



Voice Faults and Exceptions

A fault is an abnormal condition that occurs when a system or a system component violates a performance threshold or is not functioning properly. An exception is a group of related faults.

VHM groups related faults into a single exception. That is, it generates a single exception of a given type per device, regardless of the number of faults that exist.

The following topics are discussed:

- [Overview of Faults and Exceptions, page 3-2](#)
- [Media Server Faults, page 3-3](#)
- [ICS 7750 Faults, page 3-7](#)
- [Voice Gateway and Phone Access Switch Faults, page 3-10](#)
- [Voice Mail Gateway Faults, page 3-14](#)
- [Monitored Phone Faults, page 3-16](#)
- [Gatekeeper Fault, page 3-17](#)
- [Suspect Phone Fault, page 3-17](#)
- [Voice Cluster Faults, page 3-18](#)
- [General VHM Faults, page 3-18](#)
- [Pass-Through Traps, page 3-19](#)

Overview of Faults and Exceptions

By polling SNMP MIBs and subscribing to voice-related events received by DFM, VHM obtains event information to analyze, and generates faults for voice-enabled devices.

Users can review a summary of faults on the Real-Time Dashboard (see the [“Using the Real-Time Dashboard” section on page 2-1](#)) and view the generated alarms on the Monitoring Console (see the [“Using the Monitoring Console” section on page 2-17](#)).

For additional overview information, see the following topics:

- [Device Types that Generate Faults, page 3-2](#)
- [Contents of the Fault Tables, page 3-3](#)

Device Types that Generate Faults

VHM generates faults for the voice device groups that comprise the following types of voice-enabled devices:

- Voice Clusters
- Media Servers
- ICS 7750
- Voice Gateways—VHM obtains some of the event information for voice gateways from DFM.
- Phone Access Switches—VHM obtains some of the event information for Phone Access Switches from DFM.
- Voice Mail Gateways
- Monitored Phones

Contents of the Fault Tables

Fault tables include the following types of information:

- Managed entity type where faults can be detected.
- Faults that are detected.
- User-configurable thresholds that are used to define the tolerance limits of each fault condition.
- Exceptions raised by VHM when a fault condition exceeds thresholds.

Media Server Faults

Table 3-1 lists the media server faults diagnosed by VHM.



Note

IBM environment attributes (temp, fan, and power supply) are not supported.

Table 3-1 Media Server Faults

Managed Entity	Faults	Thresholds	Notification
Media Convergence Server (MCS)	<ul style="list-style-type: none"> • Unresponsive • SNMP Agent Not Responding 		Operational exception
	<ul style="list-style-type: none"> • High Processor Utilization • Insufficient Free Hard Disk Space • Insufficient Free Physical Memory • Insufficient Free Virtual Memory 	ProcessUtilitizationThreshold FreeHardDiskThreshold FreePhysicalMemoryThreshold FreeVirtualMemoryThreshold	Resource exception

Table 3-1 Media Server Faults (continued)

Managed Entity	Faults	Thresholds	Notification
Media Convergence Server (continued)	<ul style="list-style-type: none"> • Temperature High • Temperature Sensor Down • Temperature Sensor Degraded • Fan Down • Fan Degraded 	TemperatureCelsiusThreshold	Temperature exception
	<ul style="list-style-type: none"> • Power Supply Down • Power Supply Degraded 		Power supply exception
Interface	Interface Operationally Down		Operational exception
Application (Cisco CallManager, Workflow Application, Database Server, Conference Bridge, TFTP Server)	Transaction Failed		Application monitor exception
	Too Many Failed Synthetic Transactions	FailureThreshold	Application monitor exception
	Application Down		Application Exception
Cisco CallManager	CallManager Down		Application exception
Cisco CallManager (release 3.1 and 3.2 only)	Discovery Failed		

Table 3-1 Media Server Faults (continued)

Managed Entity	Faults	Thresholds	Notification
Cisco CallManager (release 3.2 only)	TooManySuspectPhones		
Remote Insight Board (RIB) Applies to MCS-7830 models only.	<ul style="list-style-type: none"> Battery Low Battery Failed Battery Disconnected 	BatteryPercentChargedThreshold	Power supply exception

Media server faults are described in more detail, grouped by notification type:

- [Operational Exceptions, page 3-5](#)
- [Resource Exceptions, page 3-5](#)
- [Temperature Exceptions, page 3-6](#)
- [Power Supply Exceptions, page 3-6](#)
- [Application Exceptions, page 3-6](#)
- [Application Monitor Exceptions, page 3-7](#)

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults (for a complete list of media server faults, see [Table 3-1](#)):

- **Unresponsive**—The device is unreachable from the DFM server.
- **Interface Operationally Down**—The interface is nonoperational.

Resource Exceptions

VHM generates a resource exception for multiple occurrences of the following faults (for a complete list of media server faults, see [Table 3-1](#)):

- **High Processor Utilization**—The processor utilization exceeds the threshold. `ProcessUtilizationThreshold` defines the upper limit for CPU utilization and is expressed as a percentage of total CPU capacity.
- **Insufficient Free Hard Disk Space**—The free disk space is less than the low free disk space threshold (`FreeHardDiskThreshold`).

- **Insufficient Free Physical Memory**—The system is running out of memory resources, and the threshold value is less than the `FreePhysicalMemoryThreshold` value.
- **Insufficient Free Virtual Memory**—The system is running out of virtual memory resources, and the threshold value is less than the `FreeVirtualMemoryThreshold` value.

Temperature Exceptions

VHM generates a temperature exception for multiple occurrences of the following faults (for a complete list of media server faults, see [Table 3-1](#)):

- **System Temperature Sensor Down/Degraded**—The temperature sensor is reporting abnormal temperature measurements. Possible conditions are OK, Degraded, and Failed.
- **Temperature High**—The operating temperature is higher than the threshold.
- **Fan Down/Degraded**—The system fan condition is not normal. The possible conditions are OK, Degraded, and Failed.

Power Supply Exceptions

VHM generates a power supply exception for multiple occurrences of the following faults (for a complete list of media server faults, see [Table 3-1](#)):

- **Battery Low/Failed**—Remote Insight Board battery status is not normal. It is either Low or Failed.
- **Battery Disconnected**—Remote Insight Board battery is disconnected.
- **Power Supply Down/Degraded**—The power supply is not in a normal state. The possible states are OK, Degraded, and Failed.

Application Exceptions

VHM generates an application exception for multiple occurrences of the following fault (for a complete list of media server faults, see [Table 3-1](#)):

- **CallManager Down**—Cisco CallManager is not running.
- **Application Down**—Application is not running.

Application Monitor Exceptions

VHM generates an application exception for multiple occurrences of the following fault (for a complete list of media server faults, see [Table 3-1](#)):

- **Transaction Failed**—Synthetic Transactions on this application were unsuccessful.

ICS 7750 Faults

[Table 3-2](#) lists the ICS 7750 faults diagnosed by VHM.

Table 3-2 ICS 7750 Faults

Managed Entity	Faults	Thresholds	Notification
ICS 7750	Unresponsive		Operational exception
	Power Supply Down		Power supply exception
	Fan Down		Temperature exception
SPEs	CallManager Down		Application exception
	<ul style="list-style-type: none"> • Insufficient Free Disk Space • Insufficient Free Virtual Memory 	FreeHardDiskThreshold FreeVirtualMemoryThreshold	Resource exception
	Unresponsive		Operational exception
Multiservice Route Processor (MRP)	<ul style="list-style-type: none"> • High Utilization • Insufficient Free Memory 	ProcessUtilizationThreshold FreePhysicalMemoryThreshold	Resource exception
	<ul style="list-style-type: none"> • Interface Operationally Down • Unresponsive 		Operational exception

Table 3-2 ICS 7750 Faults (continued)

Managed Entity	Faults	Thresholds	Notification
System Switch Processor (SSP)	<ul style="list-style-type: none"> High Utilization Insufficient Free Memory 	ProcessUtilizationThreshold FreePhysicalMemoryThreshold	
	<ul style="list-style-type: none"> Interface Operationally Down Unresponsive 		Operational exception

ICS 7750 faults are described in more detail, grouped by notification type, in the following:

- [Operational Exceptions, page 3-8](#)
- [Resource Exceptions, page 3-8](#)
- [Power Supply Exceptions, page 3-9](#)
- [Application Exceptions, page 3-9](#)
- [Temperature Exceptions, page 3-9](#)

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults (for a complete list of ICS 7750 faults, see [Table 3-2](#)):

- **Unresponsive**—If one of the ICS 7750 entities (for example, the media server, trunk card, or BPS) is down, a fault is generated.
- **Interface Operationally Down**—Status of Interface is down.

Resource Exceptions

VHM generates a resource exception for multiple occurrences of the following faults (for a complete list of ICS 7750 faults, see [Table 3-2](#)):

- **High Utilization**—The processor utilization exceeds the processor utilization threshold. ProcessUtilizationThreshold defines the upper limit for CPU utilization and is expressed as a percentage of total CPU capacity.
- **Insufficient Free Disk Space**—The free disk space is less than the low free disk space threshold (FreeHardDiskThreshold).

- **Insufficient Free Memory**—The system is running out of memory resources, and the threshold value is less than `FreePhysicalMemoryThreshold`.
- **Insufficient Free Virtual Memory**—The system is running out of virtual memory resources, and the threshold value is less than `FreeVirtualMemoryThreshold`.

Power Supply Exceptions

VHM generates a power supply exception for multiple occurrences of the following faults (for a complete list of ICS 7750 faults, see [Table 3-2](#)):

- **Power Supply State Down/Degraded**—The power supply is not in a normal state. The possible states are OK, Degraded, and Failed.

Application Exceptions

VHM generates an application exception for multiple occurrences of the following fault (for a complete list of ICS 7750 faults, see [Table 3-2](#)):

- **CallManager Down**—Application is not running.

Temperature Exceptions

VHM generates an application exception for multiple occurrences of the following fault (for a complete list of ICS 7750 faults, see [Table 3-2](#)):

- **Fan Down/Degraded**—The system fan condition is not normal. The possible conditions are OK, Degraded, and Failed.

Voice Gateway and Phone Access Switch Faults

Table 3-3 displays the Voice Gateway and Phone Access Switch Faults diagnosed by DFM and further processed by VHM.

Table 3-3 Voice Gateway and Phone Access Switch Faults

Managed Entities	Faults	Thresholds	Notification
Digital Voice Gateway	Interface Operationally Down		Operational exception
	Lost Contact with Cluster		Connectivity exception
Voice Gateway Phone Access Switch	<ul style="list-style-type: none"> • Unresponsive • Unresponsive (SNMP agent) • Voice Port Operationally Down • Interface Operationally Down • Voice Port Administratively Down • Interface Administratively Down • Phone Removed • Card Down 		Operational exception
	<ul style="list-style-type: none"> • High Utilization (CPU) • Insufficient Free Memory 	ProcessUtilizationThreshold FreePhysicalMemoryThreshold	Resource exception

Table 3-3 Voice Gateway and Phone Access Switch Faults (continued)

Managed Entities	Faults	Thresholds	Notification
Voice Gateway Phone Access Switch (continued)	<ul style="list-style-type: none"> • Temperature Sensor Degraded • Temperature Sensor Down • Fan Down • Fan Degraded 		Temperature exception
	<ul style="list-style-type: none"> • Power Supply Degraded • Power Supply Down 		Power supply exception
	<ul style="list-style-type: none"> • Port Lost Contact with Cluster • Gateway Lost Contact with Cluster • Voice Interface Lost Contact with Cluster • Voice Card Lost Contact with Cluster 		Connectivity exception

Voice Gateway and Phone Access Switch faults are described in more detail, grouped by notification type, in the following:

- [Operational Exceptions, page 3-12](#)
- [Resource Exceptions, page 3-12](#)
- [Temperature Exceptions, page 3-12](#)
- [Power Supply Exceptions, page 3-13](#)
- [Connectivity Exceptions, page 3-13](#)

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults (for a complete list of Voice Gateway and Phone Access Switch faults, see [Table 3-3](#)):

- **Unresponsive**—The device is not reachable. The ICMP pings sent by the VHM server timed out without responding.
- **Unresponsive (SNMP agent)**—The device is not responding to SNMP requests. ICMP pings are OK, but SNMP requests are timed out.
- **Interface Operationally Down**—A voice interface is down.
- **Interface Administratively Down**—A voice interface is down.
- **Voice Port Operationally Down**—A voice port is down.
- **Voice Port Administratively Down**—A voice port is down.
- **Phone Removed**—IP phone lost network connection to the switch. This fault occurs only during rediscovery of the switch (through either manual rediscovery or nightly inventory collection).
- **Card Down**—A voice card is down.

Resource Exceptions

VHM generates a resource exception for multiple occurrences of the following faults (for a complete list of Voice Gateway and Phone Access Switch faults, see [Table 3-3](#)):

- **High Utilization**—The processor utilization exceeds the CPU utilization threshold. `ProcessUtilizationThreshold` defines the upper limit for CPU utilization and is expressed as a percentage of total CPU capacity.
- **Insufficient Free Memory**—The system is running out of memory resources and the threshold value is less than the `FreePhysicalMemoryThreshold` value.

Temperature Exceptions

VHM generates a temperature exception for multiple occurrences of the following faults (for a complete list of Voice Gateway and Phone Access Switch faults, see [Table 3-3](#)):

- **Temperature Sensor Degraded**—The temperature sensor condition is Degraded.
- **Temperature Sensor Down**—The temperature sensor condition is Failed.

- **Fan Degraded**—The fan condition is Degraded.
- **Fan Down**—The fan condition is Failed.

Power Supply Exceptions

VHM generates a power supply exception for multiple occurrences of the following faults (for a complete list of Voice Gateway and Phone Access Switch faults, see [Table 3-3](#)):

- **Power Supply Degraded**—The power supply is not in a normal state. The state is Degraded.
- **Power Supply Down**—The power supply is not in a normal state. The state is Down.

Connectivity Exceptions

VHM generates a connectivity exception for multiple occurrences of the following fault (for a complete list of Voice Gateway and Phone Access Switch faults, see [Table 3-3](#)):

- **Lost Contact with Cluster**—A digital voice interface lost registration with a Cisco CallManager cluster.
- **Port Lost Contact with Cluster**—A voice port lost registration with a Cisco CallManager cluster.
- **Gateway Lost Contact with Cluster**—A voice gateway lost registration with a Cisco CallManager cluster.
- **Voice Interface Lost Contact with Cluster**—A voice interface lost registration with a Cisco CallManager cluster.
- **Voice Card Lost Contact with Cluster**—A voice card lost registration with a Cisco CallManager cluster.

Voice Mail Gateway Faults

Table 3-4 displays the Voice Mail Gateway faults diagnosed by DFM and further processed by VHM.

Table 3-4 Voice Mail Gateway Faults

Managed Entities	Faults	Thresholds	Notification
Voice Mail Gateways	<ul style="list-style-type: none"> Unresponsive Interface Operationally Down Interface Administratively Down 		Operational exception
	Port Lost Contact with Cluster		Connectivity exception
	DPA Port CallManager Link Down		DPA CallManager link exception
	DPA Port Telephony Link Down		DPA telephony link exception
	High Utilization (CPU)	ProcessUtilizationThreshold	Resource exception

Voice Mail Gateway faults are described in more detail, grouped by notification type, in the following:

- [Operational Exceptions, page 3-15](#)
- [Resource Exceptions, page 3-15](#)
- [Connectivity Exceptions, page 3-15](#)
- [Other Exceptions, page 3-15](#)

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults (for a complete list of Voice Mail Gateway faults, see [Table 3-4](#)):

- **Unresponsive**—The device is not reachable.
- **Interface Operationally Down**—A voice interface is down.
- **Interface Administratively Down**—A voice interface is down.

Resource Exceptions

VHM generates a resource exception for multiple occurrences of the following faults (for a complete list of Voice Mail Gateway faults, see [Table 3-4](#)):

- **High Utilization**—The processor utilization exceeds the CPU utilization threshold. `ProcessUtilizationThreshold` defines the upper limit for CPU utilization and is expressed as a percentage of total CPU capacity.

Connectivity Exceptions

VHM generates a connectivity exception for multiple occurrences of the following fault (for a complete list of Voice Mail Gateway faults, see [Table 3-4](#)):

- **Port Lost Contact with Cluster**—The DPA port lost contact with the cluster.

Other Exceptions

VHM generates exceptions for multiple occurrences of the following faults (for a complete list of Voice Mail Gateway faults, see [Table 3-4](#)):

- **DPA Port CallManager Link Down**—There is no connectivity between the DPA port and the CallManager.
- **DPA Port Telephony Link Down**—There is no connectivity between the DPA port and the Octel voice mail.

Monitored Phone Faults

Table 3-5 displays the Monitored Phone faults diagnosed by DFM and further processed by VHM.

Table 3-5 Monitored Phone Faults

Managed Entities	Faults	Thresholds	Notification
Monitored Phones	Unresponsive		Operational exception
	Monitored Phone Lost Contact with Cluster		Connectivity exception
	Extension Number Removed		
	Phone Discovery Error		

Monitored Phone faults are described in more detail, grouped by notification type, in the following:

- [Operational Exceptions, page 3-16](#)
- [Connectivity Exceptions, page 3-16](#)

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults (for a complete list of Monitored Phone faults, see [Table 3-5](#)):

- **Unresponsive**—The phone is not reachable. The ICMP pings sent by the VHM server timed out without responding.

Connectivity Exceptions

VHM generates a connectivity exception for multiple occurrences of the following fault (for a complete list of Monitored Phone faults, see [Table 3-5](#)):

- **Monitored Phone Lost Contact with Cluster**—The monitored phone lost contact with all Cisco CallManagers in the cluster.

Gatekeeper Fault

Table 3-6 displays the gatekeeper fault diagnosed by DFM and further processed by VHM.

Table 3-6 Gatekeeper Faults

Managed Entities	Faults	Thresholds	Notification
Gatekeeper	Gatekeeper Lost Contact with Cluster		Connectivity exception

Connectivity Exceptions

VHM generates a connectivity exception for multiple occurrences of the following fault:

- **Gatekeeper Lost Contact with Cluster**—Gatekeeper lost registration with the Cisco CallManager cluster.

Suspect Phone Fault

Table 3-7 displays the suspect phone fault diagnosed by DFM and further processed by VHM.

Table 3-7 Suspect Phone Faults

Managed Entities	Faults	Thresholds	Notification
Suspect Phone	Suspect Phone Detected		Operational exception

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following fault:

- **Suspect Phone Detected**—The phone cannot register to a Cisco CallManager.

Voice Cluster Faults

Table 3-8 displays voice cluster faults diagnosed by DFM and further processed by VHM.

Table 3-8 Voice Cluster Faults

Managed Entities	Faults	Thresholds	Notification
Voice Cluster	Too Many Inactive Phones	InactivePhoneThreshold	Operational exception
	CCM HTTP Service Down		

Operational Exceptions

VHM generates an operational exception for multiple occurrences of the following faults:

- **Too Many Inactive Phones**—The number of inactive phones exceeds the phone threshold. InactivePhoneThreshold is expressed as a percentage of the total phones connected to a Cisco CallManager cluster.
- **CCM HTTP Service Down**—VHM cannot use HTTP service to communicate to all Cisco CallManagers in the cluster.

General VHM Faults

The following are general faults that VHM displays:

- **DFM Server Down**—VHM lost contact with the DFM server.
- **Synthetic Transaction Server Down**—VHM lost contact with the Synthetic Transaction server.
- **ESS Connectivity Lost**—VHM cannot communicate with the ESS bus.
- **VHM Domain Connectivity Lost**—VHM lost contact with the domain.
- **Discovery Error**—Discovery did not complete.

Pass-Through Traps

Table 3-9 lists the pass-through traps that VHM processes for Cisco CallManager.

Table 3-9 Pass-Through Traps—Cisco CallManager

Pass-Through Trap	Description
CCMGatewayFailedException	A gateway has failed in its attempted to register or communicate with a Cisco CallManager.
CCMMediaResourceListExhaustedException	Cisco CallManager has run out of resources.
CCMCallManagerFailedException	Cisco CallManager detects a failure in one of its critical subsystems.
CCMGatewayLayer2ChangeException	The D-Channel/Layer 2 of an interface in a digital gateway that is registered with Cisco CallManager changes state.

Table 3-10 lists the pass-through traps that VHM processes for Media Servers (IBM systems).

Table 3-10 Pass-Through Traps—Media Servers (IBM systems)

Pass-Through Trap	Description
IBMFanEventException	A fan is down.
IBMVoltageEventException	The voltage is not correct.
IBMTemperatureEventException	The temperature is high.

Table 3-11 lists the pass-through traps that VHM processes for voice services.

Table 3-11 Pass-Through Traps—Voice Services

Pass-Through Trap	Description
VoiceServiceModuleStopException	An application module or subsystem has stopped.
VoiceServiceModuleStartException	An application module or subsystem has successfully started and has transitioned to in-service state.
VoiceServiceRunTimeFailureException	A run time failure has occurred.

Table 3-11 *Pass-Through Traps—Voice Services (continued)*

Pass-Through Trap	Description
VoiceServiceProcessStartException	A process has just started.
VoiceServiceProcessStopException	A process has just stopped.