



Installation

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Installation Overview

The following table summarizes the installation workflow for deploying the SD-WAN solution on a HyperFlex cluster:

Step	Summary	Reference
Preinstallation Tasks		
Complete the tasks 1—5 before deploying the SD-WAN solution on a HyperFlex cluster.		
1.	Configure the switches for use in a HyperFlex Edge Fabric.	For an example of how to configure the Cisco Catalyst C9300L-48P-4X-A switches, see Configuring the Cisco Catalyst C9300L-48P-4X-A Switches .
	Use one of the supported switches as listed in the HyperFlex Edge Deployment Guide. Configure the switches manually with the required and recommended settings before beginning the installation process.	See the Cisco HyperFlex Edge Deployment Guide, Release 4.0 for more details.
2.	Log into Cisco Intersight and Claim Devices.	Log In to Cisco Intersight, on page 2 Claim Devices, on page 2
3.	Create a Cisco Smart Account Configuration for HyperFlex SD-WAN.	Cisco Smart Account Configuration for HyperFlex SD-WAN, on page 3

Step	Summary	Reference
4.	Manually configure the required Feature templates for branch routing design in vManage. Manually upload the list of deployable vEdge virtual router chassis UUIDs in vManage.	For more information, see the Systems and Interfaces Configuration Guide, Cisco SD-WAN Releases 19.1, 19.2, and 19.3 .
Install, Configure, and Deploy		
5.	Run the Create HyperFlex SD-WAN wizard to deploy the SD-WAN solution on a HyperFlex Cluster.	Deploy SD-WAN Solution on a HyperFlex Cluster, on page 7
Post Installation		
6.	Complete post installation tasks.	Post Installation

Log In to Cisco Intersight

Log In using Cisco ID

To login to Cisco Intersight, you must have a valid **Cisco ID** to create a Cisco Intersight account. If you do not have a Cisco ID, create one [here](#).



Important

The device connector does not mandate the format of the login credentials, they are passed as is to the configured HTTP proxy server. Whether or not the username must be qualified with a domain name will depend on the configuration of the HTTP proxy server.

Log In using Single Sign-On

Single Sign-On (SSO) authentication enables you to use a single set of credentials to log in to multiple applications. With SSO authentication, you can log in to Intersight with your corporate credentials instead of your Cisco ID. Intersight supports SSO through SAML 2.0, and acts as a service provider (SP), and enables integration with Identity Providers (IdPs) for SSO authentication. You can configure your account to sign in to Intersight with your Cisco ID and SSO. Learn more about SSO with Intersight [here](#).

Claim Devices

Complete the following steps to claim one or more devices to be managed by Cisco Intersight:

Before you begin

This procedure assumes that you are an existing user with a Cisco account. If not, see [Log In to Cisco Intersight, on page 2](#). Only Intersight users with Account Administrator, Device Administrator, or Device Technician privileges can claim a new device.

Step 1 In the Cisco Intersight, left navigation pane, select **Administration > Devices**.

Step 2 In the **Devices** details page, click **Claim a New Device**.

Step 3 In the **Claim a New Device** page, select **Direct Claim** and complete the following fields:

Note You can locate the **Device ID** and the **Claim Code** information in:

- a. Cisco IMC by navigating to **Admin > Device Connector**.
- b. Cisco HyperFlex by navigating to **HyperFlex Connect UI > Settings > Device Connector**.

UI Element	Essential Information
Device ID	Enter the applicable Device ID. <ul style="list-style-type: none"> • For a Cisco UCS C-Series Standalone server, use serial number. Example: NGTR12345 • For HyperFlex, use Cluster UUID. Example: xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx
Claim Code	Enter device claim code. You can find this code in the Device Connector for the device type. <p>Note Before you gather the Claim Code, ensure that the Device Connector has outbound network access to Cisco Intersight, and is in the “Not Claimed” state.</p>

Step 4 Click **Claim**.

Note Refresh the Devices page to view the newly claimed device.

Cisco Smart Account Configuration for HyperFlex SD-WAN

Before completing the operations listed in this section, consider the following prerequisites:

- You must have a Cisco Smart Account.
- You must have a Virtual Account within the Cisco Smart Account.
- Cisco vManage add Deployed and configured controllers like vBond, vSmart, and vManage controllers. Ensure that the **Device Status** is *In Sync* as shown in the following figure.

Controller Type	Hostname	System IP	Site ID	Mode	Assigned Template	Device Status	Certificate Stat...	
vManage	vmanage	10.100.0.51	100	CLI	--	In Sync	Installed	...
vSmart	vsmart	10.100.0.53	100	CLI	--	In Sync	Installed	...
vBond	vbond	10.100.0.52	100	CLI	--	In Sync	Installed	...

To create a Cisco Smart Account Configuration for HyperFlex SD-WAN, do the following:

1. [Create Plug and Play Controller Policies in Smart Account, on page 4.](#)
2. [Create Plug and Play Software Devices in Smart Account, on page 5.](#)
3. [Sync vManage to Smart Account, on page 6.](#)

Create Plug and Play Controller Policies in Smart Account

Step 1 Navigate to <https://software.cisco.com> and log in with your credentials.

Step 2 Click on **Plug and Play Connect** under the **Network Plug and Play** section.

The screenshot shows the Cisco Software Central homepage. The 'Network Plug and Play' section is highlighted, and the 'Plug and Play Connect' link is circled in red. Other sections include 'Download & Upgrade', 'License', 'Order', and 'Administration'.

Step 3 Click on **Controller Profiles**.

Step 4 Click **Add Profile**.

- a) In the **Profile Type** step, select **VBOND** from the **Controller Type** drop-down. Click **Next**.

- b) In the **Profile Settings** step, enter a **Profile Name**, set **Default Profile** to **Yes**, enter an **Organization Name**, and enter the vBond information for the **Primary Controller**. Also, upload the **Server Root CA**. Click **Next**.
- c) In the **Review** step, review the details and click **Submit**.
- d) In the **Confirmation** step, click **Done**.

Step 5 The newly created Controller Profile will show up under the **Controller Profiles** section of **Plug and Play Connect**.

The screenshot shows the Cisco Software Central interface. At the top, there is a navigation bar with the Cisco logo and a search icon. Below the navigation bar, there is a blue banner with an important notice. The main content area is titled 'Plug and Play Connect' and has a breadcrumb trail: 'Cisco Software Central > Plug and Play Connect'. There are tabs for 'Devices', 'Controller Profiles', 'Network', 'Certificates', 'Manage External Virtual Account', and 'Event Log'. The 'Controller Profiles' tab is active. Below the tabs, there is a toolbar with buttons for '+ Add Profile...', 'Edit Selected...', 'Delete Selected...', 'Make Default...', and 'Show Log...'. Below the toolbar is a table with columns: 'Profile Name', 'Controller Type', 'Default', 'Description', 'Used By', and 'Download'. The table contains one row with the following data: 'HX-VBOND', 'VBOND', a checkmark, and '0'. The row is highlighted with a red box. At the bottom right of the table, it says 'Showing 1 Record'. At the bottom of the page, there is a footer with links: 'Contacts | Feedback | Help | Site Map | Terms & Conditions | Privacy Statement | Cookie Policy | Trademarks'.

What to do next

Create plug and play software devices in Smart Account.

Create Plug and Play Software Devices in Smart Account

Before you begin

Create a Controller Profile in Smart Account.

- Step 1** Navigate to <https://software.cisco.com> and log in with your credentials.
- Step 2** Click on **Plug and Play Connect** under the **Network Plug and Play** section.
- Step 3** Click on **Devices**.
- Step 4** Click on **Add Software Devices**.
 - a) In the **Identify Devices** step, click **Add Software Device**. In the **Identify Device** popup window, set the **Base PID** to **VEDGE-CLOuD-DNA**, enter a **Quantity**, and select the **Controller Profile** created earlier. Click **Save**. The Devices will now show up under the **Identify Devices** section. Click **Next**.
 - b) In the **Review & Submit** step, review the device information provided and click **Submit**.

c) In the **Results** step, click **Done**.

Step 5 In the **Devices** page, based on the **Quantity** entered, a number of devices will show up. When a device is created, initially it will show a **Status** of Pending for Publish. After sometime, the status will change to **Provisioned**.

The screenshot shows the Cisco Software Central interface. At the top, there is a navigation bar with the Cisco logo and a search icon. Below the navigation bar is a blue banner with an important notice. The main content area is titled 'Plug and Play Connect' and includes a breadcrumb trail: 'Cisco Software Central > Plug and Play Connect'. There are several tabs: 'Devices', 'Controller Profiles', 'Network', 'Certificates', 'Manage External Virtual Account', and 'Event Log'. The 'Devices' tab is active, showing a table of devices. The table has columns for Serial Number, Base PID, Product Group, Controller, Last Modified, Status, and Actions. Three devices are listed, all with a status of 'Provisioned'.

Serial Number	Base PID	Product Group	Controller	Last Modified	Status	Actions
062F381B-FAF4-7858-E7A5...	VEDGE-CLOUD-DNA	Router	HX-VBOND	2019-Nov-12, 21:43:29	Provisioned	Show Log...
0A039099-81FA-7C5A-C86...	VEDGE-CLOUD-DNA	Router	HX-VBOND	2019-Nov-12, 21:43:29	Provisioned	Show Log...
CF2F71FE-9D14-1C62-165...	VEDGE-CLOUD-DNA	Router	HX-VBOND	2019-Nov-12, 21:43:29	Provisioned	Show Log...

What to do next

Sync vManage to Smart Account.

Sync vManage to Smart Account

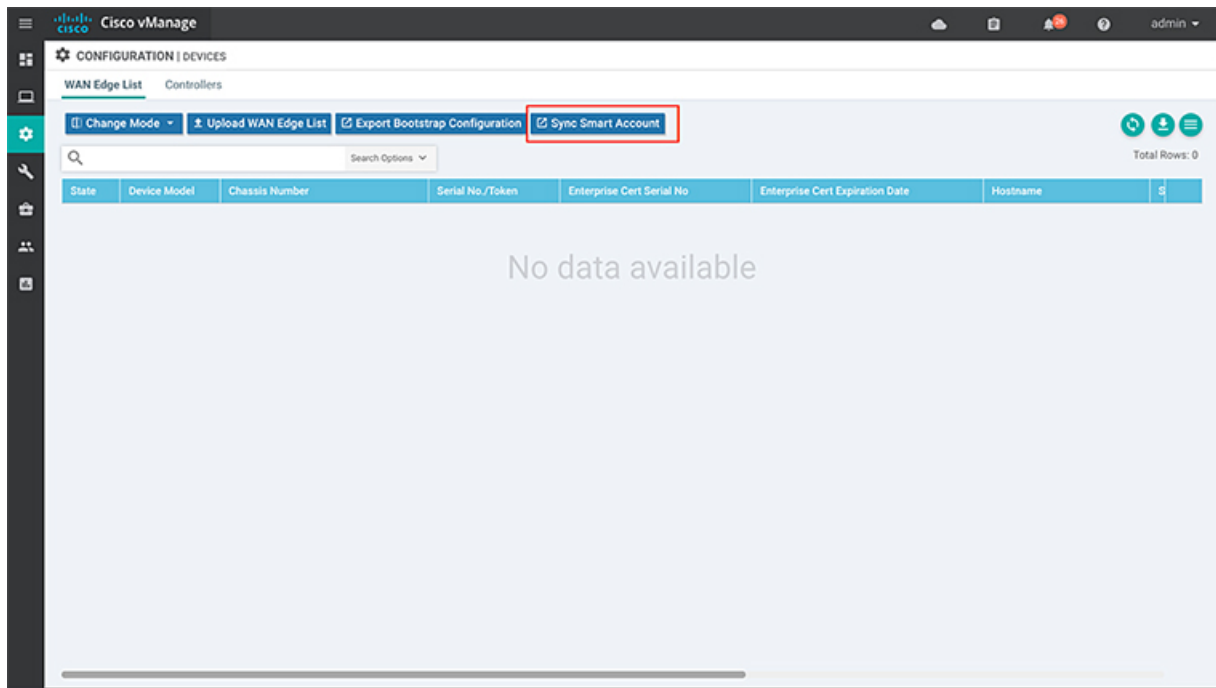
Before you begin

Create plug and play software devices in Smart Account.

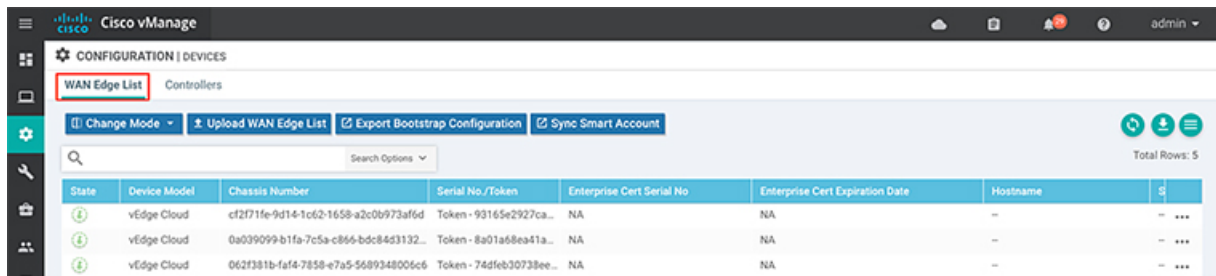
Step 1 In your web browser, log into Cisco vManage.

Step 2 Navigate to **Configuration > Devices**.

Step 3 Click on **Sync Smart Account**.



- Step 4** In the **Sync Smart Account** popup, enter the **Username** and **Password** associated with the Smart Account where the Controller Profile and Software Devices were created earlier. Leave the **Validate the uploaded WAN Edge List and send to controllers** option checked. Click **Sync**.
- Step 5** In the **Task View** page, the status of the **Smart Account Device Sync** shows as *In Progress* for a couple of minutes and then becomes *Success*.
- Step 6** Navigate back to the **Configuration > Devices** page.
- Step 7** Verify if the **Software Devices** created in the associated Smart Account show up in the **WAN Edge List** table as shown in the following image.



Deploy SD-WAN Solution on a HyperFlex Cluster

In the Deploy HyperFlex SD-WAN wizard, complete the following details to deploy the SD-WAN solution on a HyperFlex cluster using Intersight.

- Step 1** Navigate to **Solutions**.

Step 2 Select the **Deploy HyperFlex SD-WAN** solution, and click **Initiate**.

Note In the **Executions** column, click on the number to navigate to the Requests page. Here you can view recent executions of the Deploy HyperFlex SD-WAN solution.

To view existing partially complete solutions, in the ellipsis (...) click **Drafts**. To edit an existing draft, select a draft from the Drafts table view, in the ellipsis (...) click **Edit**.

Step 3 Click **Start** to begin the Deploy HyperFlex SD-WAN wizard.

Step 4 In the **General** page, complete the following details:

Field	Description
Organization drop-down list	You can make the HyperFlex SD-WAN cluster belong to either the default organization or a specific organization: <ul style="list-style-type: none"> • Default organization—Choose default to make the HyperFlex SD-WAN cluster belong to the default organization. All policies that belong to the default organization are in the Create HyperFlex SD-WAN wizard. • Specific organization—To make the HyperFlex SD-WAN cluster belong to a specific organization, select the desired organization from the drop-down. Only policies that belong to the selected organization are in the Create HyperFlex SD-WAN wizard.
Name field	Enter a name for the SD-WAN profile. The name entered here is displayed on the Requests page, after the SD-WAN solution is deployed on the HyperFlex cluster.
(Optional) Description field	Add a description for the SD-WAN profile.
(Optional) Add Tag field	Add a tag key.

Step 5 In the **vManage Connection** page, complete the following details to connect to your vManage account:

Field	Description
vManage Account	
vManage Server field	Enter the vManage URL that the account holds information for.
Port field	Default is 8443. Enter the vManage port number on which the application is running.
User field	Enter the local username for authenticating with the vManage server.

Field	Description
Password field	Enter the local password for authenticating with the vManager server.
Virtual Router Deployment Configuration	
Deployment Size drop-down list	Select the scale of the SD-WAN router virtual machine deployment. This can be: <ul style="list-style-type: none"> • Typical—4vCPU / 4GB memory • Minimal—2vCPU / 4GB memory
Version drop-down list	Select the version depending on the relationship to the solution distributable object.
Number of WANs field	Select the number of WAN connections required across the SD-WAN site. The number of WANs can be: <ul style="list-style-type: none"> • Single WAN—1 to 4 • Dual WAN—2
WAN Termination Type drop-down list	Defines if the WAN networks are singly or dually terminated. <ul style="list-style-type: none"> • Single—Singly terminated WANs are configured only on one of the SD-WAN routers. One single WAN terminator is configured on each vEdge router. For example, WAN 1 is configured on vEdge node 1 and WAN 2 is configured on vEdge node 2. • Dual—Dually terminated WANs are configured on all the SD-WAN routers.

Step 6

In the **Virtual Router Configuration** page, configure the virtual routers by providing Chassis UUID and Device Template using information from vManage.

Field	Description
Virtual Router 1 and Virtual Router 2	
Chassis UUID field	Enter the chassis ID number of the vEdge router.
Device Template field	Enter the name of the Cisco vManage device template that the current device should be attached to. A device template consists of many feature templates and has the SD-WAN router configuration. For more information, see the Systems and Interfaces Configuration Guide, Cisco SD-WAN Release 19.1, 19.2, and 19.3 .

Step 7

The fields in the **Virtual Router Device Specific Configuration** page, are dynamically generated based on the Device Template created in vManage. The fields displayed on this page will vary depending on the device specific Feature Template.

Attention The names of the fields displayed are based on the default names of the vManage Feature Template.

The following table is an example of single WAN termination:

Field	Description
Virtual Router 1 and Virtual Router 2	
vpn-vedge-interface	
Interface Name(vpn_if_name_DualWanTermination_ge0/2.X) field	The name of the Interface.
IPv4 Address(vpn_if_ipv4_address) field	The IPv4 address can either be static or set to receive the IP address from a DHCP server.
Group ID(vpn_if_vrrp_grpid) field	The virtual router ID, which is a numeric identifier of the virtual router.
Priority(vpn_if_vrrp_priority) field	The priority level of the router. The router with the highest priority is elected as master.
IP Address(vpn_if_vrrp_vrrp_ipaddress) field	The IP address of the virtual router.
Interface Name(vpn_if_name_Tunnel_Interface_TLOC_Extn) field	The name of the interface.
IPv4 Address(vpn_if_ipv4_address) field	The IPv4 address can either be static or set to receive the IP address from a DHCP server.
TLOC Extension(vpn_if_tloc_extension) field	The name of the physical interface which is on the same router that connects to the WAN transport.
IPv4 Address(vpn_if_ipv4_address) field	The IPv4 address for the TLOC.
Color(vpn_if_tunnel_color_value) field	The color selected for the TLOC.
vpn-vedge	
Address(vpn_next_hop_ip_address_0) field	The IP address of the next-hop router.
Address(vpn_next_hop_ip_address_0) field	
Address(vpn_next_hop_ip_address_1) field	
system-vedge	
Hostname(system_host_name)	Hostname of the vEdge router.
System IP(system_system_ip)	System IP address of the vEdge router.

Field	Description
Site ID(system_site_id)	The site ID.

Step 8

In the **Hypervisors Network Configuration** page, you can configure the SD-WAN port groups. The number of WANs listed on this page depend on the number of WANs selected in the *Virtual Router Deployment Configuration* policy in the vManage Connection page.

Field	Description
WAN 1 Port Group Name	Enter the name of the WAN port group.
VLAN ID	Enter the VLAN ID to be added to the port group.
WAN 2 Port Group Name	Enter the name of the WAN port group.
VLAN ID	Enter the VLAN ID to be added to the port group.
LAN Port Group Name	Enter the name of the LAN port group.

Step 9

In the **HyperFlex Cluster Profile**, you can use an existing HyperFlex Cluster Profile or create a new one for SD-WAN deployment.

- Click **Select Pre-Created** to use an existing HyperFlex Cluster Profile.
- To create a new HyperFlex Cluster profile, click **Create New**.

You also have the option to **Skip HyperFlex Edge Cluster Profile** creation for now and create it later before SD-WAN deployment.

Step 10

In the **HyperFlex Edge Cluster Configuration** page, if you are creating a new HyperFlex Edge Cluster Profile, enter the appropriate values. For detailed instructions on how to configure a HyperFlex Edge Cluster using Intersight, see the *Deploying HyperFlex Edge Clusters* chapter in the [Cisco HyperFlex Systems Installation Guide for Cisco Intersight](#).

If you are using an existing HyperFlex Cluster Profile, review the HyperFlex Edge Cluster configuration details and click **Next**.

Step 11

On the **Nodes Assignment** page, you can assign nodes now or optionally, you can choose to assign the nodes later. To Assign nodes, click the **Assign nodes** check box and select the node you want to assign. Click **Next**.

- Attention**
- You can assign a minimum of 2 and a maximum of 4 nodes to a Cisco HyperFlex Edge cluster.
 - Only nodes that have Intersight Advantage license are displayed here.

Step 12

In the **Nodes Configuration** page, you can view the IP and Hostname settings that were automatically assigned. Optionally, you can change the following configurations manually:

Field	Description
Cluster Management IP Address	This IP address must belong to the management subnet.
MAC Prefix Address	Enter a single prefix which is within the prefix range specified in the Network Configuration policy.
Nodes	

Field	Description
Hostname	The hostname of the server.
Hypervisor IP	IP address for the Hypervisor Management network.
Storage Controller IP	IP address for the HyperFlex Management network.

Click **Next**.

Step 13 On the **Summary** page, you can view the following details:

- **General**—Name of the SD-WAN profile, organization SD-WAN belongs to, tags used.
- **Targets**—Name, Status, Model, and Serial number of the HyperFlex Edge nodes
- **HyperFlex Cluster**—HyperFlex cluster configuration and node configuration details, and Errors/Warnings if any. Organization the HyperFlex cluster belongs to, name of the HyperFlex cluster and tags used.
- **SD-WAN**—Policy configuration, virtual router configuration, and Hypervisors network configuration. Details like organization the SD-WAN belongs to, name of the SD-WAN profile, and tags used.

Step 14 Click **Validate** to validate the configuration and **Execute** to begin the deployment. Optionally, click **Validate**, and then **Close** to complete deployment later.

Results:

On the **Requests** page, you can view the progress of the various configuration tasks and do one of the following:

- **Edit**—You can edit the desired inputs in the HyperFlex SD-WAN deployment wizard.
- **Retry Execution from Failure**—You can retry the execution from the failure point.
- **Retry Execution**—You can retry the execution from the beginning.

When the deployment fails due to incorrect data, you can reenter the input data in the HyperFlex SD-WAN deployment wizard. You may choose to retry the execution from the failure point or rerun the execution from the beginning.

Only the following input changes will take effect when you **Retry Execution from Failure**:

- **HyperFlex Cluster Profile:**
 - **DNS, NTP, and Timezone Policy**—When the installation fails due to incorrect DNS, you must correct the DNS manually in all ESXi hosts, in addition to changing it in Intersight.
 - **Security Policy**
 - **vCenter Policy**
- **SD-WAN Profile:**
 - **UUID and Template**

- Note** When you edit the Template you will see one of the following changes in the Template inputs, depending on the state of the deployment:
- If the solution is not submitted yet, changing the template will change the Template values in the HyperFlex SD-WAN deployment wizard based on the values from the new template.
 - If the solution is already executed and failed after deployment of vEdge Routers, editing the template requires a clean-up and reexecute the HyperFlex SD-WAN deployment.

When you **Retry Execution**, all other inputs like HyperFlex Network Configuration, Storage Network, and IP & Hostname policies, and vEdge Router settings will take effect.
