



CHAPTER 9

Configuring LLDP

This chapter describes how to configure the Link Layer Discovery Protocol (LLDP) in order to discover other devices on the local network.

This chapter describes how to configure the Link Layer Discovery Protocol (LLDP) in order to discover servers that are connected to your Cisco NX-OS device.

You can configure the Link Layer Discovery Protocol (LLDP) in order to discover servers that are connected to your Cisco NX-OS device.



Note

System-message logging levels for the LLDP feature must meet or exceed Cisco DCNM requirements. During device discovery, Cisco DCNM detects inadequate logging levels and raises them to the minimum requirements. Cisco Nexus 7000 Series switches that run Cisco NX-OS Release 4.0 are an exception. For Cisco NX-OS Release 4.0, prior to device discovery, use the command-line interface to configure logging levels to meet or exceed Cisco DCNM requirements. For more information, see the *Fundamentals Configuration Guide, Cisco DCNM for LAN, Release 5.x*.



Note

The Cisco NX-OS release that is running on a managed device may not support all of the features or settings described in this chapter. For the latest feature information and caveats, see the documentation and release notes for your platform and software release.

This chapter includes the following sections:

- [Information About LLDP, page 9-2](#)
- [Licensing Requirements for LLDP, page 9-3](#)
- [Prerequisites, page 9-3](#)
- [Guidelines and Limitations for LLDP, page 9-3](#)
- [Platform Support, page 9-4](#)
- [Default Settings, page 9-4](#)
- [Configuring LLDP, page 9-4](#)
- [Verifying the LLDP Configuration, page 9-9](#)
- [Configuration Example for LLDP, page 9-10](#)
- [Additional References, page 9-10](#)
- [Feature History for LLDP, page 9-11](#)

Information About LLDP

This section includes the following topics:

- [LLDP Overview, page 9-2](#)
- [High Availability, page 9-2](#)
- [Virtualization Support, page 9-3](#)

LLDP Overview

The Cisco Discovery Protocol (CDP) is a device discovery protocol that runs over the data-link layer (Layer 2) on all Cisco-manufactured devices (routers, bridges, access servers, and switches). CDP allows network management applications to automatically discover and learn about other Cisco devices that are connected to the network.

To permit the discovery of non-Cisco devices, the switch also supports the Link Layer Discovery Protocol (LLDP), a vendor-neutral device discovery protocol that is defined in the IEEE 802.1ab standard. LLDP allows network devices to advertise information about themselves to other devices on the network. This protocol runs over the data-link layer, which allows two systems running different network layer protocols to learn about each other.

LLDP is a one-way protocol that transmits information about the capabilities and current status of a device and its interfaces. LLDP devices use the protocol to solicit information only from other LLDP devices. Cisco DCNM can use LLDP to discover only servers that are connected to your device.

LLDP supports a set of attributes that it uses to discover other devices. These attributes contain type, length, and value (TLV) descriptions. LLDP devices can use TLVs to send and receive information to other devices on the network. Details such as configuration information, device capabilities, and device identity can be advertised using this protocol.

LLDP advertises the following TLVs by default:

- DCBXP
- Management address
- Port description
- Port VLAN
- System capabilities
- System description
- System name

**Note**

For information on device discovery and manually binding devices to a server, see the *Fundamentals Configuration Guide, Cisco DCNM for LAN, Release 5.x*.

High Availability

The LLDP feature supports stateless and stateful restarts. After a reboot or supervisor switchover, the running configuration is applied.

For more information on high availability, see the *Cisco Nexus 7000 Series NX-OS High Availability and Redundancy Guide, Release 5.x*.

Virtualization Support

One instance of LLDP is supported per virtual device context (VDC). You are automatically placed in the default VDC unless you specify otherwise.

For information on VDCs, see the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x*.

For information on VDCs, see the *Virtual Device Context Configuration Guide, Cisco DCNM for LAN, Release 6.x*.

Licensing Requirements for LLDP

The following table shows the licensing requirements for this feature:

Product	License Requirement
Cisco DCNM	LLDP requires no license. Any feature not included in a license package is bundled with Cisco DCNM and is provided at no extra charge to you. For a complete explanation of the Cisco DCNM licensing scheme, see the <i>Cisco DCNM Installation and Licensing Guide, Release 6.x</i> .
Cisco NX-OS	LLDP requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For an explanation of the Cisco NX-OS licensing scheme for your platform, see the licensing guide for your platform.
Cisco NX-OS	LLDP requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For an explanation of the Cisco NX-OS licensing scheme for your platform, see the licensing guide for your platform.

Prerequisites

The LLDP feature has the following prerequisite (for a full list of feature-specific prerequisites, see the platform-specific documentation):

- System-message logging levels for the LLDP feature must meet or exceed Cisco DCNM requirements. During device discovery, Cisco DCNM detects inadequate logging levels and raises them to the minimum requirements. Cisco Nexus 7000 Series switches that run Cisco NX-OS Release 4.0 are an exception. For Cisco NX-OS Release 4.0, prior to device discovery, use the command-line interface to configure logging levels to meet or exceed Cisco DCNM requirements. For more information, see the *Fundamentals Configuration Guide, Cisco DCNM for LAN, Release 5.x*.

Guidelines and Limitations for LLDP

LLDP has the following configuration guidelines and limitations (for a full list of feature-specific guidelines and limitations, see the platform-specific documentation):

- LLDP timers and type, length, and value (TLV) descriptions cannot be configured using Cisco DCNM.

Platform Support

The following platform supports this feature. For platform-specific information, including guidelines and limitations, system defaults, and configuration limits, see the corresponding documentation.

Platform	Documentation
Cisco Nexus 5000 Series switches	Cisco Nexus 5000 Series Switch Documentation
Cisco Nexus 7000 Series switches	Cisco Nexus 7000 Series Switch Documentation

Default Settings

Table 9-1 lists the LLDP default settings.

Table 9-1 LLDP Default Settings

Parameter	Default
Global LLDP	Disabled
LLDP on interfaces	Enabled, after LLDP is enabled globally
LLDP hold time (before discarding)	120 seconds
LLDP reinitialization delay	2 seconds
LLDP timer (packet update frequency)	30 seconds
LLDP TLVs	Enabled
LLDP receive	Enabled, after LLDP is enabled globally
LLDP transmit	Enabled, after LLDP is enabled globally

Configuring LLDP

This section includes the following topics:

- [Enabling or Disabling LLDP Globally, page 9-4](#)
- [Enabling or Disabling LLDP on an Interface, page 9-6](#)
- [Configuring Optional LLDP Parameters, page 9-8](#)



Note

Cisco NX-OS commands for this feature may differ from Cisco IOS commands for a similar feature.

Enabling or Disabling LLDP Globally

You can enable or disable LLDP globally on Cisco Nexus 7000 Series switches. You must enable LLDP globally to allow a device to send and receive LLDP packets.

**Note**

LLDP is enabled globally on Cisco Nexus 5000 Series switches and cannot be disabled.

BEFORE YOU BEGIN

Make sure that you are in the correct VDC. To switch VDCs, use the **switchto vdc** command.

SUMMARY STEPS

1. **config t**
2. **[no] feature lldp**
3. **show running-config lldp**
4. **copy running-config startup-config**

DETAILED STEPS

- Step 1** From the Feature Selector pane, choose **Interfaces > Physical > Ethernet**. The available devices appear in the Summary pane.
- Step 2** From the Summary pane, click the device on which you want to enable or disable LLDP.
- Step 3** Do one of the following:
- To enable LLDP on the device, from the menu bar, choose **Actions > Enable LLDP Service**.
 - To disable LLDP on the device, from the menu bar, choose **Actions > Disable LLDP Service**.
- Step 4** From the menu bar, choose **File > Deploy** to apply your changes to the device.

	Command	Purpose
Step 1	config t Example: switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#	Enters global configuration mode.
Step 2	[no] feature lldp Example: switch(config)# feature lldp	Enables or disables LLDP on the device. LLDP is disabled by default.
Step 3	show running-config lldp Example: switch(config)# show running-config lldp	(Optional) Displays the global LLDP configuration. If LLDP is enabled, it shows “feature lldp.” If LLDP is disabled, it shows an “Invalid command” error.
Step 4	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to enable LLDP globally on the device:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# feature lldp
```

RELATED TOPICS

- [Enabling or Disabling LLDP on an Interface, page 9-6](#)

Enabling or Disabling LLDP on an Interface

After you globally enable LLDP, it is enabled on all supported interfaces by default. However, you can enable or disable LLDP on individual interfaces or selectively configure an interface to only send or only receive LLDP packets.



Note

If the interface is configured as a tunnel port, LLDP is disabled automatically.



Note

Beginning with Cisco DCNM Release 5.1, you can enable or disable LLDP on individual interfaces on Cisco Nexus 5000 Series switches.

BEFORE YOU BEGIN

Make sure that you are in the correct VDC. To switch VDCs, use the **switchto vdc** command.

Make sure that you have globally enabled LLDP on the device. For more information, see the [“Enabling or Disabling LLDP Globally”](#) section on page 9-4.

SUMMARY STEPS

1. **config t**
2. **interface ethernet *slot/port***
3. **[no] lldp transmit**
4. **[no] lldp receive**
5. **show lldp interface ethernet *slot/port***
6. **copy running-config startup-config**

DETAILED STEPS

- Step 1** From the Feature Selector pane, choose **Interfaces > Physical > Ethernet**. The available devices appear in the Summary pane.
- Step 2** From the Summary pane, expand the device, expand the slot, and click the port on which you want to enable or disable LLDP.

Tabs appear for the port information in the Details pane. The Port Details tab is active, but its sections are not expanded.
- Step 3** Do one of the following:
 - To disable LLDP on the port, from the menu bar, choose **Actions > Disable LLDP**.

- To enable LLDP on the port, from the menu bar, choose **Actions > Enable LLDP**.
- Step 4** From the Details pane, expand the **Basic Settings** section.
- When LLDP is enabled, the LLDP Transmit Enabled and LLDP Receive Enabled fields show “Enabled.”
- When LLDP is disabled, the LLDP Transmit Enabled and LLDP Receive Enabled fields show “Disabled.”
- Step 5** (Optional) To selectively configure the port to only send or only receive LLDP packets, do one of the following:
- To configure the port to only send LLDP packets, choose **Enabled** from the LLDP Transmit Enabled drop-down list and choose **Disabled** from the LLDP Receive Enabled drop-down list.
 - To configure the port to only receive LLDP packets, choose **Disabled** from the LLDP Transmit Enabled drop-down list and choose **Enabled** from the LLDP Receive Enabled drop-down list.
- Step 6** From the menu bar, choose **File > Deploy** to apply your changes to the device.

	Command	Purpose
Step 1	config t Example: <pre>switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#</pre>	Enters global configuration mode.
Step 2	interface ethernet slot/port Example: <pre>switch(config)# interface ethernet 7/1 switch(config-if)</pre>	Specifies the interface on which you are enabling LLDP and enters the interface configuration mode.
Step 3	[no] lldp transmit Example: <pre>switch(config-if)# lldp transmit</pre>	Enables or disables the transmission of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.
Step 4	[no] lldp receive Example: <pre>switch(config-if)# lldp receive</pre>	Enables or disables the reception of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.
Step 5	show lldp interface ethernet slot/port Example: <pre>switch(config-if)# show lldp interface ethernet 7/1</pre>	(Optional) Displays the LLDP configuration on the interface.
Step 6	copy running-config startup-config Example: <pre>switch(config-if)# copy running-config startup-config</pre>	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to disable the transmission of LLDP packets on an interface:

```
switch# config t
switch(config)# interface ethernet 7/1
switch(config-if)# no lldp transmit
```

RELATED TOPICS

- [Enabling or Disabling LLDP Globally, page 9-4](#)

Configuring Optional LLDP Parameters

You can configure the frequency of LLDP updates, the amount of time for a receiving device to hold the information before discarding it, and the initialization delay time. You can also select the TLVs to include in LLDP packets.

BEFORE YOU BEGIN

Make sure that you are in the correct VDC. To switch VDCs, use the **switchto vdc** command.

SUMMARY STEPS

1. **config t**
2. **[no] lldp holdtime** *seconds*
3. **[no] lldp reinit** *seconds*
4. **[no] lldp timer** *seconds*
5. **show lldp timers**
6. **[no] lldp tlv-select** *tlv*
7. **show lldp tlv-select**
8. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	config t Example: switch# config t Enter configuration commands, one per line. End with CNTL/Z. switch(config)#	Enters global configuration mode.
Step 2	[no] lldp holdtime <i>seconds</i> Example: switch(config)# lldp holdtime 200	(Optional) Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it. The range is 10 to 255 seconds; the default is 120 seconds.
Step 3	[no] lldp reinit <i>seconds</i> Example: switch(config)# lldp reinit 5	(Optional) Specifies the delay time in seconds for LLDP to initialize on any interface. The range is 1 to 10 seconds; the default is 2 seconds.

	Command	Purpose
Step 4	[no] lldp timer <i>seconds</i> Example: switch(config)# lldp timer 50	(Optional) Specifies the transmission frequency of LLDP updates in seconds. The range is 5 to 254 seconds; the default is 30 seconds.
Step 5	show lldp timers Example: switch(config)# show lldp timers	(Optional) Displays the LLDP hold time, delay time, and update frequency configuration.
Step 6	[no] lldp tlv-select <i>tlv</i> Example: switch(config)# lldp tlv-select system-name	(Optional) Specifies the TLVs to send and receive in LLDP packets. The available TLVs are dcbbp, management-address, port-description, port-vlan, system-capabilities, system-description, and system-name. All available TLVs are enabled by default. Note For more information about using these TLVs, see the <i>Cisco Nexus 7000 Series NX-OS System Management Command Reference</i> .
Step 7	show lldp tlv-select Example: switch(config)# show lldp tlv-select	(Optional) Displays the LLDP TLV configuration.
Step 8	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to configure a hold time of 200 seconds, a delay time of 5 seconds, and an update frequency of 50 seconds as well as how to disable the port-vlan TLV:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# lldp holdtime 200
switch(config)# lldp reinit 5
switch(config)# lldp timer 50
switch(config)# no lldp tlv-select port-vlan
```

Verifying the LLDP Configuration

Use the following commands to display the LLDP configuration:

Command	Purpose
show running-config lldp	Displays the global LLDP configuration.
show lldp interface ethernet <i>slot/port</i>	Displays the LLDP interface configuration.
show lldp timers	Displays the LLDP hold time, delay time, and update frequency configuration.
show lldp tlv-select	Displays the LLDP TLV configuration.

Command	Purpose
show lldp dcbx interface ethernet slot/port	Displays the local DCBX control status.
show lldp neighbors {detail interface ethernet slot/port}	Displays the LLDP neighbor device status.
show lldp traffic	Displays the LLDP counters, including the number of LLDP packets sent and received by the device, the number of discarded packets, and the number of unrecognized TLVs.
show lldp traffic interface ethernet slot/port	Displays the number of LLDP packets sent and received on the interface.

Use the **clear lldp counters** command to clear the LLDP statistics.

Configuration Example for LLDP

This example shows how to enable LLDP on a device; disable LLDP on some interfaces; configure optional parameters such as hold time, delay time, and update frequency; and disable several LLDP TLVs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# feature lldp
switch(config)# interface ethernet 7/9
switch(config-if)# no lldp transmit
switch(config-if)# no lldp receive
switch(config-if)# exit
switch(config)# interface ethernet 7/10
switch(config-if)# no lldp transmit
switch(config-if)# no lldp receive
switch(config-if)# exit
switch(config)# lldp holdtime 200
switch(config)# lldp reinit 5
switch(config)# lldp timer 50
switch(config)# no lldp tlv-select port-vlan
switch(config)# no lldp tlv-select system-name
```

Additional References

For additional information related to implementing LLDP, see the following sections:

- [Related Documents, page 9-10](#)
- [Standards, page 9-11](#)

Related Documents

Related Topic	Document Title
LLDP commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>Cisco Nexus 7000 Series NX-OS System Management Command Reference</i>

Related Topic	Document Title
Device discovery	<i>Fundamentals Configuration Guide, Cisco DCNM for LAN, Release 5.x</i>
VDCs	<i>Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x</i>
VDCs	<i>Virtual Device Context Configuration Guide, Cisco DCNM for LAN, Release 6.x</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

Feature History for LLDP

[Table 9-2](#) lists the release history for this feature.

Table 9-2 Feature History for LLDP

Feature Name	Releases	Feature Information
LLDP	5.2(1)	No change from Release 5.1.
LLDP	5.1(1)	You can enable or disable LLDP per interface on Cisco Nexus 5000 Series switches.
LLDP	5.0(2)	This feature was introduced.

