CA Spectrum®

Standards-Based Protocol Reference Guide

Release 9.4

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Contents

Chapter 1: Standard Protocols Supported by CA Spectrum

This section contains the following topics:

About Standard Protocols Supported by CA Spectrum

This chapter describes the standard protocols that CA Spectrum supports. When a device is modeled in OneClick, CA Spectrum automatically creates child application models for the standards supported by that device. Information about the standards is available in various OneClick subviews. From OneClick, you can view standard MIB information through model attributes, create attribute watches, and edit attribute values.

The standards that are described in this chapter are organized according to their functionality.

Bridging

This section describes the bridging standards applications that CA Spectrum supports. Bridging applications include models such as Spanning Tree and PPP Bridging.

Bridges are generally more flexible and intelligent than repeaters because they interconnect separate LAN or WAN data links and they learn the addresses of nodes that can be reached over each data link. Traffic can then be relayed selectively across each bridge. The bridging function operates in the MAC (Media Access Control) sublayer and is transparent to layers above the MAC sublayer.

Bridges can interconnect networks using different transmission techniques or MAC methods. A bridge can connect a LAN data link to a WAN telecommunications operation. Multiple bridges can be used to interconnect a series of networks. A pair of bridges with a telecommunications entity located between them can interconnect two different LAN locations.

Individual LAN data links that are interconnected by a bridge are considered to be a single subnetwork. Subnetwork station addresses must be unique and must use the same station address format. An Extended LAN is actually a LAN subnetwork constructed of bridges and is different from a single physical LAN. Operating layers above the MAC sublayer view, the Extended LAN acts as if it were a single LAN data link.

A bridge can implement a frame-filtering mechanism, or filtering bridge, to receive all frames that are transmitted over each attached data link. Based on each frame's destination address, the bridge determines if each frame can be transmitted across the bridge to any other attached data links. A bridge can therefore isolate network traffic generated on a LAN data link from other LAN data links in the Extended LAN. Broadcast traffic generated on one LAN is transmitted across a bridge to other data links to which it is attached; traffic generated by any station is received by all stations on the Extended LAN.

PPP Bridging

PPP (Point-to-Point Protocol) is used for managing the bridge network control protocol on subnetwork interfaces using the family of Point-to-Point protocols.

- RFC 1474
  - **Name:** PPP Bridge
  - **Model Type Name:** PPP_Bridge_App
  - **Name:** PPP_Bridge
  - **Model Type Name:** PPP_BdgApp1474

QBridge

QBridge, or IEEE 802.1Q, defines VLAN tagging, used to allow multiple bridged networks to transparently share the same physical network link without leakage of information between networks.

- RFC 2674
  - **Name:** Q Bridge
  - **Model Type Name:** qbridge_app_05

Source Routing

The Source Routing application contains utilization statistics derived from source routing. This information may be present in bridging token ring packets, and may affect a specific token ring interface. The Source Routing data is collected from the source routing information potentially present in any token ring packet. This information can be present in a transparent bridging or a mixed bridging environment, and can only be valid in a pure source route bridging environment.

- RFC 1525
  - **Name:** Source Routing
  - **Model Type Name:** rfc1525App

Spanning Tree Bridges

A spanning tree bridge learns appropriate routes from frames and verifies that all bridges are using the same network topology. Spanning tree bridges are used to form tree structures in which any two stations on an extended LAN are connected by one active path. A spanning tree bridge is transparent to ordinary stations on the interconnected LANs. To create and maintain the spanning tree, each bridge periodically multicasts Hello packets to all other bridges on the extended LAN. These packets are used to calculate the spanning tree and to verify that all bridges are using the same topology. Redundant links are not used. If a bridge or link failure occurs, the Hello packet transmissions allow the bridges to quickly calculate a new spanning tree.

- RFC 1493
  - **Name:** Spanning Tree
  - **Model Type Name:** Span_Tree_App

Static Bridging

Static bridging deals with destination-address filtering, letting you create an entry that stays in the static routing table without aging out or being removed if a device is powered off.

The Static Group, one of the five groups within the Bridge MIB, contains objects that describe the entity's state with respect to destination address filtering. If destination address filtering is not supported, this group is not implemented. This group is applicable to any type of bridge that performs destination address filtering.

- RFC 1493
  - **Name:** Static
  - **Model Type Name:** Static_App

Transparent Bridges

Transparent bridges operate in a manner that is transparent to network hosts. A transparent bridge learns the network's topology by analyzing the source address of incoming frames from all attached networks. From this process, it builds a table, which it then uses as a basis for traffic forwarding. When a frame is received on one of the bridge's interfaces, the bridge looks up the frame's destination address in its internal table. If the table contains an association between the destination address and any of the bridge's ports, aside from the one on which the frame was received, the frame is forwarded out to the indicated port. If no association is found, the frame is sent to all ports except the inbound port. Broadcasts and multicasts are also flooded in this way.

- RFC 1493
  - **Name:** Transparent
  - **Model Type Name:** Transparnt_App

Broadband

This section describes the broadband standards applications that CA Spectrum supports.

ADSL

ADSL (Asymmetric Digital Subscriber Line) is a continuously available connection over an existing phone line.

- RFC 2662
  - **Name:** ADSLLineApp
  - **Model Type Name:** ADSLLineApp

DOCSIS

DOCSIS (Data Over Cable Service Interface Specifications) is an international standard that defines the communications and operation support interface requirements for a data over cable system. It permits the addition of high-speed data transfer to an existing Cable TV system.

- Draft DOCS-BPI-MIB
  - **Name:** DOCSISBPIApp
  - **Model Type Name:** DOCSISBPIApp
- Draft DOCS-BPI2-MIB
  - **Name:** DOCSISBPI2App
  - **Model Type Name:** DOCSISBPI2App
- RFC 2669
  - **Name:** DOCSISCblDvApp
  - **Model Type Name:** DOCSISCblDvApp
- RFC 2670
  - **Name:** DOCSISIFApp
  - **Model Type Name:** DOCSISIFApp
- Draft DOCS-QOS-MIB
  - **Name:** DOCSISQOSApp
  - **Model Type Name:** DOCSISQOSApp

Device and System Identity

This section describes the device and system identity standards applications that CA Spectrum supports.

Entity

RFC 2737, Entity MIB, provides insight into logical and physical entities managed by an SNMP agent.

- RFC 2737
  - **Name:** EntityMIBApp
  - **Model Type Name:** RFC2737App

Host Resources

CA Spectrum supports the following Host Resources standards applications:

- RFC 2790
  - **Name:** Host Resources
  - **Model Type Name:** rfc2790App
- RFC 1514
  - **Name:** Host Resources
  - **Model Type Name:** rfc1514App

System Application

The system application RFC provides objects for fault, configuration, and performance management of applications from a systems perspective.

- RFC 2287
  - **Name:** SystemLvlApp
  - **Model Type Name:** RFC2287App

IP Protocols and Services

This section describes the standards CA Spectrum supports for application models associated with IP protocols and services.

DHCP

DHCP (Dynamic Host Configuration Protocol) is a computer networking protocol used by devices (DHCP clients) to obtain configuration information for operation in an Internet Protocol network.

- RFC 2131
  - **Name:** dhcpApp
  - **Model Type Name:** dhcpApp

ICMP

ICMP (Internet Control Message Protocol) uses IP datagrams and is typically generated in response to errors in IP datagrams or for diagnostic or routing purposes.

- RFC 792
  - **Name:** ICMP
  - **Model Type Name:** ICMP_App

Note: If the firmware on your device supports both the draft and the RFC version of the 2933 MIB, only the RFC2933App is modeled.

IGMP

IGMP (Internet Group Management Protocol) provides support for managing the membership of IP multicast groups. IGMP is used by IP hosts and adjacent multicast routers to establish multicast group memberships.

- Draft RFC 2933
  - **Name:** IGMP Draft
  - **Model Type Name:** Draft2933App
- RFC 2933
  - **Name:** IGMP
  - **Model Type Name:** RFC2933App

IP

IP (Internet Protocol) is commonly used as a delivery service. IP is a connectionless service responsible for moving datagrams from one device to another. As a delivery agent, IP watches to verify that the datagrams are within shipping regulations. To deliver datagrams, IP deals with two issues: addressing and fragmentation.

- RFC 1354
  - **Name:** IP
  - **Model Type Name:** IP1_App

IPM

The IP Multicast Routing (IPM) standard is used for managing IP Multicast Routing for IPv4, independent of the specific multicast routing protocol in use.

- RFC 2932
  - **Name:** IPMRouteStd
  - **Model Type Name:** RFC2932App

IP Tunnel

IP Tunnel MIB describes managed objects used for managing tunnels of any type over IPv4 networks.

- RFC 2667
  - **Name:** IPTunnel
  - **Model Type Name:** RFC2667App

MPLS

MPLS (Multi-Protocol Label Switching) is a standards-approved technology for speeding up network traffic flow and making it easier to manage.

- MplsVpn Draft 3
  - **Name:** MplsVpnApp
  - **Model Type Name:** MplsVpnApp
- MplsVpn Draft 4
  - **Name:** MplsVpnD4App
  - **Model Type Name:** MplsVpnD4App

MSDP

MSDP (Multicast Source Discovery Protocol) is a standard that describes a mechanism to connect multiple IPv4 protocol independent multicast sparse-mode (PIM) domains together.

- IETF Draft 3
  - **Name:** Msdp_D3_App
  - **Model Type Name:** Msdp_D3_App
- IETF Draft 7
  - **Name:** Msdp_D7_App
  - **Model Type Name:** Msdp_D7_App

PIM

PIM (Protocol Independent Multicast) describes objects used for managing the PIM protocol for IPv4, which is applicable to IPv4 routers that implement PIM.

- RFC 2934
  - **Name:** PIM-MIB
  - **Model Type Name:** rfc2934App

SNMP

SNMP is the standard protocol used to monitor IP gateways and the networks to which they attach.

- RFC 1213
  - **Name:** MIB-I
  - **Model Type Name:** SNMP1_Agent
- RFC 1213
  - **Name:** MIB-II
  - **Model Type Name:** SNMP2_Agent
- RFC 4293
  - **Name:** SNMP2_v6_Agent
  - **Model Type Name:** SNMP2_v6_Agent

- RFC 2271, RFC 3411
  - **Name:** SNMP Management Frameworks
  - **Model Type Name:** RFC2271App
- RFC 3413
  - **Name:** SNMP Applications
  - **Model Type Name:** RFC3413App
- RFC 3584
  - **Name:** SNMP Coexistence
  - **Model Type Name:** RFC3584App
- RFC 3415
  - **Name:** View-based Access Control Model
  - **Model Type Name:** RFC3415App
- RFC 1213
  - **Name:** System
  - **Model Type Name:** System1_App

TCP

TCP (Transmission Control Protocol) refers to the connection-oriented transport (communications) protocol used in the Internet suite.

- RFC 2012
  - **Name:** TCP
  - **Model Type Name:** TCP1_App

UDP

UDP (User Datagram Protocol) is part of the transport layer of the OSI model and uses the services of IP to deliver data.

- RFC 2013
  - **Name:** UDP
  - **Model Type Name:** UDP1_App

LAN

This section describes the LAN standards applications that CA Spectrum supports.

Character Stream

The Character Stream application standard provides objects for the management of character stream devices, specifically to interface ports that carry a character stream, whether physical or virtual, serial or parallel, synchronous or asynchronous.

- RFC 1316
  - **Name:** Character Stream
  - **Model Type Name:** RFC1316App

Ethernet

The Ethernet standard provides objects for managing ethernet, such as media.

- RFC 1284
  - **Name:** Ethernet IF App
  - **Model Type Name:** EthernetIfApp

FDDI

FDDI (Fiber Distributed Data Interface) provides speed and reliability to a LAN and is often used as a backbone technology as well as a means of connecting high-speed computers in a local area. CA Spectrum supports the following FDDI applications:

- RFC 1512
  - **Name:** FDDI
  - **Model Type Name:** rfc1512App
  - **Name:** SMT_1
  - **Model Type Name:** GenFDDISmt_II
  - **Name:** MAC_1.1
  - **Model Type Name:** GenFDDIMac_I
  - **Model Type Name:** GenFDDIMac_II

Link Aggregation

Link aggregation is supported through the IEEE8023-LAG-MIB, developed by IEEE for managing 802.3ad. LACP (Link Aggregation Control Protocol) dynamically detects the links that can be aggregated into a Link Aggregation Group (LAG) and aggregates when links are available.

- 802.3ad
  - **Name:** LinkAggregation
  - **Model Type Name:** 802dot3adApp

Note: You can verify LACP_IF_Port for link aggregation interface information. For more information, see Managing Link Aggregation (see page 29).

Power Over Ethernet

Power over Ethernet (POE) provides objects that allow management of power ethernet power sourcing equipment.

- RFC 3621
  - **Name:** Power Ethernet
  - **Model Type Name:** RFC3621App

  For devices that support POE, their corresponding device model's POE interfaces can be identified through the POE column in the Interfaces table. You can disable the POE interface identification by changing the value of the 'EnablePOEMapping' attribute on the selected device model.

  Note: For more information about setting attribute values, see the *Modeling and Managing Your IT Infrastructure Administrator Guide*.

RS-232

RS-232 is one of several common data terminal equipment (DTE) or data circuit-terminating equipment (DCE) interface standards. There are three RS-232 applications:

- RFC 1317
  - **Name:** RS-232
  - **Model Type Name:** RFC1317App
  - **Name:** RS-232 sync
  - **Model Type Name:** RFC1317sync
  - **Name:** RS-232 async
  - **Model Type Name:** RFC1317async

Token Ring

The standard for the Token Ring protocol is IEEE 802.5. FDDI also uses a Token Ring protocol.

- RFC 1231
  - **Name:** Token Rng IF App
  - **Model Type Name:** TokenRingIfApp

Wireless LAN

802.11 is a family of IEEE standards for wireless local area networks (WLANs).

- 802.11
  - **Name:** WirelessLAN
  - **Model Type Name:** 802dot11App

Performance

This section describes the standards CA Spectrum supports for performance-related application models.

RMON

The RMON (Remote Network Monitoring) MIB is based on RFC1757 (Ethernet) and RFC1513 (Token Ring). It is divided into the following groups:

- Statistics
- History
- Alarm
- Host
- HostTopN
- Matrix
- Filter
- Packet Capture
- Event
- Token Ring

Each group defines a set of objects to be monitored. In addition, each group stores data and statistics collected by the agent on the device, which may have multiple network interfaces.

The RMONApp model accesses and presents RMON data from all network interfaces supported by a device. CA Spectrum supports the following RMON application models:

- RFC 1757, RFC 1513
  - **Name:** RMON
  - **Model Type Name:** RMONApp
- RFC 1757
  - **Name:** E Probe
  - **Model Type Name:** RMONEthProbe
- RFC 1513
  - **Name:** T R Probe
  - **Model Type Name:** RMONTRProbe

Traceroute/Lookup

The Traceroute/Lookup standard defines objects for performing remote ping, traceroute, and lookup operations at a remote host.

- RFC 2925
  - **Name:** RFC2925App
  - **Model Type Name:** RFC2925App

Routing

This section describes the routing standards applications that CA Spectrum supports.

BGP4

BGP (Border Gateway Protocol) is the core routing protocol of the Internet.

- RFC 1269
  - **Name:** BGP4
  - **Model Type Name:** BGP4_App

IP Routing

The IP routing applications contain information used by CA Spectrum to resolve the interconnections of devices through the network at the IP level (Layer 3).

- RFC 1213, RFC 2096, RFC 1354
  - **Name:** IP Routing
  - **Model Type Name:** IPRtrApp
  - **Name:** IP Routing
  - **Model Type Name:** IP2RtrApp

IS-IS Routing

The Intermediate System to Intermediate System (IS-IS) routing protocol is used to build routing tables for IP networks.

- RFC 4444
  - **Name**: IS-IS Routing
  - **Model Type Name**: RFC4444App

OSPF

The OSPF (Open Shortest Path First) protocol is a hierarchical interior gateway protocol (IGP) for routing.

- RFC 1253
  - **Name:** OSPF
  - **Model Type Name:** OSPF2RtrApp

Repeater

The Repeater standard provides support for objects used to manage IEEE 802.3 repeaters, sometimes referred to as hubs.

- RFC 1516
  - **Name:** SNMP-Repeater
  - **Model Type Name:** rfc1516App

RIP2

RIP2 (Routing Information Protocol 2) is a distance-vector routing protocol.

- RFC 1724
  - **Name:** RIP2
  - **Model Type Name:** RFC1724App

VRRP

The VRRP (Virtual Router Redundancy Protocol) application allows several routers on a multi-access link to use the same virtual IP address. One router is elected as the master with the other routers acting as backups. This allows host systems to be configured (manually or using DHCP) with a single default gateway rather than running an active routing protocol. This protocol also supports the ability to load-share traffic when both routers are up.

- RFC 2338
  - **Name:** VRRP
  - **Model Type Name:** VRRPApp

SAN

This section describes the SAN (Storage Area Network) standards applications that CA Spectrum supports.

Fibre Channel

Fibre Channel is a gigabit-speed network technology. It is the standard connection type for SAN in enterprise storage.

- Draft FC MGMT-MIB
  - **Name:** FcMgmt
  - **Model Type Name:** DraftFcMgmtApp
- Draft RFC 2837
  - **Name:** FcFabricElement
  - **Model Type Name:** Draft2837App
- RFC 2837
  - **Name:** FcFabricElement
  - **Model Type Name:** RFC2837App

The CA Spectrum DraftFcMgmtApp application model type supports versions 3.0 and 4.0 of the Fibre Channel Management Framework Integration MIB, which was developed by the Fibre Alliance in order to provide an integrated management environment for an enterprise class storage network. If a device that supports this MIB is modeled with CA Spectrum, a DraftFcMgmtApp model is created for that device.

Security

This section describes the security-related standards CA Spectrum supports.

Port-Based Network Access Control

The IEEE 802.1x standard is designed to enhance the security of wireless local area networks (WLANs). It provides an authentication framework for wireless LANs, allowing a user to be authenticated by a central authority.

- 802.1x
  - **Name:** PortNetAccControl
  - **Model Type Name:** 802dot1xApp

RADIUS

CA Spectrum supports the following RADIUS (Remote Authentication Dial-In User Service) standards applications:

- RFC 2618
  - **Name:** RADIUS Authentication Client
  - **Model Type Name:** RFC2618App
- RFC 2620
  - **Name:** RADIUS Accounting Client
  - **Model Type Name:** RFC2620App

User-Based Security Model

This standard provides a description of the User-based Security Model (USM) for SNMP. It defines the elements of procedure for providing SNMP message-level security and provides objects for remotely monitoring and managing the configuration parameters for this security model.

- RFC 3414
  - **Name:** User-based Security Model
  - **Model Type Name:** RFC3414App

WAN

Wide Area Network (WAN) data link technology is used to implement point-to-point connections between devices. This section describes the WAN standards applications that CA Spectrum supports.

ATM

The ATM (Asynchronous Transfer Mode) Client application allows you to monitor virtual channel links and change channel statistics.

- RFC 1695
  - **Name:** ATM_Client
  - **Model Type Name:** ATMClientApp
  - **Name:** ATM_Switch
  - **Model Type Name:** ATMSwitchApp

DS1

DS1 is a high-speed baseband transmission link.

- RFC 1406
  - **Name:** DS1
  - **Model Type Name:** DS1App1406
  - **Model Type Name:** DS1_1406App
- RFC 1232
  - **Name:** DS1
  - **Model Type Name:** RFC1232App

Frame Relay

Frame relay is a packet-based interface standard that has been optimized for the transport of protocol-oriented data. The frame relay interface specification provides a signaling and data transfer mechanism. Frame relay's ability to statistically multiplex means that paths or virtual circuits are defined throughout the network, but no bandwidth is allocated to the paths until data needs to be transmitted. Frame relay provides multiple logical connections within a single physical connection.

RFC 1315 is the MIB for Frame Relay DTEs (Data Terminal Equipment).

- RFC 1315
  - **Name:** Frame Relay
  - **Model Type Name:** FR_1315App
  - **Name:** Frame Relay
  - **Model Type Name:** rfc1315App

Note: The FR_1315App replaces the rfc1315App when Frame Relay Manager is installed.

RFC 2115 is the MIB for Frame Relay DTEs using SMIv2.

- RFC 2115
  - **Name:** FrameRelayApp
  - **Model Type Name:** rfc2115App

PNNI

PNNI (Private Network-to-Network Interface) is a suite of network protocols that can be used to discover an ATM network topology, create a database of topology information, and route calls over the discovered topology.

- PNNI-MIB
  - **Name:** PNNI_App
  - **Model Type Name:** PNNI_App

PPP

The PPP (Point-to-Point Protocol) application provides a method for transmitting datagrams over serial point-to-point links.

- Draft IETF-PPP-MIB
  - **Name:** PPP
  - **Model Type Name:** PPPLinkApp

SONET

SONET (Synchronous Optical Network) applications let you manage SONET/SDH (Synchronous Digital Hierarchy) interfaces. The following SONET standards are supported by CA Spectrum:

- RFC 1595
  - **Name:** SONET
  - **Model Type Name:** rfc1595App
- RFC 2558
  - **Name:** SONET
  - **Model Type Name:** rfc2558App

Chapter 2: Accessing Standard Protocol Information in OneClick

This section describes how to access standards-based application information in OneClick. You can access application models and the information related to them from the device's Information tab or by using the search functionality in the Locater tab.

This section contains the following topics:

Access Standards-Based Information Using the Information Tab

Depending on the device you have modeled, you may have various OneClick subviews available to you from the Information tab in the Component Detail panel. From these subviews you can view application model information.

To access standards-based information from a specific device model

1. Select the device from which you want to view RFC information.
2. In the Component Details panel, in the Information tab, expand the subview containing the information you want to review.

   Various subviews will be available depending on what MIB standards the device supported when it was modeled.

Locater Search

You can use the search functionality in the Locater tab to find application models and to subsequently view application model information. Search results appear in the Results tab of the Contents panel. Detailed information for application models selected in the results list appears in the Component Detail panel.

Search for Application Models

If you are not sure which device to access for the application models you want to view, you can use the Locater tab's search functionality to list every application model that was created and to which you have access rights.

Note: If you are operating a Distributed SpectroSERVER (DSS) environment, some searches require you to select which landscapes to include in your search from the 'Select Landscapes to Search' dialog.

To access application models using Locater search

1. Click the Locater tab in the Navigation panel.
2. In the Locater tab, in the Name column, click 'Application Models' to expand it, and then do one of the following:
   - Double-click 'All Application Models.'
   - Click 'All Application Models,' and then click the 'Create a new search' button.
3. Enter any additional information if prompted, depending on the type of search you are running, and click OK.

   If additional input is not required, the search runs immediately and the search results appear in the Results tab of the Contents panel.
4. To narrow your search, enter further criteria in the Filter box at the top of the results list in the Results tab.

   For example, if you were looking for the Repeater application, you could enter **1516** in the Filter box, which would find the Repeater model by its Model Type Name, 'rfc1516App.' Alternatively, you could enter **repeater** in the Filter box, which would find the Repeater model by its Name, '*<device_name>*_SNMP-Repeater.'

   The Results tab refreshes to show only those models that match the criteria in the Filter box.
5. In the Results tab list, select the application model you want more information about.

   The Component Detail view displays details about the selected application model.
6. Click any of the available tabs in the Component Detail view to review information specific to the selected application model.

Note: For more information about using Locater search functionality, see the *Operator Guide*.

Manage Link Aggregation

IEEE 802.3ad-based link aggregation lets you aggregate two or more links together to form Link Aggregation Groups (LAGs), such that a MAC client considers LAG as a single link. CA Spectrum supports LACP (Link Aggregation Control Protocol) with the following features:

- Locater Search
- Spotlight View
- Threshold Alarm

LACP OneClick View

The LACP Port Aggregation table contains Link Aggregation Control configuration information of every Aggregation Port associated with a device.

The following attributes are available in the LACP Port Aggregation Table:

Aggregator ID

Indicates the ID number as the base port number or lowest number of an aggregator. Each aggregator must have an ID number. For example, an aggregator with ports 12, 16, and 17 must be assigned the ID number 12 because that is the base port number.

Actor Port

Indicates a port number that is assigned to the port by the actor, encoded as an unsigned integer.

Partner Port

Indicates a port number that is associated with the link assigned to the port by the partner, encoded as an unsigned integer.

Actor MAC Address

Defines the value of the system ID for the system that contains the Aggregation Port.

Default: Six-digit MAC address.

Partner MAC Address

Represents the current value of the Aggregation Port protocol.

Default: Six-digit MAC address.

Actor Port Operational State

Indicates the operational values of Actor_State, transmitted by the actor in Link Aggregation Control Protocol Data Units (LACPDU).

Partner Port Operational State

Indicates a string of 8 bits, corresponding to the current values of Actor_State in the most recently received LACPDU transmitted by the protocol Partner. In the absence of an active protocol partner, this value may reflect the manually configured aAggPortPartnerAdminState value.

Actor Port System Priority

Defines the priority value that is associated with the Actor System ID.

Default: Two-digit MAC address.

Partner Port System Priority

Indicates the current administrative value of the port priority for the protocol partner.

Individual or Aggregated Port

Represents a Boolean value of the Aggregation Port. This value indicates whether the Aggregation Port can Aggregate (TRUE) or can only operate as an Individual link (FALSE).

LACP Locater Search

You can use the search functionality in the Locater tab to find the devices that are configured with LACP and the application models that are associated with LACP. Search results appear in the Results tab of the Contents panel. Detailed information for application models that are selected in the results list appears in the Component Detail panel. Access LACP Locater search from the Locater tab of the Navigation

Follow these steps:

1. Open the CA Spectrum OneClick Console.
2. From the Navigation Panel, Click the Locater tab.

   The Search Options window opens.
3. Select Devices, Supports Application, and LACP.

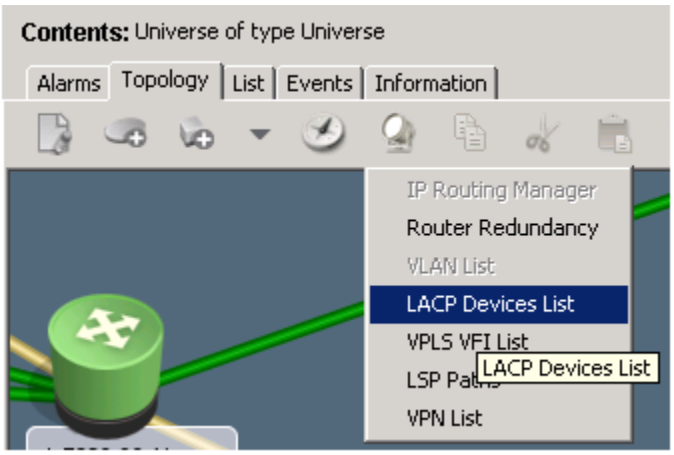
   The LACP Locater Search results are displayed in Contents pane.

   The following figure displays the LACP Locater Search results:

Spotlight View

You can use the Spotlight feature in OneClick to view the devices that are configured with LACP on your network.

The following image displays the LACP Devices List option that is available in Spotlight View:



You can spotlight the listed items if they have been enabled and configured on your network. You can click the Spotlight View button that is available on the Topology toolbar and can select the LACP Devices List option to display the LACP configured devices.

Note: The Spotlight view displays the actors and partners of the devices that are involved in Link Aggregation. Only the actors are displayed if the devices are involved in Link Aggregation with ports that are not of type LACP_IF_Port.

LACP Threshold Computation

The LACP threshold alarm generates various severity alarms on the LACP port model, such as critical, major, and minor. All the logical interfaces that are connected to the physical port of LACP participate in threshold calculation. You can use this threshold alarm to know the usage of the logical interfaces in an aggregate group of LACP.

The LACP threshold is calculated based on the IfOperStatus of the LACP interface. To access IfOperStatus, you must have the admin link (based on external attribute, ifAdminStatus) status as UP. If the admin link is DOWN, no threshold is calculated. If the admin link is UP, you can calculate threshold using the following formula:

`down/totallinks`

The following scenarios are considered during the threshold comparisons:

- If the device attributes are set to a value other than 0 but not greater than 100, the following attributes are used during the threshold comparisons:
  - LACP_Critical_Threshold = 0x2202c0
  - LACP_Major_Threshold = 0x2202bf
  - LACP_Minor_Threshold = 0x2202be
- If the LACP_IF_Port attributes are set to 0 or less than 0 or greater than 100, the following VNM attributes values are used during the threshold comparisons:
  - Critical_Threshold = 0x0001321e
  - Major_Threshold = 0x0001321d
  - Minor_Threshold = 0x0001321c
- If all the LACP port level attributes are set to 0 and the VNM LACP threshold attributes are set to greater than 100, no threshold is calculated.

Note: If the threshold attributes of both VNM and LACP_IF_Port level are set to 0, no threshold is calculated. The threshold alarms are not available for ports that are not of type LACP_IF_Port. The threshold alarm is an additional intelligence of Gen_IF_Port. This alarm is not activated for other custom port models.

Appendix A: RFC Reference

The following is a list of all RFCs that are supported by CA Spectrum. RFC support is typically provided in the form of application models, which allows it to be dynamically applied to any device model in CA Spectrum that is identified as supporting the particular RFC, including GnSNMPDev.

RFC Number	RFC Name	RFC Description
RFC1286	RFC1286-MIB	Definitions of Managed Objects for Bridges.
RFC1493	BRIDGE-MIB	
RFC1474	PPP-BRIDGE-NCP-MIB	
RFC2674	Q-BRIDGE-MIB	Management Information Base for Network Management of TCP/IP-based Internets: MIB-II.
RFC1525	SOURCE-ROUTING-MIB	Definitions of Managed Objects for Source Routing Bridges.
RFC1289	RFC1289-phivMIB	DECnet Phase IV MIB Extensions.
RFC1559	DECNET-PHIV-MIB	
RFC2662	ADSL-LINE-MIB	Definitions of Managed Objects for the ADSL Lines.
RFC2669	DOCS-CABLE-DEVICE-MIB	DOCSIS Cable Device MIB Cable Device Management Information Base for DOCSIS Compliant Cable Modems and Cable Modem Termination Systems.
RFC2670	DOCS-IF-MIB	Radio Frequency (RF) Interface Management Information Base for MCNS/DOCSIS Compliant RF Interfaces.
RFC2737	ENTITY-MIB	The MIB module for representing multiple logical entities supported by a single SNMP agent.
RFC1514	HOST-RESOURCES-MIB	Host Resources MIB.
RFC2790		
RFC1565	APPLICATION-MIB	Network Services Monitoring MIB.
RFC2248	NETWORK-SERVICES-MIB	
RFC2788		

RFC Number	RFC Name	RFC Description
RFC1566	MTA-MIB	Mail Monitoring MIB.
RFC2249		
RFC2789		
RFC1567	DSA-MIB	X.500 Directory Monitoring MIB.
RFC2605		
RFC1628	UPS-MIB	UPS Management Information Base.
RFC2287	SYSAPPL-MIB	Definitions of System-Level Managed Objects for Applications. The MIB module defines management objects that model applications as collections of executables and files installed and executing on a host system. The MIB presents a system-level view of applications; objects in this MIB are limited to those attributes that can typically be obtained from the system itself without adding special instrumentation to the applications.
RFC792		Internet Control Message Protocol (ICMP).
RFC2933	IGMP-STD-MIB	The MIB module for IGMP Management.
RFC1158	RFC1158-MIB	Management Information Base for Network Management of TCP/IP-based internets: MIB-II.
RFC1213	RFC1213-MIB	
RFC1354	RFC1354-MIB	
RFC2011	IP-MIB	
RFC2012	TCP-MIB	
RFC2013	UDP-MIB	
RFC2096	IP-FORWARD-MIB	
RFC4293	IP-MIB	
RFC2465	IPV6-TC	
RFC2452	IPV6-TCP-MIB	
RFC1573	IANAifType-MIB	The MIB module which defines the IANAifType textual convention, and thus the enumerated values of the ifType object defined in MIB-II's ifTable.
RFC1907	SNMPv2-MIB	The MIB module for SNMPv2 entities.

RFC Number	RFC Name	RFC Description
RFC2233	IF-MIB	The MIB module to describe generic objects for network interface sub-layers. This MIB is an updated version of the MIB-II ifTable, and incorporates the extensions defined in RFC1229.
RFC2863		
RFC2213	INTEGRATED-SERVICES-MIB	The MIB module to describe the Integrated Services Protocol.
RFC2932	IPMROUTE-STD-MIB	The MIB module for management of IP Multicast routing, but independent of the specific multicast routing protocol in use.
RFC2667	TUNNEL-MIB	The MIB module for management of IP Tunnels, independent of the specific encapsulation scheme in use.
RFC2934	PIM-MIB	The MIB module for management of PIM routers.
RFC2271	SNMP-FRAMEWORK-MIB	An Architecture for Describing SNMP Management Frameworks.
RFC3411		
RFC3413	SNMP-TARGET-MIB	Defines five types of SNMP applications that make use of an SNMP engine as described in STD 62, RFC3411.
RFC3584	SNMP-COMMUNITY-MIB	Describes the coexistence between Version 1, Version 2, and Version 3 of the Internet-Standard Network Management Framework.
RFC3415	SNMP-VIEW-VASED-ACM-MIB	View-Based Access Control Model (VACM) for the Simple Network Management Protocol.
RFC1316	RFC1316-MIB	Definitions of Managed Objects for Character Stream Devices using SMIv2.
RFC1658	CHARACTER-MIB	
RFC1284	RFC1284-MIB	Definitions of Managed Objects for the Ethernet-like Interface Types.
RFC1398	RFC1398-MIB	
RFC1623	EtherLike-MIB	
RFC1643		
RFC2665		
RFC1285	RFC1285-MIB	FDDI Management Information Base.

RFC Number	RFC Name	RFC Description
RFC1512	FDDI-SMT73-MIB	
RFC3621	POWER-ETHERNET-MIB	An extension to the Ethernet-like Interfaces MIB with a set of objects for managing Power Sourcing Equipment (PSE).
RFC1317	RFC1317-MIB	Definitions of Managed Objects for RS-232-like Hardware Devices using SMIv2.
RFC1659	RS-232-MIB	
RFC1318	RFC1318-MIB	Definitions of Managed Objects for Parallel-printer-like Hardware Devices using SMIv2.
RFC1660	PARALLEL-MIB	
RFC1231	RFC1231-MIB	IEEE 802.5 MIB using SMIv2.
RFC1743	TOKENRING-MIB	
RFC1748		
RFC1271	RFC1271-MIB	Remote Network Monitoring Management Information Base Version 2 using SMIv2.
RFC1757	RMON-MIB	
RFC2021	RMON2-MIB	
RFC2925	DISMAN-PING-MIB	Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations.
RFC4560		
RFC1269	RFC1269-MIB	Definitions of Managed Objects for the Fourth Version of the Border Gateway Protocol (BGP-4) using SMIv2.
RFC1657	BGP4-MIB	
RFC1243	RFC1243-MIB	AppleTalk Management Information Base II.
RFC1742	APPLETALK-MIB	
RFC1248	RFC1248-MIB	OSPF Version 2 Management Information Base.
RFC1252	RFC1252-MIB	
RFC1253	RFC1253-MIB	
RFC1850	OSPF-MIB	
RFC1368	SNMP-REPEATER-MIB	Definitions of Managed Objects for IEEE 802.3 Repeater Devices.
RFC1516		
RFC2108		

RFC Number	RFC Name	RFC Description
RFC3289	DIFFSERV-DSCP-TC	The Textual Conventions defined in this module should be used whenever a Differentiated Services Code Point is used in a MIB.
RFC1724	RIPv2-MIB	The MIB module to describe the RIP2 Version 2 Protocol.
RFC2837	FIBRE-CHANNEL-FE-MIB	The MIB module for Fibre Channel Fabric Element.
RFC2618	RADIUS-AUTH-CLIENT-MIB	The OID assigned to Remote Access Dialin User Service (RADIUS) MIB work by the IANA.
RFC2620	RADIUS-ACC-CLIENT-MIB	The MIB module for entities implementing the client side of the RADIUS accounting protocol.
RFC2574	SNMP-USER-BASED-SM-MIB	The management information definitions for the SNMP User-Based Security Model.
RFC3414		
RFC1696	Modem-MIB	Modem Management Information Base (MIB) using SMIv2.
RFC2787	VRRP-MIB	Definitions of Managed Objects for the Virtual Router Redundancy Protocol (VRRP).
RFC1695	ATM-MIB	Definitions of Managed Objects for ATM Management.
RFC2514	ATM-TC-MIB	
RFC2515	ATM-MIB	
RFC1232	RFC1232-MIB	Definitions of Managed Objects for the DS1, E1, DS2, and E2 Interface Type.
RFC1406	RFC1406-MIB	
RFC2495	DS1-MIB	
RFC1233	RFC1233-MIB	Definitions of Managed Objects for the DS3/E3 Interface Type.
RFC1407	RFC1407-MIB	
RFC2496	DS3-MIB	
RFC1315	RFC1315-MIB	Management Information Base for Frame Relay DTEs Using SMIv2.
RFC2115	FRAME-RELAY-DTE-MIB	

RFC Number	RFC Name	RFC Description
RFC1595	SONET-MIB	Definitions of Managed Objects for the SONET/SDH Interface Type.
RFC2558		

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