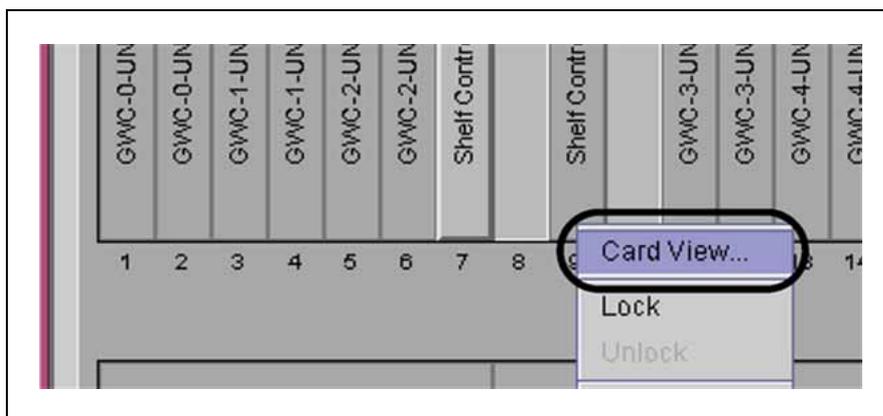
SAM21 Shelf Controller status history retrieval

The SAM21 Shelf Controller does not provide alarm history. The SAM21 Shelf Controller does provide a history of the card status.

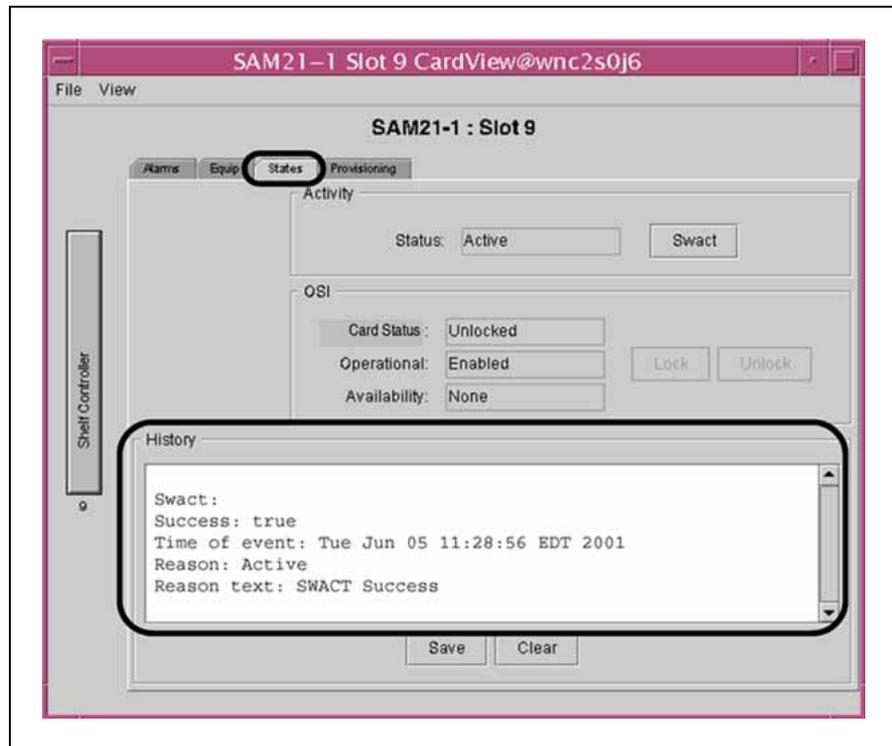
Step Action

At the CS 2000 SAM21 Manager client

- 1 From the Shelf View, right click on the SAM21 Shelf Controller and select Card View from the context menu to bring up the Card View window.



- 2 Select the States tab from the SAM21 Shelf Controller window.



3 This procedure is complete.

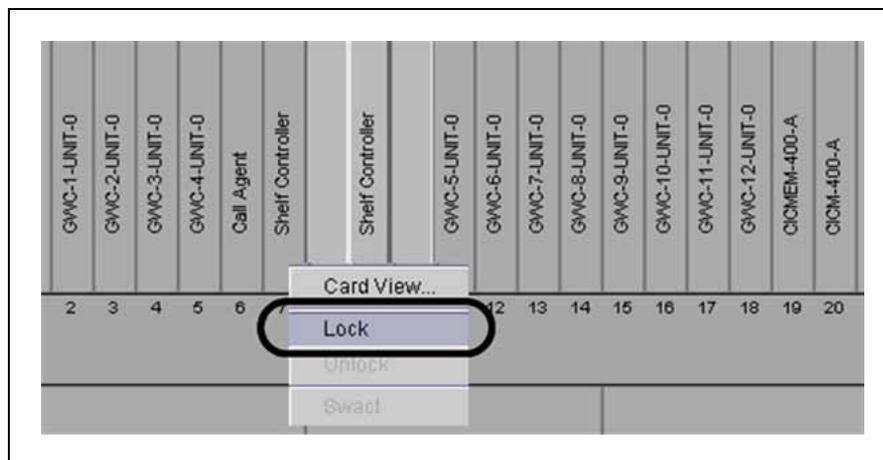
—End—

SAM21 Shelf Controller reload or restart

Step Action

At the CS 2000 SAM21 Manager client

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



- 2 Wait for the lock icon to appear on the selected card and the other SAM21 Shelf Controller to indicate that it is in simplex (alarm 2C on the other SAM21 Shelf Controller).
- 3 Right click on the card again and select Unlock from the context menu.
- 4 The card resets, downloads software, and reboots.
- 5 This procedure is complete.

—End—

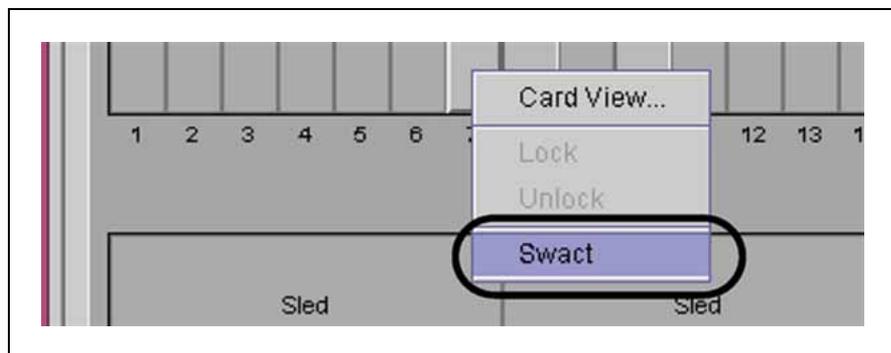
SAM21 Shelf Controller removal or replacement

Step	Action
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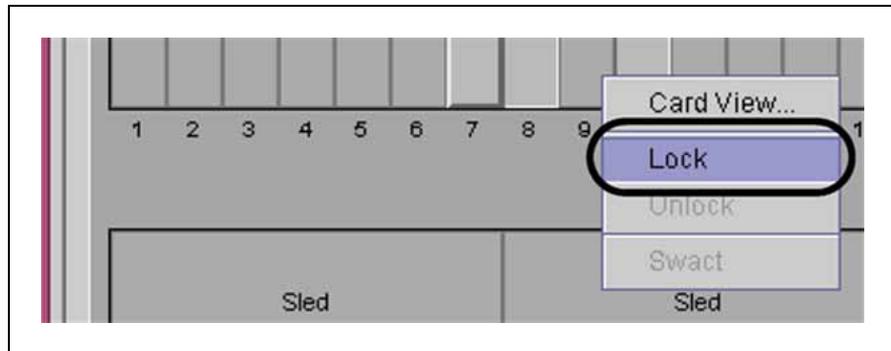
At the CS 2000 SAM21 Manager client

- 1 If the SAM21 Shelf Controller to be replaced is not inactive, Swact the SAM21 Shelf Controllers by right clicking on the SAM21 Shelf Controller in the Shelf View and selecting Swact from the context menu.

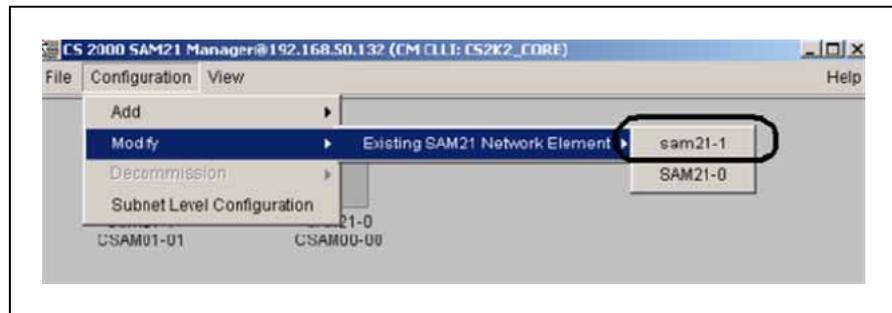
If the SAM21 Shelf Controller is configured with an ATM interface, perform the Swact at a period of low activity.



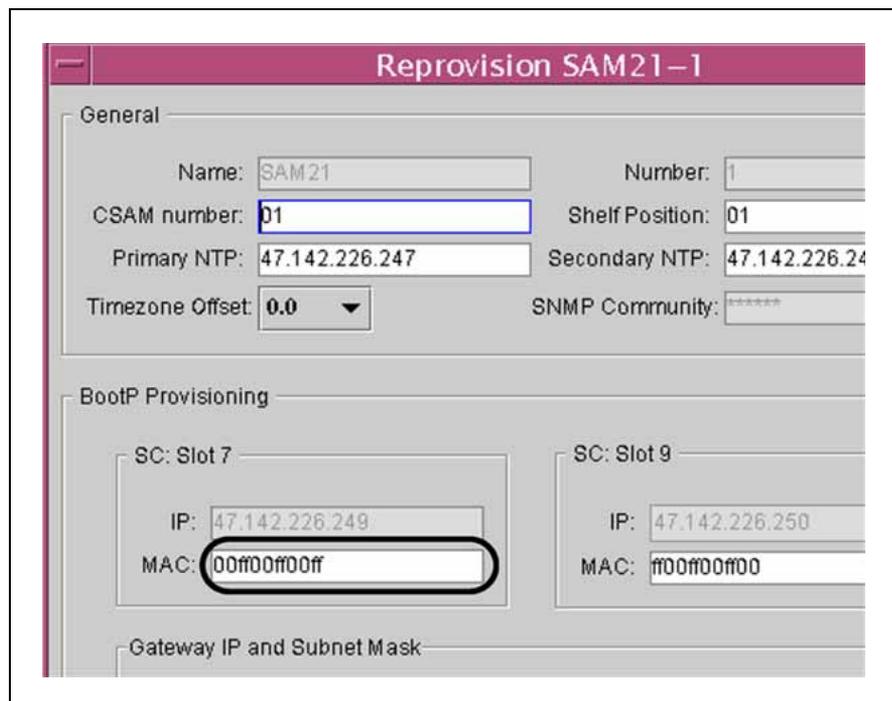
- 2 Lock the SAM21 Shelf Controller.



- 3 From the Subnet View window, select Configuration, Modify, Existing SAM21 Network Element, and then the SAM21 shelf from the menu bar.



- 4 Change the MAC address provisioning to the MAC address of the replacement SAM21 Shelf Controller. The MAC address is printed on the faceplate of the SAM21 Shelf Controller.



- 5 Select the Save button from the Reprovision window to commit the change.

At the SAM21 frame

- 6 Unlock the ejector levers on the SAM21 Shelf Controller card. Verify that the green LED is not lit and that the red LED is lit. If the green LED is lit, then this SAM21 Shelf Controller is not locked and is not the SAM21 Shelf Controller to replace.
- 7 Remove the SAM21 Shelf Controller card and replace with the new SAM21 Shelf Controller card.

Hold the replacement SAM21 Shelf Controller card by the latches and insert the SAM21 Shelf Controller by holding the latches. Do not push on the faceplate.

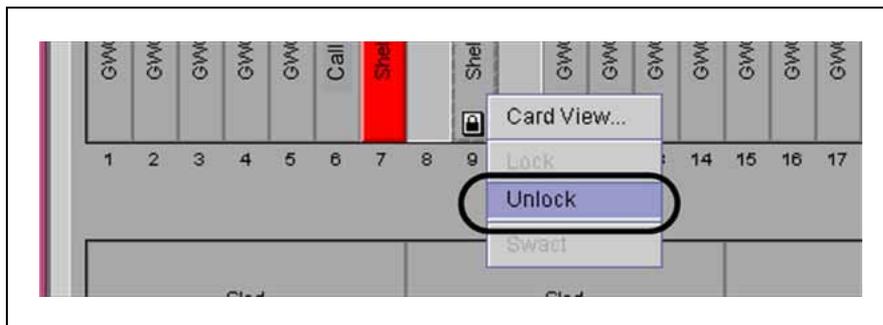
Note: Verify that the CPU LED lights. If the CPU LED does not light, reseal the card. If the CPU LED fails to light a second time, replace the card.

At the CS 2000 SAM21 Manager client

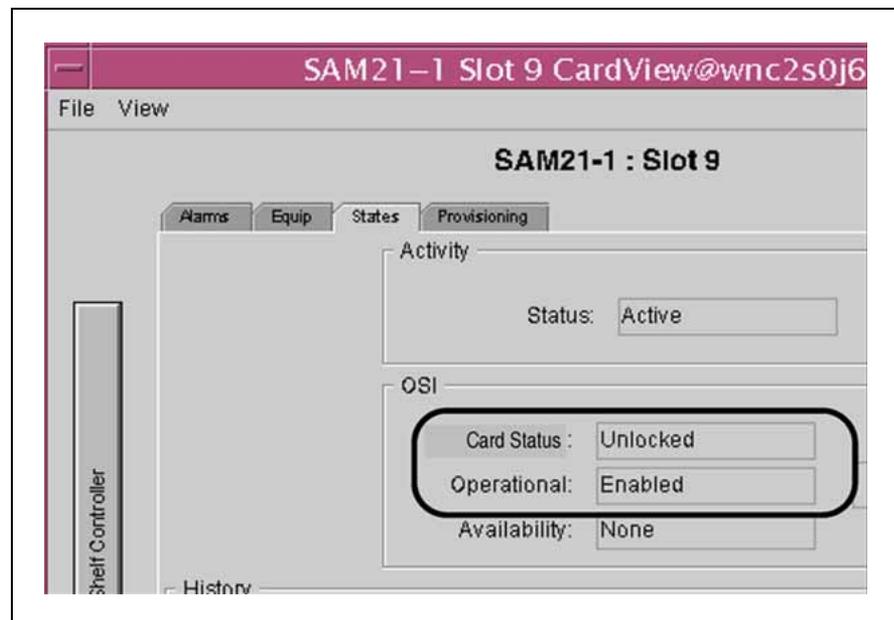
- 8 Wait for the SAM21 Shelf Controller to appear in the Shelf View window.
- 9 Right click on the card icon and select Unlock from the card context menu.

Note 1: If the replacement SAM21 Shelf Controller has the current firmware revision, then the SAM21 Shelf Controller unlocks.

Note 2: If the replacement SAM21 Shelf Controller firmware requires an update, then the active SAM21 Shelf Controller unlocks the replacement SAM21 Shelf Controller and downloads the updated firmware. The active SAM21 Shelf Controller then applies the firmware, but does not boot the replacement. The card icon appears with a dashed outline and no lock icon. Refer to "SAM21 Shelf Controller does not unlock" in *SAM21 Shelf Controller Upgrades*, NN10067-461.



- 10 Right click on the SAM21 Shelf Controller icon and select Card View from the context menu.
- 11 Select the States tab from the Card View window and wait for the Card Status field to indicate Unlocked and the Operational field to indicate Enabled.



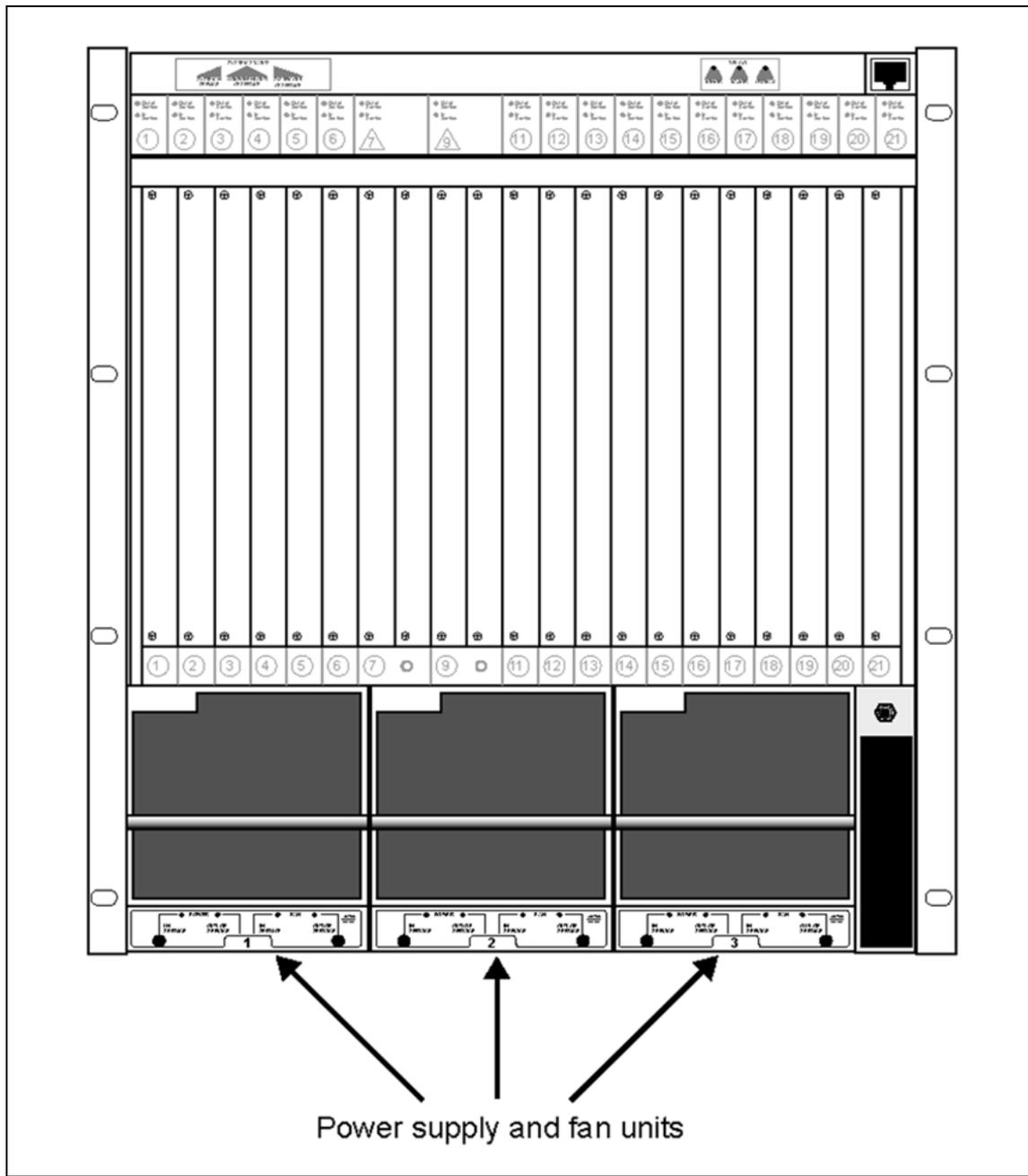
12 This procedure is complete.

—End—

SAM21 Power Supply and Fan Unit removal or replacement

The following figure shows the locations of the SAM21 Power Supply and Fan Units, as viewed from the front of the SAM21 shelf.

SAM21 Power Supply and Fan Units, seen from the front of the shelf



Step Action

At the SAM21 frame

- 1 Obtain a replacement SAM21 Power Supply and Fan Unit. Ensure that the PEC of the replacement SAM21 Power Supply and Fan Unit is NTRX51BC.

Note: The SAM21 Power Supply and Fan Unit is also known as a sled.

- 2 Loosen the two captive screws located at the bottom of the SAM21 Power Supply and Fan Unit using a Phillips screwdriver.

**DANGER****Risk of Electrocution**

Do not touch any of the exposed leads or terminals. Hazardous voltages, capable of causing death, may be present.

- 3 Use the handle on the front of the SAM21 Power Supply and Fan Unit to pull unit out of the chassis. Pull slowly and support the SAM21 Power Supply and Fan Unit from the bottom.

Alarms will appear on the SAM21 Element Manager as you remove the Power Supply and Fan Unit from the chassis.

- 4 Wait for the fan to stop rotating.
- 5 Lift the back edge of the SAM21 Power Supply and Fan Unit over the front lip of the chassis.

**WARNING****Equipment damage**

Do not operate the chassis for more than one minute without a SAM21 Power Supply and Fan Unit. Do not allow the SAM21 Power Supply and Fan Unit to bounce when it is inserted in the chassis. If the SAM21 Power Supply and Fan Unit bounces, an alarm condition may be raised in the system. Do not force the SAM21 Power Supply and Fan Unit into the slot in the chassis.

- 6 Insert the replacement SAM21 Power Supply and Fan Unit into the chassis using a single and steady motion. Use the guides on the chassis and the rails on the SAM21 Power Supply and Fan Unit to properly align the sled when it is inserted.

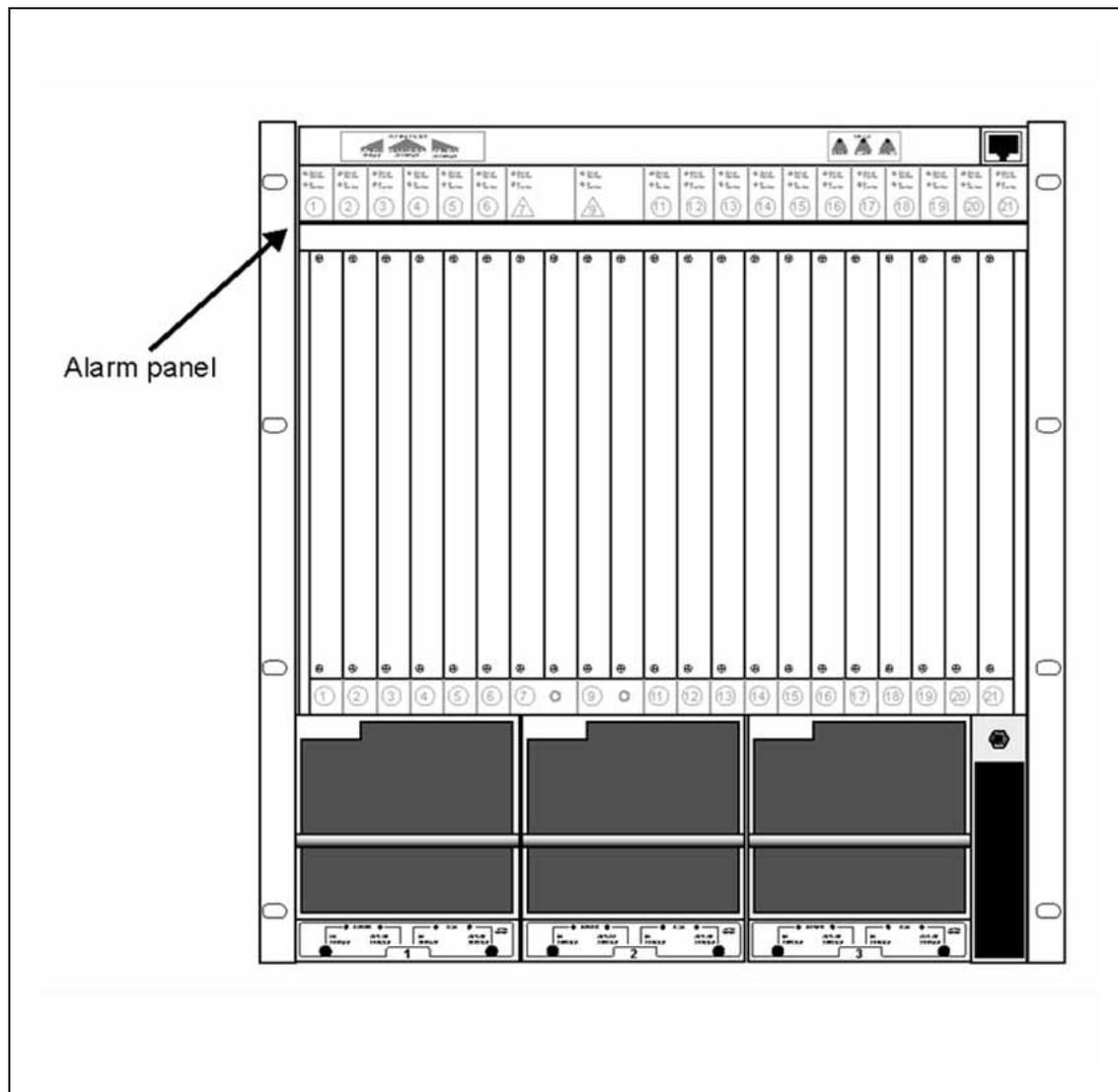
- 7 Tighten the two captive screws located at the bottom of the SAM21 Power Supply and Fan Unit using a Phillips screwdriver.
- 8 This procedure is complete.

—End—

SAM21 Alarm Panel removal or replacement

The following figure shows the location of the SAM21 Alarm Panel, as viewed from the front of the SAM21 shelf.

SAM21 Alarm Panel, seen from the front of the shelf



Step	Action
------	--------

At the SAM21 frame

- | | |
|---|---|
| 1 | Obtain a replacement SAM21 Alarm Panel. Ensure that the PEC of the replacement SAM21 Alarm Panel is NTRX51BD. |
|---|---|

- 2 Loosen the two captive screws located at the top of the SAM21 Alarm Panel using a Phillips screwdriver.
- 3 Disconnect the shelf alarm cable from the alarm panel output connector. The alarm panel output connector is an RJ-45 connector located in the upper right corner.
- 4 Pull the top of the SAM21 Alarm Panel away from the chassis. The panel rotates down.
- 5 Guide the two tabs at the bottom of the SAM21 Alarm Panel out of their slots in the chassis.
- 6 Remove the alarm cable and the power feed alarm cable from the faulty SAM21 Alarm Panel.

The alarm cable is a ribbon cable. Remove the alarm cable by pushing the two retaining clips out, which forces the connector off of the header. When the alarm cable is removed, the system may generate an alarm.

The power feed alarm cable is a three-conductor cable. Remove the power feed alarm cable by pushing the retaining clip down and pulling the connector off of the header. When the power feed alarm cable is removed, the system may generate an alarm.
- 7 Attach the alarm cable and the power feed alarm cable to the replacement SAM21 Alarm Panel.

To attach the alarm cable, push the connector on the alarm cable into header J4 on the replacement SAM21 Alarm Panel. Gently squeeze the retaining clips toward each other to ensure that the retaining clips are fully closed and that the connector is fully seated.

To attach the power feed alarm cable, push the connector on the power feed alarm cable into header J3 on the replacement SAM21 Alarm Panel.

Note: The cable connector and header are keyed: they fit together only in the correct direction. The retaining clips close automatically as the connector is seated.
- 8 Guide the tabs at the bottom of the SAM21 Alarm Panel toward the top of the chassis.
- 9 Push the top of the SAM21 Alarm Panel toward the top of the chassis.
- 10 Tighten the two captive screws located at the top of the SAM21 Alarm Panel using a Phillips screwdriver.

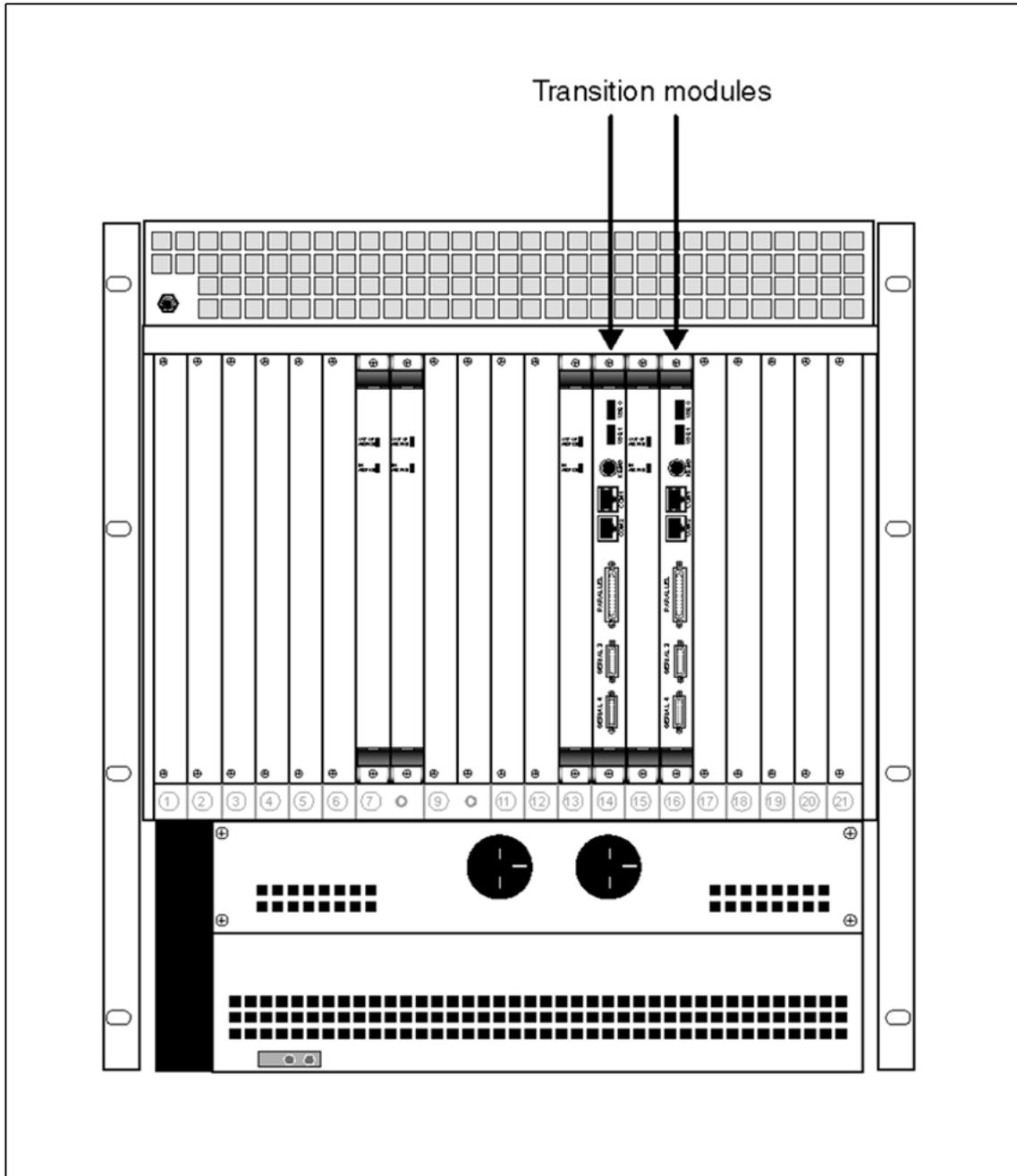
This procedure is complete.

—End—

SAM21 Transition Module removal or replacement

The following figure shows the locations of the SAM21 Transition Modules, as viewed from the rear of the SAM21 shelf.

SAM21 Transition Modules, seen from the rear of the shelf



Step Action

At the SAM21 Manager Client

- 1 Lock the SAM21 Shelf Controller on which the SAM21 Transition Module to be removed or replaced resides. Lock the SAM21 Shelf Controller by right clicking on the SAM21 Shelf Controller in the Shelf View and selecting Lock from the context menu.

At the front of the SAM21 frame

- 2 Attach a wrist strap to the wrist-strap grounding point in the SAM21 frame.

**CAUTION****Static electricity damage**

To handle cards, wear a wrist strap that connects to the wrist-strap grounding point. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

- 3 Unlock the ejector levers on the SAM21 Shelf Controller card. Verify that the green LED is not lit and that the red LED is lit.
- 4 Remove the SAM21 Shelf Controller card and set it in a safe location.

At the rear of the SAM21 frame

- 5 Attach a wrist strap to the wrist-strap grounding point in the SAM21 frame.

**CAUTION****Static electricity damage**

To handle cards, wear a wrist strap that connects to the wrist-strap grounding point. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

- 6 Obtain a replacement SAM21 Transition Module. Ensure that the PEC of the replacement SAM21 Transition Module is NTRX51BK.
- 7 Loosen the attaching screws on the faulty SAM21 Transition Module using a Phillips screwdriver.
- 8 Remove the faulty SAM 21 Transition Module.
- 9 Insert the replacement SAM21 Transition Module into the chassis slot. Ensure that the J3/J4/J5 connector pins are aligned with the backplane connector pins.

- 10** Tighten the attaching screws using a Phillips screwdriver.

At the SAM21 frame

- 11** Replace the SAM21 Shelf Controller card.

Hold the SAM21 Shelf Controller card by the latches and insert the SAM21 Shelf Controller card by holding the latches. Do not push on the faceplate.

Note: Verify that the CPU LED lights. If the CPU LED does not light, reseal the card.

At the SAM21 Manager Client

- 12** Wait for the SAM21 Shelf Controller to appear in the Shelf View window.
- 13** Right click on the card icon and select Unlock from the context menu.
- 14** Right click on the SAM21 Shelf Controller icon and select Card View from the context menu.
- 15** Select the States tab from the Card View window and wait for the Card Status field to indicate Unlocked and the Operational field to indicate Enabled.

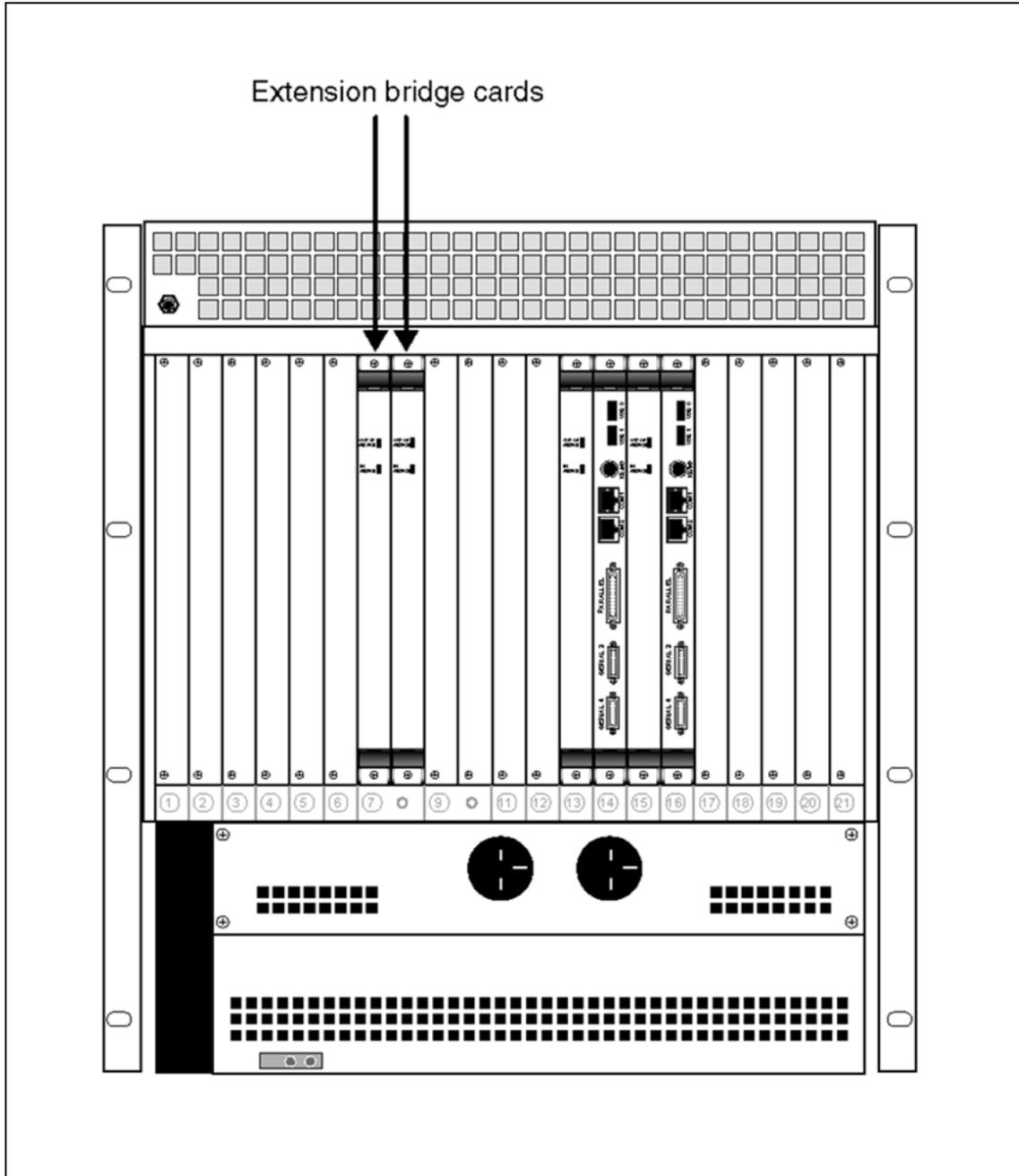
This procedure is complete.

—End—

SAM21 Extension Bridge removal or replacement

The following figure shows the locations of the SAM21 Extension Bridge cards, as viewed from the rear of the SAM21 shelf.

SAM21 Extension Bridge cards, seen from the rear of the shelf



Step Action

At the rear of the SAM21 frame

- 1 Obtain a replacement SAM21 Extension Bridge. Ensure that the PEC of the replacement SAM21 Extension Bridge is NTRX51BS.
- 2 Examine the LEDs on the SAM21 Extension Bridges, which are located in slots 15 and 16 at the rear of the chassis. The solid green LED indicates the active SAM21 Extension Bridge. The flashing green LED indicates the standby SAM21 Extension Bridge.

Do not de-latch or remove both SAM21 Extension Bridges. Removing both SAM21 Extension Bridges removes slots 15 to 21 from service.

If an active SAM21 Extension Bridge is to be replaced, SWACT the active SAM21 Extension Bridge by unlocking the ejector levers on the SAM21 Extension Bridge.
- 3 Attach a wrist strap to the wrist-strap grounding point in the SAM21 frame.

**CAUTION****Static electricity damage**

To handle cards, wear a wrist strap that connects to the wrist-strap grounding point. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

- 4 Loosen the screws at the top and bottom of the SAM21 Extension Bridge using a Phillips screwdriver.
 - 5 Unlock the ejector levers on the SAM21 Extension Bridge that has the flashing green LED.
 - 6 Watch for the flashing green LED to go out and the red LED to light. An alarm is generated on the SAM21 Element Manager indicating that a SAM 21 Extension Bridge is out of service. An SCU301 log is generated when the SAM21 Extension Bridge is removed.
 - 7 Remove the faulty SAM21 Extension Bridge.
 - 8 Insert the replacement SAM21 Extension Bridge.

Hold the replacement SAM21 Extension Bridge by the latches and insert the SAM21 Extension Bridge by holding the latches. Do not push on the faceplate.
 - 9 Verify that the green LED is flashing. If the green LED is not flashing, reseal the SAM21 Extension Bridge.
-

- 10 Tighten the screws at the top and bottom of the SAM21 Extension Bridge using a Phillips screwdriver.

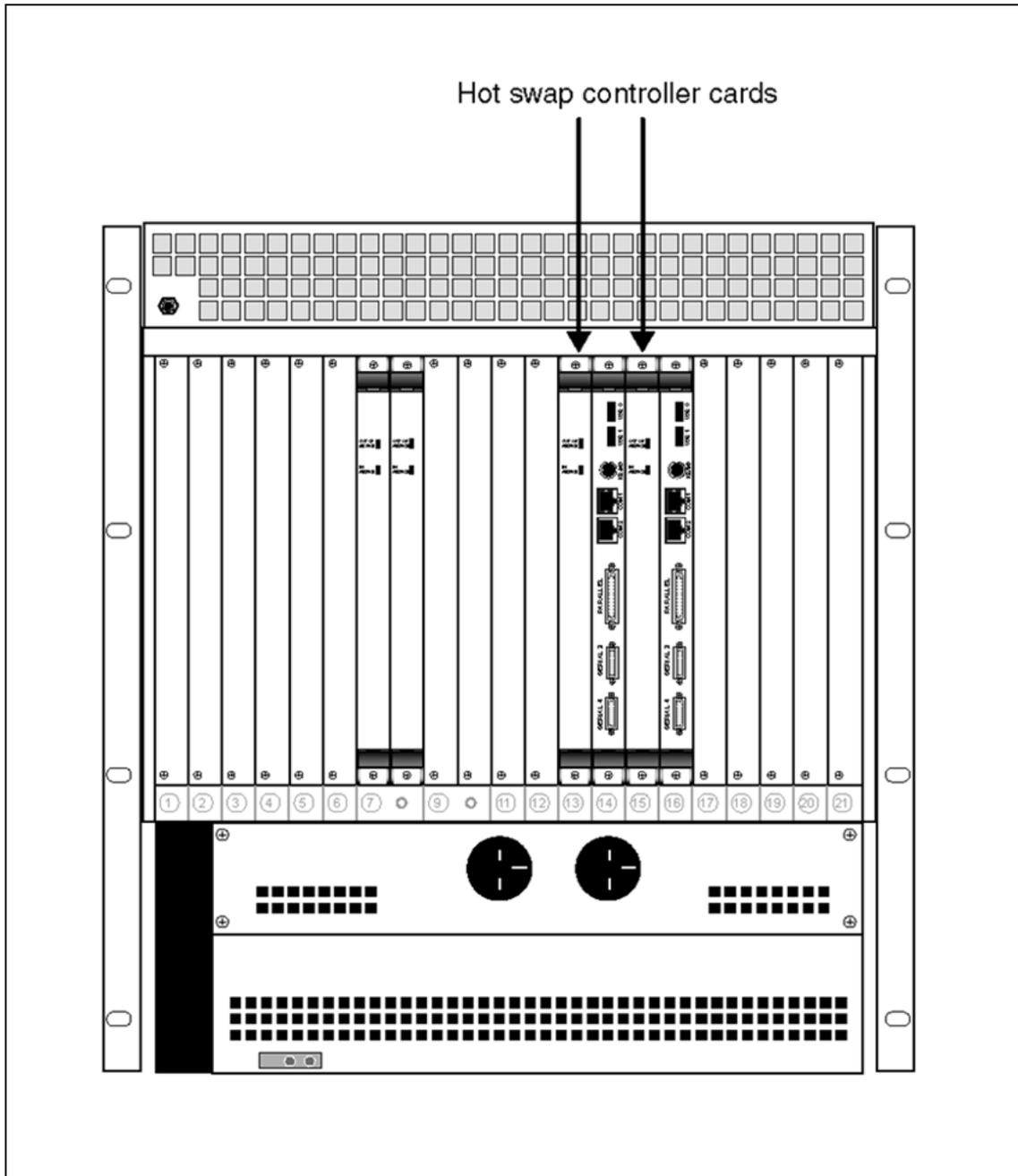
This procedure is complete.

—End—

SAM21 Hot Swap Controller removal or replacement

The following figure shows the locations of the SAM21 Hot Swap Controller cards, as viewed from the rear of the SAM21 shelf.

SAM21 Hot Swap Controller cards, seen from the rear of the shelf



Step Action

At the SAM21 Manager Client

- 1 Lock the SAM21 Shelf Controller corresponding to the SAM21 Hot Swap Controller to be removed or replaced. The SAM21 Shelf Controller in slot 7, front, corresponds to the Hot Swap Controller in slot 10; the SAM21 Shelf Controller in slot 9, front, corresponds to the Hot Swap Controller in slot 8. Lock the SAM21 Shelf Controller by right clicking on the SAM21 Shelf Controller in the Shelf View and selecting Lock from the context menu.

At the rear of the SAM21 frame

- 2 Obtain a replacement SAM21 Hot Swap Controller. Ensure that the PEC of the replacement SAM21 Hot Swap Controller is NTRX51FT.
- 3 Attach a wrist strap to the wrist-strap grounding point in the SAM21 frame.

**CAUTION****Static electricity damage**

To handle cards, wear a wrist strap that connects to the wrist-strap grounding point. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

- 4 Watch for the solid green LED to go out and the red LED to light.
- 5 Loosen the captive screws at the top and bottom of the faceplate using a Phillips screwdriver.
- 6 Unlock the ejector levers to partially unseat the SAM21 Hot Swap Controller from the backplane connectors.
- 7 Remove the SAM21 Hot Swap Controller from the chassis.
When you remove the Hot Swap Controller, the corresponding SAM21 Shelf Controller becomes invisible to the SAM21 Manager.
- 8 Insert the replacement SAM21 Hot Swap Controller.
- 9 Tighten the captive screws at the top and bottom of the faceplate using a Phillips screwdriver.

At the SAM21 Manager Client

- 10 Wait for the corresponding SAM21 Shelf Controller to re-appear in the Shelf View. (The corresponding SAM21 Shelf Controller is

the one that corresponds to the Hot Swap Controller that has been replaced.)

- 11 Unlock the SAM21 Shelf Controller on which the replacement SAM21 Hot Swap Controller resides by right clicking on the SAM21 Shelf Controller in the Shelf View and selecting Unlock from the context menu.

This procedure is complete.

—End—

Carrier VoIP

SAM21 Shelf Controller Fault Management

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