

Cisco Catalyst SD-WAN Software Installation and Upgrade Guide for Cisco ISR1100 and ISR1100X Series Integrated Services Routers

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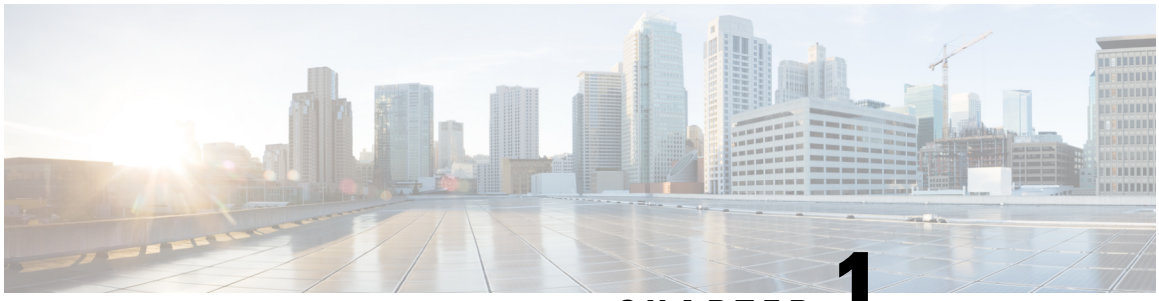
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CHAPTER 1

Read Me First

Note To achieve simplification and consistency, the Cisco SD-WAN solution has been rebranded as Cisco Catalyst SD-WAN. In addition, from Cisco IOS XE SD-WAN Release 17.12.1a and Cisco Catalyst SD-WAN Release 20.12.1, the following component changes are applicable: **Cisco vManage** to **Cisco Catalyst SD-WAN Manager**, **Cisco vAnalytics** to **Cisco Catalyst SD-WAN Analytics**, **Cisco vBond** to **Cisco Catalyst SD-WAN Validator**, **Cisco vSmart** to **Cisco Catalyst SD-WAN Controller**, and **Cisco Controllers** to **Cisco Catalyst SD-WAN Control Components**. See the latest Release Notes for a comprehensive list of all the component brand name changes. While we transition to the new names, some inconsistencies might be present in the documentation set because of a phased approach to the user interface updates of the software product.

Related References

- Cisco Catalyst SD-WAN Control Components Compatibility Matrix and Server Recommendations
- Cisco Catalyst SD-WAN Device Compatibility

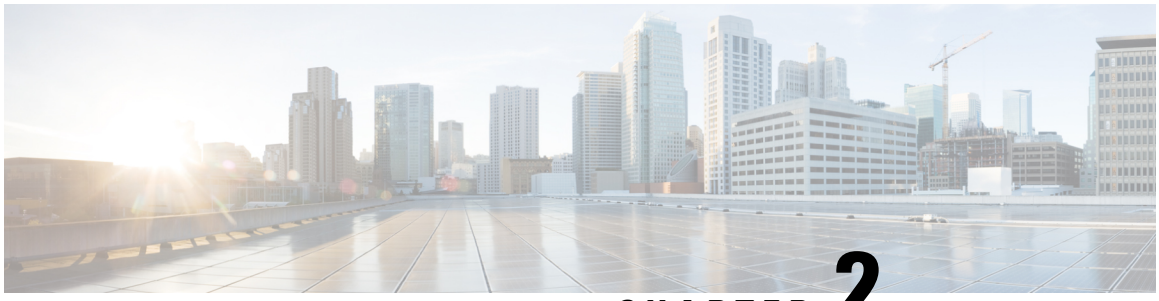
User Documentation

Communications, Services, and Additional Information

- Sign up for Cisco email newsletters and other communications at: Cisco Profile Manager.
- For information on the latest technical, advanced, and remote services to increase the operational reliability of your network visit Cisco Services.
- To browse and discover secure, validated enterprise-class apps, products, solutions, and services, visit Cisco Devnet.
- To obtain general networking, training, and certification titles from Cisco Press Publishers, visit Cisco Press.
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- To view open and resolved bugs for a release, access the Cisco Bug Search Tool.
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CHAPTER 2

What's New in Cisco IOS XE (SD-WAN) and Cisco Catalyst SD-WAN Releases

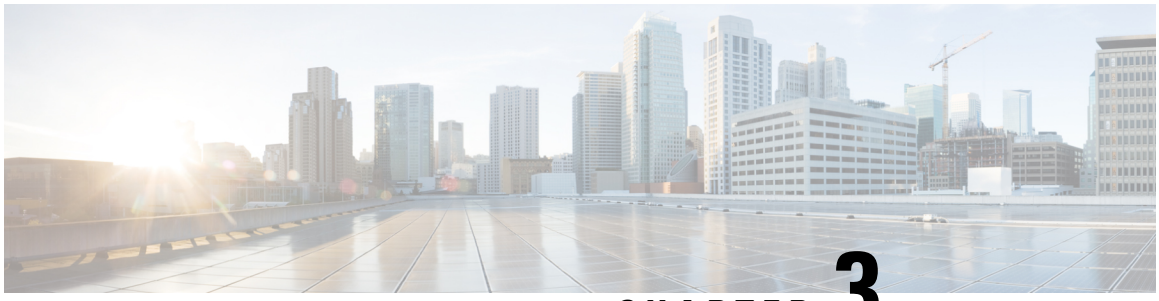
Cisco is constantly enhancing the Cisco Catalyst SD-WAN solution with every release and we try and keep the content in line with the latest enhancements. The following links includes release-wise new and modified features that are documented in the Configuration, Command Reference, and Hardware Installation guides. For information on additional features and fixes that were committed to the Cisco Catalyst SD-WAN solution, see the *Resolved and Open Bugs* section in the Release Notes.

What's New in Cisco IOS XE Catalyst SD-WAN Release 17.x

What's New in Cisco IOS XE Catalyst SD-WAN Release 16.x

What's New in Cisco SD-WAN (vEdge) Release 20.x

What's New in Cisco SD-WAN (vEdge) Release 19.x



CHAPTER 3

Software Installation and Upgrade for Cisco ISR1100 and ISR1100X Series Integrated Services Routers

Table 1: Feature History

Feature Name	Release Information	Description
Upgrade the Software of Cisco ISR1100 and ISR1100X Series Integrated Services Routers to Cisco IOS XE	Cisco IOS XE Catalyst SD-WAN Release 17.4.1a	This release introduces Cisco IOS XE SD-WAN support for Cisco ISR1100 and ISR1100X Series Integrated Services Routers. These devices can use either Cisco vEdge software or Cisco IOS XE SD-WAN. You can upgrade these routers from Cisco vEdge software to Cisco IOS XE SD-WAN, or vice-versa.

- Overview, on page 5
- Supported releases for software installation and upgrade, on page 6
- Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco IOS XE SD-WAN, on page 7
- Create the Cisco IOS XE configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 10
- Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco vEdge software, on page 11
- Create the Cisco vEdge configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 15
- Example bootstrap configuration files, on page 16

Overview

Cisco IOS XE Catalyst SD-WAN Release 17.4.1a introduces Cisco IOS XE SD-WAN support for Cisco ISR1100 and ISR1100X Series Integrated Services Routers. This provides these devices with a new flexibility. They can use Cisco vEdge software and operate as a Cisco vEdge device, or they can use Cisco IOS XE Catalyst SD-WAN Release 17.4.1a or later and operate as a Cisco IOS XE Catalyst SD-WAN device.

You can use the upgrade procedures in this section to change the software on a Cisco ISR1100 Series device from Cisco vEdge software to Cisco IOS XE SD-WAN, or from Cisco IOS XE SD-WAN to Cisco vEdge software.

Supported Platforms

- Cisco ISR1100-4G
- Ciscoo ISR1100X-4G
- Cisco ISR1100-6G
- Cisco ISR1100X-6G
- Cisco ISR1100-4GLTE (Cisco ISR1100-4GLTENA and Cisco ISR1100-4GLTEGB)

Use Cases for Updating a Device to Cisco IOS XE SD-WAN or to Cisco vEdge Software

- If a device has already been onboarded and is currently running Cisco vEdge software, you can upgrade to Cisco IOS XE SD-WAN.
- If a device has not yet been onboarded, then by default, when you upload the device serial file in Cisco SD-WAN Manager, Cisco SD-WAN Manager creates a database entry for the device identifying it as a Cisco vEdge device. In this scenario, you can:

  Onboard the device with Cisco vEdge software and continue to use the device as a Cisco vEdge device.

  or

  Use Cisco SD-WAN Manager to update the device to Cisco IOS XE SD-WAN. Updating to Cisco IOS XE SD-WAN changes the database entry for the device to identify it as a Cisco IOS XE Catalyst SD-WAN device.

Notes

When Cisco SD-WAN Manager onboards a Cisco ISR1100 and ISR1100X Series router, by default Cisco SD-WAN Manager treats it as a device running Cisco vEdge software. Cisco SD-WAN Manager indicates the software of Cisco ISR1100 and ISR1100X Series routers in the devices list. To view the device list, in Cisco SD-WAN Manager, click **Configuration** > **Devices**.

Supported releases for software installation and upgrade

Migration between Cisco vEdge software (Viptela OS) and Cisco IOS XE Catalyst SD-WAN releases is supported on these releases:

- Viptela OS: Cisco SD-WAN Release 20.4.1 through 20.9.x
- Cisco IOS XE SD-WAN: Cisco IOS XE Catalyst SD-WAN Release 17.4.1a and later

Note You must first migrate your Cisco ISR1100 Series devices from Viptela OS to Cisco IOS XE Catalyst SD-WAN Release 17.9.x. After the migration, you can upgrade to the target Cisco IOS XE Catalyst SD-WAN version. Cisco supports migration only to Cisco IOS XE Catalyst SD-WAN Release 17.9.x and 20.9.x.

Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco IOS XE SD-WAN

Use this procedure to upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco IOS XE SD-WAN.

Prerequisites

Prerequisite	Description
Cisco SD-WAN Manager version	Cisco vManage Release 20.4.1 or later.
Current software version	Check current version: If the device is using Cisco vEdge software, ensure that the current version is Cisco SD-WAN Release 20.4.1 or later. If it is not, install the correct image.
Target software image	Download the software image to use for the migration, from the following Cisco site: https://software.cisco.com **Note** Choose an image filename beginning with "isr1100be". Store the image in the Cisco SD-WAN Manager software repository. (To access the repository, in Cisco SD-WAN Manager, click **Maintenance** > **Software Repository**.)
Timeout settings	Set the download timeout and activate timeout as follows: In Cisco SD-WAN Manager, click **Administration** > **Settings** > **Software Install Timeout**. Click **Edit** and configure the following parameters: • Download timeout: 120 minutes • Activate timeout: 60 minutes

Prerequisite	Description

(Optional) Verify BIOS and Aikido Field Programmable Gate Array (FPGA) versions	(Optional) Verify that the BIOS and Aikido Field Programmable Gate Array (FPGA) versions are as follows:
	• BIOS: 17.4(2r) or later
	• Aikido FPGA: 07250006 or later
	
	Use **show hardware real-time-information** to show the FPGA and BIOS versions.
	
	Example:
	`vedge# show hardware real-time-information`
	
	`Hardware Information`
	
	`------------------------------------------------`
	`Baseboard Details:`
	`board type: ISR1100X-6G`
	`board serial number: ISR1100X-6G-FCH2348L1QA`
	`------------------------------------------------`
	`TPM Details:`
	`Aikido FPGA: 07250006`
	`------------------------------------------------`
	`…`
	`Bootloader version:`
	`BIOS Version: 17.4(2r)`
	`…`

Detach any device template	In Cisco SD-WAN Manager, if a device template has been applied to the device that you are upgrading, detach the device template.
Configuration file	Typically, the upgrade procedure automatically creates a configuration file for the new software. This configuration file preserves the following basic device configuration from the existing configuration file: • System IP • Physical WAN interface name • Cisco Catalyst SD-WAN Validator IP • Site ID • Organization name • Static default routes • Hostname IP configurations • DNS (primary/secondary) IP configurations • WAN IP/Netmask (IPv4) However, in some cases, it may be necessary to create a configuration file manually. See Create the Cisco IOS XE configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 10.

Upgrade to Cisco IOS XE SD-WAN

1. If you are creating the configuration file for Cisco IOS XE SD-WAN manually, see Create the Cisco IOS XE configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 10.
2. In Cisco SD-WAN Manager, click **Configuration** > **Devices** to view devices in the network. For Cisco ISR1100 Series routers, the table of devices shows the current software. Locate the device that you want to upgrade and note its system IP address.
3. In Cisco SD-WAN Manager, click **Maintenance** > **Software Upgrade**.
4. Locate the router in the table, using the system IP address noted earlier.
5. Select the router in the table and click **Upgrade**.
6. In the **Software Upgrade** pop-up:
   a. Select the **vManage** option.
   b. In the **Version** field, select the Cisco IOS XE image to use for the upgrade.

      The image must be for Cisco IOS XE Catalyst SD-WAN Release 17.4.1a or later.
   c. Select the **Activate and Reboot** and **Confirm** checkboxes.
   d. Click **Upgrade**. The **Task View** page displays progress. The device reboots at the end of the upgrade process.

      The process takes several minutes.
7. In the **Task View**, verify that the device is accessible. If Cisco SD-WAN Manager can reach the device, then the upgrade is considered successful.

   Messages on the **Task View** page show the status:

Message	Description
Operation status being verified by Cisco SD-WAN Manager	Cisco SD-WAN Manager is attempting to connect to the device. This message may continue for several minutes. **Note** If the device is not configured to use Cisco PnP, confirm that you have loaded the device configuration correctly.
Done – Software Install	The upgrade is complete.

8. In Cisco SD-WAN Manager, click **Configuration** > **Devices** and select the **WAN Edge List** tab.
9. In the table row for the upgraded device, click **More Actions** (**…**) and select **Migrate Device**. A warning pop-up appears, indicating that the upgrade clears the existing statistics, event history, and configuration. Click **Yes** to continue.
10. On the **Configuration** page, click **Refresh**. In the **Device Model** column, verify that the device shows the correct software, according to the migration.
    - If you migrated the device to Cisco IOS XE SD-WAN, it says **Cisco OS**.
    - If you migrated the device to Cisco vEdge software, it says **Viptela OS**.

After the upgrade, the device uses the configuration file to start up, and re-establishes a control connection to Cisco SD-WAN Manager. If the device is unable to automatically generate the configuration file, the device attempts a PnP workflow after upgrading to Cisco IOS XE SD-WAN to re-establish a control connection to Cisco SD-WAN Manager.

The device operates as any other device running the selected software. Optionally, you can use Cisco SD-WAN Manager to push a device template to add additional configuration to the device.

Note If the upgrade process fails, Cisco SD-WAN Manager returns the device to its previous software, reloads the previous configuration, and re-establishes the previous connection to the Cisco Catalyst SD-WAN controller.

Create the Cisco IOS XE configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router

Note Use this procedure only in cases where it is necessary to create the configuration file manually before the upgrade procedure.

It may be necessary to create a configuration file manually, in the format of the software to which you are upgrading the router, in the following cases:

- If the active WAN interface is a non-physical interface.
- If Cisco Network Plug and Play (PnP) cannot be used.
- If you need to preserve aspects of a complex configuration file that are not converted automatically by the upgrade procedure.
- If a loopback interface or extended TLOC is used for the connection between the device and the controller.

1. Before upgrading a device to Cisco IOS XE, create a bootstrap file called **ciscomigration.cfg** containing any configuration details that you want to preserve from the current device configuration. This file must contain the full Cisco IOS XE SD-WAN running-config for the router to use after the upgrade procedure.

   See Example bootstrap configuration files, on page 16.

Note If the **ciscomigration.cfg** file is empty, it forces a Cisco Plug and Play (PnP) workflow on the device after upgrading to Cisco IOS XE SD-WAN. PnP attempts to connect the device to Cisco SD-WAN Manager.

2. Do one of the following:

   - **Use a USB flash drive**: Copy the file to the root folder of a USB flash drive and connect the USB flash drive to the router.

     or

- **Copy the file by SSH**: Connect to the router using SSH (in Cisco SD-WAN Manager, click **Tools** > **SSH Terminal**) and transfer the file to the following directory on the router:

  /home/admin

3. Proceed with the upgrade procedure in Cisco SD-WAN Manager. See Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco IOS XE SD-WAN, on page 7. The procedure checks for the presence of the manually created configuration file (first) on an attached USB flash drive and (second) in the home directory described in the previous step. It finds the configuration file that you created and uses it instead of creating a new configuration file automatically.

Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco vEdge software

Use this procedure to upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco vEdge software.

Prerequisites

Prerequisite	Description
Cisco SD-WAN Manager version	Cisco SD-WAN Manager version: Cisco vManage Release 20.4.1 or later.
Target software image	Download the software image to use for the migration, from the following Cisco site: https://software.cisco.com Store the image in the Cisco SD-WAN Manager software repository. (To access the repository, in Cisco SD-WAN Manager, click **Maintenance** > **Software Repository**.)

Prerequisite	Description

(Optional) Verify BIOS and Aikido Field Programmable Gate Array (FPGA) versions	(Optional) Verify that the BIOS and Aikido Field Programmable Gate Array (FPGA) versions are as follows:
	• BIOS: 17.4(2r) or later
	• Aikido FPGA: 07250006 or later
	
	Use **show rom-monitor** to display the BIOS version.
	Example:
	`Router#show rom-monitor R0`
	`============================================================`
	`System Bootstrap, Version 17.4(2r), RELEASE SOFTWARE`
	`Copyright (c) 1994-2020 by cisco Systems, Inc.`
	
	Use **show hw-programmable all** to display the Aikido FPGA version.
	Example:
	`Router#show hw-programmable all`
	`Hw-programmable versions`
	`Slot CPLD version FPGA version`
	`------------------------------------------------------------`
	`R0 20011032 07250006`
	`F0 20011032 N/A`
	`0 20011032 N/A`

Detach any device template	In Cisco SD-WAN Manager, if a device template has been applied to the device that you are upgrading, detach the device template.

Prerequisite	Description
Configuration file	Typically, the upgrade procedure automatically creates a configuration file for the new software. This configuration file preserves the following basic device configuration from the existing configuration file: • System IP • Physical WAN interface name • Cisco Catalyst SD-WAN Validator IP • Site ID • Organization name • Static default routes • Hostname IP configurations • DNS (primary/secondary) IP configurations • WAN IP/Netmask (IPv4) However, in some cases, it may be necessary to create a configuration file manually. See Create the Cisco vEdge configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 15.

Upgrade to Cisco vEdge Software

1. If you are creating the configuration file for Cisco vEdge software manually, see Create the Cisco vEdge configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router, on page 15.
2. In Cisco SD-WAN Manager, click **Configuration** > **Devices** to view devices in the network. For Cisco ISR1100 Series routers, the table of devices shows the current software type. Locate the device that you want to upgrade and note its system IP address.
3. In Cisco SD-WAN Manager, click **Maintenance** > **Software Upgrade**.
4. Locate the router in the table, using the system IP address noted earlier.
5. Select the router in the table and click **Upgrade**.
6. In the **Software Upgrade** pop-up:
   a. Select the **vManage** option.
   b. In the **Version** field, select the Cisco Catalyst SD-WAN software image to use for the upgrade.

      The image must be for Cisco SD-WAN 20.4.1 or later.



Note After performing the upgrade process to Cisco SD-WAN 20.4.1, you can downgrade the software to an earlier version of Cisco vEdge software.

   c. Select the **Activate and Reboot** and **Confirm** checkboxes.

d. Click **Upgrade**. The **Task View** page displays progress. The device reboots at the end of the upgrade process.

   The process takes several minutes.

7. In the **Task View**, verify that the device is accessible. If Cisco SD-WAN Manager can reach the device, then the upgrade is considered successful.

   Messages on the **Task View** page show the status:

Message	Description
Operation status being verified by Cisco SD-WAN Manager	Cisco SD-WAN Manager is attempting to connect to the device. This message may continue for several minutes. **Note** If the device is not configured to use Cisco PnP, confirm that you have loaded the device configuration correctly.
Done – Software Install	The upgrade is complete.

8. Remove the device from the Cisco SD-WAN Manager WAN edge list, using the Delete a WAN Edge Router procedure described in the Cisco Catalyst SD-WAN Systems and Interfaces Configuration Guide.

9. Add the device back to the Cisco SD-WAN Manager WAN edge list. To do this, upload a serial number file from the Cisco Plug-and-Play (PnP) portal, containing the serial number of the device that you are updating. Use the Upload WAN Edge Router Authorized Serial Number File procedure described in the Cisco Catalyst SD-WAN Systems and Interfaces Configuration Guide to upload the file to Cisco SD-WAN Manager.

10. In Cisco SD-WAN Manager, click **Configuration** > **Devices** and select the **WAN Edge List** tab.

11. In the table row for the upgraded device, click **More Actions** (**…**) and select **Migrate Device**. A warning pop-up appears, indicating that the upgrade clears the existing statistics, event history, and configuration. Click **Yes** to continue.

12. On the **Configuration** page, click **Refresh**. In the **Device Model** column, verify that the device shows the correct software, according to the migration.

    - If you migrated the device to Cisco IOS XE SD-WAN, it says **Cisco OS**.
    - If you migrated the device to Cisco vEdge software, it says **Viptela OS**.

After upgrade, the device uses the configuration file to start up, and re-establishes a control connection to Cisco SD-WAN Manager. If the device is unable to automatically generate the configuration file, the device attempts a PnP workflow after upgrading to Cisco vEdge software to re-establish a control connection to Cisco SD-WAN Manager.

The device operates as any other device running the selected software. Optionally, you can use Cisco SD-WAN Manager to push a device template to add additional configuration to the device.



Note If the upgrade process fails, Cisco SD-WAN Manager returns the device to its previous software, reloads the previous configuration, and re-establishes the previous connection to the Cisco Catalyst SD-WAN controller.

Create the Cisco vEdge configuration file manually for upgrading a Cisco ISR1100 and ISR1100X Series router

Note Use this procedure only in cases where it is necessary to create the configuration file manually before the upgrade procedure. This manual process of creating a configuration file is not recommended for standard upgrades where automatic configuration generation and PnP workflows are preferred.

It may be necessary to create a configuration file manually, in the format of the software to which you are upgrading the router, in the following cases:

- If the active WAN interface is a non-physical interface.
- If Cisco Network Plug and Play (PnP) cannot be used.
- If you need to preserve aspects of a complex configuration file that are not converted automatically by the upgrade procedure.
- If a loopback interface or extended TLOC is used for the connection between the device and the Cisco Catalyst SD-WAN Controller.

1. Before upgrading the device to Cisco vEdge software, create a bootstrap file called **vedgemigration.cfg** containing any configuration details that you want to preserve from the current device configuration. This file must contain the full Cisco vEdge software running-config for the router to use after the upgrade procedure.

   See Example bootstrap configuration files, on page 16.

Note If the **vedgemigration.cfg** file is empty, it forces a Cisco Plug and Play (PnP) workflow on the device after upgrading to Cisco vEdge software. PnP attempts to connect the device to Cisco SD-WAN Manager.

2. Do one of the following:

   - **Use a USB flash drive**: Copy the file to the root folder of a USB flash drive and connect the USB flash drive to the router.

     or

   - **Copy the file by SSH**: Connect to the router using SSH (in Cisco SD-WAN Manager, click **Tools** > **SSH Terminal**) and transfer the file to the following directory on the router:

     :bootflash

3. Proceed with the upgrade procedure in Cisco SD-WAN Manager. See Upgrade a Cisco ISR1100 and ISR1100X Series router to Cisco vEdge software, on page 11. The procedure checks for the presence of the manually created configuration file (first) on an attached USB flash drive and (second) in the home directory described in the previous step. It finds the configuration file that you created and uses it instead of creating a new configuration file automatically.

Example bootstrap configuration files

In cases where it is necessary to create a bootstrap configuration file manually before the upgrade procedure, create the bootstrap configuration file with any configuration details that you want to preserve from the current device configuration. The file must contain the full running-config for the router to use after the upgrade procedure.

The following sections provide example bootstrap configuration files for the following tasks:

- Upgrade to Cisco IOS XE SD-WAN, for a device using a GigabitEthernet interface
- Upgrade to Cisco vEdge software, for a device using a GigabitEthernet interface
- Upgrade to Cisco IOS XE SD-WAN, for a device using a cellular (LTE) interface (applicable to devices with an LTE interface)
- Upgrade to Cisco vEdge software, for a device using a cellular (LTE) interface (applicable to devices with an LTE interface)

Example Bootstrap File for Upgrade to Cisco IOS XE SD-WAN

This ciscomigration.cfg bootstrap file is for a device that uses a GigabitEthernet interface.



Note The following command is required in the bootstrap file when using ciscomigration.cfg to load the device configuration. Without this, login to the device may not be possible.

```
username admin privilege 15 secret 0 admin
```

```
system
 system-ip             10.0.0.1
 site-id               2
 admin-tech-on-failure
 sp-organization-name  YOUR-SP-ORG
 organization-name     YOUR-ORG
 vbond vbond.org.com port 12346
!
hostname Router
username admin privilege 15 secret 0 admin
vrf definition 1
 rd 100:1
 address-family ipv4
  route-target export 100:1
  route-target import 100:1
  exit-address-family
 !
 address-family ipv6
  exit-address-family
 !
 route-target export 100:1
 route-target import 100:1
!
no ip finger
no ip rcmd rcp-enable
no ip rcmd rsh-enable
no ip dhcp use class
ip multicast route-limit 2147483647
```

```
ip route 0.0.0.0/0 192.168.0.1
no ip source-route
ip ssh version 2
ip http authentication local
ip http server
ip http secure-server
no ip igmp ssm-map query dns
ip nat settings central-policy
ip nat settings gatekeeper-size 1024
interface GigabitEthernet0/0/0
 no shutdown
 ip address 192.0.2.1 255.255.255.0
 negotiation auto
exit
interface GigabitEthernet0/0/1
 no shutdown
 negotiation auto
exit
interface GigabitEthernet0/0/2
 no shutdown
 negotiation auto
exit
interface GigabitEthernet0/0/3
 no shutdown
 negotiation auto
exit
interface Tunnel0
 no shutdown
 ip unnumbered GigabitEthernet0/0/0
 tunnel source GigabitEthernet0/0/0
 tunnel mode sdwan
exit
aaa authentication login default local
aaa authorization exec default local
login on-success log
line con 0
 login authentication default
 stopbits 1
!
line vty 0 4
 login authentication default
 transport input ssh
!
line vty 5 80
 login authentication default
 transport input ssh
!
sdwan
 interface GigabitEthernet0/0/0
  tunnel-interface
   encapsulation ipsec
   color biz-internet
   allow-service all
   no allow-service bgp
   allow-service dhcp
   allow-service dns
   allow-service icmp
   allow-service sshd
   allow-service netconf
   no allow-service ntp
   no allow-service ospf
   no allow-service stun
   allow-service https
   no allow-service snmp
```

```
   no allow-service bfd
  exit
 exit
 !
 omp
  no shutdown
  graceful-restart
  no as-dot-notation
  address-family ipv4
   advertise connected
   advertise static
  !
  address-family ipv6
   advertise connected
   advertise static
  !
 !
!
security
 ipsec
  authentication-type ah-sha1-hmac sha1-hmac
 !
!
```

Example Bootstrap File for Upgrade to Cisco vEdge Software

This vedgemigration.cfg bootstrap file is for a device that uses a GigabitEthernet interface.

```
system
 host-name               vedge
 system-ip               10.0.0.1
 site-id                 2
 control-session-pps     10000
 no route-consistency-check
 no vrrp-advt-with-phymac
 organization-name       YOUR-ORG
 upgrade-confirm         15
 vbond vbond.org.com
 aaa
  auth-order local radius tacacs
  usergroup basic
   task system read write
   task interface read write
  !
  usergroup netadmin
  !
  usergroup operator
   task system read
   task interface read
   task policy read
   task routing read
   task security read
  !
  usergroup tenantadmin
  !
  user admin
  !
 !
 logging
  disk
   enable
  !
 !
 ntp
```

```
  master
   no enable
   stratum 5
  exit
 !
!
omp
 no shutdown
 graceful-restart
 advertise connected
 advertise static
!
security
 ipsec
  authentication-type ah-sha1-hmac sha1-hmac
 !
!
vpn 0
 interface ge0/0
  ip address 192.0.2.1/24
  ipv6 dhcp-client
  tunnel-interface
   encapsulation ipsec
   color public-internet
   allow-service all
   no allow-service bgp
   allow-service dhcp
   allow-service dns
   allow-service icmp
   no allow-service sshd
   no allow-service netconf
   no allow-service ntp
   no allow-service ospf
   no allow-service stun
   allow-service https
  !
  no shutdown
 !
 interface ge0/1
  no shutdown
 !
ip route 0.0.0.0 0.0.0.0 192.168.0.1
!
vpn 512
!
```

Example Bootstrap File for Upgrade to Cisco IOS XE SD-WAN, Cellular Interface

This ciscomigration.cfg bootstrap file is for a device that uses a cellular (LTE) interface.

Note The following command is required in the bootstrap file when using ciscomigration.cfg to load the device configuration. Without this, login to the device may not be possible.

```
username admin privilege 15 secret 0 admin
```

```
system
 system-ip             10.0.0.1
 site-id               200
 admin-tech-on-failure
 organization-name     spaal-LTE-Test
 vbond vbond-dev-231945.viptela.info port 12346
```

```
!
memory free low-watermark processor 68335
no service tcp-small-servers
no service udp-small-servers
platform qfp utilization monitor load 80
hostname Routerusername admin privilege 15 secret 0 admin
controller Cellular 0/1/0
!
no ip finger
no ip rcmd rcp-enable
no ip rcmd rsh-enable
no ip dhcp use class
no ip source-route
ip ssh version 2
no ip http server
ip http secure-server
ip nat settings central-policy
ip nat settings gatekeeper-size 1024
interface GigabitEthernet0/0/0
 shutdown
 negotiation auto
exit
interface GigabitEthernet0/0/1
 shutdown
 negotiation auto
exit
interface GigabitEthernet0/0/2
 shutdown
 negotiation auto
exit
interface GigabitEthernet0/0/3
 shutdown
 negotiation auto
exit
interface Cellular0/1/0
 no shutdown
 ip address negotiated
 ipv6 enable
exit
interface Cellular0/1/1
 shutdown
 ip address negotiated
exit
interface Tunnel0
 no shutdown
 ip unnumbered Cellular0/1/0
 ipv6 unnumbered Cellular0/1/0
 tunnel source Cellular0/1/0
 tunnel mode sdwan
exit
no logging rate-limit
aaa authentication login default local
aaa authorization exec default local
login on-success log
line aux 0
 login authentication default
!
line con 0
 login authentication default
 speed    115200
 stopbits 1
!
line vty 0 4
 login authentication default
```

```
 transport input ssh
!
line vty 5 80
 login authentication default
 transport input ssh
!
sdwan
 interface Cellular0/1/0
  tunnel-interface
   encapsulation ipsec
   no allow-service bgp
   allow-service dhcp
   allow-service dns
   allow-service icmp
   no allow-service sshd
   no allow-service netconf
   no allow-service ntp
   no allow-service ospf
   no allow-service stun
   allow-service https
   no allow-service snmp
   no allow-service bfd
  exit
 exit
 appqoe
  no tcpopt enable
 !
 omp
  no shutdown
  graceful-restart
  no as-dot-notation
  address-family ipv4
   advertise connected
   advertise static
  !
  address-family ipv6
   advertise connected
   advertise static
  !
 !
!
security
 ipsec
  authentication-type ah-sha1-hmac sha1-hmac
 !
!
```

Example Bootstrap File, Upgrading to Cisco vEdge Software, Cellular Interface

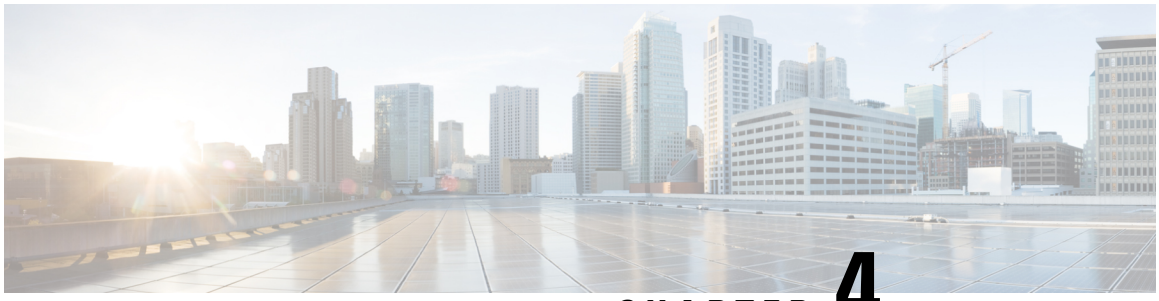
This vedgemigration.cfg bootstrap file is for a device that uses a cellular (LTE) interface.

```
system
 host-name                   vedge
 system-ip                   10.0.0.1
 site-id                     200
 no daemon-restart
 no daemon-reboot
 no reboot-on-failure
 admin-tech-on-failure
 no route-consistency-check
 no fp-buffer-check
 no vrrp-advt-with-phymac
 port-bp-threshold           32
 fp-sw-bp-threshold          8192
```

```
 sp-organization-name         spaal-LTE-Test
 fp-qos-interval              100
 fp-qos-weight-percent-factor 100
 organization-name            spaal-LTE-Test
 console-baud-rate            9600
 vbond vbond-dev-231945.viptela.info
 aaa
  auth-order local radius tacacs
  usergroup basic
   task system read write
   task interface read write
  !
  usergroup netadmin
  !
  usergroup operator
   task system read
   task interface read
   task policy read
   task routing read
   task security read
  !
  user admin
   password
$6$siwKBQ==$wT2lUa9BSreDPI6gB8sl4E6PAJoVXgMbgv/whJ8F1C6sWdRazdxorYYTLrL6syiG6qnLABTnrE96HJiKF6QRq1

  !
  user ciscotacro
   description CiscoTACReadOnly
   group       operator
   status      enabled
  !
  user ciscotacrw
   description CiscoTACReadWrite
   group       netadmin
   status      enabled
  !
 !
 logging
  disk
   enable
  !
 !
 ntp
  master
   no enable
   stratum 5
  exit
 !
 support
  zbfw-tcp-finwait-time 30
  zbfw-tcp-idle-time    3600
  zbfw-tcp-synwait-time 30
  zbfw-udp-idle-time    30
 !
!
omp
 no shutdown
 graceful-restart
 advertise connected
 advertise static
!
security
 ipsec
  authentication-type sha1-hmac ah-sha1-hmac
```

```
 !
!
vpn 0
 name "Transport VPN"
 interface cellular0
  ip dhcp-client
  tunnel-interface
   encapsulation ipsec
   color lte
   no allow-service bgp
   allow-service dhcp
   allow-service dns
   allow-service icmp
   no allow-service sshd
   no allow-service netconf
   no allow-service ntp
   no allow-service ospf
   no allow-service stun
   allow-service https
  !
  mtu      1428
  profile  0
  no shutdown
 !
!
vpn 512
 name "Transport VPN"
!
```



CHAPTER 4

Troubleshoot Cisco ISR1100 and ISR1100X Series Integrated Services Routers

To achieve simplification and consistency, the Cisco SD-WAN solution has been rebranded as Cisco Catalyst SD-WAN. In addition, from Cisco IOS XE SD-WAN Release 17.12.1a and Cisco Catalyst SD-WAN Release 20.12.1, the following component changes are applicable: **Cisco vManage** to **Cisco Catalyst SD-WAN Manager**, **Cisco vAnalytics** to **Cisco Catalyst SD-WAN Analytics**, **Cisco vBond** to **Cisco Catalyst SD-WAN Validator**, **Cisco vSmart** to **Cisco Catalyst SD-WAN Controller**, and **Cisco Controllers** to **Cisco Catalyst SD-WAN Control Components**. See the latest Release Notes for a comprehensive list of all the component brand name changes. While we transition to the new names, some inconsistencies might be present in the documentation set because of a phased approach to the user interface updates of the software product.

- Overview, on page 25
- Support Articles, on page 25
- Feedback Request, on page 26
- Disclaimer and Caution, on page 26

Overview

This chapter provides links to documents authored by Cisco subject matter experts (SMEs). They aim to help you resolve technical issues without requiring a support ticket. If these documents are unable to resolve your issue, we recommend visiting the applicable Cisco Community. There is a wealth of information and advice available from fellow Cisco customers who may have experienced this issue already and provided a solution. If you are not able to find a resolution on the Community, it may be best that you raise a support ticket at Cisco Support. In cases where a support ticket has to be raised, these documents provide guidance about the data that should be collected and added to the support ticket. Specify the support document you referred, and TAC can create an improvement request with the document owner.

Support Articles

The documents in this section were created using specific software and hardware listed in the Components Used section of each article. However, this does not mean that they are limited to what is listed in Components Used, and generally remain relevant for later versions of software and hardware. Note that there could be some changes in the software or hardware that can cause commands to stop working, the syntax to change, or GUIs and CLIs to look different from one release to another.

The following support article is associated with this technology:

Document	Description
Migrate SD-WAN ISR1100 Routers from Viptela OS to Cisco IOS XE	This document describes the procedure to migrate SD-WAN ISR1100 Router from Viptela OS to Cisco IOS® XE.
Migrate SD-WAN Nutella Boxes from Viptela OS to Cisco IOS XE	This document describes the procedure to migrate Nutella Viptela OS to Cisco IOS® XE.

Feedback Request

Your input helps. A key aspect to improving these support documents is customer feedback. Note that these documents are owned and maintained by multiple teams within Cisco. If you find an issue specific to the document (unclear, confusing, information missing, etc):

- Provide feedback using the **Feedback** button located at the right panel of the corresponding article. The document owner will be notified, and will either update the article, or flag it for removal.
- Include information regarding the section, area, or issue you had with the document and what could be improved. Provide as much detail as possible.

Disclaimer and Caution

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.