CHAPTER 26

Discovery Protocols

This chapter describes the level of support that Cisco ANA provides for discovery protocols, as follows:

Technology Description

This section provides the following discovery protocol descriptions:

Please see Part 1: Cisco VNEs in this guide for information about which devices support the various technologies.

LLDP

Link Layer Discovery Protocol (LLDP) is an open IEEE-standard (802.1AB) Layer 2 protocol used by network devices to share information about their identities and functionality with other network elements.

LLDP defines a standard method for Ethernet network devices to advertise information about themselves to other nodes on the network and store the information they discover. LLDP runs on all 802 media. The protocol runs over the data-link layer only, allowing two systems running different network layer protocols to learn about each other.

LLDP-enabled devices store the information they gather in a local table that can be queried using SNMP. This information can include:

- System name and description
- Port name and description
- VLAN name
- IP management address

- System capabilities (switching, routing, and so on)
- MAC/PHY information
- MDI power
- Link aggregation

CDP

Cisco Discovery Protocol (CDP) is Cisco's proprietary Layer 2 protocol, used to discover and share information about network-connected Cisco equipment. Cisco devices share their information by sending CDP announcements every 60 seconds on interfaces that support Subnetwork Access Protocol (SNAP) headers.

Each Cisco network element that supports CDP stores in its CDP table the information it receives from other devices to which it is directly connected. Each entry's information is refreshed, and the hold time reset, each time a new announcement is received. The hold time specifies how long entries in the table must be kept. If no announcements are received from a device before the timer expires, the device's information is discarded.

The information contained in CDP announcements varies by the type of device and the version of the operating system running on it, but always contains at least the device's device ID, port ID, and IP address.

Information Model Objects (IMOs)

This section describes the following IMOs:

- LLDP Service
- LLDP Neighbor Entry

LLDP Service

The LLDP Service object represents the LLDP configuration on the network element.

Table 26-1 LLDP Service Table (ILLDPService)

Attribute name	Attribute Description	Scheme	Polling Interval
status	The LLDP status (*enabled*, *disabled*).	Any	Configuration
lldpAdvertisementsInterval	The LLDP advertisement interval.	Any	Configuration
lldpHoldTime	The advertised LLDP hold time.	Any	Configuration
lldpReinitialisationDelay	The LLDP interface reinitialization delay.	Any	Configuration
localChassisID	The local chassis ID.	Any	Configuration
localSystemName	The local system name.	Any	Configuration
NeighborsInfoTable	An array of instances of LLDP Neighbor Entry.	Any	Configuration

LLDP Neighbor Entry

The LLDP Neighbor Entry object represents information about a network element's neighbor discovered using the LLDP Service.

Table 26-2 LLDP Neighbor Entry (ILLDPNeighbor)

Attribute name	Attribute Description	Scheme	Polling Interval
localPortName	The local port name.	Any	Configuration
localPortId	The local port ID.	Any	Configuration
remotePortDesc	Description of the remote port.	Any	Configuration
remoteChassisId	The neighbor's chassis ID.	Any	Configuration
remotePortId	The remote port ID.	Any	Configuration
remoteDeviceId	The remote device ID.	Any	Configuration
localPortOid	The link for the port.	Any	Configuration
remoteManagementIP	The IP address of the remote management IP.	Any	Configuration

Vendor-Specific Inventory and IMOs

Vendor-specific IMOs are implemented only for specific vendor devices. The following sections describe objects for specific vendors:

- CDP Service
- CDP Neighbor Entry

CDP Service

The CDP Service object represents the CDP configuration on the network element.

Table 26-3 CDP Service (ICdpService)

Attribute name	Attribute Description	Scheme	Polling Interval
cdpHoldtime	The configured hold time.	Any	Configuration
cdpMessageInterval	The configured CDP message interval.	Any	Configuration
cdpDeviceId	The ID of the device on which CDP is configured.	Any	Configuration
cdpState	The state of the CDP service on the device (*enabled*, *disabled*).	Any	Configuration
cdpVersion	The CDP version supported on the device.	Any	Configuration
NeighborsInfoTable	An array of instances of CDP Neighbor Entry.	Any	Configuration

CDP Neighbor Entry

The CDP Neighbor Entry object represents information about a network element's neighbor discovered using the CDP Service.

Table 26-4 CDP Neighbor Entry (ICdpNeighbor)

Attribute name	Attribute Description	Scheme	Polling Interval
remoteDeviceId	The neighbor device ID.	Any	Configuration
remotePortId	The neighbor port number.	Any	Configuration
remoteIPAddress	The neighbor IP address.	Any	Configuration
localPortId	The local port ID.	Any	Configuration
localPortOid	The link for the port.	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 data link layer, is also used for link discovery on a few 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

There are no faults or alarms associated with this technology.