使用vManage GUI或CLI升级SD-WAN控制器

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简介

本文档介绍软件定义广域网(SD-WAN)控制器的升级过程。

先决条件

要求

Cisco 建议您了解以下主题：

- 思科软件定义的广域网(SD-WAN)
- 思科软件中心
- 从software.cisco.com下载控制器软件
- 在升级CiscoDevNet/sure之前运行AURA脚本：SD-WAN升级就绪体验

规划控制器升级可能有多种原因，例如：

- 包含新功能的新版本。
- 修复已知警告/错误。
- 延迟释放。

注：如果版本被推迟，最好尽快升级到金星版本。由于已知缺陷，不建议在生产控制器上使用延迟版本。

升级控制器时，请考虑下一个有用的信息：

- 验证SD-WAN控制器的发行版本注释。
- 验证Cisco vManage Upgrade Paths。
- 验证Cisco SD-WAN控制器是否满足推荐的计算资源。
- 验证SD-WAN产品的生命周期终止和销售终止通知。

注意：升级SD-WAN控制器的顺序是vManage > vBonds > vSmarts。

使用的组件

本文档基于以下软件版本：

- Cisco vManage 20.12.6和20.15.4.1
- Cisco vBond和vSmart 20.12.16和20.15.4.1

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

在控制器升级之前执行的预检查

备份vManage

- 如果云托管，请确认已完成最新备份，或启动下一步中提到的config db备份。
  - 您可以查看当前备份并从SSP门户触发按需快照。 在此处查找更多指导。
- 如果内置：
  - 进行config-db备份
  - 所有控制器的虚拟机快照。

<#root>

vManage#

request nms configuration-db backup path /home/admin/db_backup

successfully saved the database to /home/admin/db_backup.tar.gz

- 如果是本地，请收集show running-config并将其保存在本地。
- 如果是内部版本，请确保您知道configuration-db(neo4j)用户名和密码，并记录到您的确切当前版本。

如果需要帮助检索您的配置数据库凭证，您可以联系思科TAC。

vManage上的系统计算

注意：此检查也适用于vBonds和vSmarts。

在每个vManage节点的CLI上，执行命令show system status。确保所需的计算映射到vManage节点。请参阅计算指南。

```
vmanage# show system status

Viptela (tm) vmanage Operating System Software
Copyright (c) 2013-2026 by Viptela, Inc.
Controller Compatibility:
Version: 20.12.6
Build: 98


System logging to host  is disabled
System logging to disk is enabled

System state:            GREEN. All daemons up
System FIPS state:       Enabled

Last reboot:             Initiated by user.
CPU-reported reboot:     Not Applicable
Boot loader version:     Not applicable
System uptime:           43 days 05 hrs 39 min 55 sec
Current time:            Wed Feb 25 11:45:23 UTC 2026

Load average:            1 minute: 0.22, 5 minutes: 0.20, 15 minutes: 0.18
Processes:               3269 total
CPU allocation:          16 total
CPU states:              1.13% user,   0.61% system,   98.26% idle
Memory usage:            32755808K total,    25276828K used,   1139940K free
                         1813204K buffers,  4525836K cache

Disk usage:              Filesystem      Size   Used  Avail   Use %  Mounted on
                         /dev/root       15230M  4356M  10039M   31%   /
vManage storage usage:   Filesystem      Size  Used  Avail  Use%  Mounted on
                         /dev/sdb        100281M  63084M  32060M   67%   /opt/data

Personality:             vmanage
Model name:              vmanage
Services:                None
vManaged:                false
Commit pending:          false
Configuration template:  None
Chassis serial number:   None
```

运行AURA检查

- 从CiscoDevNet/sure下载并遵循以下步骤以运行AURA:SD-WAN升级就绪体验
- 有关详细步骤，请参阅本指南：在升级之前配置Aura部署。
- 向TAC SR开放，以便解决与AURA报告中的检查失败相关的问题。

- 从20.11.x开始，vManage在使用vManage UI激活映像时自动运行AURA。

磁盘空间利用率vManage

在开始升级之前，请验证所有三个关键分区(/boot、/rootfs.rw和/opt/data)上的磁盘使用率是否为60%或更低。
要进行清理，请查找并删除不必要的用户复制的文件或未压缩的日志文件。
删除任何管理技术文件、堆转储、Neo4j备份、线程转储或占用磁盘空间的临时文件。

如果您不确定哪些文件可以安全删除，请打开思科TAC案例寻求帮助。

确保发送至控制器/发送至vBond已完成

在vManage UI上，导航到Configuration —> Certificates —> Controllers，然后选择send to vBond

检查vManage Statistics Collection Interval

思科建议Administration > Settings中的Statistics Collection Interval设置为默认计时器30分钟。

注意：思科建议在升级之前将vSmarts和vBonds附加到vManage模板。

验证所有vManage节点上的NMS诊断

执行命令request nms all diagnostics，并确保所有NMS服务的NPing成功。如果是vManage集群，则需要在所有vManage节点上执行以下检查：

注意：在6节点vManage集群中，configuration-db仅在3个节点上运行。

查看configuration-db的诊断信息：

确保我们能够获取如下所示的configuration-db属性：

```
Connecting to 10.10.10.1...
+-------------------------------------------------------------------------------------------+
| type             | row                                  | attributes[row]["value"]  |
+-------------------------------------------------------------------------------------------+
| "StoreSizes"     | "TotalStoreSize"                     | 367146196                 |
| "PageCache"      | "Flush"                              | 1028                      |
| "PageCache"      | "EvictionExceptions"                 | 0                         |
| "PageCache"      | "UsageRatio"                         | 0.09829963235294117       |
| "PageCache"      | "Eviction"                           | 2072                      |
| "PageCache"      | "HitRatio"                           | 1.0                       |
| "ID Allocations" | "NumberOfRelationshipIdsInUse"       | 2070                      |
| "ID Allocations" | "NumberOfPropertyIdsInUse"           | 56600                     |
| "ID Allocations" | "NumberOfNodeIdsInUse"               | 7902                      |
| "ID Allocations" | "NumberOfRelationshipTypeIdsInUse"   | 31                        |
| "Transactions"   | "LastCommittedTxId"                  | 221085                    |
| "Transactions"   | "NumberOfOpenTransactions"           | 1                         |
| "Transactions"   | "NumberOfOpenedTransactions"         | 3273                      |
| "Transactions"   | "PeakNumberOfConcurrentTransactions" | 5                         |
| "Transactions"   | "NumberOfCommittedTransactions"      | 3272                      |
| "Causal Cluster" | "IsLeader"                           | 0                         |
| "Causal Cluster" | "MsgProcessDelay"                    | 0                         |
| "Causal Cluster" | "InFlightCacheTotalBytes"            | 0                         |
+-------------------------------------------------------------------------------------------+

18 rows
```

确保所有vManage节点在“neo4j”和“system”的Neo4j集群状态中列出

```
Connecting to 10.10.10.1...
Displaying the Neo4j Cluster Status
+-----------------------------------------------------------------------------------------------------------------------------------------------+
| name     | aliases | access       | address             | role       | requestedStatus | currentStatus | error | default | home  |
+-----------------------------------------------------------------------------------------------------------------------------------------------+
| "neo4j"  | []      | "read-write" | "169.254.3.5:7687" | "follower" | "online"        | "online"      | ""    | TRUE    | TRUE  |
| "neo4j"  | []      | "read-write" | "169.254.2.5:7687" | "leader"   | "online"        | "online"      | ""    | TRUE    | TRUE  |
| "neo4j"  | []      | "read-write" | "169.254.1.5:7687" | "follower" | "online"        | "online"      | ""    | TRUE    | TRUE  |
| "system" | []      | "read-write" | "169.254.3.5:7687" | "leader"   | "online"        | "online"      | ""    | FALSE   | FALSE |
| "system" | []      | "read-write" | "169.254.2.5:7687" | "follower" | "online"        | "online"      | ""    | FALSE   | FALSE |
| "system" | []      | "read-write" | "169.254.1.5:7687" | "follower" | "online"        | "online"      | ""    | FALSE   | FALSE |
+-----------------------------------------------------------------------------------------------------------------------------------------------+

6 rows
ready to start consuming query after 105 ms, results consumed after another 2 ms
Completed
```

确保架构验证成功，并且没有隔离Neo4j节点。

```
Validating Schema from the configuration-db
Successfully validated configuration-db schema
written to file /opt/data/containers/mounts/upgrade-coordinator/schema.json
Contents of /opt/data/containers/mounts/upgrade-coordinator/schema.json:

  "check_name"  "Validating configuration-db admin names"
  "check_result"  "SUCCESSFUL"
  "check_analysis"  "Successfully validated configuration-db schema"
  "check_action"  ""

############################################
############################################
Running quarantine check
WARNING: sun.reflect.Reflection.getCallerClass is not supported. This will impact performance.
Check if Neo4j Nodes are Quarantined
None of the neo4j nodes is quarantined
None of the neo4j nodes is quarantined
None of the neo4j nodes is quarantined
############################################

############################################
Checking High Direct Memory Usage in Neo4j
High Direct Memory Usage in Neo4j not found
```

浏览整个输出，如果发现任何错误或故障，请联系TAC，然后继续升级。

检查vManage节点上的磁盘空间使用情况

确保除/rootfs.ro外，其他磁盘分区的使用率均不超过60%。在所有vManage节点上验证这一点。

```
vManage-1# vs
vManage-1:~$ df -kh
Filesystem      Size  Used Avail Use% Mounted on
none             16G  4.0K   16G   1% /dev
/dev/sda1       5.0G  2.7G  2.4G  53% /boot
/dev/loop0      1.3G  1.3G     0 100% /rootfs.ro
/dev/sda2        16G  1.9G   13G  13% /rootfs.rw
aufs             16G  1.9G   13G  13% /
tmpfs            16G  2.2M   16G   1% /run
shm              16G     0   16G   0% /dev/shm
tmp             1.0G  280K  1.0G   1% /tmp
/dev/sdb         98G   22G   72G  24% /opt/data
cgroup           16G     0   16G   0% /sys/fs/cgroup
svtmp           2.0M  960K  1.1M  47% /etc/sv
vManage-1:~$
```

验证vSmart和vBond上的磁盘空间

使用命令df -kh | grep boot from vShell以确定磁盘的大小。

```
controller:~$ df -kh | grep boot
/dev/sda1       2.5G  232M  2.3G  10% /boot
controller:~$
```

如果大小大于200 MB，请继续升级控制器。

如果大小小于200 MB，请执行以下步骤：

1.验证当前版本是show software命令下列出的唯一版本。此检查适用于所有3个控制器，vManage、vBond和vSmart。

```
VERSION    ACTIVE   DEFAULT PREVIOUS  CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6     true    true    false     auto      2023-05-02T16:48:45-00:00
20.9.1      false   false   true      user      2023-05-02T19:16:09-00:00
```

2.在show software version命令下验证当前版本是否设置为默认值。此检查适用于所有3个控制器，即vManage、vBond和vSmart。

```
controller# request software set-default 20.12.6
status mkdefault 20.11.1: successful
controller#
```

3.如果列出了更多版本，请使用request software remove <version>命令删除任何未处于活动状态的版本。这将增加可用于继续升级的空间。此检查适用于所有3个控制器，vManage、vBond和vSmart。

```
controller# request software remove 20.9.1
status remove 20.9.1: successful
vedge-1# show software
VERSION   ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
-------------------------------------------------------------------------------
20.12.6   true   true    false    auto      2023-05-02T16:48:45-00:00
controller#
```

4.检查磁盘空间以确保大于200 MB。 如果不是，请继续打开TAC SR。

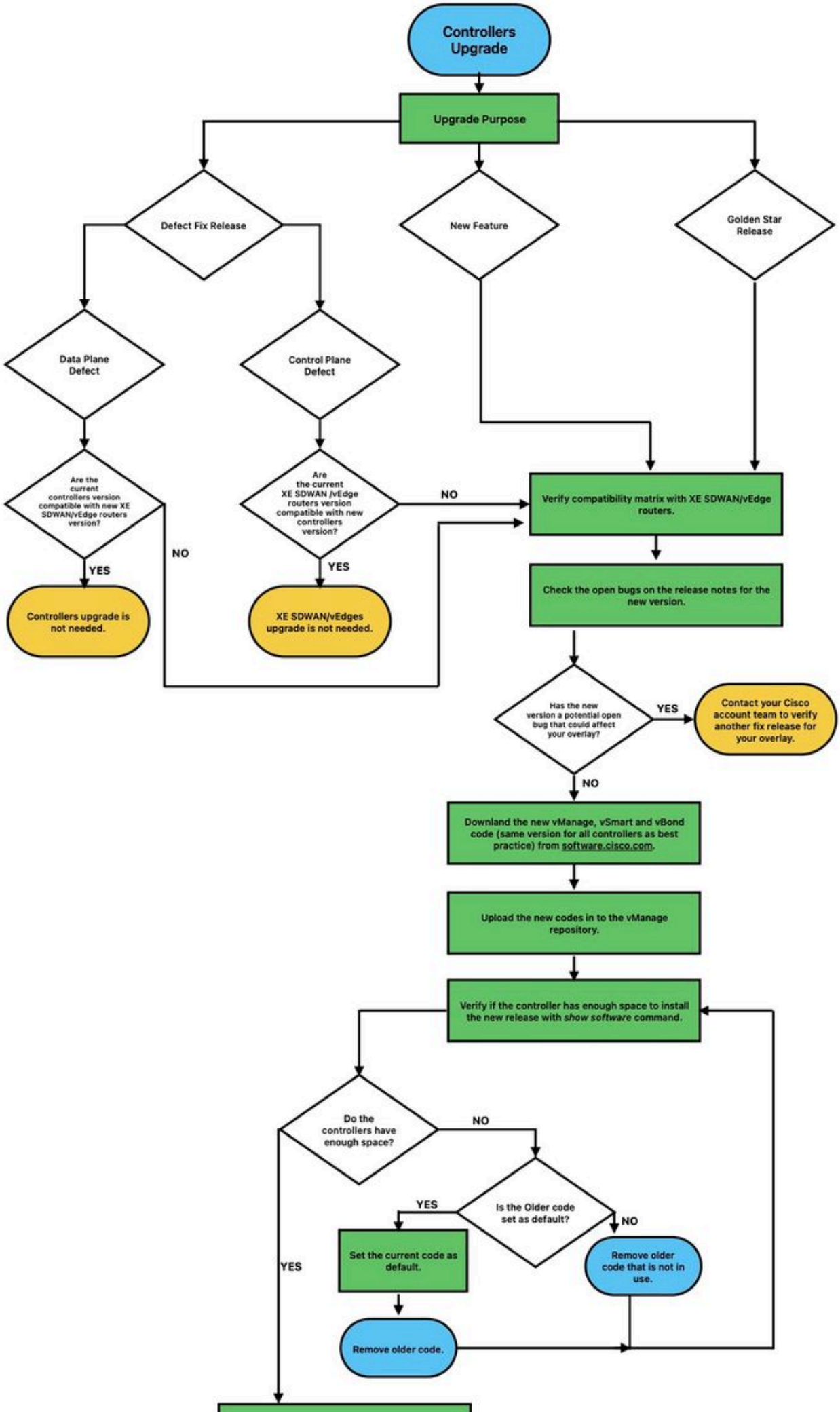
Before和After命令

在升级之前和之后，请执行以下命令以验证控制器是否已正确收敛：

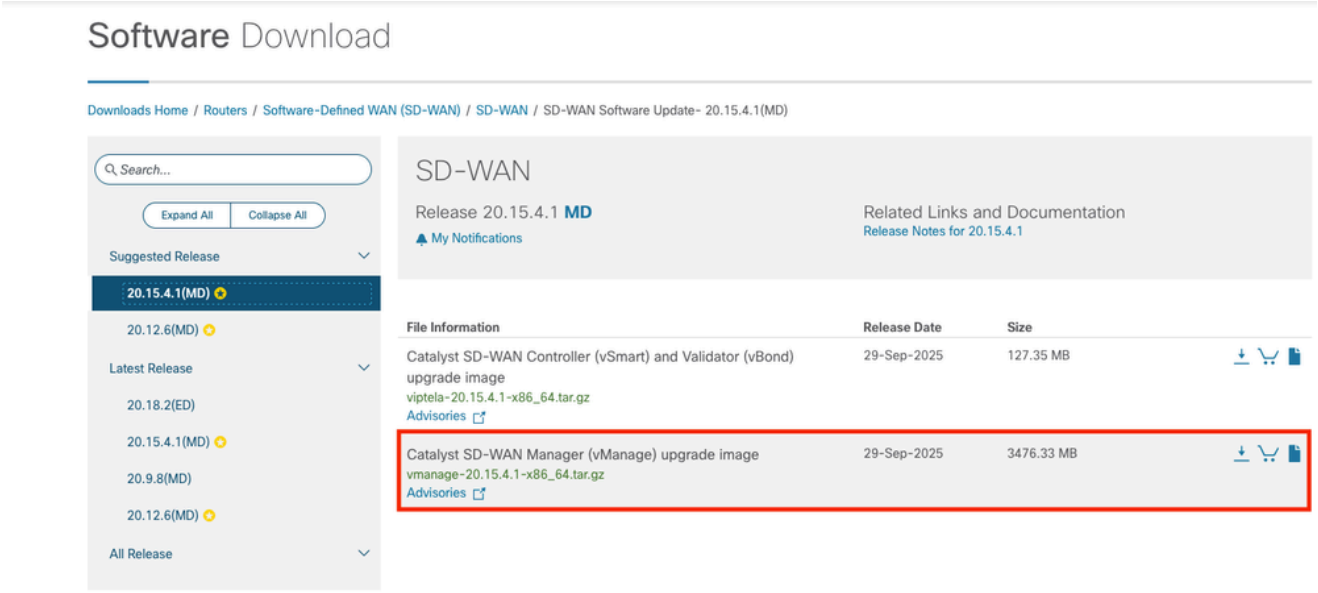
- show control connections
  确保每个控制器与所有其它控制器（全网状）具有活动控制连接。
- show omp peers（仅vSmart）
  验证每个vSmart控制器上的OMP对等体数量。
- show omp summary（仅vSmart）
  检查整体OMP状态和对等体信息。
- show running policy（仅vSmart）
  确认所有预期策略都在控制器上处于活动状态且可见。

  在升级前后查看这些命令的输出，以确保网络稳定性和适当的收敛。

控制器升级工作流程

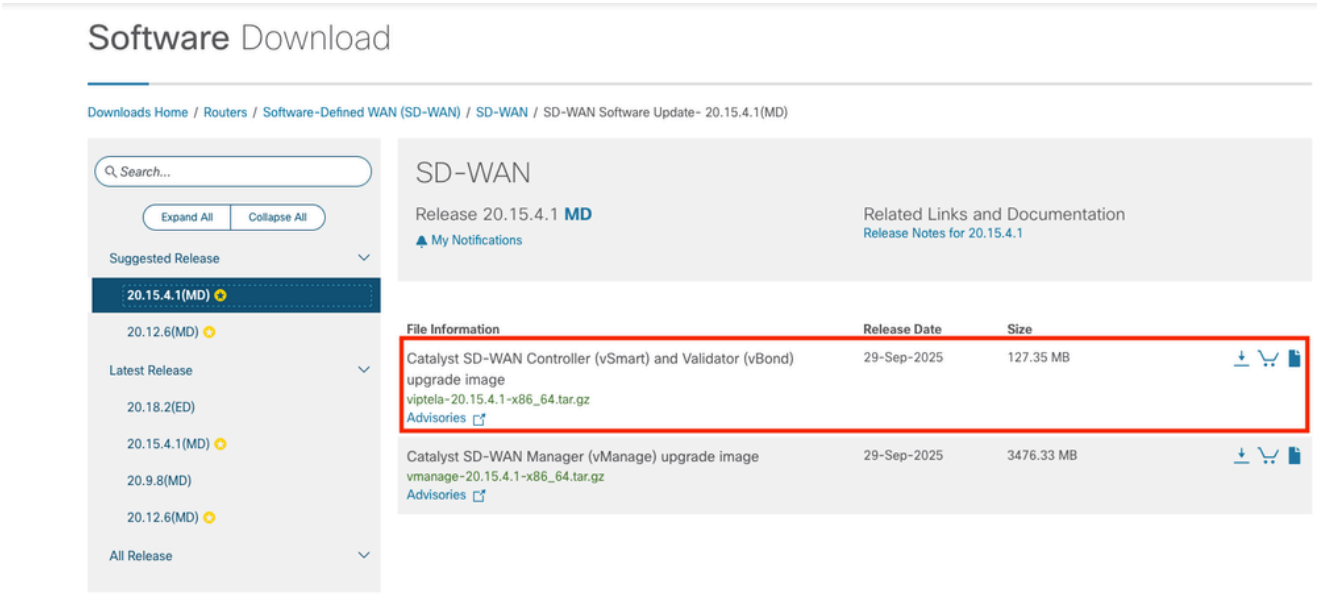

Controllers Upgrade
Upgrade Purpose
Defect Fix Release
New Feature
Golden Star Release
Data Plane Defect
Control Plane Defect
Are the current controllers version compatible with new XE SDWAN/vEdge routers version?
Are the current XE SDWAN /vEdge routers version compatible with new controllers version?
NO
YES
NO
YES
Controllers upgrade is not needed.
XE SDWAN/vEdges upgrade is not needed.
Verify compatibility matrix with XE SDWAN/vEdge routers.
Check the open bugs on the release notes for the new version.
Has the new version a potential open bug that could affect your overlay?
YES
Contact your Cisco account team to verify another fix release for your overlay.
NO
Downland the new vManage, vSmart and vBond code (same version for all controllers as best practice) from software.cisco.com.
Upload the new codes in to the vManage repository.
Verify if the controller has enough space to install the new release with show software command.
Do the controllers have enough space?
NO
YES
Is the Older code set as default?
YES
NO
Set the current code as default.
Remove older code that is not in use.
Remove older code.

控制器有两种类型的映像：新的部署和升级。在本指南范围内，要下载的映像必须是升级映像。

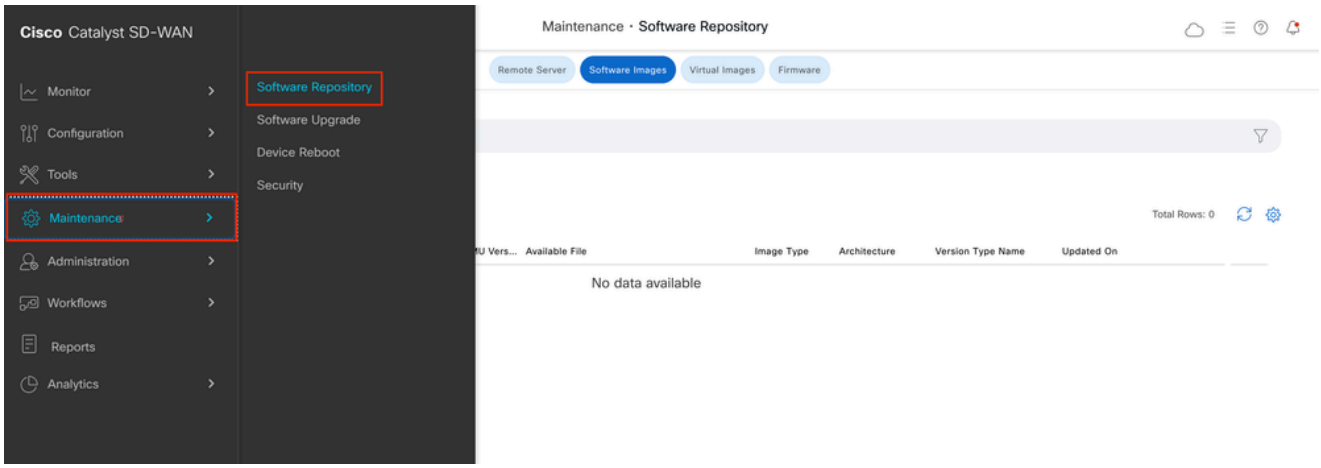


导航到[软件下载](#)，并下载vBond和vSmart的软件版本映像。

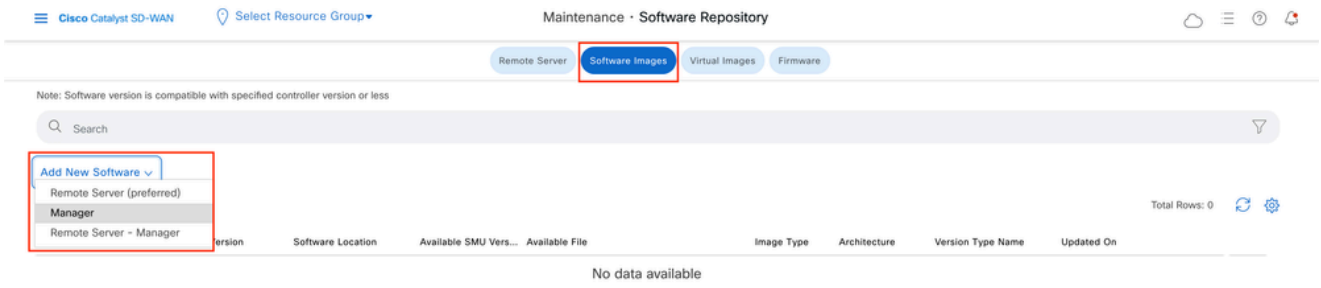
注意：vBond和vSmart的升级映像相同。



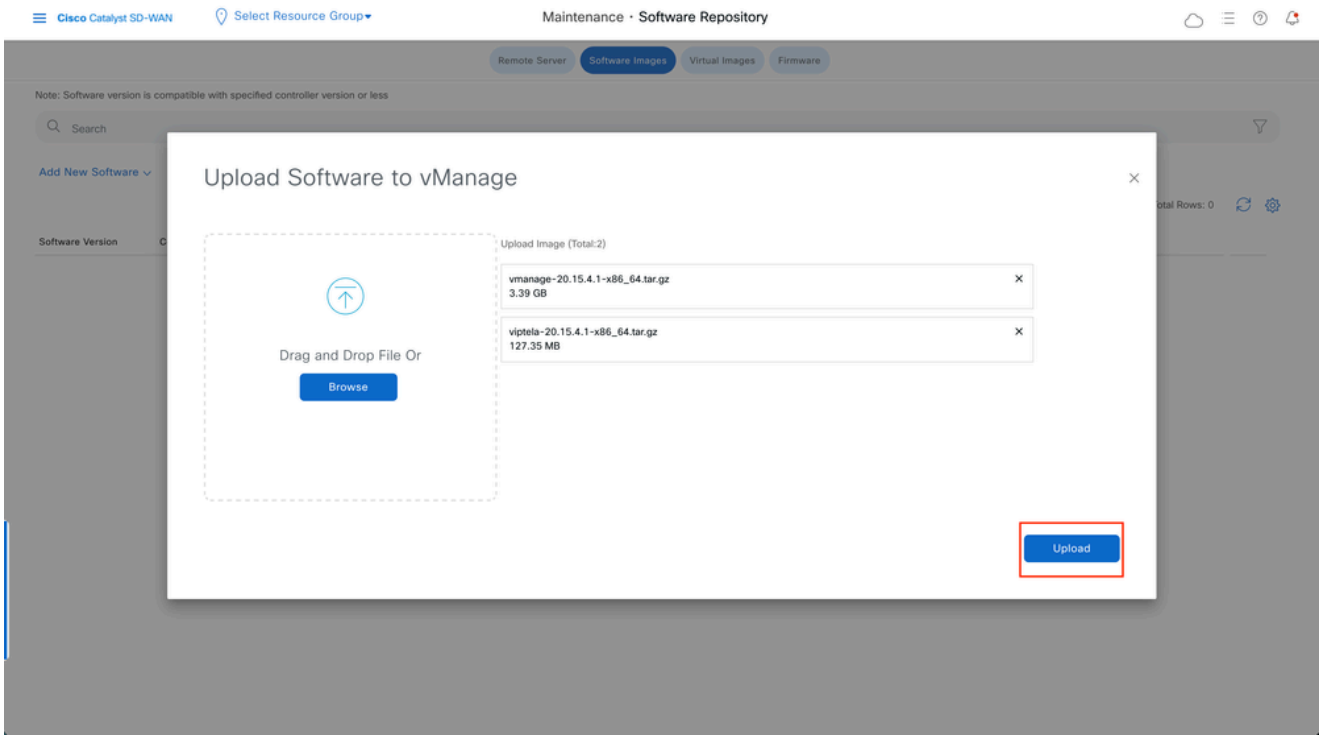
要上传新映像，请导航到维护 > 软件存储库 > 软件映像。



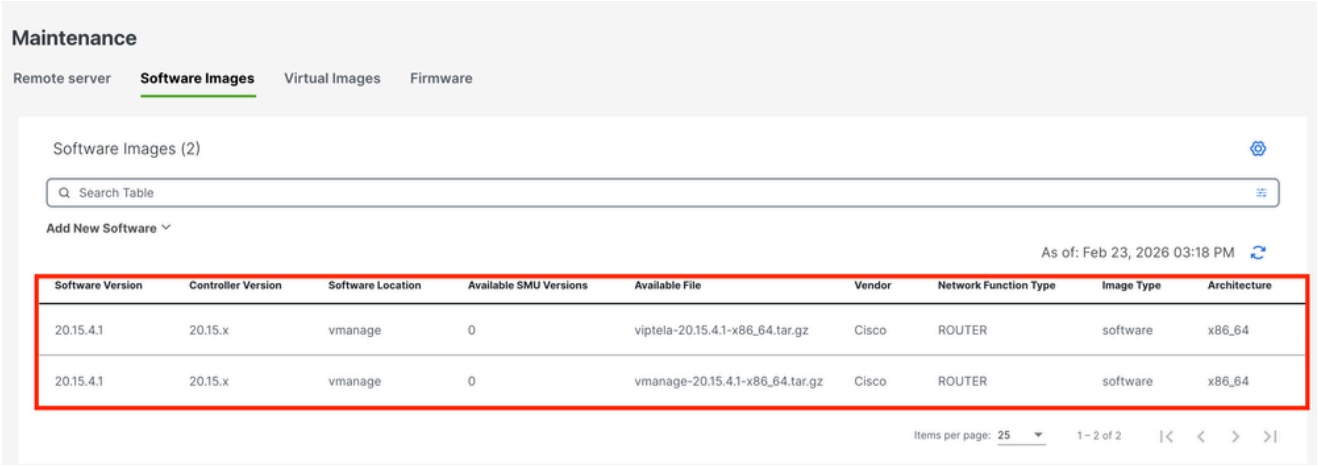
单击Add New Software，然后在下拉菜单中选择vManage。



选择图像并点击上传。



上传映像后，验证它们是否列在软件存储库 > 软件映像中。



步骤2.安装、激活并将新版本设置为默认值

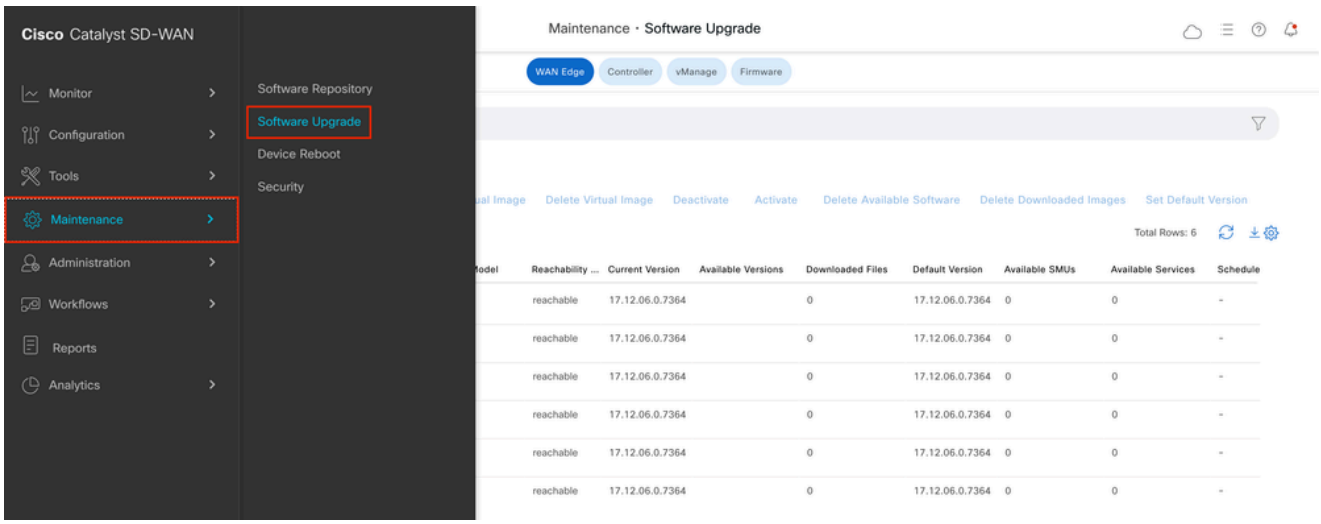
此步骤说明如何通过三个步骤执行升级：安装、激活并将新版本设置为默认值。

vManage

⚠ 警告：确保您已验证要在vManage升级之前执行的预检查。

步骤A.安装

在主菜单上，导航到Maintenance > Software Upgrade > vManage，然后单击Upgrade。

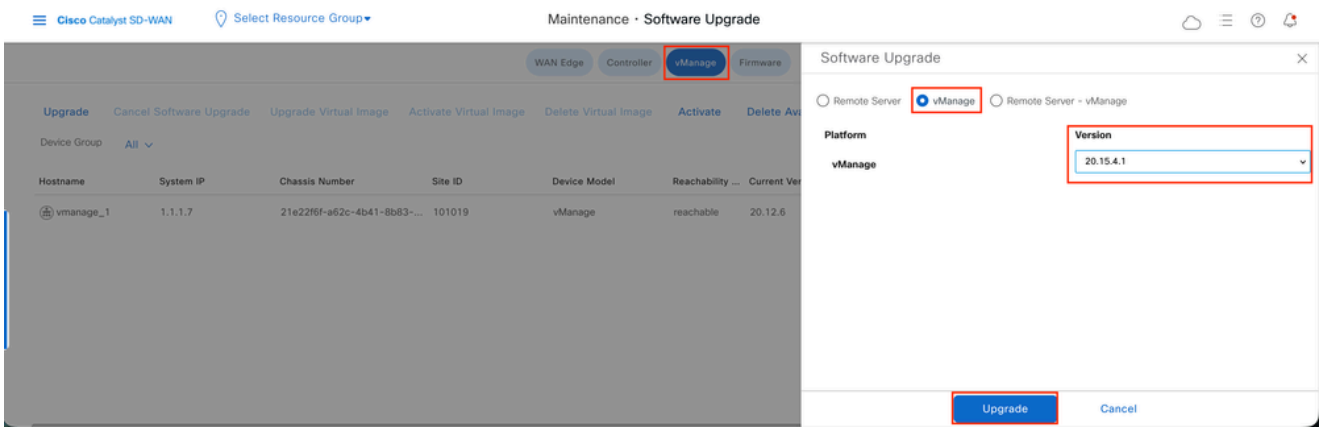


在Software Upgrade弹出窗口中，执行以下操作：

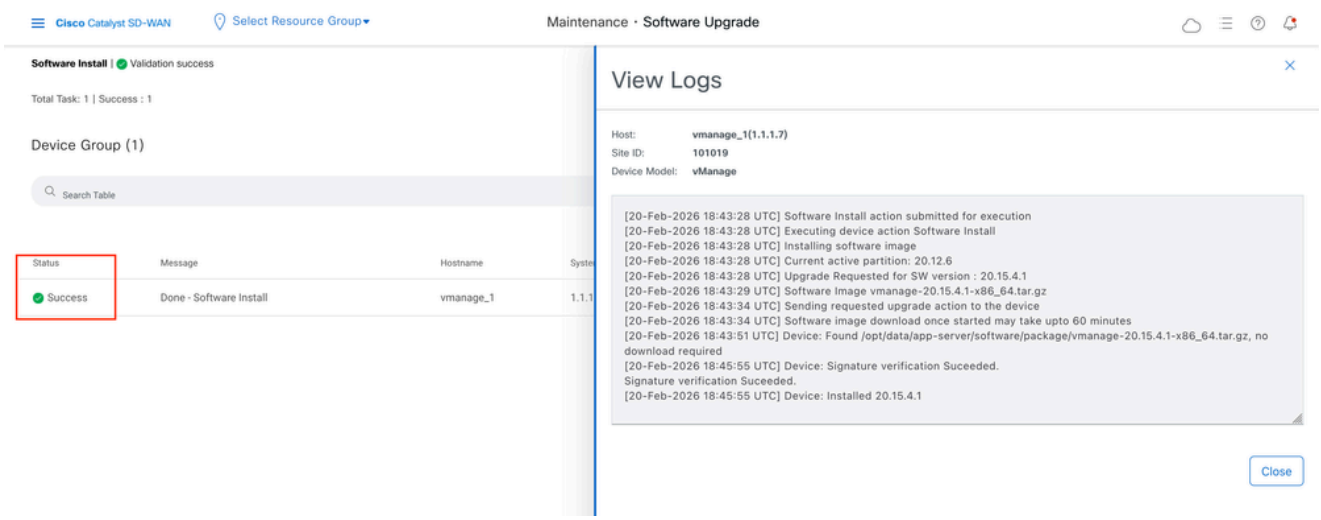
- 选择vManage选项卡。
- 从version下拉列表中选择要升级到的映像版本。
- 单击Upgrade。

注意：此过程不重新启动vManage，只传输、解压缩和创建升级所需的目录。

注意：强烈建议先备份数据卷，然后再继续升级vManage。



验证任务的状态，直到其显示为Success。

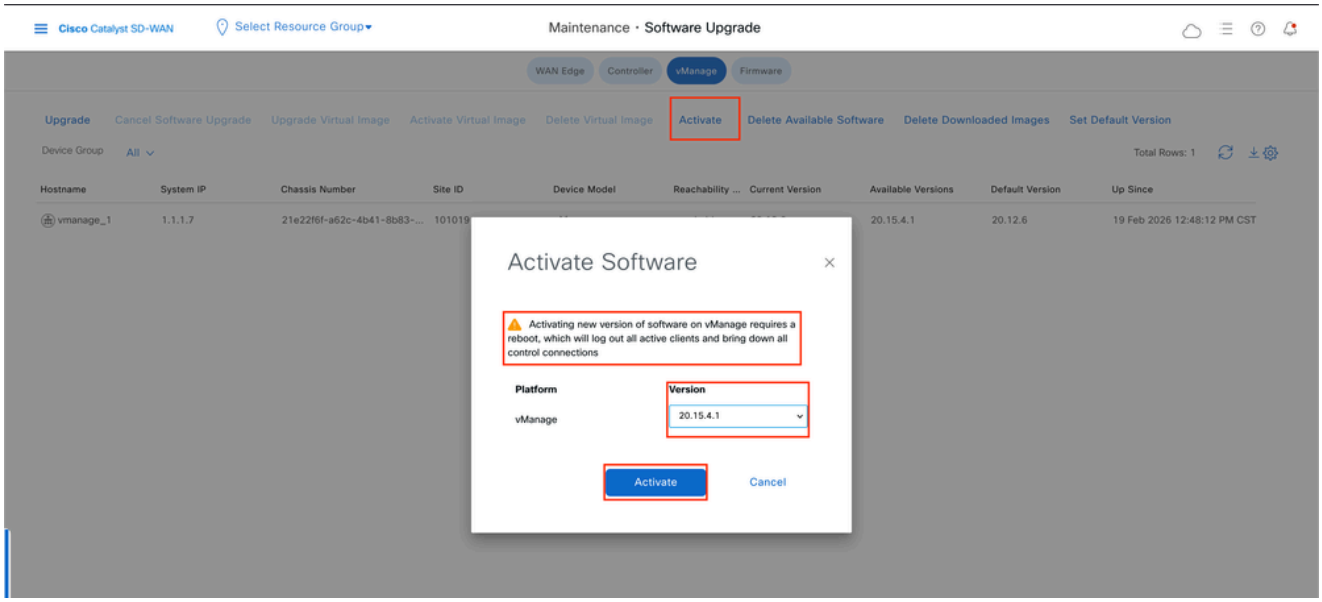


步骤B.激活

在此步骤中，vManage激活新安装的软件版本，并重新启动自身以使用新软件进行启动。

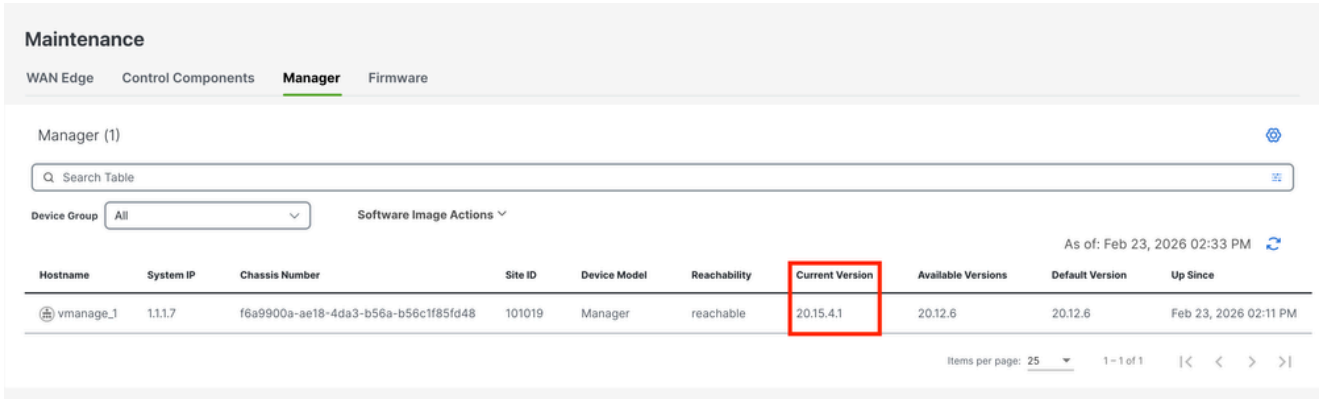
导航到维护 > 软件升级 > vManage，然后单击激活。

选择新版本，然后单击Activate。



注意：在vManage重新启动时，对GUI的访问不可用。完全激活最多可能需要60分钟。

完成该过程后，登录并导航到维护>软件升级>管理器，以验证新版本是否已激活。



步骤C.设置默认软件版本

您可以将软件映像设置为思科SD-WAN设备上的默认映像。在验证软件在设备和网络中按预期运行后，建议将新映像设置为默认映像。

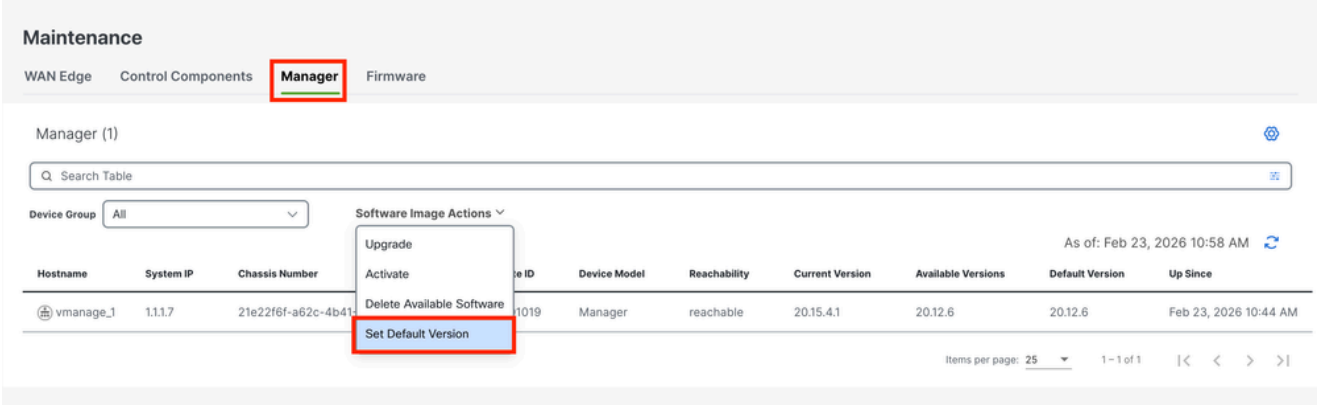
如果在设备上执行出厂重置，则设备会使用默认设置的映像启动。

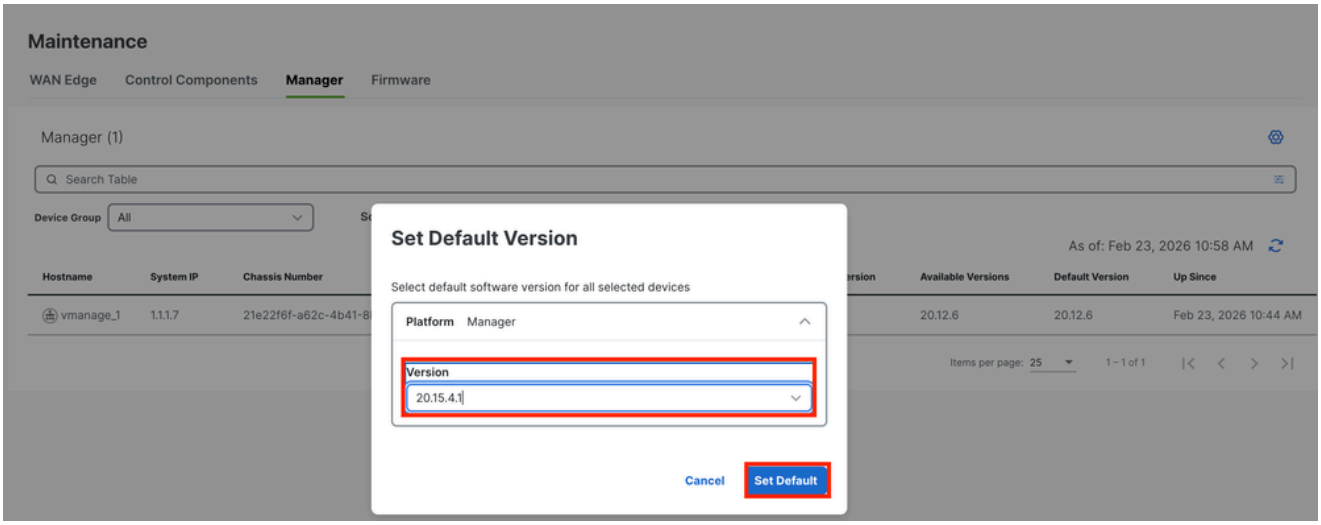
注意：建议将新版本设置为默认版本，因为如果vManage重新启动，将启动旧版本。这可能导致数据库损坏。版本从主版本降级到旧版本，在vManage中不受支持。

要将软件映像设置为默认映像，请执行以下操作：

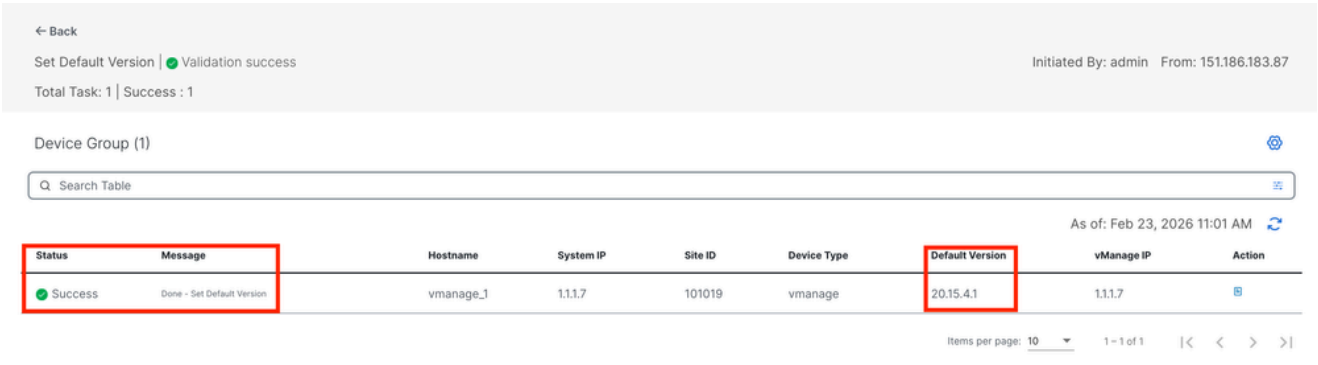
- 导航到维护> Software Upgrade > Manager > Software Image Actions。
- 单击Set Default Version，从下拉列表中选择新版本，然后单击Set Default。

注意：此过程不会重新启动vManage。

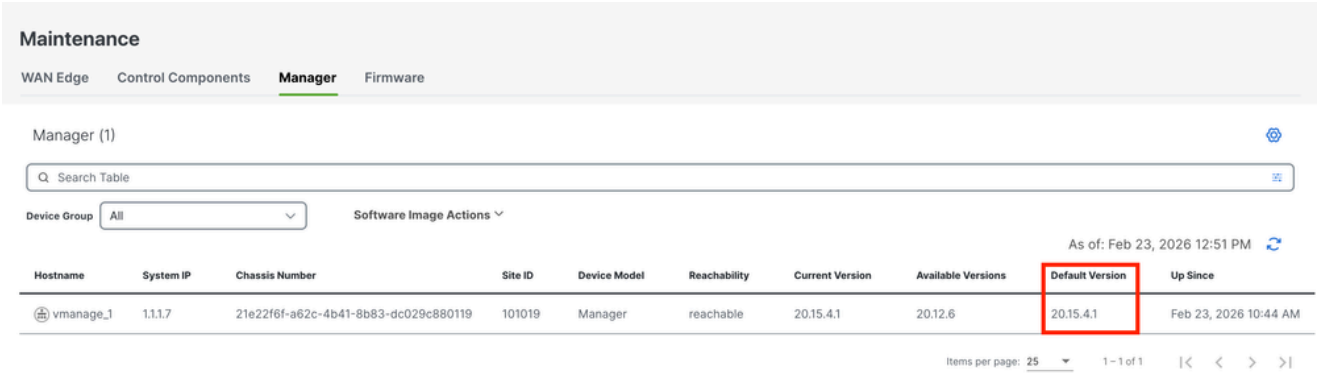




验证任务的状态，直到其显示为Success。



要验证默认版本，请导航到维护 > 软件升级 > Manager。

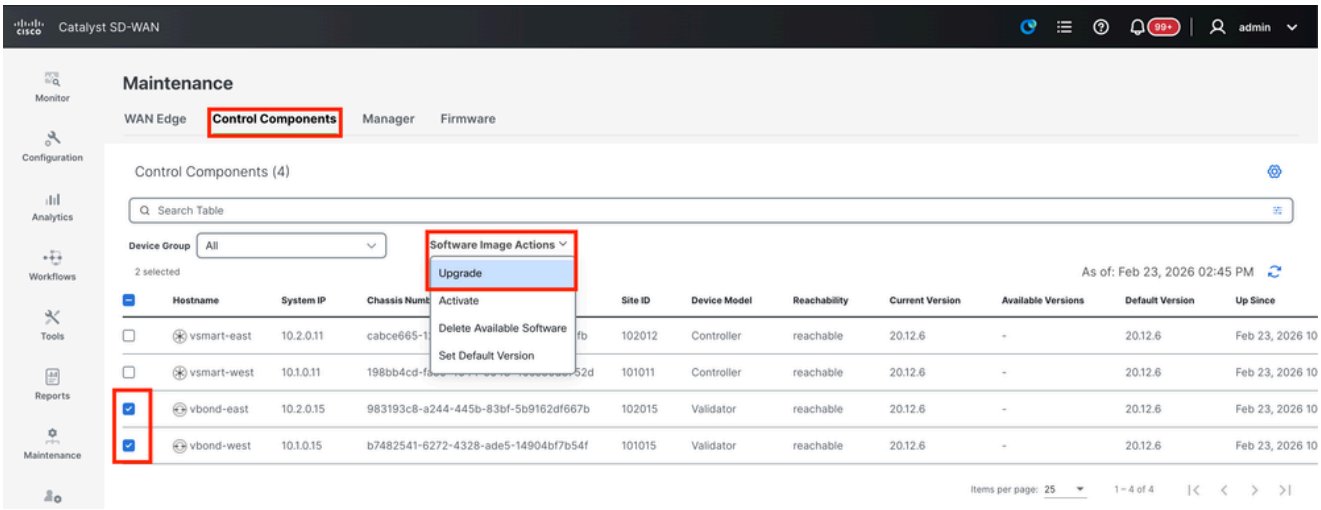


vBond

步骤A.安装

在此步骤中，vManage将新软件发送到vBond并安装新映像。

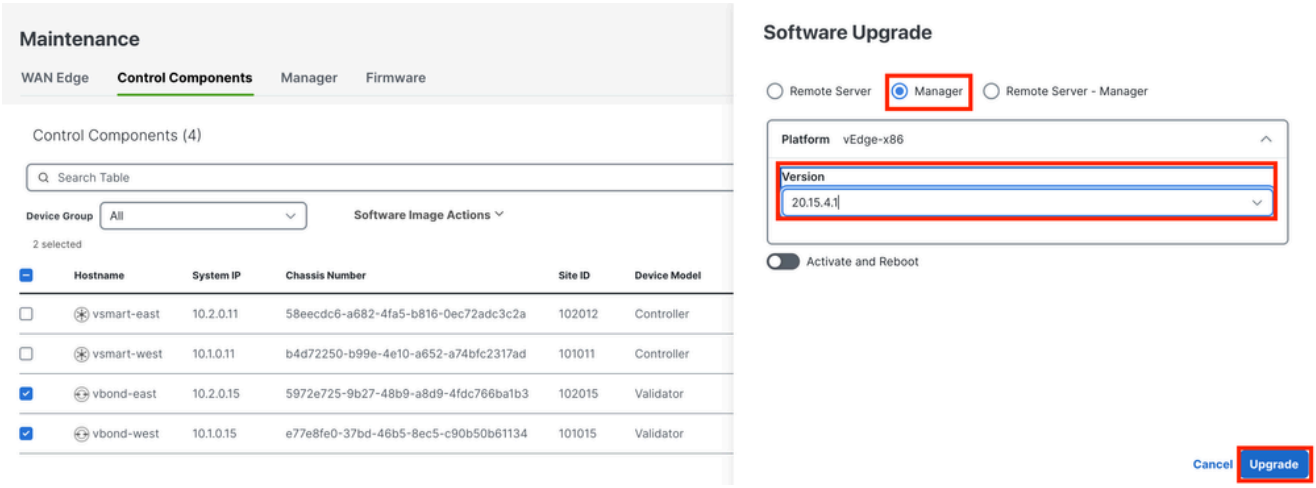
导航到维护 > 软件升级 > 控制组件，然后单击升级。



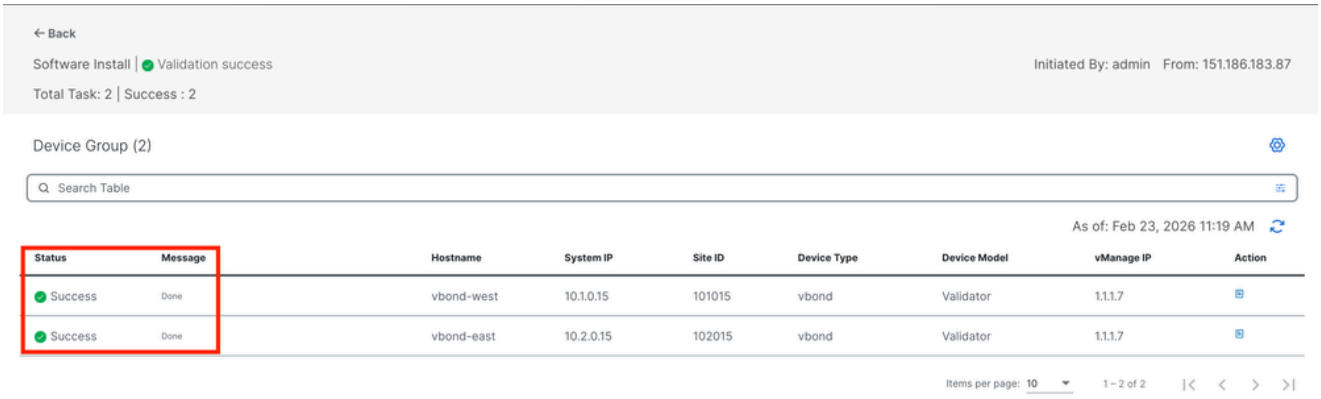
在Software Upgrade弹出窗口中，执行以下操作：

- 选择Manage选项卡。
- 从version下拉列表中选择要升级到的映像版本。
- 点击Upgrade。

注意：此过程不会重新启动vBond，仅传输、解压缩和创建升级所需的目录。



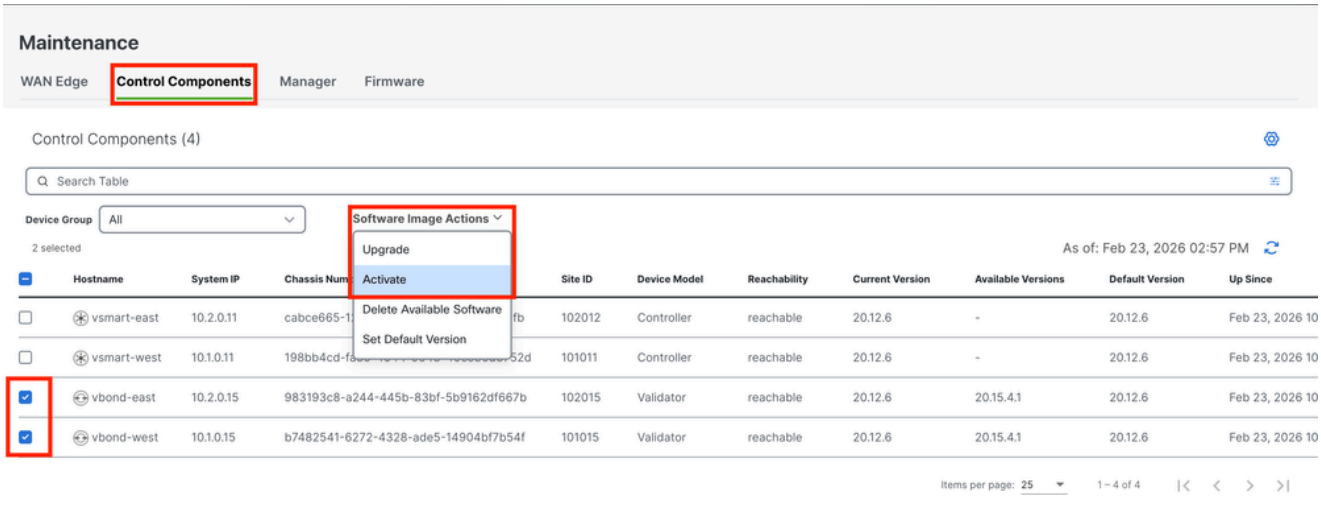
验证任务的状态，直到其显示为Success。



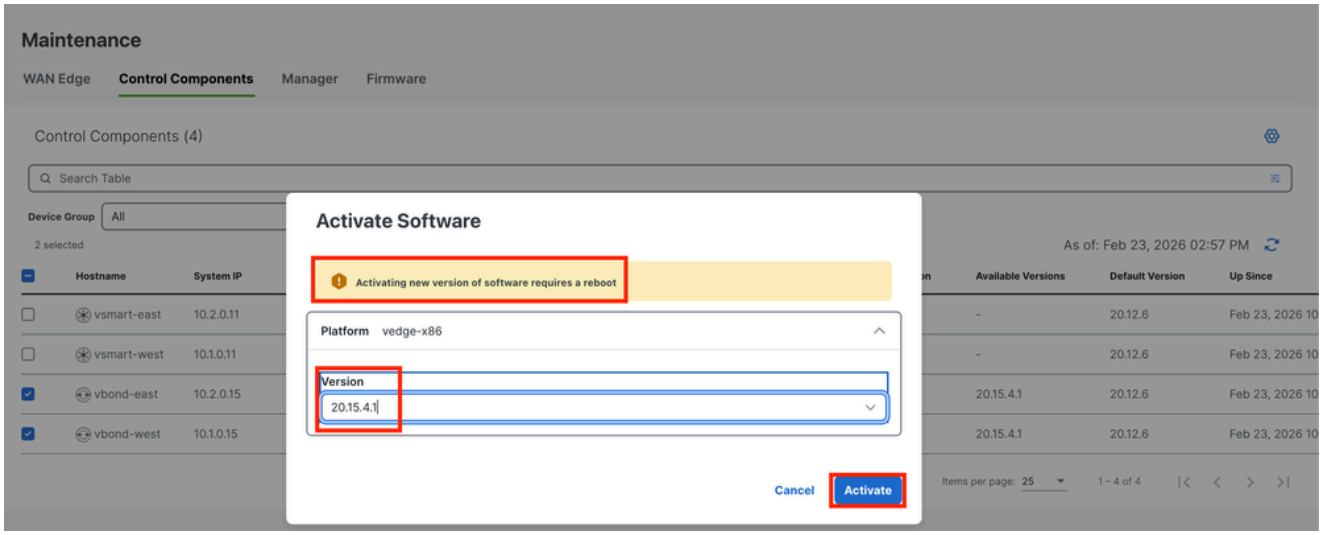
步骤B.激活

在此步骤中，vBond激活新安装的软件版本，并重新启动自身以使用新软件进行启动。

导航到维护>软件升级>控制组件，然后单击激活。

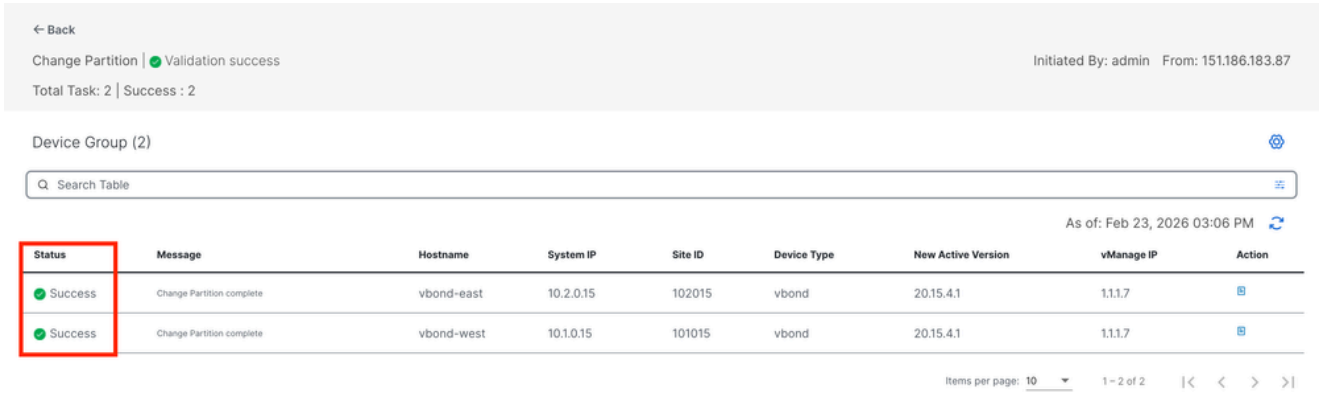


选择新版本，然后单击Activate。

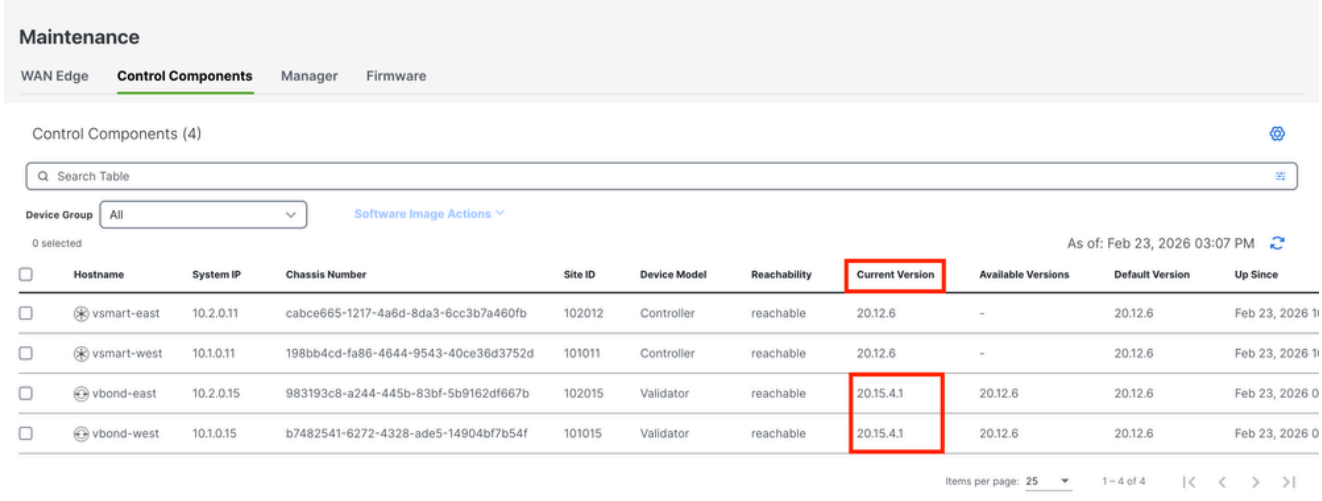


注意：此过程需要重新启动vBond。完成激活最多可能需要30分钟。

验证任务的状态，直到其显示为Success。



完成该过程后，导航到维护>软件升级>控制组件以验证新版本是否已激活。



可选步骤。激活并重新启动新的软件映像

注意：This step is optional.您可以在安装过程中选中激活和重新启动选项框。使用此过程安装并激活新的升级软件版本。

步骤C.设置默认软件版本

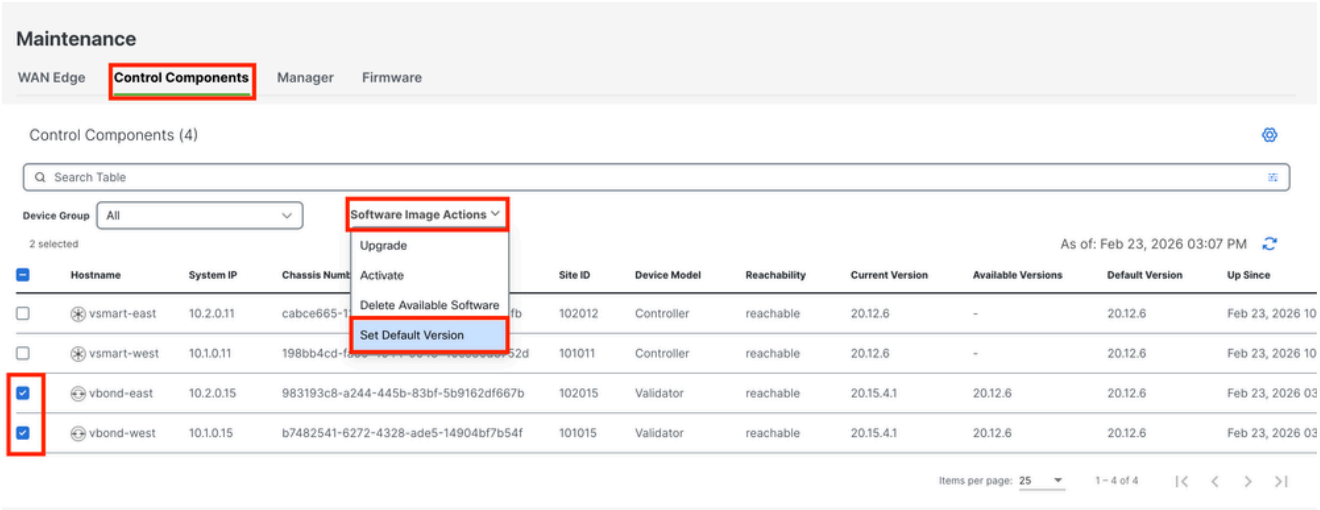
您可以将软件映像设置为思科SD-WAN设备上的默认映像。在验证软件在设备和网络中按预期运行后，建议将新映像设置为默认映像。

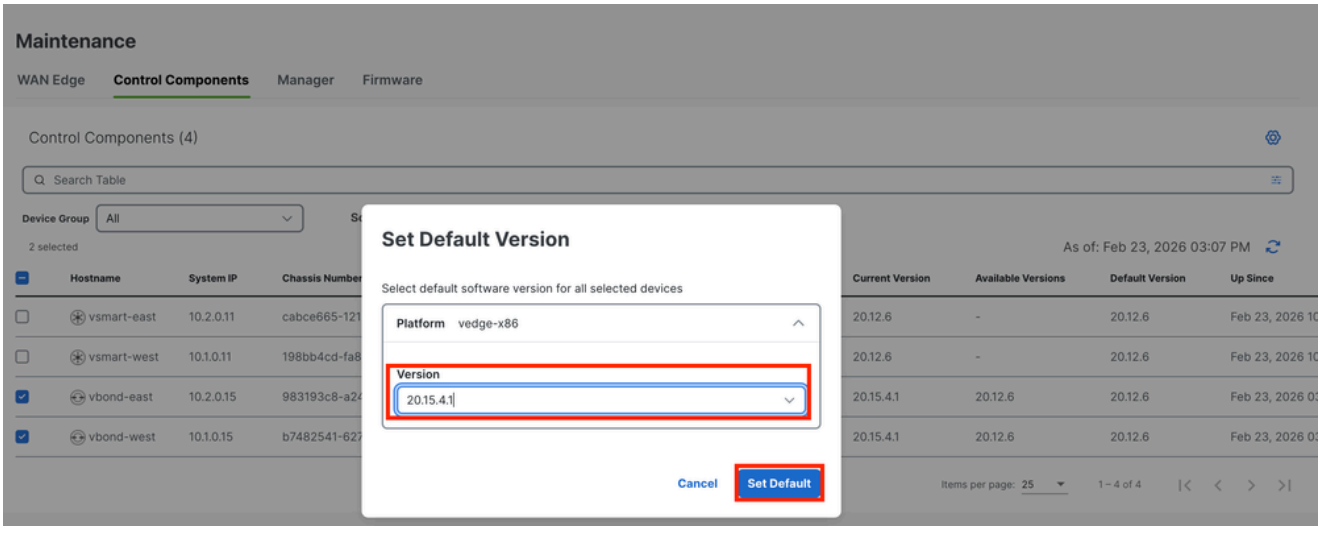
如果在设备上执行出厂重置，则设备会使用默认设置的映像启动。

要将软件映像设置为默认映像，请执行以下操作：

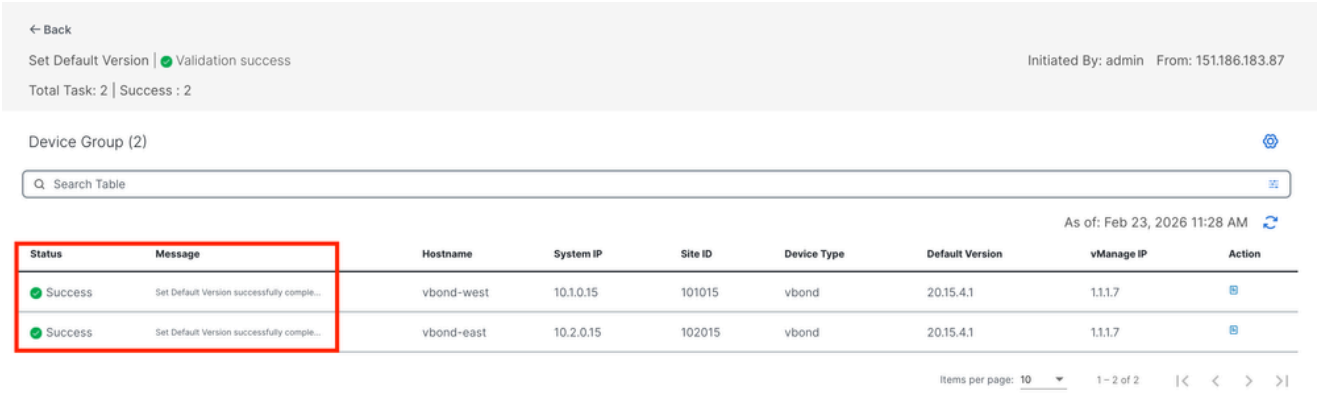
- 导航到维护>软件升级>控制组件>软件映像操作。
- 点击Set Default Version，从下拉列表中选择新版本，然后点击Set Default。

注意：此过程不会重新启动vBond。

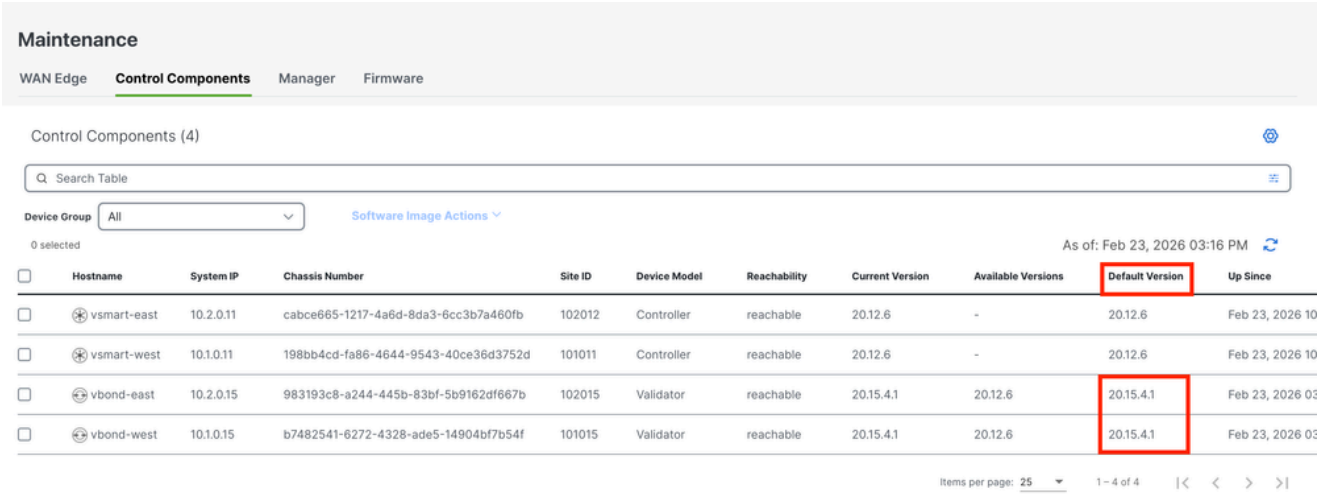




验证任务的状态，直到其显示为Success。



要验证默认版本，请导航到维护 > 软件升级 > 控制组件。



vSmart

vSmart（控制器）升级指南

1. 思科建议先升级50%的vSmart控制器。在初始升级后，请监控系统以确保至少24小时的稳定性。如果未发现任何问题，请继续升级剩余的vSmart控制器。
2. 对于升级vSmart（控制器），思科建议使用vManage GUI而不是CLI。

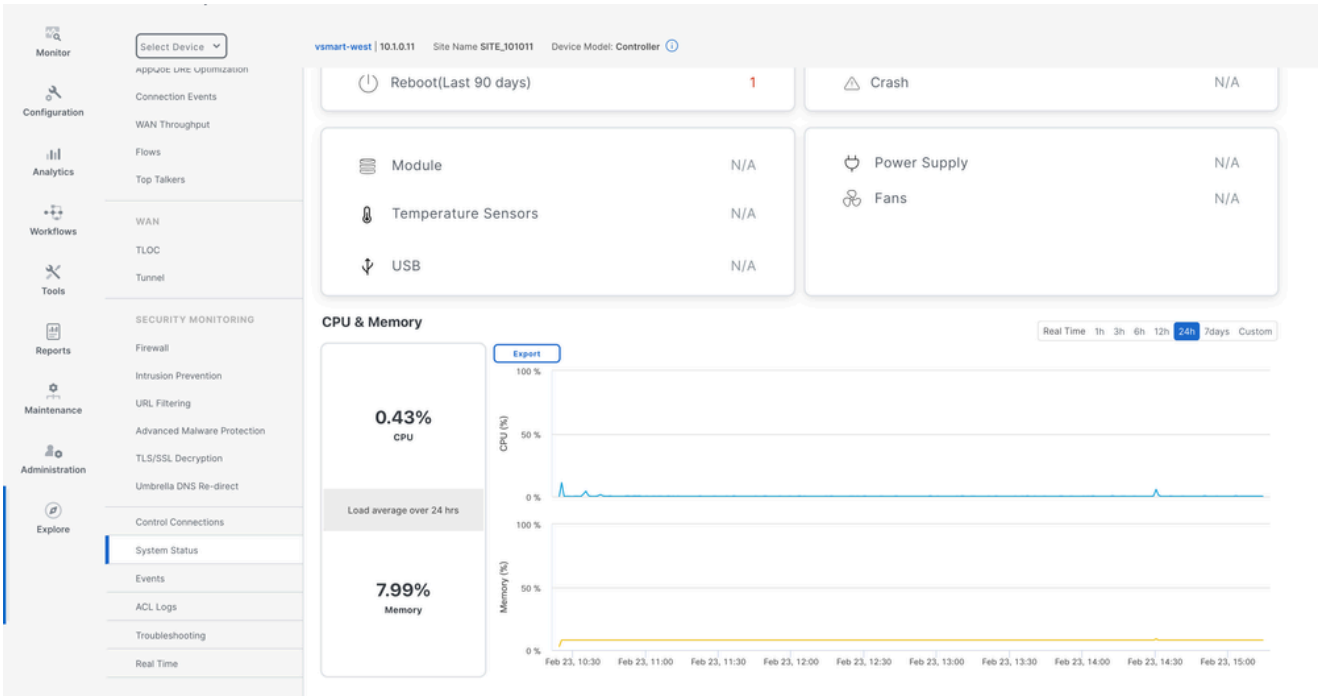
注意:vManage GUI提供更精简且用户友好的升级流程。

在升级vSmart控制器之前，请确保满足前提条件以在升级后保持无缝数据平面操作。

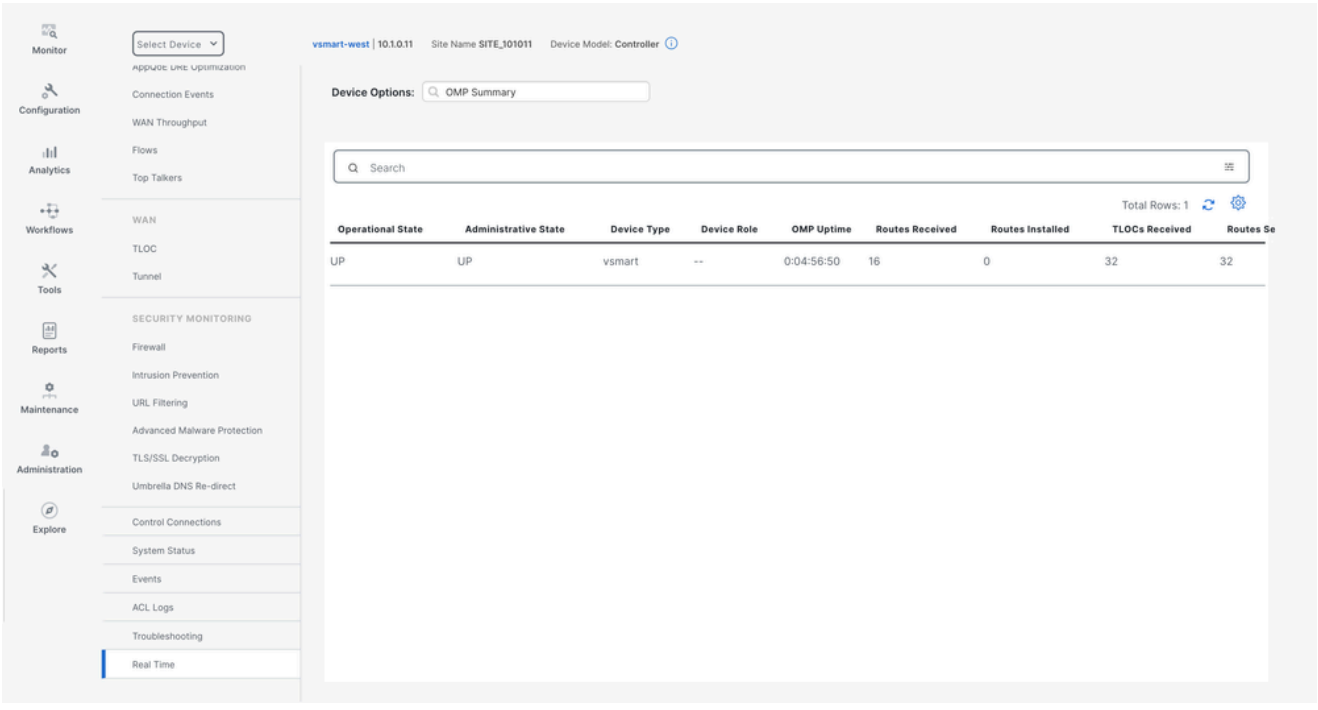
前提条件

步骤1.从控制面板收集参考屏幕截图

- 对于vSmart控制器，请导航到Monitor > Overview > Controller > System Statusto capture CPU and memory utilization。

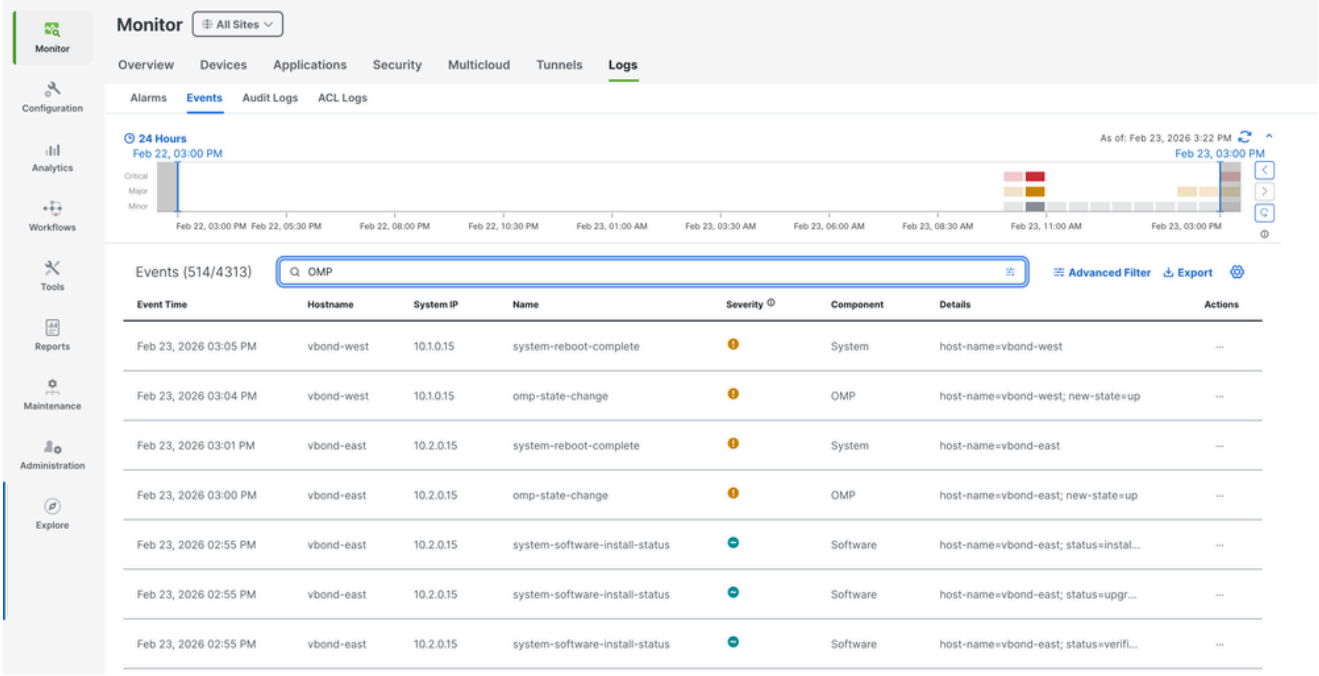


- 从vManage上的所有vSmarts收集Real-Time命令show omp summary。



步骤2.检查OMP对等体状态通知

- 查看事件或警报控制面板，了解指示OMP对等体状态关闭状态的任何通知。
- 为此，请导航至监控>日志>警报/事件，并在继续升级之前查找任何相关警报。



步骤3.备份vSmart配置

- 收集所有vSmart控制器的运行配置，包括当前vSmart策略。
- 将这些配置保存为备份，以确保在升级后可以根据需要恢复设置。

步骤4.检查磁盘空间

查看vSmart上的磁盘使用情况，确保在开始升级之前有足够的可用空间。请特别注意处于或接近满容量的分区，例如，以下输出中的/var/volatile/log/tmplog，当前为100%。根据需要解决任何存储问题，以避免升级失败或运营中断。

```
vSmart# df -h

Filesystem      Size      Used      Avail Use% Mounted on
none            7.6G      4.0K      7.6G    1% /dev
/dev/nvme0n1p1  7.9G      1.8G      6.0G   23% /boot
/dev/loop0      139M      139M         0  100% /rootfs.ro
/dev/nvme1n1     20G      7.6G       12G   41% /rootfs.rw
aufs             20G      7.6G       12G   41% /
tmpfs           7.6G      728K      7.6G    1% /run
shm             7.6G       16K      7.6G    1% /dev/shm
tmp             1.0G       16K      1.0G    1% /tmp
tmplog          120M      120M         0  100% /var/volatile/log/tmplog
svtmp           2.0M      1.2M      876K   58% /etc/sv
vSmart#
```

步骤5.监控vSmart资源利用率

- 检查vSmart控制器上的CPU和内存使用情况。
- 在vshell中，运行topandfree -m命令以收集当前资源统计信息

```
vSmart# vshell
vSmart~$top
vSmart~$ free -m
```

步骤6.检验所有vSmarts上的OMP和控制状态

- 对所有vSmarts执行OMP和控制验证，以建立基准，然后进行更改。
  - Runshow omp汇总并记录输出作为原始状态的参考，以便在升级后进行比较。
  - 使用控制摘要和show control确认到边缘、其他vSmarts、vBonds和vManage的控制连接数量是否正确。
  - Runshow control local-properties用于更多控制平面详细信息。
  - Executeshow system status可确保每个vSmart具有“vManaged”状态架构，并且“Configuration template”未设置为None。

步骤7.验证边缘设备示例

从不同的站点列表中选择10到15台设备的示例，然后执行检查：

- 运行show sdwan omp peers以确保每个设备都有与所有预期的vSmarts的主用OMPpeerings。
- Executeshow sdwan omp summary查看整体OMP状态。
- 使用sdwan bfd会话捕获活动BFD会话的数量及其正常运行时间。

思科建议的配置设置

虽然升级不是强制性的，但思科强烈建议采用这些配置最佳实践，以确保最佳操作。

OMP保持计时器

- 对于软件版本20.12.1及更高版本，请将OMP保持计时器配置为300秒。
- 对于版本为20.12.1，请将OMP保持计时器设置为60秒。

OMP平滑重启计时器

- 12小时(43,200秒)的默认计时器通常足以在临时vSmart中断期间维护数据平面隧道。

IPsec密钥更新计时器

- 要在OMP关闭时防止IPsec重新生成密钥，请将IPsec重新生成密钥计时器配置为OMP平滑重启计时器值的两倍。

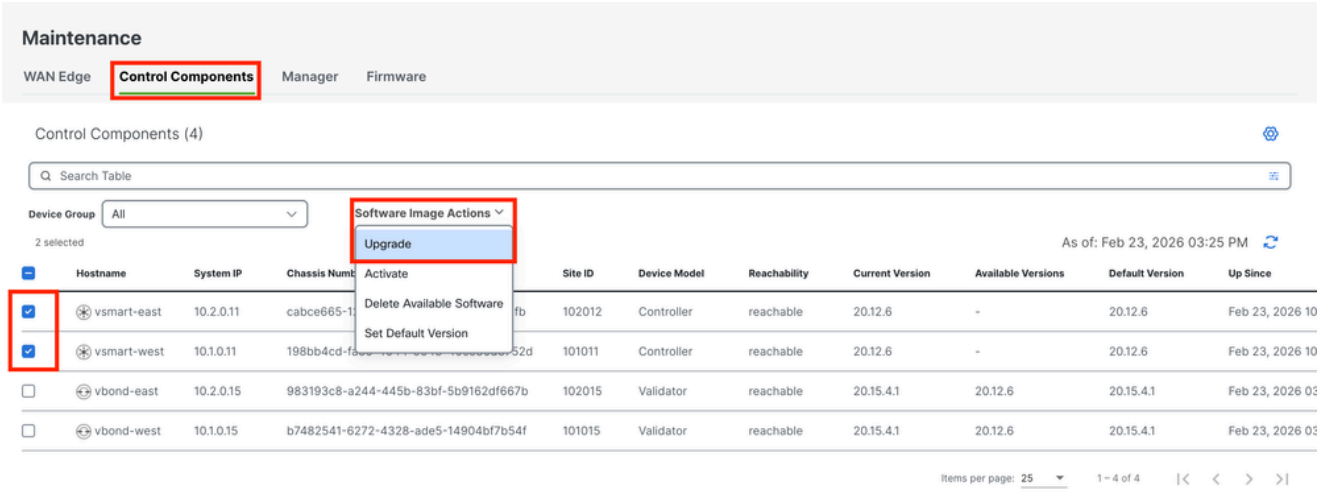
这些设置有助于增强网络稳定性，并在计划内或计划外停机期间最大限度地减少中断。

仅当所有验证都成功时，才继续执行下一步。

步骤A.安装

在此步骤中，vManagesends the new software to vSmart and install the new image。

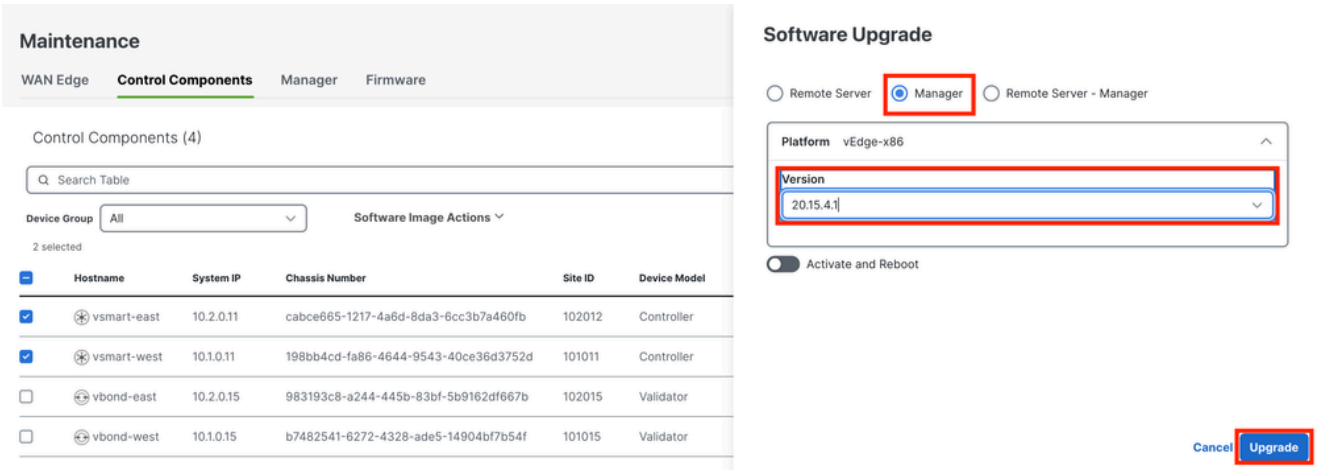
导航到维护>软件升级>控制器，然后单击升级。



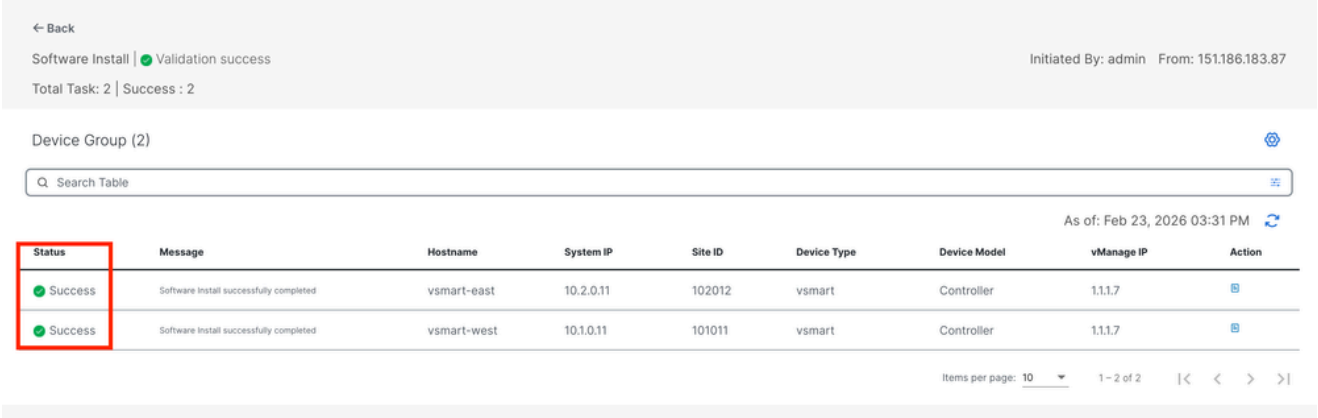
在Software Upgrade弹出窗口中，执行以下操作：

- 选择vManage选项卡。
- 从version下拉列表中选择要升级到的映像版本。
- 点击Upgrade。

注意：此过程不重新启动vSmart，只传输、解压缩和创建升级所需的目录。



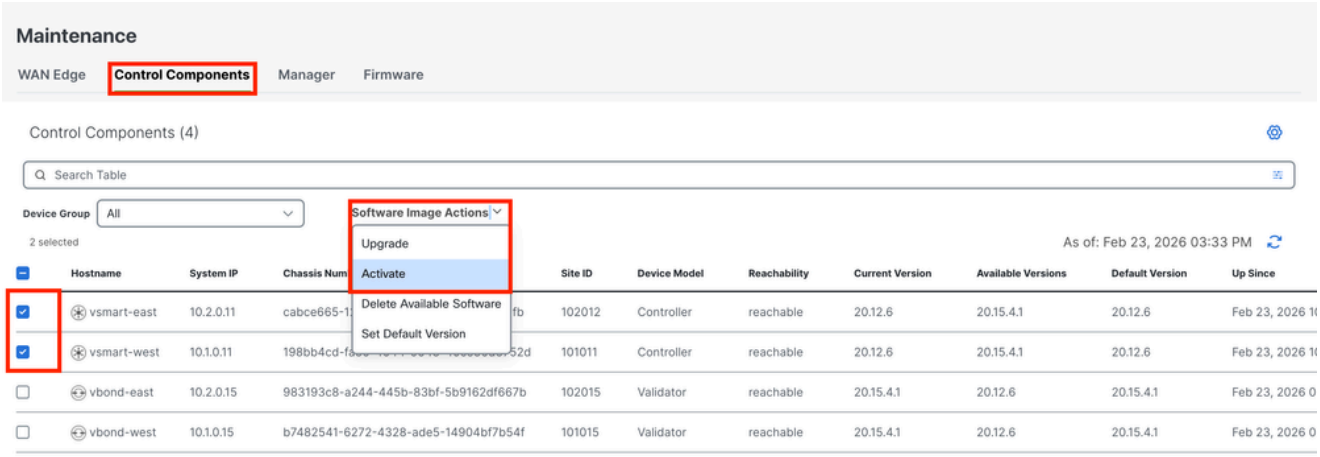
验证任务的状态，直到其显示为Success。



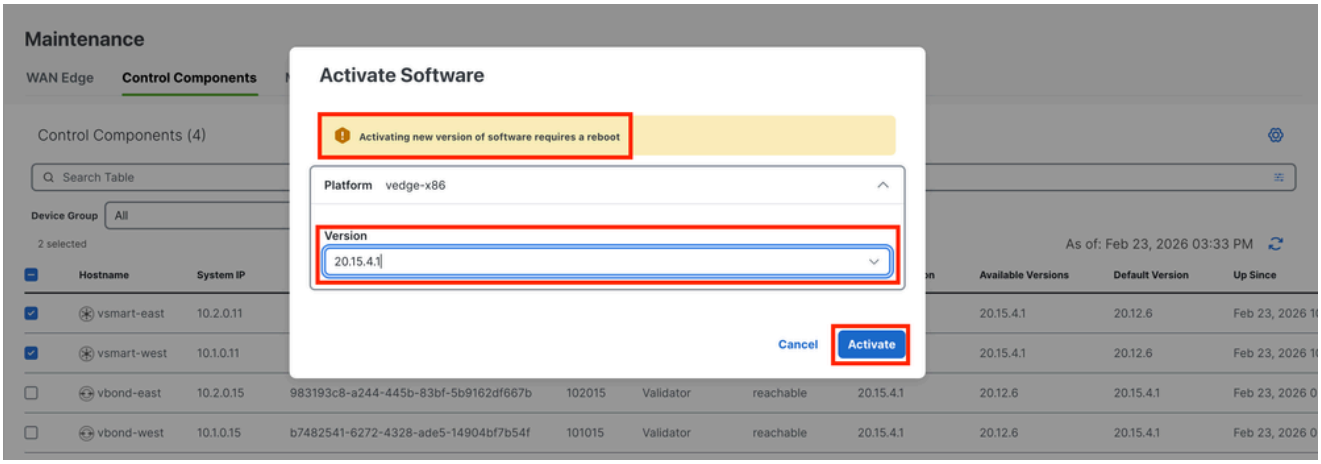
步骤B.激活

在此步骤中，vSmart激活新安装的软件版本，并重新启动自身以使用新软件进行启动。

导航到维护>软件升级>控制器，然后单击激活。

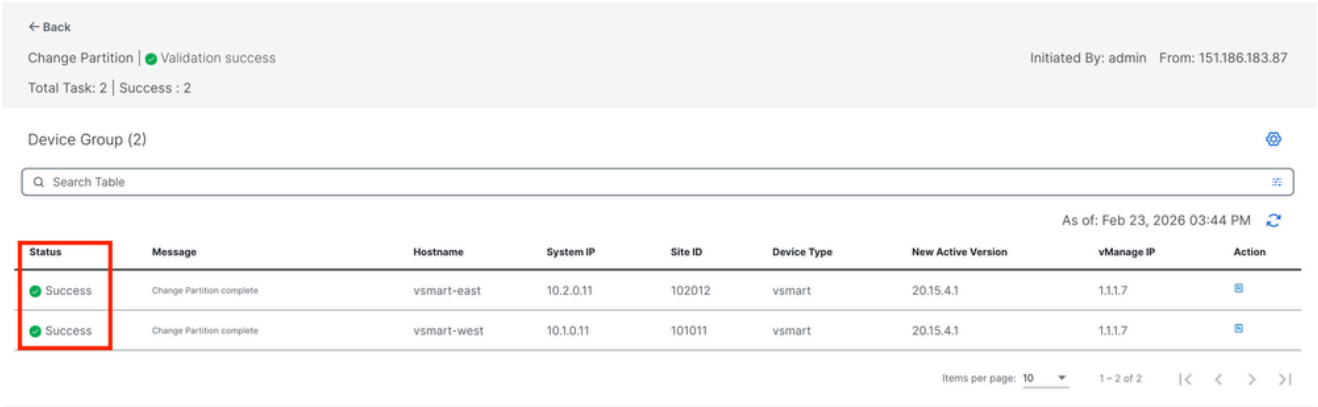


选择新版本，然后单击Activate。

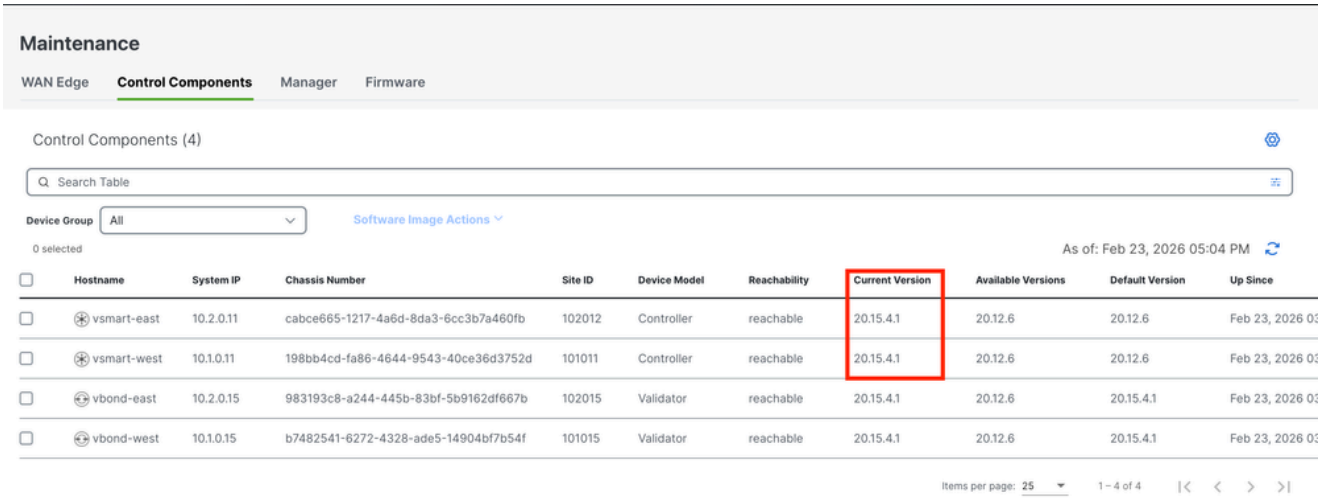


注意：此过程需要重新启动vSmart。完整激活最多可能需要30分钟。

验证任务的状态，直到其显示为Success。



完成该过程后，导航到维护>软件升级>控制器以验证新版本是否已激活。



可选步骤。激活并重新启动新的软件映像

注意：This step is optional.您可以在安装过程中选中激活和重新启动选项框。使用此过程安装并激活新的升级软件版本。

步骤C.设置默认软件版本

您可以将软件映像设置为思科SD-WAN设备上的默认映像。在验证软件在设备和网络中按预期运行后，建议将新映像设置为默认映像。

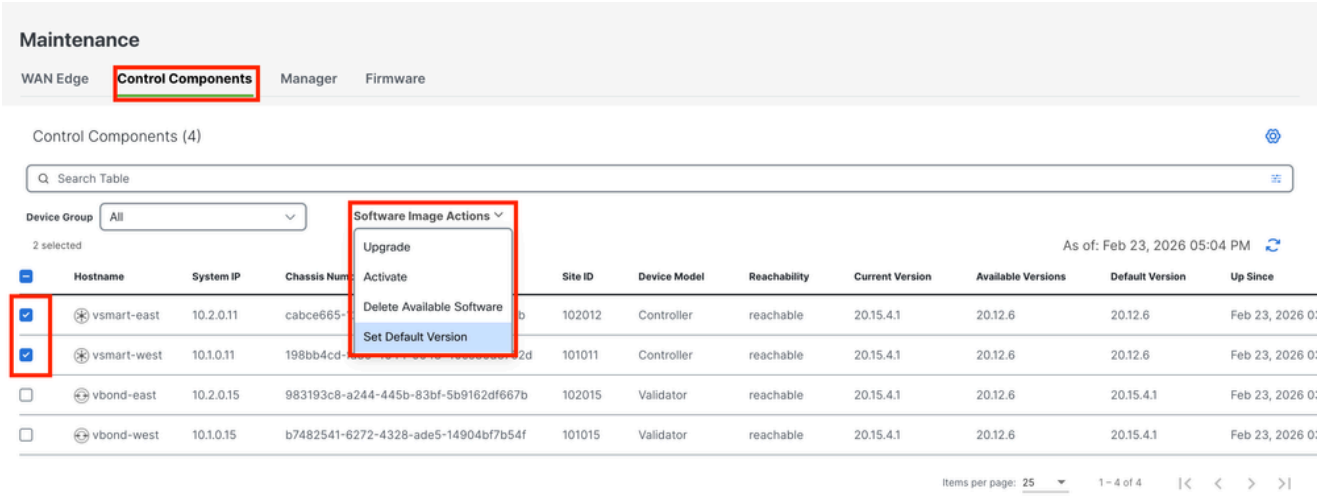
如果在设备上执行出厂重置，则设备会使用默认设置的映像启动。

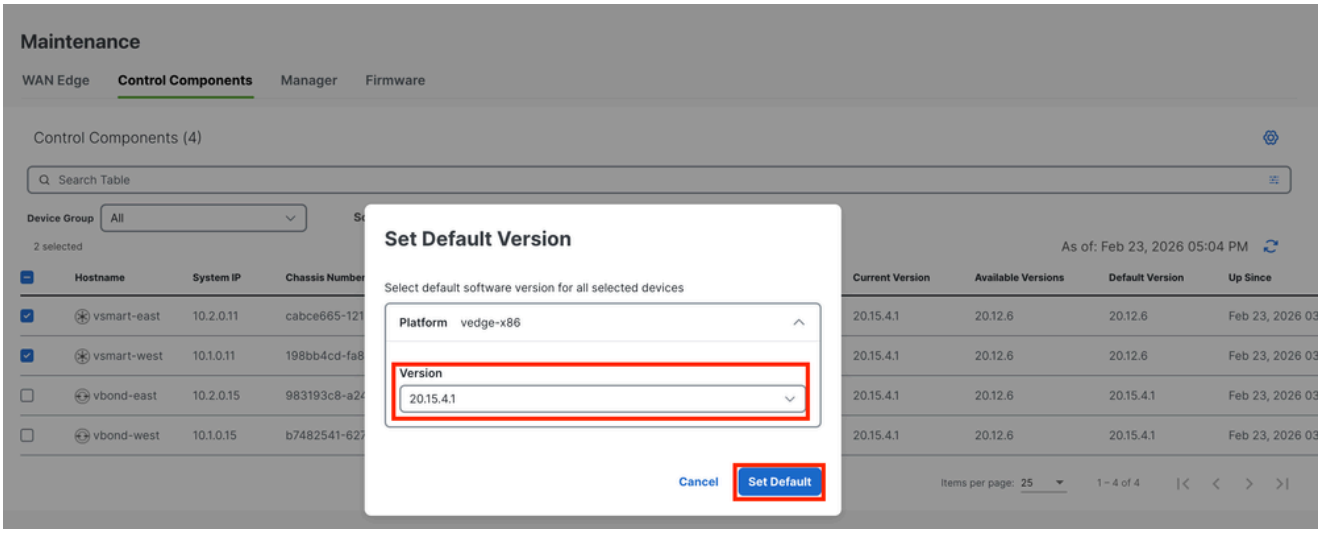
要将软件映像设置为默认映像，请执行以下操作：

- 导航到维护>软件升级>控制器。

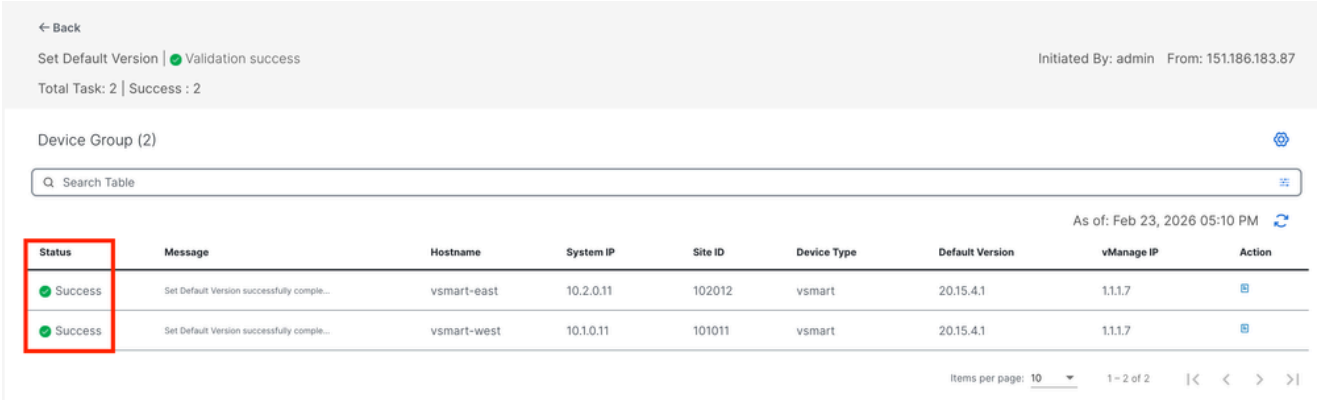
- 点击Set Default Version，从下拉列表中选择新版本，然后点击Set Default。

> 注意：此过程不会重新启动vSmart。

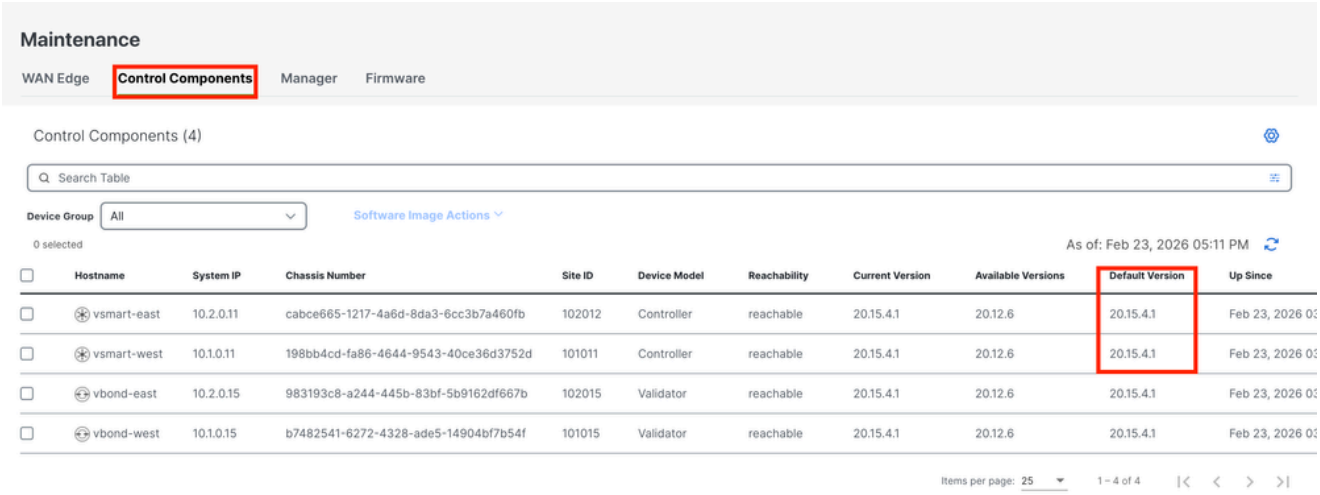




验证任务的状态，直到其显示为Success。



要验证默认版本，请导航到维护 > 软件升级 > 控制器。



通过CLI升级SD-WAN控制器

步骤1.安装

安装映像有两个选项：

选项 1：使用HTTP、FTP或TFTP从CLI。

从CLI中安装软件映像：

1. 配置时间限制以确认软件升级成功。时间可以是1到60分钟。

```
<#root>
Viptela#
system upgrade-confirm minutes
```

2. 安装软件：

```
<#root>
Viptela#
request software install url/vmanage-20.15.4.1-x86_64.tar.gz [reboot]
```

使用以下方法之一指定映像位置：

- 映像文件位于本地服务器上：

/directory-path/

您可以使用CLI上的自动完成功能来完成路径和文件名。

- 映像文件位于FTP服务器上。

ftp://hostname/

- 映像文件位于HTTP服务器上。

http://hostname/

- 镜像文件位于TFTP服务器上。

tftp://hostname/

或者，指定服务器所在的VPN标识符。

Threbootoption会在安装完成后激活新的软件映像并重新启动设备。

3.如果步骤2中未包括reboot选项，请激活新的软件映像，此操作会自动重新启动实例以启动新版本。

```
<#root>
Viptela#
request software activate
```

4.在配置的升级确认时间限制（默认为12分钟）内确认软件安装成功：

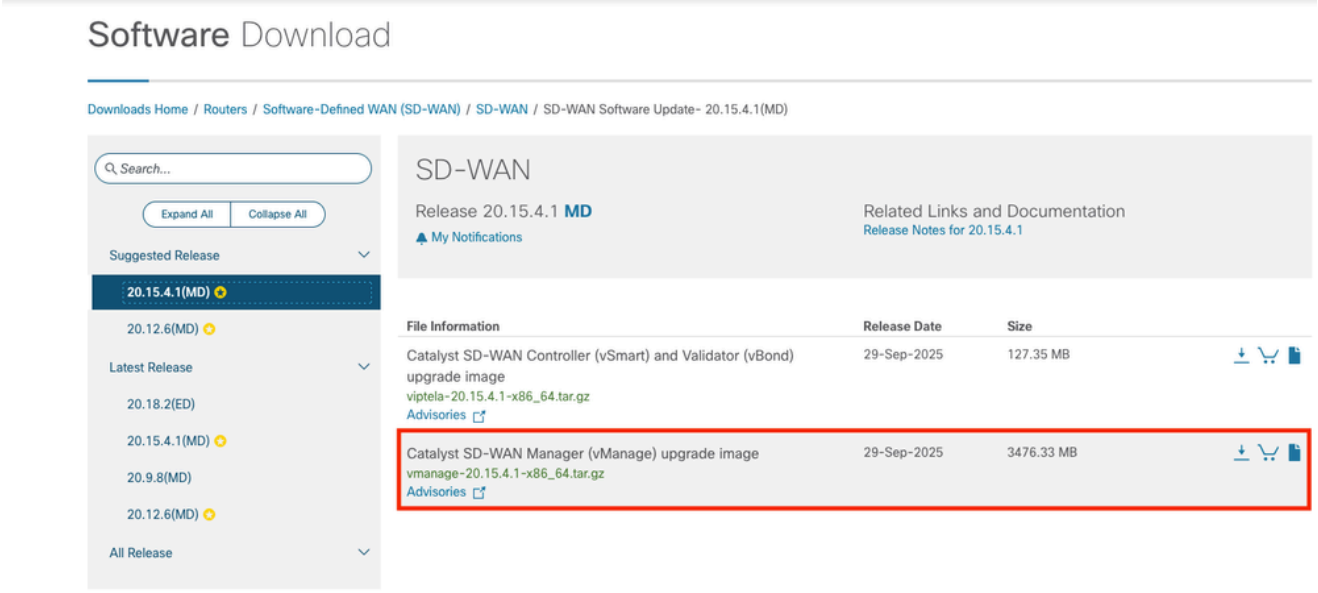
```
<#root>
Viptela#
request software upgrade-confirm
```

如果您在此时限内未发出此命令，设备将自动恢复到之前的软件映像。

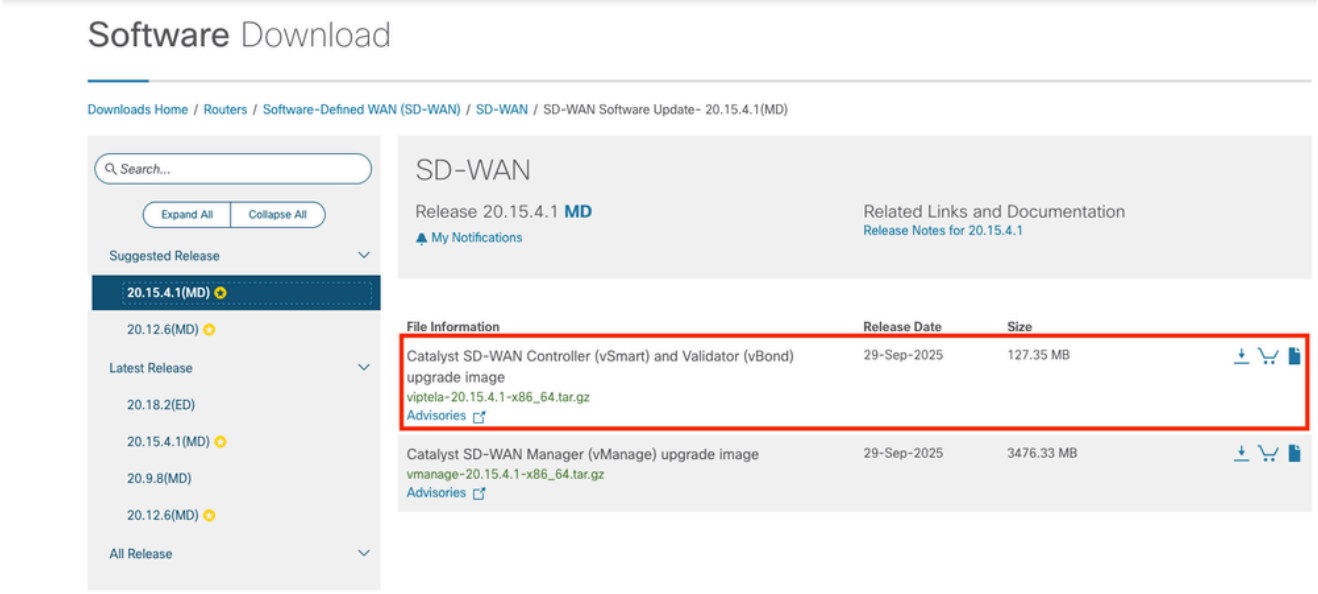
选项 2：从vManage GUI

此步骤可帮助您将映像上传到vManage存储库。

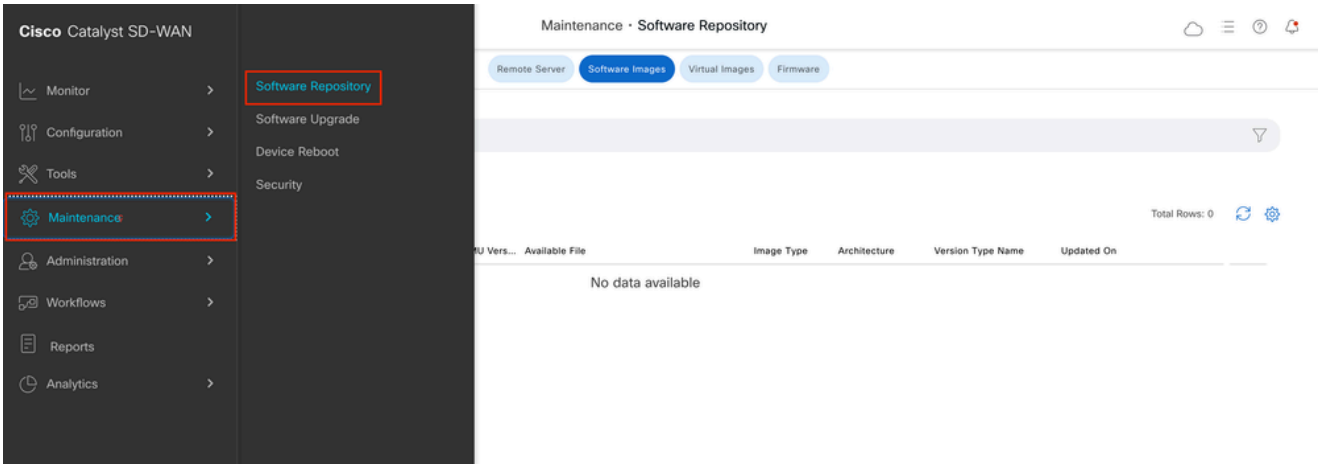
导航到软件下载并下载适用于vManage的软件版本映像。

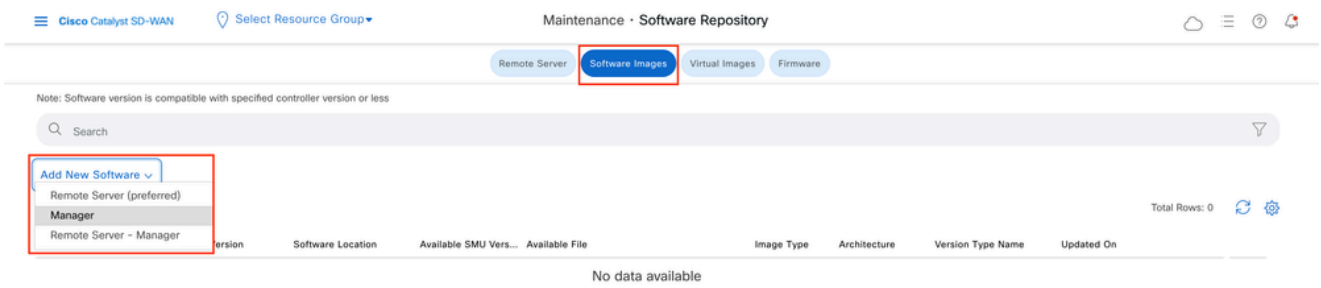


导航到[软件下载]，并下载vBond和vSmart的软件版本映像。

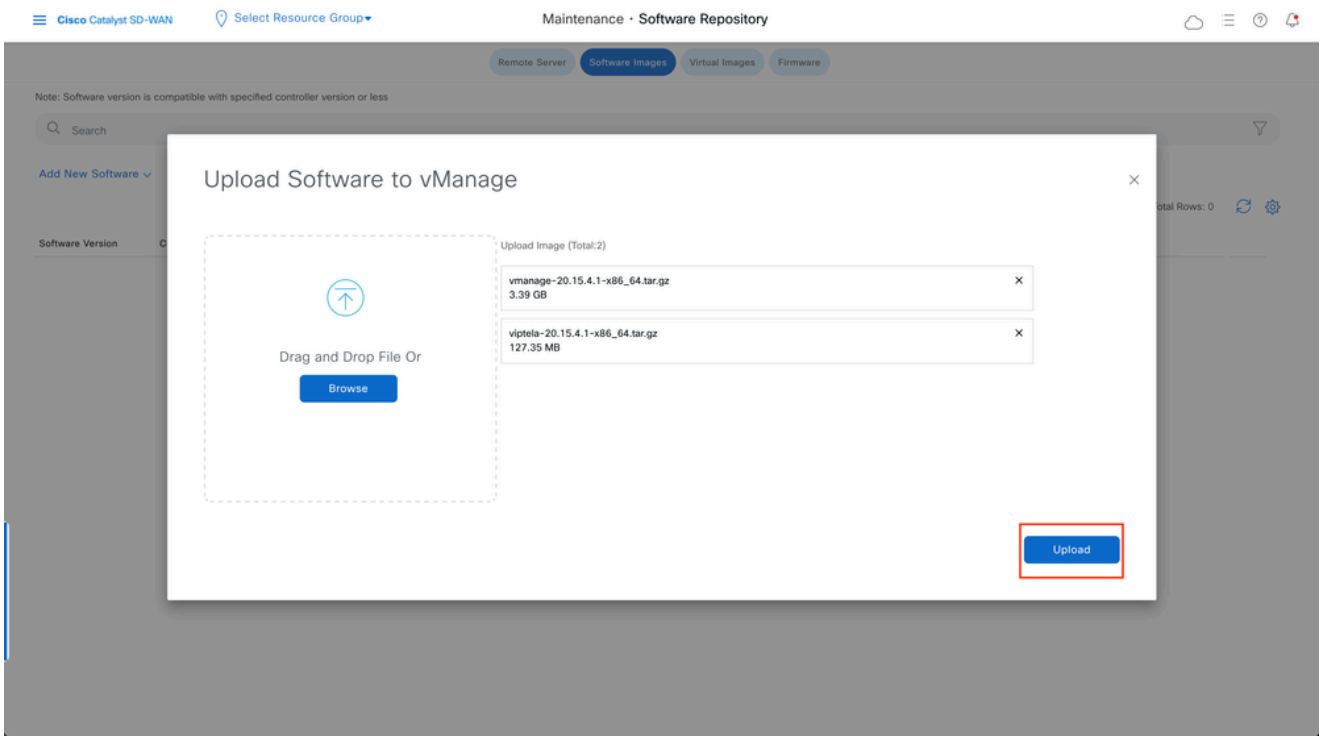


要上传新映像，请在主菜单上导航到Maintenance > Software Repository > Software Images，点击Add New Software，然后在拖放选项中选择vManage。

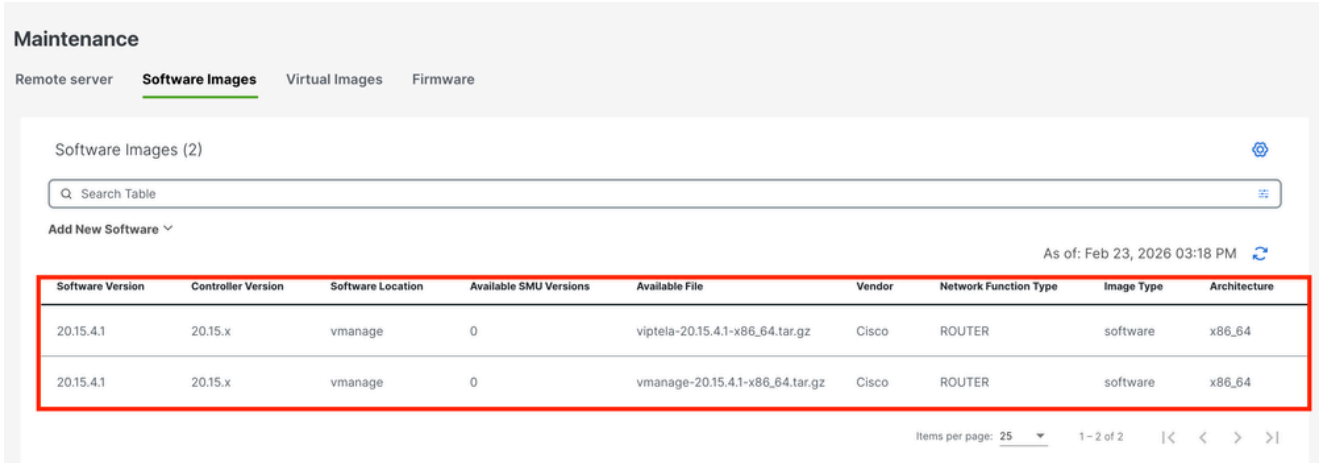




选择图像并点击上传。



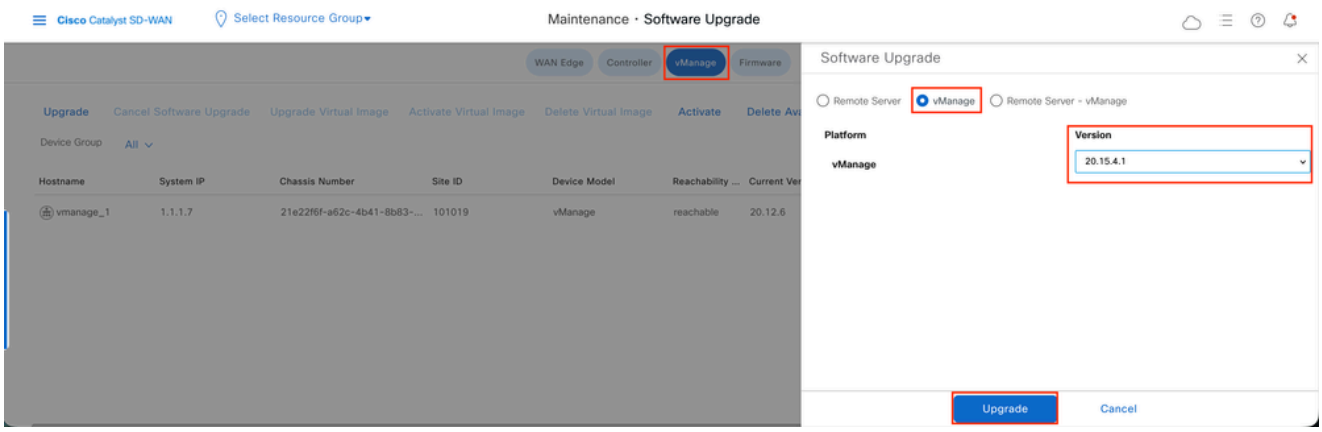
要验证映像是否可用，请导航到软件存储库 > 软件映像。



注意：需要对所有控制器执行此过程。

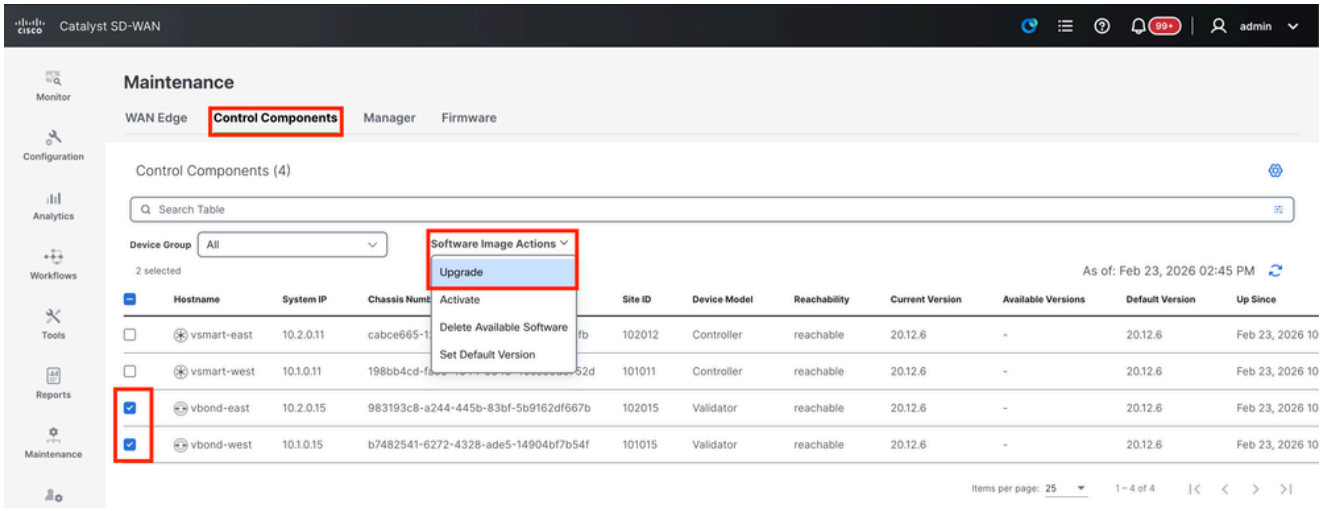
vManage:

点击Upgrade。



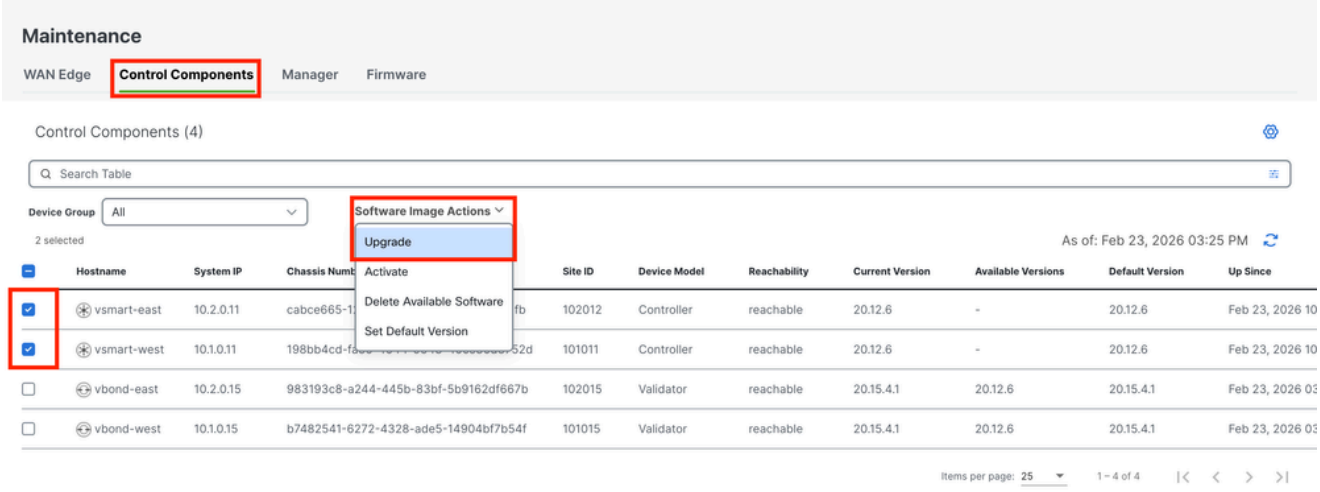
vBond:

单击Upgrade。



vSmart:

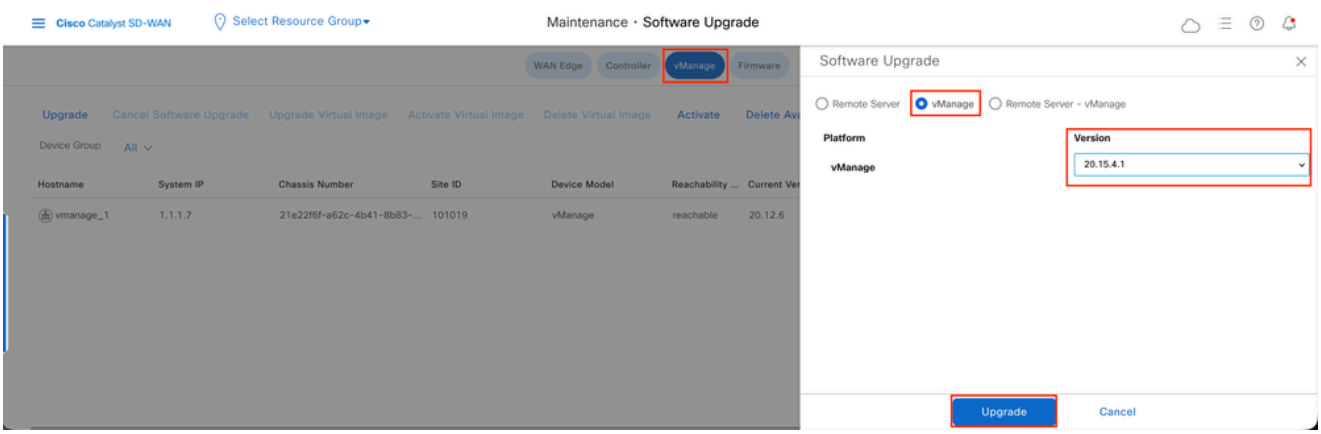
单击Upgrade。



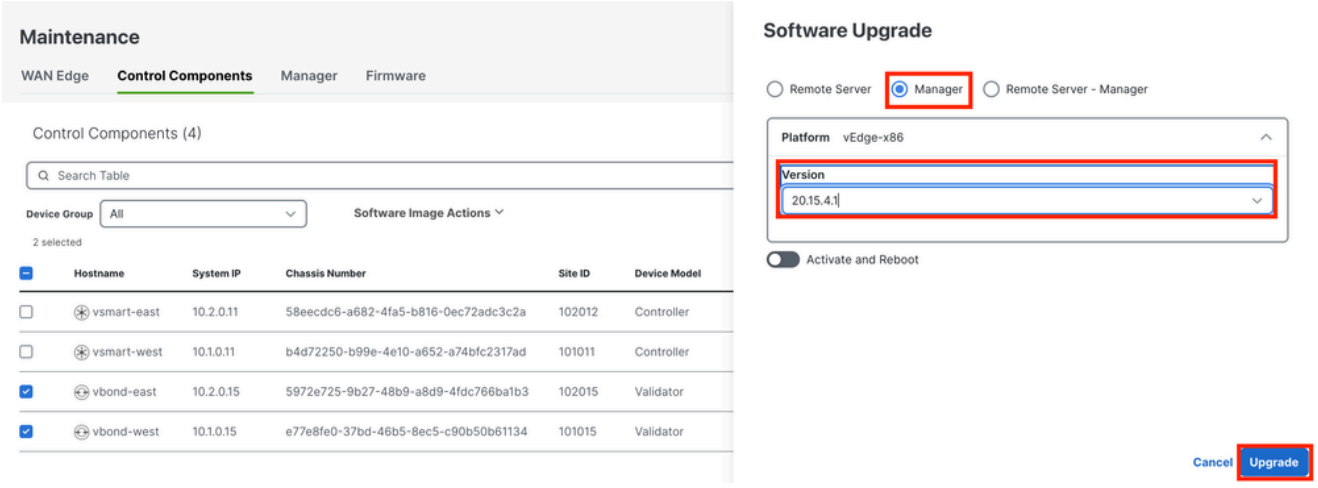
在Software Upgrade弹出窗口中，执行以下操作：

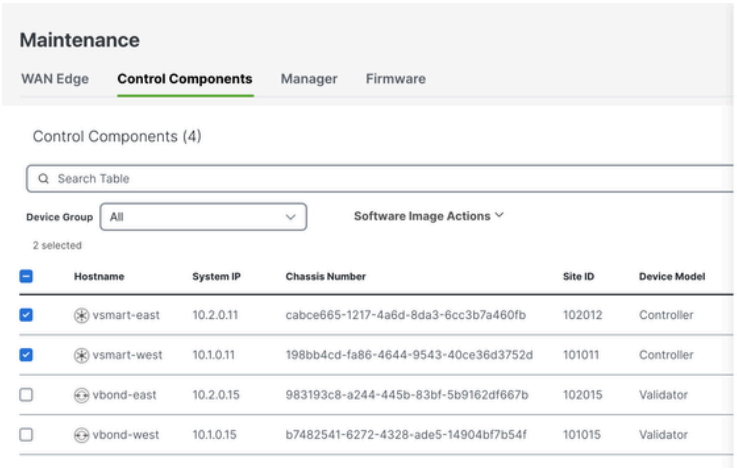
- 选择vManage选项卡。
- 从version下拉列表中选择要升级到的映像版本。
- 点击Upgrade。

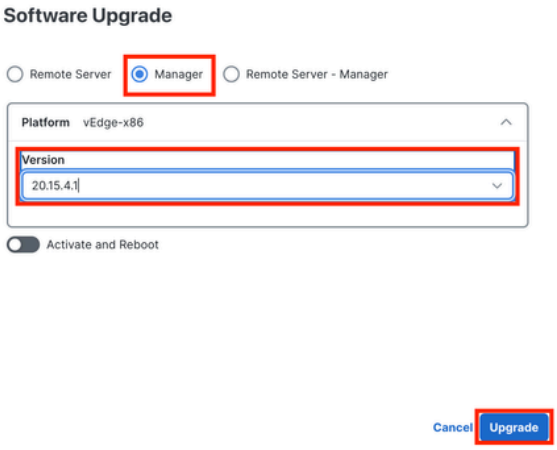
对于vManage:



对于vBond和vSmart:







步骤2.激活

安装完成后，验证控制器中安装的软件映像。

<#root>

vmanage#

show software

```
VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6 true true - - 2023-02-01T22:25:24-00:00
```

20.15.4.1

```
 false false false - -
```

<#root>

vbond#

show software

```
VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6  true true - - 2022-10-01T00:30:40-00:00
```

20.15.4.1

```
 false false false - -
```

<#root>

```
vsmart#
```

show software

```
VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6  true true - - 2022-10-01T00:31:34-00:00
```

20.15.4.1

```
 false false false - -
```

注意：要激活映像，请在控制器中发出下一个命令(Controller by Controller、1st vManage、2nd vBond、3rd vSmart)。 如果是vManage集群，必须一起激活集群中所有vManage节点上的软件。

<#root>

```
vmanage#
```

request software activate ?

```
Description: Display software versions
Possible completions:
20.12.6
20.15.4.1
clean Clean activation
now Activate software version
vmanage#
```

request software activate 20.15.4.1

```
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO]
```

yes

```
Broadcast message from root@vmanage (console) (Tue Feb 28 01:01:04 2023):

Tue Feb 28 01:01:04 UTC 2023: The system is going down for reboot NOW!
```

<#root>

```
vbond#
```

request software activate ?

```
Description: Display software versions
Possible completions:
20.12.6
```

```
20.15.4.1
clean Clean activation
now Activate software version
vbond#
```

request software activate 20.15.4.1

```
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO]
```

yes

```
Broadcast message from root@vbond (console) (Tue Feb 28 01:05:59 2023):

Tue Feb 28 01:05:59 UTC 2023: The system is going down for reboot NOW
```

<#root>

```
vsmart#
```

request software activate ?

```
Description: Display software versions
Possible completions:
20.12.6
20.15.4.1
clean Clean activation
now Activate software version
vsmart#
```

request software activate 20.15.4.1

```
This will reboot the node with the activated version.
Are you sure you want to proceed? [yes,NO]
```

yes

```
Broadcast message from root@vsmart (console) (Tue Feb 28 01:13:44 2023):

Tue Feb 28 01:13:44 UTC 2023: The system is going down for reboot NOW!
```

 注意：控制器激活新映像并自行重新启动。

要验证新软件版本是否已激活，请发出以下命令：

<#root>

```
vmanage#
```

show version

20.15.4.1
vmanage#

show software

VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP

20.12.6 false true true - 2023-02-01T22:25:24-00:00

20.15.4.1 true

false false auto 2023-02-28T01:05:14-00:00

<#root>

vbond#

show version

20.15.4.1
vbond#

show software

VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP

20.12.6 false true true - 2022-10-01T00:30:40-00:00

20.15.4.1 true

false false - 2023-02-28T01:09:05-00:00

<#root>

vsmart#

show version

20.15.4.1
vsmart#

show software

VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP

20.12.6 false true true - 2022-10-01T00:31:34-00:00

20.15.4.1 true

false false - 2023-02-28T01:16:36-00:00

步骤3.设置默认软件版本

您可以将软件映像设置为思科SD-WAN设备上的默认映像。在验证软件在设备和网络中按预期运行后，建议将新映像设置为默认映像。

如果在设备上执行出厂重置，则设备会使用默认设置的映像启动。

注意：建议将新版本设置为默认版本，因为如果vManage重新启动，将启动旧版本。这可能导致数据库损坏。版本从主版本降级到旧版本，在vManage中不受支持。

注意：此过程不会重新引导控制器。

要将软件版本设置为默认值，请在控制器中发出下一个命令：

<#root>

```
vmanage#
request software set-default ?

Possible completions:
20.12.6
20.15.4.1
cancel Cancel this operation
start-at Schedule start.
| Output modifiers
<cr>
vmanage#
request software set-default 20.15.4.1

status mkdefault 20.15.4.1: successful
```

<#root>

```
vbond#
request software set-default ?

Possible completions:
20.12.6
20.15.4.1
cancel Cancel this operation
start-at Schedule start.
| Output modifiers
<cr>
vbond#
request software set-default 20.15.4.1
```

```
status mkdefault 20.15.4.1: successful
```

<#root>

```
vsmart#
request software set-default ?

Possible completions:
20.12.6
20.15.4.1
cancel Cancel this operation
start-at Schedule start.
| Output modifiers
<cr>
vsmart#
request software set-default 20.15.4.1

status mkdefault 20.15.4.1: successful
```

要验证控制器上是否设置了新的默认版本，请发出以下命令：

<#root>

```
vmanage#
show software

VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6 false false true - 2023-02-01T22:25:24-00:00
20.15.4.1 true
true
 false auto 2023-02-28T01:05:14-00:00
```

<#root>

```
vbond#
show software

VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6 false false true - 2022-10-01T00:30:40-00:00
20.15.4.1 true
```

```
true

 false - 2023-02-28T01:09:05-00:00
```

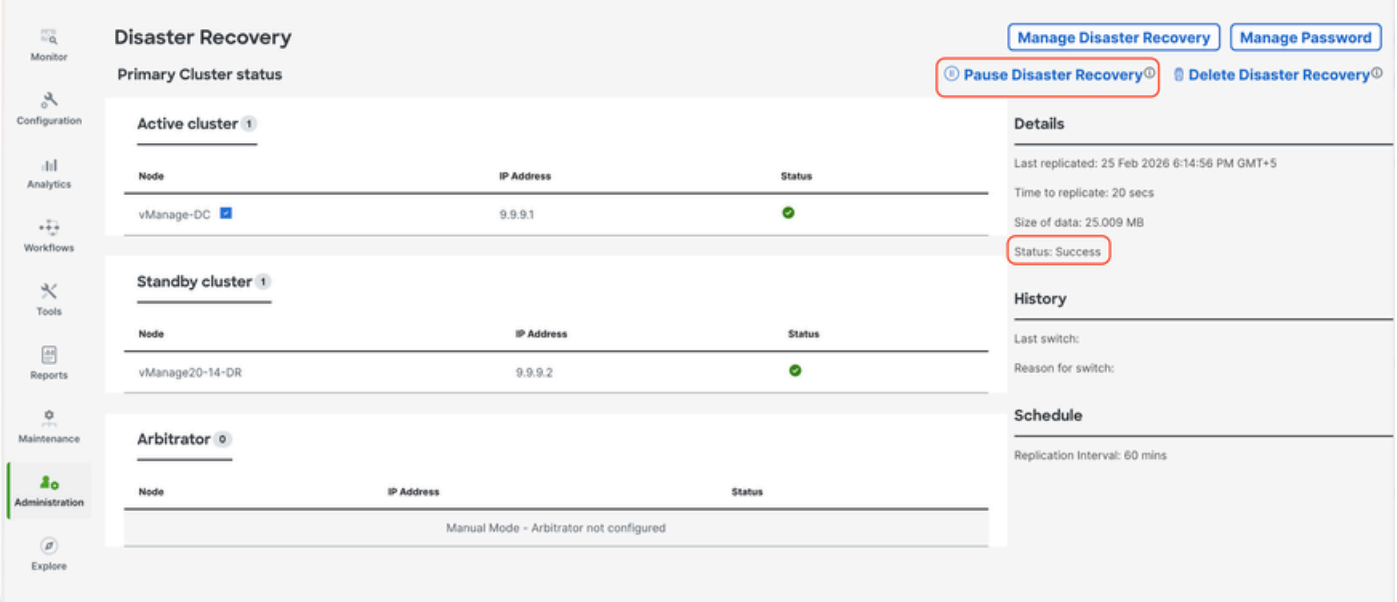
```
<#root>

vsmart#

show software
```

```
VERSION ACTIVE DEFAULT PREVIOUS CONFIRMED TIMESTAMP
--------------------------------------------------------------------------------
20.12.6 false false true - 2022-10-01T00:31:34-00:00
20.15.4.1 true

true

 false - 2023-02-28T01:16:36-00:00
```

升级启用了灾难恢复的vManage/vManage集群

对于启用了灾难恢复的vManage或vManage集群，

确认没有正在进行的灾难恢复复制。导航到Administration —> Disaster Recovery并确保状态为Success，而不是处于Import Pending、Export Pending或Download Pending等暂时状态。必须暂停当前活动vManage上的灾难恢复。



如果状态未成功，请等待状态显示为“成功”。 如果它在某个其它状态停留了更长时间（超过1小时，具体取决于复制间隔设置），请联系Cisco TAC并确保复制成功，然后继续暂停灾难恢复。

首先，暂停灾难恢复并确保任务成功。然后按照上述步骤继续升级活动vManage。

注意:对于独立的活动vManage，我们可以使用vManage UI安装和激活新软件。对于Active vManage集群，建议使用vManage UI安装软件，并使用vManage CLI使用请求软件activate < >激活软件，如下文“通过CLI升级SD-WAN控制器”一节所述。

对于备用vManage/vManage集群，我们需要使用vManage节点的CLI安装和激活软件。

• 升级后验证检查

1. 验证软件版本：确认所有控制器都运行预期软件版本。
2. 检查SD-WAN Manager服务：确保SD-WAN Manager实例上的所有服务都正常运行。
3. 验证控制器之间的控制连接：验证所有控制器之间的控制连接已建立且稳定。
4. 确认策略激活：验证策略已在SD-WAN管理器上激活。
5. 选中Control Connection Distribution:确保将控制连接正确分配到所有SD-WAN Manager节点。导航到Monitor > Network并查看Controlcolumn。
6. 站点级升级后测试：在执行升级前检查的所有站点上执行以下检查：
   - 控制连接和BFD会话：

```
show sd-wan control connections
show sd-wan bfd sessions
```

   - 路由验证：

```
show ip route
show ip route vrf <vrf_id>
show sd-wan omp routes vpn <vpn_id>
```

   - 数据中心可达性：检验与数据中心服务的连接。
   - 模板同步：确认升级后设备模板已连接并同步在设备上。
   - 来自控制器的策略验证：
   -

```
show sd-wan policy from-controller
```

- 用户验收测试：在迁移的站点上执行用户测试，以验证应用程序功能

回滚计划

vBond和vSmart回滚计划

如果在升级后发现验证器(vBond)或控制器(vSmart)存在任何意外问题，请通过激活受影响设备上的旧映像来恢复到以前的软件版本。

```
vSmart# request software activate <older image version>
vBond# request software activate <older image version>
```

vManage回滚计划

如果在升级后出现SD-WAN Manager(vManage)的意外问题，请使用升级前拍摄的快照恢复系统。

注意:vManage不支持通过CLI降级到以前的版本。

故障排除

1.如果GUI在激活后长时间关闭，并且再也不能访问，则以下输出有助于找出根本原因：

```
<#root>

vman

age# request nms application-server status


NMS application server
Enabled: true   <<<<<<<<<<<   "false"
Status: running PID:26470 for 22279s   <<<<<<<<<<  "not running"
```

如果app-server状态显示Enabled为false，且Status未运行，则可以发出下一个命令来恢复GUI:

```
vmanage# request nms application-server restart
```

2.要验证所有nms服务的状态，可以发出以下命令：

```
vmanage# request nms all status
NMS service proxy
Enabled: true
Status: running PID:30888 for 819s
NMS service proxy rate limit
Enabled: true
Status: running PID:32029 for 812s
NMS application server
Enabled: true
Status: running PID:30834 for 819s
NMS configuration database
Enabled: true
Status: running PID:28321 for 825s
Native metrics status: ENABLED
Server-load metrics status: ENABLED
NMS coordination server
Enabled: true
Status: running PID:16814 for 535s
NMS messaging server
Enabled: true
Status: running PID:32561 for 799s
NMS statistics database
Enabled: false
Status: not running
NMS data collection agent
Enabled: true
Status: running PID:31051 for 824s
NMS CloudAgent v2
Enabled: true
Status: running PID:31902 for 817s
NMS cloud agent
Enabled: true
Status: running PID:18517 for 1183s
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:3709 for 767s
NMS OLAP database
Enabled: true
Status: running PID:18167 for 521s
vManage Reporting
Enabled: true
Status: running PID:30015 for 827s
```

3.要验证TCP握手是否已完成，请发出下一条命令：

<#root>

```
vmanage# request nms all diagnostics
NMS service server
Pinging vManage  node on localhost ...
```

```
Starting Nping 0.7.80 ( https://nmap.org/nping ) at 2026-02-24 06:17 UTC
SENT (0.0014s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (0.0014s) Handshake with localhost:8443 (127.0.0.1:8443) completed
SENT (1.0025s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (1.0025s) Handshake with localhost:8443 (127.0.0.1:8443) completed
SENT (2.0036s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (2.0036s) Handshake with localhost:8443 (127.0.0.1:8443) completed

Max rtt: 0.012ms | Min rtt: 0.010ms | Avg rtt: 0.010ms

TCP connection attempts: 3 | Successful connections: 3 | Failed: 0 (0.00%)

Nping done: 1 IP address pinged in 2.00 seconds
Server network connections
--------------------------
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43682         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43892         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 169.254.1.1:8443        169.254.1.8:52962       ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43738         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43738         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43828         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43836         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43866         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:52020         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43828         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43896         ESTABLISHED 31081/envoy
tcp6       0      0 169.254.1.1:8443        169.254.1.8:51382       ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43726         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43810         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43756         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43748         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 169.254.0.254:8443      151.186.182.23:35154    ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43898         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43860         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:56308         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:52028         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43756         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43712         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43834         ESTABLISHED 31081/envoy
tcp6       0      0 169.254.0.254:8443      151.186.182.23:52168    ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43810         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43836         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43852         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 169.254.0.254:8443      151.186.182.23:53030    ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43898         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43892         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:52028         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:44096         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43896         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43866         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43730         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43860         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43878         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43772         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:52020         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443          127.0.0.1:56308         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43874         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43772         ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43826         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:52038         127.0.0.1:8443          ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443          127.0.0.1:43754         ESTABLISHED 31081/envoy
```

```
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43726           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43782           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43862           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:43834           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 169.254.1.1:8443        169.254.1.8:52964       ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:44096           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43754           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43874           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43712           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43794           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43696           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43696           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 169.254.1.1:8443        169.254.1.8:52978       ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43748           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43730           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43852           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43878           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43826           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:43682           127.0.0.1:8443            ESTABLISHED 30944/java
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43794           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43862           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:52038           ESTABLISHED 31081/envoy
tcp6       0      0 127.0.0.1:8443            127.0.0.1:43782           ESTABLISHED 31081/envoy
NMS application server
Sending ICMP Echo to vManage on localhost ...
PING localhost.localdomain (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=1 ttl=64 time=0.022 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=3 ttl=64 time=0.027 ms

--- localhost.localdomain ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2034ms
rtt min/avg/max/mdev = 0.022/0.026/0.030/0.003 ms
Pinging vManage  node on localhost ...

Starting Nping 0.7.80 ( https://nmap.org/nping ) at 2026-02-24 06:17 UTC
SENT (0.0015s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (0.0015s) Handshake with localhost:8443 (127.0.0.1:8443) completed
SENT (1.0026s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (1.0026s) Handshake with localhost:8443 (127.0.0.1:8443) completed
SENT (2.0037s) Starting TCP Handshake > localhost:8443 (127.0.0.1:8443)
RCVD (2.0037s) Handshake with localhost:8443 (127.0.0.1:8443) completed

Max rtt: 0.012ms | Min rtt: 0.009ms | Avg rtt: 0.010ms

TCP connection attempts: 3 | Successful connections: 3 | Failed: 0 (0.00%)

Nping done: 1 IP address pinged in 2.00 seconds
Disk I/O statistics for vManage storage
---------------------------------------
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           1.63    0.00    0.37    0.06    0.00   97.93

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
nvme1n1          24.49        74.59       913.44         0.00    2717198   33273456          0


NMS configuration database
Checking cluster connectivity for ports 7687,7474 ...
Pinging vManage  node 0 on 169.254.1.5:7687,7474...

Starting Nping 0.7.80 ( https://nmap.org/nping ) at 2026-02-24 06:17 UTC
```

```
SENT (0.0013s) Starting TCP Handshake > 169.254.1.5:7474
RCVD (0.0013s) Handshake with 169.254.1.5:7474 completed
SENT (1.0024s) Starting TCP Handshake > 169.254.1.5:7687
RCVD (1.0024s) Handshake with 169.254.1.5:7687 completed
SENT (2.0035s) Starting TCP Handshake > 169.254.1.5:7474
RCVD (2.0035s) Handshake with 169.254.1.5:7474 completed
SENT (3.0046s) Starting TCP Handshake > 169.254.1.5:7687
RCVD (3.0046s) Handshake with 169.254.1.5:7687 completed
SENT (4.0057s) Starting TCP Handshake > 169.254.1.5:7474
RCVD (4.0058s) Handshake with 169.254.1.5:7474 completed
SENT (5.0069s) Starting TCP Handshake > 169.254.1.5:7687
RCVD (5.0069s) Handshake with 169.254.1.5:7687 completed

Max rtt: 0.021ms | Min rtt: 0.010ms | Avg rtt: 0.013ms

TCP connection attempts: 6 | Successful connections: 6 | Failed: 0 (0.00%)

Nping done: 1 IP address pinged in 5.01 seconds
Server network connections
--------------------------
tcp        0      0 169.254.1.5:7687        169.254.1.1:59650       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:49998       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.13:55794      ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:35374       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:40100       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:52748       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:35380       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:40618       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.1:59658       ESTABLISHED 30148/java
tcp        0      0 169.254.1.5:7687        169.254.1.13:55782      ESTABLISHED 30148/java
Connecting to localhost...
+-------------------------------------------------------------------------------------+
| type             | row                                    | attributes[row]["value"] |
+-------------------------------------------------------------------------------------+
| "StoreSizes"     | "TotalStoreSize"                       | 156365978                |
| "PageCache"      | "Flush"                                | 68694                    |
| "PageCache"      | "EvictionExceptions"                   | 0                        |
| "PageCache"      | "UsageRatio"                           | 0.1795189950980392       |
| "PageCache"      | "Eviction"                             | 3186                     |
| "PageCache"      | "HitRatio"                             | 1.0                      |
| "ID Allocations" | "NumberOfRelationshipIdsInUse"         | 8791                     |
| "ID Allocations" | "NumberOfPropertyIdsInUse"             | 47067                    |
| "ID Allocations" | "NumberOfNodeIdsInUse"                 | 4450                     |
| "ID Allocations" | "NumberOfRelationshipTypeIdsInUse"     | 77                       |
| "Transactions"   | "LastCommittedTxId"                    | 26470                    |
| "Transactions"   | "NumberOfOpenTransactions"             | 1                        |
| "Transactions"   | "NumberOfOpenedTransactions"           | 109412                   |
| "Transactions"   | "PeakNumberOfConcurrentTransactions"   | 10                       |
| "Transactions"   | "NumberOfCommittedTransactions"        | 106913                   |
+-------------------------------------------------------------------------------------+

15 rows
ready to start consuming query after 126 ms, results consumed after another 2 ms
Completed
Connecting to localhost...
Displaying the Neo4j Cluster Status
+-------------------------------------------------------------------------------------------------------
| name     | aliases | access       | address          | role         | requestedStatus | currentS
+-------------------------------------------------------------------------------------------------------
| "neo4j"  | []      | "read-write" | "localhost:7687" | "standalone" | "online"        | "online"
| "system" | []      | "read-write" | "localhost:7687" | "standalone" | "online"        | "online"
+-------------------------------------------------------------------------------------------------------
```

```
2 rows
ready to start consuming query after 3 ms, results consumed after another 1 ms
Completed
Total disk space used by configuration-db:
63M    .
Detailed disk space usage of configuration-db:
0    database_lock
8.0K    neostore
48K    neostore.counts.db
1.8M    neostore.indexstats.db
48K    neostore.labelscanstore.db
8.0K    neostore.labeltokenstore.db
40K    neostore.labeltokenstore.db.id
32K    neostore.labeltokenstore.db.names
40K    neostore.labeltokenstore.db.names.id
72K    neostore.nodestore.db
48K    neostore.nodestore.db.id
8.0K    neostore.nodestore.db.labels
40K    neostore.nodestore.db.labels.id
1.9M    neostore.propertystore.db
312K    neostore.propertystore.db.arrays
48K    neostore.propertystore.db.arrays.id
72K    neostore.propertystore.db.id
8.0K    neostore.propertystore.db.index
48K    neostore.propertystore.db.index.id
32K    neostore.propertystore.db.index.keys
40K    neostore.propertystore.db.index.keys.id
4.2M    neostore.propertystore.db.strings
104K    neostore.propertystore.db.strings.id
16K    neostore.relationshipgroupstore.db
48K    neostore.relationshipgroupstore.db.id
48K    neostore.relationshipgroupstore.degrees.db
296K    neostore.relationshipstore.db
48K    neostore.relationshipstore.db.id
48K    neostore.relationshiptypescanstore.db
8.0K    neostore.relationshiptypestore.db
40K    neostore.relationshiptypestore.db.id
8.0K    neostore.relationshiptypestore.db.names
40K    neostore.relationshiptypestore.db.names.id
16K    neostore.schemastore.db
48K    neostore.schemastore.db.id
11M    profiles
44M    schema
################################################
Running schema violation pre-check script
WARNING: sun.reflect.Reflection.getCallerClass is not supported. This will impact performance.
Validating Schema from the configuration-db
Successfully validated configuration-db schema
written to file /opt/data/containers/mounts/upgrade-coordinator/schema.json
Contents of /opt/data/containers/mounts/upgrade-coordinator/schema.json:
{
  "check_name": "Validating configuration-db admin names",
  "check_result": "SUCCESSFUL",
  "check_analysis": "Successfully validated configuration-db schema",
  "check_action": ""
}
################################################
################################################
Running quarantine check
WARNING: sun.reflect.Reflection.getCallerClass is not supported. This will impact performance.
Check if Neo4j Nodes are Quarantined
```

```
None of the neo4j nodes is quarantined
############################################

############################################
Checking High Direct Memory Usage in Neo4j
High Direct Memory Usage in Neo4j not found
NMS data collection agent


Checking data-collection-agent status
------------------------
data-collection-agent container exists

Checking Data collection agent processes status
------------------------
Data collection agent parent processs ID  12

Data collection agent process ID  104

Data collection bulk process ID  97

Data collection rest process ID  98

Data collection monitor process ID  99

Checking vmanage access
------------------------
Successfully logged into vmanage.


Checking DCS Push Status
------------------------
vAnalytics not enabled.


NMS coordination server
Checking cluster connectivity for ports 2181 ...
Pinging vManage  node 0 on 169.254.1.4:2181...

Starting Nping 0.7.80 ( https://nmap.org/nping ) at 2026-02-24 06:18 UTC
SENT (0.0014s) Starting TCP Handshake > 169.254.1.4:2181
RCVD (0.0014s) Handshake with 169.254.1.4:2181 completed
SENT (1.0025s) Starting TCP Handshake > 169.254.1.4:2181
RCVD (1.0025s) Handshake with 169.254.1.4:2181 completed
SENT (2.0036s) Starting TCP Handshake > 169.254.1.4:2181
RCVD (2.0036s) Handshake with 169.254.1.4:2181 completed

Max rtt: 0.012ms | Min rtt: 0.010ms | Avg rtt: 0.010ms

TCP connection attempts: 3 | Successful connections: 3 | Failed: 0 (0.00%)

Nping done: 1 IP address pinged in 2.00 seconds
Server network connections
---------------------------
tcp        0      0 169.254.1.4:2181        169.254.1.1:56716       ESTABLISHED 16814/java
NMS container manager
Checking container-manager status

Listing all images
------------------------
REPOSITORY                    TAG            IMAGE ID       CREATED         SIZE
sdwan/host-agent              1.0.1          ca71fd3fe4a2   5 months ago    131MB
```

```
sdwan/cluster-oracle          1.0.1          8ef918482315   5 months ago    294MB
sdwan/data-collection-agent   1.0.1          4bf055257027   5 months ago    157MB
sdwan/application-server      19.1.0         6a9624dc3125   5 months ago    508MB
sdwan/configuration-db        4.4.38         700fe6e56199   5 months ago    472MB
sdwan/coordination-server     3.7.1          a04198d518b3   5 months ago    606MB
sdwan/olap-db                 23.3.13.6      a17712731d5f   5 months ago    494MB
sdwan/device-data-collector   1.0.0          515f2793ee43   5 months ago    116MB
sdwan/service-proxy           1.27.2         5174f58b97b1   5 months ago    105MB
sdwan/messaging-server        0.20.0         9560cd4b7c42   5 months ago    105MB
sdwan/statistics-db           7.17.6         b9f8ab30d647   5 months ago    589MB
cloudagent-v2                 3358cee09e99   66063bed474e   5 months ago    458MB
sdwan/upgrade-coordinator     2.0.0          969cd2f1626a   5 months ago    93.3MB
sdwan/vault                   1.0.1          0883c094affc   6 months ago    511MB
sdwan/support-tools           latest         022aebae12e6   13 months ago   143MB
sdavc                         4.6.0          730e83b39087   17 months ago   602MB
sdavc-gw                      4.6.0          84083ed484ba   18 months ago   369MB
sdwan/reporting               latest         509ec99584fd   19 months ago   772MB
sdwan/ratelimit               latest         719f624e9268   2 years ago     45.7MB

Listing all containers
------------------------
CONTAINER ID   IMAGE                                COMMAND                  CREATED         STATUS
c676b358b12d   sdwan/olap-db:23.3.13.6              "/usr/bin/docker-ini…"   10 hours ago    Up 10 h
627c1dcf16fa   sdwan/coordination-server:3.7.1      "/docker-entrypoint.…"   10 hours ago    Up 10 h
9299443ff7a1   sdwan/messaging-server:0.20.0        "/entrypoint.sh"         10 hours ago    Up 10 h
0c5236ee911b   sdwan/ratelimit:latest               "/usr/local/bin/rate…"   10 hours ago    Up 10 h
094166df1cd9   cloudagent-v2:3358cee09e99           "./entrypoint.sh"        10 hours ago    Up 10 h
8f1287c11840   sdwan/reporting:latest               "/sbin/tini -g -- py…"   10 hours ago    Up 10 h
66a46485cfab   sdwan/vault:1.0.1                    "docker-entrypoint.s…"   10 hours ago    Up 10 h
ccf5336112b6   sdwan/data-collection-agent:1.0.1    "/usr/bin/docker-ini…"   10 hours ago    Up 10 h
079ecfe36482   sdwan/service-proxy:1.27.2           "/entrypoint.sh"         10 hours ago    Up 10 h
ec1b50457302   sdwan/configuration-db:4.4.38        "/usr/bin/docker-ini…"   10 hours ago    Up 10 h
f54ccdcf7a14   sdwan/device-data-collector:1.0.0    "/bin/sh -c /vMDDC/v…"   10 hours ago    Up 10 h
605f986dc9f1   sdwan/application-server:19.1.0      "/sbin/tini -g -- /e…"   10 hours ago    Up 10 h
50377e02b120   sdwan/host-agent:1.0.1               "/entrypoint.sh pyth…"   10 hours ago    Up 10 h
ca36faf52f36   sdwan/cluster-oracle:1.0.1           "/entrypoint.sh java…"   10 hours ago    Up 10 h

Docker info
------------------------
Client:
 Context:    default
 Debug Mode: false

Server:
 Containers: 14
  Running: 14
  Paused: 0
  Stopped: 0
 Images: 19
 Server Version: 20.10.25-ce
 Storage Driver: overlay2
  Backing Filesystem: extfs
  Supports d_type: true
  Native Overlay Diff: true
  userxattr: false
 Logging Driver: local
 Cgroup Driver: cgroupfs
 Cgroup Version: 1
 Plugins:
  Volume: local
  Network: bridge host ipvlan macvlan null overlay
  Log: awslogs fluentd gcplogs gelf journald json-file local logentries splunk syslog
```

```
 Swarm: inactive
 Runtimes: io.containerd.runc.v2 io.containerd.runtime.v1.linux runc
 Default Runtime: runc
 Init Binary: docker-init
 containerd version: 1e1ea6e986c6c86565bc33d52e34b81b3e2bc71f.m
 runc version: v1.1.4-8-g974efd2d-dirty
 init version: b9f42a0-dirty
 Security Options:
  seccomp
   Profile: default
 Kernel Version: 5.15.146-yocto-standard
 Operating System: Linux
 OSType: linux
 Architecture: x86_64
 CPUs: 16
 Total Memory: 30.58GiB
 Name: vmanage_1
 ID: GHLX:JUWP:Z7JP:J3UX:MOF7:ZY7G:MSLS:E7BI:3LKT:2WRU:K2HZ:YWL7
 Docker Root Dir: /var/lib/nms/docker
 Debug Mode: false
 Registry: https://index.docker.io/v1/
 Labels:
 Experimental: false
 Insecure Registries:
  127.0.0.0/8
 Live Restore Enabled: false

WARNING: No cpu cfs quota support
WARNING: No cpu cfs period support
WARNING: No blkio throttle.read_bps_device support
WARNING: No blkio throttle.write_bps_device support
WARNING: No blkio throttle.read_iops_device support
WARNING: No blkio throttle.write_iops_device support
NMS SDAVC server is disabled on this vmanage node
NMS Device Data Collector
Checking Device Data Collector Port....
Port 8129 is reachable
Current Health Status:- true
Getting docker stats of Device Data Collector container ....
CONTAINER ID   NAME                    CPU %     MEM USAGE / LIMIT     MEM %     NET I/O
f54ccdcf7a14   device-data-collector   0.00%     9.773MiB / 30.58GiB   0.03%     1.85MB / 876kB
NMS OLAP database
Checking cluster connectivity for ports 9000,8123,9009 ...
Pinging vManage  node 0 on 169.254.1.10:9000,8123,9009...

Starting Nping 0.7.80 ( https://nmap.org/nping ) at 2026-02-24 06:18 UTC
SENT (0.0013s) Starting TCP Handshake > 169.254.1.10:8123
RCVD (0.0013s) Handshake with 169.254.1.10:8123 completed
SENT (1.0024s) Starting TCP Handshake > 169.254.1.10:9000
RCVD (1.0024s) Handshake with 169.254.1.10:9000 completed
SENT (2.0036s) Starting TCP Handshake > 169.254.1.10:9009
RCVD (2.0036s) Handshake with 169.254.1.10:9009 completed
SENT (3.0047s) Starting TCP Handshake > 169.254.1.10:8123
RCVD (3.0047s) Handshake with 169.254.1.10:8123 completed
SENT (4.0058s) Starting TCP Handshake > 169.254.1.10:9000
RCVD (4.0058s) Handshake with 169.254.1.10:9000 completed
SENT (5.0069s) Starting TCP Handshake > 169.254.1.10:9009
RCVD (5.0070s) Handshake with 169.254.1.10:9009 completed
SENT (6.0081s) Starting TCP Handshake > 169.254.1.10:8123
RCVD (6.0081s) Handshake with 169.254.1.10:8123 completed
SENT (7.0092s) Starting TCP Handshake > 169.254.1.10:9000
RCVD (7.0092s) Handshake with 169.254.1.10:9000 completed
```

```
SENT (8.0103s) Starting TCP Handshake > 169.254.1.10:9009
RCVD (8.0103s) Handshake with 169.254.1.10:9009 completed

Max rtt: 0.014ms | Min rtt: 0.008ms | Avg rtt: 0.009ms

TCP connection attempts: 9 | Successful connections: 9 | Failed: 0 (0.00%)

Nping done: 1 IP address pinged in 8.01 seconds
Server network connections
--------------------------
tcp        0      0 169.254.1.10:8123       169.254.1.1:38848       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38736       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38864       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38826       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:32996       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38792       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38720       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38704       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38790       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38740       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38786       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38576       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38766       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38754       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38828       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38676       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38770       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38620       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:32768       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38820       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38574       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38878       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38804       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38692       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38808       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38844       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:32984       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:60970       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:60974       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:51222       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38712       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38662       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:60986       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38598       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38640       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38652       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:32982       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38572       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38630       ESTABLISHED 18258/clickhouse-s
tcp        0      0 169.254.1.10:8123       169.254.1.1:38606       ESTABLISHED 18258/clickhouse-s

Mode: SingleTenant
------------------------------

Node health state
------------------------------
  Server status:      [OK]
  Replica status:     [OK]

Database summary
------------------------------
  database count:  5
```

```
    table count in db(INFORMATION_SCHEMA) : 4
    table count in db(backup) : 0
    table count in db(default) : 61
    table count in db(information_schema) : 4
    table count in db(system) : 82

Tables in database default
---------------------------
 -  aggregated_apps_dpi_app_60min_summary_view_default
 -  aggregated_apps_dpi_app_summary_default
 -  aggregated_apps_dpi_site_5min_summary_view_default
 -  aggregated_apps_dpi_site_summary_default
 -  aggregated_apps_dpi_stats_default
 -  aggregated_apps_dpi_summary_default
 -  alarm_default
 -  api_telemetry
 -  api_telemetry_metadata
 -  app_hosting_interface_stats_default
 -  app_hosting_stats_default
 -  approute_stats_default
 -  approute_stats_routing_summary_default
 -  approute_stats_transport_summary_default
 -  art_stats_default
 -  audit_log_default
 -  bridge_interface_stats_default
 -  bridge_mac_stats_default
 -  cloudx_stats_default
 -  device_configuration_default
 -  device_events_default
 -  device_health_stats_default
 -  device_stats_files_default
 -  device_system_status_stats_default
 -  dpi_stats_default
 -  eio_lte_stats_default
 -  flow_log_stats_default
 -  fwall_stats_default
 -  interface_stats_default
 -  ips_alert_stats_default
 -  nwa_default
 -  nwapending_default
 -  nwpi_agg_metrics_default
 -  nwpi_app_default
 -  nwpi_domain_agg_trend_default
 -  nwpi_domain_default
 -  nwpi_flow_default
 -  nwpi_flow_event_default
 -  nwpi_flow_metric_default
 -  nwpi_hops_of_flow_default
 -  nwpi_routing_default
 -  nwpi_te_default
 -  nwpi_time_series_default
 -  nwpi_trace_and_task_default
 -  pagination_request_info_default
 -  perf_mon_statistics_default
 -  perf_mon_summary_default
 -  perfmon_app_15min_summary_view_default
 -  perfmon_app_summary_default
 -  qos_stats_default
 -  sdra_stats_default
 -  site_health_stats_default
 -  sleofflinereport_default
 -  speed_test_default
```

```
 -  sul_stats_default
 -  tracker_stats_default
 -  umbrella_stats_default
 -  umtsrestevent_default
 -  urlf_stats_default
 -  vnf_stats_default
 -  wlan_client_info_stats_default
-----------------------------
```

parts.table	rows	latest_modification	disk_size	primary_keys_size
device_system_status_stats_default	7238	2026-02-24 06:13:12	430.24 KiB	100.00 B
api_telemetry	34476	2026-02-24 06:06:32	306.22 KiB	264.00 B
audit_log_default	744	2026-02-24 06:15:48	200.16 KiB	48.00 B
device_events_default	4819	2026-02-24 06:17:06	189.26 KiB	245.00 B
interface_stats_default	7036	2026-02-24 06:10:50	117.07 KiB	104.00 B
alarm_default	408	2026-02-23 21:48:41	69.99 KiB	212.00 B
api_telemetry_metadata	5342	2026-02-24 06:01:04	57.52 KiB	32.00 B
approute_stats_default	2540	2026-02-24 06:10:20	37.25 KiB	259.00 B
device_configuration_default	18	2026-02-23 20:55:39	33.97 KiB	51.00 B
device_health_stats_default	1463	2026-02-24 06:15:00	23.07 KiB	303.00 B
site_health_stats_default	1413	2026-02-24 06:15:01	9.95 KiB	230.00 B
approute_stats_routing_summary_default	70	2026-02-23 20:30:17	1.79 KiB	83.00 B
nwa_default	120	2026-02-24 06:11:08	1.69 KiB	32.00 B
approute_stats_transport_summary_default	18	2026-02-23 20:30:17	997.00 B	83.00 B

```
Application server stats
---------------------------------
 STATISTICS
---------------------------------
  Success:        20418
  Fail:           0
     CONN DOWN:   0
     OOM:         0
     ILL ARG:     0
---------------------------------
This action is not supported
vmanage_1#
```

- 相关信息

[Cisco SD-WAN解决方案]

[Cisco SD-WAN重叠网络启动过程]

[Cisco SD-WAN解决方案故障排除]

[升级cEdge CLI]

[升级cEdge GUI]

[升级vEdge]

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