



Device Instrumentation Requirements for Cisco Multicast Manager, 3.3

January 28, 2013

The functionality provided by Cisco Multicast Manager (CMM 3.3) depends on the MIB and CLI commands listed in this document. In addition, this document lists video probes that are supported by CMM 3.3.

Any device (Cisco or non-Cisco) that supports the mandatory MIBs and CLI commands might be supported by CMM.

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Supported MIBs

The tables in this section list the MIBs that CMM 3.3 supports.

Table 1 *MIBs Supported on Layer 2 and Layer 3 Devices Used with CMM*

MIB	Description
SNMPv2-MIB	Main SNMPv2 MIB.
SNMPv2-SMI	SNMPv2 Structure of Management Information MIB.
CISCO-SMI	The Structure of Management Information for the Cisco enterprise.
ENTITY-MIB	MIB module for representing multiple logical entities supported by a single SNMP agent, such as hardware components on a device.
CISCO-CAR-MIB	MIB used to implement Cisco Weighted Rate-Limit, known as Committed Access Rate (CAR). CAR is a traffic control method that uses a set of rate limits to be applied to an interface for packet switching purposes. Each rate limit has a configurable action to be taken when a condition is met.
CISCO-QUEUE-MIB	MIB module for objects used to manage interface queuing in Cisco devices
CISCO-CLASS-BASED-QOS-MIB	MIB that provides read access to Quality of Service (QoS) configuration and statistics information for Cisco platforms that support the Modular Quality of Service Command-line Interface (Modular QoS CLI).
CISCO-QOS-POLICY-CONFIG-MIB	Defines managed objects that support the policy source configuration of Quality of Service (QoS) on the device.
CISCO-CDP-MIB	MIB module for management of the Cisco Discovery Protocol in Cisco devices.
IF-MIB	Describes generic objects for network interface sub-layers. This MIB is an updated version of MIB-II's ifTable, and incorporates the extensions defined in RFC 1229.
ETHERLIKE-MIB	Describes generic objects for ethernet-like network interfaces.
OLD-CISCO-SYS-MIB	A MIB that is used as a replacement for the four separate system MIBs (OLD-CISCO-CPU.my, OLD-CISCO-ENVMON-MIB.my, OLD-CISCO-MEMORY-MIB.my, OLD-CISCO-SYSTEM-MIB.my) in test tool environments.
OLD-CISCO-INTERFACES-MIB	A MIB used to monitor older Cisco devices.
CISCO-CONFIG-COPY-MIB	MIB used to facilitate writing of configuration files of an SNMP Agent running Cisco's IOS in the following ways: to and from the net, copying running configurations to startup configurations and vice-versa, and copying a configuration (running or startup) to and from the local IOS file system.
RFC1213-MIB	MIB that defines the second version of the Management Information Base (MIB-II) for use with network management protocols in TCP/IP-based internets.

Table 2 *MIBs Supported on Layer 2 Devices Used with CMM*

MIB	Description
CISCO-STACK-MIB	Provides configuration and runtime status for chassis, modules, ports, etc. on Catalyst systems.
CISCO-CATOS-ACL-QOS-MIB	MIB module for Access Control Lists (ACLs) configuration of Quality of Service (QoS) as well as Security feature on the Cisco Catalyst 5000/6000 series switch running CatOS.
MPLS-VPN-MIB	Contains managed object definitions for the Multiprotocol Label Switching (MPLS)/Border Gateway Protocol (BGP) Virtual Private Networks (VPNs) as defined in RFC 3031.
CISCO-MVPN-MIB	Contains managed object definitions for Cisco implementation of multicast in VPNs defined by the Internet draft: <i>draft-rosen-vpn-mcast-05.txt</i>
DISMAN-EVENT-MIB	The IETF Event MIB, based on RFC Event MIB, provides the ability to monitor MIB objects on the local system or on a remote system and take simple action when all trigger condition are met.
CISCO-ENHANCED-WRED-MIB	MIB to support Cisco Weighted Random Early Detection/Drop (WRED)— a method that avoids traffic congestion on an output interface.
CISCO-WRED-MIB	MIB to support Cisco Weighted Random Early Detection/Drop— a method that avoids traffic congestion on an output interface.
CISCO-FLOW-MONITOR-MIB	Contains objects that facilitates monitoring of media flows, with emphasis on flows carrying video streams.
CISCO-IP-CBR-METRICS-MIB	Contains objects that describe the set of metrics used to measure the quality of an IP Constant Bite Rate (CBR) traffic flow.
CISCO-MDI-METRICS-MIB.	Contains objects that describe quality metrics collected for streams that comply to the Media Delivery Index (MDI).
CISCO-RTP-METRICS-MIB	Contains objects that describe the quality metrics for RTP streams, similar to those described by an RTCP Receiver Report packet [RFC3550].
CISCO-FLOW-MONITOR-TC-MIB	Contains Frame Relay information that is specific to Cisco products or that is missing from RFC 1315.

Table 3 *MIBs Supported on Layer 3 Devices Used with CMM*

MIB	Description
PIM-MIB	MIB module for management of PIM routers.
IPMROUTE-MIB	MIB module for management of IP Multicast routing, but independent of the specific multicast routing protocol in use.
IPMROUTE-STD-MIB	MIB module for management of IP Multicast routing, but independent of the specific multicast routing protocol in use.
CISCO-IETF-IPMROUTE-MIB	Address family independent MIB module for management IP Multicast routing, but independent of the specific multicast routing protocol in use. This MIB module is based on RFC 2932 with additional MIB objects to make it a address family independent MIB
CISCO-HSRP-MIB	Provides a means to monitor and configure the Cisco IOS proprietary Hot Standby Router Protocol (HSRP). Cisco HSRP protocol is defined in RFC2281.

Table 3 *MIBs Supported on Layer 3 Devices Used with CMM (continued)*

MIB	Description
CISCO-IETF-PIM-MIB	Address family independent MIB module for management of PIM routers
MPLS-L3VPN-STD-MIB	Contains managed object definitions for Layer-3 Multiprotocol Label Switching (MPLS) VPNs.
DRAFT-MSDP-MIB	An experimental MIB module for Multicast Source Discovery Protocol (MSDP) Management
IGMP-MIB	MIB module for Internet Group Management Protocol (IGMP) Management.
IGMP-STD-MIB	MIB module for IGMP Management.
IPMCAST-MIB	MIB module for Nexus 7K devices.

Video Probe Support

[Table 4](#) lists the video probes that are supported by CMM 3.3. CMM supports video probes in two ways:

- CMM can receive SNMP traps directly from the following probes or element managers:
 - IneoQuest iVMS
 - BridgeTech probes
 - Mixed Signals probes
- In addition, CMM can display flow trace status for probes for which it can be configured to poll directly:
 - IneoQuest probes
 - BridgeTech probes

Table 4 Video Probes Supported by Cisco Multicast Manager

Solution Component	Version Information	Notes
IneoQuest iVMS	Version 4.02.001.02.29	
IneoQuest video probes	<ul style="list-style-type: none"> Singulus G1-T Media Analyzer, Geminus G1-T Geminus G10 Geminus G2x IQ Media Monitor Cricket - ASI version Cricket - MS version Cricket - IP version Cricket - QAM and 8VSB versions Cricket - QAM Plus versions 	<ul style="list-style-type: none"> Firmware Version: TB6x-3.10a-120109.iqz Software Version: 3.10a Firmware Version: Denali-2.1-4a-120109.iqz Software Version 2.14a Firmware Version: MA6x-3.10a -120109.iqz Software Version: 3.10a Firmware version: Cricket-MS6x-2.11a-120109.iqz Software Version: 2.11aa Firmware Version: Cricket-6x-2.10a-120109.iqz Software Version: 2.10a Firmware version: Firmware Version: Cricket-6x-2.10a-120109.iqz Software Version: 2.10a Firmware Version: Cricket-Q6x-2.10a-120109.iqz Software Version: 2.10a Cricket-DQ-1.4a-120109.iqz Software Version: 1.4a
Mixed Signals video probe	Sentry 136 Digital Content Monitor ¹	Sentry Engine Version: PDM (build 1460.84) Sentry Database Version: 3.0.31 Sentry Configuration: TRANSPORT
Bridge Technologies	VB Series	Version: 3.1.0-26, including the VB260 QAM probe. <ul style="list-style-type: none"> VB220—Version 4.2.0-15 VB250—Version 4.2.0-15 VB260—Version 4.2.0-15 VB270—Version 4.2.0-15 VB280—Version 4.2.0-15

1. Cisco VAMS 3.0 does not support carousel-related traps for the Mixed Signals Sentry 136.

CLI Support

CMM uses some CLI commands internally to obtain information about managed devices. [Table 1](#) lists the commands that CLI issues internally.

CMM Functionality That Requires Telnet/SSH Access

Commands that CMM uses internally require you to set up telnet or SSH access when you configure the domain for the devices. To set up telnet or SSH access for the devices in a domain, from the CMM Main menu, select **System Configuration > Domain Management**, and then add a new domain or select an existing domain to edit.

Other commands that are available on troubleshooting screens require you to enter a username, device password, and enable password. For example, the troubleshooting pages for Cisco Catalyst 6500 devices, Cisco 7600 devices, or Layer 2 troubleshooting require you to enter a username and passwords for telnet and enable access to the devices.

[Table 5](#) lists CMM functions that require telnet or SSH access. For each type of functionality it indicates:

- The location of the functionality in the CMM GUI
- The usage of the functionality
- CLI commands required for the functionality

Table 5 CMM Functionality Requiring Telnet or SSH Access

Functionality	Location and Usage	CLI Commands
PE Only Discovery	<p>Menu Location: Discovery & Trace > Discovery > Multicast Discovery</p> <p>Click the Distributed Network tab and select PE Only.</p> <p>Use: CLI commands are used internally to prepare the CE-PE mapping file from PE devices.</p>	<p>CLI commands for IOS:</p> <ul style="list-style-type: none"> • sh ip vrf • sh ip pim vrf <VRF_Name> neighbor <p>CLI commands for IOS-XR:</p> <ul style="list-style-type: none"> • sh vrf all • sh pim vrf <VRF_Name> ipv4 neighbor
Threshold Polling- CLI	<p>Menu Location: Polling Configuration & Reports > Traffic Polling & Reports > SG</p> <p>Use: monitoring router counter value.</p>	sh ip mroute count

Table 5 CMM Functionality Requiring Telnet or SSH Access (continued)

Functionality	Location and Usage	CLI Commands
MVPN polling	<p>Menu Location: Polling Configuration & Reports > Miscellaneous Polling & Reports > MVPN</p> <p>Use: MVPN related information collection.</p>	<p>CLI commands for IOS:</p> <ul style="list-style-type: none"> • sh ip vrf • sh run vrf <vrfName> include mdt default • sh ip vrf interface <p>CLI commands for IOS-XR:</p> <ul style="list-style-type: none"> • sh vrf all • sh run multicast-routing vrf <vrfName> include mdt default • sh ipv4 vrf <vrfName> interface brief
6500/7600 Troubleshooting Diagnostics:	<p>Menu Location: Diagnostics > Tools > 6500/7600 Troubleshooting</p> <p>Use:</p> <ul style="list-style-type: none"> • Diagnostics—Router Monitoring and Trace. • Troubleshooting—CLI Command execution from GUI. 	<p>CLI commands:</p> <ul style="list-style-type: none"> • sh ip mroute • sh ip mroute <GROUP> <SOURCE> • sh mls ip multicast connected • sh mls ip multicast statistics • sh mls ip multicast summary • sh mls ip multicast group <GROUP> source <SOURCE> • sh fab swi • sh vlan id • sh ip pim int • sh ether sum • sh mac-address-table multicast vlan • sh multicast group< multicastMac> include <vlanId> • sh mls cef ip multicast source <source> group <group> detail • sh table ltl module <moduleKey> start <myIndex> end< myIndex>
L2 Diagnostics	<p>Menu Location: Diagnostics > L2 Diagnostics > L2 Multicast Info and Diagnostics > L2 Diagnostics > L2Host IPs</p> <p>Use: To see L2 Multicast information and Host IPs information.</p>	<p>CLI commands:</p> <ul style="list-style-type: none"> • show ip igmp snooping groups (igmpSnoop) • show mac-address-table dyn • show mac-address-table multicast • show multicast group • sh cam dyn
Top Talkers Diagnostics	<p>Menu Location: Diagnostics > Tools > Top Talkers</p> <p>Use: To see top 20 streams flows.</p>	<p>CLI Command: show ip mroute active</p>

Table 5 CMM Functionality Requiring Telnet or SSH Access (continued)

Functionality	Location and Usage	CLI Commands
MVPN Diagnostics VRF Update	<p>Menu Location: Diagnostics > Tools > MVPN</p> <p>Used to populate Provider Edge (PE) Device Configurations with Device Name URL.</p> <p>Use: Updates MVPN information when user clicks the device name URL.</p> <p>Note The commands used here are also used to update VRF information during CMM discovery.</p>	<p>CLI commands for IOS:</p> <ul style="list-style-type: none"> • sh ip multicast vrf <vrfName> • sh ip vrf interfaces <vrfName> • sh run vrf <vrfName> <p>CLI commands for IOS-XR:</p> <ul style="list-style-type: none"> • sh run multicast-routing • sh vrf <vrfName> detail
Explicit User Tracking Diagnostics	<p>Menu Location: Diagnostics > Tools > Explicit User Tracking</p> <p>Use: To see user information.</p>	<p>CLI commands:</p> <ul style="list-style-type: none"> • sh ip igmp groups include Vlan • sh ip igmp snooping explicit-tracking vlan <vlan_no>
P2MP Discovery	<p>Menu Location: Discovery & Trace > Discovery > Multicast Discovery</p> <p>Click the Distributed Network tab and select P2MP.</p> <p>Use: To find the P2MP tunnel and P2MP status in the devices.</p>	<p>CLI command:</p> <ul style="list-style-type: none"> • sh mpls traffic-eng tunnels
P2MP Trace	<p>Menu Location: Discovery & Trace > Trace > Multicast Trace</p> <p>Use: To find the forwarding interfaces in the P2MP tunnel.</p>	<p>CLI commands:</p> <ul style="list-style-type: none"> • sh mpls traffic-eng tunnels role all brief • sh mpls traffic-eng forwarding detail • sh mpls traffic-eng destination list • sh ip mroute <Source> <Group>

Command Descriptions

Table 6 provides a short description of each command that CMM uses.

Table 6 CLI Commands Used by CMM—Command Descriptions

Command	Description
sh cam dyn	The show cam dynamic (sh cam dyn) command shows dynamic entries in the Content Addressable Memory (CAM) table on Catalyst switches.
sh ether sum	Displays Ethernet information for an interface.
sh fab swi	Display information about the crossbar fabric on an interface and shows the module switching mode.

Table 6 CLI Commands Used by CMM—Command Descriptions (continued)

Command	Description
sh ip igmp snooping explicit-tracking vlan <vlan_no>.	Displays the information about the explicit host-tracking status for the specified VLAN on the host.
sh ip igmp snooping groups	Displays the Internet Group Management Protocol (IGMP) snooping multicast table for the switch or multicast information for the switch. For each group, the command displays the Vlan, Group, Version, and a Port List.
sh ip mroute	Display the contents of the IP multicast routing table.
sh ip mroute active	Displays the rate that active sources in the multicast routing table are sending to multicast groups.
sh ip mroute <group> <source> count	Displays IP multicast routing statistics about the specified group and source, including number of packets, packets per second, average packet size, and bits per second.
sh ip multicast vrf <vrf_name>	Displays general information about IP multicast, for the specified to the Multicast Virtual Private Network (MVPN) routing and forwarding (MVRF) instance specified in the vrf_name argument.
sh ip pim int <incoming_interface>	Displays information about an incoming interface configured for PIM,
sh ip pim vrf <vrf_name> neighbor	Displays information about PIM neighbors associated with the MVPN) routing and forwarding (MVRF) instance specified in the vrf_name argument.
sh ip vrf	Displays the set of defined VPN routing/forwarding instances (VRFs) and associated interfaces for the device.
sh ip vrf interfaces <vrf_name>	Shows the mapping of interfaces to the specified VRF.
sh ipv4 vrf <vrf_name> interface brief	Shows brief interface configuration information for a specified VRF
sh mac-address-table dyn	On a switch, displays the dynamic MAC address table entries only.
sh mac-address-table multicast	On a switch, displays information about the multicast MAC address table.
sh mac-address-table multicast vlan <vlan_id> include <multicastMac>	Display information about the multicast MAC address table for a specific VLAN only.
sh mls cef ip multicast source <source> group <group> detail	Displays IP entries in the MLS hardware Layer 3 switching table for the specified source and group.
sh mls ip multicast statistics	Displays IP multicast information for the device, and the statistics from multicast entries.
sh mls ip multicast summary	Displays IP multicast information for the device, and a summary of statistics from multicast entries.
sh mls ip multicast group <group> source <source>	Displays the IP multicast entries for a specific multicast-group address (source and group address)
sh multicast group	Displays the current multicast group configuration on the device.
sh pim vrf <vrf_name> ipv4 neighbor	Displays information about PIM neighbors associated with the MVPN routing and forwarding (MVRF) instance specified in the vrf_name argument and specifies IPv4 address prefixes.
sh run multicast-routing vrf <vrfName> include mdt default	Shows the multicast routing configuration for the specified VRF, and includes default MDT information.
sh run vrf <vrfName>	Displays the running VRF configuration for a specified VRF.

Table 6 CLI Commands Used by CMM—Command Descriptions (continued)

Command	Description
sh run vrf <vrfName> include mdt default	Shows PIM configuration information for the specified VRF and includes default MDT information.
sh table ltl module <module_num> start <index> end <index>	Checks the Local Target Logic (LTL) setting of an interface.
sh vlan id <vlan_id>	Displays information about a single VLAN identified by a VLAN ID number.
sh vrf <vrf_name> detail	Shows detailed VRF configuration for the specified VRF.
sh vrf <vrfName> detail	Displays detailed VRF information for the specified VRF.
sh vrf all	Displays VRF information for all VRFs.
sh mpls traffic-eng tunnels	Using this command: <ul style="list-style-type: none"> • CMM will identify each P2MP Tunnel involved router. • On Head-Ends in P2MP, you will receive the next hop IP details on Tunnel for all valid destinations. • On midpoint in P2MP, you will receive the incoming/outgoing interface and the next hop information. • On tail end router in P2MP, you will receive incoming interface and previous hop IP of a tail end router.
sh mpls traffic-eng tunnels role all brief	Identifies the head/middle/tail P2MP status of the IOS Devices.
sh mpls traffic-eng forwarding detail	Identifies the head/middle/tail P2MP status of the XR-IOS Devices.
sh mpls traffic-eng destination list	Receives all the destinations configured in head-end, if the router is a head-end.
sh ip mroute <Source> <Group>	Identifies the SG stream mapped to P2MP Tunnel.
sh mpls traffic-eng tunnels begin P2MP SUB-LSPS	Receives RPF neighbor IP address. The RPF neighbor IP address is the Sub-LSP destination from head-end in MPLS P2MP Tunnel
sh ip pim vrf blue neighbor	Identifies the neighbor devices of PE w.r.t VRFConfigured.

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