

# VxRail Smart Upgrade Bundle PowerShell Script v2.0

## Technical Note

February 2022

### Abstract

The VxRail Smart Upgrade Bundle PowerShell Script v2.0 reduces the upgrade bundle distribution time from a central location at a data center to multi-remote edge sites.

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## Executive summary

The VxRail Smart Upgrade Bundle PowerShell Script v2.0 reduces the upgrade bundle distribution time from a central location (depot) at a data center to multi-remote edge sites.

### Intended use and audience

This document is intended for customers, Dell Service providers who are authorized to work on a VxRail cluster, and VxRail administrators.

### Overview

Starting with VxRail v4.7.300, data center administrators can download the upgrade bundle to a location in the data center and then generate a partial upgrade bundle that contains only upgradable packages from the full bundle. In many upgrade scenarios, partial bundles will be much smaller than the full bundle. For example, a VxRail-managed VMware vCenter Server image, which is often larger than 1.5 G, can be removed from the partial bundle for VxRail clusters that do not have VxRail-managed VMware vCenter Server. Sending the partial bundle instead of the full bundle to a remote site reduces the bundle loading time and improves user experience.

Starting with VxRail v7.0.350, the VxRail Smart Upgrade Bundle PowerShell Script v2.0 has been enhanced so that data center administrators can generate the partial upgrade bundles that are targeted at multiple remote sites in one implementation. The multiple such partial upgrade bundles will be generated and stored at the central location (depot). Data center administrators will then be able to transfer such bundles to the respective target sites in one implementation.

There are two options to start the upgrade at the remote sites. One option is to continue to use the PowerShell Script to start the upgrade from the central location. The other option is for remote site local administrators to start the upgrade from the local UI upgrade page.

Data center administrators can also limit the upload speed to fit the bandwidth limitation from data center to edge clusters under IPV4 environments.

### Supported scenarios

The VxRail Smart Upgrade Bundle PowerShell Script v2.0 provides PowerShell cmdlet for central depot operations that include partial bundle generation and bundle uploading.

The following user scenarios are supported:

- Generate a partial bundle for a VxRail cluster on a data center file server and upload it from the data center to a remote VxRail cluster.
- Generate multiple partial bundles for multiple VxRail clusters at remote sites, and upload them respectively to the remote VxRail clusters.
- Upload partial bundles from data center to remote VxRail clusters within limited speed under IPV4 environments.
- Perform LCM upgrade on the remote site's VxRail clusters from a central data center.
- Perform progress query of the upgrade on the remote VxRail clusters.

### Prerequisites

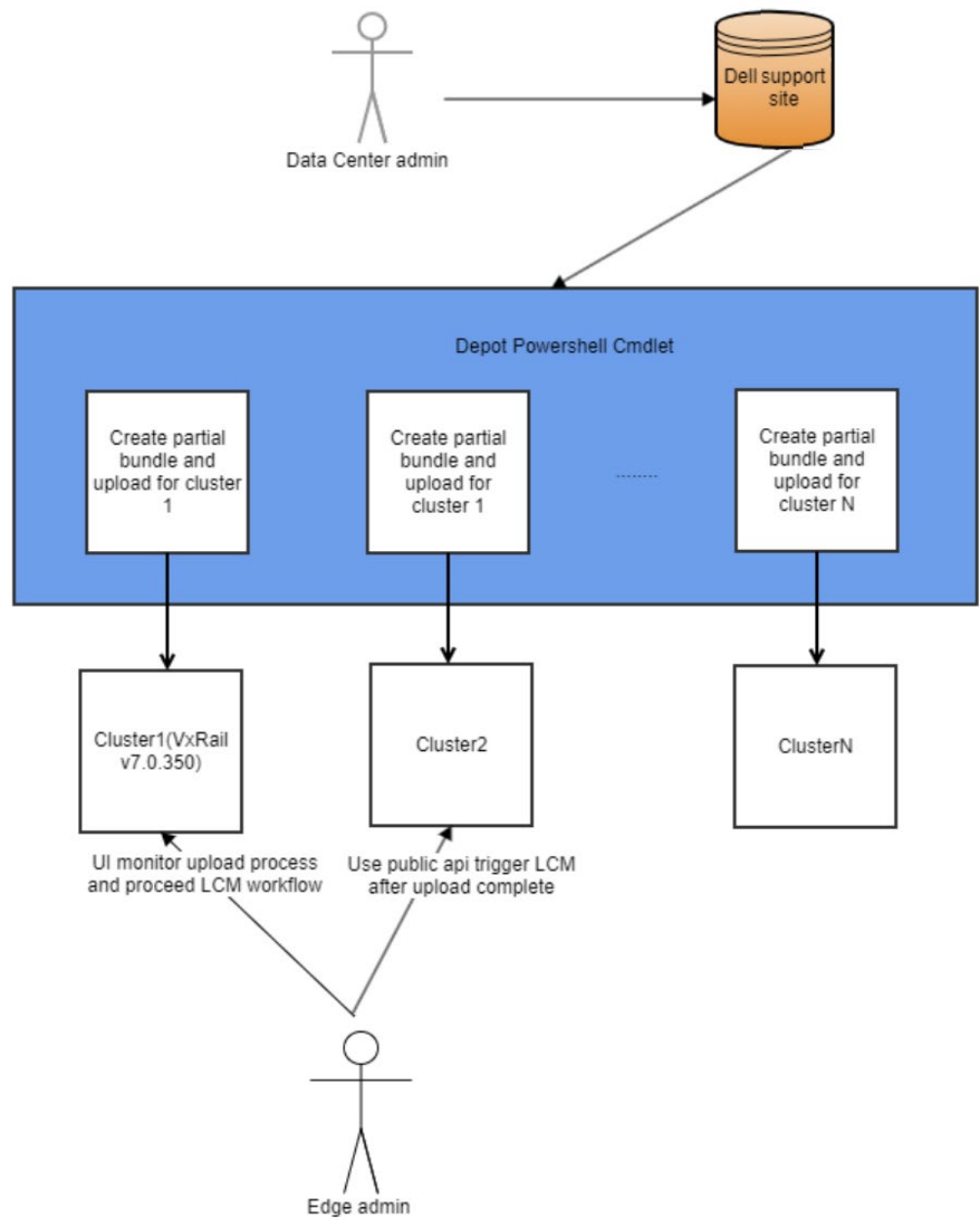
See the [Prerequisites](#) section for detailed information.

## LCM Workflow

Following is a summary of the VxRail Smart Upgrade Bundle PowerShell Script v2.0 process.

1. Data center administrators: Set up a download directory for the upgrade bundle in a file system that can be accessed by the PowerShell scripts.
2. Data center administrators: Set up a temporary directory to store unpacked full bundle and repacked partial bundles before related upload tasks complete. For more details, see Chapter 4 part 4 notes.
3. Data center administrators: Prepare the configuration .csv file with the required template format. This file is used to track the remote site VxRail Cluster information.
4. Data center administrators: Download the full bundle from the Dell support site and store it in the download directory.
5. Data center administrators: Invoke VxRail Smart Upgrade Bundle PowerShell Script v2.0 tool to generate partial bundles and upload them to each cluster listed in the configuration file.
6. Data center administrators: Check PowerShell window and log to monitor the upload progress.
7. (Optional) Edge cluster administrators: Use VxRail Public API to perform the LCM workflow.
8. (Optional) Edge cluster administrators: Starting with VxRail v7.0.350, edge cluster administrators can use VxRail LCM UI to monitor data center upload process and proceed to the LCM workflow.
9. (Alternatively) Data center administrators: Invoke the upgrade at remote sites VxRail clusters and use the PowerShell tool to monitor the progress.

## Prerequisites



## Prerequisites

**PowerShell 5.1**  
(with .NET Framework support)

Run `$PSVersionTable` to check the PowerShell version.

```
PS C:\Users\user1> $PSVersionTable

Name                           value
----                           -
PSEdition                      Desktop
PSCompatibleVersions           {1.0, 2.0, 3.0, 4.0...}
BuildVersion                   10.0.14393.4583
CLRVersion                     4.0.30319.42000
WSManStackVersion              3.0
PSRemotingProtocolVersion      2.3
SerializationVersion           1.1.0.1

PS C:\Users\user1> _
```

If you are not running PowerShell v5.1, go to <https://docs.microsoft.com/en-us/powershell/scripting/install/installing-windows-powershell?view=powershell-5.1> for instructions about installing the correct version.

### WinSCP PowerShell Wrapper dependencies

WinSCP Module is required to upload and delete bundles. Go to <https://www.powershellgallery.com/packages/WinSCP/> for instructions about installing WinSCP Module for PowerShell. Verify the WinSCP module after installation.

```
PS C:\Users\user1> Get-Module WinSCP -ListAvailable

Directory: C:\Program Files\WindowsPowerShell\Modules

ModuleType Version      Name                               ExportedCommands
-----
Manifest    5.17.10.0 WinSCP                            {ConvertTo-WinSCPEscapedString, Copy-WinSCPItem, Get-WinSC...
```

### Configure WinSCP executable path

After WinSCP Module has been installed, locate the WinSCP executable path, which is the folder of "WinSCP.exe". Typically, the path could be one of the following:

**C:\Program Files\WindowsPowerShell\Modules\WinSCP\<version>\bin**  
**C:\Program Files (x86)\WindowsPowerShell\Modules\WinSCP\<version>\bin**  
**C:\Windows\System32\WindowsPowerShell\v1.0\Modules WinSCP\<version>\bin**

After WinSCP executable path is located, launch PowerShell console as administrator, and run the following command to set it as an environment variable.

```
[Environment]::SetEnvironmentVariable("WinSCP_Path", <path>,
                                     "machine")
```

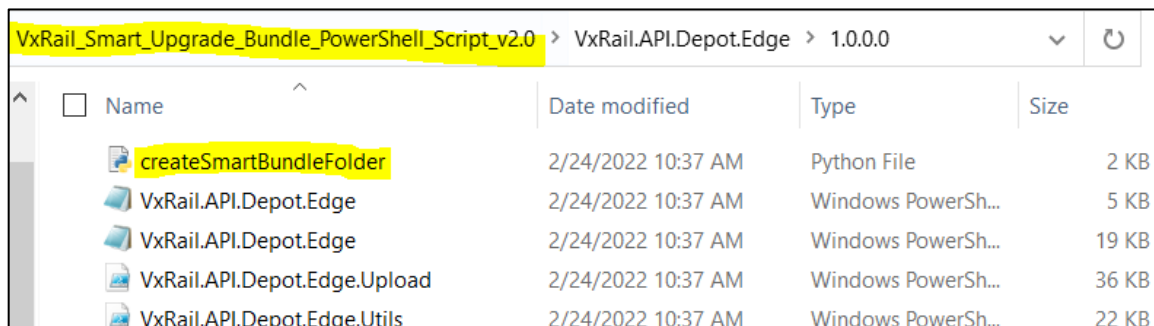
```
$env:WinSCP_Path
```

```
PS C:\Users\user1> $env:WinSCP_Path
C:\Program Files\WindowsPowerShell\Modules\WinSCP\5.17.10.0\bin
PS C:\Users\user1> _
```

Restart the PowerShell window for the configuration to take effect.

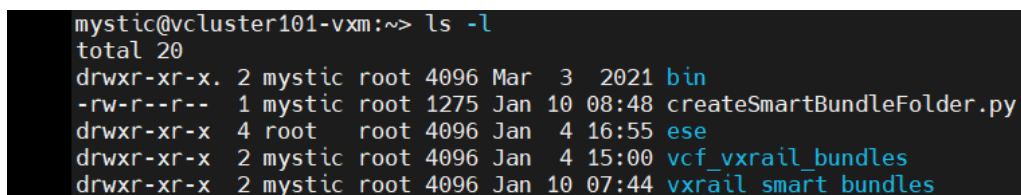
Before the data center starts the first upload task, ensure that the vxrail\_smart\_bundles folder exists. If the target folder field is left empty, PowerShell will use the vxrail\_smart\_bundles folder as a default target folder. PowerShell cmdlet will raise will error and stop if this folder has not been found. The monitor data center uploading process in edge cluster UI function will also use this folder starting with v7.0.350. We

strongly recommend that you create this folder if the VxRail Manager version is earlier than v7.0.350.



VxRail_Smart_Upgrade_Bundle_PowerShell_Script_v2.0 > VxRail.API.Depot.Edge > 1.0.0.0				
<input type="checkbox"/>	Name	Date modified	Type	Size
	createSmartBundleFolder	2/24/2022 10:37 AM	Python File	2 KB
	VxRail.API.Depot.Edge	2/24/2022 10:37 AM	Windows PowerSh...	5 KB
	VxRail.API.Depot.Edge	2/24/2022 10:37 AM	Windows PowerSh...	19 KB
	VxRail.API.Depot.Edge.Upload	2/24/2022 10:37 AM	Windows PowerSh...	36 KB
	VxRail.API.Depot.Edge.Utils	2/24/2022 10:37 AM	Windows PowerSh...	22 KB

2. Run the following command:



```
mystic@vcluster101-vxm:~> ls -l
total 20
drwxr-xr-x. 2 mystic root 4096 Mar  3 2021 bin
-rw-r--r--. 1 mystic root 1275 Jan 10 08:48 createSmartBundleFolder.py
drwxr-xr-x. 4 root   root 4096 Jan  4 16:55 ese
drwxr-xr-x. 2 mystic root 4096 Jan  4 15:00 vcf_vxrail_bundles
drwxr-xr-x. 2 mystic root 4096 Jan 10 07:44 vxrail_smart_bundles
```

## Using the Depot PowerShell cmdlet

### Import depot with latest version

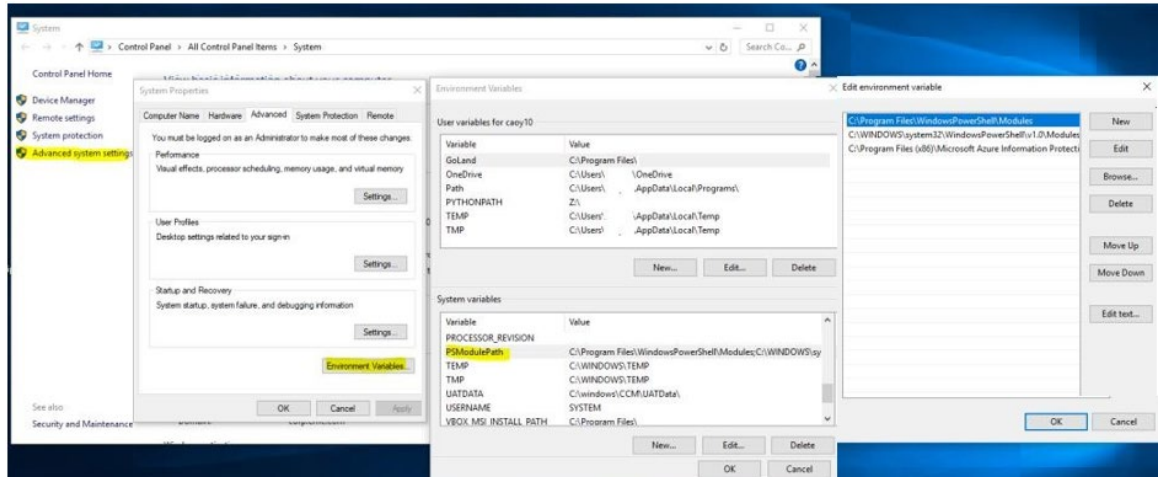
1. Use the Environment Variables Editor in the System Properties dialog box to modify the PSModulePath.
  - If your system environment does NOT have PSModulePath, create a new user environment variable called *PSModulePath*.
  - If the system environment already has PSModulePath, add a new user environment variable into PSModulePath.

For more information see Microsoft's documentation:

<https://docs.microsoft.com/enus/powershell/developer/module/modifying-the-psmodulepath-installation-path>.

2. Ensure that the Depot module is included in the PSModulePath.





3. Run the command **Import-Module VxRail.API.Depot.Edge**.
4. Run the following command to confirm installation:

```
PS C:\Users\user1> Get-Module VxRail.API.Depot.Edge

ModuleType Version      Name                               ExportedCommands
-----
Manifest    1.0.0.0      VxRail.API.Depot.Edge             Send-SMARTBundle

PS C:\Users\user1> 
```

### Create configuration .csv file for all clusters

Create a configuration .csv file in data center side, which contains connection information of target clusters – one cluster for each line. Ensure that the configuration file can be accessed by PowerShell cmdlet. Also ensure that the full composite bundle downloaded in Step 4.3 can be applied to all clusters in this configuration file.

#### Parameters:

1. VxMAddress(Required): Target VxRail Manager IP address
2. VxMPort(Optional): Target VxRail Manager SSH port. If left empty, it will use default value 22.
3. VxMUsername(Required): Username which can use SSH service. Recommend using “mystic” account.
4. VxMPassword(Required): Password for VxMUsername
5. VCAdminUsername(Required): vCenter admin username
6. VCAdminPassword(Required): Password for VCAdminUsername
7. SpeedLimit(Optional): Upload speed limit for this cluster(KB/s), leave empty means no limitation.
8. TargetFolder(Optional): Where the partial bundle is placed in the target cluster. If left empty, it uses the default value “/home/mystic/vxrail\_smart\_bundles”.

### Download full composite bundle to data center

Download full composite bundle from Dell support.

## Send-SMARTBundle cmdlet

Transfer the generated bundles to the remote sites.

- **Syntax**  
Send-SMARTBundle -ConfigFilePath <String> -CompositeBundleFilePath <String> -SmartBundleLocalPath <String> -TaskNum <Int>
- **Parameters**
  - ConfigFilePath  
Required. Path for configuration .csv file.
  - CompositeBundleFilePath  
Required. Path for downloaded full composite bundle.
  - SmartBundleLocalPath  
Required. Path for temporary unpackaging full bundle and repackaging partial bundle.
  - TaskNum  
Required. Uploading task number that will be run simultaneously.
- **Example**  
Send-SMARTBundle -ConfigFilePath  
"C:\Users\user1\Documents\configClusters.csv" -CompositeBundleFilePath  
"C:\Users\user1\Documents\VXRAIL\_COMPOSITE-7.0.350-  
27334001\_for\_7.0.x.zip" -SmartBundleLocalPath "C:\Users\user1\Documents\" -  
TaskNum 2

- For the whole progress, use the PowerShell window message to track message. Or the bundle\_upload.log under C:\Users\<current username>\Documents\VxrailBundleLog.

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\user1> Send-SMARTBundle -ConfigFilePath "C:\Users\user1\Documents\configClusters.csv" -CompositeBundleFilePath
C:\Users\user1\Documents\VXRAIL_COMPOSITE-7.0.350-27334001_for_7.0.x.zip -SmartBundleLocalPath "C:\Users\user1\Documents\" -TaskNum 2
The target disk with tag C left space is : [118GB] Begin to do the process.
Begin upload process. The overall try is 1
Begin to trigger upload for cluster 0-172.16.10.200
Has add upload task for cluster 0-172.16.10.200 to thread pool succesfullv and wait to be triageted by thread pool.
Please check the related log under C:\Users\user1\Documents\VxrailBundleLog
Remaining tasks: 1
```

- For each detailed upload task progress, check the log under C:\Users\<current username>\Documents\VxrailBundleLog. The related log format should be like lcm-upload-<id number>-<VxRail Manager IP (using – instead of >). For example: lcm-upload-0-20-12-112-200.

This PC > Documents > VxrailBundleLog				
Name	Date modified	Type	Size	
bundle_upload	12/21/2021 1:35 PM	Text Document	3 KB	
lcm-upload-0-20-12-112-200	12/21/2021 1:35 PM	Text Document	47 KB	

### Notes:

- Do not use this cmdlet to upload to an IPV6-only target cluster. This cmdlet supports IPV4 environments only in this release.

- The uploading process will not stop until all the clusters that are listed in the configuration file are attempted or you cancel it manually. If the same upload error displays repeatedly, check each related target cluster environment to ensure all the errors are covered.
- The generated logs under C:\Users\<current username>\Documents\VxrailBundleLog will not be deleted automatically. Delete obsolete logs manually.
- The TaskNum parameter affects the local disk volume check for the SmartBundleLocalPath. One uploading task requires 2.5 times the size of the full composite bundle while the cmdlet is running. For example, if one full composite bundle's size is 10 GB. If the TaskNum is set to 2, which means SmartBundleLocalPath folder spare size should be at least  $10 \times 2.5 \times 2 = 50$  GB. Ensure that the SmartBundleLocalPath folder spare size is large enough before running the cmdlet.

## Starting a partial bundle upgrade in edge clusters

### Use PowerShell tool to upgrade from central data center (v4.7.300 or later)

Data center administrators can use the cmdlet Start-LcmUpgrade or Start-LcmPartialUpgrade to perform an upgrade for one cluster. These two cmdlets are contained in VxRail.API.LCM module under VxRail\_API\_PowerShell\_Modules package. You may download it separately and follow the user guide in its package to install it and use it correctly.

After starting the upgrade with above cmdlet, data center administrators can use cmdlet Get-Requests to get the current upgrade progress. The cmdlet is contained in VxRail.API.System module, which is also under VxRail\_API\_PowerShell\_Modules package.

### Use Public API to perform an upgrade (v4.7.300 or later)

Edge cluster administrators can use existed VxRail Manager Public API to perform an upgrade after the data center upload task has finished.

The API documentation is included onboard the VxRail appliance and can be accessed from your host. It contains definitions of the VxRail APIs.

The base URL for the VxRail API (single VxRail cluster only) is:

[https://<VxM\\_IP>/rest/vxm/v1/](https://<VxM_IP>/rest/vxm/v1/). <VxM\_IP> is the network IP address of the VxRail appliance.

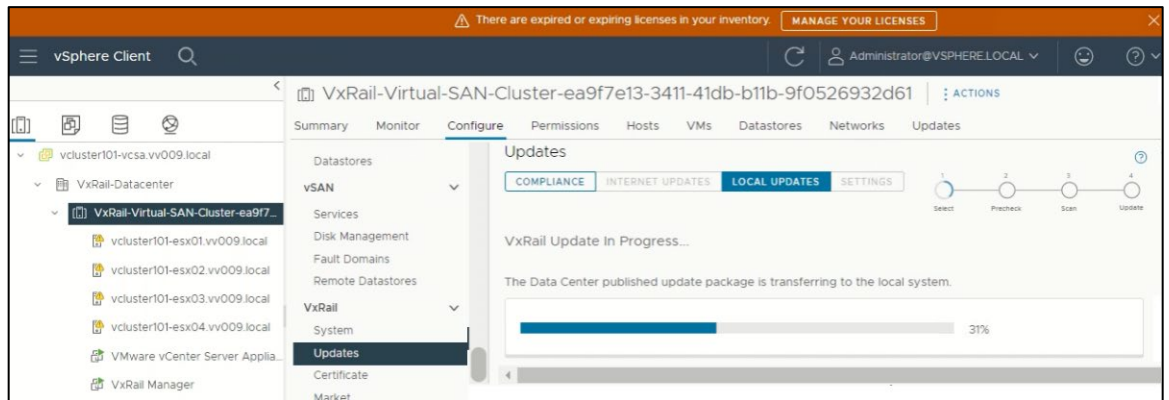
For customer-managed VMware vCenters with multiple clusters, each cluster has its own distinct base URL.

VxRail RESTful API documentation is also available onboard your VxRail appliance in software versions 4.7.300 and later. To access onboard API documentation, enter the following address in a web browser on your host:

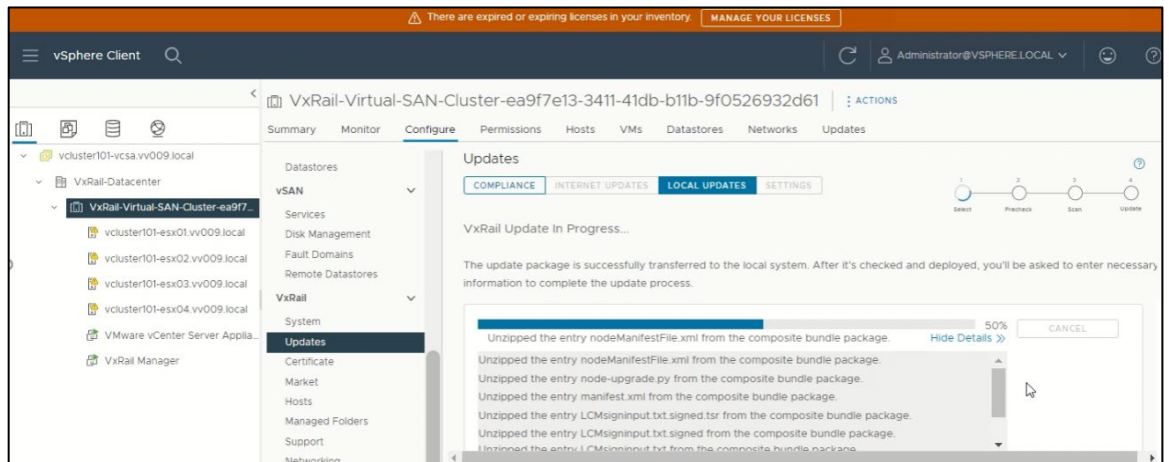
[https://<VxM\\_IP>/rest/vxm/api-doc.html](https://<VxM_IP>/rest/vxm/api-doc.html)

**Use VxRail Manager UI to monitor bundle upload and perform upgrade (v7.0.350 or later)**

When the data center begins to transfer files to a target edge cluster, the edge cluster administrators can open the VxRail Manager UI to see the uploading progress in the “LOCAL UPDATES” tab.



When the uploading completes, VxRail Manager LCM will automatically start the bundle deployment workflow.



After bundle deployment, the UI stops and waits for input of upgrade required specs. Edge cluster administrators can continue the upgrade following the normal local upgrade workflow.

