Alarms and Alarm Management

This chapter describes the CEMF alarms generated by the C65/76M software and provides an overview of the CEMF Event Browser application. The chapter consists of these sections:

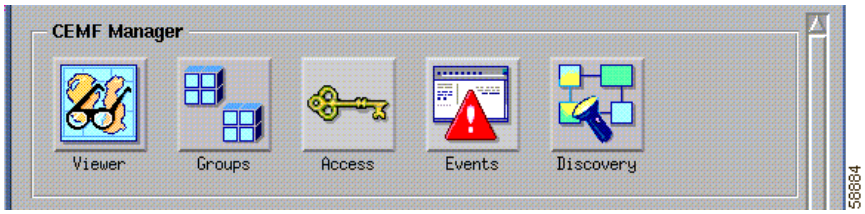
For more information on the CEMF Event Browser application, refer the *Cisco Element Management Framework User Guide v3.2*.

Viewing C65/76M Alarms

You can view all alarms generated by the C65/76M application by using the CEMF Event Browser application. The CEMF Event Browser application allows you to view all events generated by CEMF, including alarms generated by other event managers installed on the system.

The Event Browser application can be started from the main CEMF Launchpad. From the CEMF Launchpad, click the **Events** icon to launch the Event Browser (see Figure 8-1).

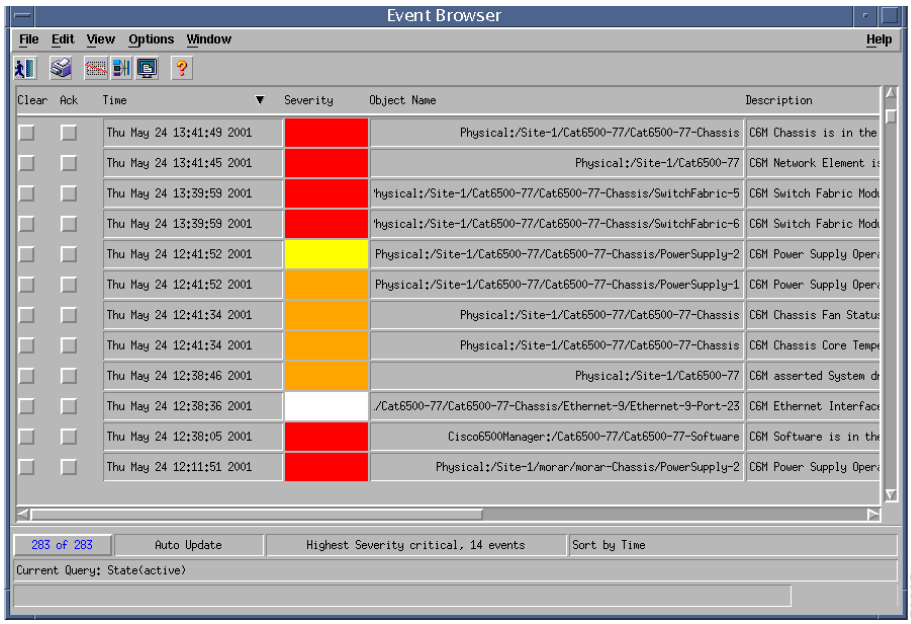
Figure 8-1 Launching Event Browser



Event Browser

The Event Browser dialog box is shown in Figure 8-2.

Figure 8-2 CEMF Event Browser Application



The Event Browser dialog box displays the following information in a tabular format:

- Time and date when an event was reported
- Object name that was affected
- Description and severity of the event

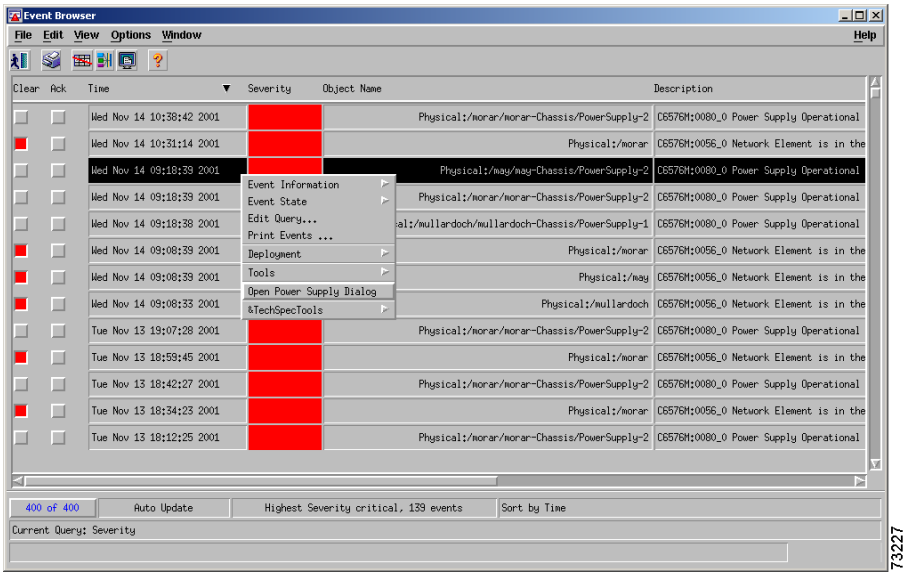
All CEMF events are saved within the Event Browser application, which displays current and historical data of events. All network objects are color-coded, indicating their operational status. Alarms are moved up the element hierarchy according to severity. Table 8-1 identifies the alarm types and their associated color codes.

Table 8-1 Alarm Color Codes

Alarm Type	Color
Critical	Red
Major	Orange
Minor	Yellow
Informational	White

You can launch a dialog box to the object that caused the alarm by choosing the **Open Dialog** option in the pop-up menu of the alarm entry, shown in Figure 8-3.

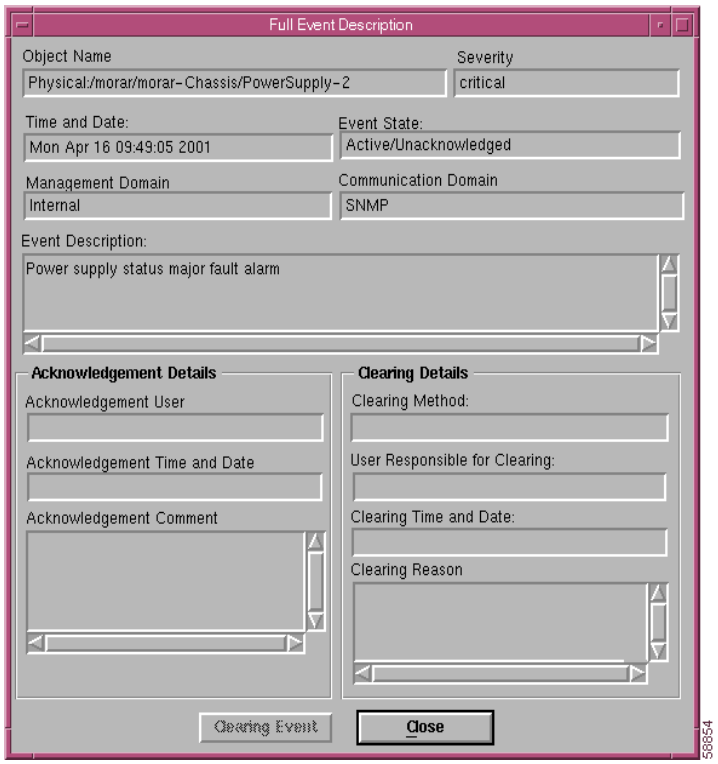
Figure 8-3 Launching the Dialog to the Affected Object From the Event Browser



Full Event Description Dialog

The Full Event Description dialog box, shown in Figure 8-4, displays full details of an alarm event listed in the Event Browser. Launch this dialog by double-clicking the event in the Event Browser.

Figure 8-4 Full Event Description Dialog Box



Note When the event has not been cleared, the Event State displays Active and the Clearing Method, User Responsible for Clearing, Clearing Time and Date, and Acknowledgement Details sections are disabled. You cannot alter the displayed information. When an event has been cleared, you can view the method used to clear it by clicking the **Clearing Event** button.

The Full Event Description dialog box displays the following information:

- Object name—Name of the CEMF-managed object the event was reported against.
- Time and Date—Time and date the event was reported.
- Severity—Severity of the reported event.
- Source Domain—Indicates from which Communications domain the event was reported.
- Management Domain—Indicates from which Management domain the event was reported.
- Event Description—Provides a brief description of the reported event.
- Event State—Indicates whether the event is active or cleared. When the event has been cleared, the Clearing Method, User Responsible for Clearing, and Clearing Time and Date sections become active.

Clearing Details Area

The Clearing Details area of the Full Event Description dialog box displays the following information:

- Clearing Method—Indicates when the event was cleared by the network or by a user.
- User Responsible for Clearing—Displays the user name responsible for clearing the event.
- Clearing Time and Date—Indicates the time and date the event was cleared.
- Clearing Reason—Displays the information that was entered in the Events Clearing dialog, which is completed when the Clear button is selected.

Clearing Details Area

The Acknowledgement Details area of the Full Event Description dialog box displays the following information:

- Acknowledgement User—Displays the name of the user that acknowledged the alarm.
- Acknowledgement Time and Date—Displays the time and date that the alarm was acknowledged.
- Acknowledgement Comment—Displays acknowledgement comments.

Click **Close** to exit the Full Event Description dialog. Click **Close** to exit the Event Browser dialog. Refer to the *Cisco Element Management Framework User Guide* for further information on Event Browser.

C65/76M Alarms

The C65/76M generates three types of alarms:

- SNMP Trap Alarms—CEMF alarms based on SNMP traps emitted by the Catalyst 6000 family switch or Cisco 7600 series Internet Router running IOS.
- Object State Alarms—CEMF alarms based on the state of the C65/76M objects.
- Attribute Value Alarms—CEMF alarms based on values of C65/76M object attributes.

SNMP Trap Alarms

Table 8-2 lists the SNMP traps supported by a Catalyst 6000 family switch or a Cisco 7600 series Internet Router and the corresponding CEMF alarm.

Table 8-2 CEMF Alarms Generated by SNMP Traps

Trap/Varbind	Message	Alarm Severity	Object	Alarms Cleared
coldStart	C6576M:0132_0 Cold Start: Agent reinitializing: configuration may have changed.	Major	Network Element	
warmStart	C6576M:0132_0 Warm Start: Agent reinitializing: configuration may have changed.	Major	Network Element	
authenticationFailure	C6576M:0133_0 Authentication Failure: Unauthorized SNMP access.	Minor	Network Element	None
ciscoFlashCopyCompletionTrap	N/A	N/A	N/A	N/A
ciscoFlashMiscOpCompletionTrap	N/A	N/A	N/A	N/A
clogMessageGenerated clogHistSeverity = emergency(1)	C6576M:0137_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Critical	Syslog	None
clogMessageGenerated clogHistSeverity = alert(2)	C6576M:0138_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Critical	Syslog	None
clogMessageGenerated clogHistSeverity = critical(3)	C6576M:0139_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Critical	Syslog	None
clogMessageGenerated clogHistSeverity = error(4)	C6576M:0140_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Major	Syslog	None
clogMessageGenerated clogHistSeverity = warning(5)	C6576M:0141_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Minor	Syslog	None

Table 8-2 CEMF Alarms Generated by SNMP Traps (continued)

Trap/Varbind	Message	Alarm Severity	Object	Alarms Cleared
clogMessageGenerated clogHistSeverity = notice(6)	C6576M:0142_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Minor	Syslog	None
clogMessageGenerated clogHistSeverity = info(7)	C6576M:0143_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Informational	Syslog	None
clogMessageGenerated clogHistSeverity = debug(8)	C6576M:0144_0 asserted <clogHistMsgText> by facility <clogHistFacility>, message name <clogHistMsgName> at <clogHistMsgTimestamp>	Informational	Syslog	None
coldStart	C6576M:0132_0 Cold Start: Agent reinitializing; configuration may have changed.	Major	Network Element	None
ciscoConfigManEvent	N/A	N/A	N/A	N/A
linkDown	C6576M:0136_0 link <ifDescr> down.	Major	Ethernet Interface	None
linkUp	C6576M:0135_0 link <ifDescr> up.	Normal	Ethernet Interface	linkDown
newRoot	C6576M:0157_0 <ip> is the new Spanning Tree root.	Informational	STP	N/A
stpxInconsistency Update	N/A	N/A	N/A	N/A
tcpConnectionClose	N/A	N/A	N/A	N/A
topologyChange	C6576M:0158_0 Ports on <ip> have transitioned states.	Informational	STP	N/A
moduleUp	N/A, see module section for details on module status alarm	N/A	N/A	N/A
moduleDown	N/A, see module section for details on module status alarm	N/A	N/A	N/A
chassisAlarmOn	N/A, see chassis section for details on chassis status alarm	N/A	N/A	N/A
chassisAlarmOff	N/A, see chassis section for details on chassis status alarm	N/A	N/A	N/A
vlanTrunkPortDynamic StatChange	N/A	N/A	N/A	N/A
vtpVersionOneDevice Detected	N/A	N/A	N/A	N/A

Table 8-2 CEMF Alarms Generated by SNMP Traps (continued)

Trap/Varbind	Message	Alarm Severity	Object	Alarms Cleared
risingAlarm	N/A	N/A	N/A	N/A
fallingAlarm				
All other traps	C6576M:0134_0 Unknown trap received from switch. Check the controller log file for details.	Informational	Network Element	None

The following SNMP traps do not generate CEMF alarms:

- ciscoFlashCopyCompletionTrap
- ciscoFlashMiscOpCompletionTrap
- ciscoConfigManEvent
- tcpConnectionClose
- stpxInconsistencyUpdate
- moduleUp
- moduleDown
- chassisAlarmOn
- chassisAlarmOff
- vlanTrunkPortDynamicStatusChange
- vtpVersionOneDeviceDetected
- risingAlarm
- failingAlarm

If these traps are received by the C65/76M software, they are ignored.

Several C65/76M alarms are generated based on the clogMessageGenerated SNMP trap. This trap is generated by the CISCO-SYSLOG-MIB whenever a syslog message is recorded into the message table. The severity of the CEMF alarm is based on the clogHistSeverity varbind value in the trap.

If a coldStart trap is received by the C65/76M software whose IP address corresponds to the IP address of a Network Element object that is currently in the decommissioned state, then that object is automatically commissioned. When the Network Element is commissioned, a subchassis discovery is executed automatically. If the Network Element is populated with other C65/76M objects, and if there is a mismatch between the type of C65/76M object and the type that is discovered, the object is placed into the mismatched state and a corresponding alarm is raised against that object (see the "Object State Alarms" section on page 8-9).

The linkUp/linkDown SNMP traps signify that the operational status of a particular interface has transitioned into or out of the down state. If a linkUp trap is received, it will clear any linkDown alarm on the corresponding interface, if it exists.

If any other SNMP trap that is not listed in Table 8-2 is detected by the C65/76M software, then a general informational alarm is raised against the Network Element object. The details for this trap (enterprise and varbinds) is logged in the C6576MCntrllr.log file.

Object State Alarms

Most C65/76M objects have state alarms associated with them. These state alarms can be used to determine what tasks are being executed for the corresponding object or the status of network connectivity to the corresponding object from the CEMF server. There will only be one state alarm for each object at any time (corresponding to the current state of the object).

The following C65/76M objects have state alarms associated with them:

- Network Element
- Chassis
- Power Supplies
- All Modules
- Port Adapters
- Interfaces
- Software Object
- Logical Objects

Network Element

Table 8-3 describes the Network Element object state alarms.

Table 8-3 Network Element State Alarms

State	Message/Description	Severity	Alarms Cleared
discovery	"C6576M Network Element is in the discovery state."	Informational	discoverylostcomms normal mismatched
discoverylostcomms	"C6576M Network Element is in the discoverylostcomms state. Network connectivity to switch has been lost during discovery."	Critical	discovery
mismatched	"C6576M Network Element is in the mismatched state. IP address does not correspond to a Catalyst 6500 switch."	Major	discovery
normal	"C6576M Network Element is in the normal state."	Normal	discovery lostcomms
lostcomms	"C6576M Network Element is in the lostcomms state. Network connectivity to the switch has been lost."	Critical	normal

Chassis

Table 8-4 describes the Chassis object state alarms.

Table 8-4 Chassis State Alarms

State	Description	Severity	Alarms Cleared
discovery	"C6576M Chassis is in the discovery state. Chassis and subchassis discovery is being performed."	Informational	normal performance
discoverylostcomms	"C6576M Chassis is in the discoverylostcomms state. Network connectivity to switch has been lost during discovery."		
normal	"C6576M Chassis is in the normal state."	Normal	discovery performance
normallostcomms	"C6576M Chassis is in the normal state."	Normal	performance
performance	"C6576M Chassis is in the performance state."	Informational	discovery normal
perflostcomms	"C6576M Chassis is in the lostcomms state. Network connectivity to switch has been lost."	Informational	dicovery normal

Power Supply

Table 8-5 describes the Power Supply objects state alarms.

Table 8-5 Power Supply State Alarms

State	Description	Severity	Alarms Cleared
normal	"C6576M Power Supply is in the normal state."	Informational	lostcomms
lostcomms	"C6576M Power Supply is in the lostcomms state. Network connectivity to the power supply has been lost."	Critical	normal

All Modules

Table 8-6 describes all Module objects' state alarms.

Table 8-6 All Modules State Alarms

State	Description	Severity	Alarms Cleared
mismatched	"C6576M Module is in the mismatched state. The discovered Supervisor Module type is different from the pre-deployed or previously discovered type."	Major	performance lostcomms
normal	"C6576M Module is in the normal state."	Normal	performance lostcomms
normallostcomms	"C6576M Module is in the lostcomms state. Network connectivity to the supervisor card is lost."	Normal	performance
performance	"C6576M Module is in the performance state."		lostcomms
perflostcomms	"C6576M Module is in the lostcomms state. Network connectivity to the supervisor card is lost."		

Interfaces

Table 8-7 describes the Interface objects state alarms.

Table 8-7 Interface State Alarms

State	Description	Severity	Alarms Cleared
normal	"C6576M Interface is in the normal state."	Normal	performance
normallostcomms	"C6576M Interface is in the lostcomms state. Network connectivity to the supervisor card is lost."	Normal	performance
performance	"C6576M Interface is in the performance state."		
perflostcomms	"C6576M Interface is in the lostcomms state. Network connectivity to the supervisor card is lost."		

Note Because an Ethernet Interface object cannot enter the lostcomms state independent of the corresponding Ethernet module or supervisor engine module, no alarm is raised when the Ethernet Interface object enters the lostcomms state.

Port Adapters

Table 8-8 describes the Port Adapters state alarms.

Table 8-8 Port Adapters State Alarms

State	Description	Severity	Alarms Cleared
mismatched	"C6576M Port Adapter is in the mismatched state. The discovered SFM card is different from the pre-deployed or previously discovered type."	Major	performance lostcomms
normal	"C6576M Port Adapter is in the normal state."	Normal	performance lostcomm
normallostcomms	"C6576M Port Adapter is in the lostcomms state. Network connectivity to the supervisor card is lost."	Normal	performance
performance	"C6576M Port Adapter is in the performance state."		lostcomms
perflostcomms	"C6576M Port Adapter is in the lostcomms state. Network connectivity to the supervisor card is lost."		

Software

Table 8-9 describes the Software object state alarms.

Table 8-9 Software Object State Alarms

State	Description	Severity	Alarms Cleared
discovery	"C6576M Software is in the discovery state. Discovery of the logical software objects is being performed."	Informational	normal
discoverylostcomms	"C6576M Software is in the discoverylostcomms state. Network connectivity to the switch has been lost during discovery or the IOS passwords are incorrect."		discovery
normal	"C6576M Software object is in the normal state."	Normal	discovery
normallostcomms	"C6576M Software object is in the lostcomms state. Network connectivity to the supervisor card is lost."		

Note Because the Software object cannot enter the lostcomms state independently of the Network Element object, no alarm is raised when the Software object enters the lostcomms state.

Attribute Value Alarms

Because the Catalyst 6000 family switches and the Cisco 7600 series Internet Router running IOS do not support SNMP traps for hardware component failures or changes, the C65/76M software polls certain object attributes to determine hardware status. If the polled value indicates a failure, the C65/76M software raises an appropriate alarm. The following objects have one or more attributes polled for status information:

- Chassis
- Power Supply
- All Modules/Port Adapters
- Software

Chassis

Table 8-10 describes the Chassis object attribute alarms.

Table 8-10 Chassis Attribute Alarms

Attribute	Message/Description	Severity	Alarms Cleared
Core Temperature Status = ok	"C6576M Chassis Core Temperature Status is ok. Core temperature is within normal operation limits."	Normal	Core Temperature Status = error Core Temperature Status = critical
Core Temperature Status = error	"C6576M Chassis Core Temperature Status is error. The core chassis temperature is greater than the normal operating temperature range."	Major	Core Temperature Status = critical
Core Temperature Status = critical	"C6576M Chassis Core Temperature Status is critical. The switch is going to shutdown due to excessively high core temperature."	Critical	Core Temperature Status = error
Fan Status = ok	"C6576M Chassis Fan Status is ok."	Normal	Fan Status = other Fan Status = minorFault Fan Status = majorFault
Fan Status = other	"C6576M Chassis Fan Status is other."	Minor	Fan Status = minorFault Fan Status = majorFault
Fan Status = minorFault	"C6576M Chassis Fan Status is minorFault."	Major	Fan Status = other Fan Status = majorFault
Fan Status = majorFault	"C6576M Chassis Fan Status is majorFault."	Critical	Fan Status = other Fan Status = minorFault
Slots Used	"C6576M Chassis Used Slots has changed. The switch line card configuration has changed." A change in this value initiates a subchassis rediscovery.	Major	None

Power Supply

Table 8-11 describes the Power Supply objects attribute alarms.

Table 8-11 Power Supply Attribute Alarms

Attribute	Description	Severity	Alarms Cleared
Operational Status = ok	"C6576M Power Supply Operational Status is ok." The power supply is operating as expected.	Normal	Operational Status = other Operational Status = minorFault Operational Status = majorFault
Operational Status = other	"C6576M Power Supply Operational Status is other." The power supply's operational status is unknown.	Minor	Operational Status = minorFault Operational Status = majorFault
Operational Status = minorFault	"C6576M Power Supply Operational Status is minorFault." There is a minor fault with the power supply.	Major	Operational Status = other Operational Status = majorFault
Operational Status = majorFault	"C6576M Power Supply Operational Status is majorFault." There is a major fault with the power supply.	Critical	Operational Status = other Operational Status = minorFault

Modules/Port Adapters

The following table describes the Module object attribute alarms.

Table 8-12 Module Attribute Alarms

Attribute	Description	Severity	Alarms Cleared
Operational Status = ok	"C6576M Module Operational Status is ok"	Normal	Operational Status = other Operational Status = minorFault Operational Status = majorFault
Operational Status = other	"C6576M Module Operational Status is other"	Minor	Operational Status = minorFault Operational Status = majorFault
Operational Status = minorFault	"C6576M Module Operational Status is minorFault."	Major	Operational Status = other Operational Status = majorFault
Operational Status = majorFault	"C6576M Module Operational Status is majorFault."	Critical	Operational Status = other Operational Status = minorFault
Serial Number	"C6576M rModule Serial Number has changed. The Module has been replaced with a different card of the same type." A change in this value indicates that the Supervisor module was removed and replaced with another of the same time.	Critical	None

Port adapters do not support the operational status information, as a result the only attribute alarm raised by a port adapter is the final one - a serial number change has been detected.

SONET Interfaces

Table 8-13 describes the alarms raised due to changes in the SONET interface status fields. Note that these alarms are slightly different than those described elsewhere in this Chapter, as they are controlled by bit-fields in the attribute value. This table contains the attribute, the mask field bit and the alarm raised when the bit is set. There is a corresponding alarm (not listed) of normal severity for each alarm which clears the alarm when the bit is cleared.

Table 8-13 SONET Interface Attribute Alarms

Attribute	Bitmask Field	Description	Severity
sonetSectionCurrentStatus	2	C6576M:0157_0 SONET Section status is Loss of Signal.	Warning
sonetSectionCurrentStatus	4	6576M:0159_0 SONET Section status is Loss of Frame.	Warning
sonetLineCurrentStatus	2	C6576M:0161_0 SONET Line status is Alarm Indication Signal.	Warning
sonetLineCurrentStatus	4	C6576M:0163_0 SONET Line status is Remote Defect Indication.	Warning
sonetPathCurrentStatus	2	C6576M:0165_0 SONET Path status is STS-Path Loss of Pointer.	Warning
sonetPathCurrentStatus	4	C6576M:0167_0 SONET Path status is STS-Path Alarm Indication Signal.	Warning
sonetPathCurrentStatus	8	C6576M:0169_0 SONET Path status is STS-Path Remote Defect Indication.	Warning
sonetPathCurrentStatus	16	C6576M:0171_0 SONET Path status is Unequipped.	Warning
sonetPathCurrentStatus	32	C6576M:0173_0 SONET Path status is Signal Label Mismatch.	Warning

Port adapters do not support the operational status information, as a result the only attribute alarm raised by a port adapter is the final one - a serial number change has been detected.

Software

Table 8-14 describes the Software object attribute alarms.

Table 8-14 Software Attribute Alarms

Attribute	Description	Severity	Alarms Cleared
Image Backup Status = Ok	"C6576M Software Image Backup Status is ok. The backup was successful."	Normal	Image Backup Status = Error
Image Backup Status = Failed	"C6576M Software Image Backup Status is Failed. IOS image backup failed."	Major	
Image Restore Status = Ok	"C6576M Software Image Restore Status is ok. IOS image restoration was successful."	Normal	Image Restore Status = Error
Image Restore Status = Failed	"C6576M Software Image Restore Status is Failed. IOS image restoration failed." Do not restart the switch/router.	Critical	
Configuration Backup Status = Ok	"C6576M Software Configuration Backup Status is ok. Startup configuration backup was successful."	Normal	Configuration Backup Status = Error
Configuration Backup Status = Failed	"C6576M Software Configuration Backup Status is Failed. Startup configuration backup failed."	Major	
Configuration Restore Status = Ok	"C6576M Software Configuration Restore Status is ok. Startup configuration restoration was successful."	Normal	Configuration Restore Status = Error
Configuration Restore Status = Failed	"C6576M Software Configuration Restore Status is Failed. Startup configuration restoration failed." Do not restart the switch/router.	Critical	