NSX-T Upgrade Guide

VMware NSX-T Data Center 2.1

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Contents

Upgrading NSX-T

The *NSX-T Upgrade Guide* provides step-by-step information about upgrading the NSX-T components, which include the data plane, control plane, and management plane with minimum system downtime.

Intended Audience

This information is intended for anyone who wants to upgrade NSX-T 2.0. to NSX-T 2.1. The information is written for experienced system administrators who are familiar with virtual machine technology, virtual networking, and security concepts and operations.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation, go to http://www.vmware.com/support/pubs.

NSX-T Upgrade Checklist

Use the checklist to track your work on the upgrade process.

You must follow the prescribed order and upgrade the hosts, NSX Edge clusters, NSX Controller cluster, and Management plane.

Table 1-1. Upgrade NSX-T

Task	Instructions
☐ Review the known upgrade problems and workaround documented in the NSX-T release notes.	See the *NSX-T Release Notes*.
☐ Prepare and update your infrastructure to meet the system configuration requirements.	See the system requirements section of the *NSX-T Installation Guide*.
☐ Evaluate the operational impact of the upgrade.	See Operational Impact of the NSX-T Upgrade.
☐ Verify that the NSX-T environment is in a healthy state.	See Verify the Current State of NSX-T.
☐ Download the latest NSX-T upgrade bundle.	See Download the NSX-T Upgrade Bundle.
☐ Configure the upgrade coordinator on an NSX Manager node.	See Verify Upgrade Coordinator Status .
☐ Upload the upgrade bundle to the NSX Manager.	See Upload the Upgrade Bundle.
☐ Upgrade the hosts.	See Configure and Upgrade Hosts .
☐ Upgrade the NSX Edge cluster.	See Upgrade NSX Edge Clusters .
☐ Upgrade the NSX Controller cluster.	See Upgrade NSX Controller Cluster.
☐ Upgrade the Management plane.	See Upgrade Management Plane.
☐ Perform post-upgrade tasks.	See Verify the Upgrade.
☐ Troubleshoot upgrade errors.	See Troubleshoot a Failed Upgrade.

Preparing to Upgrade NSX-T

2

You must prepare your infrastructure and follow the task sequence provided in the checklist for the upgrade process to be successful.

Perform the upgrade process in a maintenance time frame defined by your company.

This chapter includes the following topics:

- Operational Impact of the NSX-T Upgrade

- Supported Hypervisor Upgrade Path

- Upgrade ESXi Host 6.5 GA to ESXi Host 6.5 U1

- Upgrade Ubuntu 14.04 KVM Host to Ubuntu 16.04 KVM Host

- Verify the Current State of NSX-T

- Download the NSX-T Upgrade Bundle

Operational Impact of the NSX-T Upgrade

The duration for the NSX-T upgrade process depends on the number of components you have to upgrade in your infrastructure. It is important to understand the operational state of NSX-T components during an upgrade, such as when some hosts have been upgraded, or when NSX Edge nodes have not been upgraded.

The upgrade process is as follows:

Hosts > NSX Edge clusters > NSX Controller cluster > Management plane.

Hosts Upgrade

During Upgrade	After Upgrade
■ For standalone vSphere ESXi hosts not managed by vCenter Server, power off VMs running on the vSphere ESXi hosts and put these hosts in maintenance mode. ■ For vSphere ESXi hosts that are part of a DRS enabled cluster, do not power off the VMs running on the vSphere ESXi hosts. Do not put the vSphere ESXi hosts in maintenance mode. NSX-T migrates the VMs running on the host to another host in the same cluster during the upgrade. ■ For vSphere ESXi hosts that are part of a DRS disabled cluster, power off the VMs running on the vSphere ESXi hosts. Do not put the vSphere ESXi hosts in maintenance mode. ■ For KVM hosts, you do not have to power off the VMs running on the KVM hosts before upgrading them. ■ Configuration changes are allowed on NSX Manager.	■ Packet forwarding is briefly affected on the host currently undergoing an upgrade. ■ Upgraded hosts are compatible with non-upgraded hosts, NSX Edge clusters, NSX Controller cluster, and Management plane. ■ New features introduced in the upgrade are not configurable until the NSX Edge clusters, NSX Controller cluster, and Management plane are upgraded.

NSX Edge Clusters Upgrade

During Upgrade	After Upgrade

■ During the NSX Edge upgrade, you might experience the following traffic interruption:
   ■ North-south datapath is affected if the NSX Edge is part of the datapath.
   ■ East-west traffic between tier-1 routers using NSX Edge firewall, NAT, or load balancing.
   ■ Temporary Layer 2 and Layer 3 interruption.
 	
■ Configuration changes are not blocked on NSX Manager but might be delayed.
	■ Configuration changes are allowed.
	
	■ Upgraded NSX Edge clusters are compatible with the upgraded hosts and older versions of the NSX Controller cluster and Management plane.
	
	■ New features introduced in the upgrade are not configurable until the NSX Controller cluster and Management plane are upgraded.

NSX Controller Cluster Upgrade

During Upgrade	After Upgrade
■ Configuration changes are not blocked on NSX Manager but might be delayed.	■ Configuration changes are allowed. ■ Upgraded NSX Controller clusters are compatible with only the upgraded NSX Edge clusters and Management plane. ■ New features introduced in the upgrade are not configurable until the Management plane is upgraded.

Management Plane Upgrade

During Upgrade	After Upgrade
■ Configuration changes are not blocked on the Management plane. ■ API service is unavailable. ■ User interface is unavailable for a short period.	■ Configuration changes are allowed. ■ New features introduced in the upgrade are configurable.

Supported Hypervisor Upgrade Path

The supported hypervisor upgrade paths for the NSX-T product versions.

NSX-T 2.0	NSX-T 2.1
vSphere 6.5 U1	vSphere - http://partnerweb.vmware.com/comp_guide/sim/interop_matrix.php
Ubuntu 16.04.2 LTS with KVM 4.4.0.x	Ubuntu 16.04.2 LTS with KVM 4.4.0.x
	Red Hat 7.4 and Red Hat 7.3

You must first upgrade from NSX-T 1.1 to NSX-T 2.0. You can then upgrade NSX-T 2.0 to NSX-T 2.1.

NSX-T 1.1	NSX-T 2.0	NSX-T 2.1
vSphere 6.5 GA	vSphere 6.5 U1	vSphere 6.5 U1
Ubuntu 14.04	Ubuntu 16.04.2 LTS with KVM 4.4.0.x	Ubuntu 16.04.2 LTS with KVM 4.4.0.x
		Red Hat 7.4 and Red Hat 7.3

Upgrade ESXi Host 6.5 GA to ESXi Host 6.5 U1

Depending on your environment needs, you can manually upgrade from the ESXi 6.5 GA to ESXi 6.5 U1 version.

Procedure

1   Apply the later version of a full image profile onto the host.

```
esxcli software profile
update <build> —standard ——allow—downgrades ——no—sig—check
```

2   Reboot the ESXi host.

reboot

Upgrade Ubuntu 14.04 KVM Host to Ubuntu 16.04 KVM Host

Depending on your environment needs, you can manually upgrade the Ubuntu 14.04 to 16.04 version.

Procedure

1   (Optional) Show all Linux Standard Base and distribution-specific information.

lsb_release —a

2   Install packages using the apt tool.

sudo apt update

3   Fetch the latest packages.

sudo apt—get upgrade

4   Handle dependencies such as substituting obsolete packages with new packages.

    `sudo apt dist-upgrade`

5   Upgrade to the Ubuntu 16.04 version.

    `do-release-upgrade`

6   If you have an existing Ubuntu KVM host as a transport node, backup the `/etc/network/interfaces` file.

Verify the Current State of NSX-T

Before you begin the upgrade process, it is important to test the NSX-T working state. Otherwise, you cannot determine if the upgrade caused post-upgrade problems or if the problem existed before the upgrade.

Note Do not assume that everything is working before you start to upgrade the NSX-T infrastructure.

Procedure

1   Identify administrative user IDs and passwords.

2   Verify that you can log in to the NSX Manager Web user interface.

3   Check the Dashboard, system overview, fabric hosts, NSX Edge cluster, transport nodes, and all logical entities to make sure that all the status indicators are green, normal, deployed, and do not show any warnings.

4   Validate North-South connectivity by pinging out from a VM.

5   Validate that there is East-West connectivity between any two VMs in your environment.

6   Record BGP states on the NSX Edge devices.

- `get logical-routers`

- `vrf`

- `get bgp`

- `get bgp neighbor`

7   (Optional) If you have a test environment, check the upgrade functionality before upgrading your production environment.

Download the NSX-T Upgrade Bundle

The upgrade bundle contains all the files to upgrade the NSX-T infrastructure. Before you begin the upgrade process, you must download the correct upgrade bundle version.

Procedure

1   Locate the NSX-T build on the VMware download portal.

2   Navigate to the upgrade folder and expand that folder.

3   Verify that the master upgrade bundle filename extension ends with `.mub`.

The upgrade bundle filename has a format similar to `VMware-NSX-upgrade-bundle-`
`ReleaseNumberNSXBuildNumber`.mub.

4   Download the NSX-T upgrade bundle to the same system you are using to access the NSX Manager
user interface.

Upgrading NSX-T

3

After you finish the prerequisites for upgrading, upload the upgrade bundle to initiate the upgrade process.

Based on your input, the upgrade coordinator updates the hosts, NSX Edge clusters, NSX Controller cluster, and Management plane.

1   Upload the Upgrade Bundle

    The upgrade bundle must be uploaded to the NSX Manager.

2   Verify Upgrade Coordinator Status

    The upgrade coordinator is a self-contained Web application that orchestrates the upgrade process of different NSX-T components.

3   Configure and Upgrade Hosts

    You can set custom host configurations to customize the upgrade sequence of the hosts, disable certain hosts from the upgrade, or pause the upgrade at various stages of the upgrade process.

4   Upgrade NSX Edge Clusters

    Edge groups consist of NSX Edge nodes that are part of NSX Edge clusters. You can reorder Edge groups and enable or disable an Edge group from the upgrade sequence.

5   Upgrade NSX Controller Cluster

    You can only start the NSX Controller nodes in the cluster.

6   Upgrade Management Plane

    The upgrade sequence updates the Management plane at the end.

7   Upgrade DNE Key Manager

    If you are using the DNE feature then you must manually upgrade the DNE Key Manager.

Upload the Upgrade Bundle

The upgrade bundle must be uploaded to the NSX Manager.

Prerequisites

Verify the upgrade coordinator status. See Verify Upgrade Coordinator Status.

Procedure

1   From your browser, log in to an NSX Manager at https://*nsx-manager-ip-address*.

2   Select **System > Utilities > Upgrade** from the navigation panel and review the pre-upgrade environment.

   The existing NSX-T release version and nodes are listed.

   a   Identify a component such as, hosts.

   b   Click the number listed under the Count column.

      A list of all the configured hosts appear in the dialog box.

3   Click **Proceed to Upgrade**.

4   Click **Browse** to navigate to the location you downloaded the upgrade bundle `.mub` file.

5   Click **Upload** to transfer the upgrade bundle into the NSX Manager.

   The upgrading the upgrade coordinator might take 15–20 minutes, depending on your network speed. If the network times out, reload the upgrade bundle.

   When the upload process finishes, the **Begin Upload** button becomes active.

6   Click **Begin Upload** to initiate the upgrade.

7   Accept the notification to upgrade the upgrade coordinator.

   The new upgrade coordinator version such as, `Upgrade Coordinator version: 2.1.0.0.0.7298012` appears.

Verify Upgrade Coordinator Status

The upgrade coordinator is a self-contained Web application that orchestrates the upgrade process of different NSX-T components.

The upgrade coordinator wizard takes you through the proper upgrade sequence. You can track the upgrade process in real time and if required you can pause and resume the upgrade process from the user interface.

The upgrade coordinator allows you to upgrade groups in a serial or parallel mode. It also provides the option of upgrading the components within that group in the serial or parallel mode.

Procedure

1   From your browser, log in to an NSX Manager at https://*nsx-manager-ip-address*.

2   Select **System > Utilities > Upgrade** from the navigation panel.

3   Restart the upgrade coordinator if it is not active.

    a   Log in to the NSX Manager node using nsx-cli.

    b   Check whether the upgrade coordinator is active.

        `get service install-upgrade`

    c   Start the install-upgrade service if the service is disabled.

        `set service install-upgrade enabled`

4   Identify and resolve any errors that appear in the upgrade coordinator.

Note   If you see warning notification, click the notification to see the warning details. Resolve the warning notification before you proceed with the upgrade to avoid problems during the upgrade. .

You can safely ignore the degraded NSX Edge transport node status when you upgrade NSX-T 2.0 to NSX-T 2.1.

The hosts are ready to be upgraded and the planned upgrade sequence appears. See Configure and Upgrade Hosts.

Configure and Upgrade Hosts

You can set custom host configurations to customize the upgrade sequence of the hosts, disable certain hosts from the upgrade, or pause the upgrade at various stages of the upgrade process.

Each host group consists of individual hosts. For example, all the existing vSphere and KVM hosts are grouped in separate host groups by default. Before you upgrade the hosts, you can select to update the hosts simultaneously or consecutively. If you select simultaneous upgrade for all the hosts and host groups in your environment, the maximum limit for a simultaneous upgrade is five host groups and five hosts per group.

You can customize the host upgrade sequence prior to the upgrade. You can edit a host group to move a host to a different host group that upgrades immediately and another host to a host group that upgrades at a later date. If you have frequently used host, you can reorder the upgrade sequence of the host within a host group so it is upgraded first and move the least used host to upgrade last.

Note   If you register a vCenter Server compute manager after uploading the latest upgrade bundle, you must click **Reset** so that you can upgrade the recently added vSphere hosts.

Prerequisites

- Verify that the latest version of the upgrade bundle is uploaded. See Upload the Upgrade Bundle.

- Verify that either the vSphere or KVM hosts are prepared for upgrade. See Hosts Upgrade.

- Verify that vSphere ESX hosts managed by vCenter Server and standalone vSphere hosts are part of a cluster, the tenant VMs must be powered off or migrated to other hosts. After being moved, the vSphere hosts must be powered on.

▪ Verify that the transport zone or transport node N-VDS name does not contain spaces. If there are spaces, create a transport zone with no spaces in the N-VDS name, reconfigure all the components that are associated with the old transport zone to use the new transport zone, and delete the old transport zone.

Procedure

1 Complete the host group overall upgrade details.

You can configure the overall group upgrade order to set the host groups to be upgraded first.

Option	Description
Serial	Upgrade all the host groups consecutively.
	This menu item is selected by default and applied to the overall upgrade sequence. This selection is useful to maintain the step-by-step upgrade of the host components.
	For example, if the overall upgrade is set to serial and the host group upgrade is set to parallel, one host group is upgraded after another while hosts within the group are updated in parallel.
Parallel	Upgrade all the host groups simultaneously.
	You can upgrade up to five hosts simultaneously.
When an upgrade unit fails to upgrade	Select to pause the upgrade process if any host upgrade fails.
	This selection allows you to fix the error on the host group and resume the upgrade.
After each group completes	Select to pause the upgrade process after each host group finishes upgrading.
	By default, the upgrade pauses when all the hosts are updated. After you review the upgrade result, you can proceed to upgrade the next host group or the NSX Edge clusters.

2 (Optional) Change the host group upgrade order.

If you configure the overall group upgrade in the serial mode, the upgrade waits for a host group upgrade to finish before proceeding to upgrade the second host group. You can reorder the host group upgrade sequence to set a host group to upgrade first.

a Select the host group and click the **Actions** tab.

b Select **Reorder** from the drop-down menu.

c Select **Before** or **After** from the drop-down menu.

d Click **Save**.

3 (Optional) Remove a host group from the upgrade sequence.

You can disable some host groups and upgrade them later.

a Select the host group and click the **Actions** tab.

b Select **Set State** from the drop-down menu.

c Select **Disabled** to remove the host group.

d Click **Save**.

4 (Optional) Change the individual host group upgrade sequence.

By default, the upgrade sequence is set to the parallel mode.

a Select the host group and click the **Actions** tab.

b Select **Set Upgrade Order** from the drop-down menu.

c Select **Serial** to change the upgrade sequence.

d Click **Save**.

5 Click **Reset** to discard your custom upgrade plan and revert to the default state.

> **Caution** You cannot restore your previous upgrade configuration.

What to do next

Determine whether to add, edit, or delete host groups or to upgrade host groups. See Manage Host Groups or Upgrade Hosts.

Manage Host Groups

You can add unlimited new host groups and up to 32 hosts per host group. You can also edit and delete an existing host group before you start the upgrade or after you pause the upgrade.

Hosts in a vCenter Server cluster appear in one host group in the upgrade coordinator. You can move these hosts from one host group to another host group.

Prerequisites

Verify that you have configured the overall hosts upgrade. See Configure and Upgrade Hosts.

Procedure

1 Create a host group.

a Click **Add** to include existing hosts into a host group.

b Toggle the **State** button to enable or disable the host group from the upgrade.

c Select an existing host and click the arrow icon to move that host to the newly created host group.

If you select an existing host that was part of a host group, the host is moved to the new host group.

d Select whether to upgrade the host group simultaneously or consecutively.

e Click **Save**.

f (Optional) Select **Reorder** from the drop-down menu to reposition the host groups.

g (Optional) Select **Before** or **After** from the drop-down menu.

h (Optional) Click **Save**.

2 Move an existing host to another host group.

If a DRS enabled vCenter Server cluster is part of the upgrade, then a host group is created for the hosts managed by this cluster. You cannot add other standalone vSphere hosts to this DRS enabled host group.

    a   Select a host group.

    b   Select a host.

    c   Click the **Actions** tab.

    d   Select **Change Group** from the drop-down menu to move the host to another host group.

    e   Select the host group name from the drop-down menu to move the host to.

    f   Click **Save**.

    g   (Optional) Select **Reorder** from the drop-down menu to reposition the host within the host group.

    h   (Optional) Select **Before** or **After** from the drop-down menu.

    i   (Optional) Click **Save**.

3 Delete a host group.

You cannot delete a host group that has hosts. You must first move the hosts to another group.

    a   Select the host group.

    b   Select a host.

    c   Click the **Actions** tab.

    d   Select **Change Group** from the drop-down menu to move the host to another host group.

    e   Select the host group name from the drop-down menu to move the host to.

    f   Click **Save**.

    g   Select the host group you want to remove and click **Delete**.

    h   Accept the notification.

What to do next

Upgrade the newly configures hosts. See Upgrade Hosts.

Upgrade Hosts

Upgrade the hosts in your environment.

Prerequisites

Verify that you have configured the overall hosts upgrade. See Configure and Upgrade Hosts.

Procedure

1 Click **Start** to upgrade the hosts.

2   Accept the EULA.

A list of required upgrade dependencies appear.

3   Verify that the tenant VMs that require VM migration on the standalone vSphere hosts are powered off or migrated to other hosts.

4   Verify that the Ubuntu packages are installed.

Note   You must have all the listed packages installed on your Ubuntu host before you continue with the upgrade.

---

dpkg -l *package_name*

```
python-protobuf
python-gevent
libsnappy1v5
libleveldb15
libboost-chrono1.58.0
libboost-filesystem1.58.0
libboost-iostreams1.58.0
libboost-system1.58.0
libboost-thread1.58.0
libboost-date-time1.58.0
libgoogle-glog0v5
```

5   Click **Continue**.

6   Monitor the upgrade process.

You can view the overall upgrade status and specific progress of each host group in real time. The upgrade duration depends on the number of host groups you have in your environment.

You can pause the upgrade to configure the host group that is not upgraded and resume the upgrade.

7   Verify that the latest version of NSX-T packages are installed on the vSphere and Ubuntu hosts.

- For vSphere hosts, enter `esxcli software vib list | grep nsx`.

- For Ubuntu hosts, enter `dpkg -l | grep nsx`.

- For Red Hat hosts, enter `rpm -qa | egrep 'nsx|openvswitch|nicira'`.

8   Restart the tenant VMs on hosts managed by vCenter Server that were powered off before the upgrade.

9   Migrate the tenant VMs on hosts managed by vCenter Server to the upgraded host.

When the upgrade finishes, the status of each host group appears as successful or failed.

What to do next

You can proceed with the upgrade only after the upgrade process finishes successfully. If some of the hosts are disabled, you must enable and upgrade them before you proceed. See Upgrade NSX Edge Clusters.

If there are upgrade errors, you must resolve the errors. See Troubleshoot a Failed Upgrade.

Upgrade NSX Edge Clusters

Edge groups consist of NSX Edge nodes that are part of NSX Edge clusters. You can reorder Edge groups and enable or disable an Edge group from the upgrade sequence.

Note You cannot move an NSX Edge node from one Edge group to another because the Edge group membership is determined by the NSX Edge cluster membership prior to the upgrade.

The NSX Edge nodes are upgraded consecutively by default so that the upgrading node is down and the other nodes in the NSX Edge clusters remain active to continuously forward traffic.

Prerequisites

- Verify that the hosts are upgraded successfully. See Upgrade Hosts.

- Familiarize yourself with the upgrade impact during and after the NSX Edge cluster upgrade. See NSX Edge Clusters Upgrade.

Procedure

1 Complete the NSX Edge clusters overall upgrade plan details.

Option	Description
Serial	Upgrade all the Edge groups consecutively.
	This menu item is selected by default. This selection is applied to the overall upgrade sequence.
	For example, if the overall upgrade is set to the parallel mode, the Edge groups are upgraded at once and the NSX Edge nodes are upgraded one at a time .
Parallel	Upgrade all the Edge groups simultaneously.

Option	Description
When an upgrade unit fails to upgrade	Selected by default to let you to fix an error on the Edge node and continue the upgrade.
	You cannot deselect this setting.
After each group completes	Select to pause the upgrade process after each Edge group finishes upgrading.
	By default, the upgrade pauses when all the NSX Edge clusters are updated. After you review the upgrade result, you can proceed to upgrade the next Edge group or the NSX Controller cluster.

2 (Optional) Reorder the upgrade sequence of an Edge group.

For example, if you configure the overall group upgrade as serial, you can reorder the Edge groups serving internal networks or Edge groups interfacing with external networks to be upgraded first.

You cannot reorder the NSX Edge nodes within an Edge group.

a Select the Edge group and click the **Actions** tab.

b Select **Reorder** from the drop-down menu.

c Select **Before** or **After** from the drop-down menu.

d Click **Save**.

3 (Optional) Disable an Edge group from the upgrade sequence.

You can disable some Edge groups and upgrade them later.

a Select the Edge group and click the **Actions** tab.

b Select **Set State > Disabled** to disable the Edge group.

c Click **Save**.

4 (Optional) Click **Reset** to revert to the default state.

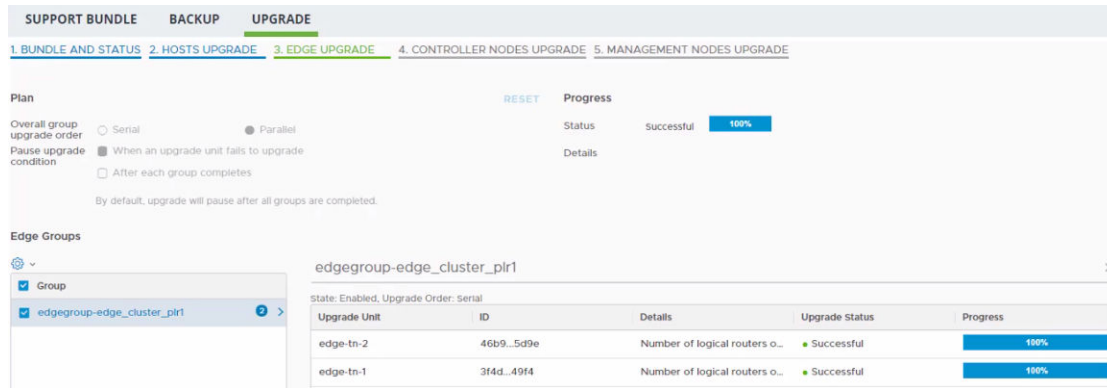**Caution** After reset, you cannot restore your previous configuration.

5 Click **Start** to upgrade the NSX Edge clusters.

6   Monitor the upgrade process.

You can view the overall upgrade status and specific progress of each Edge group in real time. The upgrade duration depends on the number of Edge groups you have in your environment.

You can pause the upgrade to configure the Edge group that is not upgraded and restart the upgrade.

When the upgrade finishes, the status of each Edge group appears as successful or failed.

7   (Optional) In the CLI, log in to each NSX Edge node and verify that the product version is updated.

```
get version
```

What to do next

You can proceed with the upgrade if the process is successful. See Upgrade NSX Controller Cluster.

If there are upgrade errors, you must resolve the errors. See Troubleshoot a Failed Upgrade.

Upgrade NSX Controller Cluster

You can only start the NSX Controller nodes in the cluster.

The NSX Controller nodes are upgraded in parallel by default.

Prerequisites

Verify that the NSX Edge clusters are upgraded successfully. See Upgrade NSX Edge Clusters.

Procedure

1   Click **Start** to upgrade the NSX Controller cluster.

2 Monitor the upgrade process.

You can view the overall upgrade status and specific progress of each Controller node in real time.

When the upgrade finishes, the status of each Controller node appears as successful or failed.
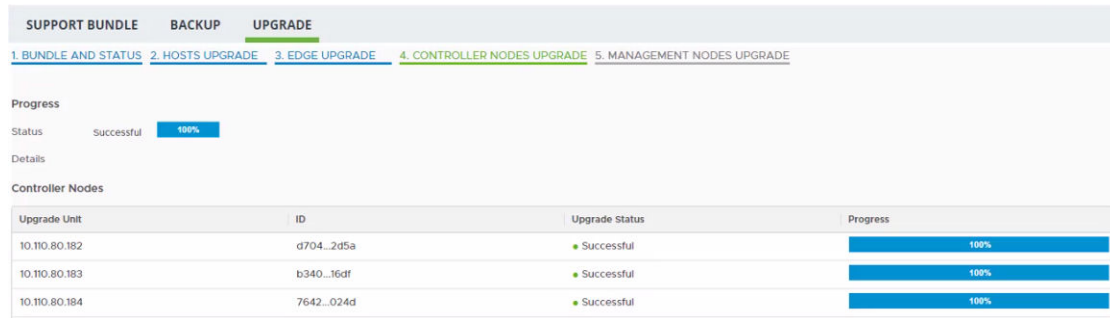
3 (Optional) In the CLI, log in to each NSX Controller node and verify that the product version is updated.

```
get versions
```

What to do next

You can proceed with the upgrade if the process was successful. See Upgrade Management Plane.

If there are upgrade errors, you must resolve the errors. See Troubleshoot a Failed Upgrade.

Upgrade Management Plane

The upgrade sequence updates the Management plane at the end.

Note   The NSX Manager user interface is accessible for one to two minutes after you initiate upgrade. Then the NSX Manager user interface, API and CLI are not accessible about 10 minutes until the upgrade finishes and the Management plane is restarted.
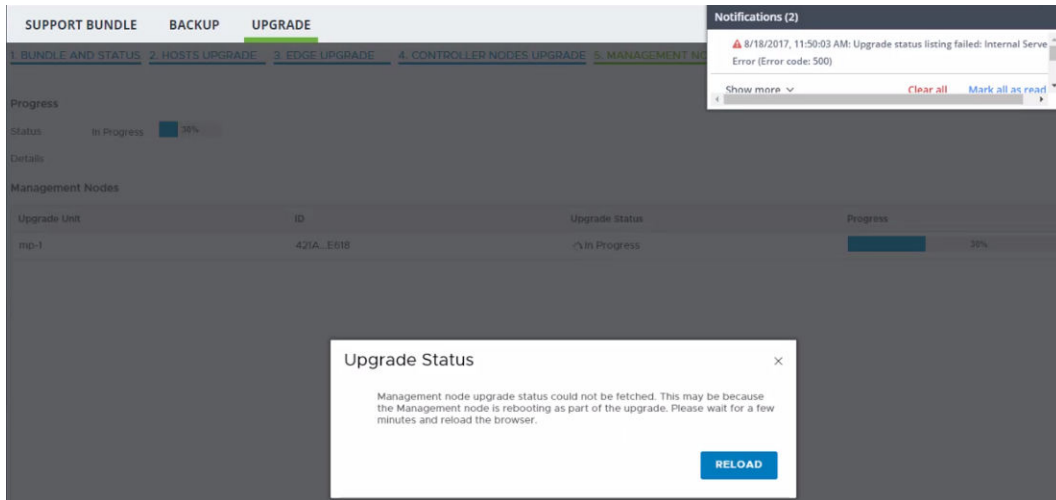
Prerequisites

Verify that the NSX Controller cluster is upgraded successfully. See Upgrade NSX Controller Cluster.

Procedure

1 Click **Start** to upgrade the Management plane.

2 Accept the notification.

You can safely ignore any upgrade related errors such as, HTTP service disruption that appear at this time. These errors appear because the Management plane is rebooting during the upgrading.

Wait about 10 minutes until the reboot is complete and the services are reestablished.

3 (Optional) In the CLI, log in to the NSX Manager to verify that the services have started.

```
get services
```

When the services start, the Service state appears as running. Some of the services include, SSH, install-upgrade, and manager.

4 (Optional) Verify that the product version is updated.

```
get version
```

When the services start, the Service state appears as running.

5 Click **Reload** to refresh the Web browser.

6 Log in to the newly upgraded NSX Manager.

What to do next

Perform post-upgrade tasks or troubleshoot errors depending on the upgrade status. See Chapter 4 Post-Upgrade Tasks or Troubleshoot a Failed Upgrade.

Upgrade DNE Key Manager

If you are using the DNE feature then you must manually upgrade the DNE Key Manager.

Prerequisites

Verify that the DNE Key Manager is properly installed and configured. See *NSX-T Installation Guide* and *NSX-T Administration Guide*.

Procedure

1   Locate the NSX-T build on the VMware download portal.

2   Navigate to the nsx-keymanager/exports/upgrade folder and expand that folder.

3   Verify that the upgrade bundle filename extension ends with `.nub`.

   The upgrade bundle filename has a format similar to `VMware-NSX-keymanager-`
   `ReleaseNumberNSXBuildNumber.nub`.

4   Download the DNE Key Manager upgrade bundle to an HTTP or FTP server which the DNE Key
   Manager can access.

5   Log in to the DNE Key Manager CLI.

6   Copy upgrade bundle file to the DNE Key Manager appliance.

   `copy url <keymanager-upgrade-bundle-http/ftp-url-path>`

7   Verify that the upgrade bundle is the latest DNE Key Manager version.

   `verify upgrade-bundle <bundle-name>`

   The <bundle-name> is the DNE Key Manager upgrade bundle name in the file store. For example,
   VMware-NSX-keymanager-<ReleaseNumberNSXBuildNumber>.

8   Start the upgrade process.

   `start upgrade-bundle <bundle-name> playbook <playbook-file>`

   The <bundle-name> is the DNE Key Manager upgrade bundle name in the file store. For example,
   VMware-NSX-keymanager-<ReleaseNumberNSXBuildNumber>.

   The <playbook-file> is the Playbook file name to use. For example, VMware-NSX-keymanager-
   <ReleaseNumberNSXBuildNumber>-playbook.

   DNE Key Manager restarts during the upgrade process.

   When the DNE Key Manager is restarting, avoid doing a manual DNE Key Manager rotate or revoke,
   do not add or delete a node, or perform a manual migration or HA.

9   After the DNE Key Manager restarts, resume the upgrade process.

   `resume upgrade-bundle <bundle-name> playbook`

   The <bundle-name> is the DNE Key Manager upgrade bundle name in the file store. For example,
   VMware-NSX-keymanager-<ReleaseNumberNSXBuildNumber>.

The DNE Key Manager upgrade completes with an upgrade success message.

Post-Upgrade Tasks

4

After you upgrade NSX-T, perform applicable post-upgrade tasks.

This chapter includes the following topics:

- Verify the Upgrade

- Upgrade Red Hat 7.3 Host to Red Hat 7.4 Host

Verify the Upgrade

After you upgrade NSX-T, you can check whether the versions of the upgraded components have been updated.

Prerequisites

Perform a successful upgrade. See Chapter 3 Upgrading NSX-T.

Procedure

1   From your browser, log in to an NSX Manager at https://*nsx-manager-ip-address*.

2   Select **System > Utilities > Upgrade** from the navigation panel.

3   Verify that the overall upgrade version, component version, and initial and target product version are accurate.

    The status of the upgrade appears as Successful.

4   (Optional) Verify that the Dashboard, fabric hosts, NSX Edge clusters, transport nodes, and all logical entities status indicators are green, normal, deployed, and do not show any warnings.

5   (Optional) Check the status of several components.

   - Fabric nodes installation

   - Transport node Local Control Plane(LCP) and Management plane agent connectivity

   - Routers connectivity

   - NAT rules

   - DFW rules

   - DHCP lease

- BGP details

- Flows in the IPFIX collector

- TOR connectivity to enable network traffic

6   If you have an existing Ubuntu KVM host as a transport node, backup the `/etc/network/interfaces` file.

Upgrade Red Hat 7.3 Host to Red Hat 7.4 Host

Depending on your environment needs, you must manually upgrade from the Red Hat 7.3 to Red Hat 7.4 version.

Procedure

1   Navigate to the `/etc/yum.conf` file.

2   Comment out the following lines.

   `exclude=[existing list] kernel* redhat-release*`

3   Clear the Yum cache.

   yum clean all

4   Update the Yum packages

   yum update

5   Install Protobuf.

   yum install protobuf

6   Download the Red Hat 7.4 Link Control Protocol (LCP) bundle.

   wget RHEL_7.4_LCP_URL

7   Unzip the downloaded tar LCP bundle.

   tar zxvf nsx-lcp-*rhel74_x86_64.tar.gz

8   Install the LCP bundle.

```
cd nsx-lcp-rhel74_x86_64
rpm -Uvh --force *.rpm
```

9   Remove the comments from the `/etc/yum.conf` file to revert to the original state.

   `exclude=[existing list] kernel* redhat-release*`

Troubleshooting Upgrade Failures

5

You can review the support bundle log messages to identify the problem.

You can also perform any of the following debugging tasks.

- Navigate to the upgrade coordinator log files `/var/log/upgrade-coordinator/upgrade-coordinator.log`.

- Configure a remote logging server and send log messages for troubleshooting. See *NSX-T Administration Guide*.

Note   If you are unable to troubleshoot the failure and want to revert to the previous working version of NSX-T, contact VMware support.

This chapter includes the following topics:

- Troubleshoot a Failed Upgrade

- Collect Support Bundles

Troubleshoot a Failed Upgrade

If the upgrade process fails, you can review the error messages to assist you with the troubleshooting process.

Procedure

1   Identify the failed host group, Edge group, Controller node that is highlighted in red.

2   Click the failed component.

     A dialog box with error messages appears.

3   Resolve the error.

Upgrade Unit	Errors
TN-edgenode-02a	• [Edge UCP] Edge 1.0.0.0.0.3788284/Edge/nub/VMware-NSX-edge-1.0.0.0.0.3788309.nub install OS task failed on edge TransportNode 88284f1e-05ba-4d5f-bf47-d7e934b69416: clientType EDGE , target edge fabric node id 4d6bfb9a-ff60-11e5-8ec7-005056ae60cd, return status Polling install_os timed out .
	1 Upgrade Unit

Serial	● Enabled	⚠ Failed	0%

In the example, wait for some time and restart the upgrade on the NSX Edge node.

4   Click **Continue** to resume the upgrade.

Collect Support Bundles

You can collect support bundles on registered cluster and fabric nodes and download the bundles to your machine or upload them to a file server.

If you choose to download the bundles to your machine, you get a single archive file consisting of a manifest file and support bundles for each node. If you choose to upload the bundles to a file server, the manifest file and the individual bundles are uploaded to the file server separately.

Procedure

1   From your browser, log in to an NSX Manager at https://*nsx-manager-ip-address*.

2   Select **System > Utilities** from the navigation panel.

3   Click the **Support Bundle** tab.

4   Select the target nodes.

The available types of nodes are management nodes, controller nodes, edges, and hosts.

5   (Optional) Specify log age in days to exclude logs that are older than the specified number of days.

6   (Optional) Toggle the switch that indicates whether to include or exclude core files and audit logs.

Note   Core files and audit logs might contain sensitive information such as passwords or encryption keys.

7   (Optional) Select a check box to upload the bundles to a file server.

8   Click **Start Bundle Collection** to start collecting support bundles.

Depending on how many log files exist, each node might take several minutes.

9   Monitor the status of the collection process.

     The status field shows the percentage of nodes that completed support bundle collection.

10   Click **Download** to download the bundle if the option to send the bundle to a file server was not set.