CHAPTER 36

Logical Components

This chapter describes the level of support that Cisco ANA provides for basic logical components required for network element modeling, as follows:

Information Model Objects (IMOs)

This section describes the following IMOs:

- Managed Element (IManagedElement)
- Logical Root (ILogicalRoot)
- Physical Root (IPhysicalRoot)
- Managed IP (IManagedIP)
- Context (IContext)
- System Service (ISystemService)

Managed Element

The Managed Element object describes the root object of a modeled network element, from which all of its physical (chassis, slots, modules, port connectors) and logical (routing and switching entities, communication and physical termination point) component objects are accessed.

Table 36-1 Managed Element (IManagedElement)

Attribute Name	Attribute Description	Scheme	Polling Interval
IP Address	Management IP address	Any	Configuration
Communication State	Communication state with the managed device and the gateway (*Agent Unloaded, Device Unreachable, Agent Unreachable, Device Reachable, Connected, Connecting, Partially Connected, Connecting, Unknown*)	Any	Configuration
Investigation State	Investigation state of the VNE (*Unknown, Initializing, Normal, Incomplete, Unsupported, Device Agent Shutting Down, Device Agent Maintenance, Device Agent Preparing for Maintenance*)	Any	Configuration

Table 36-1 Managed Element (IManagedElement) (continued)

Attribute Name	Attribute Description	Scheme	Polling Interval
Element Category	Element category (*Unknown, DSLAM, Switch, BRAS, Router, Ethernet Switch, Cloud, Metro Central, Server, EMS, Generic Device Agent, ICMP, PC, Printer, Netra, WiFi Element, Service Control Switch*)	Any	Configuration
Element Type and its Key	Element type and its key mapped by the registry based on the SNMP system OID	Any	Configuration
Logical and Physical Roots	Logical and physical roots of the VNE model	Any	Configuration
Device Name	Device name as configured by the user in the registry	Any	Configuration
System Name, Description, Location, Contact and Up Time	System name, description, location, contact and up time taken from MIB II (RFC 1213).	Any	Configuration
Software Version	Software version running on the network element	Any	System
Vendor Identity	Vendor identity (*Null, Alcatel, Cisco, Copper Mountain, Redback Networks, Marconi, Lucent, Nokia, ADC, TdSoft, RAD, Nortel Networks, ECI Telecom, Juniper Networks, Sheer Networks, SUN Microsystems, NEC, Huawei, Laurel, UTStarcom*)	Any	Configuration
Memory and CPU Usage	Memory and CPU usage	Any	Status
Agent Memory and Free Memory Sizes	Agent memory and free memory sizes	Any	Configuration
Number of Device Components	Number of Device Components (DCs)	Any	Configuration
Number of Logical Entries	Number of property holders that are not DCs	Any	Configuration

Logical Root

The Logical Root and Physical Root objects aggregate or contain all the logical and physical components of a Managed Element. They are accessed by the later logical and physical root attributes.

Table 36-2 Logical Root (ILogicalRoot)

Attribute Name	Attribute Description	Scheme	Polling Interval
Managed IPs List	Array of Managed IPs	Any	Configuration
Contexts List	Array of Contexts	Any	Configuration
Forwarding Components List	Array of Forwarding Component Containers	Any	Configuration
Traffic Descriptors List	Array of Traffic Descriptor Containers	Any	Configuration
Tunnel Containers List	Array of Tunnel Containers	Any	Configuration
Services List	Array of System Services	Any	Configuration
Data Link Aggregation Containers List	Array of data link aggregations (Link Aggregation Groups, Cisco Ethernet Channels)	Any	Configuration

Physical Root

Table 36-3 Physical Root (IPhysicalRoot)

Attribute Name	Attribute Description	Scheme	Polling Interval
Equipment Holders	Array of equipment holders such as Chassis and Shelf	Any	Configuration

Managed IP

The Managed IP object aggregates or contains all logical components of a Managed Element that are managed by one of the multiple managed IP addresses of this element. It is accessed by a Logical Root.

Table 36-4 Managed IP (IManagedIP)

Attribute Name	Attribute Description	Scheme	Polling Interval
System Name, Description, Location, Contact and Up Time	System name, description, location, contact and up time taken from MIB II (RFC 1213).	Any	Configuration
Software Version	Software version	Any	Configuration
Contexts List	Array of Contexts	Any	Configuration
Forwarding Components List	Array of Forwarding Component Containers	Any	Configuration
Traffic Descriptors List	Array of Traffic Descriptor Containers	Any	Configuration
Tunnel Containers List	Array of Tunnel Containers	Any	Configuration
Services List	Array of System Services	Any	Configuration

Context

A context represents a virtual device within a physical device. The concept of creating multiple virtual devices inside one physical device exists in many types of devices of different vendors. The main purpose of this concept is separation of network domains, and management of the virtual devices. By default, any Managed Element has a default context, and devices which support multiple contexts will have additional ones. Examples of devices that have multiple contexts:

Cisco: CRS-1- SDR (Secure Domain Router), Nexus7K - VDC (Virtual Device Context).

Juniper: JunOSe (E-Series) - Virtual Router Redback: SMS/SmartEdge - Context

Table 36-5 Context (IContext)

Attribute Name	Attribute Description	Scheme	Polling Interval
Name	A context is identified by a name within the physical device, in devices that support multiple contexts.	Any	Configuration
IP Address Pools	Array of IP Address Pools associated with this context.	Any	Configuration
Forwarding Components List	Array of Forwarding Component Containers.	Any	Configuration
Traffic Descriptors List	Array of Traffic Descriptor Containers.	Any	Configuration
Tunnel Containers List	Array of Tunnel Containers.	Any	Configuration

Table 36-5 Context (IContext) (continued)

Attribute Name	Attribute Description	Scheme	Polling Interval
Data Link Aggregation Containers List	Array of data link aggregations (Link Aggregation Groups, Cisco Ethernet Channels)	Any	Configuration
Encapsulation Aggregation Containers List	Array of encapsulation aggregations.	Any	Configuration
Operating System	NEIM operating system DC.	Any	Configuration
CDP Service	The CDP Service (ICDPService) associated with this context	Any	Configuration
STP Service	The STP Service (IStpService) associated with this context.	Any	Configuration

System Service

The System Service object describes a single system service along with its status and up time, and is accessed by a Logical Root.

Table 36-6 System Service (ISystemService)

Attribute Name	Attribute Description	Scheme	Polling Interval
Type	Service type (*Unknown, Radius, Network Time Protocol, Spanning Tree Protocol*)	Any	Configuration
Status	Service status (*Null, Running, Down, Reset, Initializing, Other*)	Any	Configuration
Up Time	Service up time.	Any	Configuration

Service Alarms

The following alarms are supported for base logical components:

- Component Unreachable, page 41-23
- CPU Utilization, page 41-25
- Device Unsupported, page 41-26
- Memory Utilization, page 41-46