# Support Information for Generic Devices

This chapter contains support information for Virtual Network Elements (VNEs) that manage generic devices in Cisco ANA 3.6.5, and contains the following topics:

**Note**    For more information about the objects and attributes described in this chapter, see the *Cisco Active Network Abstraction 3.6.5 Technology Support and Information Model Reference Manual*. For information about which NE types are supported in Cisco ANA 3.6.5, see Generic VNE.

## Understanding the Generic VNE

The generic VNE can be used to model any NE that is not currently supported by Cisco ANA. The generic VNE provides a basic level of network management that provides information such as the physical interfaces available on the device and their status, rudimentary logical modeling, and parsing of basic traps.

The generic VNE models NEs using SNMP MIB2, which is the most generic and widely used management interface. The generic VNE does not consider the device vendor, device type, or software version of the NE that it models.

This section includes the following information about the generic VNE:

# Physical Inventory Model

The generic VNE uses a static model for the device chassis. The rest of the physical inventory is modeled using the ifTable. Since modules are not modeled, the generic VNE creates a single generic module on which all of the physical interfaces reside.

Table 10-1 describes which MIB tables are used to model the physical inventory components that are supported by the generic VNE.

*Table 10-1        MIBs Used for Physical Inventory Model of Generic VNE —Cisco ANA 3.6.5*

| Logical Component | MIB Table | Columns/Tables Used For Modeling |
| --- | --- | --- |
| Interfaces | ifTable | • ifDescr<br>• ifType<br>• ifOperStatus |
| Ports | | |
|     Port status | ifTable | • ifOperStatus and ifAdminStatus |
|     Port speed | ifTable | • ifSpeed |
|     MAC address | ifTable | • ifPhysAddress (Ethernet ports) |

Note    Certain general properties on the managed element, such as system description, are modeled using the system MIB.

# Logical Inventory Model

Table 10-2 describes which MIB tables are used to model the logical inventory components that are supported by the generic VNE.

*Table 10-2        MIBs Used for Logical Inventory Model of Generic VNE—Cisco ANA 3.6.5*

| Logical Component | MIB Table | Columns/Tables Used For Modeling |
| --- | --- | --- |
| IP interfaces | ipAddrTable | • ipAdEntIfIndex<br>• ipAdEntNetMask |
| ARP table | ipNetToMediaTable | • ipNetToMediaPhysAddress<br>• ipNetToMediaType |
| Routing table | ipRouteTable | • ipRouteDest<br>• ipRouteIfIndex<br>• ipRouteNextHop<br>• ipRouteType<br>• ipRouteMask |

*Table 10-2        MIBs Used for Logical Inventory Model of Generic VNE—Cisco ANA 3.6.5 (Continued)*

| Logical Component | MIB Table | Columns/Tables Used For Modeling |
|---|---|---|
| Bridging table | dot1dTpFdbTable | --- |
| Default bridge | dot1dBridge | • dot1dBaseBridgeAddress<br>• dot1dBaseType |

# Generic VNE—Supported Traps

The generic VNE can parse the standard MIB2 traps listed in Table 10-3.

*Table 10-3        Supported Traps for Generic VNE—Cisco ANA 3.6.5*

| | |
|---|---|
| bgpBackwardTransition | mplsLdpInitSessionThresholdExceeded |
| bgpEstablished | mplsLdpSessionDown |
| ospfIfAuthFailure | mplsLdpSessionUp |
| ospfIfConfigError | mplsTunnelDown |
| ospfIfRxBadPacket | mplsTunnelUp |
| ospfIfStateChange | mplsTunnelReoptimized |
| ospfMaxAgeLsa | mplsTunnelRerouted |
| ospfNbrStateChange | authenticationFailure |
| ospfOriginateLsa | coldStart |
| ospfTxRetransmit | warmStart |
| mplsL3VpnVrfDown | entConfigChange |
| mplsL3VpnVrfUp | linkDown |
| mplsL3VpnVrfNumVrfRouteMaxThreshExceeded | linkUp |
| mplsL3VpnVrfRouteMidThreshExceeded | |

The generic VNE can identify traps, but it cannot correlate them. This is because the generic VNE does not include the model entities required by higher trap parsing levels.

For example, if Cisco ANA receives an mplsTunnelDown trap from a device modeled with the generic VNE, Cisco ANA can identify the Tunnel Down trap, but it cannot perform correlation on the trap. The reason is that the generic VNE does not investigate tunnels, which means that there is no Device Component in the model to which Cisco ANA can attach a correlation flow.

# Generic VNE—Supported Service Events

The generic VNE supports the service events listed in Table 10-4.

*Table 10-4        Supported Service Events for Generic VNE—Cisco ANA 3.6.5*

| Event Name | ANA Version | Expedited |
|---|---|---|
| Device Unreachable | 3.6.0 | N |
| Discard Packets | 3.6.0 | N |
| Dropped Packets | 3.6.0 | N |
| Port Flapping | 3.6.0 | N |
| Port Down | 3.6.0 | N |

**Note**    For more information on supported service events, see the *Cisco Active Network Abstraction 3.6.5 User Guide,* Chapter 16, "Supported Service Alarms".

# Limitations

The generic VNE uses MIB2 to cover the widest possible range of NEs. Although MIB2 is a widely accepted industry standard, most network equipment vendors augment MIB2 with other Management Interfaces such as private MIBs, Telnet, XML, and so on. In addition, different vendors sometimes have different implementations of standard MIBs. As a result, even the limited model created by the generic VNE is dependent on the vendor's adherence to general network management standards.

# Generic VNE—Supported Technologies

The following technologies are supported by the Generic VNE in Cisco ANA 3.6.5:

# Generic VNE—Supported Service Events

*Table 10-5        Supported Service Events for Generic VNE—Cisco ANA 3.6.5*

| Event Name | ANA Version | Expedited |
|---|---|---|
| Device Unreachable | 3.6.0 | N |
| Discard Packets | 3.6.0 | N |
| Dropped Packets | 3.6.0 | N |
| Port Flapping | 3.6.0 | N |

*Table 10-5        Supported Service Events for Generic VNE—Cisco ANA 3.6.5 (Continued)*

| Event Name | ANA Version | Expedited |
|---|---|---|
| Port Down | 3.6.0 | N |

# Supported Technologies on Generic Devices

The following sections list the objects and attributes that are supported on Generic devices in Cisco ANA 3.6.5 per technology:

- IP, page 10-5
- Ethernet (IEEE 802.3), page 10-8
- Base Logical Components, page 10-11
- Common, page 10-12

## IP

*Table 10-6        IP Attribute Support on Generic Devices—Cisco ANA 3.6.5*

| Attribute | Generic |
|---|---|
| **IMO Name—IIPInterface** | |
| IP Address | Y |
| Subnetwork Mask | Y |
| IP Interface Addresses Array | |
| Interface Name | |
| Interface Description | Y |
| IP Interface State | Y |
| OSPF Interface Cost | |
| Broadcast Address | |
| MTU | |
| Lookup Method | |
| Address Resolution Type | |
| ARP Timeout | |
| Secured ARP | |
| ICMP Mask Reply | |
| IGMP Proxy | |
| HSRP Groups | |
| IP Multiplexing Table | |
| IANA Type | |

*Table 10-6       IP Attribute Support on Generic Devices—Cisco ANA 3.6.5 (Continued)*

| Attribute | Generic |
|---|---|
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IIPMuxEntry** | |
| Termination Point | |
| Destination IP Subnet | |
| **IMO Name—IRoutingEntity** | |
| Routing Table | Y |
| ARP Entity | Y |
| Routing Table Changes | |
| Name | Y |
| Logical Sons | Y |
| **IMO Name—IRoutingEntry** | |
| Destination IP Subnet | Y |
| Next Hop IP Address | Y |
| Type | Y |
| Routing Protocol Type | Y |
| Outgoing Interface Name | Y |
| **IMO Name—IARPEntity** | |
| ARP Table | Y |
| **IMO Name—IARPEntry** | |
| IP Address | Y |
| MAC Address | Y |
| Port | Y |
| Entry Type | Y |
| **IMO Name—IIPPool** | |
| IP Address Pool Entries | |
| Name | |
| Index | |
| **IMO Name—IIPRangeBasedIPPoolEntry** | |
| Start IP Address | |
| End IP Address | |
| Unused Addresses | |
| Used Addresses | |
| Reserved Addresses | |

*Table 10-6        IP Attribute Support on Generic Devices—Cisco ANA 3.6.5 (Continued)*

| Attribute | Generic |
|---|---|
| **IMO Name—IIPSubnetBasedIPPoolEntry** | |
| IP Subnet | |
| Unused Addresses | |
| Used Addresses | |
| Reserved Addresses | |
| **IMO Name—HSRPGroupEntry** | |
| Group Number | |
| Port Description | |
| Priority | |
| Coupled Router | |
| State | |
| Tracking Interfaces | |
| Virtual IP Address | |
| Virtual MAC Address | |
| **IMO Name—ITunnelGRE** | |
| Name | |
| Tunnel Destination and Source | |
| IP Address | |
| IP Interface State | |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |

# Ethernet (IEEE 802.3)

*Table 10-7        Ethernet (IEEE 802.3) Attribute Support on Generic Devices—Cisco ANA 3.6.5*

| Attribute | Generic |
|---|---|
| **IMO Name—ILagPortEntry** | |
| Actor and Partner Admin Keys | |
| Actor and Partner Oper Keys | |
| Selected and Attached Aggregation Identification | |
| Actor Port | |
| Actor Port Priority | |
| Partner Admin and Oper Port | |
| Partner Admin and Oper Port Priority | |
| Actor and Partner Admin States | |
| Actor and Partner Oper States | |
| **IMO Name—IEthernet** | |
| MAC Address | Y |
| Duplex Mode | |
| Output Flow Control | |
| Input Flow Control | |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IVlanInterface** | |
| Mode | |
| Native VLAN Identification | |
| Virtual LAN Table | |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IVlanEncapMux** | |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IIEEE802** | |
| VLAN Identification | |
| Binding Information | |
| Binding Status | |

*Table 10-7        Ethernet (IEEE 802.3) Attribute Support on Generic Devices—Cisco ANA 3.6.5*

| Attribute | Generic |
|---|---|
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IStpService** | |
| Protocol Type | |
| Current and Bridge Max Age | |
| Current and Bridge Hello Time | |
| Current and Bridge Forward Delay | |
| Instance Information Table | |
| Same as ISystemService | |
| **IMO Name—IMstService** | |
| Protocol Properties | |
| Same as IStpService | |
| **IMO Name—IMstProperties** | |
| Force Version | |
| Configuration format, Region Name and Revision Level | |
| External Root Cost | |
| Maximum Instances | |
| **IMO Name—IStpInstanceInfo** | |
| Object Identification | |
| Identification | |
| Priority | |
| Designated Parent and Root Bridges | |
| Root Cost | |
| Is Root | |
| Root Port Identification | |
| Port Information Table | |
| **IMO Name—IMstInstanceInfo** | |
| Instance Identification | |
| same as IStpInstanceInfo | |
| **IMO Name—IPvstpInstanceInfo** | |
| Protocol Type | |
| Current and Bridg Maximum Age | |
| Current and Bridge Hello Time | |
| Current and Bridge Forward Delay | |

*Table 10-7* **Ethernet (IEEE 802.3) Attribute Support on Generic Devices—Cisco ANA 3.6.5**

| Attribute | Generic |
|---|---|
| same as IStpInstanceInfo | |
| **IMO Name—IRstpInstanceInfo** | |
| Force Version | |
| same as IStpInstanceInfo | |
| **IMO Name—IStpPortInfo** | |
| Object Identification | |
| Priority | |
| State | |
| Path Cost | |
| Is Edge | |
| Is Point to Point | |
| Role | |
| **IMO Name—IMstPortInfo** | |
| Hello Time | |
| same as IStpPortInfo | |
| **IMO Name—IEthernetChannel** | |
| Group Number | |
| Bandwidth | |
| Aggregation Protocol | |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |

# Base Logical Components

Table 10-8    *Base Logical Components Attribute Support on Generic Devices—Cisco ANA 3.6.5*

| Attribute | Generic |
|---|---|
| **IMO Name—IManagedElement** | |
| IP Address | Y |
| Communication State | Y |
| Investigation State | Y |
| Element Category | Y |
| Element Type and Key | Y |
| Device Name | Y |
| System Name | Y |
| System Description | Y |
| Up Time | Y |
| Software Version | Y |
| Mempry and CPU Usage | |
| Vendor Identity | Y |
| **IMO Name—IContext** | |
| Name | |
| Bounded Connections | |
| IP Address Pools | |
| Forwarding Componets List | |
| Traffic Descriptors List | |
| Tunnel Containers List | |
| Data Link Aggregation Containers List | |
| **IMO Name—ISystemService** | |
| Type | |
| Status | |
| Up Time | |

# Common

*Table 10-9        Common Attribute Support on Generic Devices—Cisco ANA 3.6.5*

| Attribute | Generic |
|---|---|
| **IMO Name—IPhysicalLayer** | |
| Media Type | |
| Clocking Source | |
| Maximum Speed | Y |
| Is Internal Port | |
| Discarded Bandwidth | |
| Dropped Bandwidth | |
| Input Bandwidth | |
| Output Bandwidth | |
| Discarded and Received Input Data Counters | Y |
| Dropped and Forward Output Data Counters | Y |
| Administrative Status | Y |
| Operational Status | Y |
| Last Changed | Y |
| IANA Type | |
| Containing CTPs | |
| Contained CTPs | |
| **IMO Name—IBridge** | |
| Bridge Table | |
| Type | |
| MAC Address | |
| IP Interface | |
| Name | |
| Logical Sons | |
| **IMO Name—IBridgeEntry** | |
| Destination MAC | Y |
| Outgoing Interface | Y |
| **IMO Name—IVcSwitchingEntity** | |
| Cross Connect Table | |
| Logical Sons | |