



CHAPTER 34

Common Components

This chapter describes the level of support that Cisco ANA provides for components common to all network elements, as follows:

- [Information Model Objects \(IMOs\), page 34-1](#)
- [Network Topology, page 34-7](#)
- [Service Alarms, page 34-7](#)

Information Model Objects (IMOs)

This section describes the following IMOs:

- [Physical Layer \(IPhysicalLayer\)](#)
- [Bridging Entity \(IBridge\)](#)
- [Bridging Entry \(IBridgeEntry\)](#)
- [VC Multiplexer \(EncapMux\)](#)
- [VC Encapsulation \(IVcBasedEncapsulation\)](#)
- [Virtual Connection Switching Entity \(IVcSwitchingEntity\)](#)
- [Virtual Cross Connection \(IVcCrossConnect\)](#)
- [Forwarding Component Container \(IFWComponentContainer\)](#)
- [Traffic Descriptor Container \(ITrafficDescriptorContainer\)](#)
- [Tunnel Container \(ITunnelContainer\)](#)

Physical Layer

The **Physical Layer** object is bound by its Containing Termination Points attribute to a **Port Connector** object. It is accessed by the data link layer bound by its Contained Connection Termination Points attribute.

The polling interval for each of the four “Thresholds” attributes is marked as Not Applicable (N/A) because it does not originate from the modeled NE. Instead, it is taken from the TCA system of the VNE.


Note

The following attributes are configured in the registry and not retrieved from the device.

Table 34-1 **Physical Layer (IPhysicalLayer)**

Attribute Name	Attribute Description	Scheme	Polling Interval
Media Type	Physical media type (<i>Null, Thin Coax, Thick Coax, Fiber Optic, Multi Mode Fiber Optic, Single Mode Fiber Optic, Short Single Mode Fiber Optic, Long Single Mode Fiber Optic, UTP, STP, FTP, EIA/TIA-232, EIA/TIA-449, V.35, X.21, EIA/TIA-530, EIA/TIA-530A, Generic Serial, EIA/TIA-612/613, Other</i>)	Any	Configuration
Clocking Source	Clocking source (<i>Unknown, Other, Network, Internal, Loop Timed, External, None, Line, Back Plane, Adaptive Timing</i>)	Any	Configuration
Maximum Speed	Maximum supported speed with units specification	Any	System
Is Internal Port	Indicates an internal port, such as between module and backplane (<i>True, False</i>)	Any	Configuration
Maximum and Minimum Discarded Thresholds	Maximum and minimum discarded input bandwidth thresholds	Any	N/A
Discarded Bandwidth	Current discarded input bandwidth	Any	Configuration
Maximum and Minimum Dropped Thresholds	Maximum and minimum dropped output bandwidth thresholds	Any	N/A
Dropped Bandwidth	Current dropped output bandwidth	Any	Configuration
Maximum and Minimum Input Thresholds	Maximum and minimum utilized input bandwidth thresholds	Any	N/A
Input Bandwidth	Current utilized input bandwidth	Any	Configuration
Maximum and Minimum Output Thresholds	Maximum and minimum utilized output bandwidth thresholds	Any	N/A
Output Bandwidth	Current utilized output bandwidth	Any	Configuration
Discarded and Received Input Data Counters	Discarded and received input octets and packets counters	Any	Topology L1
Dropped and Forwarded Output Data Counters	Dropped and forwarded output octets and packets counters	Any	Topology L1
Administrative Status	Administrative status (<i>Unknown, Up, Down, Testing</i>)	Any	Status
Operational Status	Operational status (<i>Unknown, Up, Down, Testing, Dormant, Not Present</i>)	Any	Status
Operational Status Last Change	Date of last operational status change	Any	Configuration

Table 34-1 *Physical Layer (IPhysicalLayer) (continued)*

Attribute Name	Attribute Description	Scheme	Polling Interval
IANA Type	Internet Assigned Numbers Authority (IANA) type of the sublayer	N/A	N/A
Containing Termination Points	Underlying termination points (connection or physical)	Any	N/A
Contained Connection Termination Points	Bound connection termination points	Any	N/A

Bridging Entity

The [Bridging Entity](#) object describes the IEEE 802-based protocol- independent forwarding component of an IEEE 802 bridge or switch. It is bound by its Logical Sons attribute to all the data link layer objects (such as [Ethernet Interface](#)) among which this Bridging Entity is bridging or switching IEEE 802-based data link frames.

Table 34-2 *Bridging Entity (IBridge)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Bridge Table	Array of Bridging Entries	Any	Configuration
Type	Bridge type (<i>Null, Automatic, Regular, Bridge Route</i>)	Any	Configuration
MAC Address	Bridge internal MAC address used either for running Spanning Tree Protocol (STP) or for bridge network management	Any	Configuration
IP Interface	OID of the IP interface used mainly for routing traffic from that bridge	Any	Configuration
Name	Bridging entity name	Any	Configuration
Logical Sons	Array of all IEEE 802-based data link interfaces among which this Bridging Entity is bridging or switching IEEE 802-based data link frames	Any	Configuration
VLAN Type	The type of VLAN	Any	Configuration

Bridging Entry

The [Bridging Entry](#) object describes a domain-wide bridge table entry within a [Bridging Entity](#).

Table 34-3 *Bridging Entry (IBridgeEntry)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Destination MAC Address	Destination station MAC address	Any	Configuration
Outgoing Interface	Underlying outgoing interface (Cisco Ethernet Channels , Ethernet Interfaces , Virtual LAN Interfaces or Virtual LAN Multiplexers)	Any	Configuration

VC Multiplexer

The **VC Multiplexer** object is bound by its Containing Termination Points attribute to either an **ATM Interface** or a **Frame Relay Interface** object. It is accessed primarily by the data link layer **VC Encapsulations** bound by its Contained Connection Termination Points attribute.

Table 34-4 *VC Multiplexer (EncapMux)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Virtual Connection Count	Bound virtual connection count	Any	Configuration
IANA Type	Internet Assigned Numbers Authority (IANA) type of the sublayer	N/A	N/A
Containing Termination Points	Underlying termination points (ATM Interface or Frame Relay Interface)	Any	N/A
Contained Connection Termination Points	Bound connection termination points (VC Encapsulations)	Any	N/A

VC Encapsulation

The data link layer **VC Encapsulation** object is bound by its Containing Termination Points attribute to an ATM or Frame Relay **VC Multiplexer** object. It is accessed primarily by a network layer object (such as an **IP Interface**), and also by the data link layer object (such as an **Ethernet Interface** or **PPP Encapsulation**) bound by its Contained Connection Termination Points attribute.

Table 34-5 *VC Encapsulation (IVcBasedEncapsulation)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Virtual Connection	Virtual connection (ATM Virtual Connection or Frame Relay Virtual Connection)	Any	Configuration
Binding Information	Binding information (<i>User Name, ...</i>)	Any	Configuration
Binding Status	Binding status (<i>Not Bound, Bound</i>)	Any	Configuration
IANA Type	Internet Assigned Numbers Authority (IANA) type of the sublayer	N/A	N/A
Containing Termination Points	Underlying termination points (connection or physical)	Any	N/A
Contained Connection Termination Points	Bound connection termination points	Any	N/A

Virtual Connection Switching Entity

The [Virtual Connection Switching Entity](#) object describes the standard forwarding component of an ATM or Frame Relay Switch. It is bound by its Logical Sons attribute to all the data link layer objects (such as [ATM Interfaces](#) or [Frame Relay Interfaces](#)) for which this [Virtual Connection Switching Entity](#) is switching cells or frames.

Table 34-6 *Virtual Connection Switching Entity (IVcSwitchingEntity)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Cross Connect Table	Array of Virtual Cross Connections	Any	Configuration
Cross Connect Table Size	Size of the cross-connect table	Any	Configuration
Logical Sons	Array of all ATM Interfaces or Frame Relay Interfaces for which this Virtual Connection Switching Entity is switching cells or frames.	Any	N/A

Virtual Cross Connection

The [Virtual Cross Connection](#) object describes either a [Virtual Connection Switching Entity](#)-wide or an [ATM Interface](#)-specific Cross Connect table's entry.

Table 34-7 *Virtual Cross Connection (IVcCrossConnect)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Ingress and Egress Virtual Connection	Ingress and egress virtual connections (ATM Virtual Connection or Frame Relay Virtual Connection)	Any	Configuration
Ingress and Egress Port	Ingress and egress ports (<i>Port Connectors</i>)	Any	Configuration

Forwarding Component Container

The [Forwarding Component Container](#) object aggregates a single type of Forwarding Component, such as a [Routing Entry](#), [Bridging Entity](#) or [Virtual Connection Switching Entity](#).

Table 34-8 *Forwarding Component Container (IFWComponentContainer)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Forwarding Components	Array of a single type of forwarding component	Any	Configuration
Type	Forwarding component (<i>Null, Routing Entities, Bridges, VRFs, LSEs, VC Switching Entities, L2TP Peers, MPBGPs, IMA Groups</i>)	Any	Configuration

Traffic Descriptor Container

The [Traffic Descriptor Container](#) object is basically a container of any table's entries. It aggregates a single type of Traffic Descriptor (such as [OSPF Entry](#) objects).

Table 34-9 *Traffic Descriptor Container (ITrafficDescriptorContainer)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Traffic Descriptors	Array of a single type of traffic descriptor	Any	Configuration
Type	Descriptor type (<i>Null, ATM Traffic Profiles, ADSL Traffic Descriptors, SDSL Traffic Descriptors, IDSL Traffic Descriptors, SHDSL Traffic Descriptors, MPLS Properties, CAC Profiles, ATM Access Profiles, OSPF Networks, BGP Neighbor, Access Lists, Tunnel Traffic Descriptors, QoS Policies, QoS Classes, IS-IS Database, QoS WRED, ATM Traffic Shaping Profile, Frame Relay Traffic Profiles, Rate Limit, Filter, Policer, IP Pools, ISAKMP Policies, IPsec Maps, Process List, Installed Software, L2TP Peer Group, L2TP Domain Group, QoS Object Table, QoS Class Map, QoS Policy Map, QoS Match Statements Table, QoS Queueing Config Table, QoS Service Policy Table, ADSL 2 Traffic Descriptors, ADSL 2 Spectrum Descriptors</i>)	Any	Configuration

Tunnel Container

The [Tunnel Container](#) object aggregates instances of a single type of tunnel interface (either [MPLS TE Tunnel Interfaces](#) or [PTP Layer 2 MPLS Tunnel Interfaces](#)).

Table 34-10 *Tunnel Container (ITunnelContainer)*

Attribute Name	Attribute Description	Scheme	Polling Interval
Tunnel Edges	Array of either PTP Layer 2 MPLS Tunnel Interfaces or MPLS TE Tunnel Interfaces	Any	Configuration

Network Topology

The Cisco Discovery Protocol (CDP), although proprietary, plays a major role in discovery of all Cisco network equipment. Cisco ANA uses it as part of the data link topology discovery for all Cisco network elements. It uses CDP by searching for the existence of local CDP neighbor signatures, gathered from the CDP process, in any remote side port of the same type.

LLDP, which is a standard discovery protocol for the data link layer, is also used for link discovery on the Cisco devices which support this protocol. Cisco ANA uses LLDP by searching for the existence of local LLDP neighbor signatures, gathered from the LLDP process, in any remote side port of the same type.

Service Alarms

The following alarms are supported for this technology:

- Cloud Problem
- Discard Input Packets/Normal Discard Input Packets
- Dropped Output Packets/Normal Dropped Output Packets
- Link Down/Link Up
- Port Down/Port Up
- Receive Utilization/Receive Utilization Normal
- Transmit Utilization/Transmit Utilization Normal

For detailed information about alarms and correlation, see the [Cisco Active Network Abstraction 3.7 User Guide](#).

