

**NETWORK SERVICES
NX-OS**

Dynamic Host Configuration Protocol (DHCP)

DHCP Overview

- Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an IP-Host with:
 - Its IP address and subnet mask.
 - Other IP-related information, such as default gateway and DNS server.
- DHCP benefits:
 - Reliable IP address configuration.
 - Reduced network administration.
- DHCP is an open standard protocol defined in RFCs 2131 & 2132.
 - DHCP uses UDP ports **67** (DHCP server) and **68** (DHCP Client).
- Unlike Cisco IOS, NX-OS doesn't support the DHCP server feature.
 - NX-OS supports a DHCP relay agent function.
- DHCP main messages:
 - DHCP Discover.
 - DHCP Offer.
 - DHCP Request
 - DHCP ACK.

VLAN 10 IP pool:
192.168.10.0/24

VLAN 20 IP pool:
192.168.20.0/24

DHCP Server

172.16.100.1

SrcIP: 172.16.100.1
DstIP: 255.255.255.255

Offer

SrcIP: 172.16.100.1
DstIP: 255.255.255.255

Ack

SrcIP: 0.0.0.0
DstIP: 255.255.255.255

Discover

SrcIP: 0.0.0.0
DstIP: 255.255.255.255

Request

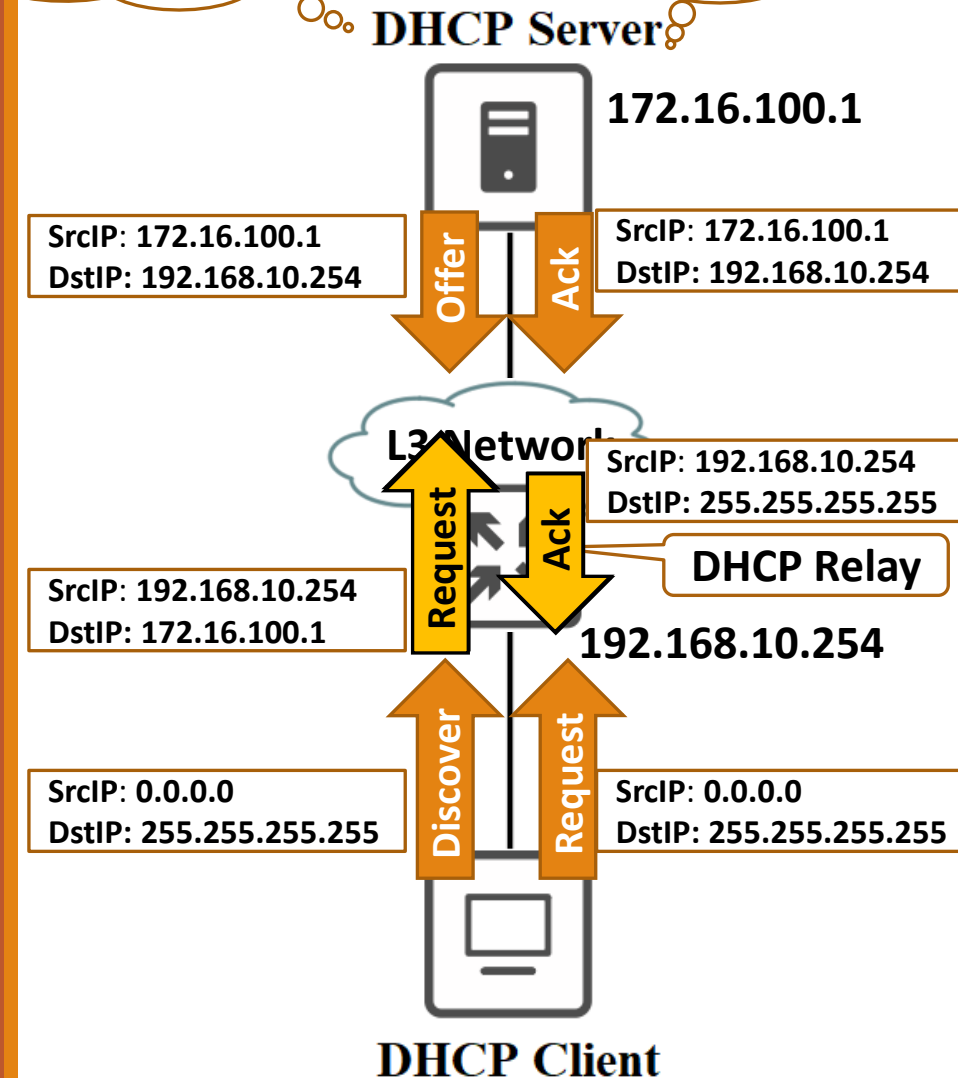
DHCP Client

DHCP Relay Agent

- DHCP is designed to work within a broadcast domain.
 - DHCP messages use 255.255.255.255 as the destination address.
 - This requires one DHCP server for each broadcast domain or VLAN.
 - DHCP Relay Agent eliminates the need for a DHCP server on every subnet.
- DHCP relay agent is a device that helps in relaying DHCP requests and replies between the DHCP client and the DHCP server when they are on different subnets.
- DHCP relay agent information (DHCP option 82):
 - Enables a DHCP relay agent to insert information about a client's identity into a DHCP client request sent to a DHCP server.
 - Contains two fields: **Remote-ID** and **Circuit-ID**.
 - Used to assist DHCP servers to implement dynamic address policies. Also, used in security features (DHCP snooping).
- To enable the DHCP relay agent on NX-OS:
 - **Step 1:** Enable DHCP feature: `feature dhcp`
 - **Step 2:** Enable the switch to act as a DHCP relay agent: `ip dhcp relay`
 - **Step 3:** Configure the DHCP-Server address in the interface facing the broadcast messages: `ip dhcp relay address dhcp-server-ip-address`
 - **Step 4: (Optionally)** enable DHCP option 82, (the DHCP server has to support option 82): `ip dhcp relay information option`

VLAN 10 IP pool:
192.168.10.0/24

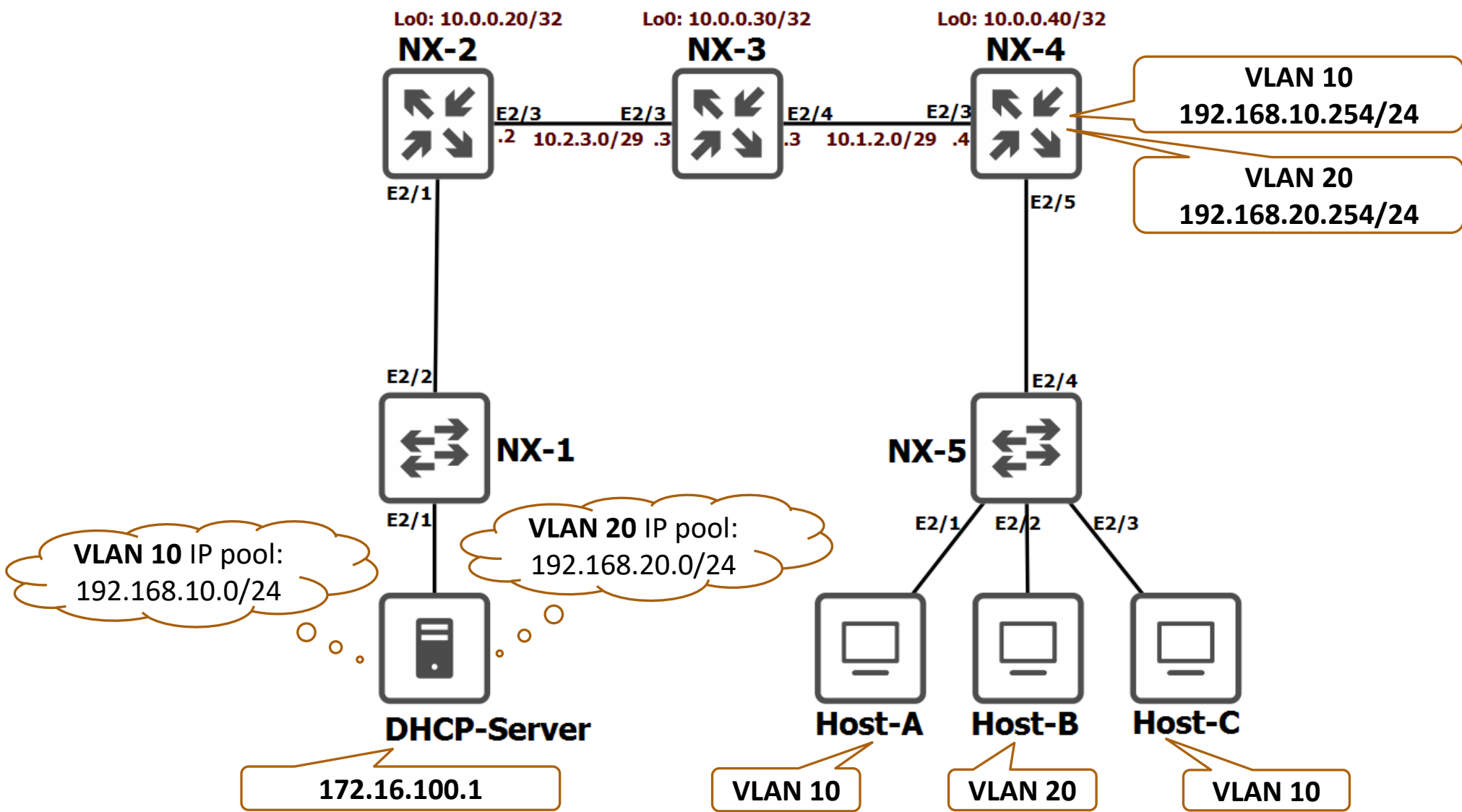
VLAN 20 IP pool:
192.168.20.0/24



Useful show commands:

```
show run dhcp
```

```
show ip dhcp relay [statistics]
```



Thanks for watching!