



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

First Published: 2020-12-17

Last Modified: 2023-12-17

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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](#).
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CHAPTER 2

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



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.

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

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.

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 6
- [Upgrade a Cisco ISR1100 and ISR1100X Series Router to Cisco IOS XE SD-WAN](#), on page 6
- [Create the Cisco IOS XE Configuration File Manually for Upgrading a Cisco ISR1100 and ISR1100X Series Router](#), on page 9
- [Upgrade a Cisco ISR1100 and ISR1100X Series Router to Cisco vEdge Software](#), on page 10
- [Create the Cisco vEdge Configuration File Manually for Upgrading a Cisco ISR1100 and ISR1100X Series Router](#), on page 14
- [Example Bootstrap Configuration Files](#), on page 15

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**.

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 | <p>Download the software image to use for the migration, from the following Cisco site: https://software.cisco.com</p> <p>Note Choose an image filename beginning with "isr1100be".</p> <p>Store the image in the Cisco SD-WAN Manager software repository. (To access the repository, in Cisco SD-WAN Manager, click Maintenance > Software Repository.)</p> |
| Timeout settings | <p>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:</p> <ul style="list-style-type: none"> • Download timeout: 120 minutes • Activate timeout: 60 minutes |
| (Optional) Verify BIOS and Aikido Field Programmable Gate Array (FPGA) versions | <p>(Optional) Verify that the BIOS and Aikido Field Programmable Gate Array (FPGA) versions are as follows:</p> <ul style="list-style-type: none"> • BIOS: 17.4(2r) or later • Aikido FPGA: 07250006 or later <p>Use show hardware real-time-information to show the FPGA and BIOS versions.</p> <p>Example:</p> <pre>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) ...</pre> |
| 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 | <p>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:</p> <ul style="list-style-type: none"> • 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) <p>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 9.</p> |

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 9](#).
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 | <p>Cisco SD-WAN Manager is attempting to connect to the device. This message may continue for several minutes.</p> <p>Note If the device is not configured to use Cisco PnP, confirm that you have loaded the device configuration correctly.</p> |
| 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 15](#).



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 6](#). 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. |

| Prerequisite | Description | | | | | | | | | | | | |
|---|---|--------------|--------------|--------------|----|----------|----------|----|----------|-----|---|----------|-----|
| Target software image | <p>Download the software image to use for the migration, from the following Cisco site: https://software.cisco.com</p> <p>Store the image in the Cisco SD-WAN Manager software repository. (To access the repository, in Cisco SD-WAN Manager, click Maintenance > Software Repository.)</p> | | | | | | | | | | | | |
| (Optional) Verify BIOS and Aikido Field Programmable Gate Array (FPGA) versions | <p>(Optional) Verify that the BIOS and Aikido Field Programmable Gate Array (FPGA) versions are as follows:</p> <ul style="list-style-type: none"> • BIOS: 17.4(2r) or later • Aikido FPGA: 07250006 or later <p>Use show rom-monitor to display the BIOS version.</p> <p>Example:</p> <pre>Router#show rom-monitor R0</pre> <pre>=====</pre> <pre>System Bootstrap, Version 17.4(2r), RELEASE SOFTWARE</pre> <pre>Copyright (c) 1994-2020 by cisco Systems, Inc.</pre> <p>Use show hw-programmable all to display the Aikido FPGA version.</p> <p>Example:</p> <pre>Router#show hw-programmable all</pre> <pre>Hw-programmable versions</pre> <table border="1"> <thead> <tr> <th>Slot</th> <th>CPLD version</th> <th>FPGA version</th> </tr> </thead> <tbody> <tr> <td>R0</td> <td>20011032</td> <td>07250006</td> </tr> <tr> <td>F0</td> <td>20011032</td> <td>N/A</td> </tr> <tr> <td>0</td> <td>20011032</td> <td>N/A</td> </tr> </tbody> </table> | Slot | CPLD version | FPGA version | R0 | 20011032 | 07250006 | F0 | 20011032 | N/A | 0 | 20011032 | N/A |
| 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 | <p>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:</p> <ul style="list-style-type: none"> • 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) <p>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 14.</p> |

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 14.
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 | <p>Cisco SD-WAN Manager is attempting to connect to the device. This message may continue for several minutes.</p> <p>Note If the device is not configured to use Cisco PnP, confirm that you have loaded the device configuration correctly.</p> |
| 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.

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 15](#).



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 10](#). 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-shal-hmac shal-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 23](#)
- [Support Articles, on page 23](#)
- [Feedback Request, on page 24](#)
- [Disclaimer and Caution, on page 24](#)

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.