



Provision a LAN Underlay

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Prerequisites for Provisioning a Network Through LAN Automation

Before provisioning a network through LAN automation, ensure the following:

- Configure your network hierarchy. (See [Add a Device to a Site](#).)
- Make sure you have defined the following global network settings:
 - Network servers, such as AAA, DHCP, and DNS servers. (See [Configure Global Network Servers](#).)
 - Device credentials, such as CLI, SNMP, HTTP, and HTTPS credentials. (See [Configure Global CLI Credentials](#), [Configure Global SNMPv2c Credentials](#), [Configure Global SNMPv3 Credentials](#), and [Configure Global HTTPS Credentials](#).)
 - IP address pools. (See [Configure IP Address Pools](#).)
- Make sure that you have at least one device in your inventory. If not, discover devices using the Discovery feature.



Note LAN automation is blocked if the discovered site is configured with CLI credentials that has a username "cisco".

- If you have a Cisco Catalyst 9400 Switch configured in the network, ensure that the following operations are done on the switch for LAN automation to automatically enable the 40G port:
 - [Day-0 Configuration](#) is performed on the switch.
 - A 40G Quad Small Form-Factor Pluggable (QSFP) transceiver is inserted in either port 9 or port 10 of the Supervisor, and the ports numbered 1 to 8 on the Supervisor do not have a 10G or 1G

Small Form-Factor Pluggable (SFP) transceiver inserted in them. If there are dual supervisor engines, ensure that the 40G QSFP is inserted in port 9.

For more information on the Catalyst 9400 Series Supervisor, see [Cisco Catalyst 9400 Series Supervisor Installation Note](#).

Provision a Network Through LAN Automation

Before you begin

Make sure the prerequisites have been met. For more information, see [Prerequisites for Provisioning a Network Through LAN Automation, on page 1](#).

Step 1 Reserve an IP address pool for the site that you will be provisioning.

Note The size of the LAN automation IP address pool must be at least 25 bits of netmask or larger.

- a) Click the menu icon (☰) and choose **Design > Network Settings > IP Address Pools**.
- b) In the **Network Hierarchy** pane, choose a site.
- c) Click **Reserve** and provide information in the following fields in the **Reserve IP Pool** window to reserve all or part of an available global IP address pool, for the specific site:

- **IP Address Pool Name:** Unique name for the reserved IP address pool.
- **Type:** Type of IP address pool. For LAN automation, choose **LAN**.
- **IP Address Space:** Check either the **IPv4** or the **IPv6** check box to create an address pool. To create a dual-stack pool, check both the **IPv4** and **IPv6** check boxes.
- **Global IP Pool:** IPv4 address pool from which you want to reserve all or some of the IP addresses.

Note LAN automation uses only the IPv4 subnet.

- **Prefix length / Number of IP Addresses:** IP subnet and mask address used to reserve all or part of the global IP address pool or the number of IP addresses that you want to reserve.
- **Gateway:** Gateway IP address.
- **DHCP Server(s):** DHCP server IP address.
- **DNS Server(s):** DNS Server IP address.

- d) Click **Reserve**.

Step 2 Discover and provision the devices:

- a) Click the menu icon (☰) and choose **Provision > Inventory**.

All the discovered devices are displayed.

- b) Choose **Actions > Provision > LAN Automation**.
- c) In the **LAN Automation** window, provide information in the following fields:

- **Primary Site:** Select your primary device from this site.
- **Primary Device:** Select the primary device that Cisco DNA Center uses as the starting point to discover and provision new devices.
- **Peer Site:** (Optional) Select a peer device. Note that this site can be different from the primary site.
- **Peer Device:** Select a peer device.
- **SELECTED PORTS OF PRIMARY DEVICE:** Ports to be used to discover and provision new devices. Click **Modify Selections** to enter the port numbers.
- **Discovered Device Site:** All the newly discovered devices are assigned to this site. This site can be different from the primary and peer sites.
- **Main IP Pool:** IP address pool that was reserved for LAN automation. (see Step 1).
- **Link Overlapping IP Pool:** IP address pool that is shared with other sites and is used to configure the /31 IP addresses on point-to-point links in the underlay.

A link that overlaps IP pool can be a subpool that is inherited from a parent site or a subpool that is defined in any other site.

A link that overlaps IP pool allows you to overlap /31 IP addresses in a multisite deployment. Hosts in different sites will be able to reuse the IP addresses on the /31 links.

If you choose to define a link that overlaps IP pool, the addresses defined in the **Main IP Pool** field are used for management IPs such as loopback address, VLAN address, and so on.

- **IS-IS Domain Password:** A user-provided IS-IS password when LAN automation starts. If the password already exists on the seed device, it is reused and is not overwritten. If no user-provided password is entered and there is no existing IS-IS password on the device, the default domain password is used. If both the primary and the secondary seeds have domain passwords, ensure that they match.
 - **Advertise LAN Automation summary route into BGP:** Check this check box if you want LAN automation to advertise the **Main IP pool** into BGP on the primary and peer seed device. LAN automation advertises the summary route on the seed devices only if BGP is configured on them.
- Note that this check box is disabled by default. It is enabled only if the primary or the peer seed device has an autonomous system (AS) number configured.
- **Enable Multicast:** Check this check box to enable underlay native multicast. LAN automation creates a multicast tree with seed devices as RPs and discovered devices as subscribers.
 - **Device Name Prefix:** Name prefix for the devices being provisioned. As Cisco DNA Center provisions each device, it prefixes the device with the text that you provide and adds a unique number at the end. For example, if you enter **Access** as the name prefix, as each device is provisioned, it is named Access-1, Access-2, Access-3, and so on.
 - **Choose a File:** Click **Browse** to choose a hostname map file. User-provided names are configured for discovered devices using the chosen CSV file that contains a mapping between serial numbers and hostnames. If the discovered device is a stack, all the serial numbers of the stack are provided in the CSV file.

A sample CSV file is as follows:

```
standalone-switch,FCW2212L0NF  
stack-switch,"FCW2212E00Y,FCW2212L0GV"
```

d) Click **Start**.

Cisco DNA Center begins to discover and provision the new devices.

LAN automation configures an IP address on the seed device of VLAN 1. If this VLAN 1 IP address of the seed device is not reachable from Cisco DNA Center, an error message is displayed on the **LAN Automation Status** window. Hover your cursor over the **See Details** link on this window to see the error details and possible remedial actions.

Step 3 Monitor and review the progress of the devices being provisioned.

- a) Choose **Actions > Provision > LAN Automation Status**.

The **LAN Automation Status** window displays the progress of the devices being provisioned.

Note The provisioning of new devices may take several minutes.

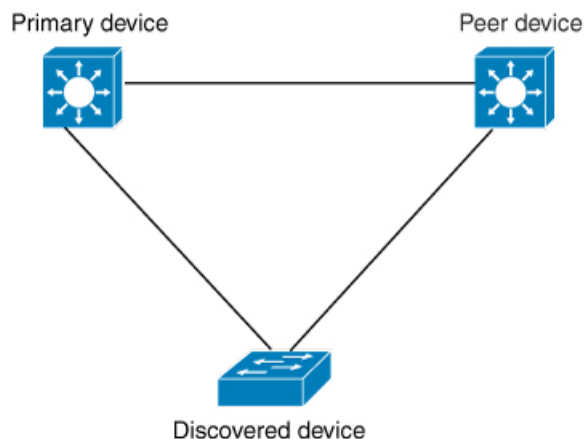
- b) After all the devices have been discovered, added to the inventory, and are in **Managed** state, click **Stop** in the **LAN Automation Status** window.

The LAN automation process is complete, and the new devices are added to the inventory.

Peer Device in LAN Automation Use Case

Provision a Dual-Homed Switch

You must always select a peer device to provision the dual-homed switch.

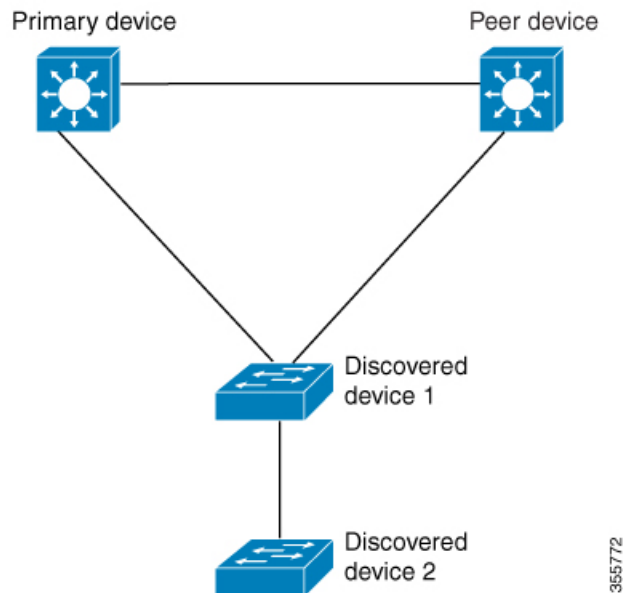


Cisco DNA Center configures the DHCP server on the primary device. Because Cisco DNA Center understands that the discovered device is connected to both the primary and peer devices, it configures two Layer 3 point-to-point connections when the LAN automation task is stopped. One connection is established between the discovered device and the primary device; the other connection is established between the discovered device and the peer device.



Note If the link between the primary and the peer device is not configured before the LAN automation job is executed, you must select the interface of the primary device that connects to the peer device as part of the LAN automation configuration in Cisco DNA Center.

LAN Automation's Two-Hop Limitation



For the preceding topology, Cisco DNA Center configures the following links:

- A point-to-point Layer 3 routed connection from *Discovered device 1* to *Primary device*
- A point-to-point Layer 3 routed connection from *Discovered device 1* to *Peer device*
- A point-to-point Layer 3 routed connection from *Discovered device 1* to *Discovered device 2*

Consider the scenario where a device—named *Discovered device 3*—is directly connected below *Discovered device 2*. The connection between *Discovered device 2* and *Discovered device 3* is not configured as part of the LAN automation job, because it is more than two hops away from *Primary device*.

Check the LAN Automation Status

You can view the status of in-progress LAN automation jobs.

Before you begin

You must have created and started a LAN automation job.

Step 1 Click the menu icon (☰) and choose **Provision > Inventory**.

All discovered devices are displayed.

Step 2 Choose **Actions > Provision > LAN Automation Status**.

The **LAN Automation Status** window displays the status of all running or completed LAN automation jobs.

Click **Details** under the **LAN Automation Status > Devices** tab to view the **Device Logs** and **Configuration** for each discovered device. Click the **Details** link in the **LAN Automation Status > Summary** window to view the logs and configuration details of the primary and the peer seed devices.

Note This release of Cisco DNA Center does not support detailed logs for the cEdge router that is configured as a seed device.

The **Configuration** window indicates whether the configuration was a success or a failure. In the case of a failure, Cisco DNA Center provides actionable error messages that aid in further troubleshooting.
