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**Welcome
To
Network for you
CDP and LLDP**



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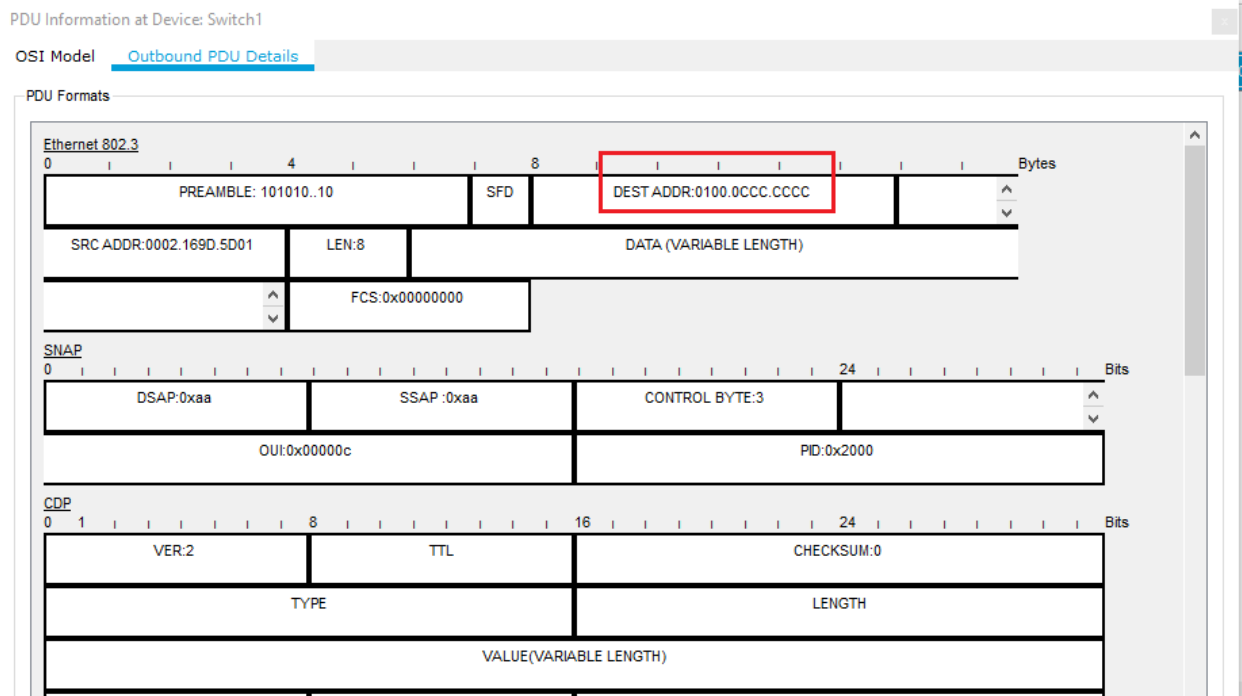
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Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)

CDP:

- CDP is CISCO Discovery Protocol.
- CDP is a Layer two discovery Protocol.
- CDP is CISCO Proprietary Protocol.
- CDP message contains information about **Device ID, IP address, Port ID, Vlan and Hardware Platform**. Or it is used to share information about other directly connected CISCO equipment such as the operating system version and IP address.
- CDP enable by default
- CDP advertisements are sent every 60 sec.
- CDP hold time advertised is 180 sec.
- CISCO devices send CDP announcements to the destination MAC address **01:00:0c:cc:cc:cc**, out each connected network interface.



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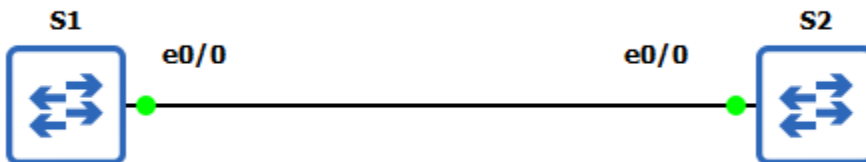
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To check we use command as given below.

Command	Description
Sh cdp entry *	To get all CDP neighbor entries
sh cdp neighbors	To get neighbors information
sh cdp neighbors detail	To get the neighbors detail
sh cdp interface	To get interface neighbors info
Int e0/0 no cdp enable	To disable cdp in any interface we go to that interface then type
no cdp run	If we want to disable completely in device then we type
cdp timer <time_in_second>	To Change CDP Time
cdp holdtime <time_in_second>	To Change CDP Holdtime

Basic Lab for CDP:



S1: type below command to get CDP info in S1	S2: type below command to get CDP info in S2
Sh cdp entry *	Sh cdp entry *
sh cdp neighbors	sh cdp neighbors
sh cdp neighbors detail	sh cdp neighbors detail
sh cdp interface	sh cdp interface
no cdp enable	no cdp enable
Cdp timer 100	Cdp timer 100
Cdp holdtime 200	Cdp holdtime 200

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```
S1#sh cdp entry *
-----
Device ID: S2
Entry address(es):
Platform: Linux Unix, Capabilities: Router Switch IGMP
Interface: Ethernet0/0, Port ID (outgoing port): Ethernet0/0
Holdtime : 146 sec

Version :
Cisco IOS Software, Linux Software (I86BI_LINUXL2-IPBASEK9-M), Experimental Vers
ion 15.2(20170809:194209) [dstivers-aug9_2017-high_iron_cts 101]
Copyright (c) 1986-2017 by Cisco Systems, Inc.
Compiled Wed 09-Aug-17 13:49 by xxxxxxxx

advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
```

```
S1#sh cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID         Local Intrfce   Holdtme    Capability  Platform  Port ID
S2                Eth 0/0        138        R S I      Linux Uni  Eth 0/0

Total cdp entries displayed : 1
```

```
S1#sh cdp neiġ detail
-----
Device ID: S2
Entry address(es):
Platform: Linux Unix, Capabilities: Router Switch IGMP
Interface: Ethernet0/0, Port ID (outgoing port): Ethernet0/0
Holdtime : 169 sec

Version :
Cisco IOS Software, Linux Software (I86BI_LINUXL2-IPBASEK9-M), Experimental Version 15.2(20170809:194209) [dstivers-aug9_2
017-high_iron_cts 101]
Copyright (c) 1986-2017 by Cisco Systems, Inc.
Compiled Wed 09-Aug-17 13:49 by xxxxxxxx

advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full

Total cdp entries displayed : 1
S1#
```

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```
S1#sh cdp interface
Ethernet0/0 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet0/1 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet0/2 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet0/3 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet1/0 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet1/1 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet1/2 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet1/3 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet2/0 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet2/1 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet2/2 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
Ethernet2/3 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
Ethernet3/0 is up, line protocol is up
  Encapsulation ARPA
  Sending CDP packets every 60 seconds
```

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```
S1(config)#int e0/0
S1(config-if)#no cdp en
S1(config-if)#no cdp enable
S1(config-if)#exit
S1(config)#exit
S1#sh c
*Sep 7 18:36:45.000: %SYS-5-CONFIG_I: Configured from console by console
S1#sh cdp int
S1#sh cdp interface e0/0
CDP is not enabled on interface Ethernet0/0
```

```
S1#config t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#no cdp run
S1(config)#exit
S1#sh
*Sep 7 18:38:53.808: %SYS-5-CONFIG_I: Configured from console by console
S1#sh cdp nei
S1#sh cdp neighbors
% CDP is not enabled
S1#config t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#cdp run
S1(config)#exit
S1#s
*Sep 7 18:39:28.592: %SYS-5-CONFIG_I: Configured from console by console
S1#sh cdp ne
S1#sh cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID          Local Intrfce    Holdtme    Capability Platform Port ID
Total cdp entries displayed : 0
S1#
```

```
S1#config t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#cdp timer 100
S1(config)#cdp holdtime 200
S1(config)#exit
S1#sh cdo
*Sep 7 18:44:25.541: %SYS-5-CONFIG_I: Configured from console by console
S1#sh cdp
S1#sh cdp
Global CDP information:
  Sending CDP packets every 100 seconds
  Sending a holdtime value of 200 seconds
  Sending CDPv2 advertisements is enabled
S1#
```

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LLDP (Link Layer Discovery Protocol):

- It is Link Layer Discovery Protocol
- LLDP is a layer two discovery protocol
- **LLDP is a standard Protocol**
- LLDP is used to share information about other directly connected equipment such as the operating system version and IP address.
- LLDP is disabled by default
- LLDP advertisements are sent every 30 sec.
- LLDP hold time advertised is 120 sec.
- LLDP announcements are sent to the multicast destination address **01-80-C2-00-00-0e** on each interface.

Command	Description
Lldp run	To Enable LLDP Globally
No lldp run	To disable LLDP Globally
Int e0/0 Lldp transmit Lldp receive	To Enable LLDP on an interface
Int e0/0 No Lldp transmit No Lldp receive	To disable LLDP on an interface To disable Transmit LLDP To disable Receive LLDP
Sh lldp entry *	To get all LLDP neighbor entries
Sh lldp	To get LLDP timer detail
Sh lldp interface	To get interface neighbors info
Lldp timer <time_in_second>	To Change LLDP timer
Lldp holdtime <time_in_second>	To Change LLDP holdtime

```
S3#sh lldp
% LLDP is not enabled
S3#sh
S3#sh cdp
S3#sh cdp
Global CDP information:
  Sending CDP packets every 60 seconds
  Sending a holdtime value of 180 seconds
  Sending CDPv2 advertisements is enabled
```

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```
S4#config t
Enter configuration commands, one per line. End with CNTL/Z.
S4(config)#lldp run
S4(config)#^Z
S4#
S4#
S4#
*Sep 12 11:38:46.290: %SYS-5-CONFIG_I: Configured from console by console
S4#sh lldp ?
  entry      Information for specific neighbor entry
  errors     LLDP computational errors and overflows
  interface  LLDP interface status and configuration
  neighbors  LLDP neighbor entries
  traffic    LLDP statistics
  |          Output modifiers
<cr>
```

```
S4#sh lldp entry *
Capability codes:
  (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
  (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
-----
Local Intf: Et0/0
Chassis id: aabb.cc00.0300
Port id: Et0/0
Port Description: Ethernet0/0
System Name: S3

System Description:
Cisco IOS Software, Linux Software (I86BI_LINUXL2-ADVENTERPRISEK9-M), Version 15.2(CML_NIGHTLY_20180510)FLO_DSGS7, EARLY D
ELOYMENT DEVELOPMENT BUILD, synced to V152_6_0_81_E
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2018 by

Time remaining: 109 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses - not advertised
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Total entries displayed: 1
```

```
S4#sh 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
S3                  Et0/0          120       R           Et0/0

Total entries displayed: 1
```

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```
S4#sh lldp interface

Ethernet0/0:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet0/1:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet0/2:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet0/3:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet1/0:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet1/1:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet1/2:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet1/3:
  Tx: enabled
  Rx: enabled
  Tx state: IDLE
  Rx state: WAIT FOR FRAME

Ethernet2/0:
  Tx: enabled
```

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```
S4#sh lldp interface e0/0  
  
Ethernet0/0:  
  Tx: enabled  
  Rx: enabled  
  Tx state: IDLE  
  Rx state: WAIT FOR FRAME  
S4#
```

```
S4#config t  
Enter configuration commands, one per line.  End with CNTL/Z.  
S4(config)#lldp timer 100  
S4(config)#lldp tim  
S4(config)#lldp holdtime 200  
S4(config)#end
```

```
S3(config)#int e0/0  
S3(config-if)#no 1  
S3(config-if)#no lldp tr  
S3(config-if)#no lldp transmit  
S3(config-if)#end
```

When we say no lldp transmit in SW3 then it will no go to SW4.





OSI Model Inbound PDU Details

PDU Formats

EthernetII

0		4		8		Bytes
PREAMBLE: 101010..10				DEST ADDR:0180.C200.000E		
SRC ADDR:000 2.17D6.1801	TYP E:0x	DATA (VARIAB LE LENGTH)	FCS:0x00000000			

LLDP Packet

LLDP Chassis ID TLV

0		8		16		31 Bits	
Type:1	Length:17	Sub Type:4					
Value:0002.17D6.1801							

LLDP Port ID TLV

0		8		16		24		31 Bits	
Type:2	Length:8	Sub Type:5		Value:Fa0/1					

LLDP Time To Live TLV

0		8		16		24		31 Bits	
Type:3	Length:4	TTL:120							

LLDP System Name TLV

0		8		16		24		31 Bits	
Type:5	Length:8	System Name:Switch							

LLDP System Description TLV

0		8		16		24		31 Bits	
Type:6	Length:185								

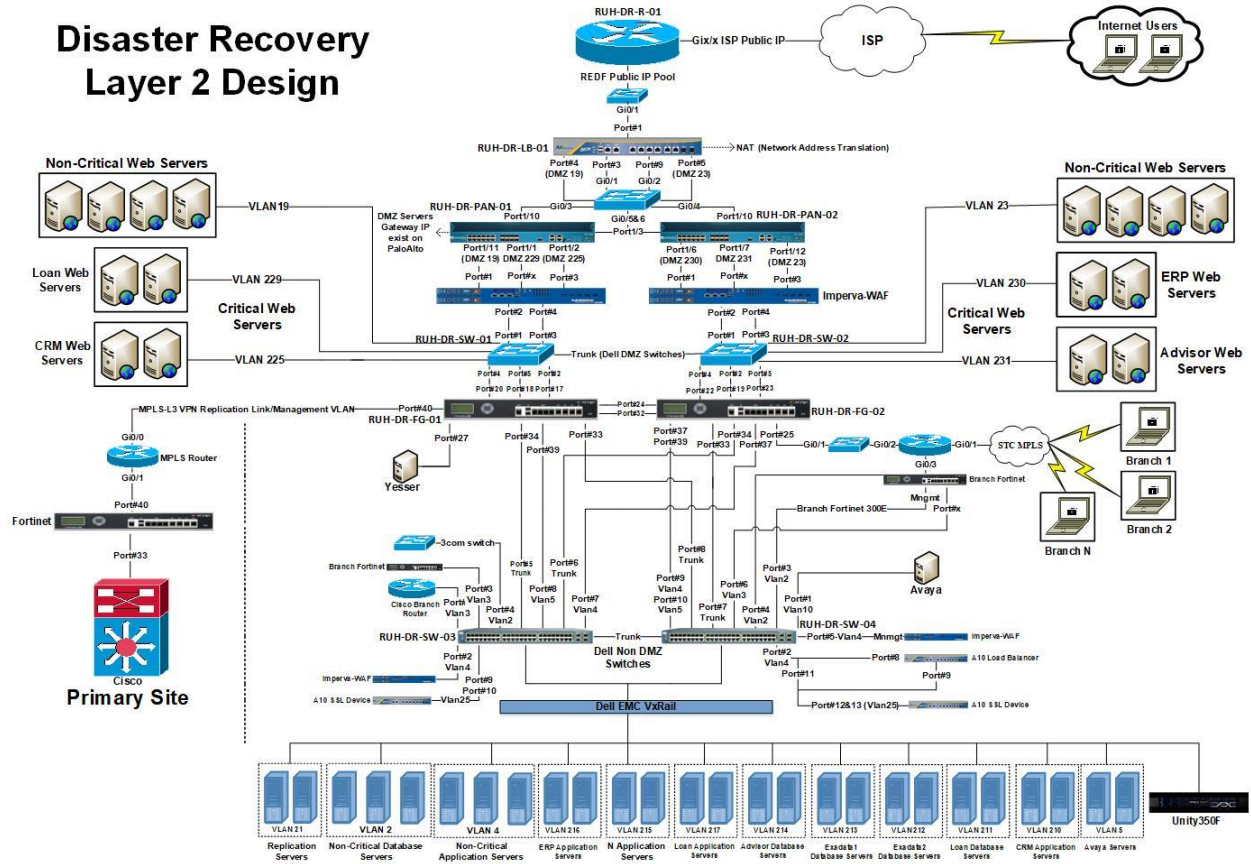
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Disaster Recovery Layer 2 Design



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