

# Day 36: CDP and LLDP

## CCNA 200-301 Study Guide: Layer 2 Discovery (CDP & LLDP)

### 1.0 Fundamentals of Layer 2 Discovery

Layer 2 discovery protocols act as the "digital handshake" of a network, allowing devices to identify neighbors without requiring an IP address. They operate at the Data Link Layer, meaning discovery occurs as long as the physical link is up and the protocol is enabled.

#### Core Attributes

- **Operational Scope:** Information is strictly point-to-point. Discovery frames are processed by the direct neighbor and then discarded; they are never forwarded.
- **Shared Data:** Device IDs (Hostnames), IP addresses (for management), platform/capabilities, and local/remote interface mappings.
- **Security Risk:** These protocols are "chatty" and broadcast sensitive topology data.  
Standard Practice: Disable discovery on untrusted ports (e.g., user-facing access ports) to prevent reconnaissance.

### 2.0 Cisco Discovery Protocol (CDP)

CDP is a Cisco-proprietary protocol used for identifying and managing Cisco hardware.

# Operational Defaults

- Status: Enabled globally and on all interfaces by default.
- Multicast MAC: 0100.0CCC.CCCC
- Default Timers:
  - Hello Timer: 60 seconds.
  - Holdtime: 180 seconds.
- Version 2 (Default): Includes enhanced features like Native VLAN and duplex mismatch detection.

# Configuration & Management

Command	Mode	Purpose
cdp run	Global	Enables CDP globally.
no cdp run	Global	Disables CDP globally.
cdp enable	Interface	Enables CDP on a specific port.
cdp timer [sec]	Global	Adjusts advertisement frequency.
cdp holdtime [sec]	Global	Adjusts neighbor retention time.

# Verification Commands

- show cdp: Checks global status and timers.
- show cdp neighbors: Provides a summary table of adjacent Cisco devices.
- show cdp neighbors detail: Provides Layer 3 addresses and software versions.
- show cdp entry [name]: Focuses on a specific neighbor.

# 3.0 Link Layer Discovery Protocol (LLDP)

LLDP (IEEE 802.1AB) is the vendor-neutral standard required for discovery in multi-vendor environments.

# Operational Defaults

- Status: Typically disabled by default on Cisco switches.
- Multicast MAC: 0180.C200.000E
- Default Timers:
  - Hello Timer: 30 seconds.
  - Holdtime: 120 seconds.
  - Reinit Delay: 2 seconds.

## Configuration & Management

Unlike CDP, LLDP allows for granular control over transmission and reception.

Command	Mode	Purpose
lldp run	Global	Enables LLDP globally.
lldp transmit	Interface	Enables sending LLDP frames on the port.
lldp receive	Interface	Enables processing incoming LLDP frames.
lldp timer [sec]	Global	Configures advertisement frequency.
lldp holdtime [sec]	Global	Configures the holdtime.

## Verification Commands

- show lldp
- show lldp neighbors
- show lldp neighbors detail
  - Note: LLDP uses B (Bridge) in its capability codes where CDP uses S (Switch).

## 4.0 Protocol Comparison Matrix

Feature	Cisco Discovery Protocol (CDP)	Link Layer Discovery (LLDP)
Ownership	Cisco Proprietary	IEEE 802.1AB (Standard)
Cisco Default	Enabled	Disabled
Hello Timer	60 Seconds	30 Seconds
Holdtime	180 Seconds	120 Seconds
Interface Logic	cdp enable (Binary)	transmit / receive (Granular)
VTP Support	Yes	No

Capability Code	S (Switch)	B (Bridge)
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