

Catalyst 3750/3750-E/3750-X Series Switches Using LLDP Configuration Example

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Introduction

This document provides a sample configuration and verification for the Link Layer Discovery Protocol (LLDP) features on the Catalyst 3750/3750-E/3750-X Series Switches. Specifically, this document shows you how to configure the port-based traffic control features on a Catalyst 3750 switch.

Prerequisites

Requirements

Make sure that you meet these requirements before you attempt this configuration:

- Have basic knowledge of configuration on Cisco Catalyst 3750/3750-E/3750-X Series Switches
- Have basic understanding of LLDP features

Components Used

The information in this document is based on Cisco Catalyst 3750 Series Switches.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to the [Cisco Technical Tips Conventions](#) for more information on document conventions.

LLDP Overview

LLDP is a neighbor discovery protocol that allows non-Cisco devices to advertise information about themselves to other devices on the network. Cisco switches supports the IEEE 802.1AB LLDP which allow non-Cisco devices for interoperability between other devices. LLDP runs over the data-link layer which allows two devices running different network layer protocols to learn about each other.

LLDP discovers neighbor devices by using a set of attributes that contain type, length, and value descriptions. These attributes are referred to as TLVs. LLDP supported devices can use TLVs to receive and send information to their neighbors. This protocol can advertise details such as configuration information, device capabilities, and device identity.

The switch supports these basic management TLVs, which are mandatory LLDP TLVs:

- Port description TLV
- System name TLV
- System description TLV
- System capabilities TLV
- Management address TLV

These organizationally-specific LLDP TLVs are also advertised to support LLDP-MED:

- Port VLAN ID TLV (IEEE 802.1 organizationally specific TLVs)
- MAC/PHY configuration/status TLV (IEEE 802.3 organizationally-specific TLVs)

Configure

In this section, you are presented with the information needed to configure the LLDP features described in this document.

Note: Use the [Command Lookup Tool](#) ([registered](#) customers only) in order to obtain more information on the commands used in this section.

Network Diagram

This document uses this network setup:

Configurations

This document uses these configurations:

Catalyst 3750 Switch

```
Switch#configure terminal

!--- Enable LLDP globally on the switch.
Switch(config)#lldp run

!--- Specify time for the device to hold LLDP
information. Switch(config)#lldp holdtime 180
```

```
!--- Set the time for sending frequency of LLDP updates.
Switch(config)#lldp timer 50

!--- Enable LLDP specific to an interface.
Switch(config)#interface gigabitethernet 1/0/1

!--- Enable the interface to send LLDP. Switch(config-
if)#lldp transmit

!--- Enable the interface to receive LLDP.
Switch(config-if)#lldp receive

!--- Return to privileged EXEC mode. Switch(config-
if)#end

!--- Save the configurations in the device.
switch(config)#copy running-config startup-config
Switch(config)#exit

!--- Disable LLDP feature on the switch.
Switch(config)#no lldp run
Switch(config)#end
```

Verify

Use this section to confirm that your configuration works properly.

The [Output Interpreter Tool](#) ([registered](#) customers only) (OIT) supports certain **show** commands. Use the OIT in order to view an analysis of **show** command output.

Use the [show lldp interface \[interface-id\]](#) command in order to display information about interfaces with LLDP enabled.

For example:

```
Switch#show lldp interface gigabitethernet1/0/1
GigabitEthernet1/0/1:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME
```

Use the [show lldp neighbors](#) command in order to display information about neighbors.

For example:

```
Switch#show lldp neighbors
Capability codes:
  (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
  (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

Device ID                Local Intf    Hold-time    Capability    Port ID
```

Nortel IP Phone	Gi1/0/1	180	T	0019.e1e7.018d
Polycom SoundPoint	IGi1/0/19	180	T	0004.f22f.88b7
Baseline Switch 2426	Gi1/0/18	180	P,B	Ethernet0/26
Baseline Switch 2426	Gi1/0/22	180	P,B	Ethernet0/26

Total entries displayed: 4

Use the [show lldp neighbors detail](#) command in order to display information about neighbors in detail.

For example:

```
Switch#show lldp neig detail
```

```
Chassis id: 47.11.133.116
Port id: 0019.e1e7.018d
Port Description: Nortel IP Phone
System Name - not advertised
```

```
System Description:
Nortel IP Telephone 1230E, Firmware:062AC53
```

```
Time remaining: 166 seconds
System Capabilities: B,T
Enabled Capabilities: T
Management Addresses - not advertised
Auto Negotiation - supported, enabled
Physical media capabilities:
```

```
Other/unknown
10base-T(HD)
Symm Pause(FD)
Symm, Asym Pause(FD)
1000baseX(FD)
1000baseT(HD)
```

```
Media Attachment Unit type: 16
```

```
MED Information:
```

```
MED Codes:
(NP) Network Policy, (LI) Location Identification
(PS) Power Source Entity, (PD) Power Device
(IN) Inventory
```

```
F/W revision: 062AC53
Manufacturer: Nortel-05
Model: IP Phone 1230E
Capabilities: NP, LI, PD, IN
Device type: Endpoint Class III
Network Policy(Voice): Unknown
PD device, Power source: Unknown, Power Priority: High, Wattage: 6.0
```

Use the [show lldp traffic](#) command in order to display LLDP counters.

For example:

```
Switch#show lldp traffic
```

LLDP traffic statistics:

Total frames out: 560

Total entries aged: 0

Total frames in: 211

Total frames received in error: 0

Total frames discarded: 0

Total TLVs discarded: 208

Total TLVs unrecognized: 208

Use the [show lldp errors](#) command in order to display LLDP error counters.

For example:

```
Switch#show lldp errors
```

```
LLDP errors/overflows:
```

```
Total memory allocation failures: 0
```

```
Total encapsulation failures: 0
```

```
Total input queue overflows: 0
```

```
Total table overflows: 0
```

Related Information

- [Cisco Catalyst 3750 Series Switches Support Page](#)
- [Cisco Catalyst 3750-E Series Switches Support Page](#)
- [Cisco Catalyst 3750-X Series Switches Support Page](#)
- [Switches Product Support](#)
- [LAN Switching Technology Support](#)
- [Technical Support & Documentation - Cisco Systems](#)