

CDP, LLDP, and NTP Configuration Lab Report

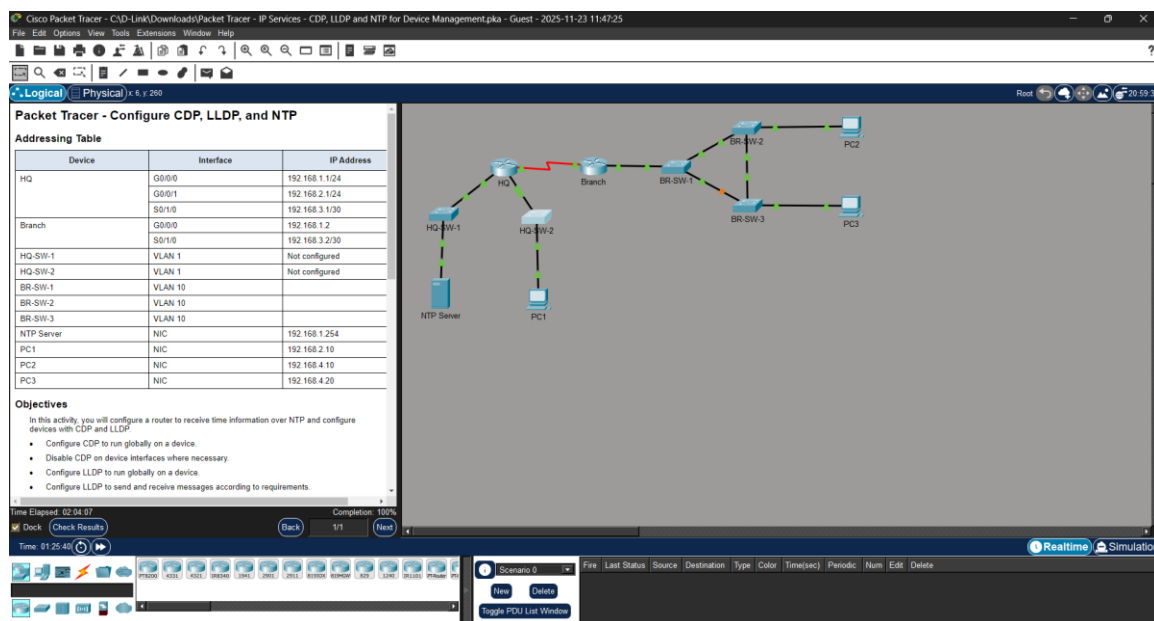
1. Introduction

This report documents the configuration and verification of CDP (Cisco Discovery Protocol), LLDP (Link Layer Discovery Protocol), and NTP (Network Time Protocol) across the HQ and Branch network infrastructure. The objective is to enable secure discovery protocols, disable unwanted protocol traffic on access ports, configure LLDP according to network design, and synchronize the HQ router to an NTP server for accurate timekeeping.

2. Network Topology Overview

The completed network topology, as shown in the screenshot below, consists of HQ and Branch routers connected through a WAN serial link. HQ is connected to two distribution switches (HQ-SW1 and HQ-SW2), while the Branch router connects to BR-SW1, BR-SW2, and BR-SW3. An NTP server is located at the HQ side.

Figure 1: Completed Network Topology



3. CDP and LLDP Configuration

This section provides labeled screenshots validating CDP enablement on Branch devices and LLDP configuration across HQ routers and switches. CDP was activated on Branch, and disabled on HQ side to improve security. LLDP was enabled on HQ and configured for controlled direction on uplinks and disabled on access ports.

Figure 2: HQ Router - LLDP Interface Configuration and Status

[illegible]

Figure 3: HQ Router - LLDP Global Status and Interface Direction Control



```
HQ
CLI

% Invalid input detected at '^' marker.
HQ#show running-config interface GigabitEthernet0/0/0
% Invalid input detected at '^' marker.
HQ#show run interface g0/0
% Invalid input detected at '^' marker.
HQ#show running-config interface GigabitEthernet0/1
% Invalid input detected at '^' marker.
HQ#
HQ#show running-config | section GigabitEthernet0/0
interface GigabitEthernet0/0/0
 ip address 192.168.1.1 255.255.255.0
 no lldp transmit
 duplex auto
 speed auto
interface GigabitEthernet0/0/1
 ip address 192.168.2.1 255.255.255.0
 no lldp transmit
 duplex auto
 speed auto
HQ#show running-config | section GigabitEthernet0/1
HQ#show lldp

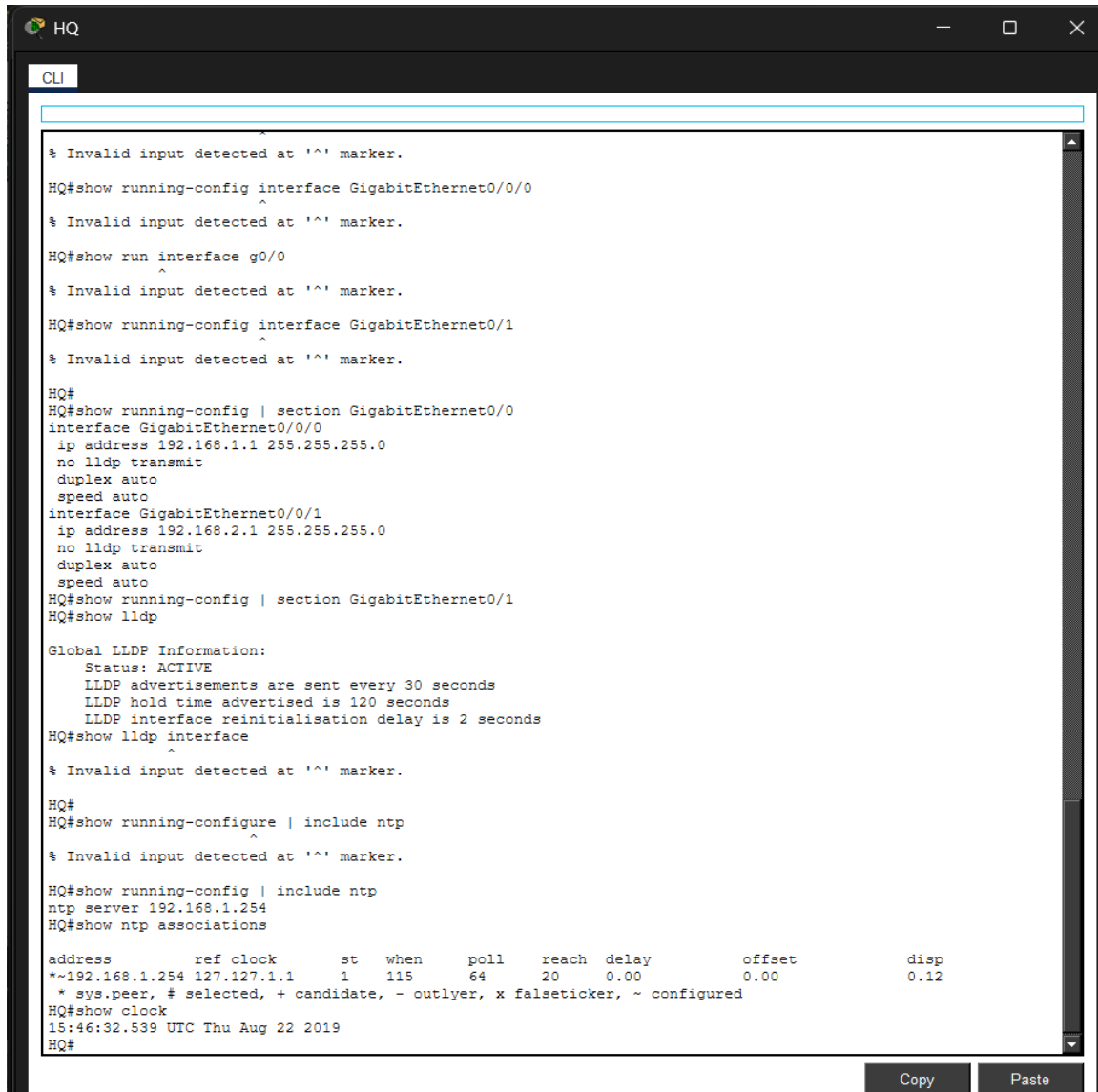
Global LLDP Information:
  Status: ACTIVE
  LLDP advertisements are sent every 30 seconds
  LLDP hold time advertised is 120 seconds
  LLDP interface reinitialisation delay is 2 seconds
HQ#show lldp interface
% Invalid input detected at '^' marker.
HQ#
HQ#show running-configure | include ntp
% Invalid input detected at '^' marker.
HQ#show running-config | include ntp
ntp server 192.168.1.254
HQ#show ntp associations

address      ref clock      st  when    poll  reach  delay    offset    disp
*~192.168.1.254 127.127.1.1    1   115     64    20     0.00     0.00     0.12
 * sys.peer, # selected, + candidate, - outlyer, x falseticker, ~ configured
HQ#show clock
15:46:32.539 UTC Thu Aug 22 2019
HQ#
```

4. NTP Configuration and Verification

The HQ router was configured to use the NTP server at 192.168.1.254. Verification confirms NTP associations and synchronization. This ensures accurate logging, consistent timestamps, and cross-device event correlation.

Figure 4: HQ Router - NTP Configuration and Sync Verification



```
HQ
CLI

% Invalid input detected at '^' marker.
HQ#show running-config interface GigabitEthernet0/0/0
% Invalid input detected at '^' marker.
HQ#show run interface g0/0
% Invalid input detected at '^' marker.
HQ#show running-config interface GigabitEthernet0/1
% Invalid input detected at '^' marker.
HQ#
HQ#show running-config | section GigabitEthernet0/0
interface GigabitEthernet0/0/0
 ip address 192.168.1.1 255.255.255.0
 no lldp transmit
 duplex auto
 speed auto
interface GigabitEthernet0/0/1
 ip address 192.168.2.1 255.255.255.0
 no lldp transmit
 duplex auto
 speed auto
HQ#show running-config | section GigabitEthernet0/1
HQ#show lldp

Global LLDP Information:
  Status: ACTIVE
  LLDP advertisements are sent every 30 seconds
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HQ#show running-config | include ntp
ntp server 192.168.1.254
HQ#show ntp associations

address      ref clock      st  when    poll  reach  delay    offset    disp
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 * sys.peer, # selected, + candidate, - outlyer, x falseticker, ~ configured
HQ#show clock
15:46:32.539 UTC Thu Aug 22 2019
HQ#
```

5. Conclusion

The lab objectives were successfully completed. CDP was selectively enabled on Branch and disabled on HQ in alignment with network security standards. LLDP was deployed on HQ routers and switches with controlled sending and receiving directions to prevent unnecessary discovery traffic. NTP synchronization was properly configured, validated, and fully operational. The network is now prepared with secure discovery mechanisms and accurate time services as required for network monitoring, troubleshooting, and log correlation.