



Configure the 112-Core Appliance Using the Browser-Based Wizard

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Appliance Configuration Overview

You can deploy the 112-core appliance in your network in one of the following modes:

- **Standalone:** As a single node offering all the functions. This option is usually preferred for initial or test deployments and in smaller network environments. If you choose Standalone mode for your initial deployment, this will be your first, or primary, node. Note that you can add more appliances later to form a cluster.
- **Cluster:** As a node that belongs to a three-node cluster. In this mode, all the services and data are shared among the hosts. This is the preferred option for large deployments. If you choose Cluster mode for your initial deployment, be sure to finish configuring the primary node before configuring the secondary nodes.

To proceed, first configure the primary node in your cluster. Then, if you have installed three appliances and want to add the second and third nodes to your cluster, configure the secondary nodes.

Browser-Based Configuration Wizards

Cisco DNA Center offers two browser-based wizards that you can use to configure your appliance. Read their descriptions to determine which of these wizards you should complete.



Important

These wizards are available for use if you are configuring a new appliance that came with Cisco DNA Center 2.3.4 already installed. If you upgraded from a previous version and want to use these wizards, contact Cisco TAC for assistance.

Install Configuration Wizard

This wizard streamlines the appliance configuration process by setting default values for the Enterprise, Management, and Internet Access interfaces (which all reside on the appliance's Enterprise port) as well as the Intracluster interface. Use this wizard if you are okay with using the default interface settings and want to get your appliance up and running as quickly as possible. Note that you cannot use this wizard to configure a cluster's secondary nodes.

Advanced Install Configuration Wizard

This wizard provides access to all of the available appliance settings that you can modify. Use this wizard if you want to specify interface settings that are different from the default settings. Also use this wizard if you are configuring the second or third node in your cluster.

Browser-Based Wizard Prerequisites

To use either of the browser-based wizards and ensure that it configures your appliance properly, complete the following tasks:

- Designate the Enterprise interface on your appliance to use the IP address, subnet mask, and default gateway that a DHCP server assigns to it. When you configure this interface in the wizard, you will not be able to change the IP address or subnet mask that have been assigned to it. You will only be able to change its default gateway. The topics in this chapter assume that the Enterprise interface was chosen for this purpose.
- Confirm that the IP address assigned by the DHCP server is reachable by the machine from which you will complete the wizard.
- For the Enterprise and Intracluster interfaces, verify that both interfaces are connected and in the **UP** state.

If you want to specify your own IP address, subnet mask, and default gateway for your appliance's Enterprise interface (and not use the values assigned by a DHCP server), ensure that you complete the Static IP Address Settings screen.

Configure an Appliance Using the Install Configuration Wizard

Perform this procedure to configure either a three-node cluster's primary node or a standalone node using the Install configuration wizard. The wizard simplifies the configuration process by setting up the Enterprise, Management, and Internet interfaces on the same port using default settings. The following second generation Cisco DNA Center appliances support configuration using this wizard:

- 112-core appliance: Cisco part number DN2-HW-APL-XL
- 112-core promotional appliance: Cisco part number DN2-HW-APL-XL-U

**Important**

- You cannot use this wizard to configure the second or third appliance in a three-node cluster. To do so, complete the steps described in [Configure a Secondary Node Using the Advanced Install Configuration Wizard, on page 33](#). Also, you cannot use this wizard to enable LACP mode on your appliance's Enterprise and Intracluster interfaces.
- Before you configure any of the appliances in a three-node cluster, ensure that you have logged out of those appliances. Otherwise, the Quick Start workflow (which you complete to discover your network's devices and enable telemetry) will not start after you have configured your cluster's appliances and log in to Cisco DNA Center for the first time.
- Ensure that all of the IP addresses you enter while completing this procedure are valid IPv4 addresses with valid IPv4 netmasks. Also make sure that the addresses and their corresponding subnets do not overlap. Service communication issues can result if they do.

You can only use this wizard to complete the initial configuration of a new Cisco DNA Center appliance. To reimage an appliance that's been configured previously, you will need to use the Maglev Configuration wizard (see [Configure the Appliance Using the Maglev Wizard](#)).

Before you begin

Ensure that you:

- Installed the Cisco DNA Center software image onto your appliance, as described in [Reimage the Appliance](#).

**Important**

This is only applicable if you are going to configure a promotional appliance, because the Cisco DNA Center software image is not preinstalled on the 112-core promotional appliance (Cisco part number DN2-HW-APL-XL-U).

- Collected all of the information called for in [Required IP Addresses and Subnets](#) and [Required Configuration Information](#).
- Installed the appliance as described in [Appliance Installation Workflow](#).
- Configured Cisco IMC browser access on this appliance, as described in [Enable Browser Access to Cisco Integrated Management Controller](#).
- Checked that the appliance's ports and the switches it uses are properly configured, as described in [Execute Preconfiguration Checks](#).
- Are using a browser that is compatible with Cisco IMC and Cisco DNA Center. For a list of compatible browsers, see the [Release Notes](#) for the version of Cisco DNA Center you are installing.
- Enabled ICMP on the firewall between Cisco DNA Center and the DNS servers you will specify in the following procedure. This wizard uses Ping to verify the DNS server you specify. This ping can be blocked if there is a firewall between Cisco DNA Center and the DNS server and ICMP is not enabled on that firewall. When this happens, you will not be able to complete the wizard.

Step 1 Start the Install configuration wizard:

- a) Point your browser to the Cisco IMC IP address you set during the Cisco IMC GUI configuration you performed, then log in to the Cisco IMC GUI as the Cisco IMC user (see [Enable Browser Access to Cisco Integrated Management Controller](#)).

After successful login, the appliance displays the **Cisco Integrated Management Controller Chassis Summary** window, with a blue link menu at the upper right, as shown below.



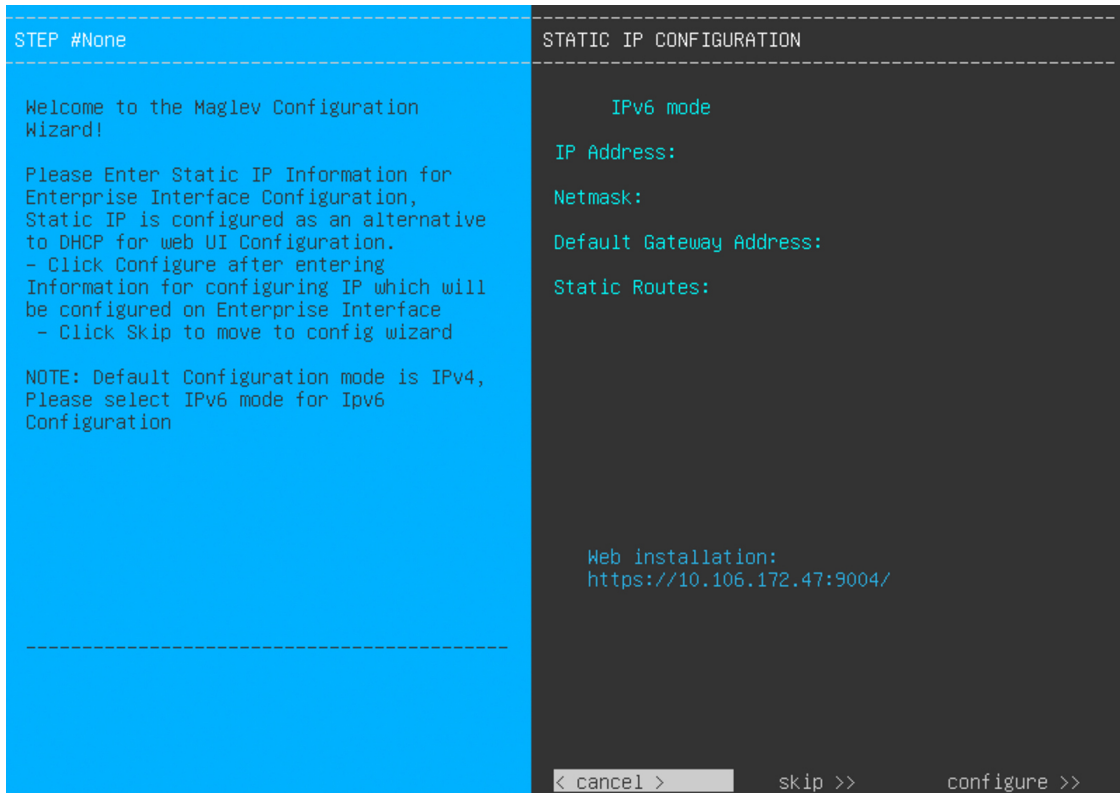
- b) From the blue link menu, choose **Launch KVM** and then select either **Java based KVM** or **HTML based KVM**. If you select the Java-based KVM, you will need to launch the Java startup file from your browser or file manager in order to view the KVM console in its own window. If you select the HTML-based KVM, it will launch the KVM console in a separate browser window or tab automatically.

Irrespective of the KVM type you choose, use the KVM console to monitor the progress of the configuration and respond to Maglev Configuration Wizard prompts.

- c) With the KVM displayed, reboot the appliance by making one of the following selections:
- In the main Cisco IMC GUI browser window: Choose **Host Power > Power Cycle**. Then switch to the KVM console to continue.
 - In the KVM console: Choose **Power > Power Cycle System (cold boot)**.

If asked to confirm your choice to reboot the appliance, click **OK**.

After displaying reboot messages, the KVM console displays the **Static IP Configuration** screen.



Note the URL listed in the **Web Installation** field.

d) Do one of the following:

- If you want a DHCP server to assign an IP address, subnet mask, and default gateway to your appliance's Enterprise interface, click **Skip**.
- If you want to assign your own IP address, subnet mask, and default gateway to your appliance's Enterprise interface, enter the information described in the following table and then click **Configure**.

IPv6 Mode check box	If you want to configure an IPv6 address, check this check box.
IP Address field	Enter the static IP address you want to use.
Netmask field	Enter the netmask for the IP address you specified in the previous field: <ul style="list-style-type: none"> • If you entered an IPv4 address, you can enter either a netmask or CIDR address. • If you entered an IPv6 address, you can only enter a CIDR address.
Default Gateway Address field	Specify the default gateway that will be used to route traffic.
Static Routes field	Enter one or more static routes in the following format, separated by spaces: <code><network>/<netmask>/<gateway></code> . This is usually required on the Management port only.

The KVM console displays the Maglev Configuration wizard welcome screen.

```
Welcome to the Maglev Configuration Wizard!  
The wizard will walk you through the steps to configure this host. Select one of the options below to specify how you  
would like to configure this host:  
  
Start a Cisco DNA Center Cluster  
Join a Cisco DNA Center Cluster  
  
< exit >
```

- e) To bring up the **Appliance Configuration** screen, open the URL that was displayed in the **Static IP Configuration** screen.

Cisco DNA Center

Appliance Configuration

Welcome to Cisco DNA Center

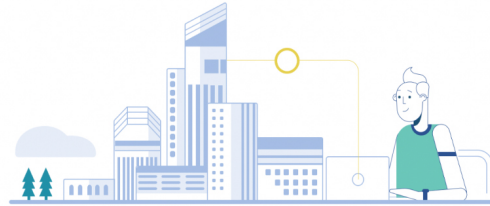
Are you starting a new Cisco DNA Center Cluster or joining an existing one?

Start A Cisco DNA
Center Cluster

This appliance will be the primary
node of a cluster.

Join A Cisco DNA
Center Cluster

This appliance will be added as a
node to the primary node of a cluster.



Next

- f) Click the **Start a Cisco DNA Center Cluster** radio button, then click **Next**.

Cisco DNA Center

Appliance Configuration

Welcome to Cisco DNA Center

Before you can use Cisco DNA Center, first complete the appropriate appliance configuration workflow. Which workflow matches your needs?

Install

Configure a standalone node or cluster's primary node.

Use this quick, simplified wizard to set up the Enterprise, Management, and Internet interfaces on the same interface with default settings.

Advanced Install

Configure a standalone node or any node in a cluster.

Use this wizard to access all of the available appliance configuration options.



Back

Start

- g) Click the **Install** radio button, then click **Start**.

The **Overview** slider opens. Click > to view a summary of the tasks that the wizard will help you complete.

✕

Overview

Complete the basic tasks required to configure your appliance for use with Cisco DNA Center.



Start Workflow



- h) Click **Start Workflow** to start the wizard.

The **Appliance Interface Overview** screen opens, providing a description of the four interfaces that are available on your Cisco DNA Center appliance.

Cisco DNA Center
Install

Appliance Interface Overview

In order for Cisco DNA Center to operate properly, you need to configure four interfaces on your appliance:

1. **Enterprise Network Interface:** Connects your appliance to the Enterprise network.
2. **Intracuster Link Interface:** Connects your appliance to your cluster.
3. **Management Network Interface:** (Optional) Accesses the Cisco DNA GUI from your Management network.
4. **Internet Access Interface:** (Optional) Accesses the internet.

In this workflow, the Intracuster Link Interface is predefined. The other three interfaces will be configured together on the Enterprise port.

Exit
Next

The wizard will help you configure the Enterprise and Cluster ports, which are required for Cisco DNA Center functionality. If the wizard fails to display either or both of these ports in the next screen, they may be non-functional or disabled. If you discover that they are non-functional, choose **Exit** to exit the wizard immediately. Be sure you have completed all of the steps provided in [Execute Preconfiguration Checks](#) before resuming configuration or contacting the Cisco Technical Assistance Center (TAC).

Step 2 Complete the Install configuration wizard:

a) Click **Next**.

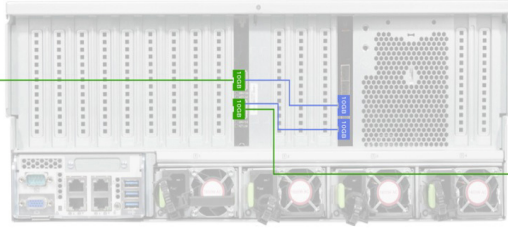
The **Configure The Enterprise Port** screen opens.

Cisco DNA Center
Install

Configure the Enterprise Port

In this workflow, the Management Network and Internet Access Interfaces are on the same port as the Enterprise Network Interface. You can enter up to three DNS addresses. If your network resides behind a firewall, you must [allow access to these URLs](#) and [open these ports](#). If you are setting up a multinode cluster, the cluster's second and third nodes must reside in the same subnet as the primary node. [Download the Intracuster Link interface's information](#)

■ Connected ■ Disconnected ■ LACP-disabled



Enterprise & Management Network & Internet Access Interface

LACP Mode: Disabled

IP Address: 10.106.172.27

Netmask: 255.255.255.128

Default Gateway: 10.106.172.1

Intracuster Link Interface

Interface Name: cluster

LACP Mode: Disabled

IP Address: 169.254.6.64

Subnet Mask: 255.255.255.128

Exit
Next

The configuration wizard sets up the Enterprise, Management, and Internet Access interfaces on the Enterprise port. The wizard also prepopulates values for almost all of the listed parameters.

If your network resides behind a firewall, do the following:

- Click the **allow access to these URLs** link to view a popup window that lists the URLs that Cisco DNA Center must be able to access.
- Click the **open these ports** link to view a popup window that lists the network service ports that must be available for Cisco DNA Center to use.

b) Click **Next**.

The **DNS Configuration** screen opens.

c) In the **DNS** field, enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add (+)** icon.

Important You can configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for an appliance.

d) Click **Next**.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Interface to Port Configuration** screen opens.

Cisco DNA Center Install

Interface to Port Configuration

We are going to configure the following interfaces. Click **Configure** and wait for configuration to be done before proceeding to the next step.

Configure

Interface Name	enterprise
LACP Mode	Disabled
IP Address	10.106.172.27
Netmask	255.255.255.128
Default Gateway	10.106.172.1

Interface Name	cluster
LACP Mode	Disabled
IP Address	169.254.6.64
Subnet Mask	255.255.255.128

[Exit](#) [Back](#) [Next](#)

- e) Review the interface settings that have been set, then click **Configure**.
- f) After initial interface configuration has completed, click **Next** to proceed to the next wizard screen.

The **Configure Proxy Server Information** screen opens.

Cisco DNA Center Install

Configure Proxy Server Information

Does your network use a proxy server to access the internet?

Yes No

Proxy Server*
 E.g. http://example.com

Port*
 Enter port number between 0 to 65535.

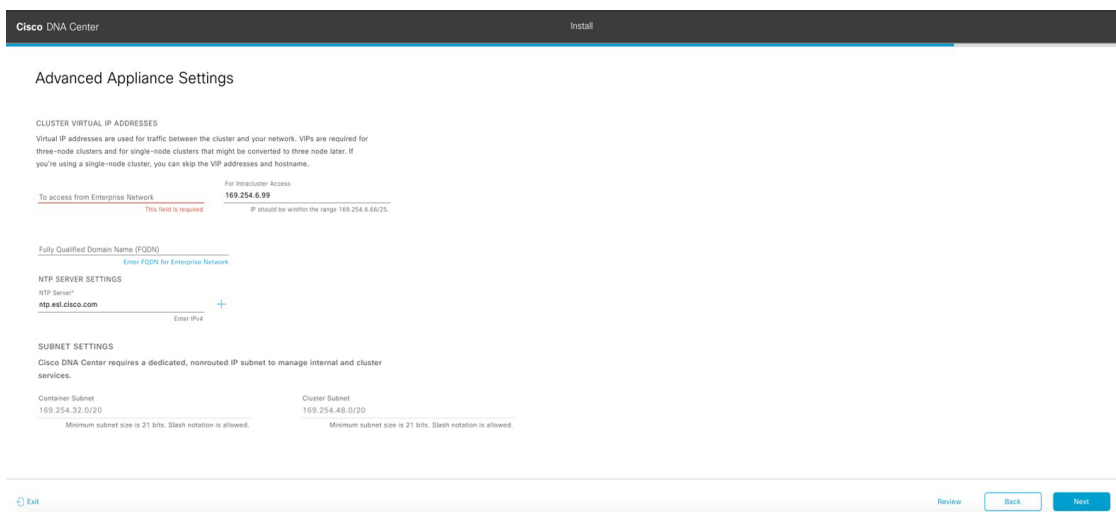
[Exit](#) [Review](#) [Back](#) [Next](#)

- g) Do one of the following, then click **Next**:
- If your network does *not* use a proxy server to access the internet, click the **No** radio button.
 - If your network does use a proxy server to access the internet, enter the values described in the following table:

Table 1: Primary Node Entries for Proxy Server Settings

Proxy Server field	Enter the URL or host name of an HTTPS network proxy used to access the Internet. Note Connection from Cisco DNA Center to the HTTPS proxy is supported only via HTTP in this release.
Port field	Enter the port your appliance used to access the network proxy.
Username field	Enter the user name used to access the network proxy. If no proxy login is required, leave this field blank.
Password field	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Advanced Appliance Settings** screen opens.



h) Enter configuration values for your cluster, then click **Next**.

Table 2: Primary Node Entries for Advanced Appliance Settings

Cluster Virtual IP Addresses	
To access from Enterprise Network and For Intracluster Access fields	Enter the virtual IP address that will be used for traffic between the cluster and both the Enterprise and Intracluster interfaces on your appliance. This is required for single-node clusters that will be converted into a three-node cluster in the future. If you have a single-node cluster setup and don't plan to move to a three-node cluster setup, you can leave the fields in this section blank. Important If you choose to configure a virtual IP address, you must enter one for each configured network interface. You will not be able to complete the wizard unless you do so. These addresses are tied to the cluster link's status, which must be in the UP state.

Fully Qualified Domain Name (FQDN) field	<p>Enter the fully qualified domain name (FQDN) for your cluster. Cisco DNA Center does the following with this hostname:</p> <ul style="list-style-type: none"> • It uses this hostname to access your cluster's web interface and the Representational State Transfer (REST) APIs used by devices in the enterprise network that Cisco DNA Center manages. • In the Subject Alternative Name (SAN) field of Cisco DNA Center certificates, it uses the FQDN to define the Plug and Play server that should be used for device provisioning.
NTP Server Settings	
NTP Server field	<p>Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the Add (+) icon.</p> <p>For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.</p>
Subnet Settings	
Container Subnet field	A dedicated, non-routed IP subnet that Cisco DNA Center uses to manage internal services. By default, this is already set to 169.254.32.0/20 , and you cannot enter another subnet.
Cluster Subnet field	A dedicated, non-routed IP subnet that Cisco DNA Center uses to manage internal cluster services. By default, this is already set to 169.254.48.0/20 , and you cannot enter another subnet.

The **Enter CLI Password** screen opens.

Cisco DNA Center Install

Enter CLI Password

CLI Password: Identifies the password for the CLI username maglev. This password ensures secure access to each appliance using the CLI command line. If required, you can assign a different CLI password for each maglev CLI username on each appliance in a cluster

Username*
maglev

Password*
..... [SHOW](#)

[View Password Criteria](#)

Retype to Confirm*
..... [SHOW](#)

[Exit](#) [Review](#) [Back](#) [Next](#)

- i) Enter and confirm the password for the `maglev` user, then click **Next**.

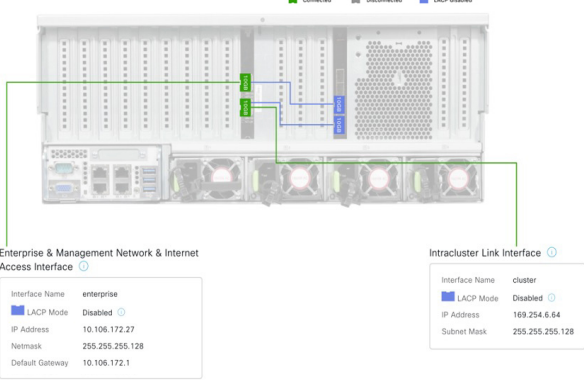
The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Summary** screen opens.

Cisco DNA Center Install

Summary

Please review the settings that you have entered. If you need to make any changes, click the appropriate Edit link and make the necessary updates. You can download the generated configuration in JSON format from [here](#). When you are happy with your settings, click Start Configuration.

Enterprise Port [Edit](#)



Enterprise & Management Network & Internet Access Interface	
Interface Name	enterprise
LACP Mode	Disabled
IP Address	10.106.172.27
Netmask	255.255.255.128
Default Gateway	10.106.172.1

Intracuster Link Interface	
Interface Name	cluster
LACP Mode	Disabled
IP Address	169.254.6.64
Subnet Mask	255.255.255.128

[Exit](#) [Start Configuration](#)

Note To download the appliance configuration as a JSON file, click the [here](#) link.

- j) Scroll to the bottom of the screen and review all of the settings that you have entered while completing the wizard. If necessary, click the appropriate **Edit** link to open the wizard screen in which you want to make updates.
- k) To complete the configuration of your Cisco DNA Center appliance, click **Start Configuration**.

The wizard screen continuously updates during the process, indicating the tasks that are currently being completed and their progress, as well as any errors that have occurred. To save a local copy of this information as a text file, click the **Download** link.

Cisco DNA Center
Install

Appliance Configuration In Progress

It should take about 30 minutes to configure the appliance. **Do not press your browser's back button or refresh this page.** The page will update after configuration completes.

30%

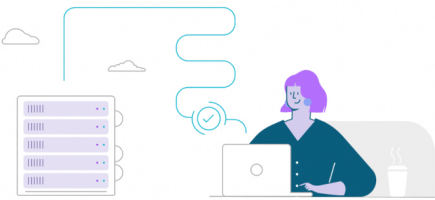
Initializing the cluster using kubeadm

Started: 04/09/2020 12:15:36

Download

```

                17:40:20 2021 GMT
                2021-12-03T05:37:06.616Z14 | kubelet.conf Apr
                13 12:12:14 2020 GMT Apr 13 17:40:21 2021 GMT
                2021-12-03T05:37:06.616Z15 | admin.conf Apr 13
                12:12:14 2020 GMT Apr 13 17:40:21 2021 GMT
                2021-12-03T05:37:06.616Z16 | scheduler.conf Apr
                13 12:12:14 2020 GMT Apr 13 17:40:22 2021 GMT
                2021-12-03T05:37:06.616Z17 | controller-
                manager.conf Apr 13 12:12:14 2020 GMT Apr 13
                17:40:22 2021 GMT
                2021-12-03T05:37:06.616Z18 | -----
                -----
            
```



Step 3 After appliance configuration completes, click the copy icon in the **Cisco DNA Center - Admin Credential** area to copy the default admin superuser password.

Cisco DNA Center
Install

Appliance Configuration Complete!

Important: Take note of the credentials displayed below. You can click the copy icon if you want to save them locally. You will use these credentials to log in to Cisco DNA Center for the first time. After logging in, you will be prompted to change the password.


CISCO DNA CENTER - ADMIN CREDENTIAL

Username admin

password maglev1@3

What's Next?

Open Cisco DNA Center



Important Cisco DNA Center automatically sets this password when you complete the Install configuration wizard. Ensure that you click the copy icon before you proceed. Otherwise, you will not be able to log in to Cisco DNA Center for the first time.

Note As a security measure, you'll be prompted to change this password after you log in. For more information, see [Complete the Quick Start Workflow](#).

What to do next

As you are deploying this appliance in standalone mode, continue by performing first-time setup: [First-Time Setup Workflow](#).

Configure the Primary Node Using the Advanced Install Configuration Wizard

Perform the following steps to configure the first installed appliance as the primary node using the Advanced Install configuration wizard. You must always configure the first appliance as the primary node, whether it will operate standalone or as part of a cluster.



Important

- The following second generation Cisco DNA Center appliances support configuration using this wizard:
 - 112-core appliance: Cisco part number DN2-HW-APL-XL
 - 112-core promotional appliance: Cisco part number DN2-HW-APL-XL-U
- You can only use this wizard to complete the initial configuration of a new Cisco DNA Center appliance. To reimage an appliance that's been configured previously, you will need to use the Maglev Configuration wizard (see [Configure the Appliance Using the Maglev Wizard](#)).
- Before you configure the appliances in a three-node cluster, ensure that you have logged out of those appliances. Otherwise, the Quick Start workflow (which you complete to discover your network's devices and enable telemetry) will not start after you have configured your cluster's appliances and log in to Cisco DNA Center for the first time.
- Ensure that all of the IP addresses you enter while completing this procedure are valid IPv4 addresses with valid IPv4 netmasks. Also make sure that the addresses and their corresponding subnets do not overlap. Service communication issues can result if they do.

If you are configuring the installed appliance as a secondary node for an existing cluster that already has a primary node, follow the steps in [Configure a Secondary Node Using the Advanced Install Configuration Wizard, on page 33](#) instead.

Before you begin

Ensure that you:

- Installed the Cisco DNA Center software image onto your appliance, as described in [Reimage the Appliance](#).

**Important**

This is only applicable if you are going to configure a promotional appliance, because the Cisco DNA Center software image is not preinstalled on the 112-core promotional appliance (Cisco part number DN2-HW-APL-XL-U).

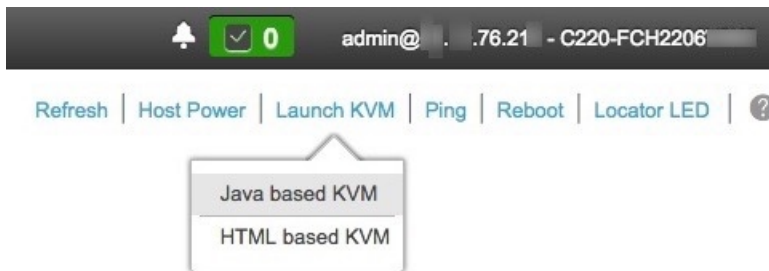
- Collected all of the information called for in [Required IP Addresses and Subnets](#) and [Required Configuration Information](#).
- Installed the first appliance as described in [Appliance Installation Workflow](#).
- Configured Cisco IMC browser access on the primary node, as described in [Enable Browser Access to Cisco Integrated Management Controller](#).
- Checked that the primary node's ports and the switches it uses are properly configured, as described in [Execute Preconfiguration Checks](#).
- Are using a browser that is compatible with Cisco IMC and Cisco DNA Center. For a list of compatible browsers, see the [Release Notes](#) for the version of Cisco DNA Center you are installing.
- Enabled ICMP on the firewall between Cisco DNA Center and both the default gateway and the DNS server you specify in the following procedure. The wizard uses ping to verify the gateway and DNS server you specify. This ping might get blocked if a firewall is in place and ICMP is not enabled on that firewall. When this happens, you will not be able to complete the wizard.

Step 1

Start the Advanced Install configuration wizard:

- Point your browser to the Cisco IMC IP address you set during the Cisco IMC GUI configuration you performed, then log in to the Cisco IMC GUI as the Cisco IMC user (see [Enable Browser Access to Cisco Integrated Management Controller](#)).

After successful login, the appliance displays the **Cisco Integrated Management Controller Chassis Summary** window, with a blue link menu at the upper right, as shown below.



- From the blue link menu, choose **Launch KVM** and then select either **Java based KVM** or **HTML based KVM**. If you select the Java-based KVM, you will need to launch the Java startup file from your browser or file manager in order to view the KVM console in its own window. If you select the HTML-based KVM, it will launch the KVM console in a separate browser window or tab automatically.

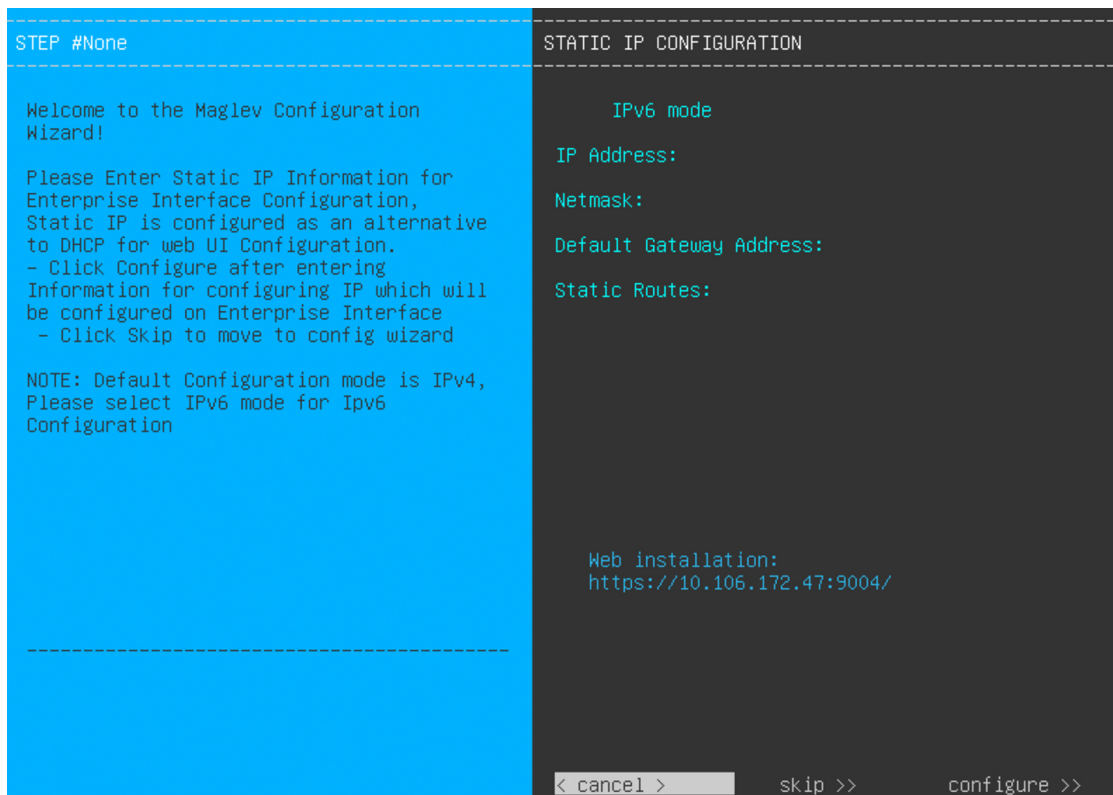
Irrespective of the KVM type you choose, use the KVM console to monitor the progress of the configuration and respond to Maglev Configuration Wizard prompts.

- With the KVM displayed, reboot the appliance by making one of the following selections:

- In the main Cisco IMC GUI browser window: Choose **Host Power > Power Cycle**. Then switch to the KVM console to continue.
- In the KVM console: Choose **Power > Power Cycle System (cold boot)**.

If asked to confirm your choice to reboot the appliance, click **OK**.

After displaying reboot messages, the KVM console displays the **Static IP Configuration** screen.



Note the URL listed in the **Web Installation** field.

d) Do one of the following:

- If you want a DHCP server to assign an IP address, subnet mask, and default gateway to your appliance's Enterprise interface, click **Skip**.
- If you want to assign your own IP address, subnet mask, and default gateway to your appliance's Enterprise interface, enter the information described in the following table and then click **Configure**.

IPv6 Mode check box	If you want to configure an IPv6 address, check this check box.
IP Address field	Enter the static IP address you want to use.
Netmask field	Enter the netmask for the IP address you specified in the previous field: <ul style="list-style-type: none"> • If you entered an IPv4 address, you can enter either a netmask or CIDR address. • If you entered an IPv6 address, you can only enter a CIDR address.

Default Gateway Address field	Specify the default gateway that will be used to route traffic.
Static Routes field	Enter one or more static routes in the following format, separated by spaces: <i><network>/<netmask>/<gateway></i> . This is usually required on the Management port only.

The KVM console displays the Maglev Configuration wizard welcome screen.

```
Welcome to the Maglev Configuration Wizard!

The wizard will walk you through the steps to configure this host. Select one of the options below to specify how you
would like to configure this host:

Start a Cisco DNA Center Cluster
Join a Cisco DNA Center Cluster

< exit >
```

- e) To bring up the **Appliance Configuration** screen, open the URL that was displayed in the **Static IP Configuration** screen.

Cisco DNA Center

Appliance Configuration

Welcome to Cisco DNA Center

Are you starting a new Cisco DNA Center Cluster or joining an existing one?

Start A Cisco DNA
Center Cluster

This appliance will be the primary
node of a cluster.

Join A Cisco DNA
Center Cluster

This appliance will be added as a
node to the primary node of a cluster.



Next

- f) Click the **Start a Cisco DNA Center Cluster** radio button, then click **Next**.

Cisco DNA Center Appliance Configuration

Welcome to Cisco DNA Center

Before you can use Cisco DNA Center, first complete the appropriate appliance configuration workflow. Which workflow matches your needs?

Install


Configure a standalone node or cluster's **primary node**.

Use this quick, simplified wizard to set up the Enterprise, Management, and Internet interfaces on the same interface with default settings.

Advanced Install

Configure a standalone node or **any node in a cluster**.

Use this wizard to access all of the available appliance configuration options.



- g) Click the **Advanced Install** radio button, then click **Start**.

The **Advanced Install Overview** slider opens. Click > to view a summary of the tasks that the wizard will help you complete.

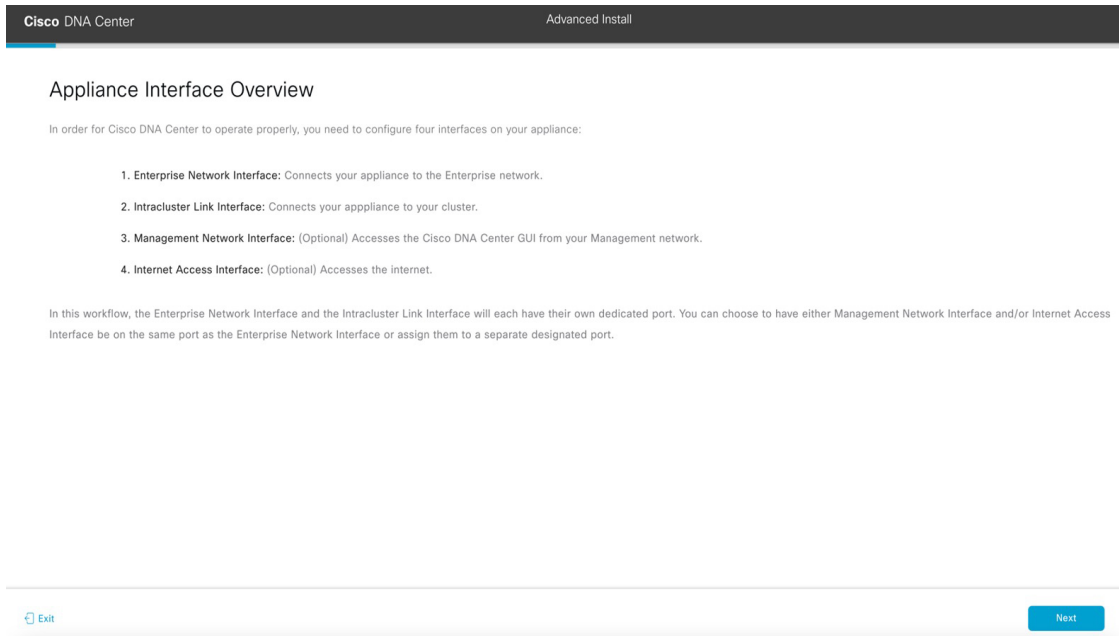
Advanced Install Overview

Prepare your appliance for use with Cisco DNA Center by configuring its interfaces and entering cluster and other required information.



- h) Click **Start Workflow** to start the wizard.

The **Appliance Interface Overview** screen opens, providing a description of the four appliance interfaces that you can configure.



The screenshot shows the Cisco DNA Center Advanced Install wizard. The title bar reads "Cisco DNA Center" and "Advanced Install". The main heading is "Appliance Interface Overview". Below the heading, a note states: "In order for Cisco DNA Center to operate properly, you need to configure four interfaces on your appliance:". A numbered list follows:

1. **Enterprise Network Interface:** Connects your appliance to the Enterprise network.
2. **Intracenter Link Interface:** Connects your appliance to your cluster.
3. **Management Network Interface:** (Optional) Accesses the Cisco DNA Center GUI from your Management network.
4. **Internet Access Interface:** (Optional) Accesses the internet.

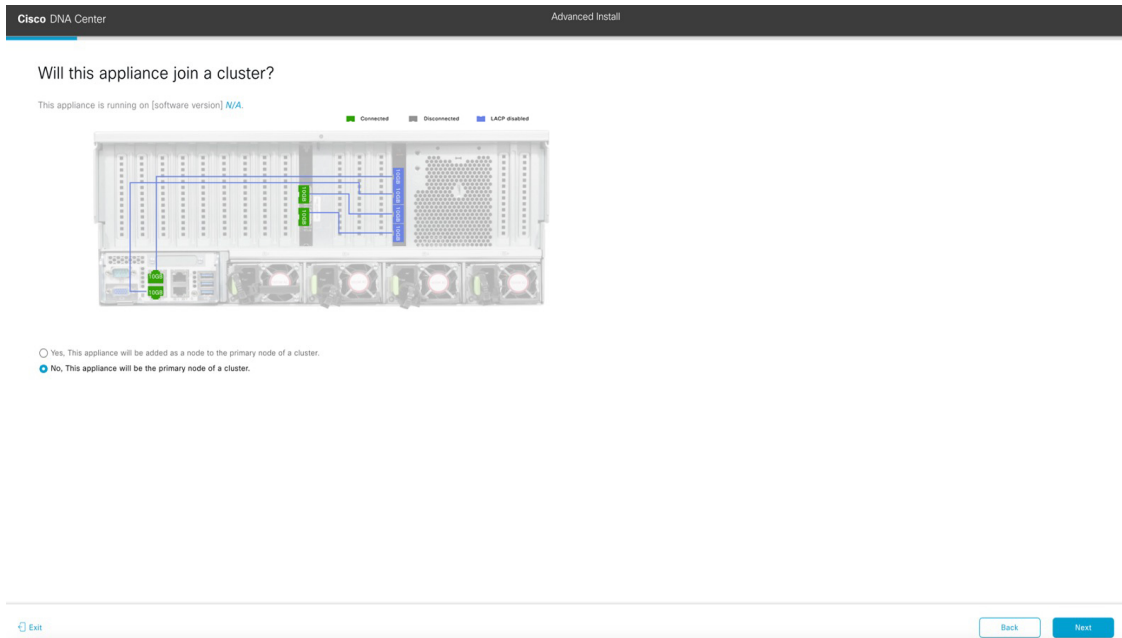
Below the list, a paragraph explains: "In this workflow, the Enterprise Network Interface and the Intracenter Link Interface will each have their own dedicated port. You can choose to have either Management Network Interface and/or Internet Access Interface be on the same port as the Enterprise Network Interface or assign them to a separate designated port." At the bottom of the wizard, there are two buttons: "Exit" on the left and "Next" on the right.

Important At a minimum, you must configure the Enterprise and Intracenter ports, as they are required for Cisco DNA Center functionality. If the wizard fails to display either or both of these ports during the course of configuration, they may be non-functional or disabled. If you discover that they are non-functional, choose **Exit** to exit the wizard immediately. Be sure you have completed all of the steps provided in [Execute Preconfiguration Checks](#) before resuming configuration or contacting the Cisco Technical Assistance Center (TAC).

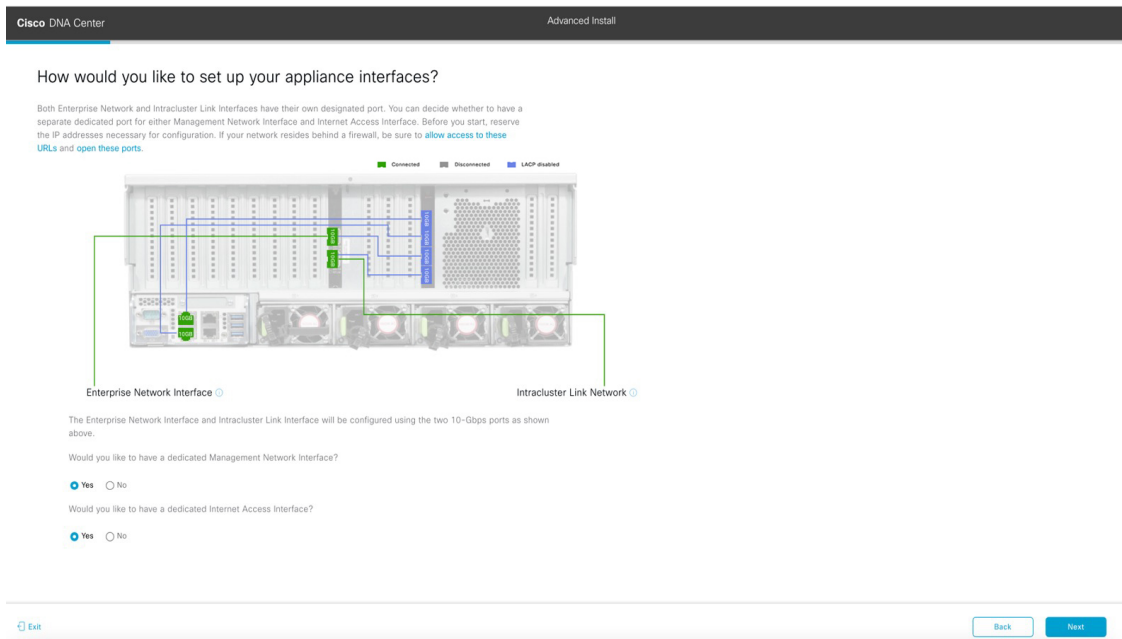
Step 2 Complete the Advanced Install wizard:

a) Click **Next**.

The **Will this appliance join a cluster?** screen opens.



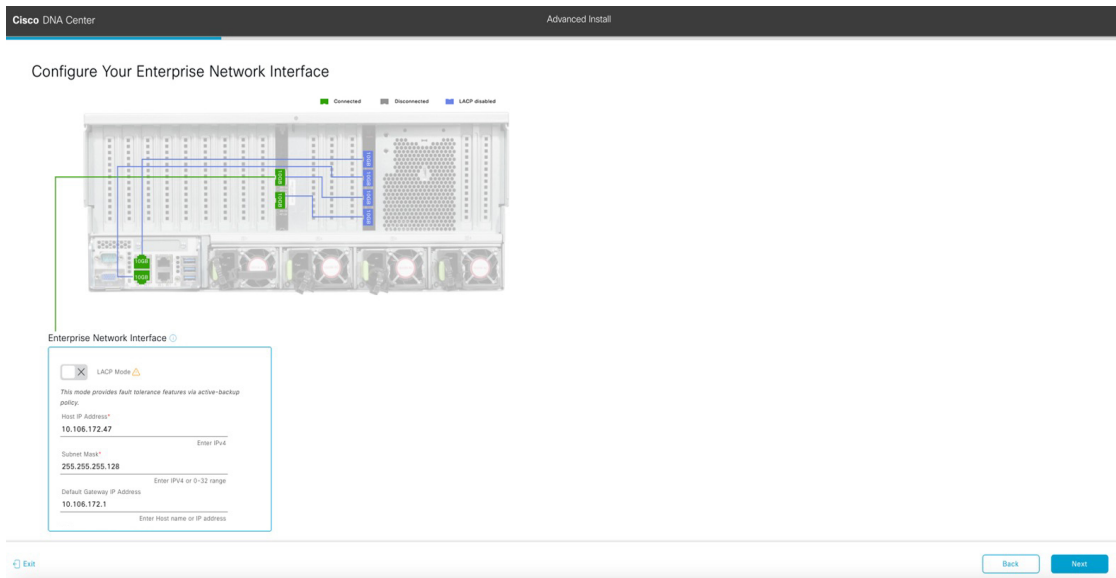
- b) Click the **No** radio button (as you are configuring your cluster's primary node), then click **Next**. The **How would you like to set up your appliance interfaces?** screen opens.



If your network resides behind a firewall, do the following:

- Click the **allow access to these URLs** link to view a popup window that lists the URLs that Cisco DNA Center must be able to access.
- Click the **open these ports** link to view a popup window that lists the network service ports that must be available for Cisco DNA Center to use.

- c) Indicate whether you want to configure dedicated Management and Internet Access interfaces, then click **Next**. The **Configure Your Enterprise Network Interface** screen opens.



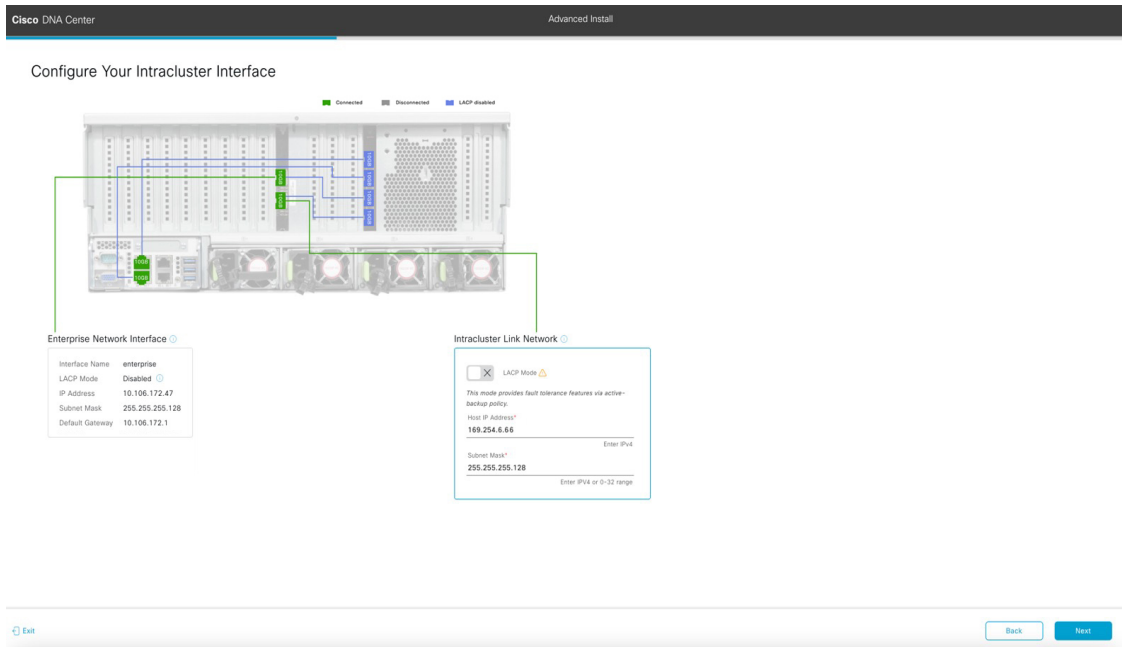
- d) Enter configuration values for the Enterprise interface, then click **Next**.
As explained in [Interface Cable Connections](#), this is a required interface used to link the appliance to the enterprise network. See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.

Table 3: Primary Node Entries for the Enterprise Interface

LACP Mode slider	<p>Choose one of the following network interface controller (NIC) bonding modes for the Enterprise interface:</p> <ul style="list-style-type: none"> • Active-Backup mode: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface takes its place and becomes active. • LACP mode: This mode aggregates two Ethernet interfaces that share the same speed and duplex settings into a single logical channel. This provides load balancing and higher bandwidth. <p>For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.</p>
Host IP Address field	Enter the IP address for the Enterprise port. This is required.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.

<p>Default Gateway IP Address field</p>	<p>Enter a default gateway IP address to use for the port.</p> <p>Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.</p> <p>Note You designated this interface to use the default gateway assigned to it by a DHCP server. Complete the following steps to specify a different gateway:</p> <ol style="list-style-type: none"> 1. Delete the IP address that is currently listed in this field and then click Exit. This will bring you back to the first wizard screen. 2. Return to the Enterprise port's wizard screen and enter the gateway IP address you want to use.
---	--

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Intracluster Interface** screen opens.



e) Enter configuration values for your Intracluster interface, then click **Next**.

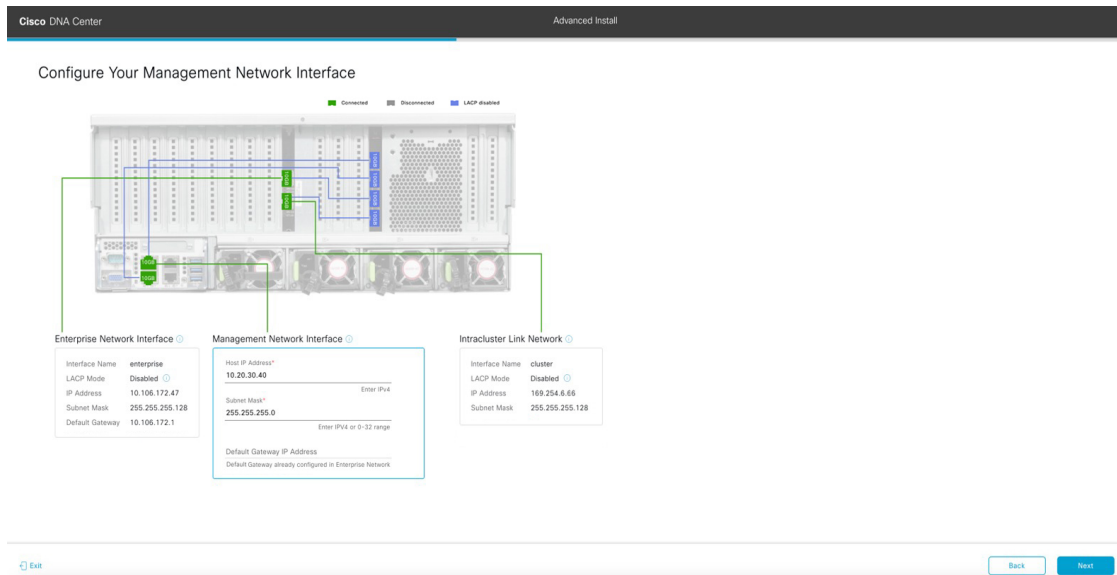
As explained in [Interface Cable Connections](#), this required port is used to link the appliance to your cluster. See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.

- Note**
- If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then proceed to Step 2f (which describes how to configure your Management interface).
 - If you opted to configure the Enterprise and Management interfaces on the same port, complete this step and then skip ahead to Step 2g (which describes how to configure your Internet Access interface).
 - If you opted to configure the Enterprise, Management, and Internet Access interfaces on the same port, complete this step and then skip ahead to Step 2h.

Table 4: Primary Node Entries for the Intracluster Interface

LACP Mode slider	<p>Choose one of the following NIC bonding modes for the Intracluster interface:</p> <ul style="list-style-type: none"> • Active-Backup mode: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface takes its place and becomes active. • LACP mode: This mode aggregates two Ethernet interfaces that share the same speed and duplex settings into a single logical channel. This provides load balancing and higher bandwidth. <p>For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.</p>
Host IP Address field	Enter the IP address for the Cluster port. This is required. Note that you cannot change the address of the Cluster port later.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Management Network Interface** screen opens.



- f) (Optional) Enter configuration values for the Management port, then click **Next**.

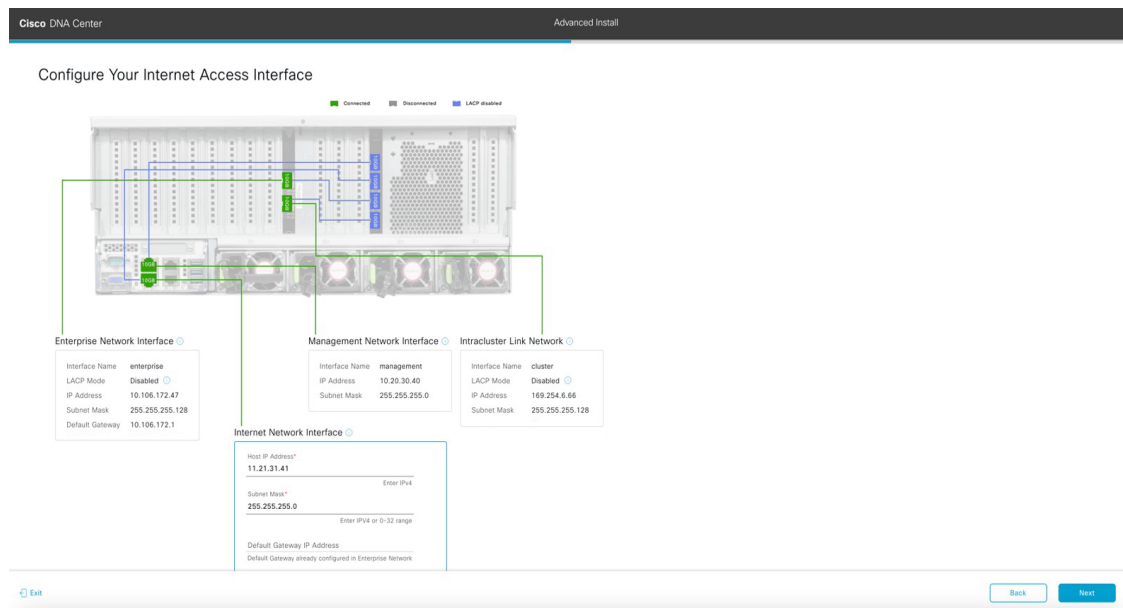
As explained in [Interface Cable Connections](#), this port is used to access the Cisco DNA Center GUI from your management network. If you chose to configure a dedicated Management interface, enter the information described in the following table. (See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.)

Note If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then skip ahead to Step 2h.

Table 5: Primary Node Entries for the Management Port

Host IP Address field	Enter the IP address for the Management port.
Subnet Mask field	Enter the netmask for the port's IP address.
Default Gateway IP Address field	Enter a default gateway IP address to use for the port. Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Internet Access Interface** screen opens.



- g) (Optional) Enter configuration values for the Internet Access interface, then click **Next**.

As explained in [Interface Cable Connections](#), this is an optional port used to link the appliance to the Internet when you cannot do so through the Enterprise port. If you chose to configure a dedicated Internet Access interface, enter the information described in the following table. (See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.)

Table 6: Primary Node Entries for the Internet Access Port

Host IP Address field	Enter the IP address for the Internet Access port.
Subnet Mask field	Enter the netmask for the port's IP address. This is required if you entered an IP address in the previous field.
Default Gateway IP Address field	Enter a default gateway IP address to use for the port. Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Interface to Port Configuration** screen opens.

- h) Review the settings that you have entered for the primary node's interfaces.
If you need to make any changes, click the **Edit** link for the relevant interface.
- i) When you are happy with the interface settings, click **Configure**.
- j) After initial interface configuration has completed, click **Next** to proceed to the next wizard screen.
The **DNS Configuration** screen opens.

- k) Enter the IP address of the preferred DNS server, then click **Next**. To enter additional DNS servers, click the **Add (+)** icon.

Important

- For each node in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for an appliance.
- For NTP, ensure port 123 (UDP) is open between Cisco DNA Center and your NTP server.

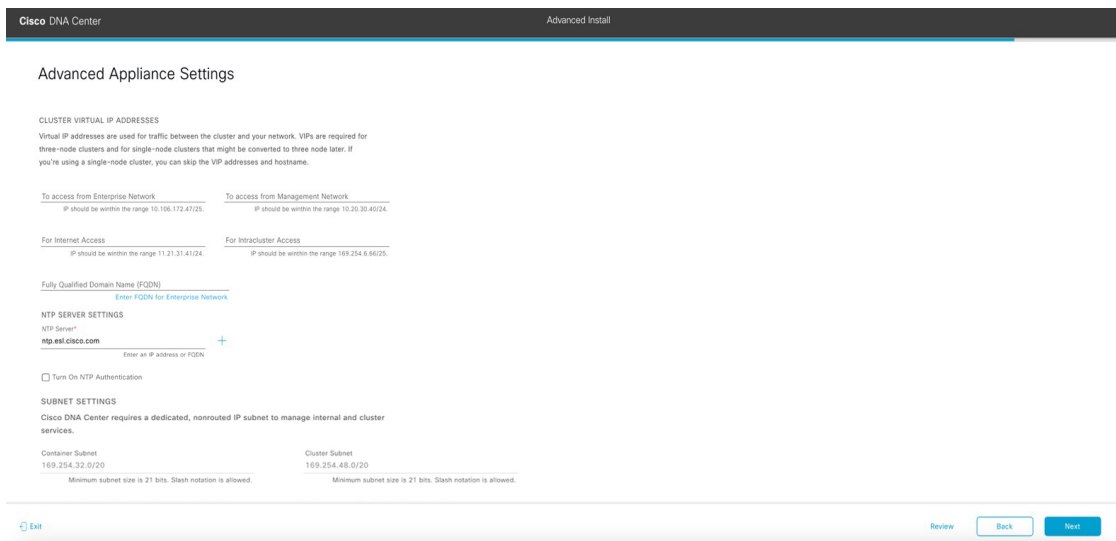
The **Configure Proxy Server Information** screen opens.

- l) Do one of the following and then click **Next**:
- If your network does *not* use a proxy server to access the internet, click the **No** radio button.
 - If your network does use a proxy server to access the internet, enter the values described in the following table:

Table 7: Primary Node Entries for Proxy Server Settings

Proxy Server field	Enter the URL or host name of an HTTPS network proxy used to access the Internet. Note Connection from Cisco DNA Center to the HTTPS proxy is supported only via HTTP in this release.
Port field	Enter the port your appliance used to access the network proxy.
Username field	Enter the user name used to access the network proxy. If no proxy login is required, leave this field blank.
Password field	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Advanced Appliance Settings** screen opens.



m) Enter configuration values for your cluster, then click **Next**.

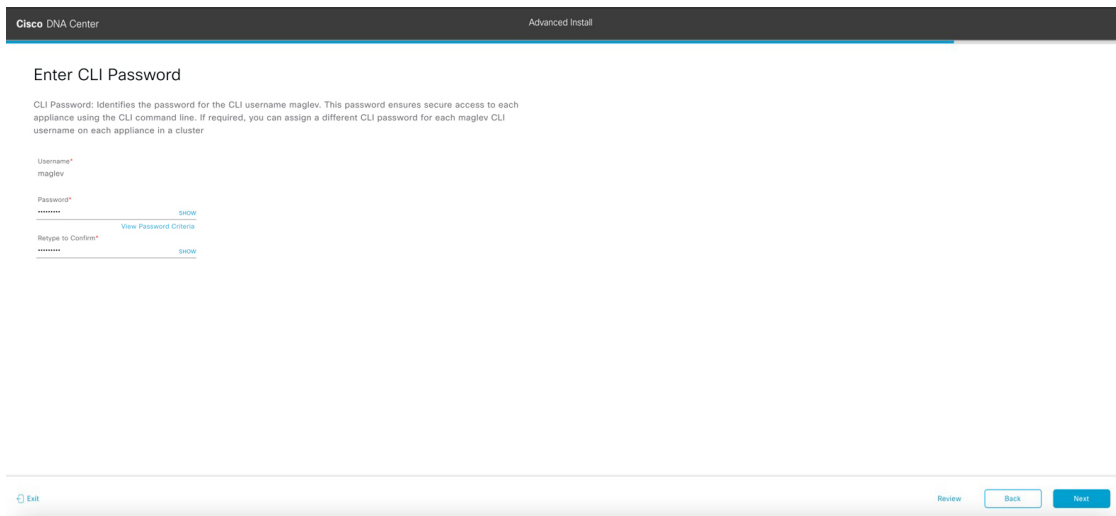
Table 8: Primary Node Entries for Advanced Appliance Settings

Cluster Virtual IP Addresses

<p>To access from Enterprise Network, To access from Management Network, For Internet Access, and For Intracluster Access fields</p> <p>Note If you configured the Management or Internet Access interface on the same port as the Enterprise interface, its corresponding field is not displayed in this section.</p>	<p>Enter the virtual IP address that will be used for traffic between the cluster and the interfaces that you have configured on your primary node. This is required for both three-node clusters and single-node clusters that will be converted into a three-node cluster in the future. If you have a single-node cluster setup and don't plan to move to a three-node cluster setup, you can leave the fields in this section blank.</p> <p>Important If you choose to configure a virtual IP address, you must enter one for each configured network interface. You will not be able to complete the wizard unless you do so. These addresses are tied to the cluster link's status, which must be in the UP state.</p>
<p>Fully Qualified Domain Name (FQDN) field</p>	<p>Enter the fully qualified domain name (FQDN) for your cluster. Cisco DNA Center does the following with this hostname:</p> <ul style="list-style-type: none"> • It uses this hostname to access your cluster's web interface and the Representational State Transfer (REST) APIs used by devices in the enterprise network that Cisco DNA Center manages. • In the Subject Alternative Name (SAN) field of Cisco DNA Center certificates, it uses the FQDN to the define the Plug and Play server that should be used for device provisioning.
<p>NTP Server Settings</p>	
<p>NTP Server field</p>	<p>Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the Add (+) icon.</p> <p>For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.</p>
<p>Turn On NTP Authentication check box</p>	<p>To enable the authentication of your NTP server before it's synchronized with Cisco DNA Center, check this check box and then enter the following information:</p> <ul style="list-style-type: none"> • The NTP server's key ID. Valid values range between 1 and 4294967295 (2³²-1). This value corresponds to the key ID that's defined in the NTP server's key file. • The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. <p>Note Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.</p>
<p>Subnet Settings</p>	
<p>Container Subnet field</p>	<p>A dedicated, non-routed IP subnet that Cisco DNA Center uses to manage internal services. By default, this is already set to 169.254.32.0/20, and we recommend that you use this subnet.</p>

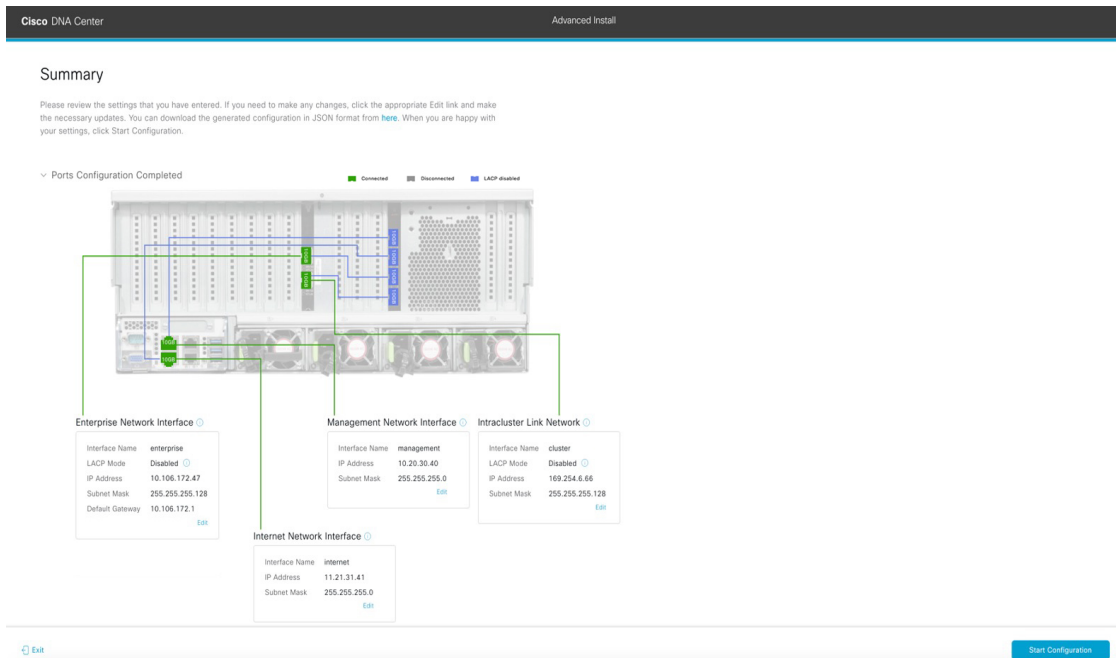
Cluster Subnet field	A dedicated, non-routed IP subnet that Cisco DNA Center uses to manage internal cluster services. By default, this is already set to 169.254.48.0/20 , and we recommend that you use this subnet.
----------------------	--

The **Enter CLI Password** screen opens.



n) Enter and confirm the password for the `maglev` user, then click **Next**.

The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Summary** screen opens.



Note To download the appliance configuration as a JSON file, click the **here** link.

- o) Review all of the settings that you have entered while completing the wizard. If necessary, click the appropriate **Edit** link to open the wizard screen in which you want to make updates.
- p) To complete the configuration of your Cisco DNA Center appliance, click **Start Configuration**.

The wizard screen continuously updates during the process, indicating the tasks that are currently being completed and their progress, as well as any errors that have occurred. To save a local copy of this information as a text file, click the download icon.

The screenshot shows the 'Configuration' page of the Cisco DNA Center wizard. The main heading is 'Appliance Configuration In Progress'. Below this, there is a progress bar indicating '30%' completion for 'Initializing the cluster using kubeadm'. A video player is embedded, showing 'ABOUT STARTING CISCO DNA CENTER' with a play button and a 0:00 duration. To the right, a terminal log shows the start time '04/09/2020 12:15:36' and a list of certificates being generated, including 'credentialmanager.pem', 'kong.pem', 'kube-admin.pem', 'kube-worker-1.pem', 'maglev-registry.pem', 'apiserver.crt', 'apiserver-kubelet-client.crt', 'front-proxy-ca.crt', 'front-proxy-client.crt', 'kubelnet.conf', 'admin.conf', 'scheduler.conf', and 'controller-manager.conf'.

What to do next

When this task is complete:

- If you are deploying this appliance in standalone mode only, continue by performing first-time setup: [First-Time Setup Workflow](#).
- If you are deploying this appliance as the primary node in a cluster, configure the second and third installed appliances in the cluster: [Configure a Secondary Node Using the Advanced Install Configuration Wizard, on page 33](#).

Configure a Secondary Node Using the Advanced Install Configuration Wizard

Perform the following steps to configure the second and third appliances in the cluster using the Advanced Install configuration wizard.

**Important**

- In order to build a three-node cluster, the same version of the **System** package must be installed on your three Cisco DNA Center appliances. Otherwise, unexpected behavior and possible downtime can occur.
- The following second generation Cisco DNA Center appliances support configuration using this wizard:
 - 112-core appliance: Cisco part number DN2-HW-APL-XL
 - 112-core promotional appliance: Cisco part number DN2-HW-APL-XL-U
- You can only use this wizard to complete the initial configuration of a new Cisco DNA Center appliance. To reimage an appliance that's been configured previously, you will need to use the Maglev Configuration wizard (see [Configure the Appliance Using the Maglev Wizard](#)).
- Before you configure the appliances in a three-node cluster, ensure that you have logged out of those appliances. Otherwise, the Quick Start workflow (which you complete to discover your network's devices and enable telemetry) will not start after you have configured your cluster's appliances and log in to Cisco DNA Center for the first time.
- Ensure that all of the IP addresses you enter while completing this procedure are valid IPv4 addresses with valid IPv4 netmasks. Also make sure that the addresses and their corresponding subnets do not overlap. Service communication issues can result if they do.

When joining each new secondary node to the cluster, you must specify the first host in the cluster as the primary node. Note the following when joining secondary nodes to a cluster:

- Before adding a new node to the cluster, be sure that all installed packages are deployed on the primary node. You can check this by using Secure Shell to log in to the primary node's Cisco DNA Center Management port as the Linux User (maglev) and then running the command `maglev package status`. All installed packages should appear in the command output as `DEPLOYED`. In the following example, a few packages were not installed, such as the `application-policy` and `sd-access` packages. They are the only packages whose status is `NOT_DEPLOYED`. Your package status should look similar to this before configuring a secondary node.

```
maglev-1 [main - https://172.29.131.224:443]
```

NAME	DISPLAY_NAME	DEPLOYED	AVAILABLE	STATUS	PROGRESS
access-control-application	Access Control Application	2.1.388.60364	-	DEPLOYED	
ai-network-analytics	AI Network Analytics	2.7.8.528	-	DEPLOYED	
app-hosting	Application Hosting	1.7.0.2108120753	-	DEPLOYED	
application-policy	Application Policy	2.1.388.170155	-	DEPLOYED	
application-registry	Application Registry	2.1.388.170155	-	DEPLOYED	
application-visibility-service	Application Visibility Service	2.1.388.170155	-	DEPLOYED	
assurance	Assurance - Base	2.2.3.337	-	DEPLOYED	
automation-core	NCP - Services	2.1.388.60364	-	DEPLOYED	
base-provision-core	Automation - Base	2.1.388.60364	-	DEPLOYED	
cloud-connectivity-contextual-content	Cloud Connectivity - Contextual Content	1.3.1.364	-	DEPLOYED	DEPLOYED
cloud-connectivity-data-hub	Cloud Connectivity - Data Hub	1.6.0.380	-	DEPLOYED	
cloud-connectivity-tethering	Cloud Connectivity - Tethering	2.1.1.43	-	DEPLOYED	
cloud-provision-core	Cloud Device Provisioning Application	2.1.388.60364	-	DEPLOYED	
command-runner	Command Runner	2.1.388.60364	-	DEPLOYED	
device-onboarding	Device Onboarding	2.1.388.60364	-	DEPLOYED	
disaster-recovery	Disaster Recovery	2.1.388.3600024	-	DEPLOYED	
dna-core-apps	Network Experience Platform - Core	2.1.388.60364	-	DEPLOYED	
dnac-platform	Cisco DNA Center Platform	1.6.1.126	-	DEPLOYED	
dnac-search	Cisco DNA Center Global Search	1.6.99.10	-	DEPLOYED	
endpoint-analytics	AI Endpoint Analytics	1.5.0.226	-	DEPLOYED	
group-based-policy-analytics	Group-Based Policy Analytics	2.2.3.55	-	DEPLOYED	
icap-automation	Automation - Intelligent Capture	2.1.388.60364	-	DEPLOYED	
image-management	Image Management	2.1.388.60364	-	DEPLOYED	
machine-reasoning	Machine Reasoning	2.1.388.210008	-	DEPLOYED	
ncp-system	NCP - Base	2.1.388.60364	-	DEPLOYED	
ndp-base-analytics	Network Data Platform - Base Analytics	1.6.1.686	-	DEPLOYED	
ndp-platform	Network Data Platform - Core	1.6.1.705	-	DEPLOYED	
ndp-ui	Network Data Platform - Manager	1.6.1.662	-	DEPLOYED	
network-visibility	Network Controller Platform	2.1.388.60364	-	DEPLOYED	
path-trace	Path Trace	2.1.388.60364	-	DEPLOYED	
platform-ui	Cisco DNA Center UI	1.6.3.155	-	DEPLOYED	
rbac-extensions	RBAC Extensions	2.1.388.190003	-	DEPLOYED	
rogue-management	Rogue and aWiPS	2.3.0.24	-	DEPLOYED	
sd-access	SD Access	2.1.388.60364	-	DEPLOYED	
sensor-assurance	Assurance - Sensor	2.2.3.317	-	DEPLOYED	
sensor-automation	Automation - Sensor	2.1.388.60364	-	DEPLOYED	
ssa	Stealthwatch Security Analytics	2.1.388.1090064	-	DEPLOYED	
system	System	1.6.551	-	DEPLOYED	
system-commons	System Commons	2.1.388.60364	-	DEPLOYED	
umbrella	Cisco Umbrella	2.1.388.590077	-	DEPLOYED	
wide-area-bonjour	Wide Area Bonjour	2.4.364.75035	-	DEPLOYED	

- Be sure to join only a single node to the cluster at a time. Do not attempt to add multiple nodes at the same time, as doing so will result in unpredictable behavior.
- Expect some service downtime during the cluster attachment process for each secondary node. Services will need to be redistributed across the nodes and the cluster will be down for periods of time during that process.

Before you begin

Ensure that you:

- Installed the Cisco DNA Center software image onto your appliance, as described in [Reimage the Appliance](#).



Important

This is only applicable if you are going to configure a promotional appliance, because the Cisco DNA Center software image is not preinstalled on the 112-core promotional appliance (Cisco part number DN2-HW-APL-XL-U).

- Configured the first appliance in the cluster, following the steps in [Configure the Primary Node Using the Advanced Install Configuration Wizard, on page 16](#).
- Collected all of the information called for in [Required IP Addresses and Subnets](#) and [Required Configuration Information](#).
- Installed the second and third appliances as described in [Appliance Installation Workflow](#).
- Have done the following:

1. Ran the **maglev package status** command on the first appliance.
You can also access this information from the Cisco DNA Center home page by clicking the **Help** icon (🔍) and choosing **About > Show Packages**.
 2. Contacted the Cisco TAC, gave them the output of this command, and asked them to point you to the ISO that you should install on your second and third appliances.
- Configured Cisco IMC browser access on both secondary nodes as described in [Enable Browser Access to Cisco IMC](#).
 - Checked that both secondary nodes' ports and the switches they use are properly configured, as described in [Execute Preconfiguration Checks](#).
 - Are using a compatible browser. For a list of compatible browsers, see the [Release Notes](#) for the version of Cisco DNA Center you are installing.
 - Enabled ICMP on the firewall between Cisco DNA Center and both the default gateway and the DNS server you specify in the following procedure. The wizard uses ping to verify the gateway and DNS server you specify. This ping might get blocked if a firewall is in place and ICMP is not enabled on that firewall. When this happens, you will not be able to complete the wizard.

Step 1

Start the Advanced Install configuration wizard:

- a) Point your browser to the Cisco IMC IP address you set during the Cisco IMC GUI configuration you performed, then log in to the Cisco IMC GUI as the Cisco IMC user (see [Enable Browser Access to Cisco Integrated Management Controller](#)).

After successful login, the appliance displays the **Cisco Integrated Management Controller Chassis Summary** window, with a blue link menu at the upper right, as shown below.



- b) From the blue link menu, choose **Launch KVM** and then select either **Java based KVM** or **HTML based KVM**. If you select the Java-based KVM, you will need to launch the Java startup file from your browser or file manager in order to view the KVM console in its own window. If you select the HTML-based KVM, it will launch the KVM console in a separate browser window or tab automatically.

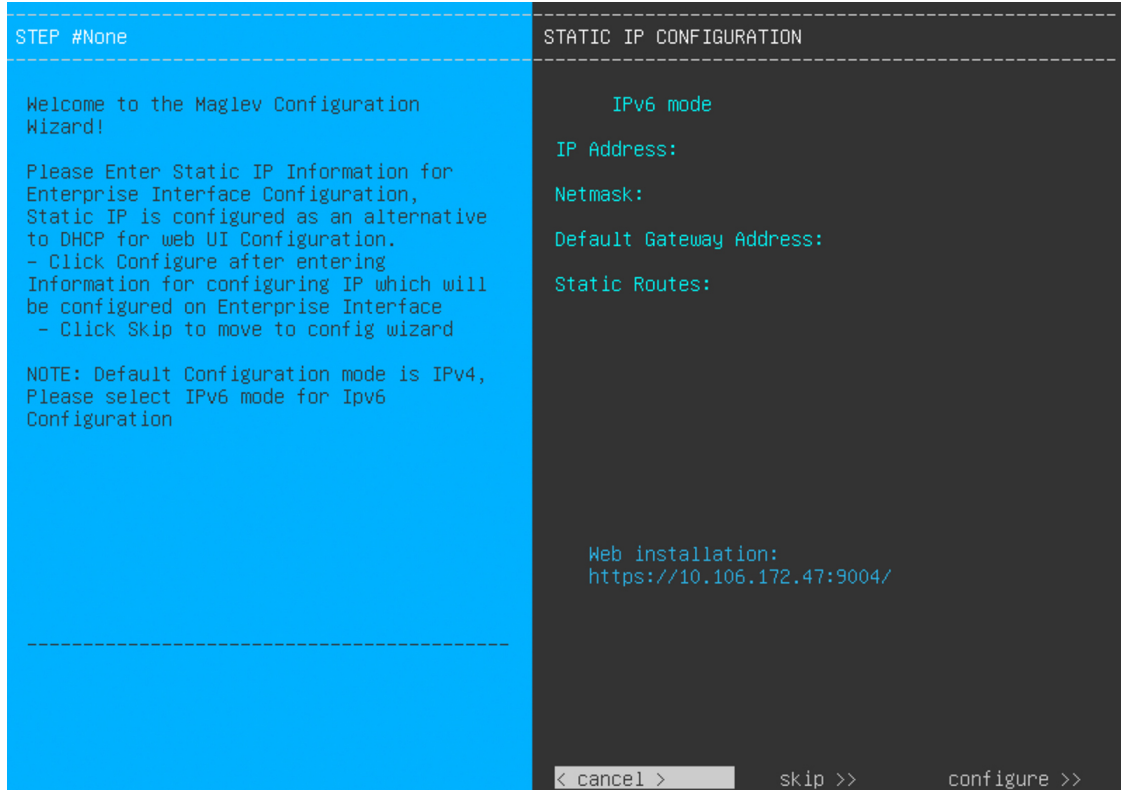
Irrespective of the KVM type you choose, use the KVM console to monitor the progress of the configuration and respond to Maglev Configuration Wizard prompts.

- c) With the KVM displayed, reboot the appliance by making one of the following selections:
 - In the main Cisco IMC GUI browser window: Choose **Host Power > Power Cycle**. Then switch to the KVM console to continue.

- In the KVM console: Choose **Power > Power Cycle System (cold boot)**.

If asked to confirm your choice to reboot the appliance, click **OK**.

After displaying reboot messages, the KVM console displays the **Static IP Configuration** screen.



Note the URL listed in the **Web Installation** field.

- d) Do one of the following:
- If you want a DHCP server to assign an IP address, subnet mask, and default gateway to your appliance's Enterprise interface, click **Skip**.
 - If you want to assign your own IP address, subnet mask, and default gateway to your appliance's Enterprise interface, enter the information described in the following table and then click **Configure**.

IPv6 Mode check box	If you want to configure an IPv6 address, check this check box.
IP Address field	Enter the static IP address you want to use.
Netmask field	Enter the netmask for the IP address you specified in the previous field: <ul style="list-style-type: none"> • If you entered an IPv4 address, you can enter either a netmask or CIDR address. • If you entered an IPv6 address, you can only enter a CIDR address.
Default Gateway Address field	Specify the default gateway that will be used to route traffic.

Static Routes field	Enter one or more static routes in the following format, separated by spaces: <code><network>/<netmask>/<gateway></code> . This is usually required on the Management port only.
---------------------	--

The KVM console displays the Maglev Configuration wizard welcome screen.

```
Welcome to the Maglev Configuration Wizard!

The wizard will walk you through the steps to configure this host. Select one of the options below to specify how you
would like to configure this host:

Start a Cisco DNA Center Cluster
Join a Cisco DNA Center Cluster

< exit >
```

- e) To bring up the **Appliance Configuration** screen, open the URL that was displayed in the **Static IP Configuration** screen.

Cisco DNA Center Appliance Configuration

Welcome to Cisco DNA Center


Are you starting a new Cisco DNA Center Cluster or joining an existing one?

Start A Cisco DNA Center Cluster

This appliance will be the primary node of a cluster.

Join A Cisco DNA Center Cluster

This appliance will be added as a node to the primary node of a cluster.



Next

- f) Click the **Join a Cisco DNA Center Cluster** radio button, then click **Next**.

Welcome to Cisco DNA Center

Before you can use Cisco DNA Center, first complete the appropriate appliance configuration workflow.
Which workflow matches your needs?

Advanced Install

Configure a standalone node or **any node in a cluster**.

Use this wizard to access all of the available appliance configuration options.



Back

Start

- g) Click the **Advanced Install** radio button, then click **Start**.

The **Advanced Install Overview** slider opens. Click > to view a summary of the tasks that the wizard will help you complete.

Advanced Install Overview

Prepare your appliance for use with Cisco DNA Center by configuring its interfaces and entering cluster and other required information.



Start Workflow



- h) Click **Start Workflow** to start the wizard.

The **Appliance Interface Overview** screen opens, providing a description of the four appliance interfaces that you can configure.

Cisco DNA Center Advanced Install

Appliance Interface Overview

In order for Cisco DNA Center to operate properly, you need to configure four interfaces on your appliance:

1. **Enterprise Network Interface:** Connects your appliance to the Enterprise network.
2. **Intracenter Link Interface:** Connects your appliance to your cluster.
3. **Management Network Interface:** (Optional) Accesses the Cisco DNA Center GUI from your Management network.
4. **Internet Access Interface:** (Optional) Accesses the Internet.

In this workflow, the Enterprise Network Interface and the Intracenter Link Interface will each have their own dedicated port. You can choose to have either Management Network Interface and/or Internet Access Interface be on the same port as the Enterprise Network Interface or assign them to a separate designated port.

[Exit](#) **Next**

Important At a minimum, you must configure the interfaces on your appliance's Enterprise and Cluster ports, as they are required for Cisco DNA Center functionality. If the wizard fails to display either or both of these ports during the course of configuration, they may be non-functional or disabled. If you discover that they are non-functional, choose **Exit** to exit the wizard immediately. Be sure you have completed all of the steps provided in [Execute Preconfiguration Checks](#) before resuming configuration or contacting the Cisco Technical Assistance Center (TAC).

Step 2 Complete the Advanced Install configuration wizard:

a) Click **Next**.

The **Will this appliance join a cluster?** screen opens.

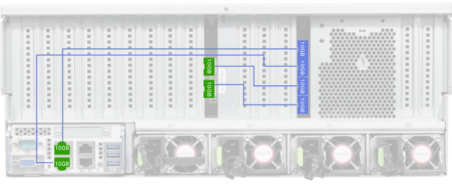
Configure a Secondary Node Using the Advanced Install Configuration Wizard

Cisco DNA Center Advanced Install

Will this appliance join a cluster?

This appliance is running on [software version] *N/A*.

Connected
 Disconnected
 LACP disabled



Yes, This appliance will be added as a node to the primary node of a cluster.
 No, This appliance will be the primary node of a cluster.

[Exit](#) [Back](#) [Next](#)

b) Click the **Yes** radio button, then click **Next**.

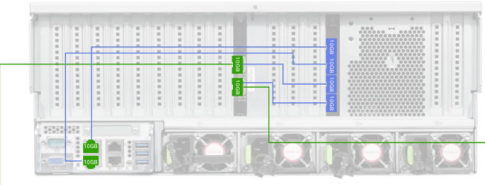
The **How would you like to set up your appliance interfaces?** screen opens.

Cisco DNA Center Advanced Install

How would you like to set up your appliance interfaces?

Both Enterprise Network and Intracluster Link Interfaces have their own designated port. You can decide whether to have a separate dedicated port for either Management Network Interface and Internet Access Interface. Before you start, reserve the IP addresses necessary for configuration. If your network resides behind a firewall, be sure to [allow access to these URLs and open these ports](#).

Connected
 Disconnected
 LACP disabled



Enterprise Network Interface Intracluster Link Network

The Enterprise Network Interface and Intracluster Link Interface will be configured using the two 10-Gbps ports as shown above.

Would you like to have a dedicated Management Network Interface?

Yes
 No

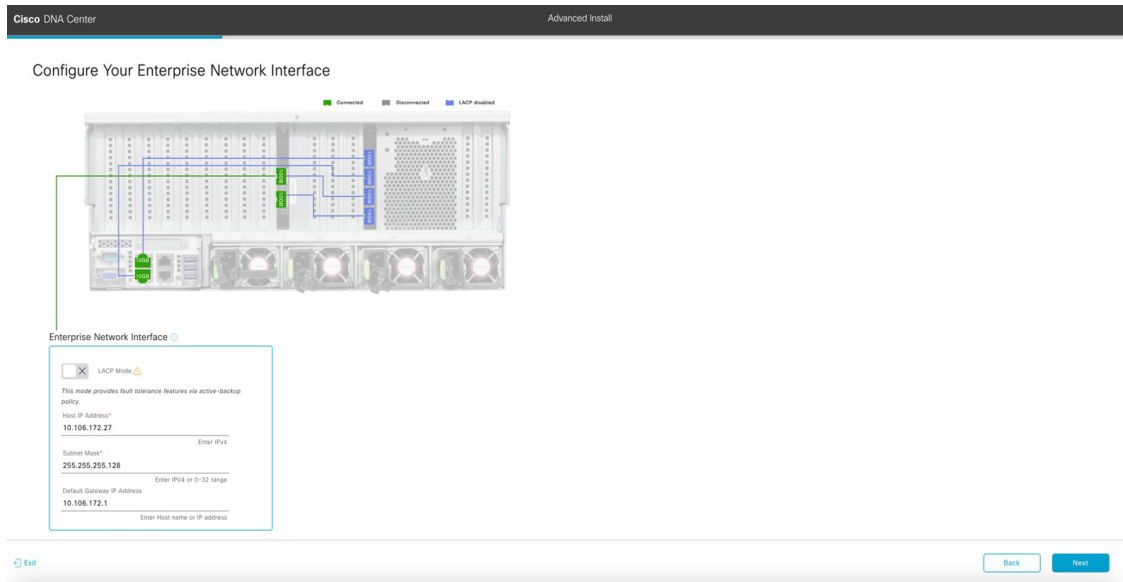
Would you like to have a dedicated Internet Access Interface?

Yes
 No

[Exit](#) [Back](#) [Next](#)

c) Indicate whether you want to configure dedicated Management and Internet Access interfaces, then click **Next**.

The **Configure Your Enterprise Network Interface** screen opens.



d) Enter configuration values for the Enterprise interface, then click **Next**.

As explained in [Interface Cable Connections](#), this is a required interface used to link the appliance to the enterprise network. See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.

Table 9: Secondary Node Entries for the Enterprise Interface

LACP Mode slider	<p>Choose one of the following network interface controller (NIC) bonding modes for the Enterprise interface:</p> <ul style="list-style-type: none"> • Active-Backup mode: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface takes its place and becomes active. • LACP mode: This mode aggregates two Ethernet interfaces that share the same speed and duplex settings into a single logical channel. This provides load balancing and higher bandwidth. <p>For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.</p>
Host IP Address field	Enter the IP address for the Enterprise port. This is required.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.

Default Gateway IP Address field	<p>Enter a default gateway IP address to use for the port.</p> <p>Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.</p> <p>Note You designated this interface to use the default gateway assigned to it by a DHCP server. Complete the following steps to specify a different gateway:</p> <ol style="list-style-type: none"> 1. Delete the IP address that is currently listed in this field and then click Exit. This will bring you back to the first wizard screen. 2. Return to the Enterprise port's wizard screen and enter the gateway IP address you want to use.
----------------------------------	---

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Intracluster Interface** screen opens.

- e) Enter configuration values for your Intracluster interface, then click **Next**.

As explained in [Interface Cable Connections](#), this required port is used to link the appliance to your cluster. See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.

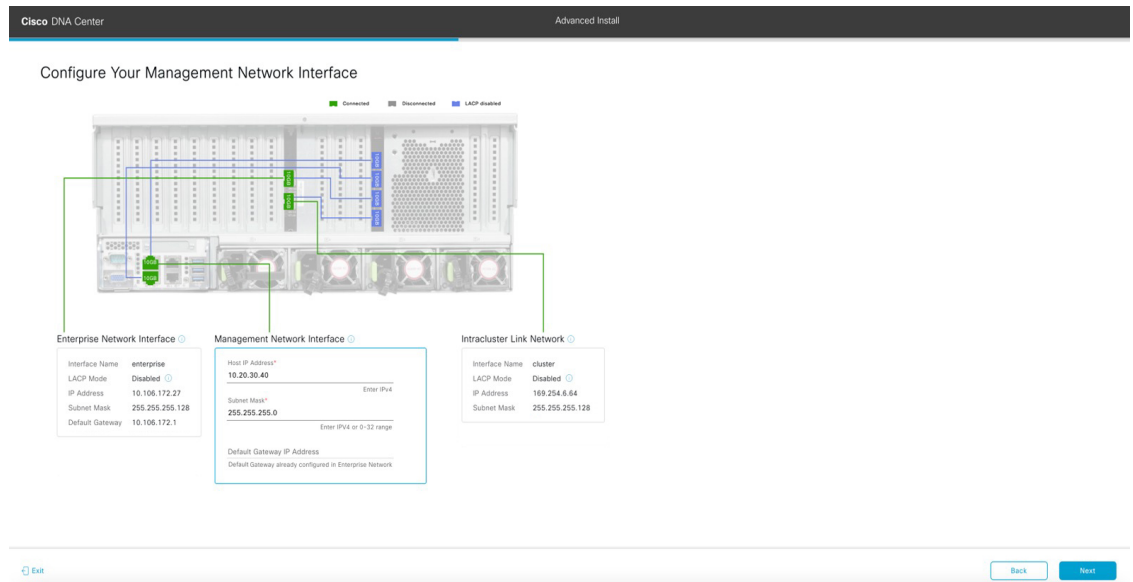
Note

- If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then proceed to Step 2f (which describes how to configure your Management interface).
- If you opted to configure the Enterprise and Management interfaces on the same port, complete this step and then skip ahead to Step 2g (which describes how to configure your Internet Access interface).
- If you opted to configure the Enterprise, Management, and Internet Access interfaces on the same port, complete this step and then skip ahead to Step 2h.

Table 10: Secondary Node Entries for the Intracluster Interface

LACP Mode slider	<p>Choose one of the following NIC bonding modes for the Intracluster interface:</p> <ul style="list-style-type: none"> • Active-Backup mode: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface takes its place and becomes active. • LACP mode: This mode aggregates two Ethernet interfaces that share the same speed and duplex settings into a single logical channel. This provides load balancing and higher bandwidth. <p>For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.</p>
Host IP Address field	Enter the IP address for the Cluster port. This is required. Note that you cannot change the address of the Cluster port later.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Management Network Interface** screen opens.



- f) (Optional) Enter configuration values for the Management port, then click **Next**.

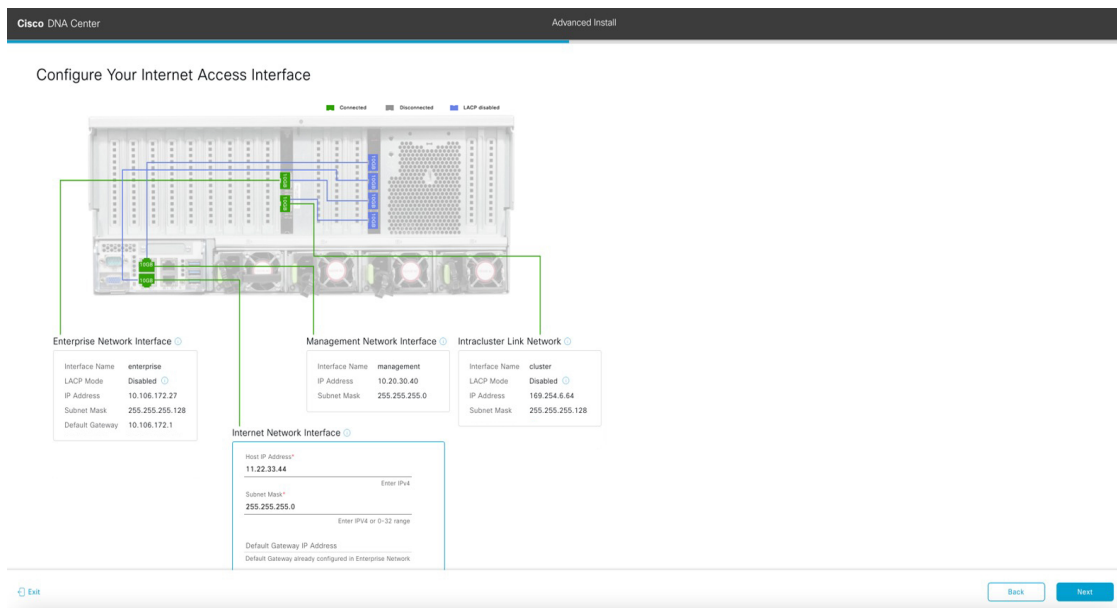
As explained in [Interface Cable Connections](#), this port is used to access the Cisco DNA Center GUI from your management network. If you chose to configure a dedicated Management interface, enter the information described in the following table. (See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.)

Note If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then skip ahead to Step 2h.

Table 11: Secondary Node Entries for the Management Port

Host IP Address field	Enter the IP address for the Management port.
Subnet Mask field	Enter the netmask for the port's IP address.
Default Gateway IP Address field	Enter a default gateway IP address to use for the port. Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Configure Your Internet Access Interface** screen opens.



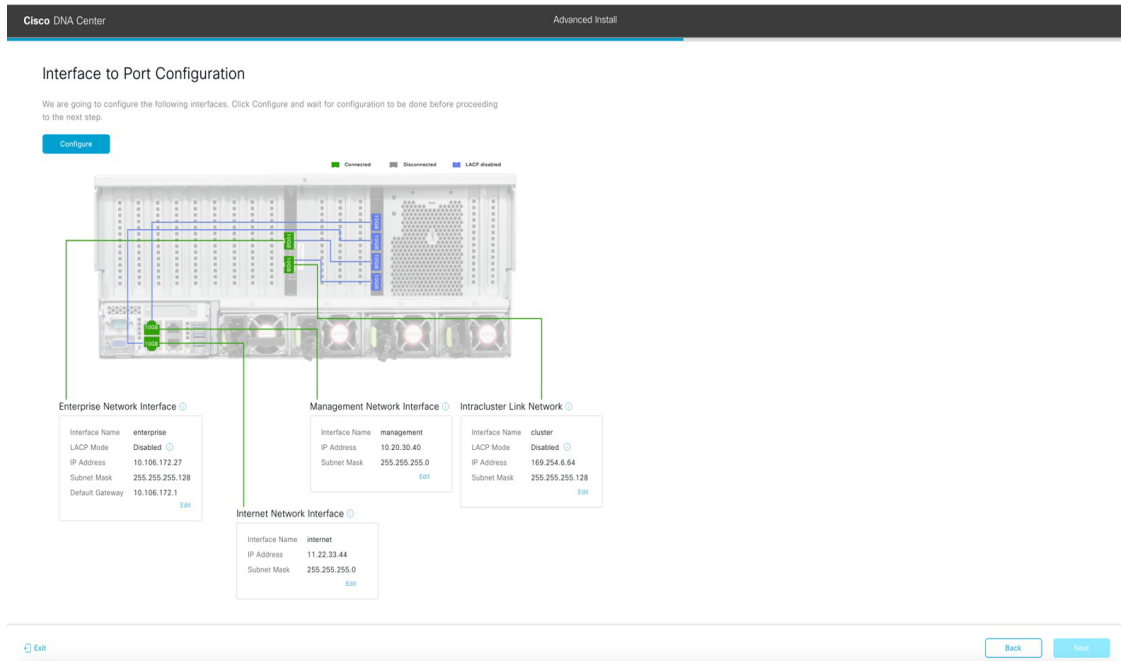
- g) (Optional) Enter configuration values for the Internet Access interface, then click **Next**.

As explained in [Interface Cable Connections](#), this is an optional port used to link the appliance to the Internet when you cannot do so through the Enterprise port. If you chose to configure a dedicated Internet Access interface, enter the information described in the following table. (See [Required IP Addresses and Subnets](#) and [Required Configuration Information](#) for a more detailed description of the values you need to enter.)

Table 12: Secondary Node Entries for the Internet Access Port

Host IP Address field	Enter the IP address for the Internet Access port.
Subnet Mask field	Enter the netmask for the port's IP address. This is required if you entered an IP address in the previous field.
Default Gateway IP Address field	Enter a default gateway IP address to use for the port. Important Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid and the port is up, the wizard's **Interface to Port Configuration** screen opens.



- h) Review the settings that you have entered for the secondary node's interfaces.

If you need to make any changes, click the **Edit** link for the relevant interface to return to its wizard screen.

- i) When you are happy with the interface settings, click **Configure**.
j) After initial interface configuration has completed, click **Next** to proceed to the next wizard screen.

The **DNS Configuration** screen opens.

Cisco DNA Center Advanced Install

DNS Configuration

Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the Add (+) configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS appliances.

DNS* +
Enter an IPv4 address

[Exit](#) [Review](#) [Back](#) [Next](#)

- k) Enter the IP address of the preferred DNS server, then click **Next**. To enter additional DNS servers, click the **Add (+)** icon.

Important

- For each node in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for an appliance.
- For NTP, ensure port 123 (UDP) is open between Cisco DNA Center and your NTP server.

The **Configure Proxy Server Information** screen opens.

Cisco DNA Center Advanced Install

Configure Proxy Server Information

Does your network use a proxy server to access the internet?

Yes No

Proxy Server*
<http://proxy.cisco.com>
E.g. <http://example.com>

Port*
80
Enter port number between 0 to 65535.

Username

Password

[Exit](#) [Review](#) [Back](#) [Next](#)

- l) Do one of the following and then click **Next**:
- If your network does *not* use a proxy server to access the internet, click the **No** radio button.
 - If your network does use a proxy server to access the internet, enter the values described in the following table:

Table 13: Secondary Node Entries for Proxy Server Settings

Proxy Server field	Enter the URL or host name of an HTTPS network proxy used to access the Internet. Note Connection from Cisco DNA Center to the HTTPS proxy is supported only via HTTP in this release.
Port field	Enter the port your appliance used to access the network proxy.
Username field	Enter the user name used to access the network proxy. If no proxy login is required, leave this field blank.
Password field	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Primary Node Details** screen opens.

Cisco DNA Center Advanced Install

Primary Node Details

This appliance is getting added as a node for the multi-node setup with software version *N/A*. This information will be used when you need to log into the Maglev CLI.

Primary Node IP*
IP should be within Intra-Cluster's 169.254.5.66/25

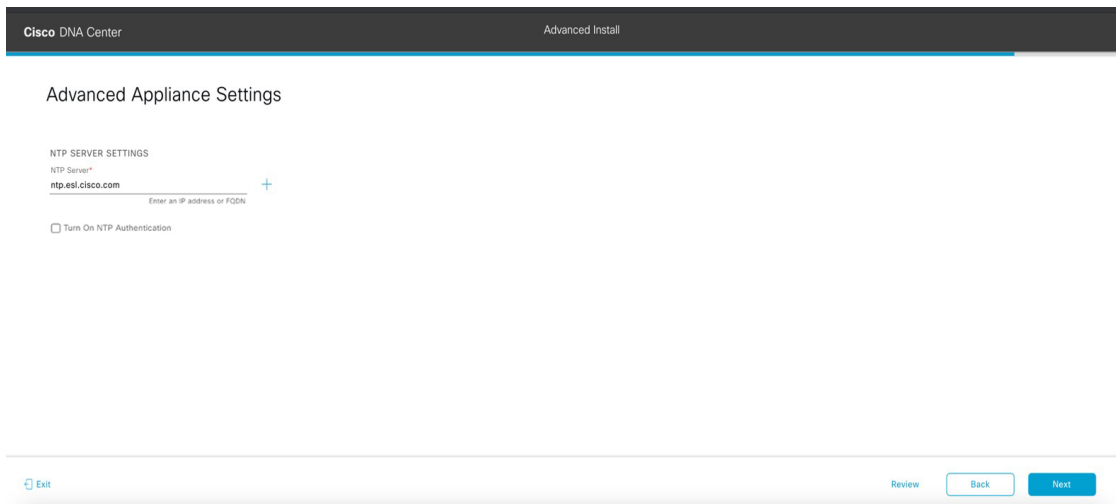
CLI Username
 maglev

CLI Password*
 Enter CLI Password

Exit Review Back Next

- m) To establish a connection with your cluster's primary node, enter its IP address and password (by default, the username is already set to **maglev**) and then click **Next**.

The **Advanced Appliance Settings** screen opens.

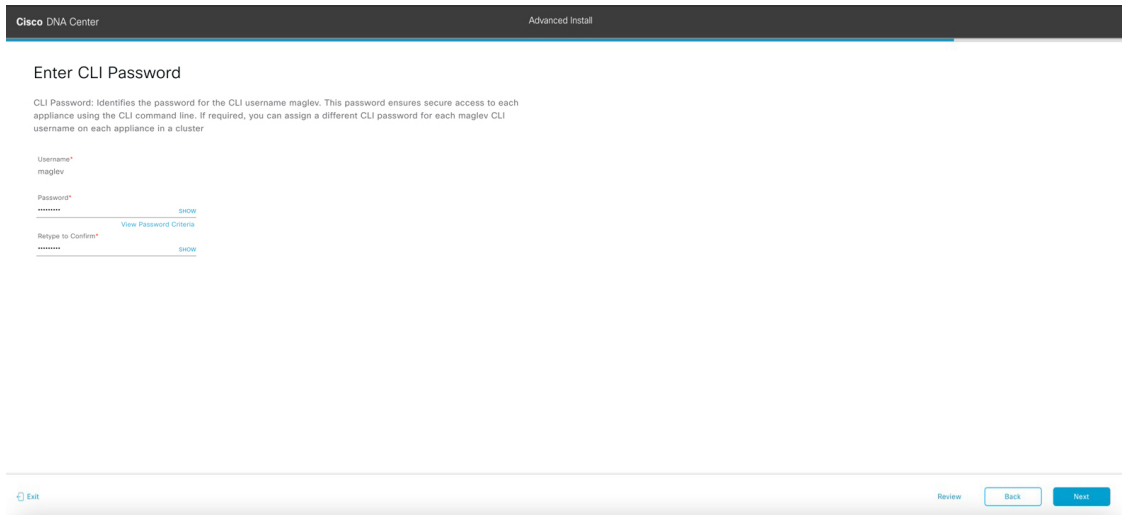


n) Enter configuration values for your cluster, then click **Next**.

Table 14: Secondary Node Entries for Advanced Appliance Settings

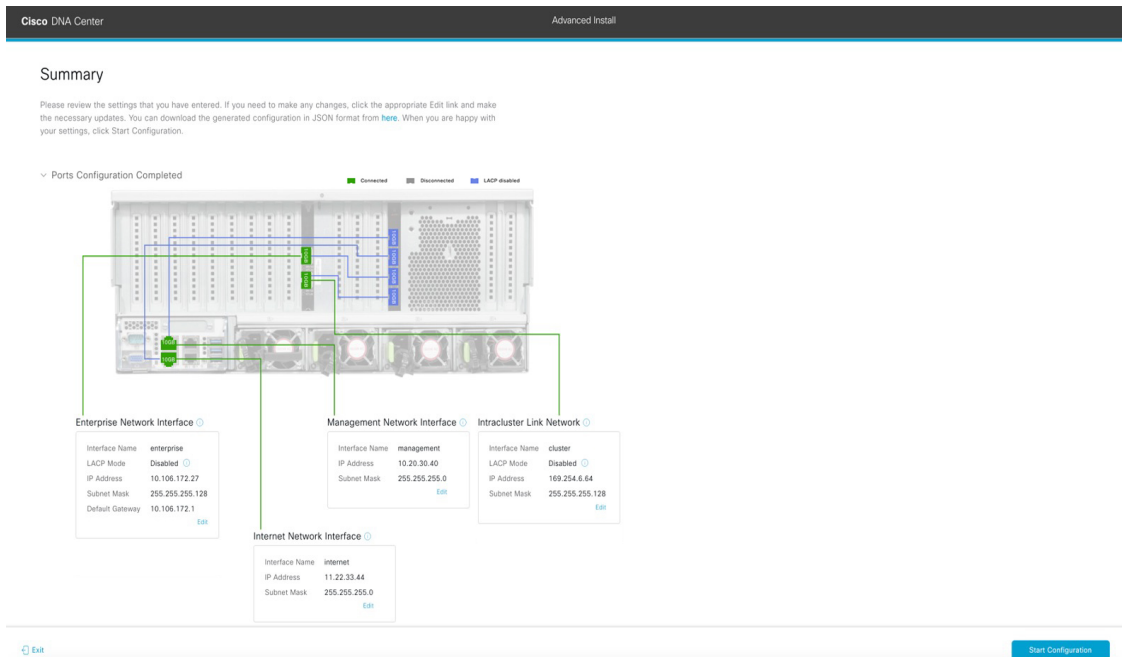
NTP Server Settings	
NTP Server field	<p>Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the Add (+) icon.</p> <p>For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.</p>
Turn On NTP Authentication check box	<p>To enable the authentication of your NTP server before it's synchronized with Cisco DNA Center, check this check box and then enter the following information:</p> <ul style="list-style-type: none"> The NTP server's key ID. Valid values range between 1 and 4294967295 (2³²-1). This value corresponds to the key ID that's defined in the NTP server's key file. The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. <p>Note Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.</p>

The **Enter CLI Password** screen opens.



- o) Enter and confirm the password for the `maglev` user, then click **Next**.

The wizard validates the information you have entered, confirms that the port is up, and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Summary** screen opens.



Note To download the appliance configuration as a JSON file, click the **here** link.

- p) Review all of the settings that you have entered while completing the wizard. If necessary, click the appropriate **Edit** link to open the wizard screen in which you want to make updates.
- q) To complete the configuration of your Cisco DNA Center appliance, click **Start Configuration**.

The configuration process takes roughly 90 minutes. The wizard screen continuously updates during the process, indicating the tasks that are currently being completed and their progress, as well as any errors that have occurred. To save a local copy of this information as a text file, click the download icon.

Cisco DNA Center
Configuration

Appliance Configuration In Progress

It should take about 90 minutes to complete the configuration of your appliance. As you wait, you can view a video that explains the next steps in the Cisco DNA Center setup process.

Initializing the cluster using kubeadm 30%

ABOUT STARTING CISCO DNA CENTER

▶ 0:00

Started: 04/09/2020 12:15:36

```

2021-05-05T16:56:59.32524 | -----
2021-05-05T16:56:59.32525 | credentialmanager.pem Apr 13 16:49:52 2020 GMT Apr 13 16:49:52 2021 GMT
2021-05-05T16:56:59.32526 | kong.pem Apr 13 16:49:51 2020 GMT Apr 13 16:49:51 2021 GMT
2021-05-05T16:56:59.32527 | kube-admin.pem Apr 13 16:49:50 2020 GMT Apr 13 16:49:50 2021 GMT
2021-05-05T16:56:59.32528 | kube-worker-1.pem Apr 13 16:49:52 2020 GMT Apr 13 16:49:52 2021 GMT
2021-05-05T16:56:59.32529 | maglev-registry.pem Apr 13 16:49:52 2020 GMT Apr 13 16:49:52 2021 GMT
2021-05-05T16:56:59.325210 | apiserver.crt Apr 13 12:12:14 2020 GMT Apr 13 17:40:20 2021 GMT
2021-05-05T16:56:59.325211 | apiserver-kubelet-client.crt Apr 13 12:12:14 2020 GMT Apr 13 17:40:20 2021 GMT
2021-05-05T16:56:59.325212 | front-proxy-ca.crt Apr 13 17:40:20 2020 GMT Apr 13 17:40:20 2020 GMT
2021-05-05T16:56:59.325213 | front-proxy-client.crt Apr 13 17:40:20 2020 GMT Apr 13 17:40:20 2021 GMT
2021-05-05T16:56:59.325214 | kubelet.conf Apr 13 12:12:14 2020 GMT Apr 13 17:40:21 2021 GMT
2021-05-05T16:56:59.325215 | admin.conf Apr 13 12:12:14 2020 GMT Apr 13 17:40:21 2021 GMT
2021-05-05T16:56:59.325216 | scheduler.conf Apr 13 12:12:14 2020 GMT Apr 13 17:40:22 2021 GMT
2021-05-05T16:56:59.325217 | controller-manager.conf Apr 13 12:12:14 2020 GMT Apr 13 17:40:22 2021 GMT
2021-05-05T16:56:59.325218 | -----
          
```

What to do next

When this task is complete:

- If you have an additional appliance to deploy as the third and final node in the cluster, repeat this procedure.
- If you are finished adding nodes to the cluster, continue by performing first-time setup: [First-Time Setup Workflow](#).

Upgrade to the Latest Cisco DNA Center Release

For information about upgrading your current release of Cisco DNA Center, see the [Cisco DNA Center Upgrade Guide](#).