

Manage Cisco NFVIS Devices Using NFV Config Group Workflow

Table 1: Feature History

Feature Name	Release Information	Description
Manage Cisco NFVIS devices using Cisco SD-WAN Manager via **Create NFV Config Group Workflow**	Cisco NFVIS Release 4.14.1 Cisco Catalyst SD-WAN Manager Release 20.14.1	Using this feature, manage the lifecycle of Cisco ENCS and Cisco Catalyst Edge uCPE 8200 devices using Cisco SD-WAN Manager. You can seamlessly provision and monitor Cisco ENCS and Cisco Catalyst Edge uCPE 8200 devices. You can deploy multiple Cisco ENCS and Cisco Catalyst Edge uCPE 8200 devices in bulk.

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Overview of Onboarding Cisco NFVIS Devices to Cisco SD-WAN Manager

With **Create NFV Configuration Group** Workflows, Cisco SD-WAN Manager provides an enhanced and intuitive user interface to manage and operate Cisco ENCS more efficiently. The workflow is designed to streamline and simplify the management tasks related to Cisco NFVIS using Cisco SD-WAN Manager.

You can now easily onboard and provision Cisco NFVIS devices into the Cisco SD-WAN Manager system using a simplified user interface and guided workflows. Create an NFV Configuration Group for Day 0 to enable efficient deployment and setup of Cisco NFVIS devices according to specific service requirements.

You can also modify configuration group parcels for Day N design customization. Cisco SD-WAN Manager offers the capability to manage software images for uCPE (Universal Customer Premises Equipment) platforms and VNF (Virtual Network Function) services, allowing administrators to source NFVIS and VNF images from external repositories.

Benefits of Cisco SD-WAN Manager Workflows

- The workflows provide monitoring tools and insights to ensure the health and performance of both Cisco ENCS and virtualized network functions.
- The Cisco SD-WAN Manager, with its modular and rich set of APIs, facilitates automation and integration with external systems. This allows for enhanced network orchestration and operational efficiency.

Key Tasks Before you Begin

- Ensure that your Cisco SD-WAN Manager is running Cisco Catalyst SD-WAN Manager Release 20.14.1 and later to onboard Cisco ENCS to Cisco SD-WAN Manager using workflows.
- Ensure Cisco NFVIS WAN Edge device has reachability to the Cisco SD-WAN Validator and other Cisco SD-WAN Control Components which are reachable through public IP addresses across the WAN transports.
- Ensure that Cisco NFVIS WAN Edge device has rechability to the remote server.

Supported Devices

- Cisco ENCS
- Cisco Catalyst Edge uCPE 8200

Define Cisco NFVIS Devices In Cisco SD-WAN Manager

Create a Device List

Create a device list in the Cisco Smart Account and make it available in Cisco SD-WAN Manager. For more information see, Cisco Plug and Play Support Guide for Cisco SD-WAN products.

Sync Smart Account Using Cisco SD-WAN Manager

1. From the Cisco SD-WAN Manager menu, choose **Configuration** > **Devices**.
2. Click **Sync Smart Account**.
3. In the **Sync Smart Account** pane, enter the **Username** and **Password**. To sync the WAN edge list, with other Cisco SD-WAN Control Components, use the **Send to Controllers** drop-down list.
4. Click **Sync**.

After the device is successfully added to Cisco SD-WAN Manager, you should see the Cisco ENCS in the devices list.



Note The device reaches out to the Cisco Plug and Play (PNP) Connect portal to receive the control components information. Don't interrupt the PnP boot-up process or the redirection to control components fails.

Register a Remote Server

Cisco SD-WAN Manager uses the remote repository to source the vnf-disk-image, and auto generate the files required by Cisco ENCS. For more information on adding a remote server,see Register Remote Server.

Upload a VNF QCOW2

Uploading VNF QCOW2 to Cisco SD-WAN Manager is a three-step process:

1. Download the VNF QEMU Copy On Write version 2 (QCOW2) from CCO.
2. In the Cisco SD-WAN Manager Menu, navigate to **Maintenance** > **Software Repository** > **Virtual Images** > **Upload Virtual Image** > **Remote Server (preferred)** to upload VNF QCOW2 to Cisco SD-WAN Manager.
3. In the pop-up window, enter the QCOW image file name (including the extension) and other required/optional fields to add a remote server virtual image.

Use the Quick Connect Workflow

A Quick Connect Workflow provides an alternative, guided method in Cisco SD-WAN Manager to onboard supported WAN edge devices into the Cisco Catalyst SD-WAN overlay network. This workflow helps you configure Cisco NFVIS devices to establish data plane and control plane connections.

The behavior of the Quick Connect workflow depends on how you upload devices to Cisco SD-WAN Manager. You can upload your devices in one of the following ways, either as part of the Quick Connect workflow or independently.

- Auto-sync option: Your Smart Account is in sync with the Cisco SD-WAN Manager. This option requires Cisco SD-WAN Manager to be able to connect with the Cisco PNP portal.
- Manual upload: Download the authorized serial number file of devices from the Cisco PnP portal and upload it to Cisco SD-WAN Manager.

Use the following instructions to use the quick connect workflow:

1. From the Cisco SD-WAN Manager menu, choose **Workflows**.
2. To start a new quick connect workflow: Under the **Popular Workflows** area, choose **Quick Connect Workflow**.

Note Ensure that you have the following configured before you get started:

- Organization's name
- Certificate Authorization
- Cisco SD-WAN Control Components including Cisco SD-WAN Controllers and Cisco SD-WAN Validators as per your requirement

3. Import device serial numbers from Cisco Plug and Play or upload device files manually using serial numbers.

Note Choose **Skip for now** if you already have Cisco NFVIS devices configured in Cisco SD-WAN Manager.

4. Once you see the Cisco NFVIS devices in the device list, select the device from the device list, and click **Next**.
5. Add and review the Cisco NFVIS devices settings that you want to configure and click **Next**.
6. (Optional) You can tag Cisco NFVIS devices to respective keywords (optional) to better group and identify the Cisco NFVIS devices.

Note In Cisco SD-WAN Manager Release 20.12.1, device tagging isn't supported for Cisco NFVIS device. The device tagging is supported for Cisco NFVIS devices starting from Cisco SD-WAN Manager Release 20.13.1.

7. In the summary page, review the configuration of Cisco NFVIS device for one last time and click **Onboard**.

   Your Cisco NFVIS device is defined as a supported device in Cisco SD-WAN Manager.

Upload .CSV Files

- To upload a file with the serial numbers: Download the sample CSV file and upload a signed file (.viptela file) from Cisco Plug and Play or upload an unsigned file (.csv file). For more information, see Plug and Play Connect Service.

Note The **Chassis number** and either the **Cert Serial Number** or **SUDI Serial Number** are mandatory field to onboard Cisco ENCS onto Cisco SD-WAN Manager.

- Typical virtual branch deployment requires an authorized list of devices and VNF images for the services to deploy. Also, the VNF images should be made available in the remote server(s).

Design Cisco NFVIS Service Chain Using Cisco SD-WAN Manager

The **Create NFV Configuration group** workflow provides a simple, reusable, and structured approach for the configurations in Cisco Catalyst SD-WAN and NFVIS environments. You can create a configuration group, that is, a logical grouping of features or configurations that is applied to one or more devices in the network. Create profiles based on features that are required, recommended, or uniquely used, and then combine the profiles to complete a device configuration.

The configuration group workflow in Cisco SD-WAN Manager provides a guided method to create configuration groups and feature profiles. For more information see, Overview of Configuration Group Workflows.

Access NFV Configuration Group Workflow

1. From the Cisco SD-WAN Manager menu, choose **Workflows** > **Create NFV Configuration Group**.
2. Start a new NFV Configuration workflow: Under the **Popular Workflows** area, choose **Create NFV Configuration Group**.



Note You can perform site-wise configurations and tweak the site settings based on your requirement.

3. Enter a name for your NFV Configuration group and click **Next**.
4. Define the NFV device system settings and WAN circuits using the **Site Configurations** step.

Table 2: Site Configurations

Field	Description
Site Type	The configuration group type is **Single NFV Device** by default. This is the only option available.
Site Settings	Enter site-specific values that maybe common to other devices in Cisco SD-WAN Manager. Configure two different banner text strings, one to be displayed before the login banner. The other to be displayed after a successful login to the device-message-of-the-day (MOTD).
WAN Interfaces	Configure the WAN interfaces required. **Note** Only one DHCP and a maximum of four WAN interfaces are supported. The Cisco ENCS device supports only two WAN interfaces.

Field	Description
WAN Routing	Click **Add Routes** to add WAN routing details to the configuration.

5. Define VNF services in the **VNF Services** step. You can either pick a predefined topology or you create your own custom topology.
6. Review and edit the NFV Config Group design if required and click **Create Configuration Group**.
7. Once you create an NFV configuration group workflow, in the success page, click **Associate Devices to the NFV config group** to associate the NFVIS devices to the intended configuration group.

Note You can edit the configuration group and add Day N modifications to the configuration group.

Create Add on CLI configuration

Create an Add on CLI configuration with a user-defined Feature Profile. For more information see, Configuration Groups and Feature Profiles.

Note

- In the **Add and Review Device Configuration** page, enter `GEO-2` in the field for the LAN interface, where the default variable name is `lan_1_intf_name`.
- Enter the **LAN IP address** and **Subnet Mask**. The Cisco SD-WAN Manager configures these settings under the MGMT interface on the Cisco ENCS platform.

Associate Cisco NFVIS Devices with Cisco SD-WAN Manager

1. Once the NFVIS Config group is sucessfully created in the **What's Next** area, click **Associate Devices to the NFV config group**.
2. Choose and review the list of devices.
3. Click **Next**.
4. Choose the respective device from the **Available Devices** screen.

Note

- You can perform site-wise configurations and tweak the site settings based on your requirement.
- If you intend to use ENCS LAN-SRIOV networks for the VM interfaces, enter `GEO-2` in the **Interface Name Variable**.

5. Click **Next**.

6. The devices are added to the configuration group. In the device added success pop-up, click **Provision Devices** to check all the site parameters, connectivity, and check if the device is ready for configuration. Click **No, I Will Do It Later** if you want to skip provisioning your devices.

Create a Switch Feature Profile For Cisco ENCS

Cisco ENCS devices are built-in with a hardware switch, by default. Configure the switch within Cisco ENCS using Cisco SD-WAN Manager using the **Switch** feature profile.

1. From the Cisco SD-WAN Manager menu, choose **Configuration** > **Configuration Groups**.
2. Click **...** in the **Actions** column adjacent to the NFV configuration group you created and click **Edit**.
3. Expand the **Network Profile** and navigate to the **Switch** tab.

Note The NFV configuration groups, by default, creates **System Profile** and **Network Profile** as associated profiles.

4. Click **Add Switch**.
5. In the **Add Feature** page, enter a **Name** and **Description** (optional) for the switch profile.
6. In the **Basic Settings** tab, click **+ Add Interfaces** and add the switch parcel configuration.

Field	Description
Interface Name	Choose an interface from the interface name drop-down list.
VLAN	Enter a VLAN value.
VLAN Mode	Choose between Access or Trunk VLAN modes.
Native VLAN	In case of trunk mode, add a native VLAN value.
Action	Click the delete icon to delete the switch profile.

Deploy Cisco NFVIS Devices to Cisco SD-WAN Manager

1. From the Cisco SD-WAN Manager menu, choose **Workflows** > **Deploy Configuration Group**.
2. Choose the configuration group you created and click **Next**.
3. Select the devices from the particular site and click **Next**.
4. Add and review device configuration.

Note Cisco Catalyst SD-WAN autogenerates minimal configurations to make it easier for you to bring up your Cisco NFVIS device. Modify them as needed and edit the configuration fields to add System IP and Site IDs as per the requirement.

5. In the **Summary** page, review the configuration group and the selected device.
6. Click **Deploy**.

   You've succesfully deployed your Cisco NFVIS device to Cisco SD-WAN Manager.

Operate Cisco NFVIS Devices Using Cisco SD-WAN Manager

Monitor and operate Cisco NFVIS devices using Cisco SD-WAN Manager.

1. From the Cisco SD-WAN Manager menu, choose **Monitor** > **Devices**.
2. In the list of devices appearing, select the Cisco NFVIS device to monitor the system status, device health and interface packet statistics. View the CPU utilization for the guest VNF as well.