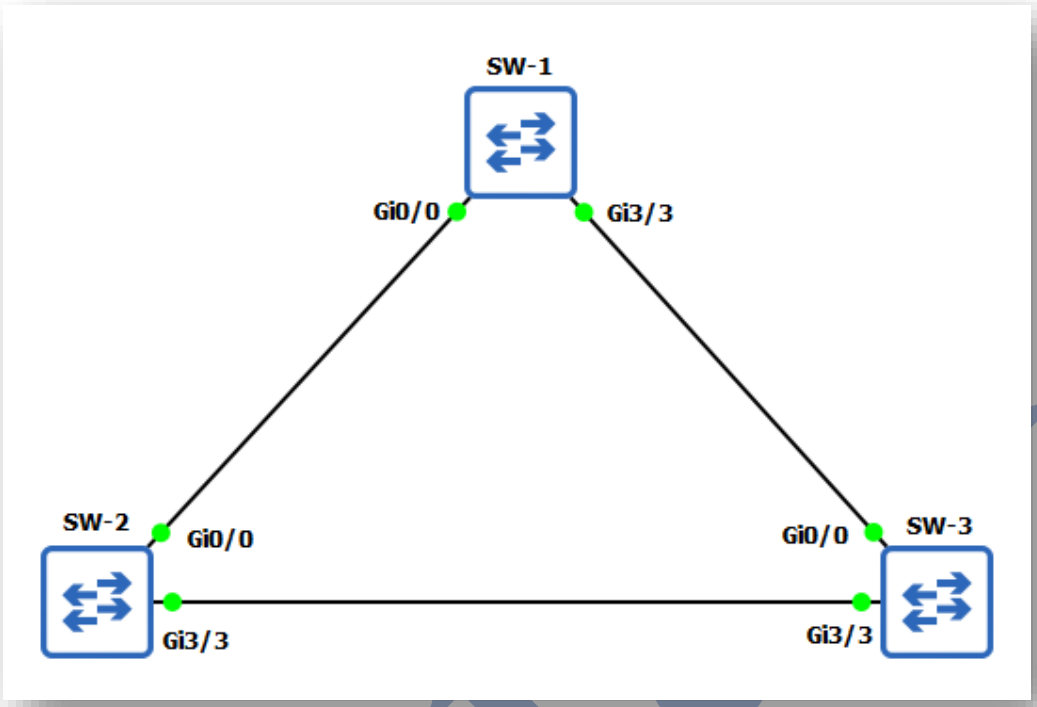
CDP (Cisco Discovery Protocol)
&
LLDP (Link Layer Discovery Protocol)



Task

1. Configure the SW-1 with IP 150.150.150.1, SW-2 with IP 150.150.150.2 and SW-3 with IP 150.150.150.3 for device management and hostnames.
2. Verify CDP parameters
3. Change CDP timers to 30 sec and holdtime to 90 sec on SW-1
4. Enable LLDP on all switches.
5. Change LLDP timers to 10 sec and holdtime to 40 sec on SW-1
6. On SW-1, configure LLDP such that it should get other network device information but should not send its information to another network device.

Task-1: Configure Hostname on switches as SW-1. SW-2 and SW-3. Configure the SW-1 with IP 150.150.150.1, SW-2 with IP 150.150.150.2 and SW-3 with IP 150.150.150.3 for device management.

SW-1 Configuration:

```
Switch#config t
Switch(config)#hostname SW-1
SW-1(config)#no ip domain-lookup
SW-1(config)#int vlan1
SW-1(config-if)#ip address 150.150.150.1 255.255.255.0
SW-1(config-if)#no shut
SW-1(config-if)#exit
SW-1(config)#exit
```

SW-1

SW-2 Configuration:

```
Switch#config t
Switch(config)#hostname SW-2
SW-2(config)#no ip domain-lookup
SW-2(config)#int vlan1
SW-2(config-if)#ip address 150.150.150.2 255.255.255.0
SW-2(config-if)#no shut
SW-2(config-if)#exit
SW-2(config)#exit
SW-2#
```

SW-3 Configuration:

```
Switch#config t
Switch(config)#hostname SW-3
SW-3(config)#no ip domain-lookup
SW-3(config)#int vlan1
SW-3(config-if)#ip address 150.150.150.3 255.255.255.0
SW-3(config-if)#no shut
SW-3(config-if)#exit
SW-3(config)#exit
SW-3#
```

Note: CDP is Cisco proprietary protocol and by default, CDP is enabled on Cisco devices. No need to enable it.

- ✓ **Verification & Testing:**

SW-1#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
SW-3             Gig 3/3           151          R S I                Gig 0/0
SW-2             Gig 0/0           125          R S I                Gig 0/0

Total cdp entries displayed : 2
```

SW-2#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
SW-1               Gig 0/0         178          R S I                Gig 0/0
SW-3               Gig 3/3         130          R S I                 Gig 3/3
```

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Total cdp entries displayed : 2

SW-3#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
SW-1	Gig 0/0	153	R S I		Gig 3/3
SW-2	Gig 3/3	142	R S I		Gig 3/3

Total cdp entries displayed : 2

SW-1#sh cdp neighbors detail

Device ID: SW-3
Entry address(es):
IP address: 150.150.150.3
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet3/3, Port ID (outgoing port): GigabitEthernet0/0
Holdtime : 127 sec

Version :
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advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.3

Device ID: SW-2
Entry address(es):
IP address: 150.150.150.2
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet0/0, Port ID (outgoing port): GigabitEthernet0/0
Holdtime : 152 sec

Version :
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advertisement version: 2
VTP Management Domain: ''

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Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.2

Total cdp entries displayed : 2

SW-2#sh cdp neighbors detail

Device ID: SW-1
Entry address(es):
IP address: 150.150.150.1
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet0/0, Port ID (outgoing port): GigabitEthernet0/0
Holdtime : 163 sec

Version :
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advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.1

Device ID: SW-3
Entry address(es):
IP address: 150.150.150.3
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet3/3, Port ID (outgoing port): GigabitEthernet3/3
Holdtime : 171 sec

Version :
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advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.3
Total cdp entries displayed : 2

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SW-3#sh cdp neighbors detail

Device ID: SW-1
Entry address(es):
IP address: 150.150.150.1
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet0/0, Port ID (outgoing port): GigabitEthernet3/3
Holdtime : 151 sec

Version :
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advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.1

Device ID: SW-2
Entry address(es):
IP address: 150.150.150.2
Platform: Cisco , Capabilities: Router Switch IGMP
Interface: GigabitEthernet3/3, Port ID (outgoing port): GigabitEthernet3/3
Holdtime : 153 sec

Version :
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advertisement version: 2
VTP Management Domain: ''
Native VLAN: 1
Duplex: full
Management address(es):
IP address: 150.150.150.2

Total cdp entries displayed : 2

SW-1#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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SW-2#sh cdp
Global CDP information:
Sending CDP packets every 60 seconds
Sending a holdtime value of 180 seconds
Sending CDPv2 advertisements is enabled

SW-3#sh cdp
Global CDP information:
Sending CDP packets every 60 seconds
Sending a holdtime value of 180 seconds
Sending CDPv2 advertisements is enabled

SW-1#sh cdp interface | section up|interfaces
GigabitEthernet0/0 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds
GigabitEthernet3/3 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds

cdp enabled interfaces : 16
interfaces up : 2
interfaces down : 14

SW-2#sh cdp interface | section up|interfaces
GigabitEthernet0/0 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds
GigabitEthernet3/3 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds
cdp enabled interfaces : 16
interfaces up : 2
interfaces down : 14

SW-3#sh cdp interface | section up|interfaces
GigabitEthernet0/0 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds
GigabitEthernet3/3 is up, line protocol is up
Encapsulation ARPA
Sending CDP packets every 60 seconds
Holdtime is 180 seconds
cdp enabled interfaces : 16
interfaces up : 2
interfaces down : 14

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Task-3: Change CDP timers to 30 sec and holdtime to 90 sec on SW-1

SW-1 Configuration:

```
SW-1#config t
SW-1(config)#cdp timer 30
SW-1(config)#cdp holdtime 90
SW-1(config)#exit
SW-1#
```

✓ Verification & Testing:

SW-1#sh cdp
Global CDP information:
Sending CDP packets every 30 seconds
Sending a holdtime value of 90 seconds
Sending CDPv2 advertisements is enabled

Disable CDP globally or on interface basis.

```
SW-1#config t
SW-1(config)#no cdp run
SW-1(config)#exit
SW-1#
```

Or

```
SW-1#config t
SW-1(config)#interface range gi0/0
SW-1(config-if)#no cdp enable
SW-1(config-if)#exit
SW-1(config)#exit
SW-1#
```

LLDP (Link Layer Discovery Protocol)

Task-4: Enable LLDP on all switches.

SW-1#sh lldp
% LLDP is not enabled
SW-1#

Note: The Link Layer Discovery Protocol (LLDP) is a vendor-neutral link layer protocol and we need to manually enable it on network device.

SW-1 Configuration:

```
SW-1#config t
SW-1(config)#lldp run
```

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SW-1(config)#exit
SW-1#

SW-2 Configuration:

SW-2#config t
SW-2(config)#lldp run
SW-2(config)#exit
SW-2#

SW-3 Configuration:

SW-3#config t
SW-3(config)#lldp run
SW-3(config)#exit
SW-3#

✓ Verification & Testing:

SW-1#sh lldp
Global LLDP Information:
Status: ACTIVE
LLDP advertisements are sent every 30 seconds
LLDP hold time advertised is 120 seconds
LLDP interface reinitialisation delay is 2 seconds

SW-2#sh lldp
Global LLDP Information:
Status: ACTIVE
LLDP advertisements are sent every 30 seconds
LLDP hold time advertised is 120 seconds
LLDP interface reinitialisation delay is 2 seconds

SW-3#sh lldp
Global LLDP Information:
Status: ACTIVE
LLDP advertisements are sent every 30 seconds
LLDP hold time advertised is 120 seconds
LLDP interface reinitialisation delay is 2 seconds

SW-1#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
SW-2	Gi0/0	120	R	Gi0/0
SW-3	Gi3/3	120	R	Gi0/0

Total entries displayed: 2

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SW-2#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
SW-1	Gi0/0	120	R	Gi0/0
SW-3	Gi3/3	120	R	Gi3/3

Total entries displayed: 2

SW-3#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
SW-2	Gi3/3	120	R	Gi3/3
SW-1	Gi0/0	120	R	Gi3/3

Total entries displayed: 2

SW-1#sh lldp neighbors detail

Local Intf: Gi0/0
Chassis id: 0c17.92f5.9600
Port id: Gi0/0
Port Description: GigabitEthernet0/0
System Name: SW-2

System Description:
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Time remaining: 96 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.2
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Local Intf: Gi3/3
Chassis id: 0c17.929f.7d00
Port id: Gi0/0
Port Description: GigabitEthernet0/0
System Name: SW-3

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System Description:
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Time remaining: 107 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.3
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Total entries displayed: 2

SW-2#sh lldp neighbors detail

Local Intf: Gi0/0
Chassis id: 0c17.9259.7100
Port id: Gi0/0
Port Description: GigabitEthernet0/0
System Name: SW-1

System Description:
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Time remaining: 108 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.1
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Local Intf: Gi3/3
Chassis id: 0c17.929f.7d00
Port id: Gi3/3
Port Description: GigabitEthernet3/3
System Name: SW-3

System Description:
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Time remaining: 100 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.3
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Total entries displayed: 2

SW-3#sh lldp neighbors detail

Local Intf: Gi3/3
Chassis id: 0c17.92f5.9600
Port id: Gi3/3
Port Description: GigabitEthernet3/3
System Name: SW-2

System Description:
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Time remaining: 110 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.2
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Local Intf: Gi0/0
Chassis id: 0c17.9259.7100
Port id: Gi3/3
Port Description: GigabitEthernet3/3
System Name: SW-1

System Description:
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Time remaining: 99 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
IP: 150.150.150.1
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
Vlan ID: - not advertised

Total entries displayed: 2

SW-1# sh lldp interface gigabitEthernet 0/0
GigabitEthernet0/0:
Tx: enabled
Rx: enabled
Tx state: IDLE
Rx state: WAIT FOR FRAME

SW-1# sh lldp interface gigabitEthernet 3/3
GigabitEthernet3/3:
Tx: enabled
Rx: enabled
Tx state: IDLE
Rx state: WAIT FOR FRAME

SW-2#sh lldp interface gigabitEthernet 0/0
GigabitEthernet0/0:
Tx: enabled
Rx: enabled
Tx state: IDLE
Rx state: WAIT FOR FRAME

SW-2#sh lldp interface gigabitEthernet 3/3
GigabitEthernet3/3:
Tx: enabled
Rx: enabled
Tx state: IDLE
Rx state: WAIT FOR FRAME

SW-3#sh lldp interface gigabitEthernet 0/0
GigabitEthernet0/0:
Tx: enabled
Rx: enabled
Tx state: IDLE
Rx state: WAIT FOR FRAME

SW-3#sh lldp interface gigabitEthernet 3/3
GigabitEthernet3/3:
Tx: enabled
Rx: enabled

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Tx state: IDLE
Rx state: WAIT FOR FRAME

Task-5: Change LLDP timers to 10 sec and holdtime to 40 sec on SW-1

SW-1 Configuration:

```
SW-1#config t
SW-1(config)#lldp timer 10
SW-1(config)#lldp holdtime 40
SW-1(config)#exit
SW-1#
```

✓ Verification & Testing:

```
SW-1#sh lldp
Global LLDP Information:
   Status: ACTIVE
   LLDP advertisements are sent every 10 seconds
   LLDP hold time advertised is 40 seconds
   LLDP interface reinitialisation delay is 2 seconds
```

Task-6: On SW-1, configure LLDP such that it should get other network device information but should not send its information to another network device.

SW-1 Configuration:

```
SW-1#config t
SW-1(config)#interface range gi0/0, gi3/3
SW-1(config-if-range)#no lldp transmit
SW-1(config-if-range)#exit
SW-1(config)#exit
SW-1#
```

Verification & Testing:

```
SW-1# sh lldp interface gigabitEthernet 0/0
GigabitEthernet0/0:
   Tx: disabled
   Rx: enabled
   Tx state: INIT
   Rx state: WAIT FOR FRAME

SW-1# sh lldp interface gigabitEthernet 3/3
GigabitEthernet3/3:
   Tx: disabled
   Rx: enabled
   Tx state: INIT
   Rx state: WAIT FOR FRAME
```

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SW-1#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
SW-2	Gi0/0	120	R	Gi0/0
SW-3	Gi3/3	120	R	Gi0/0

Total entries displayed: 2

SW-2#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
SW-3	Gi3/3	120	R	Gi3/3

Total entries displayed: 1

SW-3#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
SW-2	Gi3/3	120	R	Gi3/3

Total entries displayed: 1

Disable LLDP globally or on interface basis.

```
SW-1#config t
SW-1(config)#no lldp run
SW-1(config)#exit
SW-1#
```

Or

```
SW-1#config t
SW-1(config)#interface range gi0/0, gi3/3
SW-1(config-if-range)#no lldp transmit
SW-1(config-if-range)#no lldp receive
SW-1(config-if-range)#exit
SW-1(config)#exit
SW-1#
```

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Important Commands:

sh cdp
sh cdp neighbors
sh cdp neighbors details
sh cdp interface | section up|interfaces
sh lldp
sh lldp neighbors
sh lldp neighbors detail
sh lldp interface gigabitEthernet x/x

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