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Cisco Catalyst Center SD-Access LAN Automation Deployment Guide

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LAN Automation: Step-by-Step Deployment

Cisco LAN automation simplifies network operations; frees IT staff from time-consuming, repetitive network configuration tasks; and creates a standard, error-free underlay network. LAN automation accelerates building the underlay network without the traditional network planning and implementation process.

This guide is based on Catalyst Center Release 2.3.3; however, an additional topic in the guide provides some information on the LAN automation process based on Catalyst Center Release 2.3.5 and later.



Note Cisco DNA Center has been rebranded as Catalyst Center. During the rebranding process, you will see both names used in different collaterals, but both names refer to the same product.

The steps and examples may vary based on your Catalyst Center version. For more information on configuring LAN automation and related features, see *Cisco Catalyst Center User Guide*.

Workflow

Cisco LAN automation provides the following key benefits:

- Zero-touch provisioning: Network devices are dynamically discovered, onboarded, and automated from their factory-default state to fully integrated in the network.
- *End-to-end topology*: Dynamic discovery of new network systems and their physical connectivity can be modeled and programmed. These new systems can be automated with Layer 3 IP addressing and routing protocols to dynamically build end-to-end routing topologies.
- *Resilience*: Cisco LAN automation integrates system and network configuration parameters that optimize forwarding topologies and redundancy. Cisco LAN automation enables system-level redundancy and automates best practices to enable best-in-class resiliency during planned or unplanned network outages.
- Security: Cisco-recommended network access and infrastructure protection parameters are automated, providing security from the initial deployment.
- *Compliance*: LAN automation helps eliminate human errors, misconfigurations, and inconsistent rules and settings that drain IT resources. During new system onboarding, LAN automation provides compliance across the network infrastructure by automating globally managed parameters from Catalyst Center.

In four main steps, the Cisco LAN automation workflow helps enterprise IT administrators prepare, plan, and automate greenfield networks:

Procedure

- **Step 1 Plan**: Understand the different roles in the LAN automation domain. Plan the site and IP pool and understand the prerequisites for seed devices.
- **Step 2 Design**: Design and build global sites. Configure global network services and site-level network services. Configure global device credentials. Design the global IP address pool and assign the LAN automation pool.

- **Step 3 Discover**: Discover seed devices.
- **Step 4 Provision**: Start and stop LAN automation:
 - a) Start LAN automation: Push the temporary configuration to seed devices, discover devices, upgrade the image, and push the initial configuration to discovered devices.
 - b) Stop LAN automation: Convert all point-to-point links to Layer 3.

Step 1: Plan

LAN automation planning is the first step in successfully building the underlay network. This section explains the aspects you must plan to ensure that the Cisco LAN automation support matrix aligns with the targeted underlay network environment.

System Roles

Seed Device

The seed device is a predeployed system in the network and is the initial point through which Cisco LAN automation discovers and onboards new switches downstream. The seed device can be automated through technologies such as Cisco Plug n Play (PnP) and zero-touch provisioning, or configured manually. The following figure shows the seed device network boundaries between the Catalyst Center connection in the IP core and the to-be-discovered underlay network using LAN automation.

The peer seed (Seed-2 in the following figure) can also be automated via LAN automation. Only one seed device is required.

Device discovery happens only on the primary seed device interfaces.



PnP Agent

The PnP agent is a Cisco Catalyst switch with factory-default settings. The switch leverages the built-in day-0 mechanism to communicate with Catalyst Center and support the integrated PnP server function. Catalyst Center dynamically builds the PnP profile and configuration sets that enable complete day-0 automation. The following figure shows the PnP agent physical connection to the seed device.



Automation Boundary

In general, we recommend building structured and hierarchical network designs in enterprise networks to provide scalability and redundancy at every network tier. While the three-tier architecture is proven in large-scale enterprise campus networks, the network design varies based on the overall network size, physical connections, and so on. As part of the initial planning, the network admin must determine the physical topology to automate with Cisco LAN automation.

LAN automation in Catalyst Center supports a maximum of two hops from the initial automation boundary point device. In other words, to build the underlay network up to the access layer, the network admin must start the automation boundary from the core or distribution layer. Any additional network devices beyond two hops might be discovered but cannot be automated.

LAN automation initiates only on directly connected neighbors. Consider two scenarios:

- Scenario 1: You have a three-tier network and you want to LAN automate distribution- and access-layer switches. Because distribution-layer switches (which are directly connected to the seed) participate in LAN automation, both distribution- and access-layer switches will be discovered and LAN automated.
- Scenario 2: You have a three-tier network and you want to LAN automate distribution- and access-layer switches. You already LAN automated the distribution layer. Later, you add access-layer switches to your network and you want to LAN automate

these switches. Because the distribution switches are already LAN automated and links converted to Layer 3, Tier 1 switches cannot be used as the seed. You must choose distribution as the seed in this scenario.

The following figure shows the automation boundary that Cisco LAN automation supports.



The following figure shows a two-tier and three-tier network design.



Multistep LAN Automation for Large Topologies: First Pass

Large topologies are brought up by performing LAN automation multiple times. During the first pass, distribution switches are brought up by choosing core devices as seed devices; the distribution switches come up as new devices.

Ø

Note N is less than or equal to 50 devices at a time. All switches in the group can be booted in parallel or in a staggered fashion.



Multistep LAN Automation for Large Topologies: Second Pass with First Group

During the second pass, two of the distribution switches act as seed devices to bring up the edge devices as new devices. All new devices in this session must connect directly to the two distribution switches that act as seed devices. Repeat this process for the remaining set of distribution switches, two at a time.

- 1. Repeat the second pass for each set of distribution to bring up the access/edge switches (where *N* is less than or equal to 50 devices at a time).
- 2. Connect uplinks from edges to the primary and peer distribution switches only.
- 3. Power down IOT/extended devices during the LAN automation session.
- 4. Distribution switches can be connected to other distribution switches.
- 5. There can be two tiers of devices below the seeds.
- 6. Always connect new devices to the primary seed device. Connection to the peer seed device is optional.



Multistep LAN Automation for Large Topologies: Second Pass with Second Group

Edge devices in one group cannot be connected to edge devices in another group. Newly discovered PnP devices in the LAN automation session cannot be connected to existing nonseed inventory devices.



Note In Catalyst Center 2.3.5 and later, you can establish links between the devices after LAN automation stops using the **Add** Link feature. For more information, see Create Link Between Interfaces, on page 60.



Link Configuration

- After all devices are added to the Catalyst Center inventory, you begin the process of Layer 3 link configuration by "stopping" the LAN automation session on the GUI.
- If you accidentally stop the LAN automation prematurely before all PnP devices are added to the Catalyst Center inventory, links are not configured on in-progress devices. You must delete the in-progress devices from the inventory, begin a new LAN automation session, bring the in-progress devices to the factory-default state, and reload the devices to rediscover them and get their links configured.
- This process starts the conversion of Layer 2 links to Layer 3 links, which is done by traversing the network graph built during new device onboarding. First, the lower device link is converted to a Layer 3 IP address. Next, the upper device link is converted to a Layer 3 IP address. Next, the upper device link is converted to a Layer 3 IP address. Next, the upper device link is phase, there might be a temporary loss of connectivity to the lower-tier device until the upper-tier link is configured. This phase can also result in an STP topology change when the Layer 2 links are converted to Layer 3.
- The process follows an algorithm that begins with the tier-three devices, followed by the tier-two devices, and completes with the tier-one devices.
- It is important to note that only the links between devices that participate in the current session are converted to Layer 3 links. Links between the newly discovered PnP device and the existing nonseed inventory device are not converted to Layer 3.
- Consider the following scenarios when a LAN-automated device is deleted from the inventory:
 - Scenario 1: If the edge device is single-homed (connected to only one intermediate node) and the intermediate node is deleted from the inventory, then the /31 point-to-point link IP address is deleted from Catalyst Center (IPAM) but may not be unconfigured from the edge device, which is still in the inventory. This is because the edge device can become unreachable from Catalyst Center due to the point-to-point interface between the intermediate node and the fabric border being unconfigured before the one on the edge device. In this case, log in to the edge device CLI and set the interface connected to the deleted device to default configuration. This avoids duplicate IP address assignment during LAN automation workflows later due to the released IP addresses still being present on the device. You can later use the LAN automation workflow to add a new link from the edge device to the new intermediate node or border node (as required) instead of manually configuring the IP addresses.

• Scenario 2: If the edge device is dual-homed (connected to two intermediate nodes) and one of the intermediate nodes is deleted from the inventory, then the /31 point-to-point link IP address is deleted from Catalyst Center (IPAM) and is unconfigured from the edge device as well. There is no manual configuration required on the edge devices.

Catalyst Center 2.3.5 and later provide the support for day-*n* link configurations (add and delete link). For more information, see Create Link Between Interfaces, on page 60.

Constraints

- LAN automation does not automate the onboarding of a StackWise Virtual (SVL) switch via PnP. SVL switch can only be used as a seed device.
- LAN automation does not support stack renumbering.
- For platform support, see Supported Switches for Each Role at Different Layers, on page 11.

Supported Switches for Each Role at Different Layers

The following figure shows supported device families for the seed and PnP agent at different layers.



Cisco LAN Automation Product Support Matrix

Role ¹	Product Model ²	Network Module ³
Seed	C9606R	Seed: any uplinks and module ports are supported
PnP agent	C9600-SUP-1	PnP agent: 100G interfaces are not supported
	C9600-SUP-1/2	
	C9600X-SUP-2	
Seed	C9500-32C	
PnP agent	C9500-32QC	
	C9500-24Y4C	
	C9500-48Y4C	
	C9500X-28C8D	
Seed	C9500-12Q	Any front-panel ports ⁴
PnP agent	C9500-24Q	
	C9500-40X	
	C9500-16X	
Seed	C9404R	Sup-1 ⁵
PnP agent	C9407R	Sup-1XL ³
	C9410R	Sup-1XL-Y ³
		Any line card
Seed	C9400-SUP-1	—
PnP agent	C9400-SUP-1XL	
	C9400-SUP-1XL-Y	
	C9400X-SUP-2XL	
	C9400X-SUP-2	
1		

Role ¹	Product Model ²	Network Module ³
Seed	C9300-24S	Any uplinks and module ports
PnP agent	C9300-24T	
	C9300-24P	
	C9300-24U	
	С9300-24Н	
	C9300-48S	
	С9300-48Т	
	C9300-48P	
	C9300-48U	
	С9300-48Н	
	C9300-24UX	
	C9300-24UXB	
	C9300-24UB	
	C9300-48UXM	
	C9300-48UN	
	C9300-48UB	
	C9300L-48UXG	
	C9300L-24UXG	
	C9300L-24P	
	C9300L-48P	
	C9300L-48T	
	C9300L-24T	
	C9300LM-48UX-4Y	
	C9300LM-48U-4Y	
	C9300LM-24U-4Y	
	C9300LM-48T-4Y	
	C9300X-12Y	
	C9300X-24Y	
	C9300X-24HX	
	C9300X-48HXN	
	C9300X-48HX	
	C9300X-48TX	

Role ¹	Product Model ²	Network Module ³
Seed	С9200-24Т	Any uplinks and module ports
PnP agent	C9200-24P	
	С9200-24РВ	
	С9200-48Т	
	C9200-48P	
	С9200-48РВ	
	C9200-48PL	
	C9200-24PXG	
	C9200-48PXG	
	C9200L-24T	
	C9200L-24P	
	C9200L-48T	
	C9200L-48P	
	C9200L-48PL	
	C9200L-24PXG	
	C9200L-48PXG	
	C9200CX-12T-2X2G	
	C9200CX-12P-2X2G	
	C9200CX-8P-2X2G	
Seed	WS-C3850-24T	Any uplinks and module ports
PnP agent	WS-C3850-48T	
	WS-C3850-24P	
	WS-C3850-48P	
	WS-C3850-48F	
	WS-C3850-24U	
	WS-C3850-48U	
	WS-C3850-24XU	
	WS-C3850-12X48U	
	WS-C3850-12S	
	WS-C3850-24S	
	WS-C3850-12XS	
	WS-C3850-24XS	
	WS-C3850-48XS	

- ¹ Catalyst Center 2.1.2 and later supports configuring C9400, C9500, or C9600 StackWise Virtual (SVL) switches as a seed for LAN automation. LAN automation does not automate the onboarding of a StackWise Virtual switch via PnP. StackWise Virtual switch can only be used as a seed device.
- ² LAN automation is supported only on the products or platforms listed here. For the supported Cisco IOS XE and Catalyst Center versions, see *Cisco Catalyst Center Compatibility Matrix*.
- ³ LAN automation does not support a dedicated management port. For C9500H and C9600 switches, the convertible ports can only be used in seed device. The convertible ports do not come up when the switches are used as PnP device.
- ⁴ Breakout cable support is available only on the seed devices. For discovered devices, LAN automation does not support a breakout cable, because it requires some extra configurations that will stop the PnP agent on the factory-default devices.
- ⁵ The 40-G uplink is supported on 16.11.1 and later.

Site Planning

Use the Catalyst Center Design application to create the required sites, buildings, and floors. Consider how the primary seed and peer seed will be connected to the new devices—for example, will they all belong to the same site or follow a hierarchy? Consider also how to share IP pools across different sites, buildings, and floors. One option is to have a pool specific to a site. Another option is to share a common LAN pool for all sites in the hierarchy. If the devices are onboarded across multiple LAN automation sessions, ensure that the required IP pools are available across the various sites in the hierarchy.



Note After devices are provisioned, the site cannot be changed. For this reason, we recommend that you complete LAN automation before you provision devices.

IP Pool Planning

IP pools for LAN automation are created by first creating a global pool in Catalyst Center, followed by a site-specific LAN IP pool, which LAN automation allocates internally, as follows:

- 1. One part of the IP pool is reserved for a temporary DHCP server. The size of this pool depends on the size of the parent LAN pool. For example, if the parent pool is 192.168.10.0/24, a subpool of size /26 is allocated for the DHCP server. If the pool size is larger than /24, the algorithm keeps increasing the size of the DHCP pool, up to a maximum of a /23 subpool (512 IP addresses). Therefore, a /24 pool reserves 64; a /23 pool reserves 128; a /22 pool reserves 256; and anything larger reserves 512 IP addresses for the DHCP server. The minimum pool size to start LAN automation is /25; that reserves /27 or 32 IP addresses for the DHCP pool. This IP pool is reserved temporarily for the duration of the LAN automation discovery session. After the LAN automation discovery session completes, the DHCP pool is released, and the IPs are returned to the LAN pool. Because the DHCP pool is usually the largest contiguous segment of IPs required, the pool should have at least one such segment available. If the pool is too fragmented, it cannot allocate the DHCP pool and the LAN automation session ends with an IP pool allocation error.
- 2. Another part of the IP pool is reserved internally with a subpool size of /27. This subpool is for allocating single IPs for Loopback0 and Loopback60000 always. Also, two consecutive IPs for point-to-point L3 links are allocated from this subpool if no separate overlapping IP pool is provided. This internally reserved subpool is used throughout the LAN automation sessions for providing IPs as long as it has IPs available. In case the IPs are exhausted, a new /27 subpool is created and IPs are allocated from that subpool. These subpools are released only when all the allocated IPs are released as part of the devices being deleted from Catalyst Center. Otherwise, the subpools remain throughout the process and are not allowed to be removed. Due to this internal subpool allocation logic, the IP pool usage in IPAM counts the subpools instead of the actual IPs allocated to the devices.
- **3.** If a shared or link overlapping IP pool is provided for the point-to-point L3 links, then the subpool of size /27 is reserved internally from the shared pool instead of the main IP pool. The subpools are automatically deleted when all the allocated IPs from the pool are released.

When a dedicated (single) IP pool is used to build the underlay networks, each of the devices discovered via LAN automation gets a unique /31 per interface for point-to-point connection, and a unique /32 for Loopback0 and the underlay multicast.

Link Overlapping IP Pool or shared IP pool is used to optimize the IPv4 addressing in the underlay network by allowing overlapping /31 IP addresses for a multisite deployment. Hosts in different sites can get duplicate IP addresses on the /31 links. The /31s in the underlay are not advertised outside of the fabric site and hence there is no need for them to be unique. However, the /32 loopback needs to be unique to every device, and should be advertised to the global routing table to identify the device in the entire network.

There are two valid roles that a LAN IP pool can have:

- Link Overlapping IP Pool: A pool with this role is optional for a LAN automation session. If provided, the allocation of IP addresses is only on the point-to-point L3 links.
- Main IP Pool (Principal IP Address Pool in Catalyst Center 2.3.5 and later) : A pool with this role is mandatory for every LAN automation session. This is the pool that is used for all management-related IP addressing such as loopbacks, multicast, and DHCP. If the Link Overlapping IP Pool is not provided, then the Main IP Pool is the default fallback pool for the L3 links IP addressing.

Discovered Device Site*	~	
Main IP Pool	~ (Ð
Link Overlapping IP Pool	~ (Ì
IS-IS Domain Password		j)

Note When the seed device for LAN automation session is in a different site than the discovered device site, then the same shared IP pool cannot be used with the same seed and different discovered device site. This is to avoid the allocation of duplicate IP to the same seed device.

IP Pool Usage Example

Imagine you want to LAN automate 10 devices using the same pool, where each device has one link to the primary seed and another link to the secondary.

Consider a 192.168.199.0/24 pool. When LAN automation starts, a /26 pool is reserved for the DHCP addresses. In this example, 192.168.199.1 to 192.168.199.63 are reserved and assigned to VLAN 1 for the 10 devices.

Next, a /27 pool is reserved for loopback addresses. If there is no shared IP pool, then this pool is used for point-to-point links as well. Because there are 10 devices with two links each, a total of 2*10*2 = 40 IP addresses are reserved for point-to-point links and 10 loopback addresses are reserved.

In total, 60 IP addresses are reserved for the 10 devices: 10 for each VLAN 1, 10 for each loopback, and 40 for the point-to-point links between devices and seeds.

After LAN automation stops, the VLAN 1 IP addresses are released back to the pool, and 90 addresses are allocated for the LAN automation session.

Note the following:

- The same IP pool can be used for multiple discovery sessions. For example, you can run one discovery session and discover the first set of devices. After discovery completes, you can provide the same IP pool for a subsequent LAN automation session. Similarly, you can choose one LAN pool for one discovery session and another LAN pool for a second discovery session.
- Every time you start LAN automation, it checks for 64 available IP addresses in the IP pool. If you decide to run LAN automation multiple times with the same pool, use at least a /24 pool. If you plan to LAN automate only once for the IP pool, a /25 pool suffices.
- Don't use an address pool that is in use elsewhere in the network, such as an address pool that belongs to the loopback or to other addresses configured on the device.

Site-Specific CLI and SNMP Configuration

To start LAN automation, a site-specific CLI and SNMPv2 read or SNMPv3 configuration is required. Use the Catalyst Center Design application to configure the site-specific CLI and SNMP. Save the configuration for the site that is used for LAN automation. If you configure the credentials at the global level, they are visible at the site level. You must click the radio button for the specific site and then save the configuration to make it available for LAN automation.



Note SNMPv2 write credentials are not required and if configured, it won't be pushed to the device during LAN automation.

Configuration on Seed Devices

When configuring the seed devices, follow these guidelines:

- The system maximum transmission unit (MTU) value must be at least 9100.
- Turn on IP routing on the seed devices.
- Set up routing between the seed service and Catalyst Center so that Catalyst Center has IP reachability to the LAN IP pool subnet.
- We recommend that you use the default interfaces connected to PnP agents. If the peer seed device has IP interfaces configured on the interfaces connected to PnP agents, those links don't get configured. If you want to configure the peer device interfaces connected to PnP agents, use the default interfaces and perform an inventory synchronization on the peer seed device. LAN automation works only when the ports are Layer 2. The ports on Cisco Catalyst 6000 are Layer 3 by default. Convert the ports to Layer 2 before starting LAN automation.
- Configure device credentials and SNMP credentials on the seed devices.
- If the seed devices have Layer 3 interfaces configured, ensure that there are no conflicts with any of the IP pools provided in Catalyst Center. Check the IP addresses which are configured manually.
- Ensure that the seed devices don't have any other interfaces connected to another DHCP server running in VLAN 1.
- If loopback is not configured on the seed devices, LAN automation configures loopback on the seed.
- If any configuration changes are made on the seed devices before running LAN automation, synchronize the seed devices with the Catalyst Center inventory.

• Assign the seed devices to a site. (You don't have to provision the seed devices for LAN automation.)

Additional recommended configurations on seed devices:

• Run multiple discovery sessions for devices across sites connected to the same seed: If you plan to run multiple discovery sessions to onboard devices across different buildings and floors connected to the same seed devices, we recommend that you block the ports for PnP agents that do not participate in the upcoming discovery session.

For example, imagine that seed devices are in Building-23 and are connected to PnP agents on Floor-1 and Floor-2. Floor-1 devices are connected on interfaces Gig 1/0/10 through Gig 1/0/15. Floor-2 devices are connected on interfaces Gig 1/0/16 through Gig 1/0/20. For the discovery session on Floor-1, we recommend that you shut down ports connected to Gig 1/0/16 to Gig 1/0/20. Otherwise, the PnP agents connected to Floor-2 might also get DHCP IPs from the server running on the primary seed device. Because these interfaces aren't selected for the discovery session, they remain as stale entries in the PnP database. When you run the discovery session for Floor-2, the discovery doesn't function correctly until these devices are deleted from the PnP application and write erase/reloaded. Therefore, we recommend that you shut down other discovery interfaces.

• Endpoint/client integration: For Catalyst Center 1.2.8 and earlier, if there are clients connected to a switch that is being discovered, those clients contend for DHCP IP and might exhaust the pool, causing LAN automation to fail. Therefore, we recommend that you connect the client after LAN automation is complete.

This endpoint/client integration restriction does not apply to Catalyst Center 1.2.10 and later. Clients can remain connected while the switch is undergoing LAN automation.

PnP Agent Initial State

Ensure that the device that you want to LAN automate is running the Advantage license level. Otherwise, some commands are not pushed.



Note Catalyst Center 2.3.5 and later support automatic license upgrade for C9000 and C3850 series switches.

New PnP agents have factory defaults and are ready to start LAN automation.

If you are reusing existing network devices, ensure the following:

- PnP agents must have the required license that allow you to push the LISP, IS-IS routing, and CTS-related CLI commands. Use the **show license** command to see the current license level. If required, upgrade the license.
- PnP agents should not have stale certificate or keys from the previous runs.
- Restore the switch configurations to factory default using the following commands:
 - For Cisco IOS XE 16.11 and earlier, use:

```
[CLI config mode]
```

```
no pnp profile pnp-zero-touch
no crypto pki certificate pool
Also remove any other crypto certs shown by "show run | inc crypto"
crypto key zeroize
config-register 0x2102 or 0x0102 (if not already)
do write
end
[CLI exec mode]
delete /force nvram:*.cer
delete /force stby-nvram:*.cer (if a stack)
```

```
delete /force flash:pnp-reset-config.cfg
write erase
reload (enter no if asked to save)
```

• For Cisco IOS XE 16.12.x or later, use:

```
[CLI exec mode]
pnp service reset no-prompt
```

Step 2: Design

The design phase is the second step in LAN automation. During the design phase, you:

- 1. Design and build global sites.
- 2. Configure global and local network services.
- 3. Configure global device credentials.
- 4. Design the global IP address pool and assign the LAN automation pool for the required site from the global pool.

Design and Build a Site

This section explains how to design and build a site.

Procedure

Step 1 From the Catalyst Center home page, c	lick the menu icon and choose Design > Network Hierarchy
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Step 2 Create a site and add buildings and floors.

• To create a site, choose + Add Site > Add Area.

- To add a building, choose + Add Site > Add Building.
- To add a floor, choose + Add Site > Add Floor.

■ Cisco DNA Center	Design / Network Hierarchy	0 🝊
Q Search Hierarchy	Add Site Jumport 🖒 Export Q. Find sites	® ≣ Ø
Search Help	Add Area	
	Add Building	
	Add Floor	
		E8thSt
	Per-	
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	eth ⁵⁴	
	E	

Step 3 From the top-left corner, click the menu icon and choose Design > Network Settings > Device Credentials.
 Step 4 Click Manage Credentials and add the following credentials:

• CLI

SNMPV2C Read

■ Cisco DNA Center	Design / Netw	vork Settings		0 (0
Network Device Credentials	IP Address Pools SP Profiles Wireless Telemetry Secur Create credentials for the protocols used to access devices, then choose or to the selected site.	^{Credentials} Manage Crede	entials	×
> 命 Global > 命 area1 命 area3 謡 area5	Click "Apply" in the section below to push an assigned credential to this site click "Manage Credentials" and choose "Apply" from the credential's Actio Manage Credentials	Select one credential fo credentials are not app Add ^ CLI	or each protocol, then click Assign to assign liled automatically to the site's member devic	these credentials to the site. Note that assigned es.
୍ବିତ aroa6 ୧୬୦ aroa8 E≣ aroa10 ୧୬୦ aroa11		HTTP(S) Read HTTP(S) Write	Туре	Actions
එම area13 මම area15 එම area16	-	SNMPv2c Write SNMPv3	SNMPv2c Read	
ൽ area18 ല് area20 എല് area21 എല് area23				
画 area25 命 area26				

Note If you want to use the same device credentials for all sites, click **Global** in the left navigation tree and set the credentials.

Do not use **cisco** as the username.

- **Step 5** From the top-left corner, click the menu icon and choose **Design** > **Network Settings** > **IP Address Pools**.
- **Step 6** From the left hierarchy tree, choose **Global** and click **Add**.

Create a dedicated IP address pool to use for the underlay infrastructure. Do not use an address pool that is already in use in the network. For example, do not use an address pool that belongs to a loopback or other addresses configured on the device.

■ Cisco DNA Center	Design / Network Settings	© <
Network Device Credentials	IP Address Pools SP Profiles Wireless Telemetry Security and Trust	Add IP Pool
Q, Find Hierarchy Search Heip ✓ & Global → & area1 & area3 & area5 & area6	IP Address Pools (2) Subnet Type All IPv6 ✓ Filter 0 Selected Add More Actions ✓ Name ^ Type IPv4 Subnet IPv4 Used ①	IP Pool Name* Type* Generic IP Address Space IP Pod
ଡ଼ିକ arcea3 ଜଣି arcea10 ଡ଼ିକ arcea13 ଜଣି arcea15 ଡ଼ିକ arcea16 ଜଣି arcea18 ଜଣି arcea20 ଡ଼ିକ arcea21 ଡ଼ିକ arcea23		Turnel Type is supported for IPv4 pools only, if IPv6 is selected, all the below fields will have to be IPv6 format. IP Subnet* For Example - 192.0.2.0 Prefix langth /8 (255.0.0.0) Gateway IP Address DH/DS Securifs)
ਾ area25 ਦੀ area26 ਦੀ area28 ਦੀ area30		DNS Server(s) Cancel Save

Step 7 From the left hierarchy tree, choose a site and click **Reserve**.

Step 8 In the **Reserve IP Pool** window, from the **Type** drop-down list, choose **LAN**.

■ Cisco DNA Center	Design / Network Settings	0 (0
Network Device Credentials	IP Address Pools SP Profiles Wireless Telemetry Security and Trust	Reserve IP Pool ×
Q Find Hierarchy Search Help > & Global > & area1 > & area5 & area5 & area6 & area6 & area7 & area7 & area10 & area13 & area13 & area16 & area26 & area21 & area27 & area21 & area23 & area25 & area25 & area26 & area26 & area28	IP Address Pools (1) Subnet Type All IPv4 only Dual-Stack ♥ Filter 0 Selected Reserve More Actions ∨ Name ↑ Type IPv4 Subnet IPv4 Used () IPv6 :	IP Address Pool Name* Type* Generic AN Generic LAN Management Service WAN Tunnel pools are not available for reserving for Site(s). Prefix length / Number of IP Addresses ● Prefix length _ O Number of IP Addresses Prefix length _ ✓
i⊞ area30	1 Records	Cancel Reserve

Step 3: Discover

Device discovery is the third step in successfully building the underlay network.

Before creating and running a discovery profile, review the underlay configuration of the seed device.

Create Discovery Profile

This section explains how to create a discovery profile.

Procedure

- **Step 1** From the Catalyst Center home page, click the menu icon and choose **Tools** > **Discovery**.
- **Step 2** In the **Discovery** window, click **Add Discovery**.
- **Step 3** In the **New Discovery**window, enter the following details:
 - Discovery Name: Name of the discovery profile.
 - **IP** Address/Range: The IP address can be any Layer 3 interface or loopback on any switch that Catalyst Center can access. If you are discovering the primary and peer seeds together, enter an IP range. Click the appropriate radio button and enter the details accordingly.
 - Credentials: Enable at least one CLI and one SNMP credential. Click Add Credentials to add the credentials.
 - Advanced: Specify one or more protocols for the discovery scan to use. Choose SSH and/or Telnet.

Note If you choose SSH, ensure that the seed is configured for SSH.

■ Cisco DNA Center	Tools / Discovery / Add Discovery	Q @ @ 4
Discovery / Add Discovery		
EQ -> Search by Discovered Device IP	New Discovery	
⊘ discovered-via-script0 2 Rea		
	Discovery Name*	
	✓ IP Address/Range*	
	Discovery Type 🕜	
	⊙ CDP ○ IP Address/Range ○ LLDP	
	IP Address*	
	Subnet Filters +	
	CDP Level	
	16	
	Preferred Management IP Address ①	
	lo noire O use coopuack	
	> Credentials *	
	> Advanced	
Device Controllability is Enabled. Co	nnig changes will be made on network devices during	eset Discover

Step 4 Click Discover.

Step 5 Choose a discovery schedule and click **Start**.

You can view the status and results of the scan in the **Discoveries** window.

Note The discovery process takes some time. Ensure that there are no failures after the process completes.

■ Cisco DNA Center		Tools / Discovery / View All Discoveries								Q	0 0	۵		
Discovery / View All Discoveries														
EQ - Search by Discovered Device IP	discovered-v	ia-sc © Completed	2 Reachable Devic	e(s) 00h:00m:	02s								Take	а То
O discovered-via-script0 2 Rea			DEVICE	STATUS 🗸		\ \\	liter						Histor	у ~
						IP Ad	dress	Device Name	Status	ICMP ·	SNMP	CLI	NETCONF	1
								Border-01						
			•	Success(2)				Border-02						
		Device(s)		Unreachable(0)										
	Discovery [Details												
	CDP Level	None		LLDP Level	None									
	Protocol Order	ssh telnet		Retry Count	None									
	Timeout	30 second(s)		IP Address/Range	9									
	IP Filter List	None		Preferred Management IP Address	None									
	New Device Only Configured	No		Recurring	No	Shor	w 25	UNREACHABLE	Showing 1	to 2 of 2	TRUED	Page 1	v of 1	
Device Controllability is Enabled. C discovery/inventory or when device	onfig changes will is associated to a	be made on network devices site. Learn More Disable	during						De	elete (Copy & E	idit	Re-discov	ver

- **Step 6** To verify that the discovered device is added to the inventory, click the menu icon and choose **Provision** > **Inventory**.
 - **Note** Make sure that the discovered device's **Reachability** status is *Reachable* and **Manageability** status is *Managed*.

■ Cisco DNA Center	Provision / Network Devices / Inventory							
Inventory Plug and Play Inve	ntory Insights	5						
Q Search Hierarchy						💡 Global		
Search Help	DEVICES (2)						
∨ & Global	FOCUS: In	iventory ~						
Unassigned Devices	√ Filter	Add Device	Tag Actio	ons∨ () Tak	e a Tour			
> 🏶 San_Jose		Device Name 🔺	IP Address	Device Family	Reachability (i)	EoX Status 🕕	Manageability 🕕	Compliance (i)
		Border-01 😔		Switches and Hubs (WLC Capable)	🖉 Reachable	🔺 Not Scanned	Ø Managed	Compliant
		Border-02 😑		Switches and Hubs (WLC Capable)	Reachable	🔺 Not Scanned	🥝 Managed	Compliant

Step 7To assign the device to site from inventory, select the device and from the Actions menu, choose Provision > Assign
Device to Site.

■ Cisco DNA Center			Provision /	Ne	twork Devic	es / Inventory					
Inventory Plug and Play Inver	ntory Insights										
Q Search Hierarchy	♀ Global										
Search Help	DEVICES (2) FOCUS: Inventory V	DEVICES (2) Focus: Inventory V									
Unassigned Devices	√ Filter	Tag Action	ns ^ () Take	a Te	our 1 Selec	sted					
> 🎄 San_Jose	Device Name •	IP Addre: In	ventory	>	achability 🕕	EoX Status 🕕	Manageability 🕕	Compliance 🕕			
	Border-01 😔	So	oftware Image	>	Reachable	🔺 Not Scanned	🥝 Managed	Compliant			
	Border-02 😔	Pr	rovision	>	Assign Devi	ice to Site	Ø Managed	Compliant			
		Telemetry		>	Provision D	evice					
		De	Device Replacement > LAN Automation								
		C	ompliance	Ś	LAN Autom	ation Status					
					Learn Device Config						
					Configure V	VLC HA					
					Configure V	VLC Mobility					
					Manage LEI	O Flash Status					

Step 8 In the Assign Device to Site window, choose a site and click Apply.

For Catalyst Center 1.2.6 and earlier, ensure that both the primary and peer seeds are in the same site and same floor (although they can be physically on different floors).

The discovered device is added to the selected site.

Note

```
If you don't see the Site column in the Inventory window, click , check the Site check box, and click Apply.
```

Q Search Hierarchy				Q (Global			≡ ⊳
Search Help	DEVICES (2)							
li 🖓 Global	Focus: inventory V							
Unassigned Devices	Filter Add Device Ta	ag Actions ∨ ①	Take a Tour					As of: 5:01 PM 🏦 Export 📿 R
> 💩 San_Jose	Device Name 🔺 IP Address	Device Family	Reachability ()	EoX Status 🕕	Manageability 🚺	Compliance 🕕	Health Score Sit	e MAC Address Device
	⊘ Border-01 ⊝	Switches and Hubs (WLC Capable)	Reachable	🔺 Not Scanned	🥥 Managed	Ocmpliant	🗹 EoX Status	Image Needs Updat
	Barrier-02 Q	Switches and Hubs	👩 Reachable	A Not Scanned	Managed	O Compliant	Manageability	Image Precheck Sta
		(WLC Capable)	- Resensoie	- Not ocumed	-	Compilant	Compliance	Provisioning Status
							Health Score	Credential Status
							Site	Last Provisioned
							MAC Address	Associated WLC IP
							Device Role	AP CDP Neighbors
							Image Version	AP Group Name
							Car	Apply

Steps to Consider Before Starting LAN Automation

Take the following considerations into account before starting the LAN automation process.

IP Pool Subnet Reachability from Catalyst Center

LAN automation discovery uses the LAN pool to reach PnP agents. Catalyst Center should be able to reach the IPs allocated from the LAN pool. For example, if the LAN pool is 192.168.10.0, Catalyst Center should have the correct route to reach this subnet. To test the reachability, create an SVI (VLAN 1 interface) on the primary seed device and do a ping test between Catalyst Center and the seed. Refer to the following sample code.

```
[On seed device]
Switch(config)#interface vlan1
Switch(config-if)#ip address 192.168.99.1 255.255.255.0
Switch(config-if)#end
[On Catalyst Center CLI console]
[Sat Jun 23 05:55:18 UTC] maglev@10.195.192.157
$ ping 192.168.99.1
PING 192.168.99.1 (192.168.99.1) 56(84) bytes of data.
64 bytes from 192.168.99.1: icmp_seq=1 ttl=252 time=0.579 ms
64 bytes from 192.168.99.1: icmp_seq=2 ttl=252 time=0.684 ms
64 bytes from 192.168.99.1: icmp_seq=3 ttl=252 time=0.541 ms
[On seed device]
Switch(config)#default int vlan 1
Interface Vlan1 set to default configuration
```

If the ping test fails, the route is not set up correctly on Catalyst Center.

Static Route Addition for LAN Pool

Catalyst Center hardware has multiple physical interfaces with each serving different categories of communication. See the *Cisco Digital Network Architecture Center Appliance Installation Guide* for recommended interface connections, IP routing, and static assignment. In a single-home design, Catalyst Center performs the host function with the default gateway providing IP routing. In a multi-home design, Catalyst Center must have a static route to the LAN automation networks via the enterprise-facing interface.

Figure 1: IP Addressing for Single-Home and Multi-Home Designs





If the network design is a multi-home design, one way to fix the IP reachability issue is to add a static route on Catalyst Center. A network administrator can add a static route during the initial Catalyst Center configuration or later via a maglev command. (Don't use the Linux route command, because maglev APIs don't pick the correct information if the route is modified using the route command.)

For a single-home design, check the routing between the seed and Catalyst Center.

To add a static route on Catalyst Center:

Procedure

Step 1 On the Catalyst Center console, enter the command sudo maglev-config update. The config wizard opens.



- **Step 2** Enter the static route and click **Next**. The config wizard validates and configures host networking.
- **Step 3** Ensure that the correct interface is selected to add the static route. Otherwise, click **Next** until the correct interface is displayed on which to configure the route.
- **Step 4** Leave the **Network Proxy** field blank. When the proxy validation fails, skip the proxy settings.
- Step 5Click Proceed to apply the changes to the controller.It takes from 5 to 6 minutes to add a static route. You can ignore any warning messages.

PnP Agent Initial State Before Starting LAN Automation

System Serial Number

Procedure

Step 1 Before starting LAN automation, make sure that the PnP agent is in **System Configuration Dialog** state.

: FCW2137G032

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled cisco C9300-24T (X86) processor with 1418286K/6147K bytes of memory. Processor board ID FCW2137G032 2048K bytes of non-volatile configuration memory. 8388608K bytes of physical memory. 1638400K bytes of Crash Files at crashinfo:. 11264000K bytes of Flash at flash:. OK bytes of WebUI ODM Files at webui:. Base Ethernet MAC Address : f8:7b:20:48:d8:80 Motherboard Assembly Number : 73-17952-06 Motherboard Serial Number : FOC21354B06 Model Revision Number : A0 Motherboard Revision Number : A0 : C9300-24T Model Number

%INIT: waited 0 seconds for NVRAM to be available

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:

- **Step 2** Do not press **Yes** or **No**. Leave the device in the same state.
 - **Note** If the device does not stop at this initial prompt and moves ahead, check the device config-register value using the CLI command show ver | inc register. In some cases, the value might be 0x142. Change the config-register value to 0x102 or 0x2102 and save the configuration. Check the CLI again; it shows *Configuration register is 0x142 (will be 0x102 at next reload).*

If the device comes up with the older config-register value even after changing the value to 0x102 or 0x2102 and reloading the device, configure no system ignore startupconfig switch all on the device, save the configuration, and reload.

For Cisco Catalyst 9000 series switches, use pnp service reset no-prompt.

Stack Considerations

- Follow the same procedure for the stack. Allow extra time to make sure that all members in the stack are up. Do not start LAN automation until all switches are up.
- LAN automation is always initiated on the active switch. When all switches in a stack are booted together, the switch with the lowest MAC address (assuming no switch priority is configured) becomes active. The second lowest switch becomes the standby, and so on. Some customers require that the first switch is always active. In this case, if all switches are booted together and the first switch does not have the lowest MAC address, it does not become the active. To ensure that the first switch is the active, boot the switches in a staggered manner. That is, boot switch 1. After 120 seconds, boot switch 2, and so on. This ensures that the switch becomes active in the correct order: switch 1 is active, switch 2 is standby, and so on. However, when you reload, the order is not maintained and the switches obtain their role depending on their MAC address.
- To make sure that the switches maintain their order after reload, it is a good practice to assign switch priorities to ensure that the switches always come up in the same order. The highest priority is 15. When priorities are assigned, they take preference over the switch MAC address. Assigning switch priorities does not change the NVRAM configuration. The values are written to ROMMON and persist after reload or write erase. As an example, see the following sample code.

```
3850_edge_2#switch 1 priority ?
    <1-15> Switch Priority
3850_edge_2#switch 1 priority 14
WARNING: Changing the switch priority may result in a configuration change for that switch. Do
you want to continue?[y/n]? [yes]: y
```

You might have to clean up the switch after assigning priorities, because some certificates will have been configured on the switch during boot up. To clean up the switch, see PnP Agent Initial State.

Note Do not start LAN automation until all switches in the stack are up.

If you are consoled in to the standby/member switches, do not press Enter, even though the screen says *console is now available, Press RETURN to get started.* Monitor the active switch, which should be at the **System Configuration Dialog** state.

If LAN automation is already running and you don't want to stop it, shut the seed link connecting to the PnP agent. That way, discovery doesn't occur until you are ready to bring up the link.

Unplug the Management Port

Connect PnP agents directly to seed devices. Do not connect PnP agents to any other network (for example, the management network) or any network that can provide DHCP through another server on VLAN 1.

Ensure That Seed Ports Are Layer 2

Ensure that the seed ports connected to the PnP agents are Layer 2 and defaulted. For example, Cisco Catalyst 6500 and 9500H ports are Layer 3 by default.

Ensure That Primary Seed Port Does Not Block STP

Ensure that the port on the primary seed connecting to the PnP agents does not block STP.

Ensure That the Device Is Not Present in Inventory

This section applies to devices that were discovered or LAN automated at any point.

If the devices to discover in an upcoming LAN automation session are already present in the inventory, complete the following steps to remove them from the inventory.

Before you begin

If a device was provisioned and added to the fabric, remove it from the fabric and unprovision it before you remove it from the inventory.

Procedure

Step 1	From the Catalyst Center home p	age, click the mer	nu icon and choose	Provision > Inventory
--------	---------------------------------	--------------------	--------------------	-----------------------

Step 2 Filter the devices by **Serial Number** and then from the **Actions** drop-down list, choose **Inventory** > **Delete Device**.

■ Cisco DNA Center		Provision / No	etwork Devices / Inventory	
Inventory Plug and Play Inve	ntory Insights			
Q Search Hierarchy			💡 Global	
Search Help	DEVICES (2)			
√ 🏶 Global	Focus: Inventory V			
Unassigned Devices	√ Filter	Actions ^ (i) Take a	Tour 1 Selected	
> 🆓 San_Jose	Device Name IP Addres	Inventory >	Edit Device	lanageability
	Border-01 🐵	Software Image >	Resync Device) Managed
	Borrier-02	Provision >	Reboot Device	Managed
	bolder-02 G	Telemetry >	Delete Device	
		Device Replacement >		
		Others >	Import Inventory	
		Compliance	Export Inventory	
		Compliance /	Manage User Defined Fields	
			Schedule Maintenance	
			Manage Maintenance	
			Manage System Beacon	

Ensure That the Device Is Not Present in PnP

If the devices to discover in an upcoming LAN automation session are already available in PnP, complete the following steps to remove them from PnP before you run the discovery. Otherwise, the discovery won't work correctly.

Procedure

- **Step 1** From the Catalyst Center home page, click the menu icon and choose **Provision** > **Plug and Play**.
- **Step 2** From the **Device Status** filter, choose **Unclaimed**. Make sure that the device (**Serial Number**) being discovered is not available under **Unclaimed**.

■ Cisco DNA Center		Provision / Network Devices / Plug and Play					
Inventory Plug and Play Inventor	y Insights						
Device Status Unclaimed (0) Erro	r (2) Provisioned (0)	All (2)					
Devices (0) Focus: Default V							
Q Search Table							
0 Selected Actions V 🕘 Add De	vices						
Device Name	Serial Number	Product ID	IP Address	Source	State	Onboarding Progress	
			No dat	a to display			

Step 3 If the device is available, console into the device and remove the PnP profile:

```
[on PNP agent]
3850_edge_2#show run | sec pnp-zero-touch
pnp profile pnp-zero-touch
transport https ipv4 192.168.99.2 port 443
3850_edge_2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
3850_edge_2 (config)#no pnp profile pnp-zero-touch
3850_edge_2
For Cisco IOS XE 16.12.x or later, use:
```

pnp service reset no-prompt

Step 4 Check the check box of the device in the **Unclaimed** section and choose **Actions** > **Delete**.

Use the Advantage License

Ensure that the PNP agent is running the Advantage license level.

Ensure That the PNP Agent is in INSTALL Mode

For the image upgrade to occur during LAN automation, the PnP agent must be in INSTALL mode.

Image upgrade through LAN automation occurs in the background.

Procedure

Step 1 After PnP discovers the device, Catalyst Center checks whether any golden image is marked for the switch family (Cisco Catalyst 9300 or 3850) of the discovered device. To check whether a golden image is selected, choose Design > Image Repository.

If the golden image is marked and the discovered device is not running the golden image, LAN automation upgrades the discovered device to the golden image. If not, Catalyst Center skips the image upgrade and proceeds to pushing the initial device configuration.

- **Step 2** If you want LAN automation to upgrade the image on the discovered device, ensure that the device is running in INSTALL mode. Image upgrade through LAN automation does not occur if the device is in BUNDLE mode.
- **Step 3** If the device is in BUNDLE mode and you want to proceed with LAN automation, remove the golden image for that particular switch family **Design** > **Image Repository**.

Step 4: Provision

Provisioning is the final step in the LAN automation process. It is divided into two stages:

1. Device discovery and onboarding (starting LAN automation).

When LAN automation starts, it:

• Pushes the loopback and IS-IS configuration to the primary and peer seed devices and the temporary configuration to the primary seed device, enabling discovery and onboarding of the PnP agent.



Note Catalyst Center 2.3.3 and later support is-type level-2-only as part of IS-IS configurations.

- Discovers new devices.
- Upgrades the image and pushes the configuration to discovered devices.



Note The image is updated only if a golden image is marked for that switch type under the Catalyst Center home page > Design > Image repository.

When LAN automation starts, the temporary configuration is pushed to the primary seed device, which discovers and onboards the PNP agent. Next, the PNP agent image is upgraded and basic configurations such as loopback address, system MTU, and IP routing are pushed to the PNP agent.

2. Interface configuration (stopping LAN automation).

When LAN automation stops:

- The discovery phase ends and all point-to-point links between the seed and discovered devices and between the discovered devices (a maximum of two hops) are converted to Layer 3.
- All temporary DHCP and VLAN 1 configurations on the seed and discovered devices are removed. The DHCP subpool is returned to the LAN automation pool.

Start LAN Automation

For LAN automation, you must select the primary seed device, peer seed device, site for seed device, LAN IP pool, and interface. Optionally, you can select the device prefix, hostname CSV file, configurable IS-IS password, and so on.

Interface Selection

Interfaces on the primary seed device participate in the new device discovery and L3 configuration. The interfaces on seed devices provide a filter to directly connect PnP agents that can be onboarded through the LAN automation session. For example, consider four directly connected PnP agents: device-1 through Gig1/0/10, device-2 through Gig 1/0/11, device-3 through Gig 1/0/12, and device-4 through Gig 1/0/13. If you choose Gig 1/0/11 and Gig 1/0/12 as part of the discovery interfaces, LAN automation discovers only device-1 and device-2. If device-3 and device-4 also try to initiate the PnP flow, they are filtered, because they are connected through interfaces that are not selected during the LAN automation session. This mechanism lets you restrict the discovery process.

Interface selection also lets you choose interfaces between the primary seed and the peer seed to configure with Layer 3 links. If there are multiple interfaces between the primary and peer seeds, you can choose to configure any set of these interfaces with Layer 3 links. If no interfaces are chosen, they aren't configured with Layer 3 links.

The option to choose a peer seed interface is not available. Interfaces between peer seed and PnP agents are automatically inferred based on the topology information gathered from the device. The topology information is built on the CDP information available on the device.

Site Selection

Sites can be selected for seed devices and PnP agents. Currently, there is one site for seed device(s) and one site for PnP agents.

LAN Pool Selection

The LAN pool is selected based on PnP agent site information. To start LAN automation, select a LAN pool from the list of LAN pools available for a particular site. You can select the same LAN pool for multiple LAN automation sessions. For example, you can run one discovery session and discover the first set of devices. After the discovery session completes, you can provide the same IP pool for subsequent LAN automation sessions. Similarly, you can select a different LAN pool for different discovery sessions. Make sure that you select a LAN pool with enough remaining capacity.

IS-IS Password

- If you enter a value, enter the same password that is configured on the seed. If you enter a value that is different from the password configured on the primary and peer seeds, an error is returned.
- If the password on the primary and peer seeds does not match, an error is returned.

If you enter a value in the IS-IS Password field:

- If the primary seed has an IS-IS password configured, LAN automation configures the primary seed's IS-IS password on the PnP devices (and on the peer seed, if it doesn't already have the password).
- If the primary seed doesn't have an IS-IS password but the peer does, LAN automation configures the peer seed's IS-IS password on the PnP devices and on the primary seed.
- If the primary and peer seeds don't have an IS-IS password configured and you enter a value in the password field, LAN automation configures the user-entered password on the PnP devices and on the primary and peer seeds.

If you leave the IS-IS Password field blank:

- If the primary seed has an IS-IS password configured, LAN automation configures the primary seed's IS-IS password on the PnP devices (and on the peer seed, if it doesn't already have the password).
- If the primary seed doesn't have an IS-IS password but the peer does, LAN automation configures the peer seed's IS-IS password on the PnP devices and on the primary seed.
- If the primary and peer seeds don't have an IS-IS password configured, LAN automation uses the default value "cisco" for the PnP devices and for both seeds.

Hostname Mapping

- **Default**: If no value is entered, LAN automation sets the hostname as **Switch**, followed by the loopback address. Example: **Switch-192-168-199-100**.
- Device Name Prefix: The device prefix is used to generate hostnames for discovered devices. LAN automation keeps the site counter and generates the name using the prefix and the current site counter. For example, if the device prefix is *Building-23-First-Floor*, LAN automation generates device names such as *Building-23-First-Floor-1*, *Building-23-First-Floor-2*, and so on.
- Hostname Map File Format: Catalyst Center expects a CSV file with the hostname and serial number (hostname,serial number) as shown in the following example. For stack LAN automation, the CSV file lets you enter one hostname and multiple serial numbers per row. Use commas to separate serial numbers.



Note

If both device name prefix and hostname map file are used, then the hostname map file takes precedence and the device name prefix will not be used.

А	В
Edge1	FCW2048Cxxx
Edge2	FCW2131Lxxx, FCW2131Gxxx, FCW2131Gxxx, FCW2131Gxxx
Edge3	FOC2052Xxxx, FCW2052Cxxx, FCW2052Fxxx
Edge4	FXS2131Qxxx

Before you begin

For Catalyst Center 2.3.5 and later, see Provision LAN Automation, on page 50.

Procedure

- **Step 1** From the Catalyst Center GUI, click the menu icon and choose **Provision** > **Network Devices** > **Inventory**.
- Step 2 In the Inventory window, choose Actions > Provision > LAN Automation.
- **Step 3** Enter the required details and click **Start**.

■ Cisco DNA Center		Provision / Network Devices / Inventory	Preview Now Page 💿 📀 🔿			
Inventory Plug and Play Inver	ntory Insights	LAN Automation	×			
Q Search Hierarchy	Cisco CX Cloud EULA is required to initiate EoX so					
Saato Hep 	DEVICES (1) rocue: linventory ∨ ⊽ Riter ● Add Device Tag Actions ∨ ⊙	Cleo recommends that you add the peer with the primary. Why? LAN automation brings up the LAN network sutermatically starting from seed and peer device. Lan automation will use the selected ports of the Primary device to disr and onboard new devices in the network. The onboarding devices should be in the factory default mode. Devices will be auto-upgraded to the Golden Image tagged for the device(s). You can modify the Golden Image selection from Cleage Repository.				
	☐	Bindle starting Leviauronation, see the Claco trik Center Straccess LeviAuronation Penary Ster* Global/Bangalore/bgl16				
		Primary Device*	<u>^</u>			
		T2_Seed01 Peer Device T2_Seed01	×			
		SELECTED PORTS OF PRIMARY DEVICE (0)* Modify Salections				
		Discovered Device Configuration Discovered Device Site*	v			
		Main IP Pool	~ 0			
		Link Overlapping IP Pool	~ o			
		IS-IS Domain Password	0			
0	Show 25 V entries		Clear Cancel Start			

Step 4 After LAN automation starts, click LAN Automation Status to monitor the progress.

nventory Plug and Play Inve	intory Insights												
) Search Hierarchy	() Cisco CX Cloud EULA is	is required t	to initiate EoX scans.	Click here to accept.									
Search Help						Q Global /	Bangalore / bu	116				1	= >
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ez bangalore 톄 bol16	V Filter Add Device	e Tag Ad	ctions ^ () Ta	ke a Tour								As of: 11:34 PM 🌰 🗈	xport ©R
	Device Name	IP Addres	Inventory	> Reachability ()	EoX Status 🕕	Manageability 🕢	Compliance ()	Site	MAC Address	Device Role	Image Version	Uptime	Last Updat
	□ ⊘ T2_Seed01 ⊙	192.168	Software Image	> O Reachable	A Not Scanned	Managed	O Compliant	/Bangalore/bgl16	64:f6:9d:72:57:00	DISTRIBUTION	15.5(1)SY1	110 days 11 hrs	7 minutes
		- 1	Provision	>	to file								
		- 6	Telemetry	> Assign Device	to arte								
			Device Replacemen	t >	10								
			Others	> LAN Automatic	in								
			Compliance	> LAN Automatic	in Status								
				Learn Device C	sontig								
				Configure wcc	, BA								
				Conligure wcc	Mobility								
				Manage LED FI	lash Status								
	Show 25 V entries					Showi	ng 1 of 1						
Cisco DNA Center	Show 25 V entries			Pr	ovision / Netw	Showi	ng 1 of 1					Preview New Page	• •
Cisco DNA Center	Show 25 V entries			Pr LAN Automatic	ovision / Netwo	Showi	ng 1 of 1					Preview New Page	• •
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After LAN automation starts, the following sample configuration is pushed to the seed device(s).

Primary Seed Configuration

Primary Seed Configuration

```
!exec: enable
!
system mtu 9100
!
ip multicast-routing
ip pim ssm default
```

Loopback IP and IS-IS configuration. (If the secondary seed is configured, it also gets configured with the loopback IP and IS-IS configuration.)

```
interface Loopback0
   ip address 10.4.210.123 255.255.255.255
   description Fabric Node Router ID
1
router isis
  net 49.0000.0100.0421.0123.00
  domain-password *
  is-type level-2-only
 metric-style wide
 nsf ietf
  log-adjacency-changes
  bfd all-interfaces
  passive-interface Loopback0
   default-information originate
interface Loopback0
ip router isis
clns mtu 1400
ip pim sparse-mode
exit
```

DHCP pool information:

!

```
ip dhcp pool nw_orchestration_pool
  network 10.4.218.0 255.255.255.192
  option 43 ascii 5A1D;B2;K4;I10.4.249.241;J80;
  default-router 10.4.218.1
   class ciscopnp
    address range 10.4.218.2 10.4.218.62
!
ip dhcp class ciscopnp
   option 60 hex 636973636f706e70
!
ip dhcp excluded-address 10.4.218.1
```

VLAN 1 configuration:

```
vlan 1
!
interface Vlan1
    ip address 10.4.218.1 255.255.255.192
    no shutdown
    ip router isis
    clns mtu 1400
    bfd interval 500 min_rx 500 multiplier 3
    no bfd echo
exit
!
```

Primary Seed Configuration

Switch port configuration on interfaces used for discovery. (Each discovery interface on the primary seed device gets this configuration.)

```
interface TenGigabitEthernet1/1/8
  switchport
  switchport mode access
  switchport access vlan 1
!
interface TenGigabitEthernet1/1/7
  switchport
  switchport mode access
  switchport access vlan 1
exit
```

Multicast configuration (optional; only configured if the multicast check box is checked).

If the Rendezvous Point (RP) for the underlay multicast needs to be the border, ensure to start LAN automation with multicast enabled using a switch that is planned to be the border as the seed device.

If the peer seed is configured, these multicast CLIs are pushed on the peer seed as well. The same rp-address is used to configure Loopback60000 on both the primary and peer seeds.

```
interface Loopback60000
  ip address 10.4.218.67 255.255.255.255
  ip pim sparse-mode
  ip router isis
  ip pim register-source Loopback0
  ip pim rp-address 10.4.218.67
```

Secondary Seed Configuration

```
!exec: enable
1
system mtu 9100
1
ip multicast-routing
ip pim ssm default
interface Loopback0
 ip address 10.4.210.124 255.255.255.255
 description Fabric Node Router ID
router isis
  net 49.0000.0100.0421.0124.00
   domain-password *
  is-type level-2-only
  metric-style wide
  nsf ietf
  log-adjacency-changes
  bfd all-interfaces
  passive-interface Loopback0
   default-information originate
interface Loopback0
ip router isis
clns mtu 1400
ip pim sparse-mode
exit
1
```

Note Catalyst Center 2.3.3 and later support is-type level-2-only as part of the IS-IS configuration.

Step 5 After device discovery starts, view logs on the PnP agent.

Note Do not press the Enter key on the PnP agent yet.

%INIT: waited 0 seconds for NVRAM to be available

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:

Press RETURN to get started!

*Aug 2 23:13:50.440: %SMART LIC-5-COMM RESTORED: Communications with the Cisco Smart Software Manager or satellite restored *Aug 2 23:13:51.314: %CRYPTO ENGINE-5-KEY ADDITION: A key named TP-self-signed-1875844429 has been generated or imported *Aug 2 23:13:51.315: %SSH-5-ENABLED: SSH 1.99 has been enabled *Aug 2 23:13:51.355: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write memory" to save new IOS PKI configuration *Aug 2 23:13:51.418: %CRYPTO ENGINE-5-KEY ADDITION: A key named TP-self-signed-1875844429.server has been generated or imported *Aug 2 23:13:52.071: %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to administratively down *Aug 2 23:13:53.071: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to down *Aug 2 23:14:00.112: %HMANRP-6-EMP ELECTION INFO: EMP active switch 1 elected: EMP RELAY: Mgmt port status DOWN, reelecting EMP active switch *Aug 2 23:14:00.112: %HMANRP-6-EMP NO ELECTION INFO: Could not elect active EMP switch, setting emp active switch to 0: EMP RELAY: Could not elect switch with mgmt port UP *Aug 2 23:14:02.000: %SYS-6-CLOCKUPDATE: System clock has been updated from 23:14:04 UTC Thu Aug 2 2018 to 23:14:02 UTC Thu Aug 2 2018, configured from console by vty0. Aug 2 23:14:02.000: %PKI-6-AUTHORITATIVE CLOCK: The system clock has been set. Aug 2 23:14:02.462: %PNP-6-PNP DISCOVERY DONE: PnP Discovery done successfully Aug 2 23:14:07.847: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write memory" to save new IOS PKI configuration Aug 2 23:14:16.348: %AN-6-AN ABORTED BY CONSOLE INPUT: Autonomic disabled due to User intervention on console. configure 'autonomic' to enable it. %Error opening tftp://255.255.255.255/network-confg (Timed out)

Step 6 After the device is discovered, Catalyst Center checks if a golden image is marked for the switch family of the discovered device. If a golden image is marked and the discovered device is not running the golden image, LAN automation first upgrades the discovered device to the golden image. If not, Catalyst Center skips the image upgrade and pushes the initial device configuration. The following logs show when the image is upgraded.

Aug 2 23:14:25.263: AUTOINSTALL: Tftp script execution not successful for Vl1.

```
Oct 5 19:20:11.437: MCP_INSTALLER_NOTICE:

Installer: Source file flash:cat9k_iosxe.16.06.04s.SPA.bin is in flash, Install directly

Oct 5 19:20:12.450: %IOSXE-5-PLATFORM: Switch 1 R0/0: Oct 5 19:20:12 provision.sh:

%INSTALL-5-OPERATION_START_INFO: Started install package flash:cat9k_iosxe.16.06.04s.SPA.bin

Oct 5 19:20:22.778: %IOSXE-5-PLATFORM: Switch 1 R0/0: Oct 5 19:20:22 packtool.sh:

%INSTALL-5-OPERATION_START_INFO: Started expand package flash:cat9k_iosxe.16.06.04s.SPA.bin

Oct 5 19:21:26.034: %IOSXE-5-PLATFORM: Switch 1 R0/0: Oct 5 19:21:26 packtool.sh:

%INSTALL-5-OPERATION_COMPLETED_INFO: Completed expand package flash:cat9k_iosxe.16.06.04s.SPA.bin

Oct 5 19:22:09.861: %IOSXE-5-PLATFORM: Switch 1 R0/0: Oct 5 19:22:09 provision.sh:

%INSTALL-5-OPERATION_COMPLETED_INFO: Completed install package flash:cat9k_iosxe.16.06.04s.SPA.bin

Oct 5 19:22:09.861: %IOSXE-5-PLATFORM: Switch 1 R0/0: Oct 5 19:22:09 provision.sh:

%INSTALL-5-OPERATION_COMPLETED_INFO: Completed install package flash:
```

*** *** --- SHUTDOWN NOW ---***

```
Oct 5 19:22:20.950: %SYS-5-RELOAD: Reload requested by controller. Reload Reason: Image Install.
Chassis 1 reloading, reason - Reload command
Oct 5 19:22:30.501 FP0/0: %PMAN-5-EXITACTION: Process
manager is exiting: reload fp action requested
Oct 5 19:22:
```

Initializing Hardware...

Catalyst Center pushes part of the configuration, allowing the devices to be onboarded and managed by Catalyst Center. **LAN Automation Status** displays *In Progress*, **Discovered Devices Status** displays the aggregate status of all devices being discovered, and the **Devices** tab displays the status of individual devices being discovered.



Step 7 View the logs on the PnP agent, as shown in the following example. It is safe to press return on the console if you want to. When you press return, the hostname changes to the value entered in the **Hostname Mapping** field when you started LAN automation.

```
Aug 2 23:14:50.682: %LINK-3-UPDOWN: Interface GigabitEthernet1/0/3, changed state to up
Aug 2 23:14:51.487: %LINK-3-UPDOWN: Interface GigabitEthernet1/0/24, changed state to up
Aug 2 23:14:51.681: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/3, changed
state to up
Aug 2 23:14:51.854: %LINK-3-UPDOWN: Interface GigabitEthernet1/0/23, changed state to up
Aug 2 23:14:52.487: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/24, changed
state to up
Aug 2 23:14:52.855: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0/23, changed
state to up
000123: Aug 2 23:16:17.345: %CRYPTO ENGINE-5-KEY ADDITION: A key named dnac-sda has been generated
or imported
000124: Aug 2 23:16:17.423: Configuring snmpv3 USM user, persisting snmpEngineBoots. Please Wait...
000125: Aug 2 23:16:17.474: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state
to up
000126: Aug 2 23:16:17.479: %CLNS-6-DFT OPT: Protocol timers for fast convergence are Enabled.
000128: Aug 2 23:16:17.489: %BFD-6-BFD IF CONFIGURE: BFD-SYSLOG: bfd config apply, idb:Vlan1
000129: Aug 2 23:16:18.423: %CLNS-3-BADPACKET: ISIS: LAN L1 hello, packet (9097) or wire (8841)
length invalid from f87b.2077.b147 (Vlan1)
000130: Aug 2 23:16:18.502: %BFD-6-BFD SESS CREATED: BFD-SYSLOG: bfd session created, neigh 204.1.183.1
proc:ISIS, idb:Vlan1 handle:1 act
000131: Aug 2 23:16:19.269: %BFDFSM-6-BFD SESS UP: BFD-SYSLOG: BFD session ld:1 handle:1 is going
```

```
UP
000132: Aug 2 23:16:19.494: %CLNS-5-ADJCHANGE: ISIS: Adjacency to 0100.1001.0001 (Vlan1) Up, new
adjacency
000133: Aug 2 23:16:20.289: %PNPA-DHCP Op-43 Msg: Op43 has 5A. It is for PnP
000134: Aug 2 23:16:20.289: %PNPA-DHCP Op-43 Msg: After stripping extra characters in front of 5A,
if any
000135: Aug 2 23:16:20.289: %PNPA-DHCP Op-43 Msg: _pdoon.2.ina=[Vlan1]
000136: Aug 2 23:16:20.289: %PNPA-DHCP Op-43 Msg: _papdo.2.eRr.ena
000137: Aug 2 23:16:20.289: %PNPA-DHCP Op-43 Msg: _pdoon.2.eRr.pdo=-1
000138: Aug 2 23:16:30.010: %CLNS-5-ADJCHANGE: ISIS: Adjacency to 9324-SN-BCP-1 (Vlan1) Up, new
adjacency
```

After all devices are discovered, the **Discovered Devices** status changes to *Completed* and the discovered devices are added to the inventory.



Step 8 From the Catalyst Center home page, click the menu icon and choose **Provision** > **Inventory** and filter by serial number. The newly discovered switches appear as *Managed*.

The following example shows a sample configuration pushed to discovered devices.

1

```
archive
log config
logging enable
logging size 500
hidekeys
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
service sequence-numbers
! Setup NTP Server
! Setup Timezone & Daylight Savings
ntp server 10.4.250.104
1
! ntp update-calendar
! clock timezone <timezoneName> <timezoneOffsetHours> <timezoneOffsetMinutes>
! clock summer-time <timezoneName> recurring
! Disable external HTTP(S) access
! Disable external Telnet access
! Enable external SSHv2 access
1
no ip http server
no ip http secure-server
ip ssh version 2
ip scp server enable
1
line vty 0 15
! maybe redundant
login local
transport input ssh
! maybe redundant
transport preferred none
! Set VTP mode to transparent (no auto VLAN propagation)
! Set STP mode to Rapid PVST+ (prefer for non-Fabric compatibility)
! Enable extended STP system ID
! Set Fabric Node to be STP Root for all local VLANs
! Enable STP Root Guard to prevent non-Fabric nodes from becoming Root
! Confirm whether vtp mode transparent below is needed
vtp mode transparent
1
spanning-tree mode rapid-pvst
spanning-tree extend system-id
! spanning-tree bridge priority 0
! spanning-tree rootguard
! spanning-tree portfast bpduguard default
```

```
no udld enable
errdisable recovery cause all
1
errdisable recovery interval 300
ip routing
!Config below applies only on underlay orchestration
! Setup a Loopback & IP for Underlay reachability (ID)
! Add Loopback to Underlay Routing (ISIS)
interface loopback 0
description Fabric Node Router ID
ip address 10.4.218.97 255.255.255.255
ip router isis
! Setup an ACL to only allow SNMP from Fabric Controller
! Enable SNMP and RW access based on ACL
snmp-server view DNAC-ACCESS iso in
snmp-server group DNACGROUPAuthPriv v3 priv read DNAC-ACCESS write DNAC-ACCESS
snmp-server user admin DNACGROUPAuthPriv v3 auth MD5 Clscol23 priv AES 128 Clscol23
1
! Set MTU to be Jumbo (9100, some do not support 9216)
system mtu 9100
! FABRIC UNDERLAY ROUTING CONFIG:
! Enable ISIS for Underlay Routing
! Specify the ISIS Network ID (e.g. encoded Loop IP)
! Specific the ISIS domain password
! Enable ISPF & FRR Load-Sharing
! Enable BFD on all (Underlay) links
router isis
net 49.0000.0100.0421.8097.00
domain-password <password>
is-type level-2-only
metric-style wide
nsf ietf
! fast-reroute load-sharing level-1
log-adjacency-changes
bfd all-interfaces
! passive-interface loopback 0
interface vlan1
bfd interval 500 min rx 500 multiplier 3
no bfd echo
!This config goes to subtended node
username lan-admin privilege 15 password 0 C1sco123
enable password C1sco123
1
!
```

```
hostname CL-9300_7
!
interface vlan1
ip router isis
!
!
end
```

Note Catalyst Center 2.3.3 and later support is-type level-2-only as part of the IS-IS configuration.

Step 9 After the Discovered Devices status changes to *Completed* and all discovered devices are displayed in the inventory as *Managed*, you can stop LAN automation. However, before stopping LAN automation, check the **Topology** page to make sure that the links between the discovered device and primary and peer seed are displayed. Choose **Tools** > **Topology** and click the physical links between the seed and discovered device. Make sure that the interfaces are correct.

If the physical links are not visible, resynchronize the seed device where the physical links connect. After resync, check the **Topology** page again to make sure that the links are visible before stopping LAN automation.

Stop LAN Automation

You can stop LAN automation to finish discovering all required devices and to prevent inadvertent discovery of additional devices. In the LAN Automation Status window, click Stop.

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Q Search Hierarchy	Cisco CX Cloud EULA is required to initiate EoX sci		Last updated Apr 25, 2023 11:55 PM 📿 Refresh			
V & Global	DEVICES (2) FOCUS: Inventory V	Summary Devices Logs				
ン 徳 Bangalore 語 bgl16	√ Filter → Add Device Tag Actions ∨ ⊙ → Device Name + → Device Name +	U, Search Hole Message	Timestamp *			
	Switch-152-1-0-65 @ 172.16.0.1	Added device FCW2311D156, FCW2134L0LG (Switch 172-16-0-1) to Inventory.	Apr 25, 2023 11:50 PM			
	□	Provisioned Device FCW2311D15G (Switch- 172-16-0-1	Apr 25, 2023 11:48 PM			
		Claimed device FCW2311D15G and generated config file with hostname Switch- 172-16-0-1	Apr 25, 2023 11:46 PM			
		Reserved IP Address 172.16.0.1 or interface Loopback0 on device FCW2311D15G role PnpDevice.	Apr 25, 2023 11:46 PM			
		Reserved Subnet 172.16.0.3/31 for interface GigabitEthernet1/0/24 on device FCW2311D15G.	Apr 25, 2023 11:46 PM			
		Claiming PNP device FCW2311D15G.	Apr 25, 2023 11:46 PM			
		Received show response from PNP device FCW2311D1SG.	Apr 25, 2023 11:46 PM			
		Sent show command to PNP device FCW2311D15G to retrieve device license information.	Apr 25, 2023 11:45 PM			
		Completed Seed Device Configuration phase.	Apr 25, 2023 11:42 PM			
		Starting Seed Device Configuration phase.	Apr 25, 2023 11:42 PM			
		Re-used existing IP Address 172.16.0.2 interface Loopback0 on device SAL1923G6Q2 role PrimarySeedDevice.	Apr 25, 2023 11:42 PM			
		Reserved Subnet 172.16.0.0/26 interface Vian1 on device SAL1923G6Q2.	Apr 25, 2023 11:42 PM			
		Started the Network Orchestration Session with primary device: T2_Seed01.	Apr 25, 2023 11:42 PM			
		Showing 14 of 14				
3	Show 25 🖌 entries		Cancel Stop			

After you click Stop:

- The remainder of the configuration is pushed to network devices, which includes converting the point-to-point links from Layer 2 to Layer 3.
- The VLAN 1 configuration is removed and the VLAN 1 IP addresses are returned to the LAN automation pool.
- The device is onboarded in Catalyst Center and assigned to the site.

After the LAN automation stop process is initiated, the LAN Automation Status changes to STOP in Progress.

After LAN automation stops, the following sample configuration is pushed to the discovered device.

The network orchestration service issues a RESYNC for seed and PnP devices to retrieve the state of all links. After the initial RESYNC completes, it pushes the Layer 3 configuration on all Layer 2 links. Finally, it reissues RESYNC to resynchronize the cluster's link state.

The Layer 3 link configuration is pushed when network orchestration stops. (Each interface pair gets its configuration.)

```
interface GigabitEthernet1/0/13
description Fabric Physical Link
no switchport
dampening
ip address 192.168.2.97 255.255.255.252
ip router isis
logging event link-status
load-interval 30
bfd interval 500 min_rx 50 multiplier 3
no bfd echo
isis network point-to-point
```

After all the point-to-point links between the seeds and discovered devices—including links between peer seed and discovered devices—are configured, the devices are added to the site and synced to Catalyst Center.

The LAN automation process completes and the LAN Automation Status changes to Completed.

Check the LAN automation logs.

■ Cisco DNA Center			Provision / Network Devices / Inventory	Preview New Page 🛛 💿 🗷
Inventory Plug and Play Inver	itory Insights		LAN Automation Status	×
Q. Search Hierarchy	(i) Cisco CX Cloud EULA is requi	red to initiate EoX sca	Summary Devices Logs	Last updated Apr 25, 2023 11:56 PM 🛛 📿 Refresh
 Unassigned Devices Bangalore Bg116 	DEVICES (2) FOCUS: Inventory ~ Filter Add Device Tag	Actions \vee ①	Q, Search Table	Timestamp *
	Device Name * IP Address De O Swfech-152-1-0-65 © 172:16.0.1 Sv		Completed LAN Automation.	Apr 25, 2023 11:56 PM
	□ <i>○</i> T2_Seed01 ⊖ 192.168.0.1	192.168.0.1 S	Completed Final Resync. Starting Final Resync for Devices.	Apr 25, 2023 11:56 PM
			Releasing SVI subnet: 172.16.0.026	Apr 25, 2023 11:55 PM
			Completed Device Cleanup. Waiting for Device Cleanup to complete.	Apr 25, 2023 11:55 PM
		Starting Device Cleanup.	Apr 25, 2023 11:55 PM	
			Completed L3 Conversion for the session's Tier-2 Devices.	Apr 25, 2023 11:55 PM
			Completed Initial Resync.	Apr 25, 2023 11:55 PM
			Starting Initial Resync for Devices.	Apr 25, 2023 11:55 PM
			Stopping LAN Automation by user: admin. Added device FCW2311D15G, FCW2134LDLG (Switch- 172-16-0-1 to Inventory.	Apr 25, 2023 11:54 PM Apr 25, 2023 11:50 PM
			Decesing 25 of 28 Dream Mare	Success Success Stop Network Orchestration
0	Show 25 V entries			success.

Add Switches and Links to an Existing LAN-Automated Stack

This section describes how to add a new switch, add an existing switch, or configure a link in a LAN-automated stack.

Add a New Switch

This section explains how to add a brand new switch that was never present in Catalyst Center.

You can add switches to a stack that is already LAN automated and in provisioned state without having to LAN automate or discover the new switch.

Procedure

- **Step 1** Make sure that the switch was not part of Catalyst Center earlier. (The switch should not be discovered and present in the inventory.)
- **Step 2** Make sure that the switch being added has the same image and license version as the provisioned standalone/stack. Use the commands show ver and show license right-to-use to verify the image and license version.
- **Step 3** Make sure that the switch is in the same boot mode as the stack. It should be in either INSTALL (preferred) or BUNDLE mode.

9300	Ed	lge_	1#show ver	inc INSTALL		
*	1	62	C9300-48U	16.6.3	CAT9K_IOSXE	INSTALL
	2	62	C9300-48U	16.6.3	CAT9K_IOSXE	INSTALL
	3	62	C9300-48U	16.6.3	CAT9K IOSXE	INSTALL
	4	62	C9300-48U	16.6.3	CAT9K IOSXE	INSTALL

- **Step 4** Use the stack cable to connect the new switch to the stack. Then, power it on. After 2 to 3 minutes, the new switch is added to the stack as a standby (if one switch is already present in the stack) or as a member (if two or more switches are already present in the stack).
- **Step 5** Check the output of the commands show ver and show switch to make sure that the new switch is added. The output of the show ver command consists of serial numbers for all switches.
- **Step 6** After the switch is added to the stack, go to **Inventory**, select the original provisioned switch/stack, and perform a resync.
- **Step 7** After the sync completes, the new serial number is displayed, completing the addition process.
 - **Note** You can add more than one switch at a time. Repeat this procedure, making sure to use the correct cabling.

The following image shows the serial number before the new switch is added.

oh cu				Inventory				۷۵	Q Ⅲ ¢	
						Last	updated: 4:14 pm 🛛 🗧	Refresh 🖄 Import	1 Export	🕂 Add
₹ Filt	er Actions ~									
	Device Name 🔺	IP Address	Reachability Status	Serial Number	Uptime	Last Updated	Resync Interval	Last Sync Status	Site	1
	3850_Edge_3 🕑	192.168.199.98	Reachable	FCW2133F05W, FOC2052X0C9, FCW2020F0A0	8 days 6 hrs 22 mins	7 minutes ago	00:25:00	Managed	SJC24/SJC24-1	
	9300_Edge_1	192.168.199.97	Ø Reachable	FCW2214L0S3, FCW2224C122	1 day 1 hrs 50 mins	6 minutes ago	00:25:00	Managed	SJC24/SJC24-1	1
	9500_border.ciscodna 🗹	192.168.210.1	Reachable	FCW2205A33L	5 days 6 hrs 24 mins	13 minutes ago	00:25:00	Managed	SJC24/SJC24-1	del.
Show 1	0 • entries			Showing 1 - 3	of 3					1 Ne

The following image shows the serial number after the new switch is added.

oh ci	CENTER			Inventory				۷	Q Ⅲ \$	
						Last update	sd: 4:45 pm	C Refresh in import	🕆 Export	+ Add
Y Filt	er Actions ~									
	Device Name 🔺	IP Address	Reachability Status	Serial Number	Uptime	Last Updated	Resync Interval	Last Sync Status	Site	I
	3850_Edge_3 🖓	192.168.199.98	Reachable	FCW2133F05W, FOC2052X0C9, FCW2020F0A0	8 days 6 hrs 49 mins	10 minutes ago	00:25:00	Managed	SJC24/SJC24-1	
	9300_Edge_1 ₽	192.168.199.97	Reachable	FCW2214L0S3, FCW2224C122, FOC2224Q0UE, FCW2224C123	1 day 2 hrs 13 mins	12 minutes ago	00:25:00	Managed	SJC24/SJC24-1	?
	9500_border.ciscodna 🕑	192.168.210.1	Reachable	FCW2205A33L	5 days 6 hrs 52 mins	17 minutes ago	00:25:00	Managed	SJC24/SJC24-1	ke a Wis
Show 1	0 🚽 entries			Showing 1 - 3 of 3						1 Ne.

Add an Existing Switch

This section explains how to add an existing switch that was already present in Catalyst Center.

If the switch being added was previously LAN automated (part of another stack/standalone) or was discovered by PnP, to add it, you must first remove the switch physically and then remove its entry from the inventory and PnP application/database.

Remove the Switch from Inventory

If the switch is a standalone, from the Catalyst Center home page, click **Inventory** and select the switch to remove. Choose **Actions** > **Delete Device**. If the switch is part of a stack, remove the switch physically, and then resync the original stack. After the sync completes, the removed switch serial number does not appear in the inventory.

Remove the Switch from PnP

- If the switch is a standalone, first unconfigure pnp profile pnp-zero-touch from the switch and then delete the entry from the PnP database under **Device**.
- If the switch is part of a stack, remove the switch physically. Make sure that the removed switch does not have pnp profile pnp-zero-touch; then, delete the entry from the PnP database under **Device**.

Configure Additional Links After LAN Automation Stops

Use this method when you want to configure:

- Additional links between the primary and peer seed devices or between distribution devices after LAN automation stops
- Uplinks from the newly added stack switch to the primary and peer seeds

If you chose the Enable Multicast option the first time LAN automation ran on the device, do not choose Enable Multicast when you configure additional links. Complete the following steps and when LAN automation stops, go to the newly configured Layer 3 ports and manually configure **ip pim sparse-mode** under the interface.

Before you begin

For Catalyst Center 2.3.5 and later, see Create Link Between Interfaces, on page 60.

Procedure

Step 1 Check the output of the command **show cdp neighbors** to make sure that the neighbor connected to the new link is displayed. The following sample configuration shows a new link connected to port *Ten 4/1/5* on switch 9300_Edge-7. On the other end, the link is connected to switch 9500_border-6 via port For 1/0/1.

```
9300 Edge-7#show 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
9500 border.cisco.com
                Ten 1/1/5
                                  173
                                                  R S I C9500-120 For 1/0/1
9500 border-6.cisco.com
                Ten 4/1/5
                                  136
                                                  R S I C9500-12Q For 1/0/1
```

- **Step 2** Make sure that the ports to which the link is connected (*Ten 4/1/5* and *For 1/0/1*) do not have any Layer 3 configurations on them. If they have Layer 3 configurations, use the default interfaces connected to the new uplink being added and resynchronize both devices.
- **Step 3** From the Catalyst Center home page, choose **Provision** > **LAN Automation**.
- **Step 4** In the **Primary Device** field, enter the switch (for example, **9500_border-6**) to which the new link is connected.
- **Step 5** In the **Peer Device** field, enter the switch (for example, **9300 Edge-7**) where you want to configure the new link.
- **Step 6** Select the port on the primary device where the uplink connects; that is, the port where the PnP device is connected (for example, For 1/0/1).
- **Step 7** Use the same LAN automation pool that was used to provision the original stack.
- **Step 8** Start LAN automation. Wait for 2 minutes and then stop LAN automation. Because there is no new device discovery to perform, you don't have to go through the entire LAN automation process. After you stop LAN automation, both ports connected to the uplink are configured with an IP address from the same LAN automation pool.
- **Step 9** As shown in the following example, after LAN automation stops and completes, both ports are configured for Layer 3 from the LAN pool.

```
9300_Edge-7#show run int t4/1/5
Building configuration...
Current configuration : 325 bytes
```

```
!
interface TenGigabitEthernet4/1/5
description Fabric Physical Link
no switchport
dampening
ip address 192.168.199.85 255.255.255.252
ip router isis
logging event link-status
load-interval 30
bfd interval 100 min_rx 100 multiplier 3
no bfd echo
isis network point-to-point
9500_border-6#show run int Fo1/0/1
Building configuration...
```

```
Current configuration : 327 bytes

!

interface FortyGigabitEthernet1/0/1

description Fabric Physical Link

no switchport

dampening

ip address 192.168.199.86 255.255.255.252

ip router isis

logging event link-status

load-interval 30

bfd interval 100 min_rx 100 multiplier 3

no bfd echo

isis network point-to-point

end
```

Note If you are familiar with APIs, the preceding IP address addition can also be achieved manually through APIs. However, we recommend adding IP addresses through LAN automation, because it updates all table entries. Another advantage of LAN automation is that when the device is removed from the inventory, all associated IP addresses are released. If IP addresses are configured manually through APIs, they are not released.

Move an Uplink to the Newly Added Switch

You cannot move an uplink from a stack that is already provisioned to a newly added switch in a LAN-automated stack.

Use a 40-G Interface on the Cisco Catalyst 9400

For 16.11.1 and later, Cisco IOS enables the 40-G port on bootup if the following conditions are met:

- The switch must have its day-0, factory-default configuration. (For information about how to bring a device back to its day-0 configuration, see PnP Agent Initial State, on page 18.)
- For a single supervisor, a 10-G/1-G SFP cannot be inserted in any of the SUP ports (ports 1 to 8). A 40-G QSFP must be inserted in ports 9 or 10.
- For a dual supervisor, a 10-G/1-G SFP cannot be inserted in any of the SUP ports (ports 1 to 8). A 40-G QSFP must be inserted in port 9 only.

Troubleshoot LAN Automation

If you encounter any problems, collect the root cause analysis (RCA) file, which is helpful for troubleshooting. At the CLI, enter:

\$ sudo rca

For a three-node cluster, collect the RCA file for each cluster.

Additional Information: LAN Automation in Catalyst Center Release 2.3.5 and later

The following topic provides information on the LAN automation provisioning based on Catalyst Center Release 2.3.5. The steps and examples may vary for later versions.

For more information on the LAN automation configuration and related features in your Catalyst Center version, see *Cisco Catalyst Center User Guide*.

Provision LAN Automation

Start and stop LAN automation.

Before you begin

The following topic describes the LAN automation procedure based on Catalyst Center 2.3.5. The steps may vary based on your Catalyst Center version.

Procedure

Step 1	From the top-left corner, clic	k the menu icon and choose Provision > LAN Automation .
Step 2	In the LAN Automation win	dow, click Start LAN Automation.

■ Cisco DNA Center		Provision / Netw	rork Devices / LAN Automation			\$ @ @ \$
Start LAN Automation						
> Overview						
Sessions History LAN Automated Dev	ices					
Q Search					As of: Anr 5	2023 2-12 PM
Date 👻	Primary Seed Device	Secondary Seed Device	Discovered Device Site	Discovered Devices	Provisioned Devices	Errors
Mar 26, 2023, 12:23:43 PM	seed1	seed2	Global/Bengaluru/BGL16	2	2	
Mar 23, 2023, 06:12:35 PM	seed1	seed2	Global/Bengaluru/BGL16	2	2	
Mar 23, 2023, 12:06:25 PM	seed1	seed2	Global/Bengaluru/BGL16	2	2	

- **Step 3** In the **Seed Devices** window, do the following:
 - Select the Primary Seed Device and its Plug and Play (PnP) interfaces.
 - (Optional) Select the Secondary Seed Device and its PnP interfaces.

≡	Cisco DNA Center	LAN Automation	¢ ⑦ ⊄
	Seect Devices Select the Primary and Secondary Seed I Select the interfaces where factory-defau A Secondary Seed Device is optional, but If a Secondary Seed Device is used, a po Devices before starting the LAN Automati	evices. t switches are connected to or through each Seed Device. strongly recommended for consistent network configuration nt-to-point Layer 3 routed link must be configured between t n session.	on both Seeds. the Seed
	Q. Search Hierarchy Search Heip	Primary Seed Device* Interfaces Q: Search Dropdown T2_Seed01 T2_Seed01	
Exi	t		Next

In Catalyst Center Release 2.3.7.5 and later, you can add a discovery depth level for LAN automation. Devices are LAN automated up to the specified level below the primary seed device. The default value is 2. You can review the discovery depth in the summary window and see the specified value in the session details window after the LAN automation starts.

elect the Primary and Secondary Seed Devices. elect the interfaces where factory-default switches are connected to or through each Seed Device. Secondary Seed Device is used, a point-to-point Layer 3 routed link must be configured between the Seed evices before starting the LAN Automation session. Primary Secondary (Optional)	Seed Devices					
elect the interfaces where factory-default switches are connected to or through each Seed Device. Secondary Seed Device is optional, but strongly recommended for consistent network configuration on both Seeds. a Secondary Seed Device is used, a point-to-point Layer 3 routed link must be configured between the Seed evices before starting the LAN Automation session. timary Secondary (Optional) Q Search Hierarchy V Search Heip V Q Global Be the first to add a new site from Network Hierarchy	elect the Primary and Secon	idary Seed Device	IS.			
Image: Secondary (Optional) Q Search Hierarchy Search Heip V I Search Heip Discovery Depth 2	elect the interfaces where fa Secondary Seed Device is of a Secondary Seed Device is evices before starting the LA	actory-default swii optional, but stron s used, a point-to- AN Automation se	tches are connected to or throi gly recommended for consiste -point Layer 3 routed link must ssion.	ugh each Seed Devic nt network configurat be configured betwe	e. tion on both Seeds. ren the Seed	
	rimary Secondary (Option Q Search Hierarchy ✓ ♥ Global Be the first to add a new Network Hierarchy	v site from	Primary Seed Device*	v interfa 0° Select Select (3 ∨ ()	ces actad Interfaces	

To select the interfaces, in the Select Interfaces window, choose the interfaces and click Add Selected.

Exit

Select Interfaces

Add All 50 Unselected Remove All 2 Selected INTERFACE STATUS: UP + GigabitEthernet1/0/1 X GigabitEthernet1/0/3
INTERFACE STATUS: UP + GigabitEthernet1/0/1 × GigabitEthernet1/0/3
 GigabitEthernet1/0/7 INTERFACE STATUS: DOWN GigabitEthernet1/0/10 GigabitEthernet1/0/11 GigabitEthernet1/0/12 GigabitEthernet1/0/15 GigabitEthernet1/0/16

Select Primary Seed Device Interfaces.

Step 4 In the Sessions Attributes window, select the Principal IP Address Pool and add the other details as required.

Session Attributes	
Select the Site where Discovered The available IP Address pools are	Devices will be assigned. based on the Discovered Device Site.
Advanced Session Attributes, and	a Hostname Prefix are optional.
Discovered Devices Site	Principal IP Address Pool*
Q Search Hierarchy Search ∽ 해 Global	Lan C Link Uvernapping or Pool C Help IS-IS Domain Password (Optional) 0
✓ 라 Bengaluru > 릐 BGL16	👩 Enable Multicast 💿
> 通 BGL17	Advertise LAN Automation Routes into BGP 0
	HOSTNAME MAPPING
	Discovered Devices Hostname Prefix
	Choose a File V
Exit All changes saved	Back Review

In Catalyst Center Release 2.3.7.5 and later, you can specify the following session attributes.

- Session Timeout: Specifies a timeout value for the LAN automation session. LAN automation stops automatically when the specified time limit is reached. The value is specified in minutes and the valid range is 20 through10080.
- Device Matching: Specifies the method for device discovery.

- **Relaxed**: Hostname and loopback IP is assigned to the discovered device if the device's serial number matches the uploaded device list.
- Strict: Device discovery is restricted to the list of devices provided. You can discover a maximum of 50 devices. To add or edit devices, see Manage Devices in Strict Discovery Mode, on page 66.

Select the Site where Discovered Devices w The available IP Address pools are based or	ill be assigned. the Discovered Device Site.			
Advanced Session Attributes, and a Hostnar	ne Prefix are optional.			
Discovered Devices Site	Principal IP Address Pool*	-	Link Quadapping ID Dagl	
	underlay_sub	0		0
C Search Hierarchy V Search Help ∨ Ø Global	IS-IS Domain Password (Optional)	0	Session Timeout (in Minutes)	0
∨ 🕅 USA	Enable Multicast			
✓ d [®] SAN JOSE	0			
> 画 BLD23	Advertise LAN Automation Routes into BGP	0		
	HOSTNAME MAPPING			
	Discovered Devices Hostname Prefix	0		
	DEVICE MATCHING			
	Relaxed Strict			

You can review the session attributes in the summary window and view them in the device details window after the LAN automation is complete.

- Step 5 Click Review.
- **Step 6** After reviewing the configurations, click **Start** to start the LAN automation.

■ Cisco DNA Center			
Review			
Review the LAN Automation session settings select the applicable Edit button.	o make changes before continuing,		
 Seed Devices Edit PRIMARY SEED DEVICE Site: Global/Dangatore/bg116 Device: T2_Seed01 	SECONDARY SEED DEVICE Sile: Device:		
1 INTERFACES SELECTED			
TenGigabltEthernet1/9			
 Session Attributes 64 			
Discovered Device Site:	Global/bangalore/bgl16		
Principal IP Address Pool:	LanPool1		
Overlapping IP Address Pool:			
IS-IS Domain Password:			
Multicast:	8		
Advertise LAN Automation Routes into BGP:	8		
HOSTNAME AND LOOPBACK IP MAPPING			
Discovered Devices Hostname Prefix:	Access		
Uploaded File:	**		
Exit All changes saved		Back	Start

The LAN automation session is created and a tile for the session is displayed in the LAN Automation window.

		Provision / IV	etwork Devices / LAN Automation			☆ () (C
Start LAN Automation	Apr 7, 2023, 12:01:59 Discovered: • Provisioned Discovered Device Site: Primary Seed Device Secondary Seed Device: Status: See Session Details	AM Encr: 0 bul/taingatore/bg16 T2_Seed01 totalized 0 Stop LAN Automation				
Overview						
essions						
History LAN Automated Devices Q Search Date •	Primary Seed Device	Secondary Seed Device	Discovered Device Site	Discovered Devices	As Provisioned Devices	s of: Apr 7, 2023 12:02 AM 🧭 Errors
essions History LAN Automated Devices Q Search Date - Mar 20, 2023, 05:01:39 AM	Primary Seed Davice T2_Seed01	Secondary Seed Device	Discovered Device Site Global/bangsione/bg116	Discovered Devices	As Provisioned Devices 1	s of: Apr 7, 2023 12:02 AM 🧭 Errors
Assions UAN Automated Devices Q Search Cote - Mar 20, 2023, 05:01:39 AM Mar 6, 2023, 10:58:39 AM	Primary Seed Davice T2_Seed01 T2_Seed01	Secondary Seed Device	Discourse Davis Bite Glabal/bangstore/bg116 Glabal/bangstore/bg116	Discovered Devices	Aa Provisioned Devices 1 1	k of Apr 7, 2023 12:02 AM ∂ Errors
Bistory LAN Automated Devices Q	Primary Seed Device T2_Seed01 T2_Seed01 T2_Seed01 T2_Seed01	Security See Droke	Discound Davis Site Glabal/bangson/bg16 Glabal/bangson/bg16 Glabal/bangson/bg16	Discovered Devices	Ar Presistened Deutese 1 1 1	e de Apr 7, 2023 12-02 AM 🧭 Errors
History LAN Automated Devices Q. Search Search Date - - Mar 20, 2023, 05:01:39 AM Mar 6, 2023, 10:58:39 AM Mar 6, 2023, 10:58:39 AM Mar 6, 2023, 10:58:39 AM	Primary Seed Device 12_Seed01 12_Seed01 12_Seed01 12_Seed01 12_Seed01	Secondary Seed Dovice	Discourse Davies Site Global/bangators/bg16 Global/bangators/bg16 Global/bangators/bg16 Global/bangators/bg16	Discoursed Daviess 1 1 1 1 1	A Presidence Devices 1 1 1 1	e of Apr 7, 2023 12:02 AM 👔
History LAN Automated Devices Q. Search Date - - Mar 20, 2023, 05:01:39 AM - Mar 4, 2023, 10:08:39 AM - Mar 4, 2023, 10:08:39 AM - Mar 5, 2023, 02:01:24 AM - Feb 23, 2023, 02:01:24 AM -	Primary Seed Device 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01	Secondary Sand Device 	Discoursed Device Bite Disbut/bangatore/bg116 Disbut/bangatore/bg116 Disbut/bangatore/bg116 Disbut/bangatore/bg116 Disbut/bangatore/bg116	Decrement Devices 1 1 1 1 1 1 1 1 1 1 1 1 1	A Providenced Devices 1 1 1 1 1 1 1 1 1	Left Apr 7, 2023 12:02 AM C Frees
Hatary LAN Automated Devices Q Search Date - - Mar 20, 2023, 06:01:39 AM - Mar 6, 2023, 10:58:39 AM - Mar 3, 2023, 06:21:43 AM - Feb 22, 2023, 08:23:42 AM - Feb 22, 2023, 05:30:34 AM - Feb 21, 2023, 11:53:33 AM -	Primary Seed Device 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01 72_Seed01	Secondary Seed Device	Discound Device Bite Clubal/bangstore/bg16 Clubal/bangstore/bg16 Clubal/bangstore/bg16 Clubal/bangstore/bg16 Clubal/bangstore/bg16 Clubal/bangstore/bg16	Decentred Devices J	A Presidented Devices	N (c) A (c) 1, 2023 1 2 (c) A (c) From
essions	Primary Seed Device T2_SeedD1 T2_SeedD1	Secondary Seed Device	Discoveral Device Site Clobal/bangstore.hg16 Clobal/bangstore.hg16 Clobal/bangstore.hg16 Clobal/bangstore.hg16 Clobal/bangstore.hg16 Clobal/bangstore.hg16 Clobal/bangstore.hg16	Decement Decise	Previolated Devices 7 1 1 1 1 1 1 2 Succet	N (c) A (c) 1, 2023 1 2 62 A (c) (c) 1 2 64 A (c) (c) 1 2 64 A (c)

To view the details of the session, click **See Session Details** in the tile. To view the logs for a session, click **View Session Logs** in the session details window.

The session details window displays the status of the LAN automation session and the devices that are being LAN automated. You can filter the data and see details of the seed devices, discovered devices, provisioned devices, or the error messages. You can stop the LAN automation process when all the devices are provisioned and the progress bar in the **Status** column shows as complete.

E Cisco DNA Center		Provision / Network Devices	/ LAN Automation	\$ ® (@
N Automation / Apr 7, 2023 12:01:59 AM Stop LAN Automation Status: In Progress PM K. Seed Devices: 1. Discovered: P	Discovered Device Site: Global/bangalore/bg116	Primary Seed Device: T2_Seed01 Second (192.0.2.1)	ary Seed Device: View Session Logs	
evices (1)				
Q Search Devices				
Selected ④ Add Link ④ Delete Link / Edit D] Device Name	evice IP Address *	Platform	Serial Number	As of: Apr 7, 2023 12:20 AM 📿 Auto Refresh: 30 1 Status 🕢
B Access-4	172.16.0.1	C9300-24T	FCW2311D15G	0

To stop LAN automation for the session, click **Stop LAN Automation** in the session details window or in the session tile. The LAN automation status changes to *STOP in Progress*.

E Cisco DNA Center		Provision / N	Network Devices / LAN Automation			🖈 💿 🤇 🗘
Start LAN Automation	Apr 7, 2023, 12:01:59 Ab Discovered: Provisioned: 1 Discovered: Provisioned: 1 Discovered: Device:	A Croc: 0 Add/bangatore/bg16 Seed01 P In Progress pp LAY Automation				
> Overview						
Sessions History LAN Automated Devices Q Search					As	ot: Apr 7, 2023 12:23 AM 💋
Date -	Primary Seed Device	Secondary Seed Device	Discovered Device Site	Discovered Devices	Provisioned Devices	Errors
Mar 20, 2023, 05:01:39 AM	T2_Seed01		Global/bangalore/bgl16	1	1	
Mar 6, 2023, 10:58:39 AM	T2_Seed01		Global/bangalore/bgl16	1	1	
Mar 6, 2023, 10:06:12 AM	T2_Seed01		Global/bangalore/bgi16	1	1	
Mar 3, 2023, 08:21:43 AM	T2_Seed01		Global/bangalore/bgl16	1	1	
Feb 23, 2023, 03:53:42 PM	T2_Seed01		Global/bangalore/bg116	1	1	
Feb 21, 2023, 11:53:33 AM	T2_Seed01		Global/bangalore/bgl16	1	1	
Feb 18, 2023, 12:12:26 AM	T2_Seed01		Global/bangalore/bgl16			
Feb 17, 2023, 11:48:10 PM	T2_Seed01		Global/bangalore/bgl16	1	1	

The **History** tab displays the history of LAN automation sessions in your network. You can use the search field to search for specific text in history. Click the hyperlinked date to view the session details.

The **LAN Automated Devices** tab displays the details of the LAN automated devices. You can use the search field to filter the data based on specific text. Click one of the following toggle buttons to filter the data:

- · Seed Devices: Displays the data for seed devices
- Discovered: Displays the data for discovered devices.
- Provisioned: Displays the data for provisioned devices.

• Error: Displays the data for devices with errors.

Cisco DNA Center		LAN A	utomation	
Start LAN Automation				
> Overview				
Sessions History LAN Automated Device	es]			
View By: Seed Devices: 2 Disco	overed: 1 Provisioned: 1 E	rror:		
0 Selected 🕀 Add Link 🛞 Delete I	link			As of: Apr 12, 2023 12:00 PM 🛛 🤗
Device Name *	IP Address	Platform	Serial Number	Status 🕕
Border-01		C9606R	FXS2240Q0S5	0%
Border-02		C9500-32C	CAT2421L4N9	0%

Check Device Logs and Configurations

View the LAN automation session logs, device-specific logs, and configurations that are pushed on the device.

Procedure

Start LAN Automa	tion					
> Overview						
Sessions						
History LAN Automated	Devices					
Q Search						
					As of: Dec 8, 202	2 2:21 PM
But a	Primary Seed Davice	Secondary Seed Device	Discovered Device Site	Discovered Devices	Provisioned Devices	Error
Date •	Prinary Seed Device	,				
Nov 21, 2022, 01:08:42 PM	Border-01	Border-02	Global/USA/SAN JOSE/BLD_Sanity	1	1	
Nov 21, 2022, 01:08:42 PM	Border-01 Border-01	Border-02 Border-02	Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity	1	1	
Nov 21, 2022, 01:08:42 PM Nov 9, 2022, 12:52:54 PM Nov 9, 2022, 12:01:28 PM	Border-01 Border-01 Border-01	Border-02 Border-02 Border-02	Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity	1 1 1 1	1	
Nov 21, 2022, 01:08:42 PM Nov 9, 2022, 12:52:54 PM Nov 9, 2022, 12:01:28 PM Nov 9, 2022, 03:47:30 AM	Border-01 Border-01 Border-01 Border-01	Border-02 Border-02 Border-02 Border-02	Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity	1 1 1 1 1	1 1 1 1	
Nov 91, 2022, 01:08:42 PM Nov 91, 2022, 12:52:54 PM Nov 9, 2022, 12:01:28 PM Nov 9, 2022, 03:47:30 AM Nov 9, 2022, 03:47:30 AM	Border-01 Border-01 Border-01 Border-01 Border-01	Border-02 Border-02 Border-02 Border-02 Border-02	Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity Global/USA/SAN JOSE/BLD_Sanity	1 1 1 1 1 1	1 1 1 1 1 1 1	
Nov 21, 2022, 01:08:42 PM Nov 9, 2022, 12:52:54 PM Nov 9, 2022, 12:01:28 PM Nov 9, 2022, 03:47:30 AM Nov 9, 2022, 03:47:30 AM Nov 9, 2022, 03:47:30 AM	Border-01 Border-01 Border-01 Border-01 Border-01 Border-01 Border-01	Border-02 Border-02 Border-02 Border-02 Border-02 Border-02	Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity	1 1 1 1 1 1 1	1 1 1 1 1 1 1	
Nov 21, 2022, 01:08:42 PM Nov 9, 2022, 12:52:54 PM Nov 9, 2022, 12:51:26 PM Nov 9, 2022, 03:47:30 AM Nov 9, 2022, 03:24:03 AM	Border-01 Border-01 Border-01 Border-01 Border-01 Border-01 Border-01 Border-01	Border-02 Border-02 Border-02 Border-02 Border-02 Border-02 Border-02	Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity Giobal/USA/SAN JOSE/BLD_Sanity	1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	

Step 1 In the LAN Automation window, click the **History** tab in the **Sessions** area and click the hyperlinked date to view the session details.

Step 2 To view the logs for a session, click **View Session Logs** in the session details window.

LAN Automation / Nov 9, 2022 12:01:28 PM				
Status: Completed Discovered Device Site:SA/SAN JOS	E/BLD_Sanity Primary Seed Device: Border-01 (10.0.0.1)	Secondary Seed Device: Border-02 View (10.0.0.2)	v Session Logs	
View By: Seed Devices: 2 Discovered: Provision	ed: 1 Error:			
Devices (2)				
Q Search Devices				
0 Selected ④ Add Link ③ Delete Link 🖉 Edit Device				As of: Dec 8, 2022 5:26 PM 🦪
Device Name	IP Address 👻	Platform	Serial Number	
Border-01	10.0.0.1	C9500-24Q	FJB2332E0BK	
Border-02	10.0.0.2	C9500-24Q	FJB2351E00H	

2 Records		Show Records: 2	5 ∨ 1-2 < 0 >
LAN Automation / Nov 9, 2022 12:01:28 PM Status: Completed Discovered Device Site:	SA/SAN JOSE/BLD_Sanity Primary Seed Device	Session Log	
View By: Seed Devices: 2 Discovered:	- Provisioned: 1 Error:	Q Search Devices	
Devices (2)		Message	As of: Dec 8, 2022 2:23 PM 🧷
Q Search Devices		Device FOC2422U025, FOC2422W01Y is deleted from Inventory.	Nov 9, 2022, 12:49:43 PM
0 Selected Add Link Device Name	IP Address 💌	Released subnet 192.0.2.1/31	Nov 9, 2022, 12:49:41 PM
Border-01	10.0.0.1	Released subnet 192.0.2.2/31	Nov 9, 2022, 12:49:41 PM
Border-02	10.0.0.2	Released Loopback address 192.0.2.3 for Device FOC2422U025, FOC2422W01Y (STK).	Nov 9, 2022, 12:49:41 PM
		Completed LAN Automation.	Nov 9, 2022, 12:28:31 PM
		Completed Final Resync.	Nov 9, 2022, 12:28:31 PM
		Starting Final Resync for Devices.	Nov 9, 2022, 12:27:11 PM
		Releasing SVI subnet: 192.0.2.192/26	Nov 9, 2022, 12:27:11 PM
		Completed Device Cleanup.	Nov 9, 2022, 12:27:11 PM
		Waiting for Device Cleanup to complete.	Nov 9, 2022, 12:27:01 PM
		Starting Device Cleanup.	Nov 9, 2022, 12:27:01 PM
2 Records		44 Records Show Records: 25	✓ 1 - 25 < ① 2 >

Step 3 To view the device-specific logs and configurations, click on the device name in the session details window. Use the toggle button to filter the devices.

The device details are displayed.

Border-01 (Primary Seed)

Device Model: Cisco Catalyst 9500 Series Switches Site: Global/USA/SAN JOSE/BLD_Sanity Primary Seed Device: Border-01 (10.0.0.1) Secondary Seed Device: Border-02 (10.0.0.2)

DETAILS		
Session Attributes	Discovered Device Site	Global/USA/SAN JOSE/BLD_Sanity
Interfaces	Primary Seed	Border-01
Configuration Logs \sim	Secondary Seed	Border-02
Primary Seed Configs	Primary Interfaces	FortyGigabitEthernet1/0/3
Secondary Seed Configs	IP Pool	-
Discovered Device Configs	Link Overlapping IP Pool	-
Seesion Loge	Multicast	8
Delater Orad Land	Advertise LAN Automation Routes into BGP	0
Primary Seed Logs	HOSTNAME AND LOODBACK ID MADDING	
Secondary Seed Logs	Device Prefix	
Discovered Device Logs	Uploaded File	ballack IoO LAN single cou
Session Logs	opioaded rife	naneck_lov_Leva_angle.caa

Step 4 To view the configurations that are pushed to the device, expand **Configuration Logs** in the left pane and select the device configuration.

■ Pordor_01 (Dri	imany Soud)	2
Device Model: Cisco Catalyst 950	O Series Switches Ste: Global/USA/SAN JOSE/BLD_Sanity Primary Seed Device: Border-01 (10.0.0.1) Secondary Seed Device: Border-02 (10.0.0.2)	
DETAILS Session Attributes Interfaces	Primary Seed Configs	
Configuration Logs ~	✓ ● L3 Delete Link Configuration for Interface FortyGigabitEthernet1/0/3 Nov 9, 2022, 12:49:42 PM	
Secondary Seed Configs Discovered Device Configs Session Logs	default interface FortyGigabitEthernet1/0/3 #INTERACTIVE d w vite memory <10×confirm <r>y #END5_INTERACTIVE</r>	
Primary Seed Logs Secondary Seed Logs	> ODHCP Delete Configuration Nov 9, 2022, 12:27:02 PM	
Session Logs	SVI Delete Configuration Nov 9, 2022, 12:27:01 PM	
	> O L3 Create Link Configuration for Interface FortyGigabitEthernet1/0/3 Nov 8, 2022, 12:26:43 PM	
	SVI Create Configuration Nov 9, 2022, 12:01:33 PM	
	> B DHCP Create Configuration Mode 2002 12:01:33 BM	-

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Device Model: Cisco Catalyst 9300 Series Switches Site: Global/USA/SAN JOSE/BLD_Sanity Primary Seed Device: Border-01 (10.0.0.1) Secondary Seed Device: Border-02 (10.0.0.2)

DETAILS	
Session Attributes	Discovered Device Configs
Interfaces	
Configuration Logs $~~$ $~~$	
Primary Seed Configs	SVI Delete Configuration New 9, 2022, 12:27:01 PM
Secondary Seed Configs	interface Vlan 1
Discovered Device Configs	no Lip ruder 1818 no clis atu
Session Logs Primary Seed Logs Secondary Seed Logs Discovered Device Logs	no ip adoress no bfd interval 500 min_rx 500 multiplier 3 ip redirects no onpy profile pnp-zero-touch #INTERACTIVE no crypto pki trustpoint pnplabel <i0>Are you sure you want to do this<ॡ>yes #ENDS_INTERACTIVE #ENTERACTIVE</i0>
Session Logs	do write memory <iq>confirm<r>y #ENDS_INTERACTIVE.</r></iq>
	O L3 Create Link Configuration for Interface TenGigabitEthernet2/1/5 Nov 9, 2022, 12:26:52 PM OL3 Create Link Configuration for Interface TenGigabitEthernet1/1/7 Nov 9, 2022, 12:26:41 PM

Step 5 To view the device-specific logs, expand **Session Logs** in the left pane and the select the device log.

Border-01 (Primary Seed)
Device Model: Clisco Catalyst 9500 Series Switches
Site: Global/USA/SAN JOSE/BLD_Sanity
Primary Seed Device: Border-01 (10.0.0.1)
Secondary Seed Device: Border-02 (10.0.0.2)

DETAILS Session Attributes	Q Search Table	
Interfaces Configuration Logs	Message	Timestamp 👻
Primary Seed Configs	Completed Resync for Device FJB2332E0BK.	Nov 9, 2022, 12:50:03 PM
Secondary Seed Configs	Sending Resync Message for Device FJB2332E0BK.	Nov 9, 2022, 12:49:53 PM
Session Logs 🛛 🗸	Completed Resync for Device FJB2332E0BK.	Nov 9, 2022, 12:28:31 PM
Primary Seed Logs	Sending Resync Message for Device FJB2332E0BK.	Nov 9, 2022, 12:27:11 PM
Secondary Seed Logs Discovered Device Logs	Generated DHCP Delete configuration for device FJB2332E0BK	Nov 9, 2022, 12:27:02 PM
Session Logs	Generated SVI Delete configuration for device FJB2332E0BK	Nov 9, 2022, 12:27:01 PM
	Configuring L3 Link for Port FortyGigsbitEthernet1/0/3 of Device FJB2332E0BK.	Nov 9, 2022, 12:26:43 PM
	Completed Resync for Device FJB2332E0BK.	Nov 9, 2022, 12:26:40 PM
	17 Records	Show Records: 25 Y 1 - 17 < 1 >

❀ STK (Discovered Device)

Device Model: Cisco Catalyst 9300 Series Switches Site: Global/USA/SAN JOSE/BLD_Sanity Primary Seed Device: Border-01 (10.0.0.1) Secondary Seed Device: Border-02 (10.0.0.2)

DETAILS		
Session Attributes	Q Search Table	
Interfaces		
Configuration Logs V	wezzeße	imestamp -
Primary Seed Configs	Device FOC2422U025, FOC2422W01Y is deleted from Inventory.	Nov 9, 2022, 12:49:43 PM
Secondary Seed Configs Discovered Device Configs	Released Loopback address 192.0.2.1 for Device FOC2422U025, FOC2422W01Y (STK).	Nov 9, 2022, 12:49:41 PM
Session Logs 🗸 🗸	Completed Resync for Device FOC2422U025, FOC2422W01Y.	Nov 9, 2022, 12:28:31 PM
Primary Seed Logs	Sending Resync Message for Device FOC2422U025, FOC2422W01Y.	Nov 9, 2022, 12:27:11 PM
Discovered Device Logs	Performing Cleanup for Device FOC2422U025, FOC2422W01Y.	Nov 9, 2022, 12:27:01 PM
Session Logs	Generated SVI Delete configuration for device FOC2422U025, FOC2422W01Y	Nov 9, 2022, 12:27:01 PM
	Configuring L3 Link for Port TenGigabitEthernet2/1/5 of Device FOC2422U025, FOC2422W01Y.	Nov 9, 2022, 12:26:52 PM
	Configuring L3 Link for Port TenGigabitEthernet1/1/7 of Device FOC2422U025, FOC2422W01Y.	Nov 9, 2022, 12:26:41 PM
	22 Records	Show Records: 25 🗸 1 - 22 < 0 >

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X

Create Link Between Interfaces

Configure additional links between interfaces after LAN automation stops.

Before you begin

The following topic describes the steps to configure additional links between interfaces based on Catalyst Center 2.3.5. The steps may vary based on your Catalyst Center version.

Procedure

- **Step 1** From the top-left corner, click the menu icon and choose **Provision** > **LAN Automation**.
- **Step 2** Use one of the following options:
 - Option 1: In the LAN Automation Devices tab of the LAN Automation window, click Add Link.

■ Cisco DNA Center	LAN A			
Start LAN Automation				
> Overview				
Sessions History LAN Automated Devices View By: Seed Devices: 2 Discovered: 1 Provisioned: 1 Error Q. Search Devices	ar:			
0 Selected Add Link O Delete Link			As of: Apr 12, 2023 12:00 PM	з
Device Name IP Address	Platform	Serial Number	Status ()	
Border-01	C9606R	FXS2240Q0S5	0%	
Border-02	C9500-32C	CAT2421L4N9	0%	

• Option 2: In the History tab, click on a session date to view the session details and click Add Link.

LAN Automation / Nov 15, 2022 7:24:35 PM				
Status: Completed Discovered Device Site: Global/San_Jose/	Building23 Primary Seed Device: Border-02 (10.0.0.2)	Secondary Seed Device: View Session Logs		
View By: Seed Devices: 1 Discovered: Provisioned:	Error:			
Devices (1)				
Q Search Devices				
0 Selected 🛨 Add Link 🙁 Delete Link 🖉 Edit Device			As of: No	v 15, 2022 10:53 PM 🛛 📿
Device Name	IP Address 👻	Platform	Serial Number	
Border-02	10.0.0.2	C9500-32C	CAT2421L4N9	
Border-02	10.0.0.2	C9500-32C	CAT2421L4N9	
🗌 🛞 Border-02	10.0.0.2	C9500-32C	CAT2421L4N9	
Eorder-02	10.0.0.2	C9500-32C	CAT2421L4N9	
🗌 🛞 Border-02	10.0.0.2	C9500-32C	CAT2421L4N9	
🗌 🛞 Border-02	10.0.0.2	C9500-32C	CAT2421L4N9	
	10.0.0.2	C9500-32C	CAT2421L4N9	

1 Records: 25 v 1 - 1 < 0 >

- **Step 3** Follow these steps in the **Add Link** workflow:
 - a) Select the two devices to establish the link.

		Device*			
Q Search Hierarchy	V	Border-01	~		
	Search Help				
✓ 都 Global					
∨ 🕫 San_Jose					
@ Building18					

b) Select an IP address pool within the LAN. Ensure that the IP address pool is reachable from Catalyst Center.

Select IP Ad	dress Pool		
all pools with LAN are	shown.		
DEVICE 1	DEVICE 2		
Border-01	Border-02		
IP Address Pool*			
Global/San_Jose{group-	192net-lan V		
hanges saved			Bac

c) Select the interfaces on both the devices between which you want to establish a connection.

Select Interface - De	evice 1
This interface cannot currently have a	e. an IP Address or be bundled in a Port-Channel.
Link 1 Device 1 Interface: FortyGigabitEthernet1/0/11	Available Interface Selected Interfaces Unavailable Interface DEVICE 1 Border-01
Device 2 Interface:	
Exit All changes saved	

Select Interface - Device 2

Select the interface on the first device.

This interface cannot currently have an IP Address or be bundled in a Port-Channel.

Link 1 Device 1 Interface: FortyGigabitEthernet1/0/11 Device 2 Interface: House 2015/12/01	Available Interface Selected Interfaces Unavailable Interface DEVICE 2 Border-02
Livie z interace. Hunordosige (10/11	
Exit All channes saved	

d) Click **Now** or **Later** to indicate when you want to provision the link. Enter a name for the task in the field provided.

Schedule Add Link Task Specify the schedule details to begin the add link task.	
Now Clater Task Name* Add Link	
Exit All changes saved	Back Next

e) In the **Summary** window, review the configuration settings. To make any changes, click **Edit**.

	Summary Review the link to be added and scheduler details. Click edit if you wish to make changes.				
	 Review Link Edit DEVICE 1 Border-01 	INTERFACE FortyGigabitEthernet1/0/11	DEVICE 2 Border-02	INTERFACE HundredGigE1/0/11	
	 Schedule Your Task E Scheduler: Run Now 	Edit			
🗧 Exit Al	l changes saved				Back Start Add Link
Click	Start Add Link				

Step 4 To see the status of the configuration, click **View Status in Activities**.

What to do next

To delete a link:

- Click Delete link.
- Select the devices and the interfaces.
- Click Start Delete Link.

Edit LAN Automated Devices

In Catalyst Center Release 2.3.7.5 and later, you can edit the hostname and Loopback0 interface IP address of a LAN automated device.

Before you begin

Ensure that you've reserved LAN IP pools and discovered the devices through LAN automation.



• In a Day-1 scenario, the devices that you want to edit must be in a Managed state in the Catalyst Center inventory.

• You can edit the Loopback0 interface IP address for a maximum of 25 devices in a single Day-1 workflow.

Procedure

- **Step 1** From the top-left corner, click the menu icon and choose **Provision** > **LAN Automation**.
- Step 2 In the LAN Automation window, click the LAN Automated Devices tab.
- **Step 3** Check the check box next to the device that you want to edit and click **Edit Device**.

LAN Automation / Nov 3, 2023 8:46:14 AM					
Status: Completed Discovered Device Site: Glo	bbal/San_Jose/Building18 Primary Se	ed Device: Border-01 Secondary 10.10.10.1	Seed Device: Border-02 View S 10.1.2.3	Session Logs	
View By: Seed Devices: 2 Discovered:	Provisioned: 1 Error:				
Devices (1)					
Q Search Devices					
1 Selected $+$ Add Link \times Delete Link	Ø Edit Device				As of: Nov 3, 2023 9:12 AM 🦪
Oevice Name	IP Åddress -	Platform	Serial Number	Status ①	
STK	10.11.7.67	C9300-48P	FOC2421W1D0	0	

Step 4 In the Edit Devices window, edit the Device Name, IP Address Pool, and IP Address fields, as required.

Enter the IP address without a subnet mask and ensure that the IP address is within the range of the selected IP address pool.

Devices (1)					
Seset All Device Name ★	IP Address Pool	IP Address ①	Platform	Serial Number	
STK1	Global/San_Jose (group-192net-lar	10.11.7.78	C9300-48P	FOC2421W1D0	Re

- **Step 5** Click **Validate** to validate the IP address allocation.
- **Step 6** After validation, click **Next**.
- **Step 7** Choose **Now** or **Later** to schedule the edit device deployment and click **Apply**.

Schedule Edit Device Dep Schedule when to deploy the changes to your	bloyment		
● Now O Later Task Name*			
Edit Device			
Exit All changes saved			Back

What to do next

You can view the status of the edit task under the **Activities** > **Task** window.

Edit Device Changes Scheduled Successfully		SUMMARY	Q Search by description
The changes made will be deployed at your scheduled date.		✓ Type (2) ○ Task	Edit Device
What's Next?		O Work Item	Task · A admin · LAN
View Status in Activities		✓ Status (8)	Nov 2, 2023 8:43 Update Nov 2, 2023 8:43
← Return to Lan Automation		In Progress Success	Assign/Unassign 2 Device
2		Failed	Task · 실 admin · SITE . Completed · @ Success
		Show all ~ Review Status (1)	Start Nov 2, 2023 8:07 Update Nov 2, 2023 8:08
		Pending Review	End Nov 2, 2023 8:08
		3 hours	discovered-via-script0 Task · 은 admin · DISC
		24 hours	Completed · O Success
	×	> Categories (45)	Update Nov 2, 2023 8:06
žxit All changes saved	Edit Device Started Sucessfully.	V Recurring (2)	End Nov 2, 2023 8:06

Manage Devices in Strict Discovery Mode

In Catalyst Center Release 2.3.7.5 and later, you can choose between the **Relaxed** or **Strict** mode for device matching during discovery. In **Strict** mode, device discovery is restricted to the list of devices provided. Use the following procedure to add, edit, or delete devices from the list.

Procedure

- Step 1 In the LAN Automation window, click Start LAN Automation.
- **Step 2** Add the seed devices, and click **Next**.
- Step 3 In the Session Attributes window, in the left pane, select a building or a floor.
- Step 4 Under Device Matching, select the Strict option.

> 🕸 Bengaluru		
i BGL18	📋 Enable Multicast 🕖	
	Advertise LAN Automation Routes into BGP 0	
	HOSTNAME MAPPING	
	Discovered Devices Hostname Prefix	
	DEVICE MATCHING	
	Relaxed ① Strict ①	
	Devices (0)	
	Q Search Devices	∇
	0 Selected Add Device More Actions V	
	Site name - Serial Number Host Name IP Address	
	No data to display	

- **Note** It is mandatory to add a device list if you have selected an area as the site. When you select an area, the **Strict** mode is chosen automatically, and the **Relaxed** mode is disabled.
- **Step 5** Add devices using one of the following options:
 - Add Device: Use this option to add a single device.
 - In the Devices table, click Add Device.
 - In the Add Device window, do the following:
 - a. If you've chosen an area, select a building or a floor as the site.
 - **b.** Enter a **Serial Number** for the device.
 - c. (Optional) Enter Host Name and IP Address.
 - d. Click Save.

Add Device

The default selected site is Discovery site. It can be preserved or modified to any other building/floor within the selected Discovered site.

Serial Number and IP Address should have unique values, not assigned to any existing inventory device.

IP Address and Hostname are optional fields.

		Global/BGL18
	V	
	Search Help	
🖓 Global	1	Serial Number*
> 🖓 Bengaluru		
🖻 BGL18		Host Name
		IP Address

• Upload Device: Use this option to add devices from a CSV file.

- a. In the Devices table, click More Actions and choose Upload Device.
- **b.** In the **Upload Device Details** window, drag and drop the CSV file into the boxed area or click **Choose a file** and browse to the CSV file.

Cancel

You can also download a sample template file.

c. Click Upload.

Upload Device details

Select a valid CSV file and upload device details. A sample template can be downloaded.



Step 6 To edit a device from the list of devices to be discovered, do the following:

- a) Check the check box next to the device that you want to edit and choose More Actions > Edit Device.
- b) Edit the device details, as required.You can edit only one device at a time.
- c) Click Save.
- **Step 7** To delete a device from the list of devices to be discovered, do the following:
 - a) Check the check box next to the device that you want to delete and choose More Actions > Delete Device.
 You can select multiple devices to delete.
 - b) Click the **Delete** icon and confirm the delete action.

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