

Upgrade Guide for Cisco SD-WAN Manager Cluster

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Introduction

This document describes a clear and practical reference for upgrading Cisco SD-WAN vManage clusters across different software versions.

Background Information

This document covers all major upgrade scenarios, including direct and multi-step paths, in order to help engineers plan and execute upgrades safely. The document also outlines recommended sequences, key pre-checks, cluster considerations, and post-upgrade validations in order to ensure minimal disruption and consistent system stability.

SD-WAN Manager Cluster Upgrade Procedure: Version 20.9.x to 20.12.x

Prerequisites



Note: Base version must be 20.9.5.2 or later release in 20.9.x train in order to upgrade to 20.12.x or later release. If current version is lower than 20.9.5.2, upgrade to 20.9.5.2 or a later 20.9.x version.

1. Controller Snapshots

Create complete snapshots of all SD-WAN controllers prior to beginning the upgrade process.

2. Configuration Database Backup

Execute a backup of the configuration database and store it in a location external to the sd-wan manager server using the **request nms configuration-db backup path <path_and_filename>** command.

3. AURA Health Check on sd-wan manager Nodes

Perform the AURA health check on all sd-wan manager nodes as documented in

<https://www.cisco.com/c/en/us/support/docs/routers/sd-wan/220514-execute-the-aura-script-on-vmanage.html>.

4. Image Distribution to sd-wan manager Servers

Manually copy the 20.12.5 upgrade image 'vmanage-20.12.5-x86_64.tar.gz' to the **/home/admin** directory on each Cisco sd-wan manager server in the cluster.

5. Image Verification

Verify that the upgrade image has been successfully copied to the **/home/admin** location on all sd-wan manager servers.

6. Six-Node Cluster Persona Verification

For six-node sd-wan manager cluster upgrades, verify that the sd-wan manager persona distribution consists of three COMPUTE_DATA nodes and three DATA nodes. This information can be confirmed on the sd-wan manager cluster management page.

Cisco SD-WAN

Select Resource Group

Administration · Cluster Management

Service Configuration

Service Reachability

Add vManage

Hostname	IP Address	Configure Status	Node Persona	UUID	
vmanage-1		Ready	COMPUTE_AND_DATA	f-4d4f-878a-554b62ae9e81	...
vManage-2		Ready	COMPUTE_AND_DATA	711-44dd-b6af-711ca46a1566	...
vManage-3		Ready	COMPUTE_AND_DATA	13c-41cd-b509-d028beb925b	...
vManage-4		Ready	DATA	4710-a56a-d887d8661587	...
vManage-5		Ready	DATA	baa4-b1803b2ba8d1	...
vManage-6		Ready	DATA	4fe9-b3b6-3b71060d6af2	...

7. Software Inventory Management

- Execute the **show software** command on each sd-wan manager node in order to verify the installed software versions.
- Ensure that no more than two software images are installed on each sd-wan manager node.
- If additional images are present, remove the obsolete installed images using the **request software remove <version>** command.

Example output:

```
vmanage3-2093# show software
VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
-----
20.12.5 false false - - 2025-11-24T05:09:38-00:00
20.9.7 true true - - 2025-11-24T05:09:30-00:00
```

Pre-Upgrade Validation Checks

8. Control Connection Stability Verification

- Verify the stability of control connections between all SD-WAN controllers.
- Capture a screenshot of the sd-wan manager dashboard for documentation purposes.

9. Site-Level Verification

Choose representative sites and capture these logs and outputs:

a. Control Connection Verification

show sd-wan control connections

b. BFD Session Verification

show sd-wan bfd sessions

c. Routing Table Verification

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

d. Application Service Testing

Customer to perform application service testing from a minimum of five branch locations.

10. vSmart Controller Verification

a. Control Connections

Execute **show control connections** in order to verify that each vSmart maintains control connections with all controllers.

b. OMP Peer Status

Execute **show omp peers** in order to verify the number of peers on each vSmart controller.

c. OMP Summary

Execute **show omp summary** in order to verify overall OMP status.

Upgrade Procedure

These high-level steps outline the upgrade process:

1. Software Installation

Install the upgrade image on each Cisco sd-wan manager server using the **request software install <path>** command. Do not activate the image at this stage.

```
vmmanage1-2093#  
vmmanage1-2093# request software install vmanage-20.12.5-x86_64.tar.gz  
status vmanage-20.12.5-x86_64.tar.gz is local  
status Installing vmanage-20.12.5-x86_64.tar.gz  
status Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Successfully installed version: 20.12.5  
status Installation of 20.12.5 complete  
vmmanage1-2093#
```

```
vmmanage2-2093# request software install vmanage-20.12.5-x86_64.tar.gz  
status vmanage-20.12.5-x86_64.tar.gz is local  
status Installing vmanage-20.12.5-x86_64.tar.gz  
status Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Successfully installed version: 20.12.5  
status Installation of 20.12.5 complete  
vmmanage2-2093#
```

```
vmmanage1-2093#  
vmmanage1-2093# request software install vmanage-20.12.5-x86_64.tar.gz  
status vmanage-20.12.5-x86_64.tar.gz is local  
status Installing vmanage-20.12.5-x86_64.tar.gz  
status Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Signature verification Succeeded.  
Successfully installed version: 20.12.5  
status Installation of 20.12.5 complete  
vmmanage1-2093#
```

2. Software Activation

Activate the upgrade image on each Cisco sd-wan manager server using the **request software activate <version>** command. Note that all sd-wan manager nodes will reboot simultaneously.

```
vmmanage1-2093# request software activate 20.12.5  
This will reboot the node with the activated version.  
Are you sure you want to proceed? [yes,NO] yes  
  
Broadcast message from root@vmmanage1-2093 (somewhere) (Mon Nov 24 05:26:31 2025)  
  
Mon Nov 24 05:26:31 UTC 2025: The system is going down for reboot NOW!
```

```
vmmanage2-2093# request software activate 20.12.5  
This will reboot the node with the activated version.  
Are you sure you want to proceed? [yes,NO] yes  
  
Broadcast message from root@vmmanage2-2093 (somewhere) (Mon Nov 24 05:26:17 2025)  
  
Mon Nov 24 05:26:17 UTC 2025: The system is going down for reboot NOW!  
  
error-reason 'activate 20.12.5: successful'  
vmmanage2-2093# Connection to 192.168.103.35 closed.  
  
Broadcast message from root@vmmanage1-2093 (somewhere) (Mon Nov 24 05:26:31 2025)
```

```
vmange3-2093# request software activate 20.12.5
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO] yes
yes

Broadcast message from root@vmange3-2093 (somewhere) (Mon Nov 24 05:26:14 2025)

Mon Nov 24 05:26:14 UTC 2025: The system is going down for reboot NOW!

error-reason 'activate 20.12.5: successful'
vmange3-2093# Connection to 192.168.103.36 closed.
```

3. Upgrade Confirmation

Confirm the upgrade within 15 minutes of activation using the **request software upgrade-confirm** command.



Note: Following the upgrade, a manual configuration database upgrade is required. Allow 20-25 minutes after the reboot for services to initialize. During this period, you will observe that the App-server and configuration database services do not start automatically, as they require a manual upgrade procedure.

4. Service Status Verification

- Execute 'request nms all status' on all nodes in order to verify the status of services.
- Verify that all services except App-server and configuration database are operational.

Expected observation: App-server will be in a down state, and the configuration database will continuously restart.

```
vmange1-2093# request nms all status
NMS service proxy
  Enabled: true
  Status: running PID:20527 for 230s
NMS service proxy rate limit
  Enabled: true
  Status: running PID:22586 for 230s
NMS application server
  Enabled: true
  Status: yet to start
NMS configuration database
  Enabled: true
  Status: running PID:20438 for 5s
NMS coordination server
  Enabled: true
  Status: running PID:22469 for 221s
NMS messaging server
  Enabled: true
  Status: running PID:23826 for 232s
NMS statistics database
  Enabled: true
  Status: running PID:23768 for 218s
NMS data collection agent
  Enabled: true
  Status: running PID:23564 for 200s
NMS CloudAgent v2
  Enabled: true
  Status: running PID:22574 for 233s
NMS cloud agent
  Enabled: true
  Status: running PID:18718 for 278s
NMS SD-WAN server
```

5. Configuration Database Upgrade

- Perform the configuration database **upgrade only on one node** that is running the configuration database service.
- Upon successful completion, the App-server and Config-DB services will restart on all nodes.

Execute this command on one configuration database node:

```
vmange-2# request nms configuration-db upgrade
== Upgrading configuration-db to 4.4.15 version..
```

== The configuration-db upgrade logs are available at /var/log/nms/neo4j-upgrade.log file
== Previous software version on this vmanage: 20.9.7

== Copying dump files remotely
== Loading configuration-db on remote nodes
== Starting configuration-db in all nodes
== Checking for remote nodes
== Starting application server.
== Configuration-db upgrade completed!
== Waiting for instances to synchronize...
== Successfully upgraded configuration-db to 4.4.15 version.

6. Final Service Status Verification

- Wait approximately 5 minutes after the configuration database upgrade completes.
- Execute 'request nms all status' on all nodes in order to verify that all services are operational.

Post-Upgrade Validation Checks

1. Software Version Verification

Verify that all controllers are running the correct software version.

2. sd-wan manager Service Status Verification

Confirm that all services on the sd-wan manager servers are operational.

3. Inter-Controller Connection Verification

Verify control connections between all controllers.

4. Policy Activation Verification

Confirm that policies are properly activated on the sd-wan manager servers.

5. Control Connection Distribution Verification

- Verify that control connections are properly distributed across all sd-wan manager nodes.
- Navigate to **Monitor > Network** and verify the control connection column.

6. Site-Level Post-Upgrade Validation

Perform these validation tests on all sites where pre-upgrade checks were conducted:

a. Control Connection and BFD Session Verification

show sd-wan control connections

show sd-wan bfd sessions

b. Routing Verification

show ip route

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

c. Data Center Service Reachability

Verify reachability to all data center services.

d. Template Synchronization Verification

Verify that device templates are properly attached and synchronized post the upgrade.

e. Policy Verification from vSmart

Execute 'show sd-wan policy from-vsmart' in order to verify policy distribution.

f. User Acceptance Testing

Conduct user acceptance testing on all validated sites to ensure application functionality.

SD-WAN Manager Cluster Upgrade Procedure: Version 20.9.5.2/20.9.7 to 20.15.x

Prerequisites

1. Controller Snapshots

Create complete snapshots of all SD-WAN controllers prior to beginning the upgrade process.

2. Configuration Database Backup

Execute a backup of the configuration database and store it in a location external to the sd-wan manager server using the **request nms configuration-db backup path <path_and_filename>** command.

3. AURA Health Check on sd-wan manager Nodes

Perform the AURA health check on all sd-wan manager nodes as documented in

<https://www.cisco.com/c/en/us/support/docs/routers/sd-wan/220514-execute-the-aura-script-on-vmanage.html>.

4. Image Distribution to sd-wan manager Servers

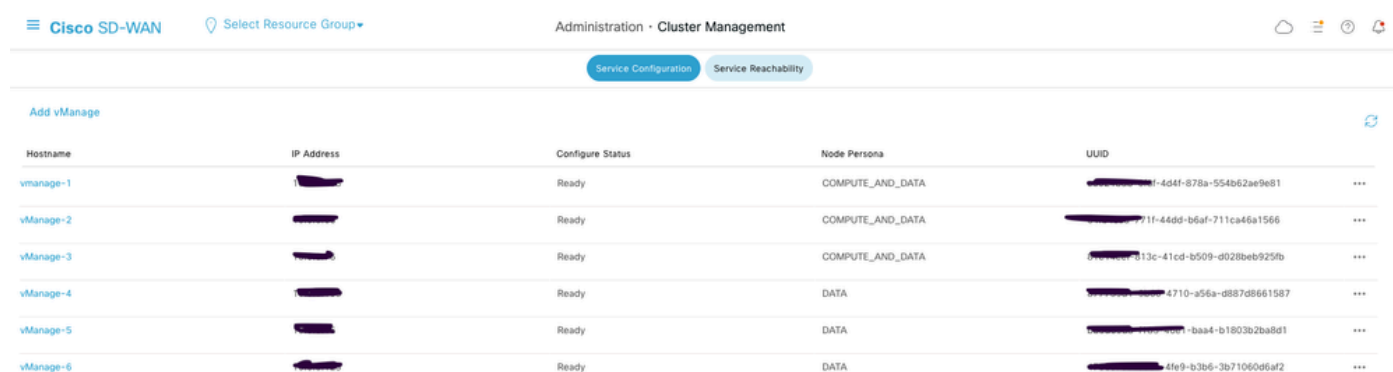
Manually copy the 20.15.2 upgrade image 'vmanage-20.15.2-x86_64.tar.gz' to the **/home/admin** directory on each Cisco sd-wan manager server in the cluster.

5. Image Verification

Verify that the upgrade image has been successfully copied to the **/home/admin** location on all sd-wan manager servers.

6. Six-Node Cluster Persona Verification

For six-node sd-wan manager cluster upgrades, verify that the sd-wan manager persona distribution consists of three COMPUTE_DATA nodes and three DATA nodes. This information can be confirmed on the sd-wan manager cluster management page.



Cisco SD-WAN Administration - Cluster Management				
Service Configuration Service Reachability				
Add vManage				
Hostname	IP Address	Configure Status	Node Persona	UUID
vmanage-1		Ready	COMPUTE_AND_DATA	f-4d4f-878a-554b62ae9e81
vmanage-2		Ready	COMPUTE_AND_DATA	71f-44dd-b6af-711ca46a1566
vmanage-3		Ready	COMPUTE_AND_DATA	513c-41cd-b509-d028beb925fb
vmanage-4		Ready	DATA	4710-a56a-d887d8661587
vmanage-5		Ready	DATA	-baa4-b1803b2ba8d1
vmanage-6		Ready	DATA	f1e9-b3b6-3b710606af2

7. Software Inventory Management

- Execute the **show software** command on each sd-wan manager node in order to verify the installed software versions.

- Ensure that no more than two software images are installed on each sd-wan manager node.
- If additional images are present, remove the obsolete installed images using the **request software remove <version>** command.

Example output:

```
vmanage1# show software
```

VERSION	ACTIVE	DEFAULT	PREVIOUS	CONFIRMED	TIMESTAMP
20.15.2	false	false	false	-	2025-03-19T10:43:26-00:00
20.9.4	false	true	true	-	2024-11-25T08:16:14-00:00
20.9.5.2	true	false	false	user	2025-03-19T07:10:15-00:00

```
vmanage1#
```

Pre-Upgrade Validation Checks

8. Control Connection Stability Verification

- Verify the stability of control connections between all SD-WAN controllers.
- Capture a screenshot of the sd-wan manager dashboard for documentation purposes.

9. Site-Level Verification

Choose representative sites and capture these logs and outputs:

a. Control Connection Verification

show sd-wan control connections

b. BFD Session Verification

show sd-wan bfd sessions

c. Routing Table Verification

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

d. Application Service Testing

Customer to perform application service testing from a minimum of five branch locations.

10. vSmart Controller Verification

a. Control Connections

Execute 'show control connections' in order to verify that each vSmart maintains control connections with all controllers.

b. OMP Peer Status

Execute 'show omp peers' in order to verify the number of peers on each vSmart controller.

c. OMP Summary

Execute 'show omp summary' in order to verify overall OMP status.

Upgrade Procedure

These high-level steps outline the upgrade process:

1. Software Installation

Install the upgrade image on each Cisco sd-wan manager server using the **request software install <path>**

command. Do not activate the image at this stage.

```
vmanage1#request software install /home/admin/vmanage-20.15.2-x86_64.tar.gz
Signature verification Succeeded.
Signature verification Succeeded.
[2025-09-25 09:04:19,066][INFO][upgrade-context]: Upgrade context written to destination path: /opt
Signature verification Succeeded.
Successfully installed version: 20.15.2
vmanage1#
```

```
vmanage2#request software install /home/admin/vmanage-20.15.2-x86_64.tar.gz
Signature verification Succeeded.
Signature verification Succeeded.
[2025-09-25 09:04:19,066][INFO][upgrade-context]: Upgrade context written to destination path: /opt
Signature verification Succeeded.
Successfully installed version: 20.15.2
vmanage2#
```

```
vmanage3#request software install /home/admin/vmanage-20.15.2-x86_64.tar.gz
Signature verification Succeeded.
Signature verification Succeeded.
[2025-09-25 09:04:19,066][INFO][upgrade-context]: Upgrade context written to destination path: /opt
Signature verification Succeeded.
Successfully installed version: 20.15.2
vmanage3#
```

2. Software Activation

Activate the upgrade image on each Cisco sd-wan manager server using the **request software activate <version>** command. Note that all sd-wan manager nodes will reboot simultaneously.

```
vmanage1# request software activate 20.15.2
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO] yes
```

```
vmanage2# request software activate 20.15.2
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO] yes
```

```
vmanage3# request software activate 20.15.2
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO] yes
```

3. Upgrade Confirmation

Confirm the upgrade within 15 minutes of activation using the **request software upgrade-confirm** command:



Note: Post the upgrade, a manual configuration database upgrade is required. Allow 20-25 minutes after the reboot for services to initialize. During this period, you will observe that the App-server and configuration database services do not start automatically, as they require a manual upgrade

procedure.

4. Service Status Verification

- Execute 'request nms all status' on all nodes in order to verify the status of services.
- Verify that all services except App-server and configuration database are operational.

Expected observation: App-server will be in a down state, and the configuration database will continuously restart.

```
vmanage2# request nms all status
NMS service proxy
  Enabled: true
  Status: running PID:28748 for 638s
NMS service proxy rate limit
  Enabled: true
  Status: running PID:26818 for 644s
NMS application server
  Enabled: true
  Status: yet to start
NMS configuration database
  Enabled: true
  Status: running PID:7095 for nulls
  Native metrics status: ENABLED
  Server-load metrics status: ENABLED
NMS coordination server
  Enabled: true
  Status: running PID:27606 for 647s
NMS messaging server
  Enabled: true
  Status: running PID:29968 for 626s
NMS statistics database
  Enabled: false
  Status: not running
NMS data collection agent
  Enabled: true
  Status: yet to start
NMS CloudAgent v2
  Enabled: true
  Status: running PID:27486 for 656s
NMS cloud agent
  Enabled: true
  Status: running PID:8518 for 1435s
NMS SDAVC server
  Enabled: false
  Status: not running
NMS SDAVC gateway
  Enabled: false
  Status: not running
vManage Device Data Collector
  Enabled: true
  Status: yet to start
NMS OLAP database
  Enabled: true
  Status: running PID:28926 for 652s
vManage Reporting
  Enabled: true
  Status: running PID:26653 for 671s
vmanage2#
```

5. Configuration Database Upgrade

- Perform the configuration database **upgrade only on one node** that is running the configuration database service.

- Upon successful completion, the App-server and Config-DB services will restart on all nodes.

Execute the **request nms configuration-db upgrade** command on one configuration database node:

```
vmanage3# request nms con
Possible completions:
  configuration-db  NMS configuration database
  container-manager NMS Container Manager
vmanage3# request nms configuration-db upgrade
==> Upgrading configuration-db to 4.4.19 version..
==> The configuration-db upgrade logs are available at /var/log/nms/neo4j-upgrade.log file
==> Previous software version on this vmanage: 20.9.5.2

==> Try to get cluster size...
==== Cluster size= 3
==== host_id_addresses= 75.75.75.3
==> This is cluster deployment. Verifying the control connectivity between the cluster members
==> All vmanage servers are having control connection with each other.
==> Using password less approach for neo4j cluster upgrade, please wait...
WARNING: sun.reflect.Reflection.getCallerClass is not supported. This will impact performance.
*** This is for cluster upgrade, please make sure you issue upgrade command from only one node in the cluster. ctrl-c to abort the flow
==> Continuing...
==> Invoking local stop action..
==> Invoking local stop action..
==> Stopped application server and configuration-db
==> Starting configuration-db on local vmanage for upgrade
==> Invoking local start action..
==> Stopping configuration-db on local vmanage
==> Invoking local stop action..
==> Generating dump files
==> Copying dump files remotely
==> Loading configuration-db on remote nodes
==> Starting configuration-db in all nodes
```

6. Final Service Status Verification

- Wait approximately 5 minutes after the configuration database upgrade completes.
- Execute 'request nms all status' on all nodes in order to verify that all services are operational.

Post-Upgrade Validation Checks

1. Software Version Verification

Verify that all controllers are running the correct software version.

2. sd-wan manager Service Status Verification

Confirm that all services on the sd-wan manager servers are operational.

3. Inter-Controller Connection Verification

Verify control connections between all controllers.

4. Policy Activation Verification

Confirm that policies are properly activated on the sd-wan manager servers.

5. Control Connection Distribution Verification

- Verify that control connections are properly distributed across all sd-wan manager nodes.
- Navigate to **Monitor > Network** and verify the control connection column.

6. Site-Level Post-Upgrade Validation

Perform these validation tests on all sites where pre-upgrade checks were conducted:

a. Control Connection and BFD Session Verification

show sd-wan control connections

show sd-wan bfd sessions

b. Routing Verification

show ip route

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

c. Data Center Service Reachability

Verify reachability to all data center services.

d. Template Synchronization Verification

Verify that device templates are properly attached and synchronized post the upgrade.

e. Policy Verification from vSmart

Execute 'show sd-wan policy from-vsmart' in order to verify policy distribution.

f. User Acceptance Testing

Conduct user acceptance testing on all validated sites in order to ensure application functionality.

SD-WAN Manager Cluster Upgrade Procedure: Version 20.12.x to 20.15.x

Prerequisites

1. Controller Snapshots

Create complete snapshots of all SD-WAN controllers prior to beginning the upgrade process.

2. Configuration Database Backup

Execute a backup of the configuration database and store it in a location external to the sd-wan manager server using the **request nms configuration-db backup path <path_and_filename>** command:

3. AURA Health Check on sd-wan manager Nodes

Perform the AURA health check on all sd-wan manager nodes as documented in

<https://www.cisco.com/c/en/us/support/docs/routers/sd-wan/220514-execute-the-aura-script-on-vmanage.html>.

4. Image Distribution to sd-wan manager Servers

Manually copy the 20.15.x upgrade image 'vmanage-20.15.3-x86_64.tar.gz' to the **/home/admin** directory on each Cisco sd-wan manager server in the cluster.

5. Image Verification

Verify that the upgrade image has been successfully copied to the **/home/admin** location on all sd-wan manager servers.

6. Software Inventory Management

- Execute the **show software** command on each sd-wan manager node in order to verify the installed software versions.
- Ensure that no more than two software images are installed on each sd-wan manager node.
- If additional images are present, remove the obsolete installed images using the **request software remove <version>** command.

Example output:

```
vmanage1# show software
```

VERSION	ACTIVE	DEFAULT	PREVIOUS	CONFIRMED	TIMESTAMP
20.15.2	false	false	false	-	2025-03-19T10:43:26-00:00
20.9.4	false	true	true	-	2024-11-25T08:16:14-00:00
20.9.5.2	true	false	false	user	2025-03-19T07:10:15-00:00

```
vmanage1#
```

Pre-Upgrade Validation Checks

7. Control Connection Stability Verification

- Verify the stability of control connections between all SD-WAN controllers.
- Capture a screenshot of the sd-wan manager dashboard for documentation purposes.

8. Site-Level Verification

Choose representative sites and capture these logs and outputs:

a. Control Connection Verification

show sd-wan control connections

b. BFD Session Verification

show sd-wan bfd sessions

c. Routing Table Verification

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

d. Application Service Testing

Customer to perform application service testing from a minimum of five branch locations.

9. vSmart Controller Verification

a. Control Connections

Execute 'show control connections' in order to verify that each vSmart maintains control connections with all controllers.

b. OMP Peer Status

Execute 'show omp peers' in order to verify the number of peers on each vSmart controller.

c. OMP Summary

Execute 'show omp summary' in order to verify overall OMP status.

Upgrade Procedure

These high-level steps outline the upgrade process:

1. Software Installation

Install the upgrade image on each Cisco sd-wan manager server using the **request software install <path>** command. Do not activate the image at this stage.

```
vmanage1# request software install vmanage-20.15.3-x86_64.tar.gz
status vmanage-20.15.3-x86_64.tar.gz is local
status Installing vmanage-20.15.3-x86_64.tar.gz
status Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Successfully installed version: 20.15.3
status Installation of 20.15.3 complete
vmanage1#
```

```
vmanage2# request software install vmanage-20.15.3-x86_64.tar.gz
status vmanage-20.15.3-x86_64.tar.gz is local
status Installing vmanage-20.15.3-x86_64.tar.gz
status Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Successfully installed version: 20.15.3
status Installation of 20.15.3 complete
vmanage2#
```

```
vmanage3# request software install vmanage-20.15.3-x86_64.tar.gz
status vmanage-20.15.3-x86_64.tar.gz is local
status Installing vmanage-20.15.3-x86_64.tar.gz
status Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Signature verification Succeeded.
Successfully installed version: 20.15.3
status Installation of 20.15.3 complete
vmanage3#
```

2. Software Activation

Activate the upgrade image on each Cisco sd-wan manager server using the **request software activate <version>** command. Note that all sd-wan manager nodes will reboot simultaneously.

```
vmanage1# request software activate 20.15.3
This will reboot the node with the activated version.
Are you sure you want to proceed? [no,yes] yes
status activate 20.15.3: successful
```

```
vmanage2# request software activate 20.15.3
This will reboot the node with the activated version.
Are you sure you want to proceed? [no,yes] yes
status activate 20.15.3: successful
```

```
vmanage3# request software activate 20.15.3
This will reboot the node with the activated version.
Are you sure you want to proceed? [no,yes] yes
status activate 20.15.3: successful
```

3. Upgrade Confirmation

Confirm the upgrade within 15 minutes of activation using the **request software upgrade-confirm** command.

4. Service Status Verification

- Allow approximately 30 minutes after the reboot for services to initialize.
- Execute 'request nms all status' on all nodes to verify the status of services.

Expected output:

```

Status: running PID:10113 for 666s
vmanage2# request nms all status
NMS service proxy
    Enabled: true
    Status: running PID:20190 for 766s
NMS service proxy rate limit
    Enabled: true
    Status: running PID:19114 for 776s
NMS application server
    Enabled: true
    Status: running PID:20191 for 768s
NMS configuration database
    Enabled: true
    Status: running PID:16598 for 797s
    Native metrics status: ENABLED
    Server-load metrics status: ENABLED
NMS coordination server
    Enabled: true
    Status: running PID:19507 for 775s
NMS messaging server
    Enabled: true
    Status: running PID:20563 for 771s
NMS statistics database
    Enabled: false
    Status: not running
NMS data collection agent
    Enabled: true
    Status: running PID:47109 for 38s
NMS CloudAgent v2
    Enabled: true
    Status: running PID:19154 for 781s
NMS cloud agent
    Enabled: true
    Status: running PID:5562 for 1069s
NMS SDAVC server
    Enabled: false
    Status: not running
NMS SDAVC gateway
    Enabled: false
    Status: not running
vManage Device Data Collector
    Enabled: true
    Status: running PID:47032 for 43s
NMS OLAP database
    Enabled: true
    Status: running PID:20487 for 770s
vManage Reporting
    Enabled: true
    Status: running PID:18119 for 791s
vmanage2#

```

Post-Upgrade Validation Checks

1. Software Version Verification

Verify that all controllers are running the correct software version.

2. sd-wan manager Service Status Verification

Confirm that all services on the sd-wan manager servers are operational.

3. Inter-Controller Connection Verification

Verify control connections between all controllers.

4. Policy Activation Verification

Confirm that policies are properly activated on the sd-wan manager servers.

5. Control Connection Distribution Verification

- Verify that control connections are properly distributed across all sd-wan manager nodes.
- Navigate to **Monitor > Network** and verify the control connection column.

6. Site-Level Post-Upgrade Validation

Perform these validation tests on all sites where pre-upgrade checks were conducted:

a. Control Connection and BFD Session Verification

show sd-wan control connections

show sd-wan bfd sessions

b. Routing Verification

show ip route

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

c. Data Center Service Reachability

Verify reachability to all data center services.

d. Template Synchronization Verification

Verify that device templates are properly attached and synchronized post the upgrade.

e. Policy Verification from vSmart

Execute 'show sd-wan policy from-vsmart' in order to verify policy distribution.

f. User Acceptance Testing

Conduct user acceptance testing on all validated sites in order to ensure application functionality.

SD-WAN Manager Cluster Upgrade Procedure: Version 20.15.x to 20.18.x

Prerequisites



Note: Base version must be 20.15.x in order to upgrade to 20.18.x or later release. If current version is lower than 20.15.x, upgrade to 20.15.x release first.

1. Controller Snapshots

Create complete snapshots of all SD-WAN controllers prior to beginning the upgrade process.

2. Configuration Database Backup

Execute a backup of the configuration database and store it in a location external to the sd-wan manager server using the **request nms configuration-db backup path <path_and_filename>** command.

3. AURA Health Check on sd-wan manager Nodes

Perform the AURA health check on all sd-wan manager nodes as documented in

<https://www.cisco.com/c/en/us/support/docs/routers/sd-wan/220514-execute-the-aura-script-on-vmanage.html>.

4. Image copy to sd-wan manager Servers

Copy the 20.18.x upgrade image 'vmanage-20.18.1-x86_64.tar.gz' in order to sd-wan manager repository.

Software Repository

Remote server

Software Images

Virtual Images

Firmware

Software Images 1

Q Search Table

Add New Software

As of: Oct 20, 2025 09:24:05 PM

Software Version	Controller Version	Software Location	Available SMU Versions	Available File	Vendor	Network Function Type	Image Type	Architecture	Version Type Name	Actions
20.18.1	20.18.x	vmanage	0	vmanage-20.18.1-x86_64.tar.gz	Cisco	ROUTER	software	x86_64	software	...

Items per page: 25

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5. Software Inventory Management

- Execute the **show software** command on each sd-wan manager node in order to verify the installed software versions.
- Ensure that no more than two software images are installed on each sd-wan manager node.
- If additional images are present, remove the obsolete installed images using the **request software remove <version>** command.

Example output:

```
vmanage1# show software
```

VERSION	ACTIVE	DEFAULT	PREVIOUS	CONFIRMED	TIMESTAMP
20.15.2	false	false	false	-	2025-03-19T10:43:26-00:00
20.9.4	false	true	true	-	2024-11-25T08:16:14-00:00
20.9.5.2	true	false	false	user	2025-03-19T07:10:15-00:00

```
vmanage1#
```

6. Verify container status

Verify docket container status using the command shown:

```
vmanage2# request nms container-manager dia
NMS container manager
Checking container-manager status
Listing all containers
-----
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
3578e5ac3e1e sd-wan/messaging-server:0.20.0 "/entrypoint.sh" 25 minutes ago Up 25 minutes (healthy) 127.
e2c1e54dd48f sd-wan/olap-db:23.3.13.6 "/usr/bin/docker-ini..." 25 minutes ago Up 25 minutes (healthy) 127.
e3375e1c2254 sd-wan/coordination-server:3.7.1 "/docker-entrypoint...." 25 minutes ago Up 25 minutes (heal
8ae9ce33bbc8 cloudagent-v2:91a62b952db9 "./entrypoint.sh" 25 minutes ago Up 25 minutes 127.0.0.1:9051-9
b1a298cc3d4e sd-wan/ratelimit:latest "/usr/local/bin/rate..." 25 minutes ago Up 25 minutes (healthy) 6379.
c077a9cc59b0 sd-wan/reporting:latest "/sbin/tini -g -- py..." 25 minutes ago Up 25 minutes 80/tcp, 127.0.
07dcbc92acbb sd-wan/data-collection-agent:1.0.1 "/usr/bin/docker-ini..." 25 minutes ago Up 12 minutes (he
ca58a770f2dc sd-wan/vault:1.0.1 "docker-entrypoint.s..." 25 minutes ago Up 25 minutes (healthy) 8200/tcp,
ca838f61299f sd-wan/service-proxy:1.27.2 "/entrypoint.sh" 25 minutes ago Up 25 minutes (healthy) servic
8c0e15c9e552 sd-wan/configuration-db:4.4.19 "/usr/bin/docker-ini..." 25 minutes ago Up 25 minutes (health
671dfed47394 sd-wan/device-data-collector:1.0.0 "/bin/sh -c /vMDDC/v..." 25 minutes ago Up 12 minutes (he
ceb808046e34 sd-wan/application-server:19.1.0 "/sbin/tini -g -- /e..." 25 minutes ago Up 25 minutes (heal
dd744e0aa80f sd-wan/host-agent:1.0.1 "/entrypoint.sh pyth..." 25 minutes ago Up 25 minutes (healthy) 127.
972a13290a15 sd-wan/cluster-oracle:1.0.1 "/entrypoint.sh java..." 25 minutes ago Up 25 minutes (healthy)
```

Pre-Upgrade Validation Checks

7. Control Connection Stability Verification

- Verify the stability of control connections between all SD-WAN controllers.
- Capture a screenshot of the sd-wan manager dashboard for documentation purposes.

8. Site-Level Verification

Choose representative sites and capture these logs and outputs:

a. Control Connection Verification

show sd-wan control connections

b. BFD Session Verification

show sd-wan bfd sessions

c. Routing Table Verification

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

d. Application Service Testing

Customer to perform application service testing from a minimum of five branch locations.

9. vSmart Controller Verification

a. Control Connections

Execute 'show control connections' in order to verify that each vSmart maintains control connections with all controllers.

b. OMP Peer Status

Execute 'show omp peers' in order to verify the number of peers on each vSmart controller.

c. OMP Summary

Execute 'show omp summary' in order to verify overall OMP status.

Upgrade Procedure

Here are the high-level steps to be followed for the upgrade:

Navigate to **Maintenance > Software Upgrade > Manager > Software Image Action** and choose **Upgrade**. Image will be installed on all three nodes.

Maintenance

WAN Edge

Control Components

Manager

Firmware

Manager (3)

Q Search Table

Device Group

All

Software Image Actions

Upgrade

Delete Available Software

Set Default Version

Hostname	System IP	Chassis Num	Site ID	Device Model	Reachability	Current Version	Available Versions	Default Version	Up Since
vmanage1-201531	1.1.1.1	4bbea39c-1b9	300	Manager	reachable	20.15.3.1	-	20.15.3.1	Oct 17, 2025 11:19 AM
vmanage2-201531	1.1.1.2	247a3fcc-184	300	Manager	reachable	20.15.3.1	-	20.15.3.1	Oct 17, 2025 11:20 AM
vmanage3-201531	1.1.1.3	e5e38ef9-6492-4071-8103-b97b9d1c25fb	300	Manager	reachable	20.15.3.1	-	20.15.3.1	Oct 17, 2025 11:21 AM

As of: Oct 17, 2025 12:16 PM

Items per page: 25

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<< < > >>

Installation of the image is successful on all three nodes.

The network is out of compliance due to licensing, please [click here](#) for more actions.

← Back

Software Install | Validation success

Total Task: 3 | Success : 3

Device Group (3)

Q Search Table

Status	Message	Hostname	System IP	Site ID
Success	Done - Software Install	vmanage1-201531	1.1.1.1	300
Success	Done - Software Install	vmanage2-201531	1.1.1.2	300
Success	Done - Software Install	vmanage3-201531	1.1.1.3	300

View Logs

Host: 1.1.1.1

Site ID: 300

Device Model: Manager

[17-Oct-2025 6:46:19 UTC] Waiting for other vManages software_install to complete

[17-Oct-2025 6:49:45 UTC] Software Install action submitted for execution

[17-Oct-2025 6:49:45 UTC] Executing device action Software Install

[17-Oct-2025 6:49:45 UTC] Installing software image

[17-Oct-2025 6:49:45 UTC] Current active partition: 20.15.3.1

[17-Oct-2025 6:49:45 UTC] Upgrade Requested for SW version : 20.18.1

[17-Oct-2025 6:49:46 UTC] Software Image vmanage-20.18.1-x86_64.tar.gz

[17-Oct-2025 6:49:51 UTC] Sending requested upgrade action to the device

[17-Oct-2025 6:49:51 UTC] Software image download once started may take upto 60 minutes

[17-Oct-2025 6:50:04 UTC] Device: Found /opt/data/app-server/software/package/vmanage-20.18.1-x86_64.tar.gz, no download required

[17-Oct-2025 6:51:25 UTC] Device: Signature verification Succeeded.

[17-Oct-2025 6:51:25 UTC] Signature verification Succeeded.

[17-Oct-2025 6:51:25 UTC] Device: Installed 20.18.1

Feedback

Close

Once installation is complete, activate 20.18.1 image. All three nodes will be rebooted.

The network is out of compliance due to licensing, please [click here](#) for more actions.

Maintenance

WAN Edge | Control Components | **Manager** | Firmware

Manager (3)

Q Search Table

Device Group All

Hostname	System IP	Chassis Num
vmanage1-201531	1.1.1.1	4bbea39c...
vmanage2-201531	1.1.1.2	247a3fcc...
vmanage3-201531	1.1.1.3	e5e38ef9...

Activate Software

Activating new version of software on Manager requires a reboot, which will log out all active clients and bring down all control connections

Platform Manager

Version

Select

20.18.1

Cancel | **Activate**

As of: Oct 17, 2025 12:22 PM

Available Versions	Default Version	Up Since
20.18.1	20.15.3.1	Oct 17, 2025 11:20 AM
20.18.1	20.15.3.1	Oct 17, 2025 11:21 AM
20.18.1	20.15.3.1	Oct 17, 2025 11:21 AM

Items per page: 25 | 1 - 3 of 3

The network is out of compliance due to licensing, please [click here](#) for more actions.

← Back

Change Partition | Validation success

Total Task: 1 | In progress : 1

Device Group (1)

Q Search Table

Status	Message	Hostname	System IP	Site ID
In progress	Successfully started NMS Upgrade Co...	vmanage1-201531	1.1.1.1	300

View Logs

Host: 1.1.1.1

Site ID: 300

Device Model: Manager

[17-Oct-2025 6:54:03 UTC] Success : Host-agent: All Edge device versions are supported in activate vmanage version 20.18.1

[17-Oct-2025 6:54:03 UTC] Success : Host-agent: (disk_controller_type: 'non IDE')

[17-Oct-2025 6:54:03 UTC] Success : Host-agent: (optdata_partition_inode: '13%')

[17-Oct-2025 6:54:03 UTC] Success : Host-agent: (rootfs_partition_inode: '1%')

[17-Oct-2025 6:54:29 UTC] Warning : Host-agent: Root CA certificate expired: [Symantec Private SSL SHA256 CA: Wed Jun 12 23:59:59 UTC 2024.]

[17-Oct-2025 6:54:35 UTC] Success : Host-agent: vsmart and vbond devices are consistent

[17-Oct-2025 6:54:42 UTC] Success : Host-agent: Disaster Recovery is not enabled.

#####

192.168.103.33

#####

-----Executing: preCheck stage-----

[17-Oct-2025 6:54:09 UTC] Success : Olap-db: Service is up

[17-Oct-2025 6:54:09 UTC] Warning : Configuration-db: /var/log/nms/neo4j-backup.log file not found

[17-Oct-2025 6:54:09 UTC] Success : Configuration-db: No database performance issues found.

[17-Oct-2025 6:54:09 UTC] Success : Configuration-db: No Error messages found in

Feedback

Close

Service Status Verification

- Allow approximately 30 minutes after the reboot for services to initialize.

- Execute 'request nms all status' on all nodes in order to verify the status of services.

Expected output:

```
vManage-DC# request nms all status
NMS service proxy
    Enabled: true
    Status: running PID:3622 for 3299063s
NMS service proxy rate limit
    Enabled: true
    Status: running PID:4268 for 3299011s
NMS application server
    Enabled: true
    Status: running PID:18 for 3299103s
NMS configuration database
    Enabled: true
    Status: running PID:35159 for 3299049s
    Native metrics status: ENABLED
    Server-load metrics status: ENABLED
NMS coordination server
    Enabled: true
    Status: running PID:33080 for 3299052s
NMS cluster orchestrator
    Enabled: true
    Status: running PID:13467 for 3299113s
NMS messaging server
    Enabled: true
    Status: running PID:42073 for 3298949s
NMS data collection agent
    Enabled: true
    Status: running PID:57888 for 3297473s
NMS CloudAgent v2
    Enabled: false
    Status: not running
NMS cloud agent
    Enabled: true
    Status: running PID:25673 for 3299092s
NMS SDAVC server
    Enabled: false
    Status: not running
NMS SDAVC gateway
    Enabled: true
    Status: running PID:30108 for 3299073s
vManage Device Data Collector
    Enabled: true
    Status: running PID:34186 for 3297583s
NMS OLAP database
    Enabled: true
    Status: running PID:41757 for 3298955s
vManage Reporting
    Enabled: false
    Status: not running
NMS Radkit
    Enabled: true
    Status: running PID:33666 for 3299058s
vManage-DC#
```

Verify docker container status post upgradation:

```
vmanage2# request nms container-manager dia
NMS container manager
Checking container-manager status
Listing all containers
```

```
-----
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
378d13a98478 sd-wan/messaging-server:0.20.0 "/bin/bash /entrypoi..." 9 minutes ago Up 9 minutes (healthy)
```

```
cf4f3dae69bc sd-wan/olap-db:24.3.6.48 "/usr/bin/tini -- /e..." 10 minutes ago Up 10 minutes (healthy) 127.0.0.1
e6af832a551d sd-wan/configuration-db:4.4.38 "/usr/bin/tini -g --..." 10 minutes ago Up 10 minutes (healthy) 127.0.0.1
3ff5a7f12bbd sd-wan/coordination-server:3.8.4 "/docker-entrypoint..." 10 minutes ago Up 10 minutes (healthy) 127.0.0.1
e065840d7736 sd-wan/application-server:24.0.1 "/usr/bin/tini -g --..." 3 days ago Up 11 minutes (healthy) 127.0.0.1
3bdf71f009e9 sd-wan/cluster-orchestrator:1.0.1 "/entrypoint.sh" 3 days ago Up 11 minutes (healthy) 127.0.0.1
4c06c0be3efe sd-wan/vault:1.0.1 "docker-entrypoint.s..." 3 days ago Up 11 minutes (healthy) 8200/tcp, 127.0.0.1
```

Post-Upgrade Validation Checks

1. Software Version Verification

Verify that all controllers are running the correct software version.

2. sd-wan manager Service Status Verification

Confirm that all services on the sd-wan manager servers are operational.

3. Inter-Controller Connection Verification

Verify control connections between all controllers.

4. Policy Activation Verification

Confirm that policies are properly activated on the sd-wan manager servers.

5. Control Connection Distribution Verification

- Verify that control connections are properly distributed across all sd-wan manager nodes.
- Navigate to **Monitor** > **Network** and verify the control connection column.

6. Site-Level Post-Upgrade Validation

Perform these validation tests on all sites where pre-upgrade checks were conducted:

a. Control Connection and BFD Session Verification

show sd-wan control connections

show sd-wan bfd sessions

b. Routing Verification

show ip route

show ip route vrf <vrf_id>

show sd-wan omp routes vpn <vpn_id>

c. Data Center Service Reachability

Verify reachability to all data center services.

d. Template Synchronization Verification

Verify that device templates are properly attached and synchronized post the upgrade.

e. Policy Verification from vSmart

Execute 'show sd-wan policy from-vsmart' in order to verify policy distribution.

f. User Acceptance Testing

Conduct user acceptance testing on all validated sites to ensure application functionality.