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

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, complete the following tasks:

1. Configure the primary node in your cluster. See Configure the Primary Node Using the Advanced Install Configuration Wizard, on page 2.

2. If you have installed three appliances and want to add the second and third nodes to your cluster, see Configure a Secondary Node Using the Advanced Install Configuration Wizard, on page 20.

Browser-Based Wizard Prerequisites

To use the browser-based wizard and ensure that it configures your appliance properly, do the following:

- 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.

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.

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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

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 20 instead.

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Important   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).

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Note   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.

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Important   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.

Before you begin

Ensure that you:

- Installed the Cisco DNA Center software image onto your appliance, as described in Reimage the Appliance.

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> **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:

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 HMTL-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 Maglev Configuration wizard welcome screen.

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

d) Open this URL to bring up the **Appliance Configuration** screen.

e) With the **Advanced Install** radio button selected, click **Start**.

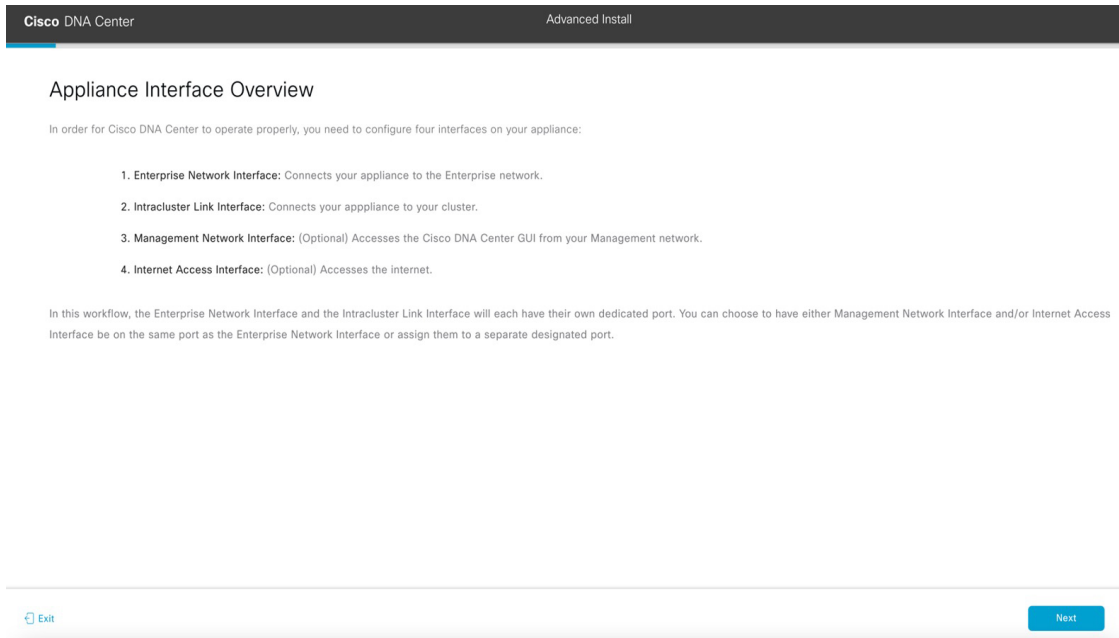The **Advanced Install Overview** slider opens. Click **>** to view a summary of the tasks that the wizard will help you complete.

f) 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. **Intracluster Link Interface:** Connects your apppliance 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 Intracluster 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 Enterprise and Intracluster 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).
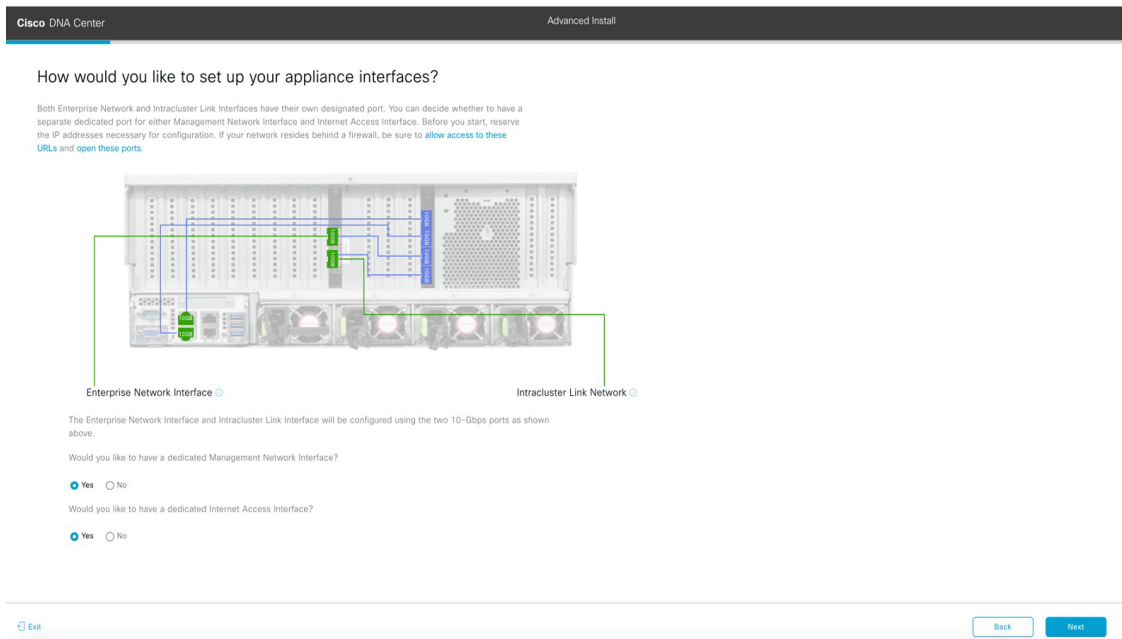
Step 2   Complete the Advanced Install wizard:

a)   Click **Next**.

The **Will this appliance join a cluster?** screen opens.
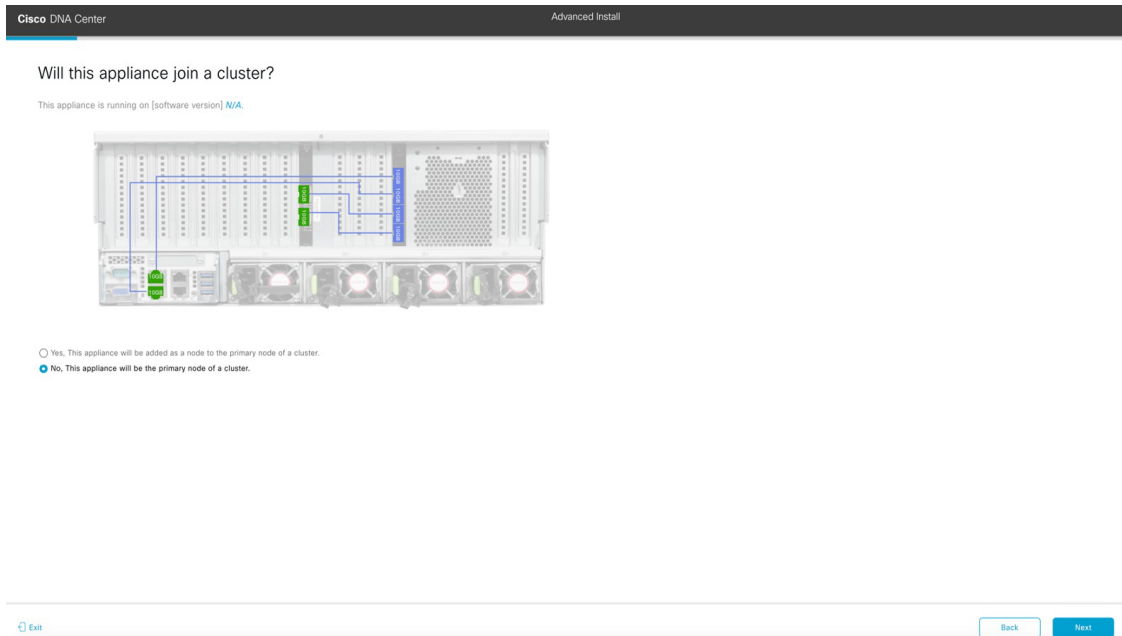
b) Click the **No** radio button (as you are configuring your cluster's primary node), then click **Next**.

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.
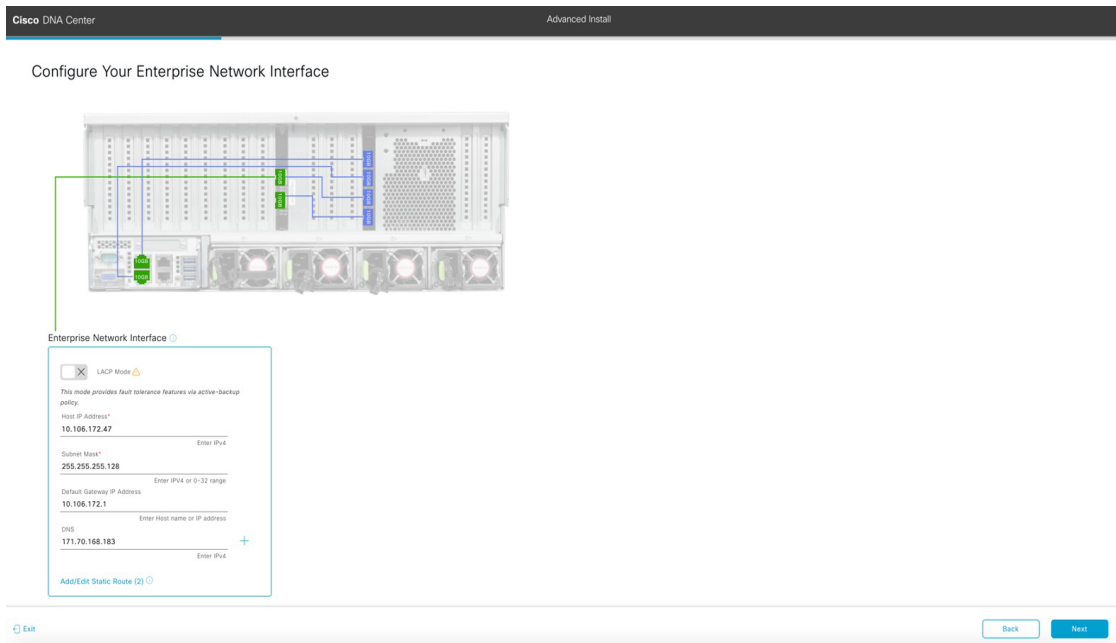
d) Enter configuration values for the Enterprise interface.

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.

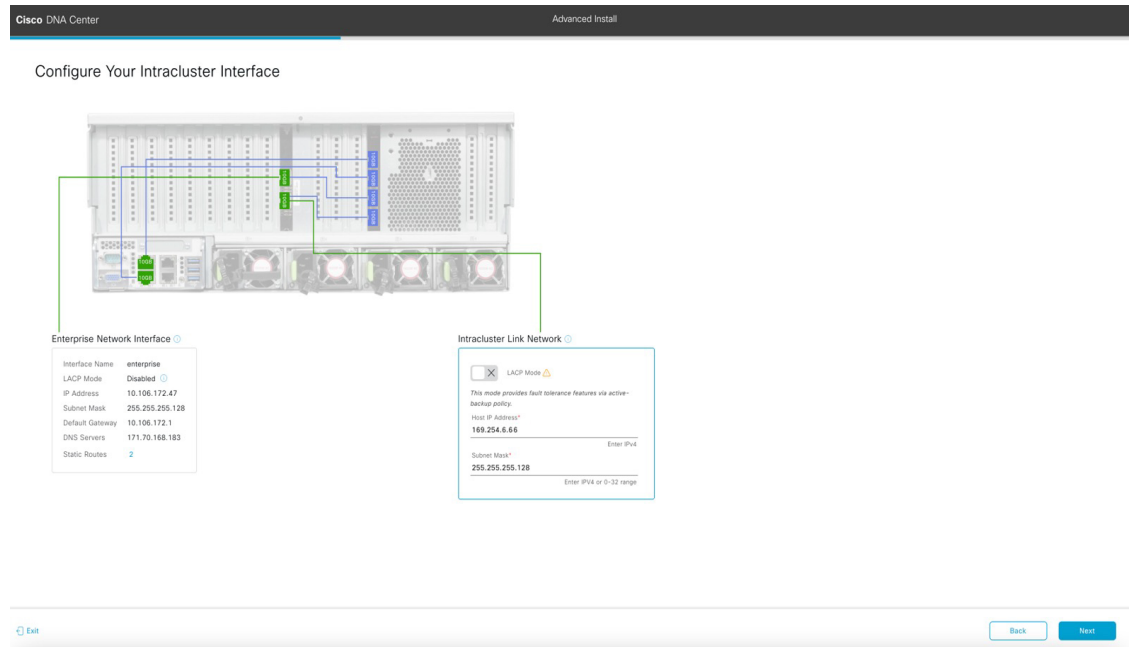*Table 1: Primary Node Entries for the Enterprise Interface*

LACP Mode slider	Choose one of the following network interface controller (NIC) bonding modes for the Enterprise interface:
	• **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.
	For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.
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	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.
	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:
	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.
DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon.
	Important For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.
Add/Edit Static Route link	To configure a static route, click this link and then do the following:
	1. Enter the route's network IP prefix, subnet mask, and nexthop IP address.
	To configure additional static routes, click +.
	2. Click **Add**.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Configure Your Intracluster Interface** screen opens.

e) Enter configuration values for your Intracluster interface.

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.

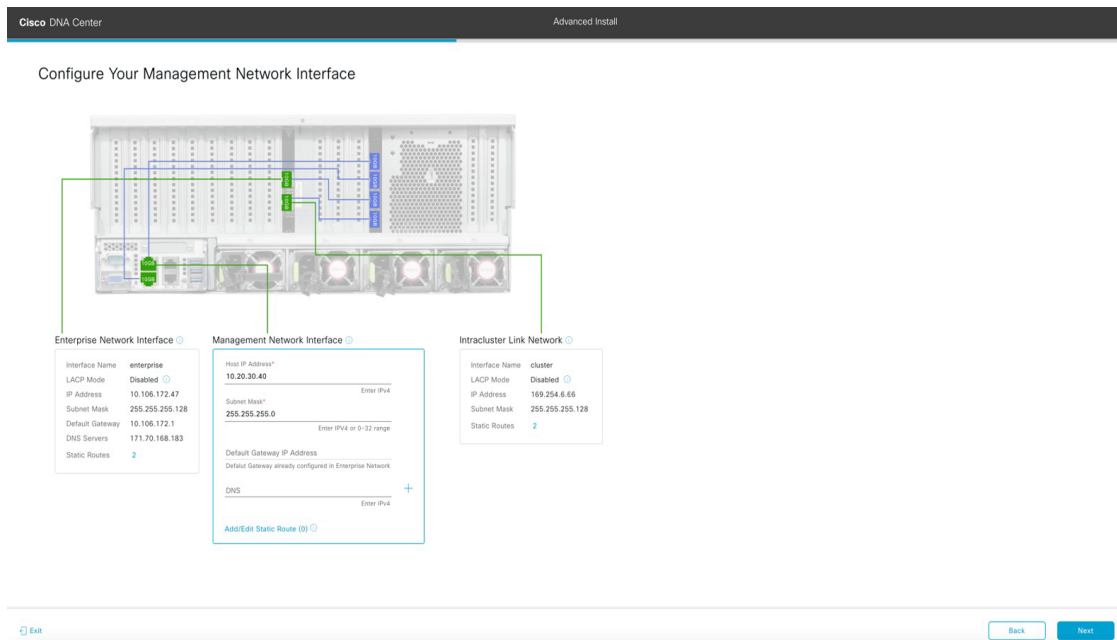| Note	• If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then proceed to Step 2f (which describes how to configure your Management interface).
	• If you opted to configure the Enterprise and Management interfaces on the same port, complete 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 2: Primary Node Entries for the Intracluster Interface
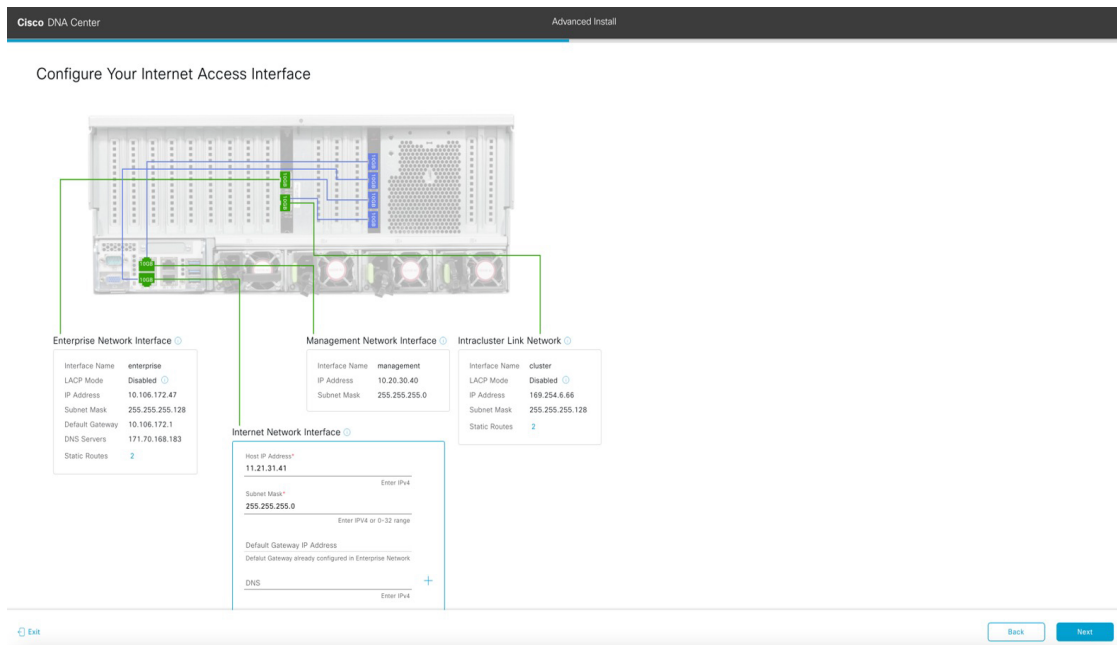
LACP Mode slider	Choose one of the following NIC bonding modes for the Intracluster interface:
	• **Active-Backup mode**: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface 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.
	For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.
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.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Configure Your Management Network Interface** screen opens.

f) (Optional) Enter configuration values for the Management port.

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 3: Primary Node Entries for the Management Port

Host IP Address field	Enter the IP address for the Management port. This is required.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.
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.

DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon.
	Important • For NTP, ensure port 123 (UDP) is open between Cisco DNA Center and your NTP server. • For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.
Add/Edit Static Route link	To configure a static route, click this link and then do the following: 1. Enter the route's network IP prefix, subnet mask, and nexthop IP address. To configure additional static routes, click +. 2. Click **Add**.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Configure Your Internet Access Interface** screen opens.

g) (Optional) Enter configuration values for the Internet Access interface.

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 4: 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 enter an 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.
DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon. **Important** For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.

Add/Edit Static Route link	To configure a static route, click this link and then do the following:
	1. Enter the route's network IP prefix, subnet mask, and nexthop IP address. To configure additional static routes, click +.
	2. Click **Add**.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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.

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 wizard's **Configure Proxy Server Information** screen opens.

k) Do one of the following:

- If your network does *not* use a proxy server to access the internet, click the **No** radio button and then click **Next**.

- If your network does use a proxy server to access the internet, enter the values described in the following table:

Table 5: 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.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 and the port is up, the wizard's **Advanced Appliance Settings** screen opens.

l) Enter configuration values for your cluster.

Table 6: Primary Node Entries for Advance Appliance Settings

Cluster Virtual IP Addresses	
To access from Enterprise Network, To access from Management Network, For Internet Access, and For Intracluster Access fields **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.	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 plan to stick with it, you can leave the fields in this section blank. **Important** You must enter one virtual IP address for each configured network interface. You will not be able to complete the wizard unless you do so. This address is tied to the cluster link's status, which must be in the **UP** state.

Fully Qualified Domain Name (FQDN) field	Enter the fully qualified domain name (FQDN) for your cluster. Cisco DNA Center does the following with this hostname:
	• 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.
Linux Admin Credentials	
Password and Confirm Password fields	Enter and then confirm the password for the `maglev` user.
Cisco DNA Center Admin Credentials	
Password and Confirm Password fields	Enter and then confirm the password for the default admin superuser, used 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.
NTP Server Settings	
NTP Servers field	Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the **Add** (+) icon.
	For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.
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 we recommend that you use this subnet. If you choose to enter another subnet, ensure that it does not conflict with or overlap any other subnet used by the Cisco DNA Center internal network or an external network. For more information, see the Container Subnet description in Required IP Addresses and Subnets.

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. If you choose to enter another subnet, ensure that it does not conflict with or overlap any other subnet used by the Cisco DNA Center internal network or an external network. For more information, see the Cluster Subnet description in Required IP Addresses and Subnets.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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.

m) 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.

n) 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.

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

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

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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

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Important 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).

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Note 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.

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Important 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.

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.

```
[Thu Feb 04 17:07:37 UTC] maglev@192.192.192.224 (maglev-master-192.192.192.224) ~
$ maglev package status
[administration] password for 'admin':

maglev-1 [main - https://kong-frontend.maglev-system.svc.cluster.local:443]

NAME                         DISPLAY_NAME                          DEPLOYED          AVAILABLE        STATUS              PROGRESS
---------------------------------------------------------------------------------------------------------------------------------
access-control-application  Access Control Application            -                 2.1.310.61014    NOT_DEPLOYED
application-policy           Application Policy                    -                 2.1.310.117202   NOT_DEPLOYED
application-registry         Application Registry                  -                 2.1.310.117202   NOT_DEPLOYED
assurance                   Assurance - Base                      2.2.1.243         -                DEPLOYED
automation-core             NCP - Services                        2.1.310.61014     -                DEPLOYED
base-provision-core         Automation - Base                     2.1.310.61014     -                DEPLOYED
cloud-connectivity-data-hub Cloud Connectivity - Data Hub         1.6.0.263         -                DEPLOYED
cloud-connectivity-tethering Cloud Connectivity - Tethering       2.1.1.37          -                DEPLOYED
command-runner              Command Runner                        2.1.310.61014     -                DEPLOYED
device-onboarding           Device Onboarding                     2.1.310.61014     -                DEPLOYED
dna-core-apps               Network Experience Platform - Core    2.1.310.61014     -                DEPLOYED
dnac-platform               Cisco DNA Center Platform             1.4.99.106        -                DEPLOYED
dnac-search                 Cisco DNA Center Global Search        1.4.0.11          -                DEPLOYED
image-management            Image Management                      2.1.310.61014     -                DEPLOYED
machine-reasoning           Machine Reasoning                     2.1.310.210298    -                DEPLOYED
ncp-system                  NCP - Base                            2.1.310.61014     -                DEPLOYED
ndp-base-analytics          Network Data Platform - Base Analytics 1.6.175          -                DEPLOYED
ndp-platform                Network Data Platform - Core          1.6.259           -                DEPLOYED
ndp-ui                      Network Data Platform - Manager       1.6.129           -                DEPLOYED
network-visibility          Network Controller Platform           2.1.310.61014     -                DEPLOYED
path-trace                  Path Trace                            2.1.310.61014     -                DEPLOYED
platform-ui                 Cisco DNA Center UI                   1.6.1.331         -                DEPLOYED
rbac-extensions             RBAC Extensions                       2.1.310.1900012   -                DEPLOYED
sd-access                   SD Access                             -                 2.1.310.61014    NOT_DEPLOYED
sensor-automation           Automation - Sensor                   -                 2.1.310.61014    NOT_DEPLOYED
ssa                         Stealthwatch Security Analytics       2.1.310.1090254   -                DEPLOYED
system                      System                                1.6.301           -                DEPLOYED
system-commons              System Commons                        2.1.310.61014     -                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.

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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 2.

• 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 HMTL-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 Maglev Configuration wizard welcome screen.

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

d)   Open this URL to bring up the **Appliance Configuration** screen.

e)   With the **Advanced Install** radio button selected, click **Start**.

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

f) 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.

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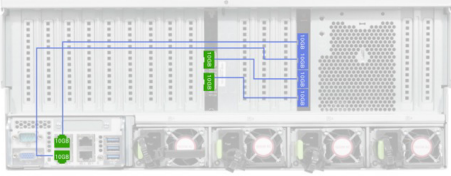
The **Will this appliance join a cluster?** screen opens.

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

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

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.

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 7: Secondary Node Entries for the Enterprise Interface

LACP Mode slider	Choose one of the following network interface controller (NIC) bonding modes for the Enterprise interface:
	• **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. For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.
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	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.
	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:
	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.
DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon.
	Important For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.
Add/Edit Static Route link	To configure a static route, click this link and then do the following:
	1. Enter the route's network IP prefix, subnet mask, and nexthop IP address.
	To configure additional static routes, click +.
	2. Click **Add**.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Configure Your Intracluster Interface** screen opens.

Configure Your Intracluster Interface

e) Enter configuration values for your Intracluster interface.

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.

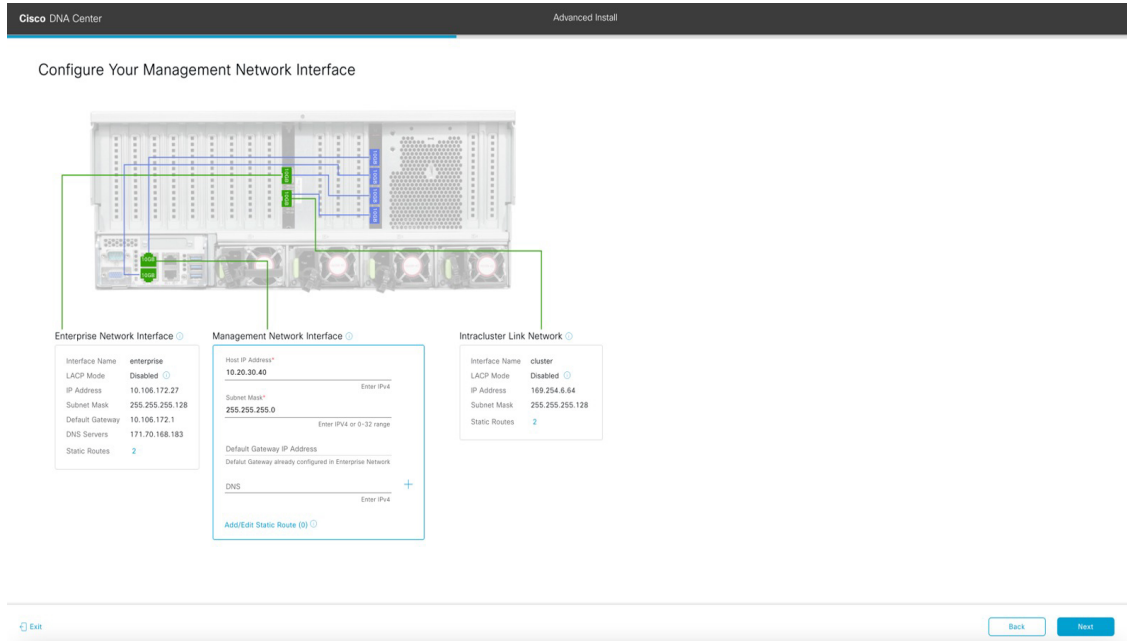|	
Note	• If you opted to configure the Enterprise and Internet Access interfaces on the same port, complete this step and then proceed to Step 2f (which describes how to configure your Management interface).
	• If you opted to configure the Enterprise and Management interfaces on the same port, complete 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 8: Secondary Node Entries for the Intracluster Interface
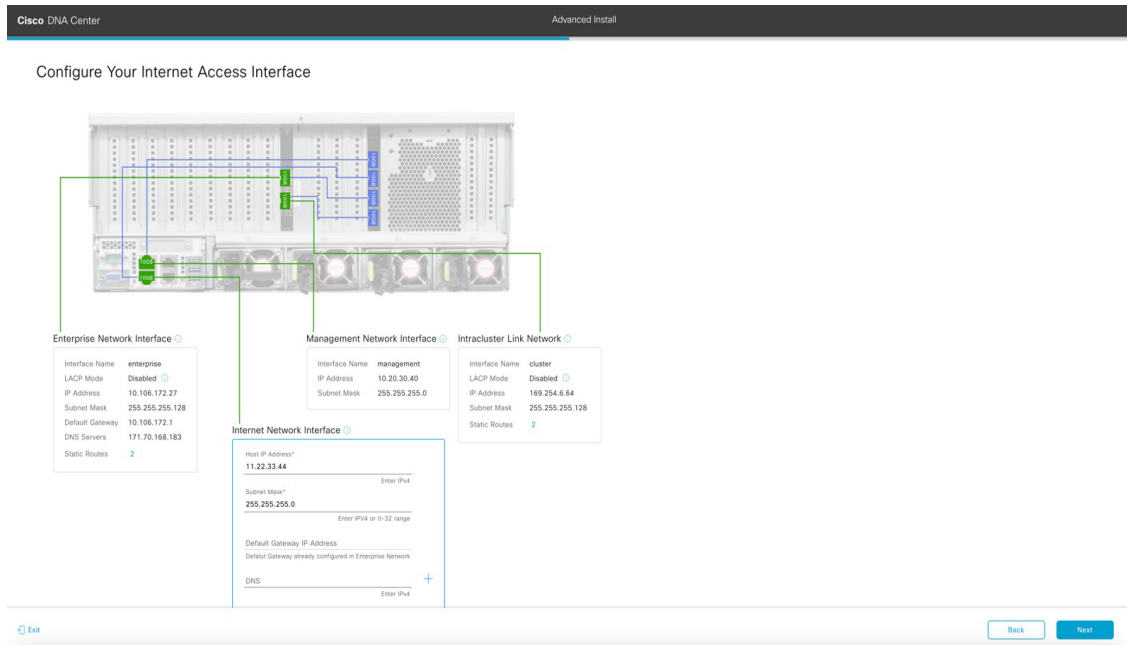
LACP Mode slider	Choose one of the following NIC bonding modes for the Intracluster interface:
	• **Active-Backup mode**: This mode provides fault tolerance by aggregating two Ethernet interfaces into a single logical channel. When the interface that's currently active goes down, the other interface 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.
	For more information about Cisco DNA Center's implementation of NIC bonding, see NIC Bonding Overview.
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.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Configure Your Management Network Interface** screen opens.

f) (Optional) Enter configuration values for the Management port.

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 9: Secondary Node Entries for the Management Port

Host IP Address field	Enter the IP address for the Management port. This is required.
Subnet Mask field	Enter the netmask for the port's IP address. This is required.
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.

DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon.
	Important • For NTP, ensure port 123 (UDP) is open between Cisco DNA Center and your NTP server. • For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.
Add/Edit Static Route link	To configure a static route, click this link and then do the following: 1. Enter the route's network IP prefix, subnet mask, and nexthop IP address. To configure additional static routes, click +. 2. Click **Add**.

From here, do one of the following:

• To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

• To return to the previous wizard screen, click **Back**.

• To proceed to the next wizard screen, 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 **Configure Your Internet Access Interface** screen opens.

g) (Optional) Enter configuration values for the Internet Access interface.

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 10: 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 enter an 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.
DNS field	Enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon. **Important** For each appliance in your cluster, configure a maximum of three DNS servers. Problems can occur if you configure more than three DNS servers for a node.

Add/Edit Static Route link	To configure a static route, click this link and then do the following:
	1. Enter the route's network IP prefix, subnet mask, and nexthop IP address. To configure additional static routes, click +. 2. Click **Add**.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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.

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 **Configure Proxy Server Information** screen opens.

k) Do one of the following:

- If your network does *not* use a proxy server to access the internet, click the **No** radio button and then click **Next**.

- If your network does use a proxy server to access the internet, enter the values described in the following table:

Table 11: 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.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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 **Primary Cluster Details** screen opens.

Cisco DNA Center   Advanced Install

Primary Cluster Details

This appliance is getting added as a node for the Multi Cluster Setup with software version *N/A*.

Primary IP
169.254.6.67
        IP should be within Intra-Cluster's 169.254.6.64/25
Username*
admin
                        Enter Linux Username
Password*
••••••••   SHOW
                        Enter Linux Password

Exit   Review   Back   Next

l) To establish a connection with your cluster's primary node, enter its IP address and login credentials, and then click **Next**.

The **Advanced Appliance Settings** screen opens.

Cisco DNA Center   Advanced Install

Advanced Appliance Settings

LINUX ADMIN CREDENTIALS
Username*
maglev

Password*
••••••••   SHOW
                View Password Criteria
Confirm Password*
••••••••   SHOW

NTP SERVER SETTINGS
NTP Server*
ntp.esl.cisco.com   +
                Enter IPv4

Exit   Review   Back   Next

m) Enter configuration values for your cluster.

Table 12: Secondary Node Entries for Advanced Appliance Settings

Linux Admin Credentials	
Password and Confirm Password fields	Enter and then confirm the password for the `maglev` user.
NTP Server Settings	
NTP Server field	Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the **Add** (+) icon. For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.

From here, do one of the following:

- To close the wizard, click **Exit**. A popup window appears, indicating that the settings you have entered up to this point will be saved. Click **Exit** again to confirm that you want to close the wizard. When you restart the wizard and return to this screen, the settings that you entered previously will already be populated.

- To return to the previous wizard screen, click **Back**.

- To proceed to the next wizard screen, 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.

n) 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.

o) 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.

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.