

# HOL-0301-01 - VxRAIL - SIMPLIFYING IT THROUGH STANDARDIZATION AND AUTOMATION (8.0.000)



# Table of Contents

Lab Overview - HOL-0301-01 - VxRail - Simplifying IT through Standardization and Automation (8.0.000) .....	3
Lab Modules .....	4
Lab Guidance.....	6
Key Solution Benefits .....	9
Module 1 - Getting Started (5-10 min / Basic) .....	12
Getting connected to the lab environment .....	13
Verifying the Current Configuration .....	16
vCenter plug-in for VxRail user interface - a short overview .....	19
Module 2 - Monitoring & Maintenance (15-30 min / Intermediate) .....	27
Monitoring a VxRail Cluster .....	28
Maintaining a VxRail Cluster .....	42
Module Conclusion .....	64
Module 3 - Using the VxRail Public REST API (3-5 min / Advanced) .....	65
VxRail Public REST API Overview.....	66
Module Conclusion .....	71
Module 4 - Add & Update VxRail Satellite Nodes (30-40 min / Intermediate).....	72
Add a VxRail Satellite Node .....	73
Update a VxRail Satellite Node.....	84
Module Conclusion .....	89
Module 5 - Cluster Expansion or Scaling Out (15 min / Intermediate) .....	90
Add Nodes to a Cluster.....	91
Module Conclusion .....	102
Module 6 - Lifecycle Management or LCM (10 min / Intermediate).....	103
VxRail Lifecycle Management Introduction.....	104
Performing the full-stack update of the VxRail System Software .....	106
Module Conclusion .....	122

# **Lab Overview - HOL-0301-01 - VxRail - Simplifying IT through Standardization and Automation (8.0.000)**

# Lab Modules

## Lab Module List:

**Module 1:** [Getting Started](#) (5-10 min / Basic) - The aim of this module is to get the lab up and running and ensure that the environment is ready for the next modules.

- Connect to vCenter
- Verify current configuration
- Access VxRail Manager
- See VxRail Manager plugin user interface - a short overview

**Module 2:** [Monitoring and Maintenance](#) (20-30 min / Intermediate) - In this module we will navigate the VxRail Manager, to become more familiar with the options available to monitor the health indicators of the VxRail cluster. There will also be a number of maintenance tasks, that will show how these functions can simplify the management of your environment.

- Monitoring the health of a VxRail cluster:
  - Check the cluster's overall health
  - Check the health of the nodes
  - Check the individual components of a node
- Maintenance of a VxRail cluster:
  - Add storage (a new disk) to a node
  - Change the name or management IP address of a VxRail node
  - Collect a log bundle of the VxRail cluster
  - Cluster shutdown

**Module 3:** [Using the VxRail Public REST API](#) (3-5 min / Advanced) - This module will introduce to you the VxRail public REST API. With tasks being available in the REST API, it means that there is a choice to perform management in a scripted fashion. This can make cluster management at scale more efficient and shows that you can now, for example, integrate certain VxRail tasks in your automated environment.

**Module 4:** [Add & Update VxRail Satellite Nodes](#) (30-40 min / Intermediate) - In this module you will experience how easy it is to add and perform updates on satellite nodes.

- Add a satellite node linked to the existing VxRail cluster
- Update the satellite node

**Module 5:** [Cluster Expansion or Scaling Out](#) (15-20 min / Intermediate) - In this module you will experience how easy it is to expand the cluster with an extra node.

- Add a node to the existing VxRail Cluster



- Verify cluster state after expansion

**Module 6:** [Lifecycle Management or LCM](#) (5-10\* min / Intermediate) - Lastly, this module will show that providing credentials and a few clicks are all it takes to update VxRail cluster software, firmware, and drivers.

- Update the cluster - Apply a software update bundle to bring it to the next VxRail software version.

\*Does not include the actual update time, which could be 90+ min

## Lab Guidance

This lab is designed to take up to 2 hours to complete, excluding the time needed for the cluster update to complete.

VxRail delivers virtualization, compute, and storage in a scalable, easy-to-manage, hyper-converged infrastructure (HCI). This lab introduces VxRail 8.0.000, which uses VMware vSAN 8.0 with Original Storage Architecture (OSA). OSA is the new term for the vSAN storage architecture that we all come to know since the introduction of vSAN. The new term is necessary because VMware now offers an optional vSAN storage architecture called Express Storage Architecture (ESA) in vSAN 8.0. ESA builds upon the existing vSAN software stack to unlock hardware advancements in the past 10 years such as multi-core processing, increased memory capacity, and NVMe technology. Because the difference in VxRail management for a cluster using vSAN OSA versus a cluster using vSAN ESA is negligible, the lab uses a VxRail cluster with vSAN OSA to minimize the resource footprint.

The lab modules show how easy it is to manage a VxRail cluster. The VxRail Manager UI is integrated in the vSphere Client using a plugin, resulting in a single pane of glass to manage the cluster. To introduce the new VxRail plugin and show where the VxRail functionality can be found, the first module provides a short overview.

In this lab you will gain hands-on experience with the following:

- How to verify the set-up and configuration of the VxRail with vSAN Cluster
- How to use VxRail Manager services to monitor the health of the system
- How to service the hardware, for example add or replace a disk in an existing cluster
- How to expand the cluster by adding a node or satellite node
- How to update cluster or satellite node software

The time for each module varies depending on if you choose to complete all available tasks.

You can use the Table of Contents to quickly access any module.

## Lab Environment

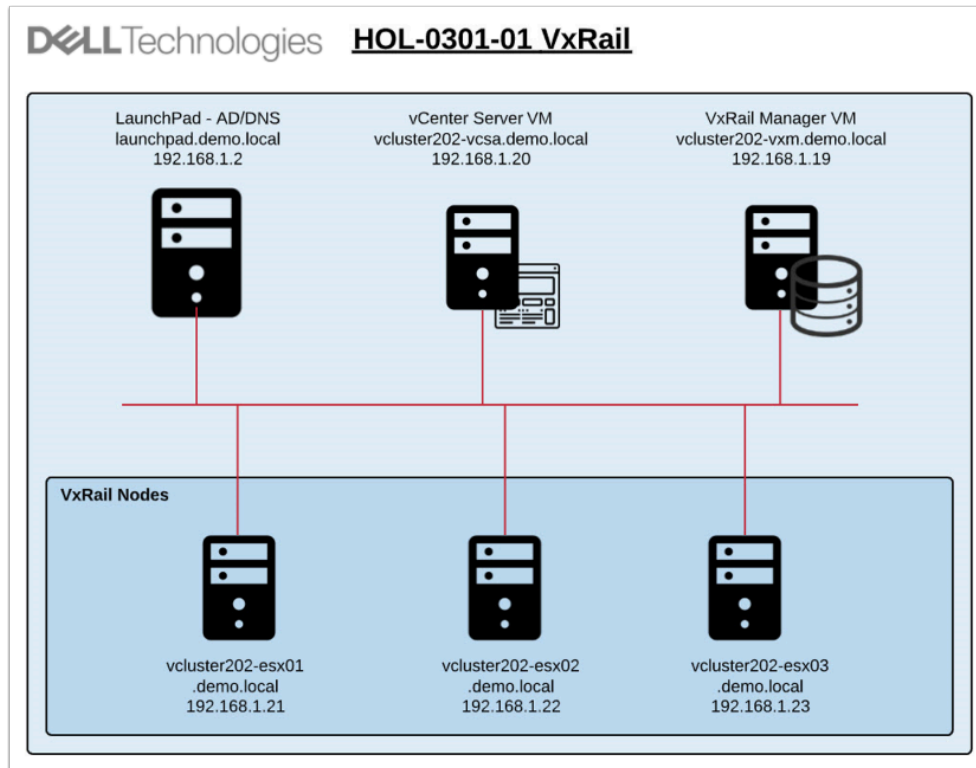
This lab provides you with a hands-on functional experience with VxRail 8.0.000 features. It is not designed to demonstrate the performance of VxRail. It is built on a virtualized VMware environment instead of the normal physical environment, but it provides an operational VxRail cluster.

While production environments would be built on physical VxRail nodes, this lab contains only virtual nodes and relatively low resources. This is done to allow many to enjoy the hands-on labs simultaneously.

## Network Diagram

The general lab layout consists of the following virtual elements:

- 1x Windows Server 2022 client host ("launchpad")
- 1x vCenter Server
- 1x VxRail Manager VM
- 3x VxRail nodes



## Lab Credentials

This table lists the credentials for this lab.

Server / VM / Appliance Name	Use	IP Address / FQDN in DNS	Credentials
VxRail Manager Appliance	OS Login	192.168.1.19 / vcluster202-vxm.demo.local	root / Vxrailtest123! mystic / Testvxrail123!
vCenter Appliance	vSphere Client	192.168.1.20 / vcluster202-vcsa.demo.local	administrator@vsphere.local / P@ssw0rd123!
vCenter Appliance	OS Login	192.168.1.20 / vcluster202-vcsa.demo.local	root / P@ssw0rd123!
ESXi Node 1	VxRail Node	192.168.1.21 / vcluster202-esx01.demo.local	root / P@ssw0rd123!
ESXi Node 2	VxRail Node	192.168.1.22 / vcluster202-esx02.demo.local	root / P@ssw0rd123!

Server / VM / Appliance Name	Use	IP Address / FQDN in DNS	Credentials
ESXi Node 3	VxRail Node	192.168.1.23 / vcluster202-esx03.demo.local	root / P@ssw0rd123!
Satellite Node	Adding Satellite Node	192.168.1.25 / vcluster202-esx05.demo.local	root / Passw0rd!

## Key Solution Benefits

Dell VxRail systems are the standard for simplifying and modernizing VMware environments regardless of where an organization starts or ends their IT transformation. VxRail systems are jointly developed by Dell and VMware and are the only fully integrated, pre-configured, and tested HCI system optimized for VMware vSAN technology for software-defined storage. Managed through the ubiquitous VMware vCenter Server interface, VxRail provides a familiar vSphere experience that enables streamlined deployment and the ability to extend the use of existing IT tools and processes.

VxRail systems offer a choice of PowerEdge servers, powered by latest generation Intel Scalable processors and AMD EPYC processors, variable RAM configurations, and storage capacity, allowing customers to size and buy what they need now. The VxRail system uses a modular, distributed system architecture that starts with as few as two nodes and scales near linearly up to 64 nodes. Single-node scaling and storage capacity expansion provide a predictable, “pay-as-you-grow” approach for future scale up and out as business and user requirements evolve.

## VxRail HCI System Software

VxRail HCI System Software, the VxRail management software, is a strategic advantage for VxRail and further reduces operational complexity. It is the software running atop the vSAN stack and encapsulates much of the key VxRail differentiation over other vSAN Ready Nodes and other HCI solutions in the market. VxRail HCI System Software provides out-of-the-box automation and orchestration for deployment to day-to-day system-based operational tasks, which reduces the overall IT OpEx required to manage the stack. No build-it-yourself HCI solution provides this level of lifecycle management (LCM), automation, and operational simplicity.

It's well understood that a Hyperconverged Infrastructure (HCI) improves efficiency, increases scalability, and lowers costs.

**Amplify these benefits by providing HCI users with...**



Consistent operations  
using native integration



Familiar  
management tools

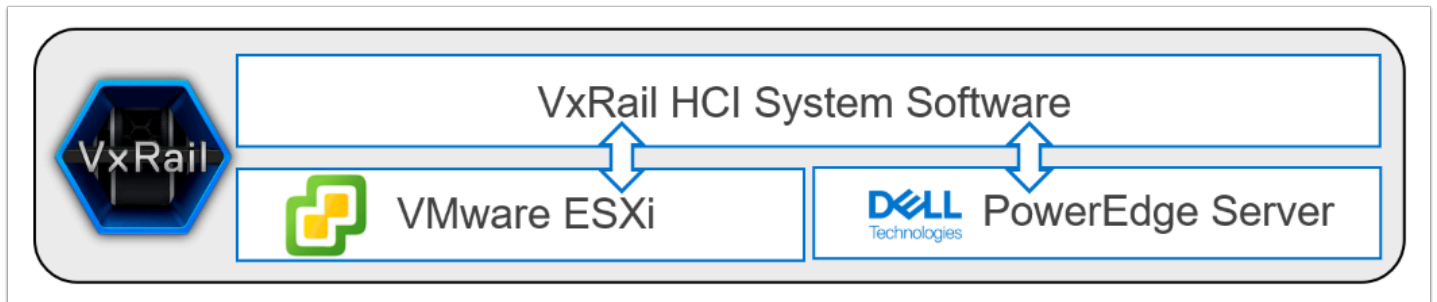


Integrated  
Lifecycle Management  
(LCM)



APIs  
for extensibility

VxRail goes further to deliver more highly differentiated features and benefits based on proprietary VxRail HCI System Software. This unique combination **automates deployment, provides full stack lifecycle management and facilitates critical upstream and downstream integration points** that create a truly better together experience with VxRail as the foundation.



With VxRail HCI System Software, updates are simple and automated with a single-click. Customers can sit back and relax knowing they are going from one continuously validated state to the next, inclusive of all the managed software and PowerEdge server hardware component firmware. No longer do they need to verify hardware compatibility lists, run test and development scenarios, sequence and trial updates, and so on. The heavy lifting of maintaining continuously validated states for the life of the cluster is already done for them. In short, VxRail creates IT certainty.

VxRail cluster management is integrated into the vCenter Server interface via the VxRail Manager plug-in to provide a fully integrated experience that is familiar to VMware users. The benefits of LCM services are extensible using a RESTful API to position the VxRail as the platform of choice for SDDC deployments, Infrastructure as Code (IaC) cloud deployments, or for customers that prefer to manage clusters at scale through scripts or custom automation solutions.

Within VxRail HCI System Software, SaaS multi-cluster management provides global visualization, simplified health monitoring, and multi-cluster management via a cloud-based web portal. These features build upon the LCM services to increase operational efficiency, especially for customers with a large footprint of VxRail clusters and managing at scale has been challenging.



To learn more about the VxRail, please visit: <https://www.delltechnologies.com/vxrail>.

For more technical information about the VxRail advantage, check out the VxRail Interactive Journey experience: <https://infohub.delltechnologies.com/l/related-resources-17/vxrail-interactive-journey>.

## Flexibility and Choice

As the world's most configurable system, VxRail provides extreme flexibility with purpose-built nodes that are designed to address any use case, including big data, analytics, 2D/3D visualization, data inferencing, graphics rendering, or collaboration applications. VxRail systems, built with the latest PowerEdge servers based on latest generation Intel Xeon Scalable processors or 2nd Generation AMD EPYC processors, deliver more predictable high performance. The VxRail family offers Nvidia

GPU optimized, storage dense, high performance computing, and entry level options - to give you the perfect match for your specific HCI workload requirements.

**DELLTechnologies**

A CURATED EXPERIENCE WITH DELL EMC VXRAIL

**CORE TO CORE DEPLOYMENT**

**VXRAIL E SERIES**

The Emerging Platform. The VxRail E Series is built for edge and remote locations. It provides high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads. It is designed for edge and remote locations, providing high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads.

**VxRail E Series Features**

FORM FACTOR	1U
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

**BUSINESS CRITICAL WORKLOADS**

**VXRAIL P SERIES**

The Business Critical Platform. The VxRail P Series is built for business critical workloads. It provides high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads. It is designed for business critical workloads, providing high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads.

**VxRail P Series Features**

FORM FACTOR	Single socket 1U
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

**HYPERSCALE CLOUD**

**VXRAIL Y SERIES**

The HyperScale Platform. The VxRail Y Series is built for hyper-scale workloads. It provides high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads. It is designed for hyper-scale workloads, providing high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads.

**VxRail Y Series Features**

FORM FACTOR	2U
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

**WARM ENVIRONMENTS**

**VXRAIL D SERIES**

The Dense, Short-Depth Platform. The VxRail D Series provides a 32% smaller footprint, which makes it ideal for space-constrained locations and remote, harsh environments. Use cases include mobile command centers, retail POS systems, video surveillance, GPS mapping on the go, and field environments.

**VxRail D Series Features**

FORM FACTOR	1U
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

**CHANGING APPLICATIONS**

**VXRAIL S SERIES**

The Storage Dense Platform. The VxRail S Series is built for dense storage workloads where the storage capacity scales faster than CPU or memory. Use cases include applications such as Microsoft SharePoint, Microsoft Exchange, big data and analytics.

**VxRail S Series Features**

FORM FACTOR	2U
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

**BROAD HCI DEPLOYMENT**

**VXRAIL G SERIES**

The General Purpose Platform. The VxRail G Series is built for general purpose workloads. It provides high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads. It is designed for general purpose workloads, providing high performance computing (HPC), virtual reality (VR), and artificial intelligence (AI) workloads.

**VxRail G Series Features**

FORM FACTOR	2U rack
MEMORY	Up to 16 TB
FORM FACTOR	Single or dual socket up to 16 cores/CPU
CAPACITY	Up to 10 TB or 10 TB 10 TB

# **Module 1 - Getting Started**

## **(5-10 min / Basic)**



# Getting connected to the lab environment

This lesson will set up the connectivity to the lab environment.

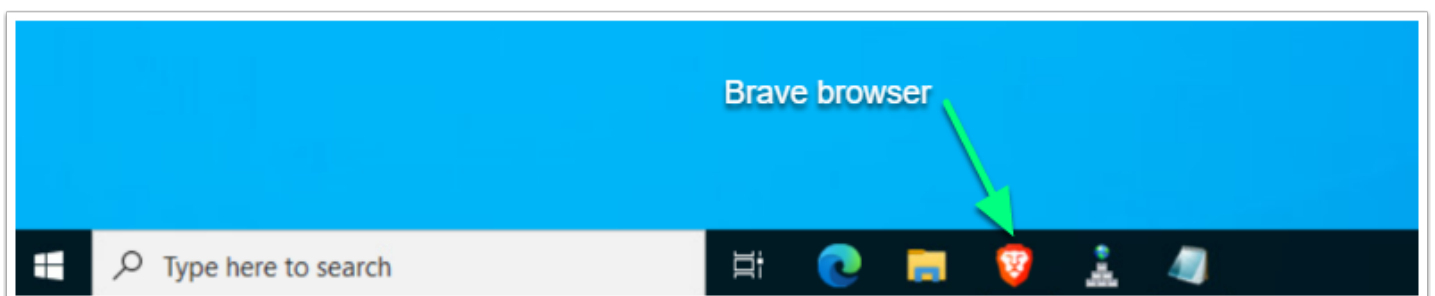
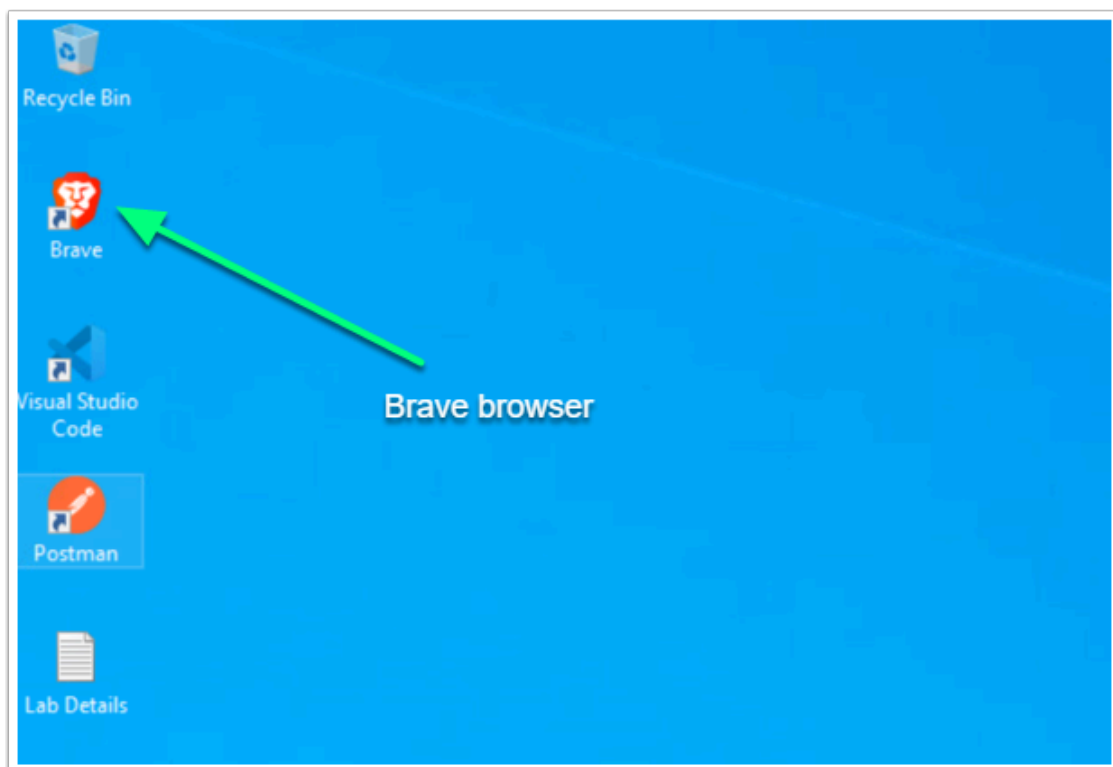
This lab begins immediately after the configuration of the VxRail system, so the cluster is now up and running with 3 nodes.

💡 You can copy and paste text from the manual into the demo environment, by selecting it, followed by drag and drop.

## Step 1 Start the browser

You will use the Brave browser throughout the lab.

Click on the Brave icon located on the Windows Taskbar or on the Desktop.



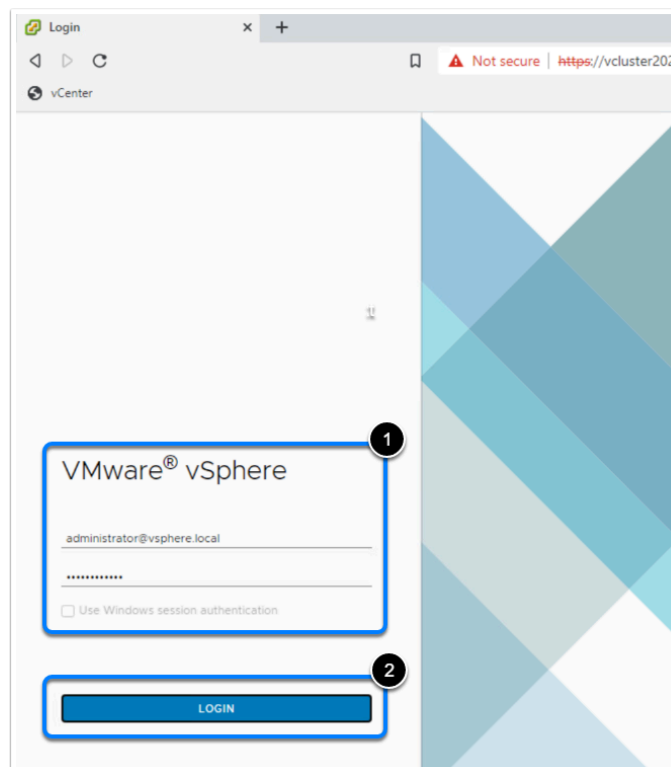
## Step 2 Sign On to the VMware vCenter Server Appliance

The browser now opens the default URL, which is set to the vSphere client UI:

Use the following credentials to login

- User name: **administrator@vsphere.local**
- Password: **P@ssw0rd123!**

Click **Login**

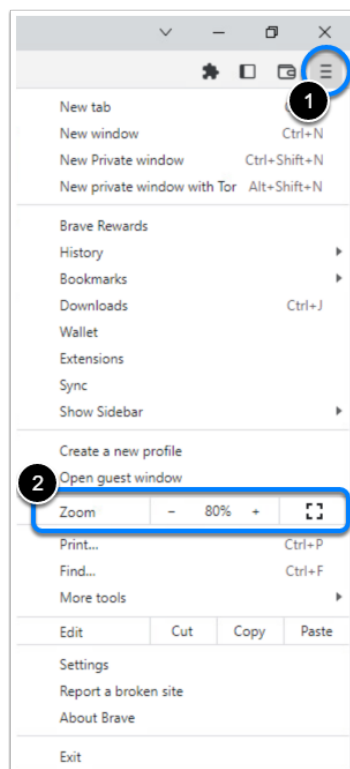


Note: You can always browse to the vSphere UI by simply clicking the **vCenter** bookmark and click the **Launch vSphere Client** button.

## Adjusting the browser UI zoom level

Once logged in, the vSphere UI will present the cluster information on screen. To optimize your viewing experience, the window can be zoomed in or out at any time, to adjust the resolution.

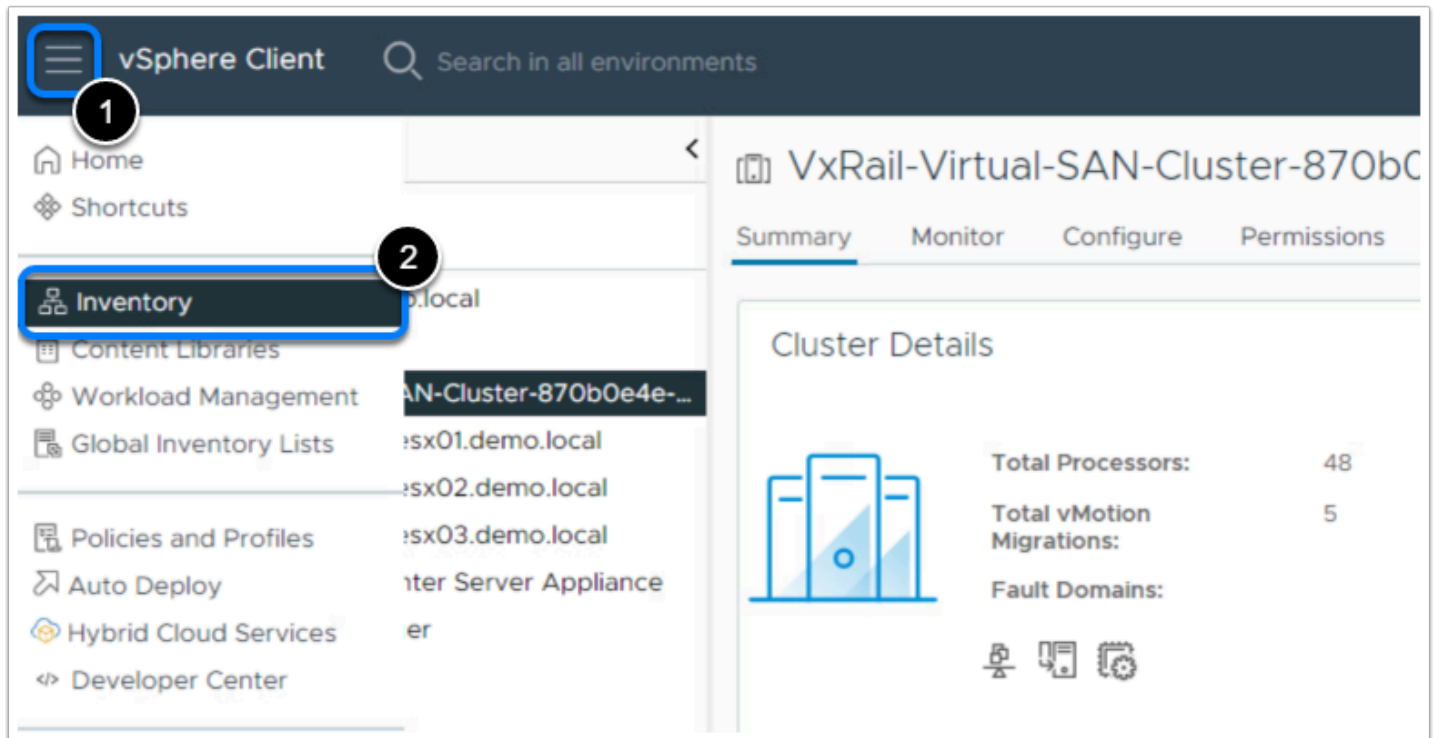
To zoom, click the **Brave menu** button and use the **Zoom Out (-)** or **In (+)** buttons.



# Verifying the Current Configuration

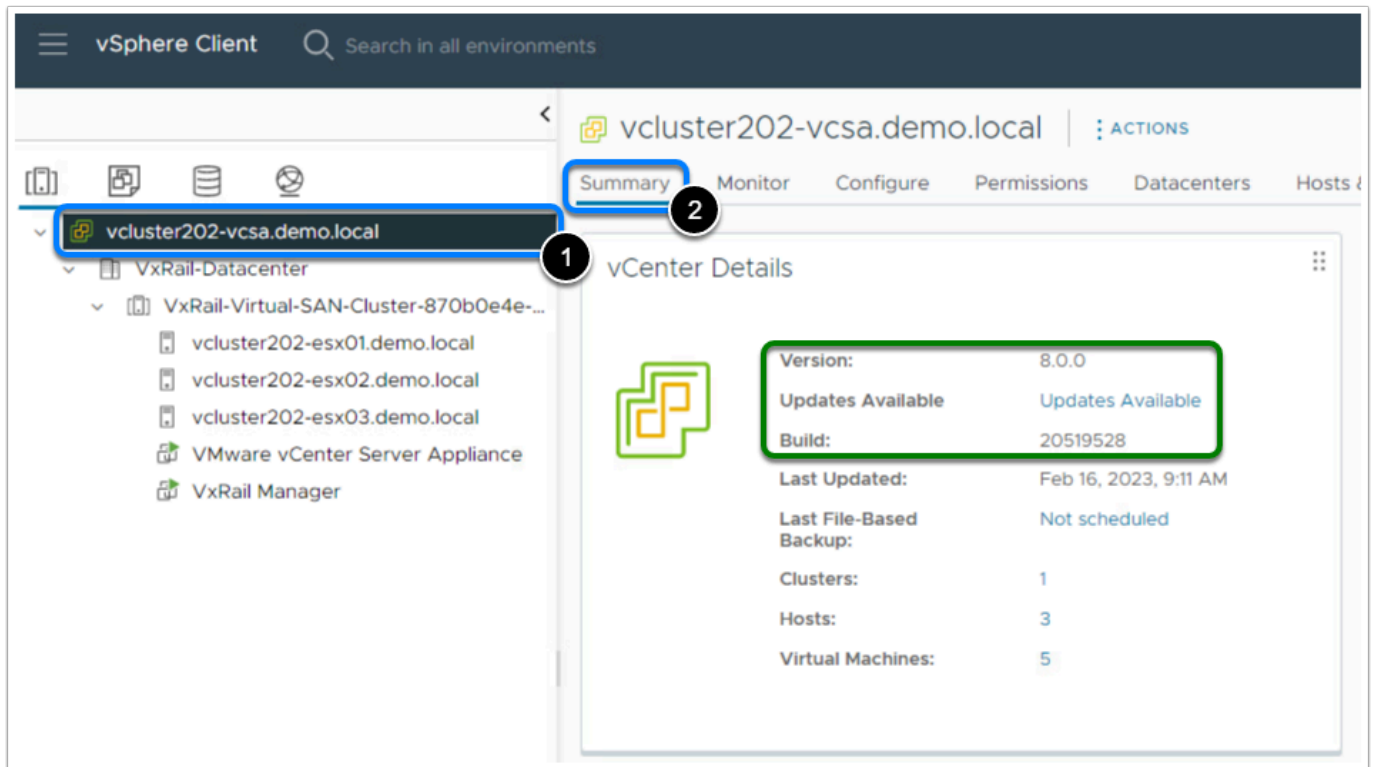
## Verify the vCenter Server version

Where: In the vSphere Client > ☰ > **Inventory**



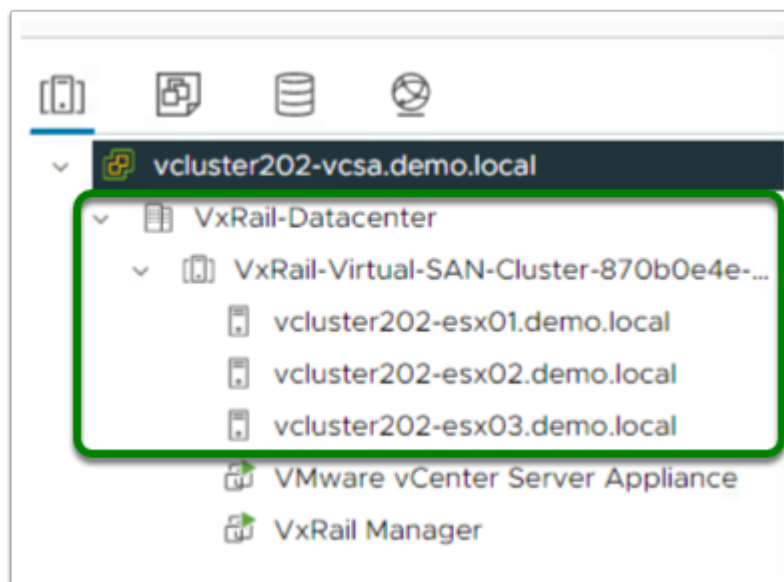
Where: vCenter object **vcluster202-vcsa.demo.local** > **Summary**

Note that the vCenter in this lab environment is running version 8.0.000 Build 20519528:



Now make sure that the vCenter, the datacenter and the vSAN cluster are expanded in the navigation pane on the left. Observe that in vCenter Server **vcluster202-vcasa.demo.local** there is one datacenter **VxRail-Datacenter**, and this datacenter has one cluster, **VxRail-Virtual-SAN-Cluster-xxx**.

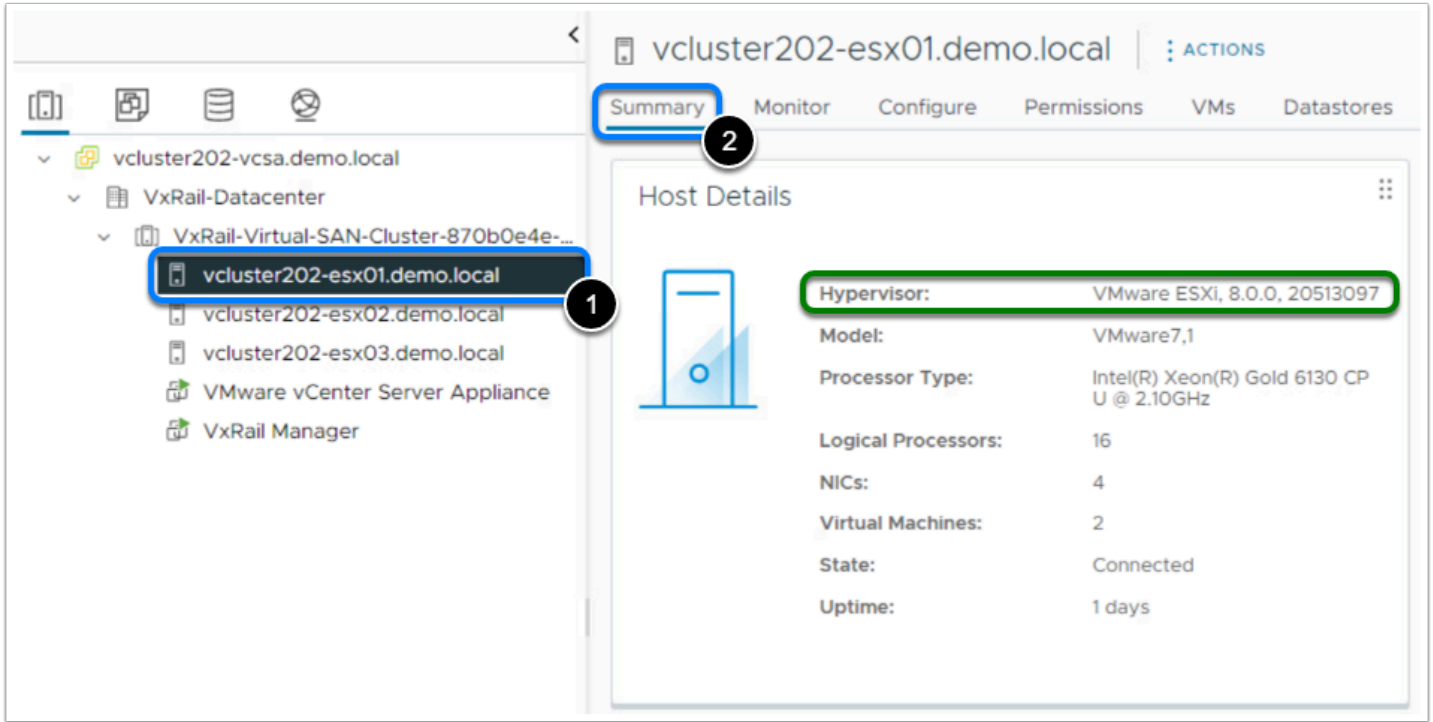
This is the VxRail cluster. This cluster is built as a 3-node cluster. The 3 ESXi hosts are called: **vcluster202-esx##.demo.local** (## is the host number).



## Verify the ESXi hypervisor version

Where: Host **vcluster202-esx##.demo.local** > Summary

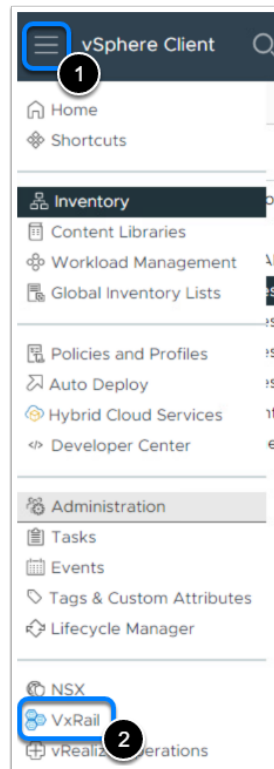
Note that the VxRail nodes in this lab environment are running VMware ESXi version 8.0.0 Build 20513097.



# vCenter plug-in for VxRail user interface - a short overview

## VxRail Dashboard

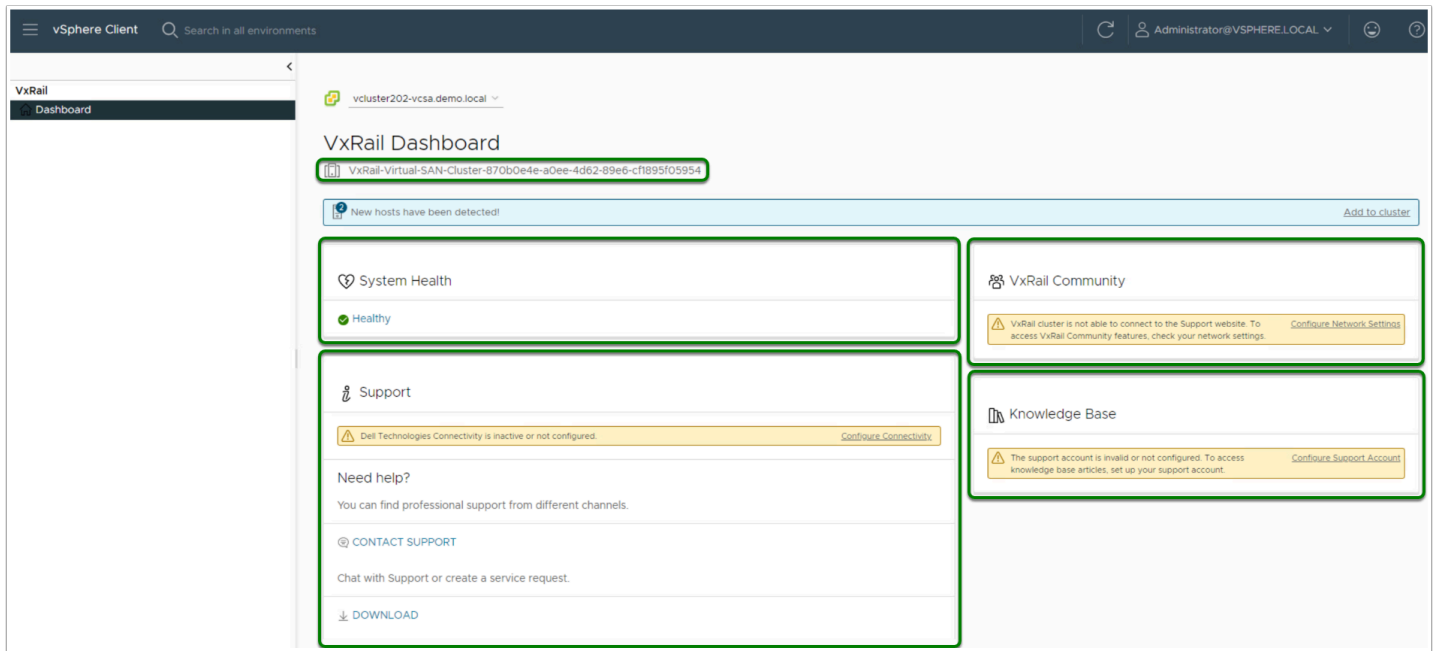
Where: ☰ > **VxRail**



The VxRail dashboard provides the following:

- Cluster Name
- System Health status
- Notification whether any new nodes are available to add to the cluster
- Support links:
  - Chat with support
  - Open a service request
  - Download documentation, KB articles, software, etc.
- VxRail Community info (showing latest items)
- VxRail Knowledge Base info (showing latest items)

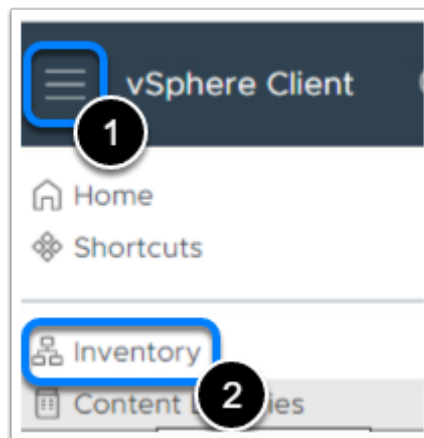
Note that the components that need internet connectivity and/or a support login or Secure Connect Gateway setup are only showing content when these prerequisites are configured. In the above image, there is internet connectivity, but Secure Connect Gateway has not been configured.



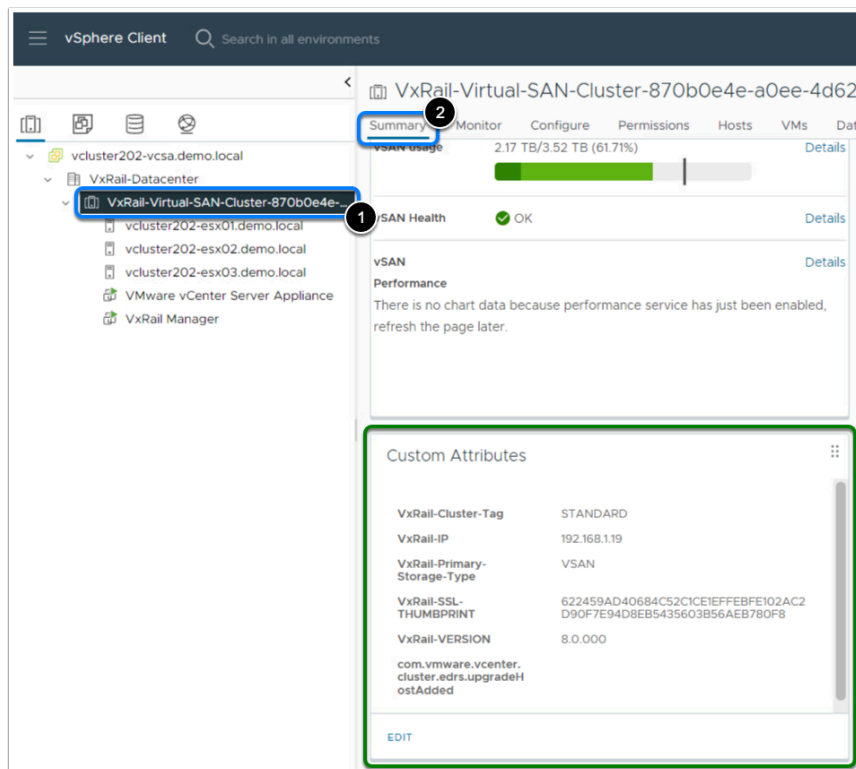
## VxRail Cluster Basics

Where: > **Inventory**

Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Summary** > **Custom Attributes** (pane)





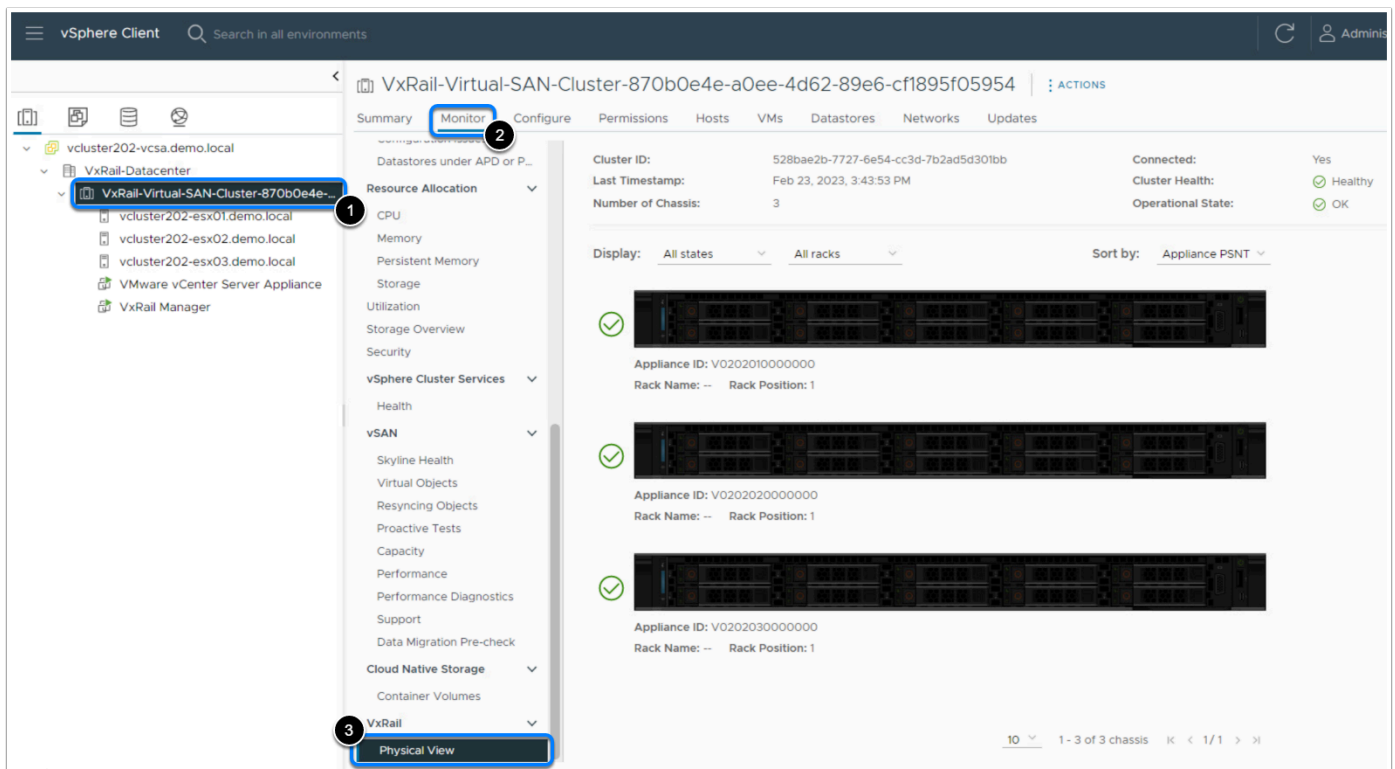


The cluster's custom attributes provide the following VxRail specific information:

- VxRail cluster tag (showing the deployment type)
- VxRail IP address
- VxRail primary storage type
- VxRail SSL thumbprint
- VxRail version

## VxRail Cluster Monitoring

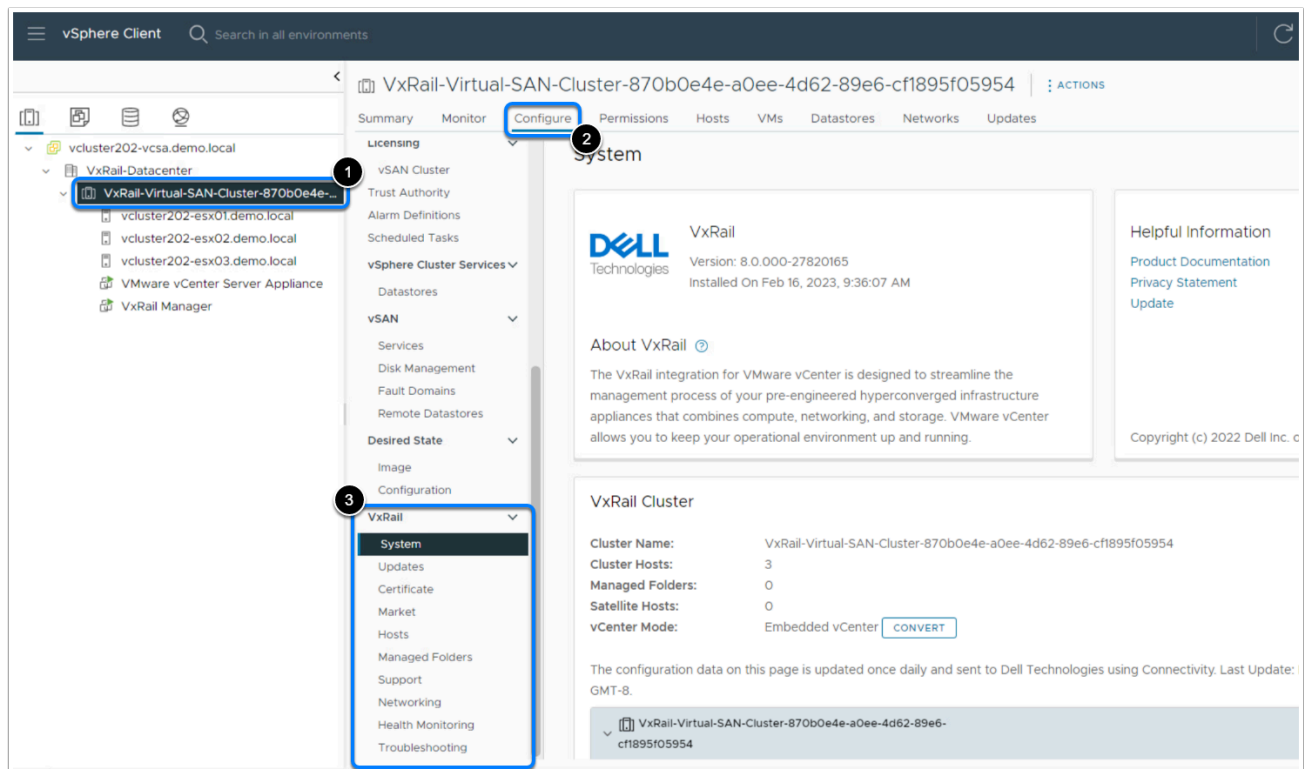
Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Monitor** > **VxRail** > **Physical View**



**Physical View:** A physical view of the cluster. This provides detailed physical component information and node level functions, such as adding a disk, node shutdown and removal of a node from the cluster.

## VxRail Cluster Configuration

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail**



This menu contains the bulk of the functionality and provides the following options:

- **System:**
  - Version and installation date information
  - Links to the product documentation, privacy statement
  - **Update link.** This is a link to the **Updates** entry of the VxRail menu.
  - Convert vCenter Mode. This process can change the vCenter on the cluster from internal/ embedded (VxRail-managed) to external (customer-managed).
  - Shows the last configuration data sent to Dell using the Secure Connect Gateway connection (if configured).
- **Updates:** This is the Lifecycle Management (LCM) page for the VxRail cluster. It will show all component version information and allows for initiating the VxRail LCM functionality (covered in a later module).
- **Certificate:** Update and refresh of the VxRail Manager certificates is supported by the VxRail UI.
- **Market:** The VxRail Market lets you download, install and upgrade qualified software products for your system.
- **Hosts:** Overview of the hosts in the cluster, providing information such as: service tag, appliance id, model, operation status, ESXi host management IP, hostname. Changing the hostname or management IP, adding a host is now possible from this host overview.
- **Managed Folders:** Manage and show information about the satellite nodes.
- **Support:** Shows information about (and allows setting of) the Dell Support Account and the Dell Secure Connect Gateway. It also shows a pane with information about **SaaS multi-cluster management**, which is part of the **VxRail HCI System Software**. SaaS multi-cluster management allows you to monitor and manage (upgrade) all of your VxRail clusters in a centralized cloud-based web interface. This web portal is called CloudIQ. It has a link to the online documentation (the circled question mark button). Clicking the pane (it is a button) will open a browser with the

CloudIQ login page at <https://cloudiq.dell.com/>. (Note that the CloudIQ portal is not available in this Hands-on Lab.)

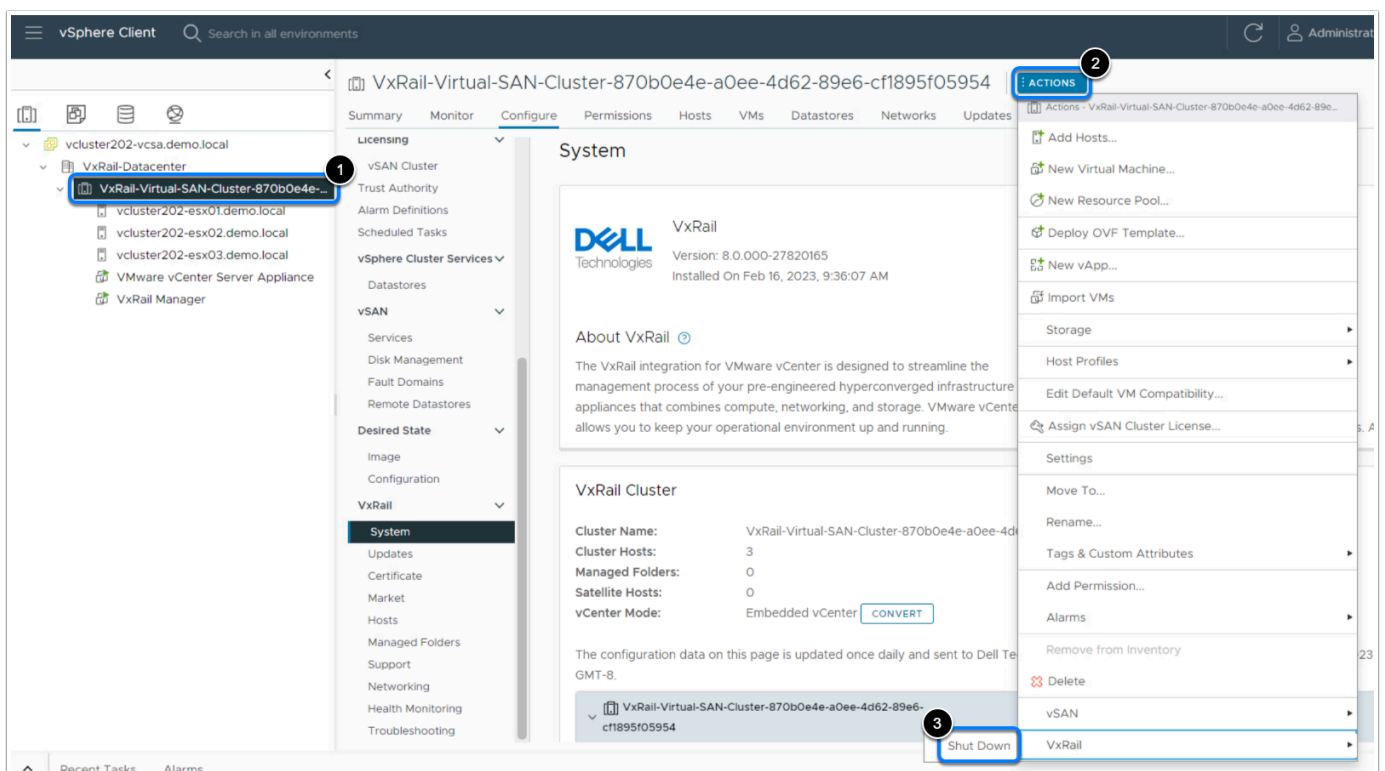
- **Networking:** Allows setting of the Internet Connection Status, Proxy Setting Status and Traffic Throttle Configuration. This last item sets the communication frequency between VxRail Manager and vCenter. This determines how frequent the collected telemetry data gets communicated to the CloudIQ's back-end (via Secure Connect Gateway).
- **Health Monitoring:** Allows enabling/disabling of the VxRail cluster's health monitoring, which can be helpful while certain planned maintenance tasks are performed.
- **Troubleshooting:** Allows creation and download of log bundles for the VxRail cluster. The following data can be collected into a log bundle:
  - VxRail Manager
  - vCenter
  - ESXi\*
  - iDRAC\*
  - PTAgent\*

(\*)These options require selection of which hosts to include.

## VxRail Cluster context actions

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Actions** > **VxRail**

Note: the Actions button is the same in each screen as long as the cluster is selected

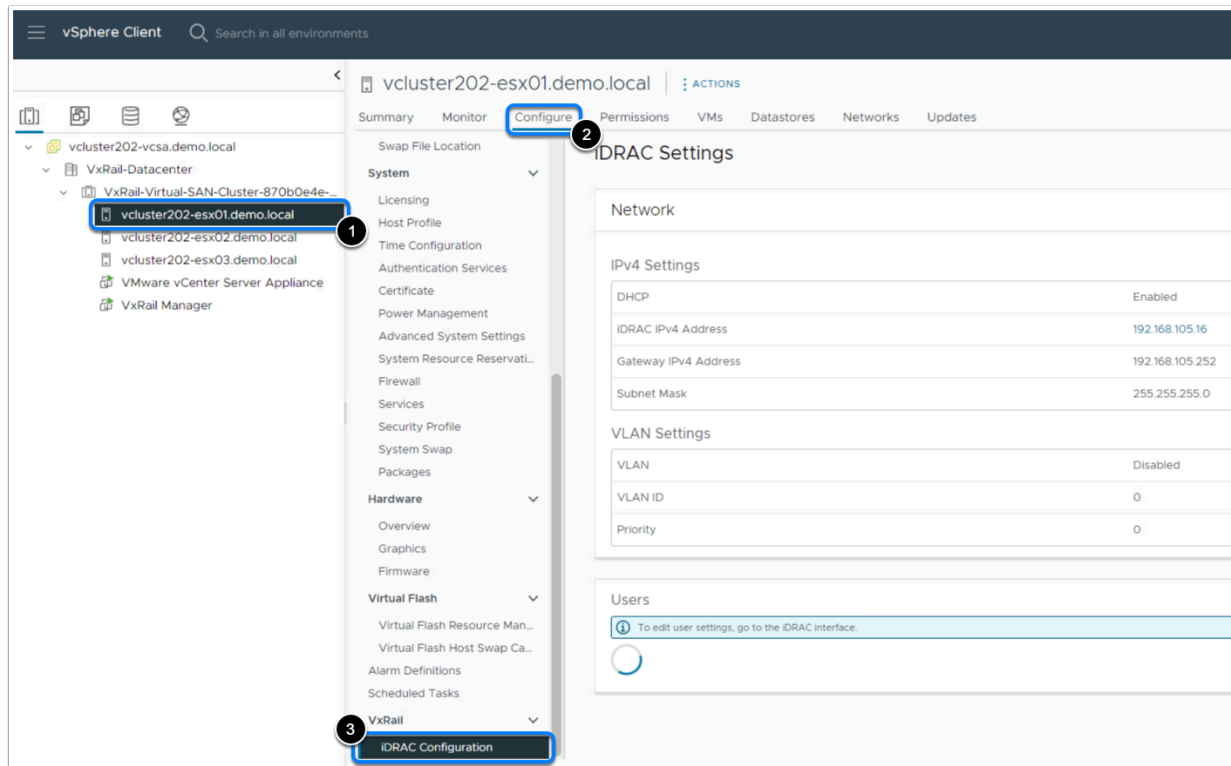


The VxRail cluster actions provide this option:

- **Shutdown:** Allows graceful shutdown of the VxRail cluster.

## VxRail Node Configuration

Where: Host **vcluster202-esx###.demo.local** > **Configure** > **VxRail** > **iDRAC Configuration**

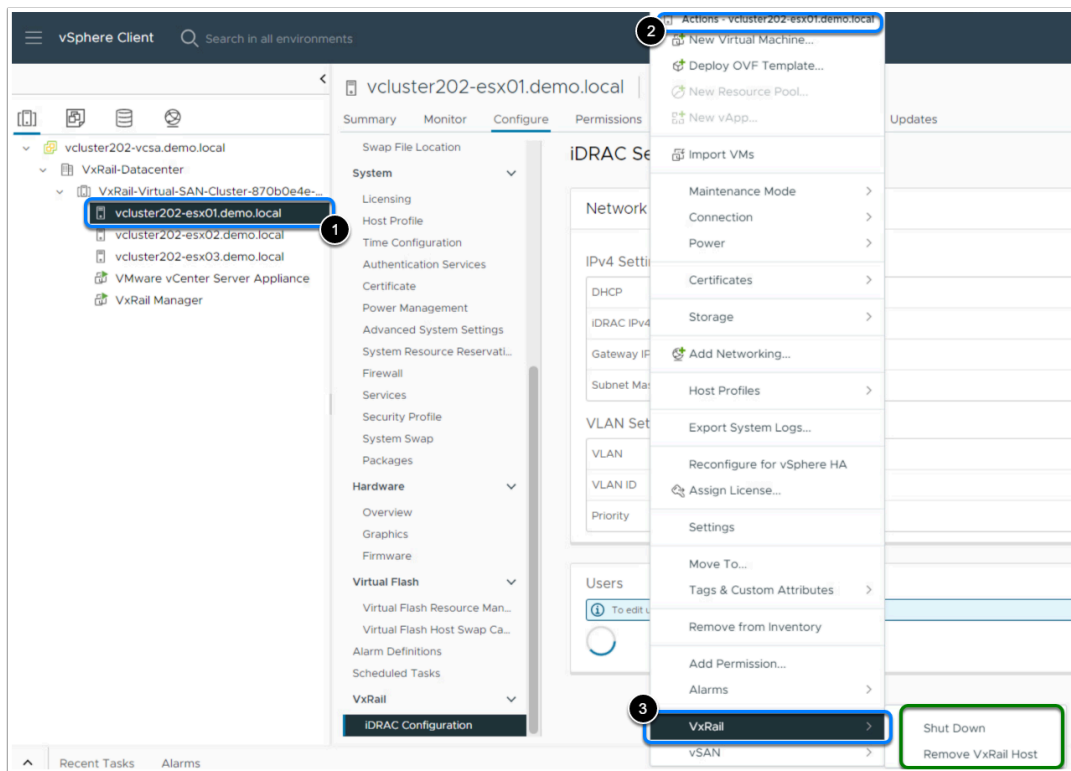


**iDRAC Configuration:** Configure the iDRAC information for this node.

Note that the above screenshot, it won't be able to show any iDRAC Users because this is a virtual environment.

## VxRail Node context actions

Where: Host **vcluster202-esx###.demo.local** > **Actions** > **VxRail**



The VxRail cluster node actions provide the following options:

- **Shutdown:** Shutdown the node.
- **Remove VxRail Host:** Allows the user to remove a node from the cluster.

[Click here to jump straight back to the Lab Modules overview.](#)

# **Module 2 - Monitoring & Maintenance (15-30 min / Intermediate)**

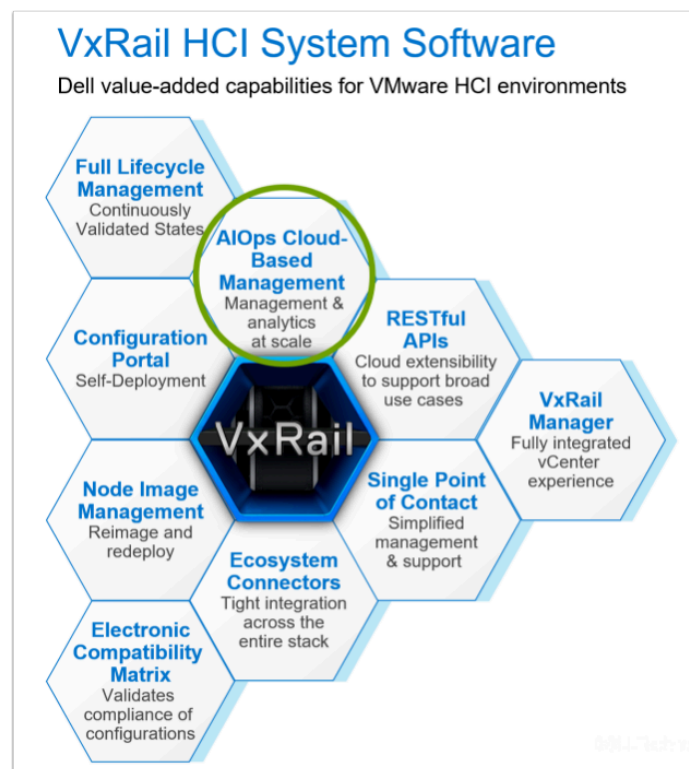
# Monitoring a VxRail Cluster

In this portion of the module we will learn how to monitor the VxRail cluster's health. We will navigate the VxRail Manager to perform the following tasks:

1. Access SaaS multi-cluster management
2. VxRail Manager Dashboard - overall cluster health
3. Cluster Level Physical View
4. Node Level Physical View
5. Component Level Physical View

## Access SaaS multi-cluster management

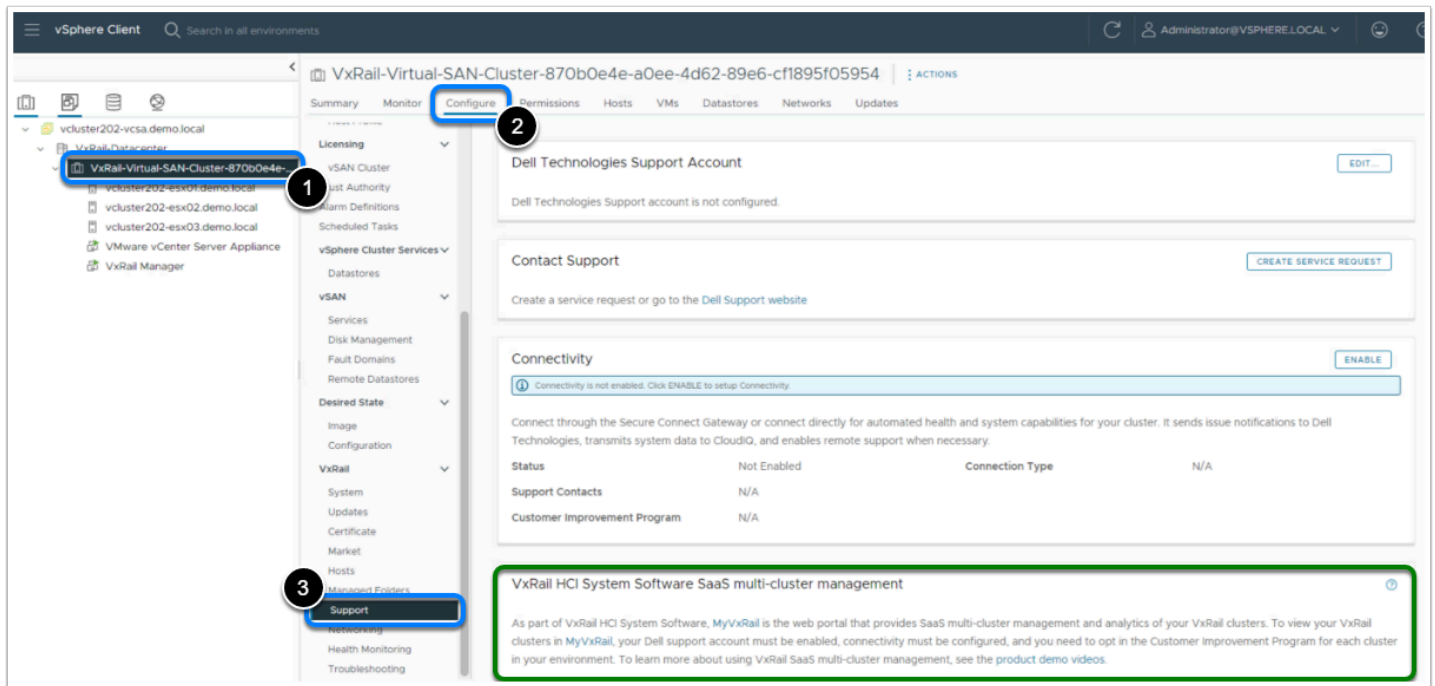
SaaS multi-cluster management, also referred to as AIOps cloud-based management, is one of the components in the VxRail HCI System Software, as shown in the diagram below. It provides you with a cloud-based single pane of glass, to view all your VxRail clusters. So instead having to go to every vCenter Server, or every VxRail Manager individually to view overall system health and capacity details, it provides you a single consolidated view of the entire VxRail estate. The web portal that comes with SaaS multi-cluster management is called CloudIQ.



To access CloudIQ, internet access is required. Unfortunately the portal is not available in this hands-on lab. However, when internet access *is* available, the CloudIQ portal can be accessed using either of the following ways:

- Open a browser and go to the following URL: <https://cloudiq.dell.com>
- Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Support**

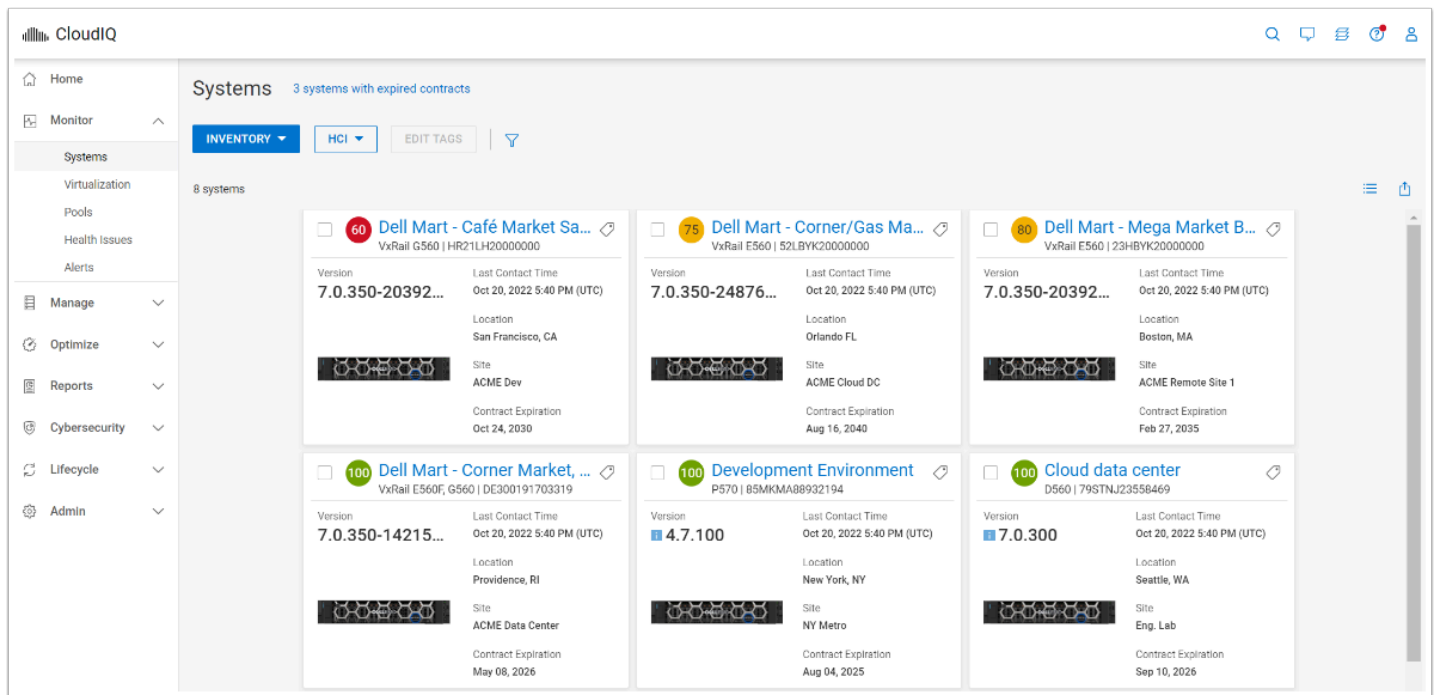




The area is one big button. When the VxRail is connected to the internet, you can simply click it, which will open the browser and show the CloudIQ portal.

**Note:** The UI still has references to MyVxRail which was the web portal for VxRail SaaS multi-cluster management. Now that MyVxRail has been retired, the latest versions of VxRail has references to CloudIQ and provides a link to its web portal.

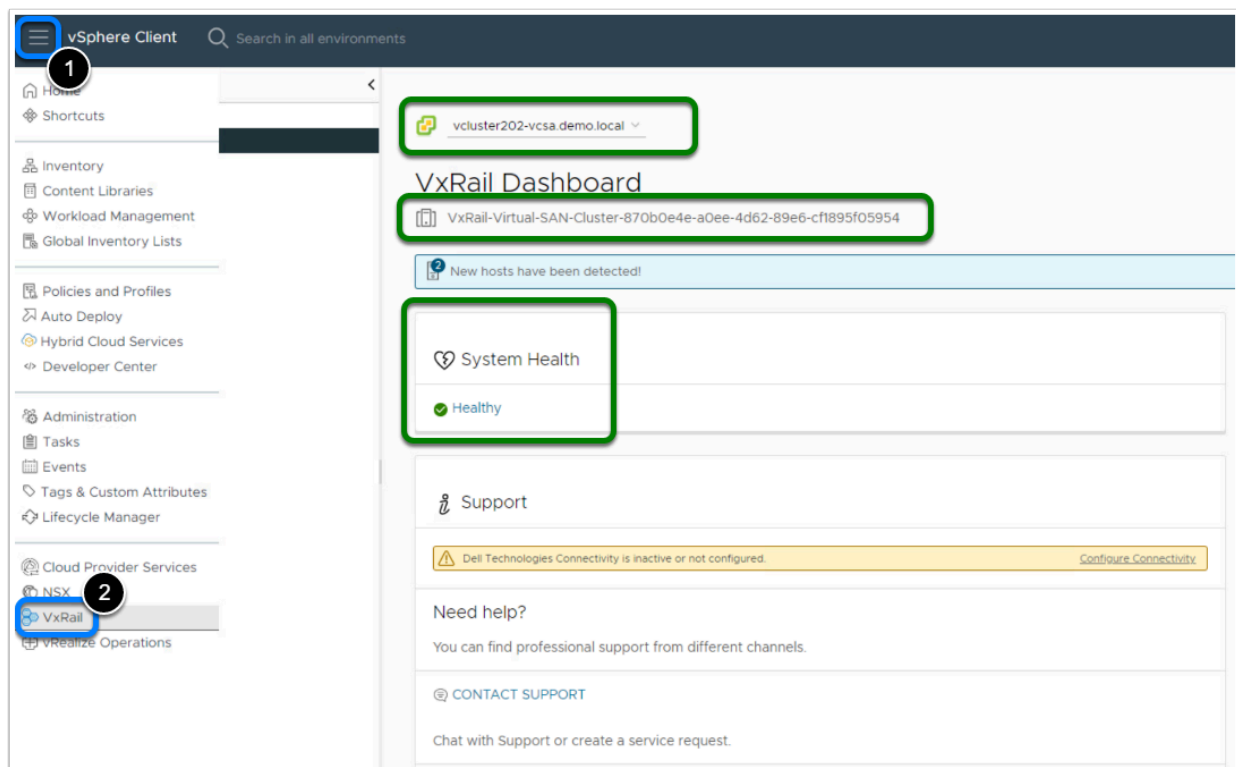
An example of the CloudIQ portal UI (HCI System Inventory view) is shown below.



## VxRail Manager Dashboard - overall cluster health

To check the cluster's overall health, we can use the VxRail dashboard.

Where: > VxRail



The dashboard shows the VxRail cluster state in a glance:

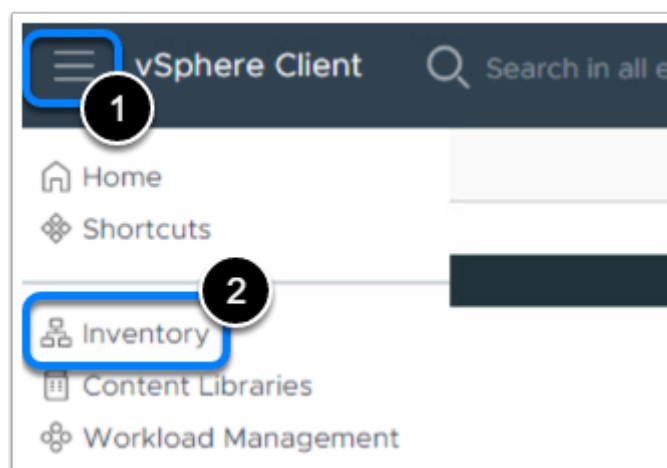
- The vCenter Server that manages the VxRail cluster: **vcluster202-vcsa.demo.local**
- The name of the VxRail cluster: **VxRail-Virtual-SAN-Cluster-xxxx**
- If any new hosts are available: the dashboard shows a new host has been detected for node expansion
- The overall system health: the cluster is currently healthy

**i** We will expand the cluster with the available new host in the next module.

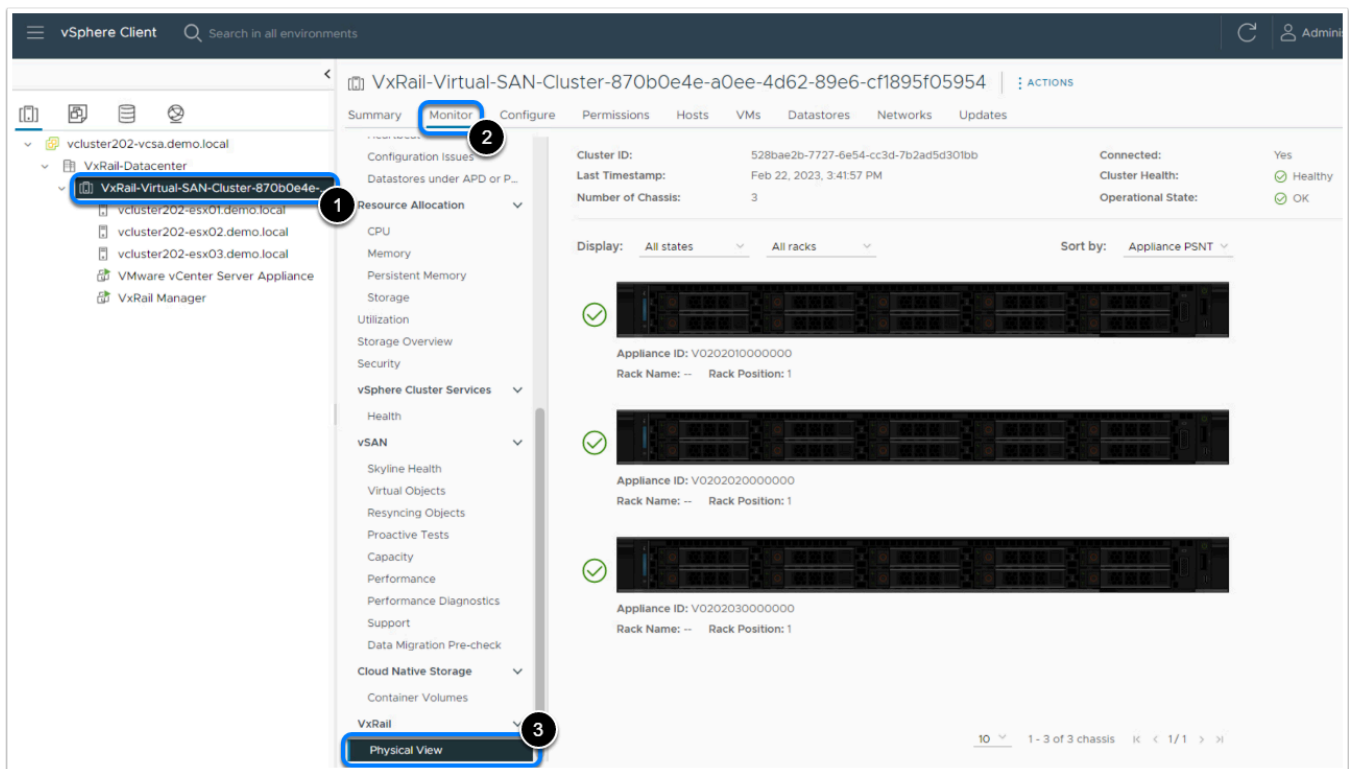
## Cluster Level Physical View

You can monitor the physical view of your cluster right here in the vSphere Client, using the VxRail Manager plugin.

First navigate back to the **inventory** view.



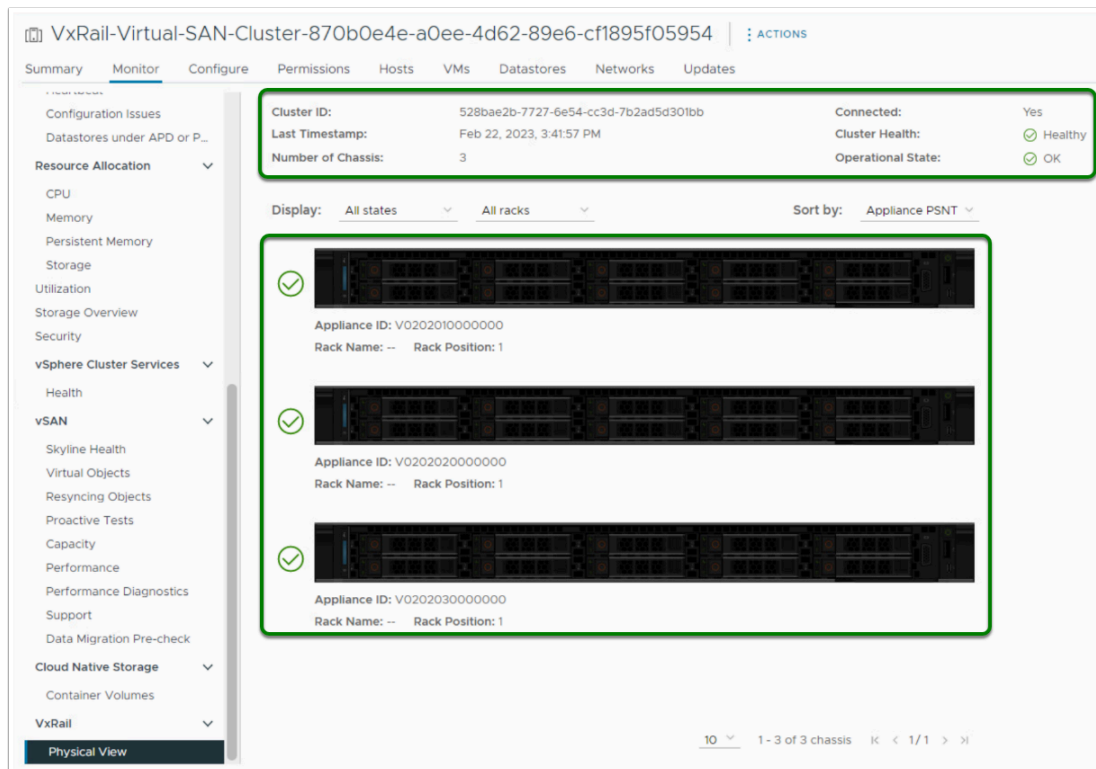
Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Monitor** > **VxRail** > **Physical View**



The upper part of the Physical View pane shows the high level **cluster information**:

- Cluster ID
- Connected
- Last Timestamp
- Cluster Health
- Number of Chassis
- Operational State

Below this information, we can see a visual image of each physical host, with its Appliance ID.



Click on the image of any host to see its high level **node information**, showing the following:

- Service Tag
- Appliance ID
- Appliance PSNT
- Host PSNT
- Model
- ESXi IP Address
- iDRAC IP Address
- Any alerts found

You can see in the selected node's detail information that this is a **VxRail E660**. This is a VxRail model based on **15th generation Dell PowerEdge** servers.

VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

Summary Monitor Configure Permissions Hosts VMs Datastores Networks Updates

Cluster ID: 528bae2b-7727-6e54-cc3d-7b2ad5d301bb  
 Last Timestamp: Feb 22, 2023, 3:41:57 PM  
 Number of Chassis: 3

Connected: Yes  
 Cluster Health: Healthy  
 Operational State: OK

Display: All states All racks Sort by: Appliance PSNT

Hostname: vcluster202-esx01.demo.local  
 Rack Name: -- Rack Position: 1

Appliance ID: V0202020000000  
 Rack Name: -- Rack Position: 1

Appliance ID: V0202030000000  
 Rack Name: -- Rack Position: 1

vcluster202-esx01.demo.local

Service Tag: V020201  
 Appliance ID: V0202010000000  
 Appliance PSNT: V0202010000000  
 Host PSNT: V0202010000000  
 Model: VxRail E660  
 ESXi IPv4 address: 192.168.1.21  
 iDRAC IPv4 address: 192.168.105.16

All Warning

VXR018004 Feb 16, 2023, 5:39:34 PM  
 Host memory usage - Yellow  
 Action: No suggested action.

## Node Level Physical View

To see more detailed information for a node, click **ACTIONS** > **View Host Details**.

Display: All states All racks Sort by: Appliance PSNT

Hostname: vcluster202-esx01.demo.local  
 Rack Name: -- Rack Position: 1

Appliance ID: V0202020000000  
 Rack Name: -- Rack Position: 1

Appliance ID: V0202030000000  
 Rack Name: -- Rack Position: 1

vcluster202-esx01.demo.local

Service Tag: V020201  
 Appliance ID: V0202010000000  
 Appliance PSNT: V0202010000000  
 Host PSNT: V0202010000000  
 Model: VxRail E660  
 ESXi IPv4 address: 192.168.1.21  
 iDRAC IPv4 address: 192.168.105.16

All Warning

VXR018004 Feb 16, 2023, 5:39:34 PM  
 Host memory usage - Yellow  
 Action: No suggested action.

ACTIONS

View Host Details

Enable System LED

Shutdown Host

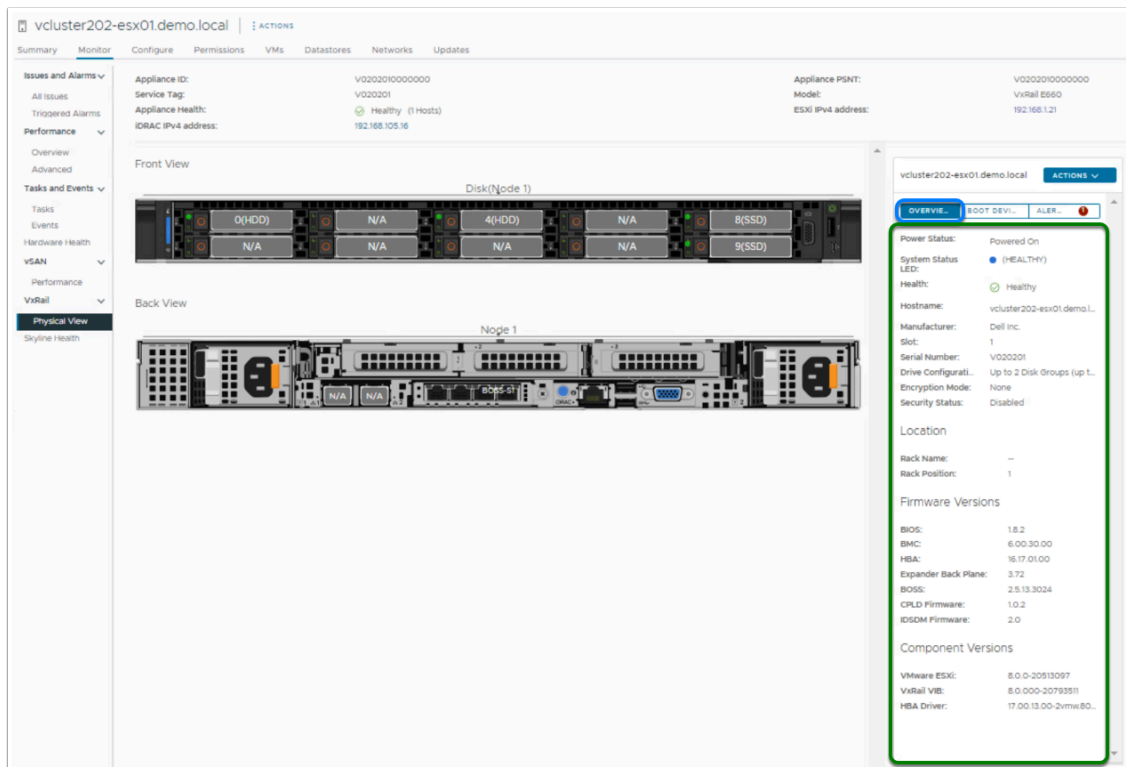
Edit Host Location

Add Disk

Remove Host from vCenter

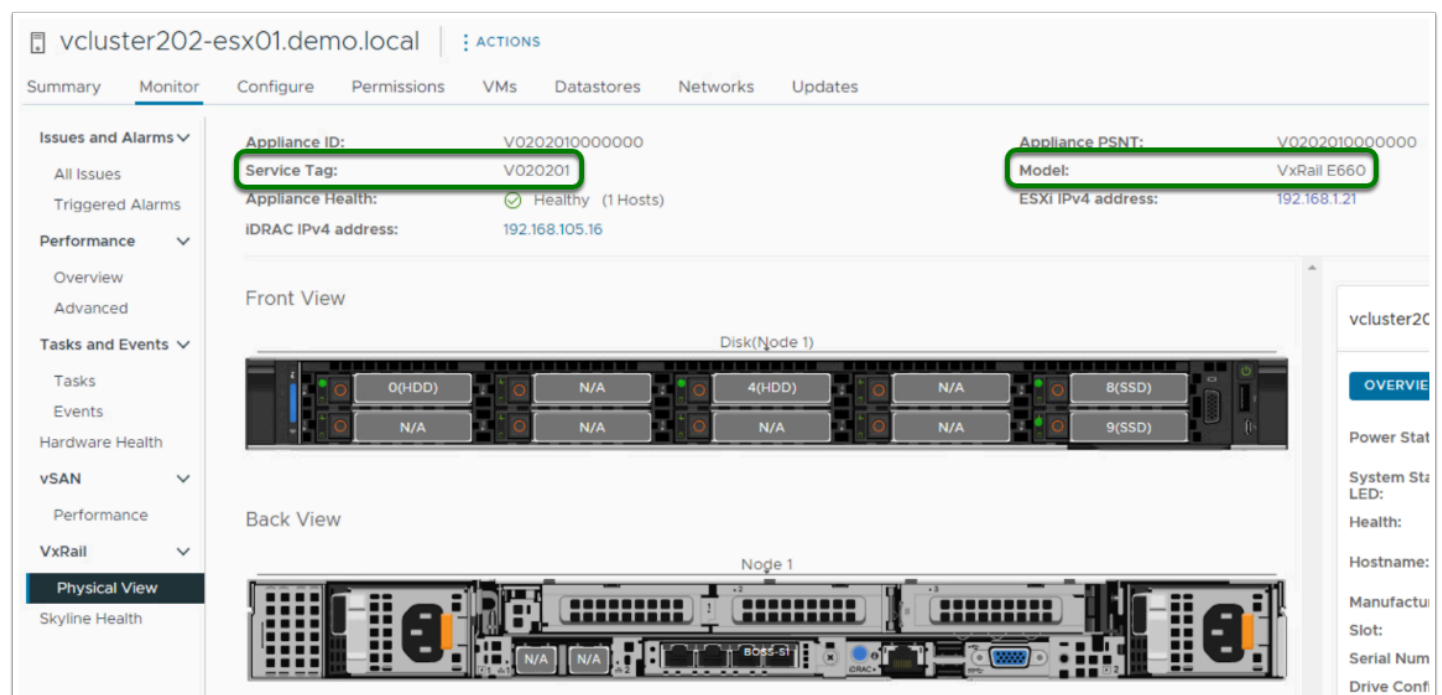
The vSphere Client now changes focus to Host **vcluster202-esx##.demo.local** > **Monitor** > **VxRail** > **Physical View**. This displays the host's detail information again. A graphical representation of the node in your cluster makes it easy to navigate for event and status information.

It now also shows more detailed information in the **Overview** tab, such as firmware and component versions. Having this so easily available right there in the vSphere Client makes it so much easier for an administrator to look-up or check when needed.



In the upper area of the screen you can see **Service Tag: V020201** and **Model: VxRail E660**

In case of problems with any of the "Customer Replaceable" hardware components, the failed component is highlighted to facilitate identification.



You can drill down on a node, to see more detailed information for components such as disks, NIC ports, and power supplies. Simply click the desired component and a pane with its details will show up.

For example, after clicking the disk in slot 0:

The screenshot shows the Dell vCenter interface for a node named 'vcluster202-esx01.demo.local'. The left sidebar contains navigation options: Issues and Alarms, Performance, Tasks and Events, vSAN, VxRail, and Physical View (selected). The main area displays the 'Physical View' of 'Node 1'. It includes a 'Front View' showing disk slots (0(HDD), 4(HDD), 8(SSD), 9(SSD)) and a 'Back View' showing the server chassis. A 'Disk Information' pane is open, showing details for disk '0 (HDD)'. The pane has tabs for 'INFORMATION' and 'ALERTS'. The 'INFORMATION' tab is active, displaying the following data:

Property	Value	Property	Value
Status LED:	● (HEALTHY)	Health:	Healthy
Serial Number:	V020201DVSNOO	Manufacturer:	SAMSUNG
Slot:	0	Model:	MZLSIT9HEJH0D3
Protocol:	SAS	Slot Claimed As:	vSAN
Disk Type:	HDD	GUID:	6000c2987013ba2702dbe8027a98c290
Capacity:	600.0GB	Firmware Revision:	DSLA
Encryption Ability:	None	Encryption Status:	Unencrypted

Note that both the node level information pane as well as the component (in this case: disk) level information pane each have **Actions** button drop-downs.



Front View

Back View

Disk Information

INFORMATION	ALERTS
Status LED:	(HEALTHY)
Serial Number:	V020201DVSN00
Slot:	0
Protocol:	SAS
Disk Type:	HDD
Capacity:	600.0GB
Encryption Ability:	None
Health:	Healthy
Manufacturer:	SAMSUNG
Model:	MZLSIT9HEJH003
Slot Claimed As:	vSAN
GUID:	6000c2987013ba2702dbe8027d98c290
Firmware Revision:	DSLA
Encryption Status:	Unencrypted

System Status: Powered On  
System Status LED: (HEALTHY)  
Health: Healthy  
Hostname: vcluster202-esx01.demo.local  
Manufacturer: Dell Inc.  
Slot: 1  
Serial Number: V020201  
Drive Configurati... Up to 2 Disk Groups (up to...  
Encryption Mode: None  
Security Status: Disabled  
Location  
Rack Name: --  
Rack Position: 1  
Firmware Versions  
BIOS: 1.8.2  
BMC: 6.00.30.00  
HBA: 16.17.01.00  
Expander Back Plane: 3.72  
BOSS: 2.5.13.3024  
CPLD Firmware: 1.0.2  
iSDM Firmware: 2.0

Each information pane also has multiple tabs. The main tab, called **Overview** or **Information**, will show detail information for the node or component. There is also an **Alerts** tab, which will show any alerts that are found. For each node, there will also be a Boot Device tab, showing all information for the boot device.

Front View

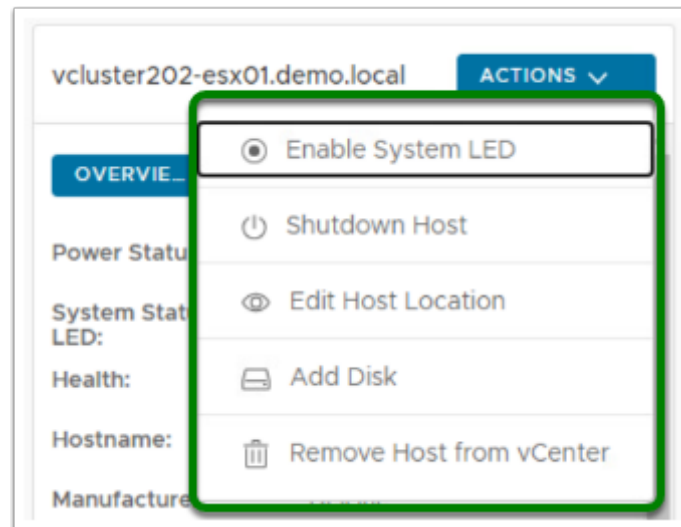
Back View

Disk Information

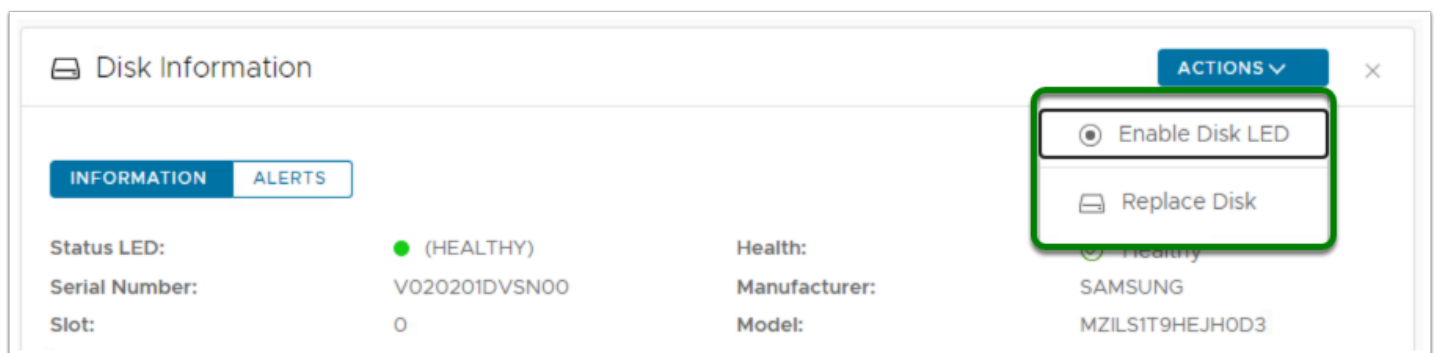
INFORMATION	ALERTS
Status LED:	(HEALTHY)
Serial Number:	V020201DVSN00
Slot:	0
Protocol:	SAS
Disk Type:	HDD
Capacity:	600.0GB
Encryption Ability:	None
Health:	Healthy
Manufacturer:	SAMSUNG
Model:	MZLSIT9HEJH003
Slot Claimed As:	vSAN
GUID:	6000c2987013ba2702dbe8027d98c290
Firmware Revision:	DSLA
Encryption Status:	Unencrypted

System Status: Powered On  
System Status LED: (HEALTHY)  
Health: Healthy  
Hostname: vcluster202-esx01.demo.local  
Manufacturer: Dell Inc.  
Slot: 1  
Serial Number: V020201  
Drive Configurati... Up to 2 Disk Groups (up to...  
Encryption Mode: None  
Security Status: Disabled  
Location  
Rack Name: --  
Rack Position: 1  
Firmware Versions  
BIOS: 1.8.2  
BMC: 6.00.30.00  
HBA: 16.17.01.00  
Expander Back Plane: 3.72  
BOSS: 2.5.13.3024  
CPLD Firmware: 1.0.2  
iSDM Firmware: 2.0

The Actions drop-down will only show actions relevant to the particular item type it belongs to. So for example the node drop-down will show node type actions:



If instead the disk actions button is selected, the drop-down will show disk type actions:



## Component Level Physical View

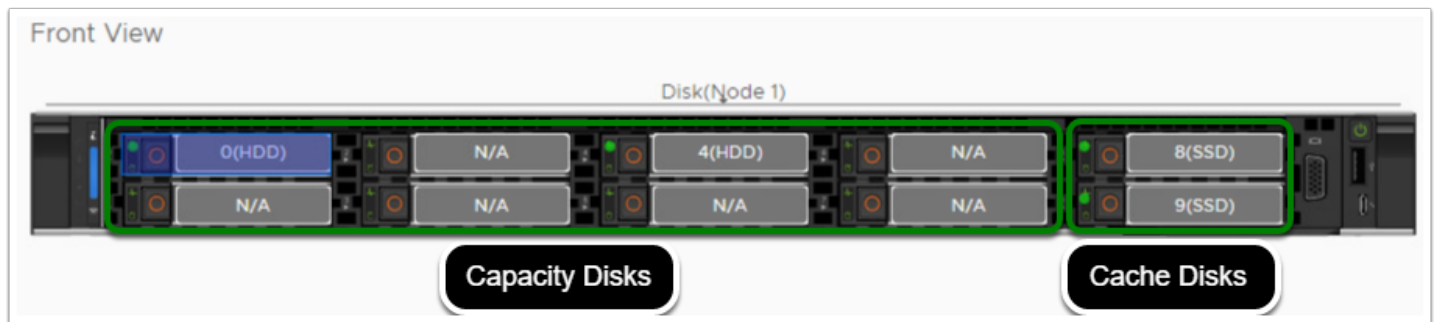
The **front view** provides disk drive information.

To simplify serviceability, VxRail running vSAN Original Storage Architecture has pre-defined slots for the capacity drives as well as cache drives of each disk group.

In the E660 models there can be up to 2 Disk Groups per node with a maximum of 4 capacity disks per group.

The first 8 slots that we see in the front view image are reserved for capacity drives and the last 2 slots are reserved for cache drives.

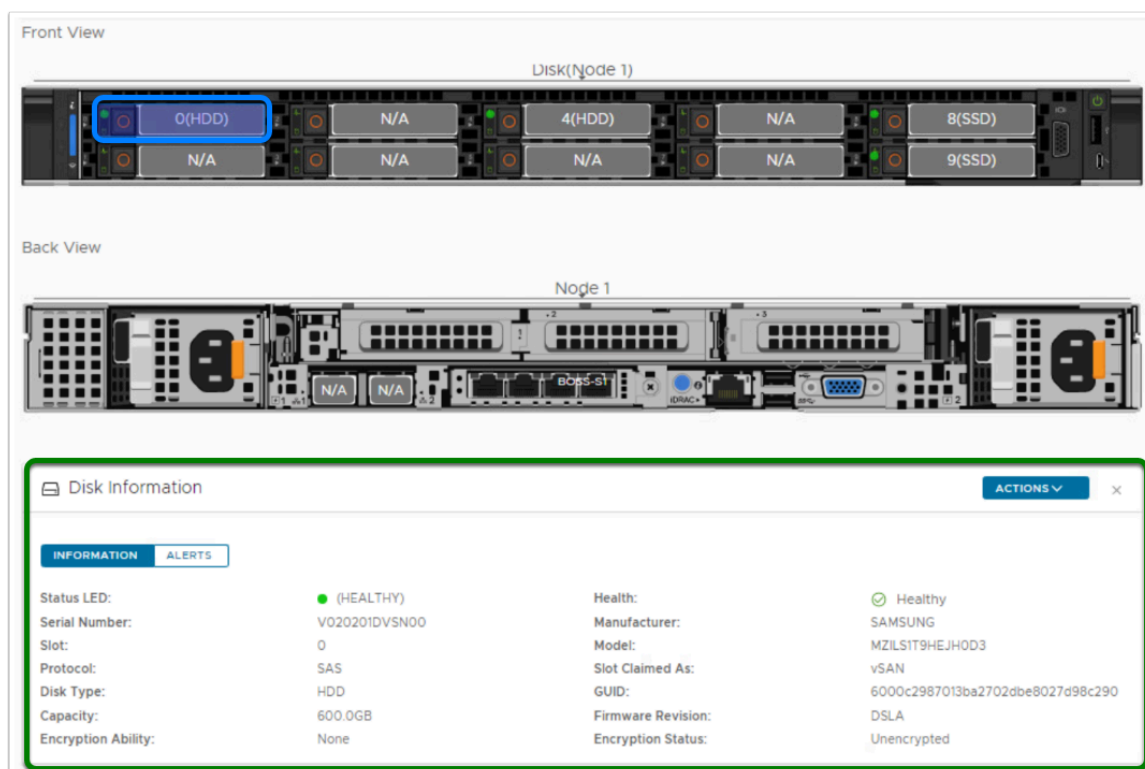
You can observe that you only have 1 capacity disk in your first disk group, and the cache disk slot for disk group 1 (slot 8) is populated.



## Component Level - Front View - Capacity drives

Click on the **slot 0 disk** to see its details.

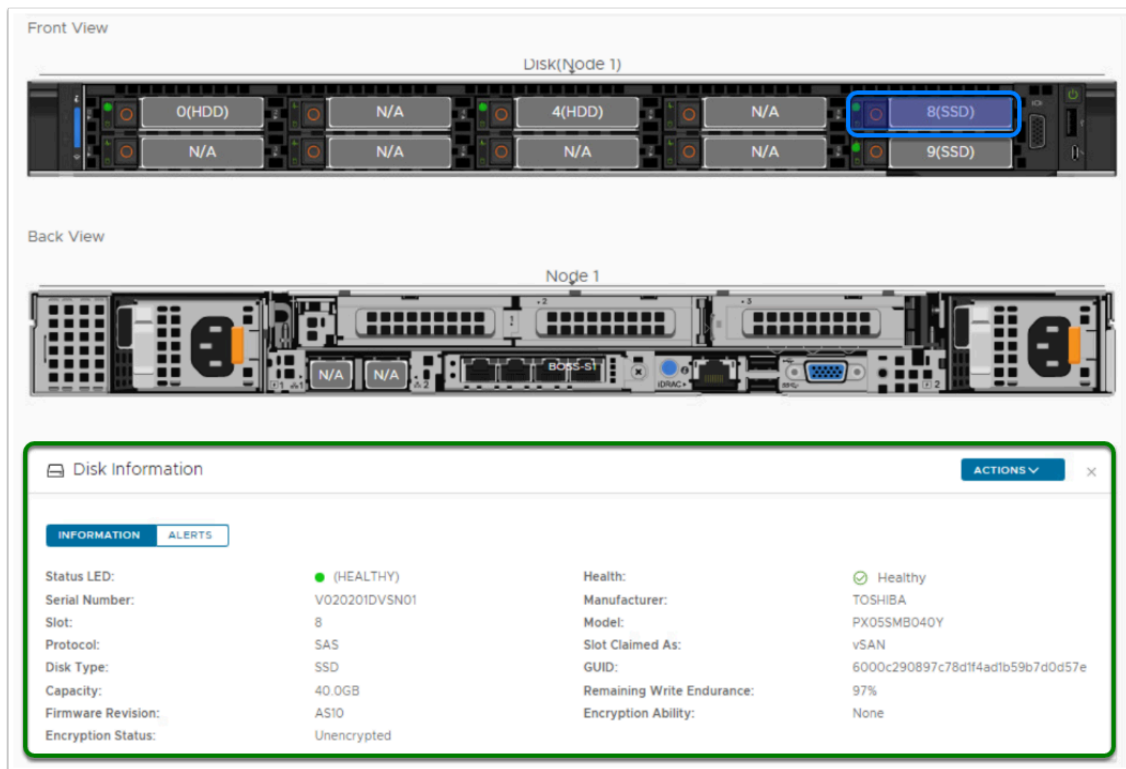
Once a disk has been selected, its details will be displayed under the image.



Observe that the disk in slot 0 is a SAS HDD drive, and the available capacity is 400.0GB. Drive manufacturer information is also displayed.

## Component - Front View - Cache drives

Click on the **disk in slot 8**. This is the cache drive of disk group 1.



Observe that this is a SAS SSD flash drive. Drive manufacturer information is also displayed.

VxRail also supports a choice of Intel Optane based NVMe cache drives, as well as NVMe and SAS SSDs for caching.

Note that the 'Remaining Write Endurance' is displayed for all flash drives.

Monitoring of the wear level of the flash drives is done automatically by VxRail Manager. If the endurance of any flash drive falls below a predetermined threshold, the system will log an event and use Secure Connect Gateway (if configured) to send alert messages to the support center.

## Component Level - Back view - Network Interface Controller Information

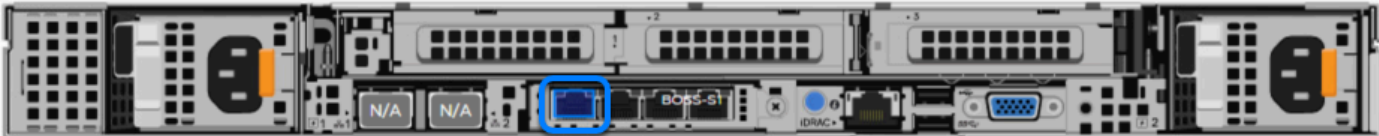
### Click the Network Interface Controller

The details shown provide information such as the MAC addresses, link speed and status of the ports.

The easy access to all this information greatly enhances serviceability.

Back View

Node 1



Network Interface Controller Information

INFORMATION

DRIVER VERSION

MAC Address:	00:50:56:8d:1c:c7	Link Status:	Up
Link Speed:	10 Gbps	Port:	3
Type:	NIC	Firmware Family Version:	21.5.9


Component Level - Back view - Power Supply Information

Click the **Power Supply**

The details shown will include information such as the serial number, revision number and part number.

Back View

Node 1



Power Supply Information

INFORMATION

ALERTS

Serial Number:	V020201PSUSN001	Slot:	2
Health:	Healthy	Part Number:	OCMPGMA01
Revision Number:	04.08.26	Name:	Power Supply 2
Manufacturer:	DELL		

# Maintaining a VxRail Cluster

In this module section we will learn how to maintain a VxRail cluster. The ease and simplicity of these maintenance procedures significantly enhances serviceability.

We will navigate the VxRail Manager to perform the following tasks:

1. Add storage (a new disk) to a node
2. Change the management IP address (or name) of a VxRail node
3. Collect a log bundle of a VxRail cluster
4. Cluster shutdown\*

**i** Note: Node expansion (scaling out) and Lifecycle Management (upgrading) will be done in later modules in this lab.

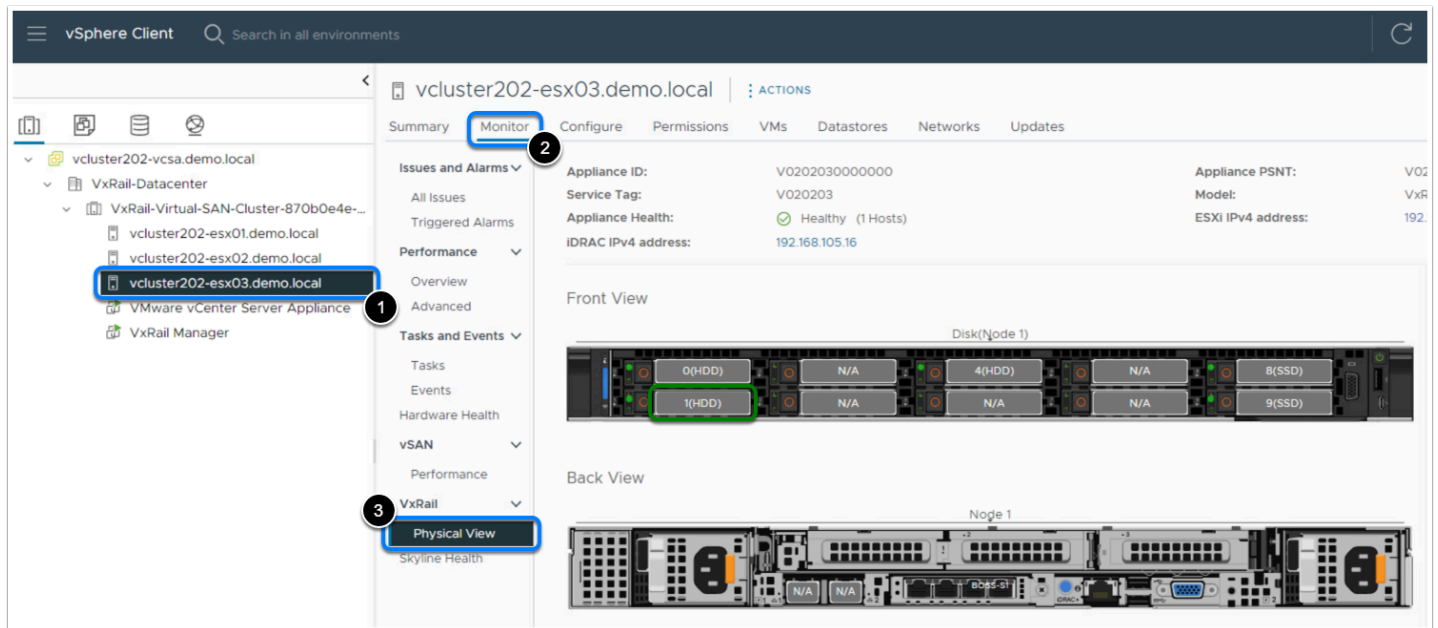
**i** \* Note that we will not actually execute step 4 *Cluster shutdown*, for reasons to do with the fact that this is a virtual hands-on lab environment. It is however included in this guide, to show that these procedures automate many steps and make serviceability significantly better.

## Add storage (a new disk) to a node

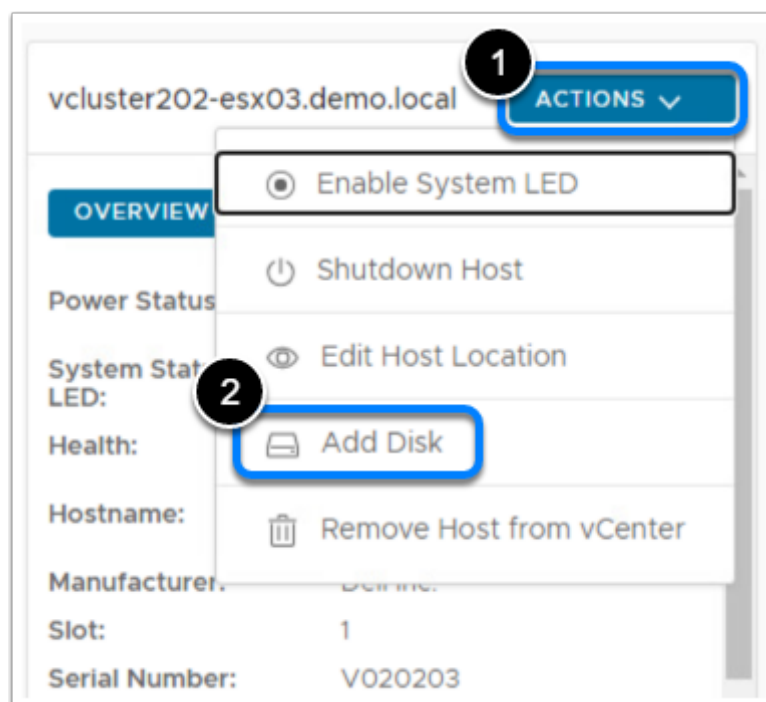
We will now learn how to add a capacity drive to an existing disk group on a node. To initiate the add disk procedure, we need to go to the node's physical view. This will visually show us the drives in the node, which helps serviceability. For this task we will use node `vcluster202-esx03.demo.local`.

In the vSphere Client, click host **vcluster202-esx03.demo.local > Monitor > VxRail > Physical View**

Slot 1 has the new disk, that has been inserted, but has not been added yet.



Click the **ACTIONS** drop-down in the host's detail information pane, and select **Add Disk**.



This will start the Add Disk dialog. In step 1 Insert New Disk, the user has a choice: to simply confirm that a new disk is already inserted and continue to the next step, or the user can choose to get suggestions on disk slots for the new disks.

Add Disk - vcluster202-esx03.demo.local

1 Insert New Disk

2 Disk Suggestions

3 Verify Disk

4 Validate

5 Complete Addition

Insert New Disk ⓘ

Confirm if you have inserted new disk(s) or not.

☐ Yes, I have inserted new disk(s).

☒ No, I want suggestions about disk slots for the new disks.

Disk Suggestion Options:

Disk Type Capacity Disk ▾

Capacity Disk type of disks each time.

Cache Disk

Number of disks

CANCEL NEXT

The wizard can guide the user here and suggest the exact disk slot(s) to use, depending on the type of disk(s) that the user selects.

This support significantly reduces the chances of issues further down the line as a result of using either incorrect disk types or incorrect disk slots in the procedure. This is again part of the enhanced serviceability that the VxRail Manager plugin provides.

For this task we have already made a new disk available, so select "**Yes, I have inserted new disk(s)**" and click **Next**.



Add Disk - vcluster202-esx03.demo.local

1 Insert New Disk

2 Disk Suggestions

3 Verify Disk

4 Validate

5 Complete Addition

### Insert New Disk

Confirm if you have inserted new disk(s) or not.

☒ Yes, I have inserted new disk(s).

☐ No, I want suggestions about disk slots for the new disks.

CANCEL

NEXT

This will skip **Step 2 Disk Suggestions** and go straight to **Step 3 Verify Disk**. It will now scan the node for any new disks, and present the result. It will present information on each new disk found, such as slot, id, type, capacity, etc.

Click **Next** to go to step 4 Validation.

Add Disk - vcluster202-esx03.demo.local

1 Insert New Disk

2 Disk Suggestions

3 Verify Disk

4 Validate

5 Complete Addition

### Verify Disk

The following disks are detected on the host, verify if they are inserted in the expected slots. Click "Next" to continue.

Slot#	GUID	Disk Type	Slot Claimed As	Protocol	Capacity	Status
1	6000c2919b1e59ed500cec225d99aa73	Capacity	vSAN	SAS	600 GB	✓

CANCEL

BACK

NEXT

**Step 4 Validate** will execute a set of pre-checks to determine whether the environment is ready to go ahead with adding the disk.

Once the validation is finished successfully, click **Next**.

Add Disk - vcluster202-esx03.demo.local

- 1 Insert New Disk
- 2 Disk Suggestions
- 3 Verify Disk
- 4 Validate
- 5 Complete Addition

### Validate ⓘ

Once validation is complete, click Next to add new disk(s).

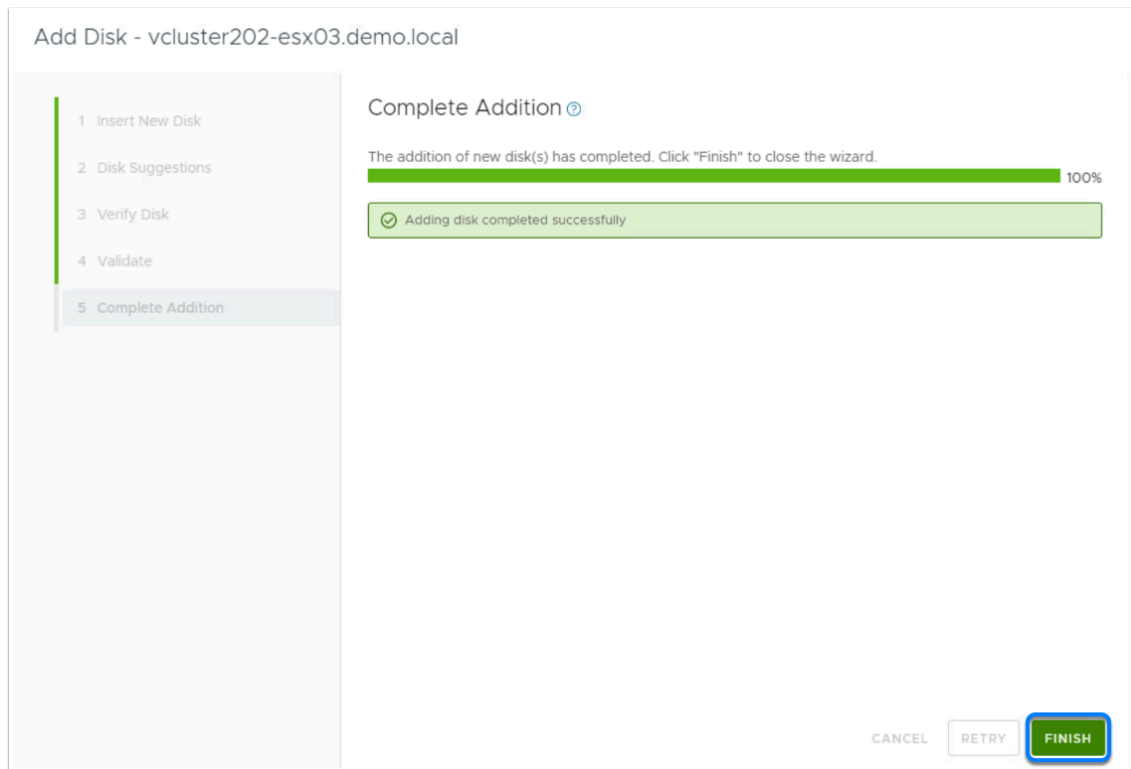
Task Name	Status
Verify that cluster health monitoring is on.	✓ Passed
Verify that the host(s) aren't in maintenance mode	✓ Passed

[CANCEL](#) [RETRY](#) [NEXT](#)

The **Step 5 Complete Addition** process will then run adding the disk to the vSAN cluster.

The disk addition procedure is now executing and shows some information on screen to indicate its progress. This may take about 2-3 minutes. A green status bar will be displayed once the disk has been successfully added.

Click **FINISH**. This is all there is to it, to insert a new drive and add it into a VxRail cluster with vSAN. The dialog has guided you through all required steps, ensuring that you can be confident of the result.



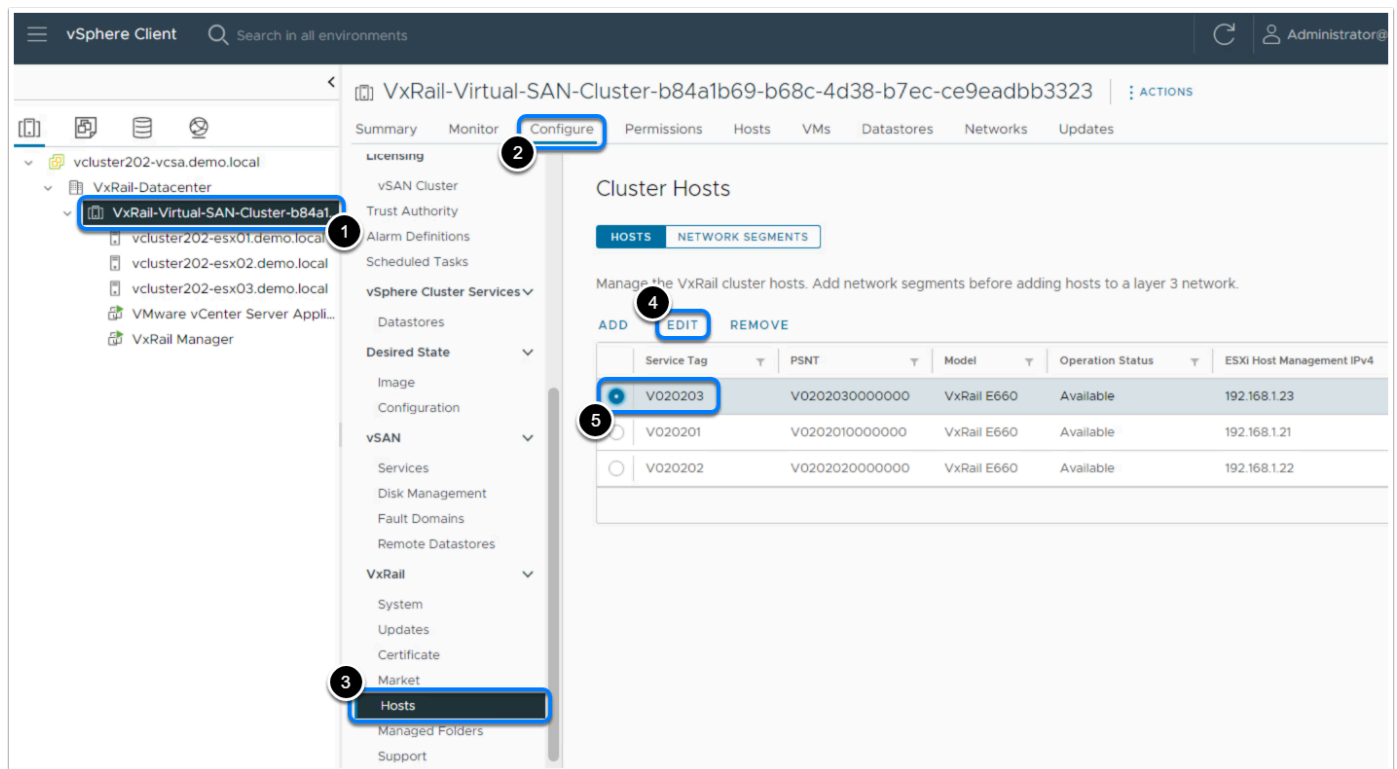
## Change the management IP address (or name) of a VxRail node

Sometimes an occasion arises where a VxRail cluster is up and running, and we need to change the name or the management IP address of a host in the cluster. This procedure can be initiated and managed via the same vSphere Client user interface. A dialog will again guide you through all required steps to ensure a successful outcome.

**Note:** In this virtual environment you will perform the host re-IP. The workflow for the host rename however, would be the same.

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Hosts**

**Select** the desired host, in this case Host **vcluster202-esx03.demo.local** (Service Tag: V020203) and click **Edit**.



💡 Note that if you select a host that currently has no VM's running on it, that the process will be a bit faster as there is no need for any VM's to be migrated off first, before the IP change takes place.

Select **ESXi Host Management IP**.

The form presents a few warnings, to inform us of the requirements and of the steps that need to be performed outside of the vSphere Client user interface.

Edit ESXi Host

Use the page to select and edit an ESXi host

Select Configuration:

Hostname
vcluster202-esx03.demo.local

Configure

☐ ESXi Hostname
☒ ESXi Host Management IP

Edit Host:

Do NOT update the host DNS entry with the new IP address. You are prompted to do so after you click APPLY.

For data accessibility, either vSphere DRS automation must be set to Fully Automated or VMs must be manually migrated to other hosts.

Editing the ESXi hostname and/or IP address requires the host be temporarily removed from the vCenter. Verify the health of all the hosts

In preparation, we can scroll down in the dialog, and enter the required information as shown in the image:

1. New Host Management IP: **192.168.1.123**
2. ESXi Root Password: **P@ssw0rd123!**
3. vCenter Username: **administrator@vsphere.local**
4. vCenter Password: **P@ssw0rd123!**

Click **VERIFY CREDENTIALS** to ensure we entered the correct vCenter credentials.

Hostname
vcluster202-esx03.demo.local

New Host Management IPv4 \*
192.168.1.123

ESXi Root Password \*
P@ssw0rd123!

vCenter Username \*
administrator@vsphere.local

vCenter Password \*
P@ssw0rd123!

VERIFY CREDENTIALS

Upon successful validation, click **APPLY** to start the process.

Hostname

vcluster202-esx03.demo.local

New Host Management IPv4 \*

192.168.1.123

ESXi Root Password \*

P@ssw0rd123!

vCenter Username \*

administrator@vsphere.local

vCenter Password \*

P@ssw0rd123!

✓ Verification Successful

CANCEL

APPLY

This process will migrate any virtual machines off the host and remove it from the cluster. Any such tasks can be seen in the Recent Tasks list.

After a short while, the process will pause:

VxRail-Virtual-SAN-Cluster-b84a1b69-b68c-4d38-b7ec-ce9eadbb3323

ACTIONS

Summary

Monitor

Configure

Permissions

Hosts

VMs

Datastores

Networks

Updates

Licensing

vSAN Cluster

Trust Authority

Alarm Definitions

Scheduled Tasks

vSphere Cluster Services

Datastores

Desired State

Image

Configuration

vSAN

Services

Disk Management

Fault Domains

Remote Datastores

VxRail

System

Updates

Certificate

Market

Hosts

Managed Folders

Support

Cluster Hosts

HOSTS

NETWORK SEGMENTS

⊗ Error configuring 1 host(s). Health monitoring is disabled during this task.

Hostname

Status

Actions

vcluster202-esx03.demo.local

ⓘ The process has paused and waiting for these user actions outside of vCenter to continue: update the host DNS record with the new IP address [192.168.1.123], and then flush the vCenter DNS cache and the VxRail Manager DNS cache. See KB543222. If you click Abort, the node remains deleted. See KB000191961 to add it back.

CONTINUE

ABORT

Hide Details ↑

Manage the VxRail cluster hosts. Add network segments before adding hosts to a layer 3 network.

ADD

EDIT

REMOVE

	Service Tag	PSNT	Model	Operation Status	ESXi Host Management IPv4	Hostname
<input type="radio"/>	V020203	V0202030000000	VxRail E660	ⓘ Configuration Paused	192.168.1.23	vcluster202-esx03.demo.local
<input type="radio"/>	V020201	V0202010000000	VxRail E660	Available	192.168.1.21	vcluster202-esx01.demo.local
<input type="radio"/>	V020202	V0202020000000	VxRail E660	Available	192.168.1.22	vcluster202-esx02.demo.local

1 - 3 of 3 hosts

At this point the node has been taken out of the cluster and the workflow waits for you to update the host's IP in DNS and flush the vCenter and VxRail Manager DNS cache.

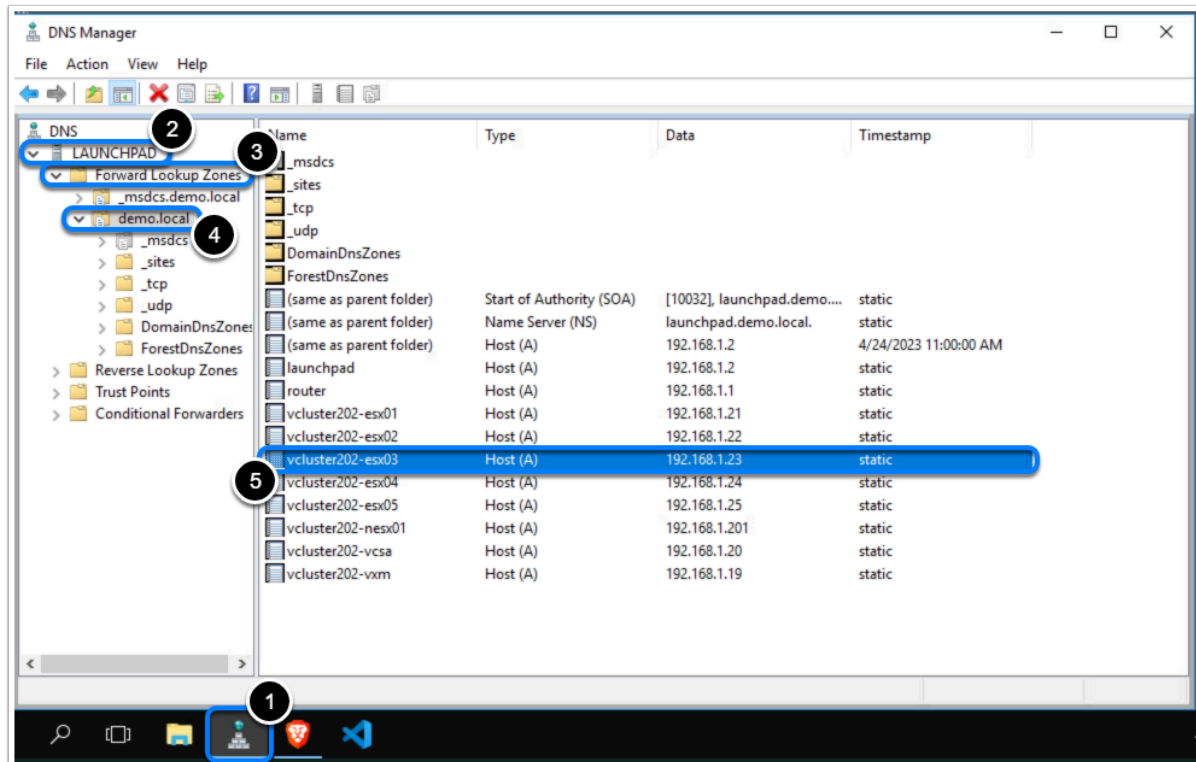
HOL-0301-01 - VxRail - Simplifying IT through Standardization and Automation (8.0.000)

Page 50

## Update DNS configuration

Use the DNS Manager to modify the host's IP, using the following steps:

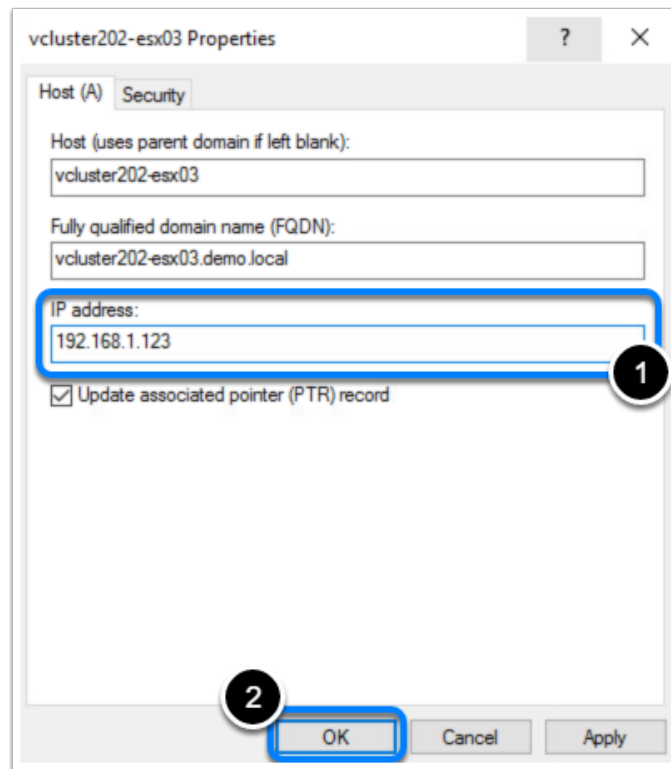
1. Open the DNS Manager (find the **icon on the task bar**)
2. In the navigation pane on the left, expand **LAUNCHPAD > Forward Lookup Zones**
3. Click **demo.local**.
4. Double Click **vcluster202-esx03** with IP address **192.168.1.23**



In the Properties dialog, change the IP address:

- IP address: **192.168.1.123**

Click **OK** to close the Properties dialog window.



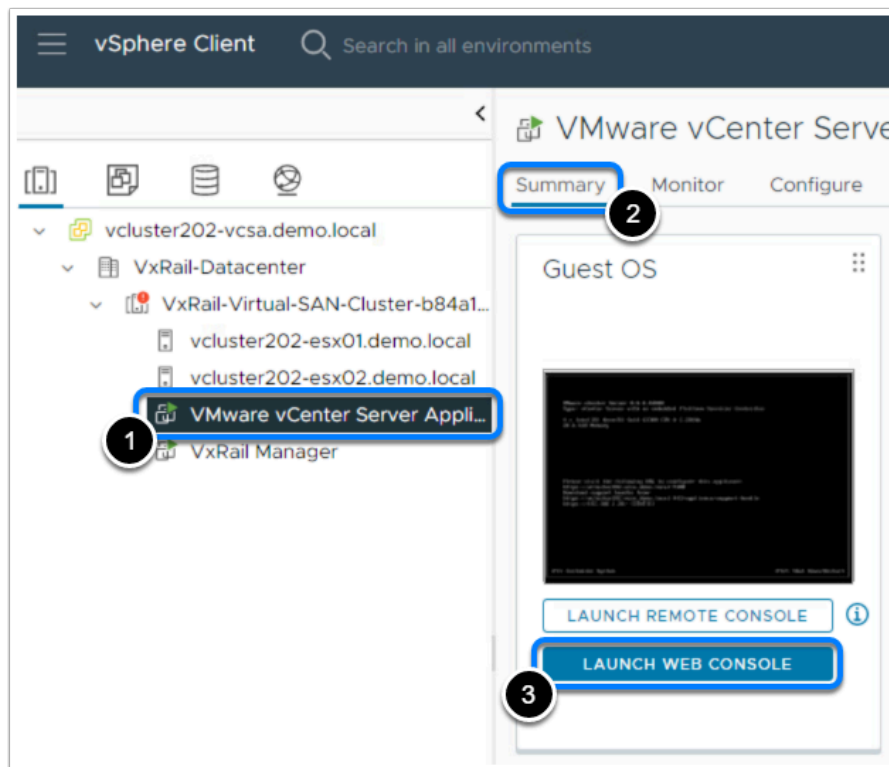
Now we will return to the vSphere Client.

## Flush DNS cache

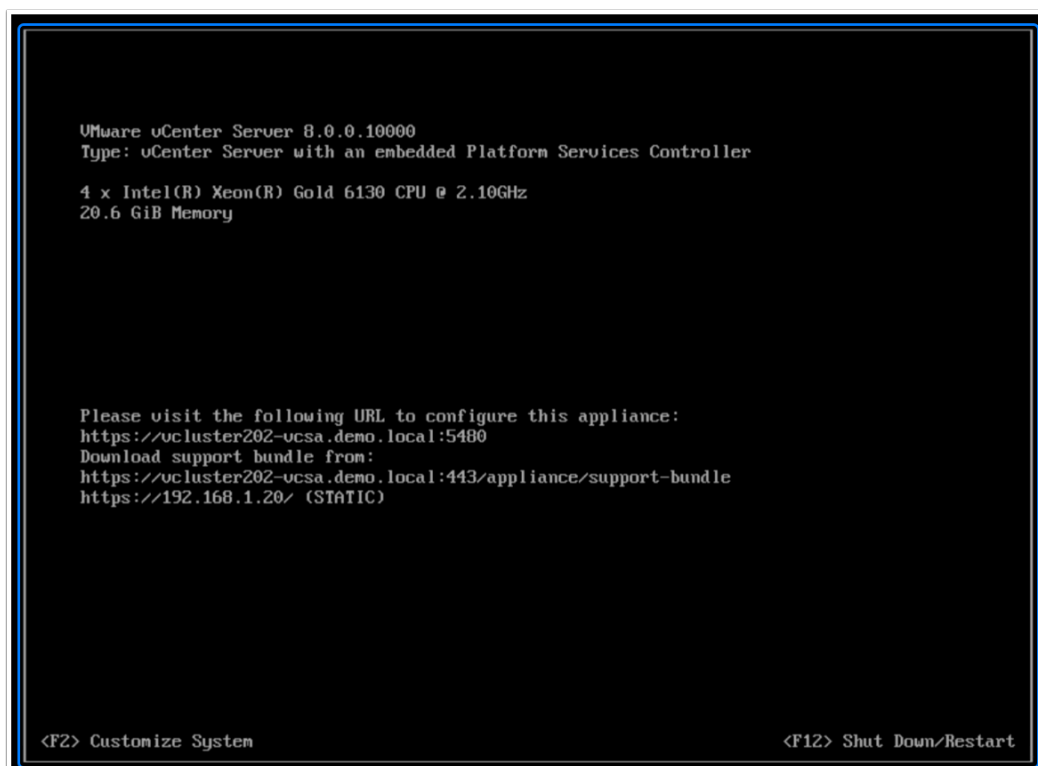
Flush the cache as advised in the warning. This needs to be done on the VMware vCenter Server Appliance (vCSA) and on the VxRail Manager.

Where: **vCSA > Summary > Web Console**





Click into the console screen.



Press **Alt+F1** to show the console and type in **root** and press **ENTER**.

Type in the password: **P@ssw0rd123!** and press **ENTER**.

```
VMware vCenter Server 8.0.0.10000

Type: vCenter Server with an embedded Platform Services Controller

vcluster202-ucsa login: root
Password: _
```

Once logged on as root, flush the cache by restarting the local dns service:

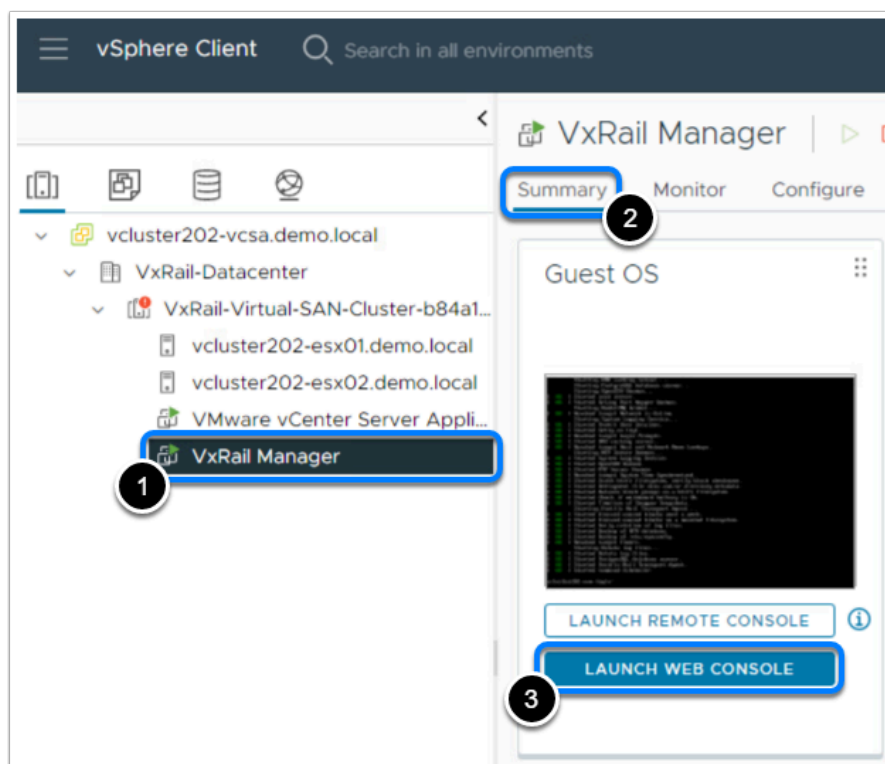
Type `systemctl restart dnsmasq` and press **ENTER**.

```
VMware vCenter Server 8.0.0.10000

Type: vCenter Server with an embedded Platform Services Controller

vcluster202-ucsa login: root
Password:
root@vcluster202-ucsa [ ~ ]# systemctl restart dnsmasq
```

Where: **VxRail Manager > Summary > Web Console**



Click into the console screen.

Type in username: **root** and press **ENTER**.

Type in password: **Vxrailtest123!** and press **ENTER**.

```

Starting System Logging Service...
[ OK ] Started Permit User Sessions.
[ OK ] Started Getty on tty1.
[ OK ] Reached target Login Prompts.
[ OK ] Started DNS caching server..
[ OK ] Reached target Host and Network Name Lookups.
Starting NTP Server Daemon...
[ OK ] Started System Logging Service.
[ OK ] Started OpenSSH Daemon.
[ OK ] Started NTP Server Daemon.
[ OK ] Reached target System Time Synchronized.
[ OK ] Started Discard unused blocks on a mounted filesystem.
[ OK ] Started Backup of RPM database.
[ OK ] Started Discard unused blocks once a week.
[ OK ] Started Check if mainboard battery is Ok.
[ OK ] Started Balance block groups on a btrfs filesystem.
[ OK ] Started Defragment file data and/or directory metadata.
[ OK ] Started Backup of /etc/sysconfig.
Starting Postfix Mail Transport Agent...
[ OK ] Started Timeline of Snapper Snapshots.
[ OK ] Started Daily rotation of log files.
[ OK ] Started Scrub btrfs filesystem, verify block checksums.
[ OK ] Reached target Timers.
Starting Check if mainboard battery is Ok...
Starting Rotate log files...
Starting Backup /etc/sysconfig directory...
Starting Backup RPM database...
[ OK ] Started Check if mainboard battery is Ok.
[ OK ] Started Backup /etc/sysconfig directory.
[ OK ] Started Backup RPM database.
[ OK ] Started PostgreSQL database server.
[ OK ] Started Postfix Mail Transport Agent.
[ OK ] Started Command Scheduler.
[ OK ] Started Rotate log files.

vcluster202-uxm login: root
Password: _

```

Once logged on as root, flush the VxRail Manager DNS cache:

Type `systemctl restart dnsmasq` and press **ENTER**.

[illegible]

## Continue the host re-IP process in the VxRail UI

With the new IP address for this host in DNS, and the cache flushed, you can now go back to the Edit ESXi Host dialog in the browser.

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Hosts**

Click **Continue**.

VxRail-Virtual-SAN-Cluster-b84a1b69-b68c-4d38-b7ec-ce9eadbb3323

ACTIONS

SummaryMonitorConfigurePermissionsHostsVMsDatastoresNetworksUpdates

vSAN Cluster

Trust Authority

Alarm Definitions

Scheduled Tasks

vSphere Cluster Services

Datastores

Desired State

Image

Configuration

vSAN

Services

Disk Management

Fault Domains

Remote Datastores

VxRail

System

Updates

Certificate

Market

Hosts

Managed Folders

Support

Cluster Hosts

HOSTS

NETWORK SEGMENTS

Error configuring 1 host(s). Health monitoring is disabled during this task.

Hostname	Status	Actions
vcluster202-esx03.demo.local	<div>The process has paused and waiting for these user actions outside of vCenter to continue: update the host DNS record with the new IP address [192.168.1.123], and then flush the vCenter DNS cache and the VxRail Manager DNS cache. See KB543222.If you click Abort, the node remains deleted. See KB000191961 to add it back.</div>	<div>CONTINUE</div> <div>ABORT</div>

Hide Details

Manage the VxRail cluster hosts. Add network segments before adding hosts to a layer 3 network.

ADD

EDIT

REMOVE

	Service Tag	PSNT	Model	Operation Status	ESXi Host Management IPv4	Hostname
	V020203	V0202030000000	VxRail E660	Configuration Paused	192.168.1.23	vcluster202-esx03.demo.local
	V020201	V0202010000000	VxRail E660	Available	192.168.1.21	vcluster202-esx01.demo.local
	V020202	V0202020000000	VxRail E660	Available	192.168.1.22	vcluster202-esx02.demo.local

1 - 3 of 3 hosts

The host configuration will be shown in two places.

VxRail-Virtual-SAN-Cluster-b84a1b69-b68c-4d38-b7ec-ce9eadbb3323 : ACTIONS

Summary Monitor **Configure** Permissions Hosts VMs Datastores Networks Updates

vSAN Cluster  
Trust Authority  
Alarm Definitions  
Scheduled Tasks  
vSphere Cluster Services  
Datastores  
Desired State  
Image  
Configuration  
vSAN  
Services  
Disk Management  
Fault Domains  
Remote Datastores  
VxRail  
System  
Updates  
Certificate  
Market  
**Hosts**  
Managed Folders

### Cluster Hosts

HOSTS NETWORK SEGMENTS

Configuring 1 host(s). Health monitoring is disabled during this task.

Hostname	Status	Actions
vcluster202-esx03.demo.local	Configuring	--

Hide Details ↑

Manage the VxRail cluster hosts. Add network segments before adding hosts to a layer 3 network.

ADD EDIT REMOVE

	Service Tag	PSNT	Model	Operation Status	ESXi Host Management IPv4	Hostname
<input type="radio"/>	V020203	V0202030000000	VxRail E660	Configuring ESXi IP	192.168.1.23	vcluster202-esx03.demo.local
<input type="radio"/>	V020201	V0202010000000	VxRail E660	Available	192.168.1.21	vcluster202-esx01.demo.local
<input type="radio"/>	V020202	V0202020000000	VxRail E660	Available	192.168.1.22	vcluster202-esx02.demo.local

1 - 3 of 3 hosts

You can view the Recent Tasks pane to see all the steps being taken to perform this process.

Task Name	Target	Status	Details	Initiator	Queued For	Start Time	Completion Time	Server
Remediate vCLS VM plac...	vCLS-dcb9624a-e4...	Completed	Migrating Virtual Machine ac...	System	7 ms	04/26/2023, 11:12:30 ...	04/26/2023, 11:12:51 P...	vcluster202-vcsa.demo.local
Exit maintenance mode	vcluster202-esx03.d...	Completed	Waiting for cluster election t...	System	17 ms	04/26/2023, 11:12:17 P...	04/26/2023, 11:12:48 ...	vcluster202-vcsa.demo.local
Update vSAN configurati...	vcluster202-esx01.d...	Completed		VSPHERE.LOCAL\Administrator	18 ms	04/26/2023, 11:12:17 P...	04/26/2023, 11:12:48 ...	vcluster202-vcsa.demo.local
Update vSAN configurati...	vcluster202-esx02.d...	Completed		VSPHERE.LOCAL\Administrator	25 ms	04/26/2023, 11:12:17 P...	04/26/2023, 11:12:47 ...	vcluster202-vcsa.demo.local

**Note:** During this process you will see the node being taken out of the cluster and being put back in to the cluster. This process may take around 2 minutes to complete. The process can be followed in the Recent Tasks list.

## Operation verification

When done, two messages will display showing successful configuration.

The list will now be updated and show the new IP address:

VxRail-Virtual-SAN-Cluster-b84a1b69-b68c-4d38-b7ec-ce9eadbb3323 | ACTIONS

Summary Monitor **Configure** Permissions Hosts VMs Datastores Networks Updates

vSAN Cluster  
Trust Authority  
Alarm Definitions  
Scheduled Tasks  
vSphere Cluster Services  
Datastores  
Desired State  
Image  
Configuration  
vSAN  
Services  
Disk Management  
Fault Domains  
Remote Datastores  
VxRail  
System  
Updates  
Certificate  
Market  
Hosts

### Cluster Hosts

HOSTS NETWORK SEGMENTS

✓ Configured 1 host(s). Health monitoring is disabled during this task.

Hostname	Status	Actions
vcluster202-esx03.demo.local	✓ The host was successfully reconfigured.	DISMISS

[Hide Details ↑](#)

Manage the VxRail cluster hosts. Add network segments before adding hosts to a layer 3 network.

ADD EDIT REMOVE

	Service Tag	PSNT	Model	Operation Status	ESXi Host Management IPv4	Hostname
<input type="radio"/>	V020203	V0202030000000	VxRail E660	✓ Configuration Successful	192.168.1.123	vcluster202-esx03.demo.local
<input type="radio"/>	V020201	V0202010000000	VxRail E660	Available	192.168.1.21	vcluster202-esx01.demo.local
<input type="radio"/>	V020202	V0202020000000	VxRail E660	Available	192.168.1.22	vcluster202-esx02.demo.local

1 - 3 of 3 hosts

## Collect a log bundle of a VxRail cluster

There can always be a scenario where things don't go as expected and eventually there is the need to collect information from the log files.

Logging and log bundles are provided through VxRail Manager. These logs provide operation and event information about VxRail Manager. This function allows collection of data to include in the log bundle file from all sources:

- VxRail Manager
- vCenter
- ESXi\*
- iDRAC\*
- PTAgent\*

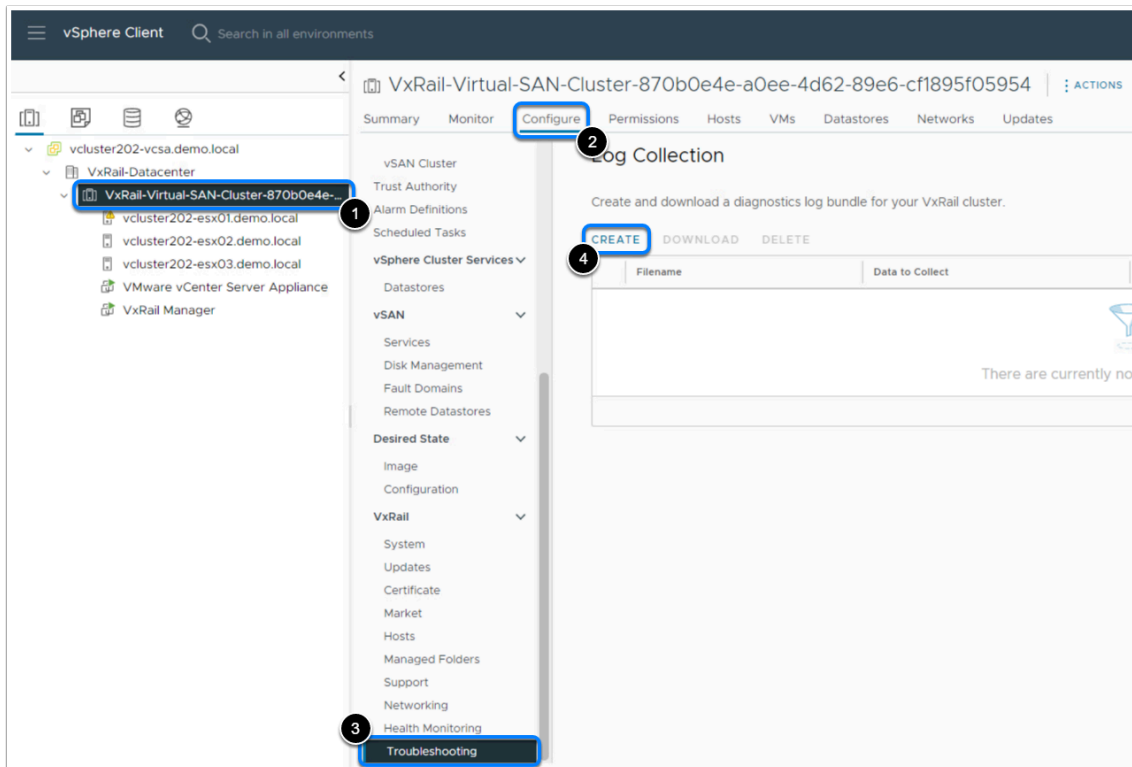
\* These sources require host selection, which enables limiting the log collection to only the relevant hosts.

You will now go through the steps for collecting the log bundle. Being able to pick and choose your sources makes it incredibly easy to create the right log bundle, even when you're investigating events. Since this is a virtual environment with limited resources, we will only select the VxRail Manager and no other log sources.

This function is available on the Troubleshooting page in the VxRail cluster configuration menu.

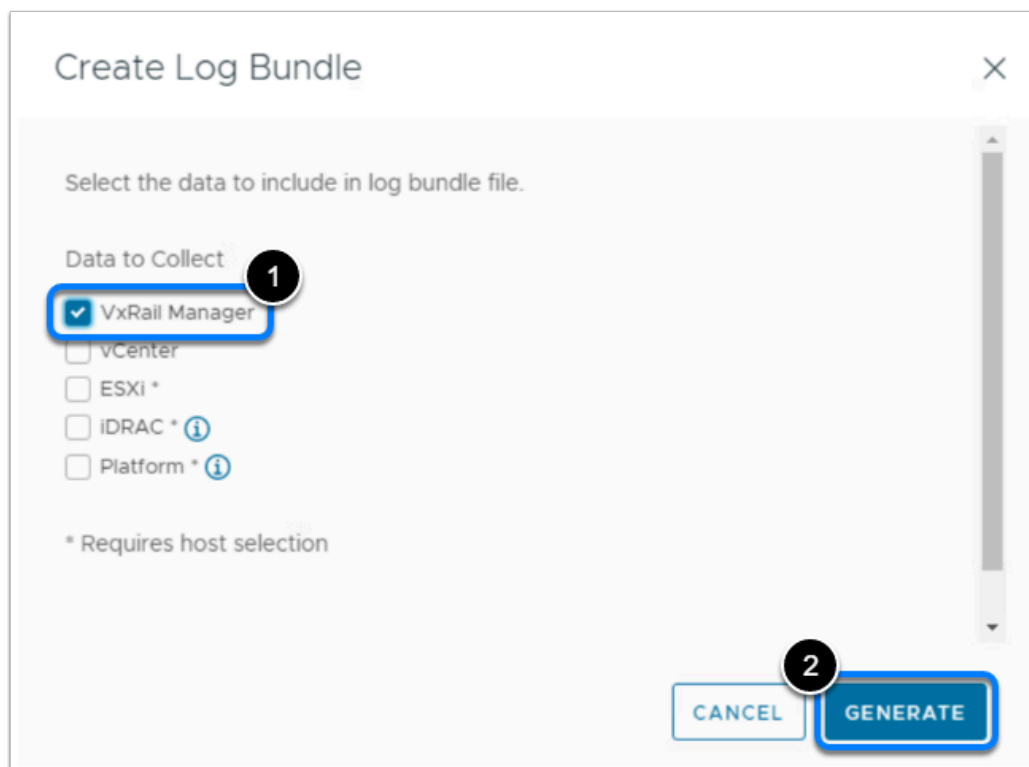
Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Troubleshooting**

Click **Create** to start the log collection dialog:




In the Create Log Bundle dialog, the required data sources can be selected.

Select **VxRail Manager** and Click **GENERATE** to start the process:



The Log Collection form will show that the creation of the log bundle is in progress...

 **Note:** This may take a few minutes, feel free to move on while this process is creating the bundle and check back later.

VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

ACTIONS

SummaryMonitorConfigurePermissionsHostsVMsDatastoresNetworksUpdates

vSAN Cluster

Trust Authority

Alarm Definitions

Scheduled Tasks

vSphere Cluster Services

Datastores

vSAN

Services

Disk Management

Log Collection

Create and download a diagnostics log bundle for your VxRail cluster.

CREATEDOWNLOADDELETE

	Filename	Data to Collect	Status	Description
<div></div>	n/a	VxRail Manager	In Progress	Generating log bundle...

1 log file(s)

When done, it will show as available for download. Expanding the line in the Log Collection window will show further metadata for the log bundle.

If there is a list of multiple log bundles, each entry in the list will show exactly what was collected and when. In this case, it will show that data was collected only for VxRail Manager:

Log Collection

Create and download a diagnostics log bundle for your VxRail cluster.

CREATEDOWNLOADDELETE

	Filename	Data to Collect	Status	Description
<div><div></div><div></div></div>	VxRail_Support_Bundle_528bae2b-7727-6e54-cc3d-7b2ad5d301bb_2023-02-24_23_49_09.zip	VxRail Manager	Completed	Log bundle successfully generated.

Created

2/24/23, 3:49 PM

File Size

111.33 MB


Service Tag / Appliance ID

No Hosts

1 log file(s)

If required, the log bundle can now be transferred from the VxRail Manager VM to the Windows client by simply clicking the Download button.

Cluster shutdown (Not executed)

 **Note:** We will not actually execute this step, as we wouldn't be able to switch it back on in this virtual hands-on lab environment.

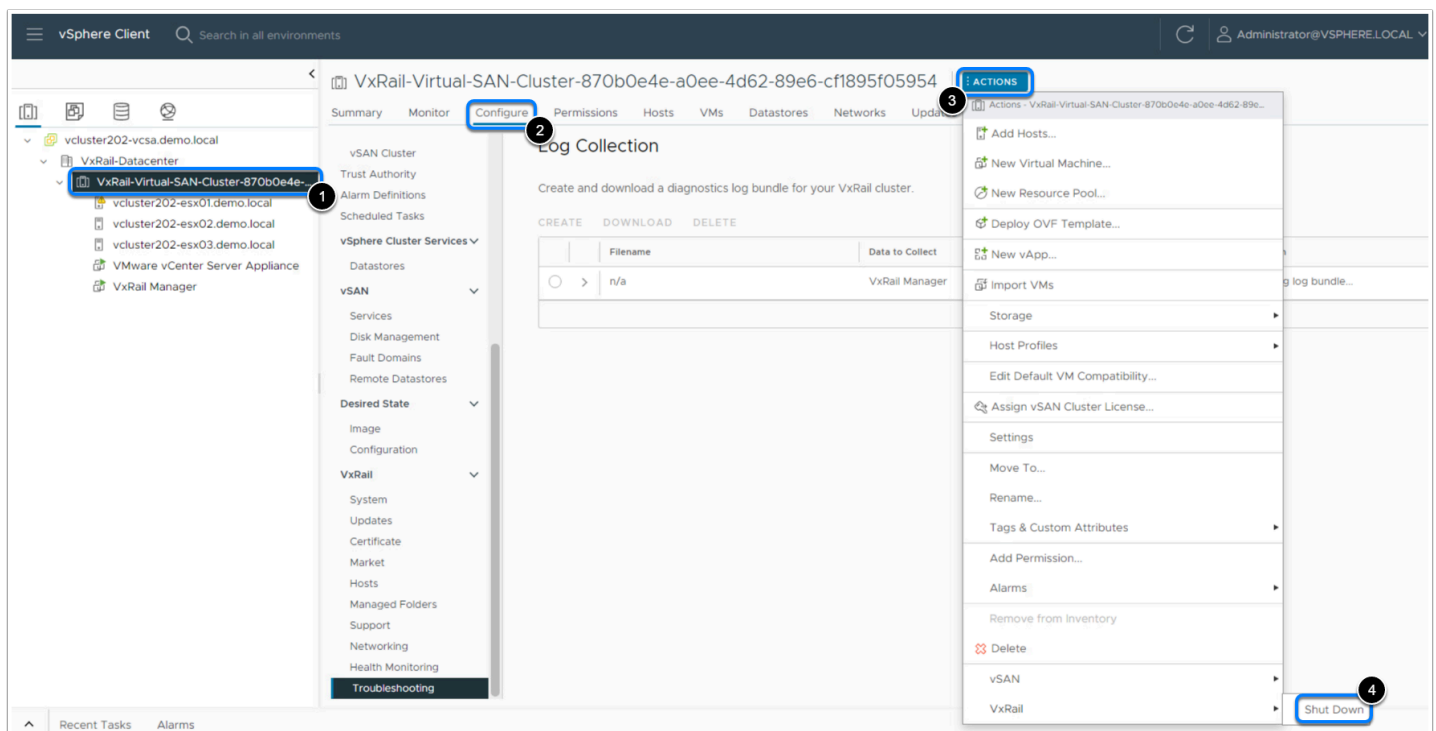


There are situations in which the shutdown of the entire VxRail cluster is required, for example when the nodes are being physically relocated.

For these situations VxRail Manager provides a cluster shutdown function, which provides a simplified and automated procedure for this entire process. This can be quite useful, especially when the VxRail cluster has a large number of hosts.

**Note:** In this step we will show all steps and screenshots for the VxRail cluster shutdown procedure, but **we will not actually execute those steps now**. It is here to show that this procedure automates many more steps and validations, which significantly helps serviceability.

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Actions Menu** > **VxRail** > **Shutdown**



First a set of pre-checks is executed to ensure that the VxRail cluster and nodes are in the proper state for a normal shutdown.

One check in particular is that all customer virtual machines have been shut down, to ensure a graceful cluster shutdown and a clean restart afterward.

## Shut Down

- Welcome
- Validate
- Confirm Operation
- Shut Down Cluster

### Validate

Once validation is complete, click Next. ?

Success. The cluster has passed validation. Click Next to power off the cluster.

Task Name	Status
Verify that cluster health monitoring is on.	✓ Passed
Verify that the host(s) aren't in maintenance mode	✓ Passed
Verify that the hosts are connected	✓ Passed
Verify that all customer virtual machines have been shut down	✓ Passed

CANCEL
BACK
NEXT

An extra confirmation step in the wizard double checks if we actually want to shut down all the physical nodes of the VxRail cluster:

## Shut Down

- Welcome
- Validate
- Confirm Operation
- Shut Down Cluster

### Confirm Operation

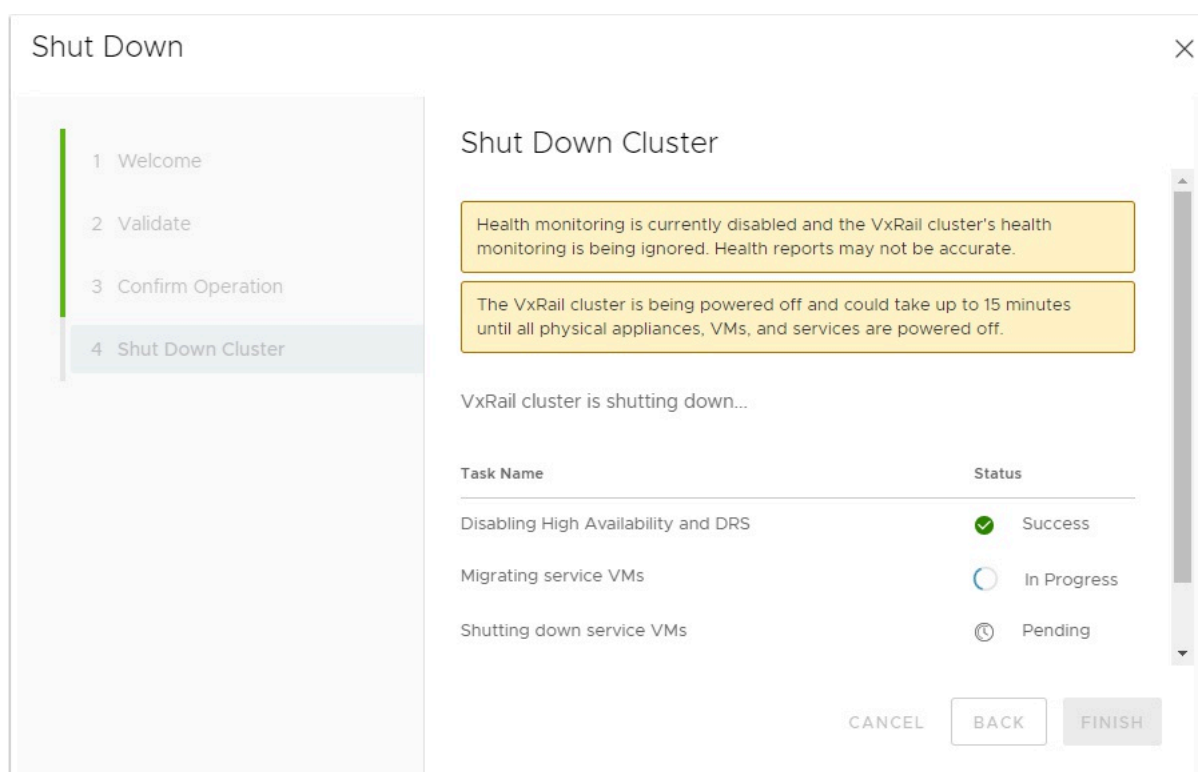
To shut down the VxRail cluster, click Next. ?

Are you sure you want to shut down the VxRail cluster?

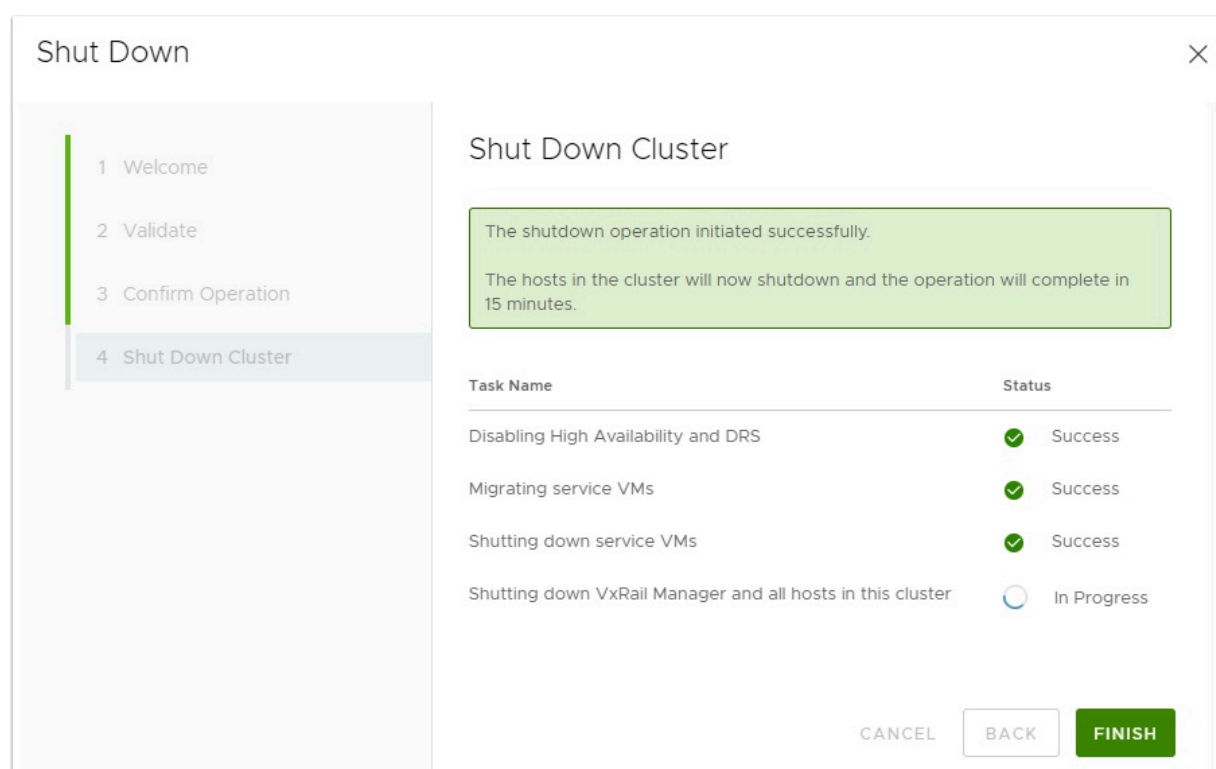
Once the operation is initiated, the VxRail cluster will power off the physical appliances, VMs, and their services.

CANCEL
BACK
NEXT

Once confirmed, the shut down procedure will start and show the progress of each step in the dialog window:



When the shutdown procedure is in the final step, a message displays that the shutdown operation has initiated successfully.



This concludes the Maintaining a VxRail Cluster section of this module.

## Module Conclusion

In this module you looked at the VxRail Manager plugin, to become more familiar with the options available to monitor the health indicators of the VxRail cluster, and how these functions can simplify the management of your environment.

The VxRail Manager operations and events are now all integrated in vCenter, where all information is centralized. All VxRail functionality can be easily found at the cluster and host level. You have seen that maintenance operations like adding or replacing disks are well supported by the VxRail Manager plugin, and the visual guidance significantly reduces the risk and effort needed and to perform these tasks.

In the next module, you will look at the VxRail public REST API.

[Click here to jump straight back to the Lab Modules overview.](#)

# **Module 3 - Using the VxRail Public REST API (3-5 min / Advanced)**

# VxRail Public REST API Overview

## VxRail Public REST API Overview

This API exposes the VxRail cluster's web services and allows it to be managed via that API, in an automated fashion. This enables enterprises to orchestrate their cluster management and reduce the administrator's time spent monitoring their VxRail clusters in the vSphere Client UI.

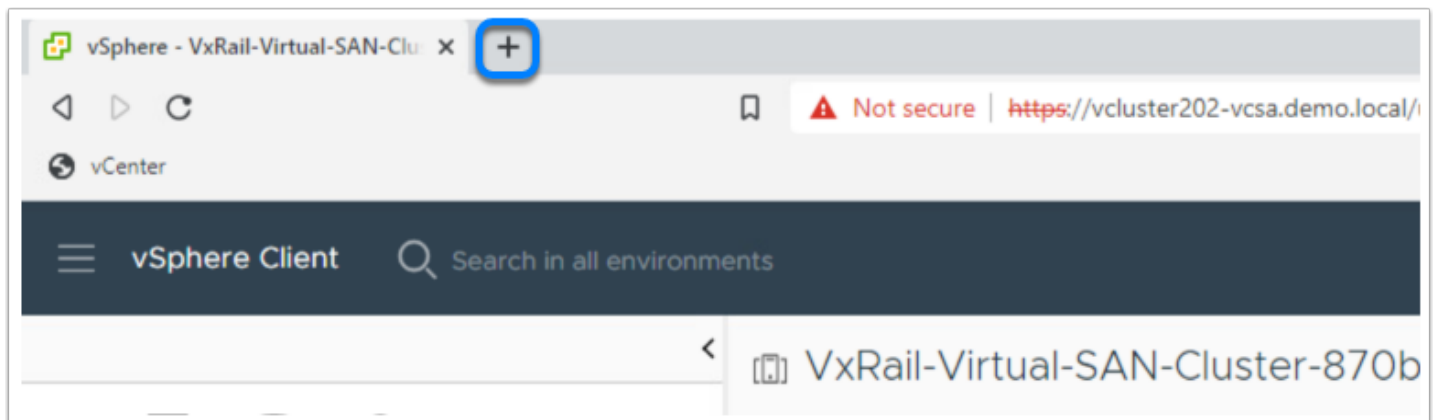
The VxRail API provides all functionality that the VxRail Manager plugin offers via the vCenter UI. This enables enterprises to do cluster management via this API and for example check the health of the cluster or just a node, see the firmware versions on a host, orchestrate LCM operations across the enterprise, etc.

Here we are only introducing the topic. There is a separate VxRail RESTful API Hands on Lab, where you will be able experience our VxRail RESTful API documentation, execute API calls, and experiment with PowerShell.

The VxRail RESTful API Hands on Lab is called: Scalable Virtualization, Compute, and Storage with the VxRail REST API.

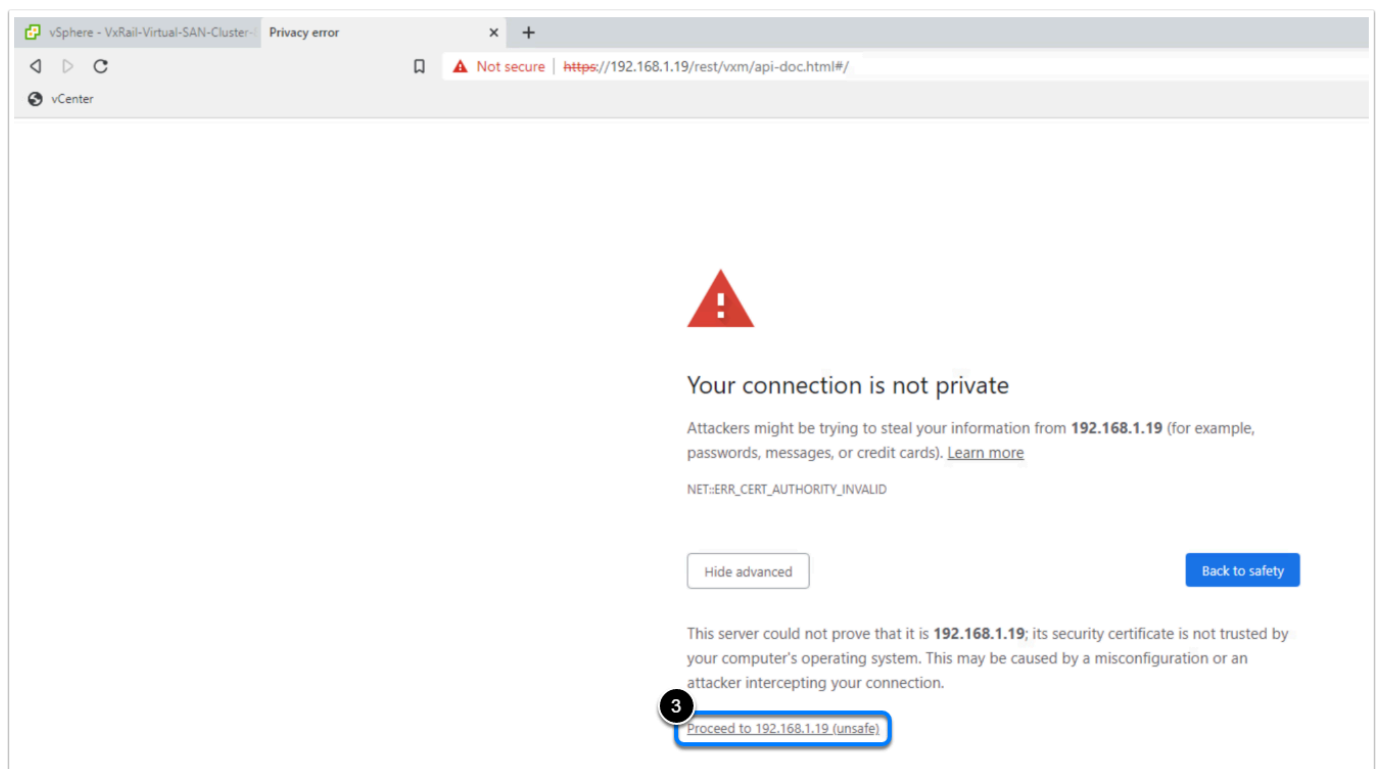
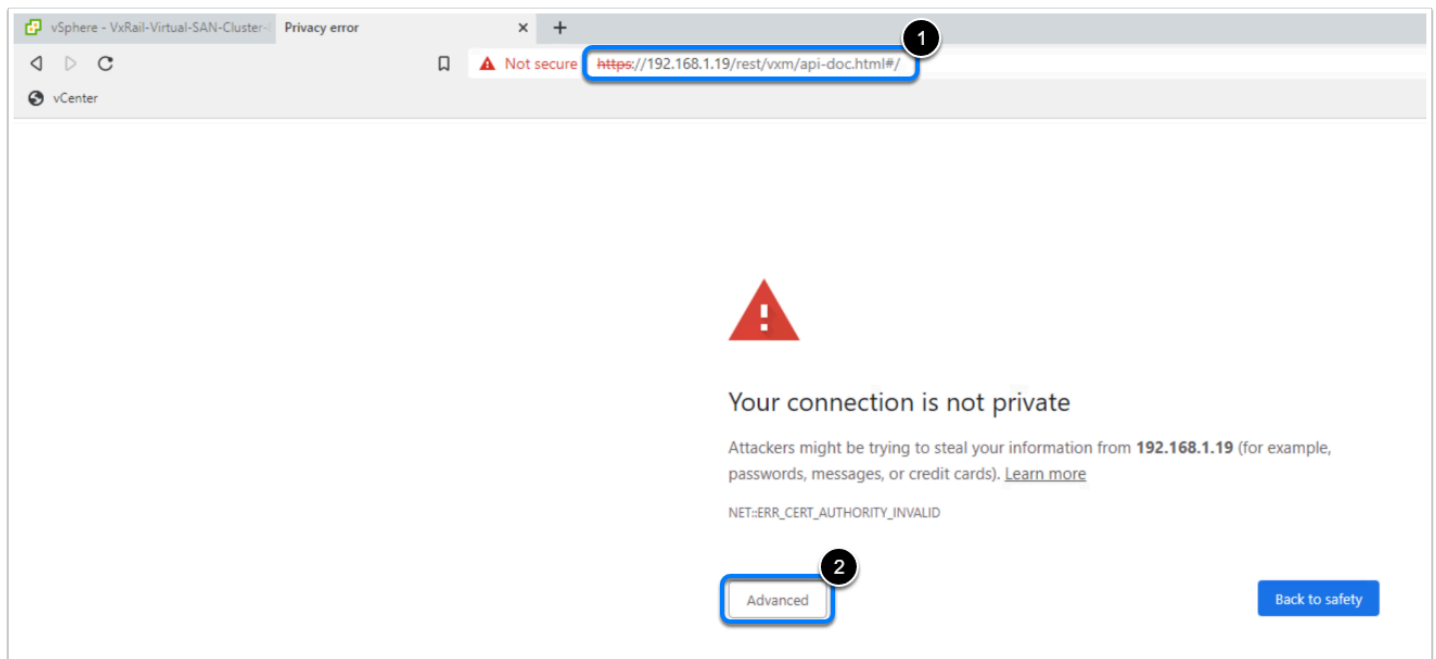
In this module, we will provide a quick introduction to the VxRail REST API by viewing the API documentation that is available via the web browser and executing an API call.

First, open a new browser tab on your current browser window.



The REST API documentation can be accessed via VxRail Manager.

- Enter the following URL: <https://192.168.1.19/rest/vxm/api-doc.html>.
- You may get a certificate invalid warning. For the purpose of this lab, you can click on the **Advanced** button, and then click on **Proceed to 192.168.1.19 (unsafe)**.



The VxRail REST API guide provides information on all the available API calls that can be used to monitor, report, and manage the VxRail cluster. The documentation shows you the available input parameters and the response format. You can also use this interface to execute API calls.

### VxRail REST API

Overview

ENDPOINTS

- pre-installation static ip >
- esxi hostname or management ip addres... >
- vxrail installation >
- lcm pre-check >
- lcm upgrade >
- bandwidth throttling information >
- call home mode >
- call home operations >
- certificates >
- chassis information >
- cluster information
  - Get VxRail cluster information GET
  - Get VxRail cluster information GET
- cluster shutdown >
- cluster expansion >
- cvs public >
- disk information >
- disk slot mapping >
- host folder lcm >
- host information >
- host idrac configuration >
- host removal >
- management account >
- network segment management >

## VxRail REST API

v8.0.000

API Base URL

VxRail Manager Server: <https://192.168.1.19/rest/vsm>

Security

Basic Auth

Basic authentication is a simple authentication scheme built into the HTTP protocol. To use it, send your HTTP requests with an Authorization header that contains the word Basic followed by a space and a base64-encoded string `username:password`.

Example: `Authorization: Basic ZGVtb2p4QXlkd29yZD==`

The VxRail REST API provides a programmatic interface for performing VxRail administrative tasks. Data is available in JSON format.

Let's run an API command as an example. On the left-hand panel, expand cluster information and select **Get VxRail cluster information**.

### VxRail REST API

Overview

ENDPOINTS

- pre-installation static ip >
- esxi hostname or management ip addres... >
- vxrail installation >
- lcm pre-check >
- lcm upgrade >
- bandwidth throttling information >
- call home mode >
- call home operations >
- certificates >
- chassis information >
- cluster information
  - Get VxRail cluster information GET
  - Get VxRail cluster information GET
- cluster shutdown >
- cluster expansion >
- cvs public >
- disk information >

On the Get VxRail cluster information page, we can see:

- a short description of what this API call does
- the response types



- body of the output
- response example for this API call.

### VxRail REST API

Overview

ENDPOINTS

- pre-installation static ip >
- esxi hostname or management ip addres... >
- vxrail installation >
- lcm pre-check >
- lcm upgrade >
- bandwidth throttling information >
- call home mode >
- call home operations >
- certificates >
- chassis information >
- cluster information >
- Get VxRail cluster information GET
- Get VxRail cluster information GET
- cluster shutdown >
- cluster expansion >
- cvs public >
- disk information >
- disk slot mapping >
- host folder lcm >
- host information >
- host idrac configuration >
- host removal >
- management account >
- network segment management >

## Get VxRail cluster information

Basic Auth

Get VxRail cluster information and basic information about the appliances in the cluster.

Request

1

GET /v2/cluster

Responses 200 400 401 403 500

The request is successful.

Body application/json

cluster\_id string  
The UUID of the VxRail cluster

product\_type string  
Product type of the host

device\_type string  
Device type of the host

vc\_connected boolean  
Whether the vCenter is connected

Examples

health string  
Status of the health of the cluster. Supported values are Critical, Error, Warning, and Healthy.

operational\_status string  
Operational status information

### GET /v2/cluster

VxRail Manager Server

Auth

Username : username

Password : password

Send Request

Request Sample: Shell / cURL

```
curl --request GET \
--url https://192.168.1.19/rest/vxm/v2/cluster \
--header 'Authorization: Basic Og==' \
--header 'Content-Type: application/json'
```

Response Example

```
{
  "cluster_id": "string",
  "product_type": "string",
  "device_type": "string",
  "vc_connected": true,
  "health": "string",
  "operational_status": "string",
  "chassis": [
    {
      "id": "string",
      "psnt": "string",
      "model": "string",
      "render_category": "string",
      "generation": 0,
      "health": "string",
      "missing": true
    }
  ]
}
```

To run this API call, you need to authenticate using the vCenter Server administrator credentials.

Username: **administrator@vsphere.local**

Password: **P@ssw0rd123!**

Then click **Send Request**.

## Get VxRail cluster information

Basic Auth

Get VxRail cluster information and basic information about the appliances in the cluster.

**Request**

GET /v2/cluster

**Responses** 200 400 401 403 500

The request is successful.

**Body** application/json

**cluster\_id** string  
The UUID of the VxRail cluster

**product\_type** string  
Product type of the host

**device\_type** string  
Device type of the host

**vc\_connected** boolean  
Whether the vCenter is connected

**health** string  
Status of the health of the cluster. Supported values are Critical, Error, Warning, and Healthy.

**operational\_status** string  
Operational status information

**Response**

200 OK

```
{
  "cluster_id": "528bae2b-7727-6e54-cc3d-7b2ad5d301bb",
  "product_type": "V5PEXPLUS",
  "device_type": "V5PEXBLUE",
  "vc_connected": true,
  "health": "Healthy",
  "operational_status": "ok",
  "chassis": [
    {
      "id": "V02020100000000",
      "psnt": "V02020100000000",
      "model": "VxRail E660",
      "render_category": "DELL_R650",
      "generation": 3,
      "health": "Healthy",
      "missing": false
    },
    {
      "id": "V02020200000000",
      "psnt": "V02020200000000",
      "model": "VxRail E660",
      "render_category": "DELL_R650",
      "generation": 3,
      "health": "Healthy",
      "missing": false
    }
  ]
}
```

In the response, you learn that the API request was successful. In the response body, the health status, hardware information, PSNT number, etc. are provided.

This concludes the VxRail Public REST API Overview section of the module.

## Module Conclusion

Congratulations on completing Module 3.

In this module, we touched on VxRail RESTful API and where to find the in-depth VxRail RESTful API Hands on Lab.

In the next module, you will experience the simplicity of adding and updating VxRail satellite nodes.

# **Module 4 - Add & Update VxRail Satellite Nodes (30-40 min / Intermediate)**

# Add a VxRail Satellite Node

## Introduction

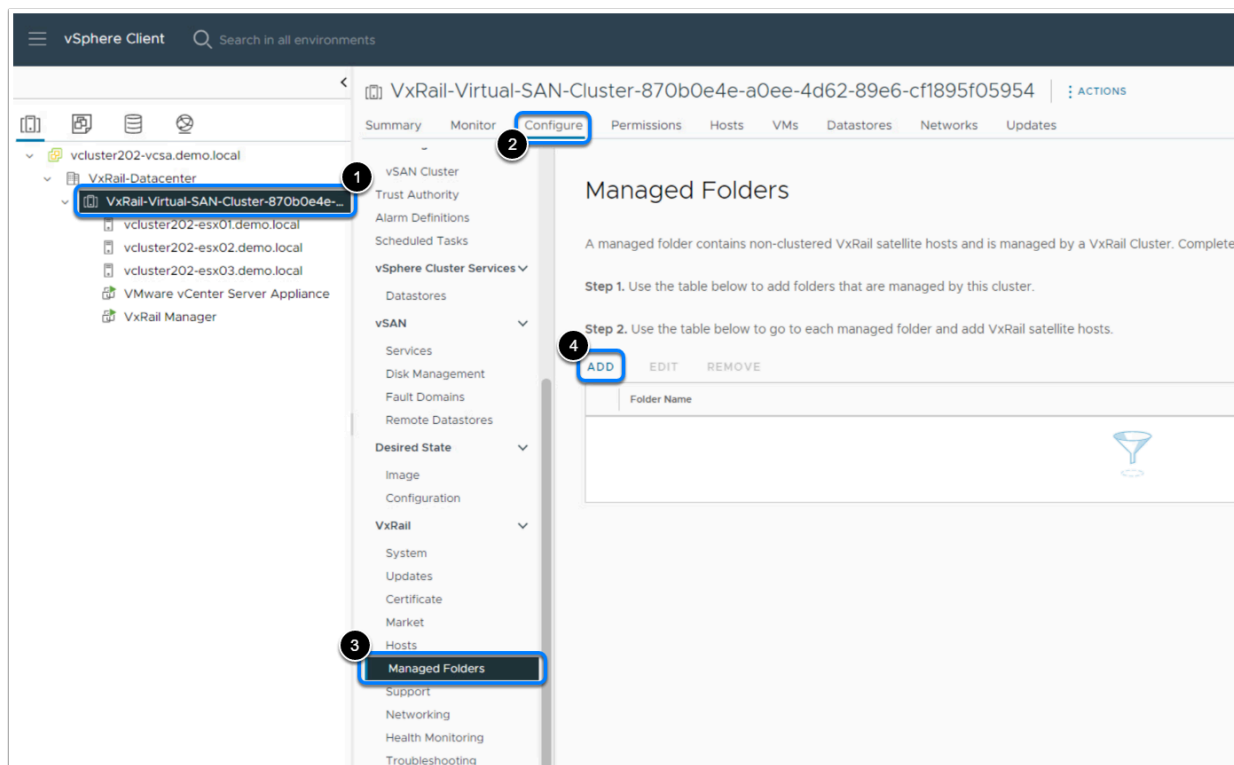
Satellite nodes are a great extension to the VxRail portfolio, empowering deployments at the edge. Satellite nodes are deployed as single nodes but are centrally managed by a VxRail cluster that can be located at a regional hub or datacenter where there is available IT expertise. Unique from standard VxRail nodes, satellite nodes (except the VD-4000 nodes) include a PowerEdge RAID Controller for local RAID protection (due to it being a single node). Satellite nodes are great for edge deployments because of their smaller footprint and lower costs (hardware and licensing).

In this module, you will see how simple it is to deploy a satellite node. First, a new managed folder has to be created within vCenter.

## Create Managed Folder

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Managed Folders**

Click **ADD** to create a managed folder.



Select **Create a new folder**.

Type **Satellite Nodes** to name the folder.

Click **ADD AND CLOSE**.

Add Managed Folder

VxRail managed folders and satellite hosts are only supported with an external (customer-provided) vCenter Server.

☐ Select an existing folder
☒ Create a new folder

Provide a managed folder name and add the folder. Added folders are managed by the VxRail Management Cluster.

VxRail Management Cluster: VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

Managed Folder Location: VxRail-Datacenter

Managed Folder Name: \* Satellite Nodes

\* Required Field

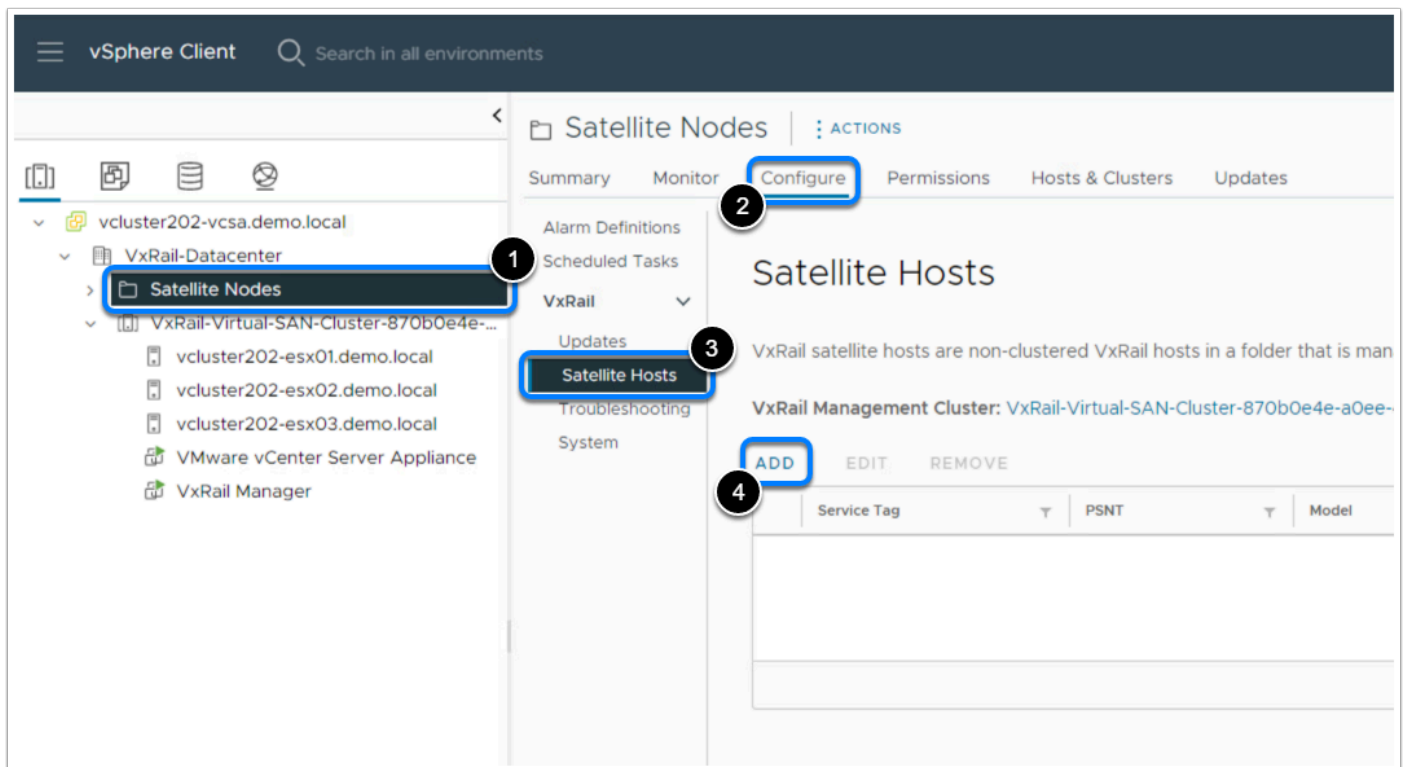
CLOSE ADD ADD AND CLOSE

**i** While VxRail 8.0.000 does not support the management of satellite nodes with a VxRail-managed vCenter Server, this lab uses a VxRail-managed vCenter Server strictly for the purpose of demonstrating satellite node functionality in this lab environment. This configuration is supported in future versions of VxRail software. Check the software release notes for the latest support details.

## Add Satellite Node

Where: Managed folder **Satellite Nodes** > **Configure** > **VxRail** > **Satellite Hosts**

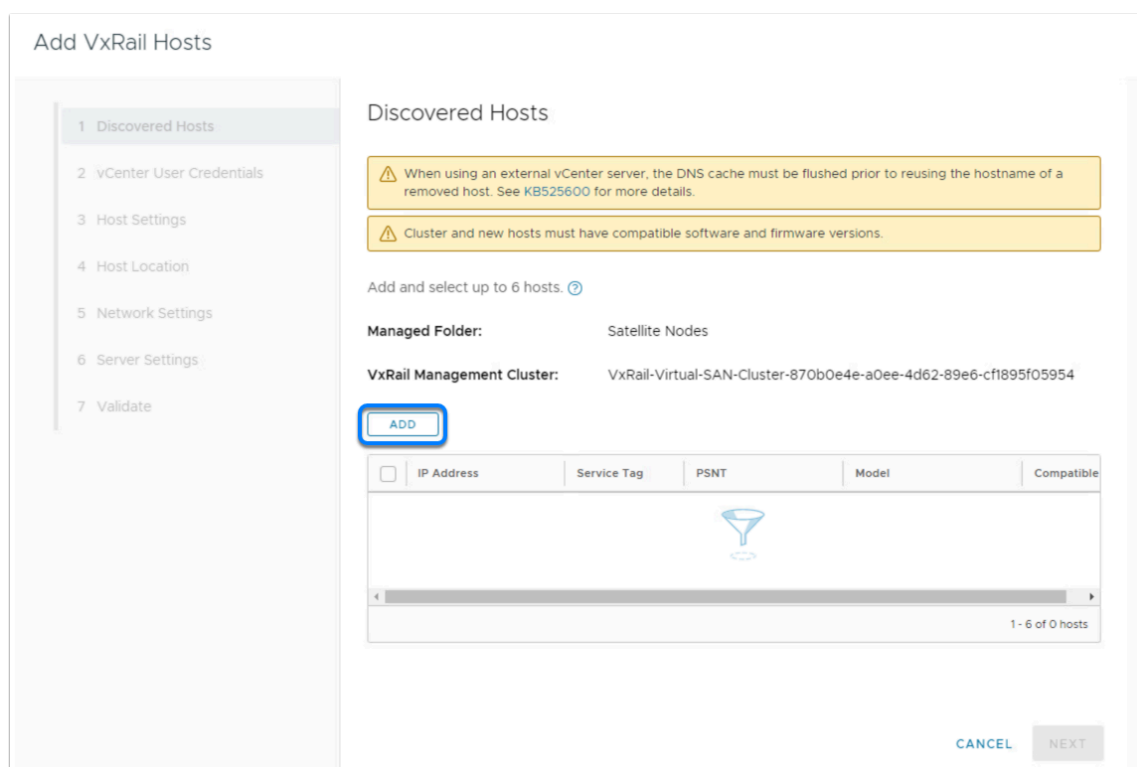
Click **ADD** to open the **Add VxRail Hosts wizard**.



Click **ADD**

Note: up to 6 hosts can be added at a time.

## Step 1 Discovered Hosts



Un-check the **Use default credentials** box.

Type in the ESXi IP Address and ESXi Root Password

- ESXi IP Address: **192.168.1.25**
- ESXi Root Password: **Passw0rd!**

Click **VALIDATE**, a green check mark will appear in the compatible column once complete.

Click **ADD** after the validation is complete.

Add Hosts
×

Validate and add 1 to 6 ESXi hosts.

☐ Use default credentials.

ESXi IPv4 address *	Username	ESXi root password	Service Tag	PSNT	Model	Compatible
✓ 192.168.1.25	root	Passw0rd!	V020205	V0202050000000	VxRail E660	✓ Compatible
	root		--	--	--	--
	root		--	--	--	--
	root		--	--	--	--
	root		--	--	--	--
	root		--	--	--	--

CANCEL
VALIDATE
ADD

Check the box for each node you want to add.

Click **NEXT**.



Add VxRail Hosts

1 Discovered Hosts

2 vCenter User Credentials

3 Host Settings

4 Host Location

5 Network Settings

6 Server Settings

7 Validate

Discovered Hosts

⚠ When using an external vCenter server, the DNS cache must be flushed prior to reusing the hostname of a removed host. See KB525600 for more details.

⚠ Cluster and new hosts must have compatible software and firmware versions.

Add and select up to 6 hosts. ⓘ

Managed Folder: Satellite Nodes

VxRail Management Cluster: VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

ADD

<input checked="" type="checkbox"/>	IP Address	Service Tag	PSNT	Model	Compatible
<input checked="" type="checkbox"/>	192.168.1.25	V020205	V0202050000000	VxRail E660	Compatible

1

1 - 1 of 1 hosts

CANCEL NEXT

2

## Step 2 vCenter User Credentials

Type in vCenter credentials

- Username: **administrator@vsphere.local**
- Password: **P@ssw0rd123!**

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts

2 vCenter User Credentials

3 Host Settings

4 Host Location

5 Network Settings

6 Server Settings

7 Validate

vCenter User Credentials

To add the hosts, enter the vCenter username and password.

Username \* administrator@vsphere.local

Password \* P@ssw0rd123!

\* field is required

CANCEL BACK NEXT

## Step 3 Host Settings

Type in Host details

- ESXi Hostname: **vcluster202-esx05**
- ESXi Management Username: **management**
- ESXi Management Password: **P@ssw0rd123!**

IP address and Root information will be pre-populated.

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts  
2 vCenter User Credentials  
3 Host Settings  
4 Host Location  
5 Network Settings  
6 Server Settings  
7 Validate

Host Settings  
Provide the ESXi host configuration settings for the hosts to be added to the VxRail Cluster.  
*Verify that new hostnames and IP addresses have been added to the DNS lookup records.*

Host

Service Tag V020205  
PSNT V0202050000000  
ESXi Hostname \* *vcluster202-esx05*  
Domain Name \* demo.local  
Preview vcluster202-esx05.demo.local  
ESXi IPv4 address \* 192.168.1.25  
ESXi Management Username \* management  
ESXi Management Password \* P@ssw0rd123!  
Re-enter ESXi Management Password \* P@ssw0rd123!

CANCEL BACK NEXT

## Step 4 Host Location

Here you can enter a **Rack Name** and **Rack Position** but they are optional.

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts

2 vCenter User Credentials

3 Host Settings

4 Host Location

5 Network Settings

6 Server Settings

7 Validate

Host Location

You have the option to provide host rack information.

Service Tag	PSNT	ESXi Hostname	ESXi IP Address	Rack Name	Rack Position
V020205	V0202050000000	vcluster202-esx05	192.168.1.25		

CANCEL

BACK

NEXT

Step 5 Network Settings

One final review of the **Management Gateway**, **Management Subnet Mask**, and **Management VLAN ID**.

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts

2 vCenter User Credentials

3 Host Settings

4 Host Location

5 Network Settings

6 Server Settings

7 Validate

Network Settings

Review the virtual network settings for the hosts(s) that will be added to the managed folder.

Management Gateway

192.168.1.1

Management Subnet Mask

255.255.255.0

Management VLAN ID

0

CANCEL

BACK

NEXT

## Step 6 Server Settings

The **DNS** and **NTP** server IP addresses will be pre-populated using information from the managing VxRail cluster.

Click **NEXT**.

## Step 7 Validate

Verify satellite node information is correct.

Click **VALIDATE**.

### Add VxRail Hosts

- Discovered Hosts
- vCenter User Credentials
- Host Settings
- Host Location
- Network Settings
- Server Settings
- Validate

### Validate

Review the information below and click VALIDATE to validate the host and network configuration.

#### Hosts

1 hosts will be added.

Service Tag	PSNT	Model	Hostname	ESXi IPv4 address
V020205	V0202050000000	VxRail E660	vcluster202-esx05.demo.local	192.168.1.25

CANCEL
BACK
VALIDATE

Once complete a message will show success.

Click **FINISH**.

### Add VxRail Hosts

- Discovered Hosts
- vCenter User Credentials
- Host Settings
- Host Location
- Network Settings
- Server Settings
- Validate

### Validate

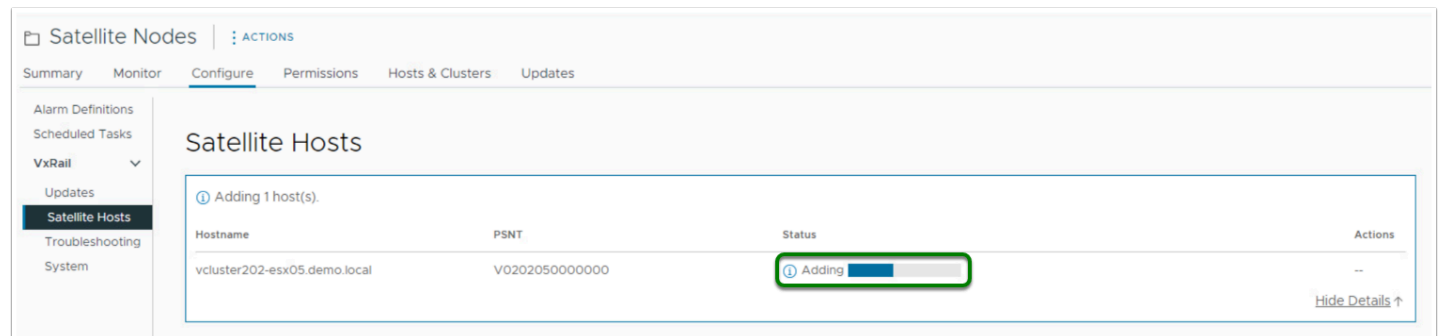
✓
The configuration was validated successfully. Click FINISH to add the hosts to the cluster.

CANCEL
BACK
FINISH

## Completing the Process

Clicking finish will begin the adding process and progress will be shown in the status bar.

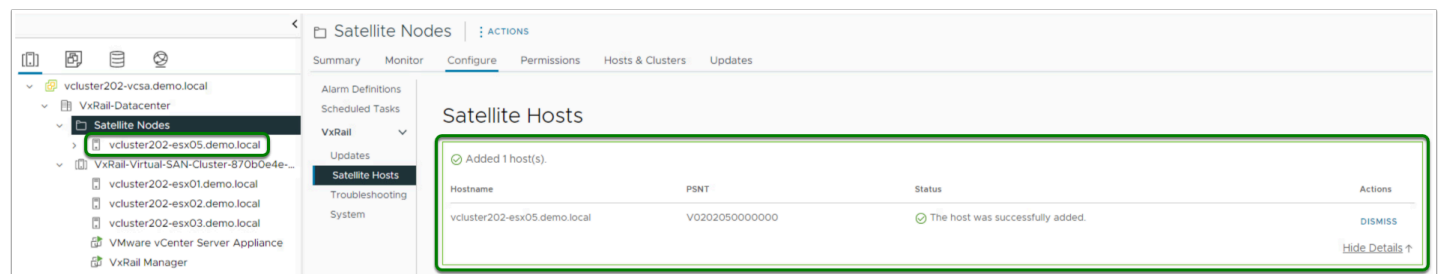
This process will take **~5 minutes**.



The screenshot shows the 'Satellite Nodes' configuration page. The left sidebar contains a navigation pane with 'Satellite Hosts' selected. The main area has tabs for 'Summary', 'Monitor', 'Configure', 'Permissions', 'Hosts & Clusters', and 'Updates'. The 'Configure' tab is active, showing a table with columns: Hostname, PSNT, Status, and Actions. The table contains one row with Hostname 'vcluster202-esx05.demo.local' and PSNT 'V0202050000000'. The Status column shows a progress bar labeled 'Adding' with a green circle icon. The Actions column has a '--' button. A 'Hide Details' link is at the bottom right.

A completion message will display once complete.

The satellite node will now appear in the navigation pane, where you can select and manage the node.



The screenshot shows the 'Satellite Nodes' configuration page after completion. The left sidebar shows the 'Satellite Nodes' folder expanded, with 'vcluster202-esx05.demo.local' selected. The main area shows the 'Configure' tab with the 'Status' column displaying a green checkmark and the message 'The host was successfully added.' The Actions column now has a 'DISMISS' button. The 'Hide Details' link is still present.

Congratulations, you have now completed the process of adding a managed folder and satellite node!

# Update a VxRail Satellite Node

## Introduction

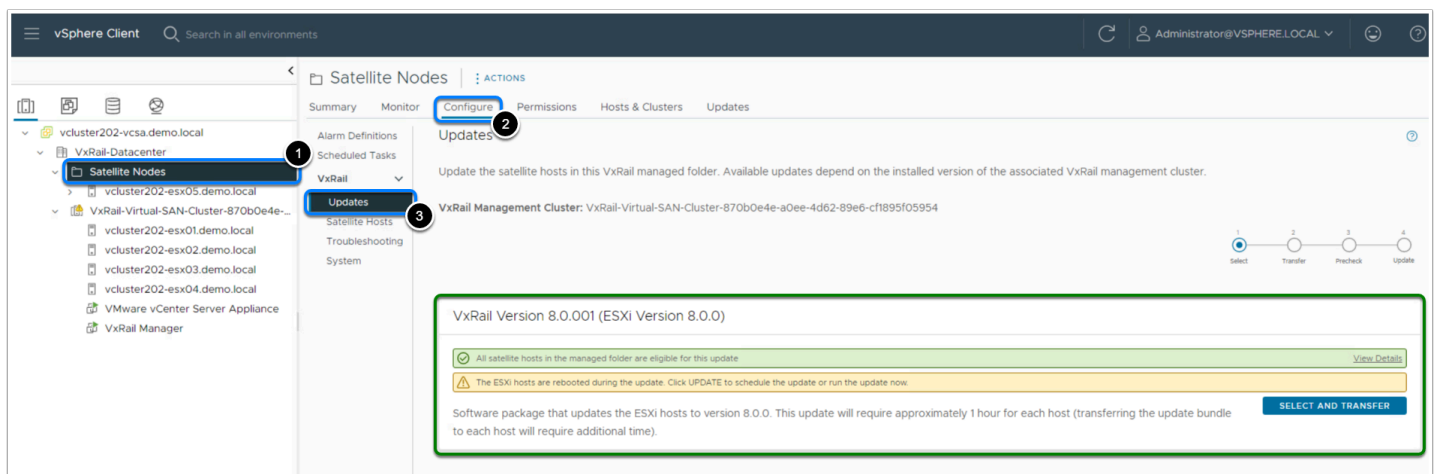
Updating a satellite node is slightly different from updating a VxRail cluster. The update bundle for satellite nodes is based on the recovery bundle of the managing cluster. The recovery bundle can include firmware, drivers, software, and PERC controller updates. The satellite node update will not include vCenter or VxRail Manager updates because those are only run on the cluster and not on the satellite node. Another major difference is that satellite nodes are not part of a cluster. VMs on the satellite node will be shutdown during the update and will not be migrated. Up to 20 satellite nodes can be updated in parallel.


Note: The recovery bundle is automatically created on the cluster anytime a cluster update is performed. In this lab an update bundle will already be in place.

## Updating a VxRail Satellite Node

Where: Managed folder **Satellite Nodes** > **Configure** > **VxRail** > **Updates**

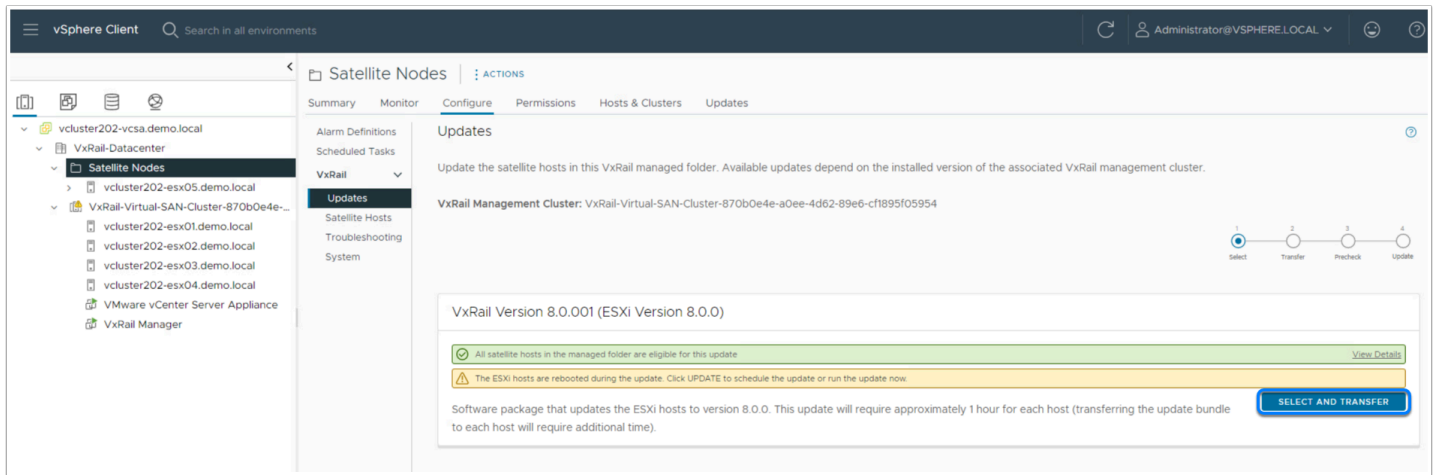
VxRail Manager will compare all satellite node software versions in the folder with available recovery bundle on the managing VxRail cluster and provide update options when node versions are behind.



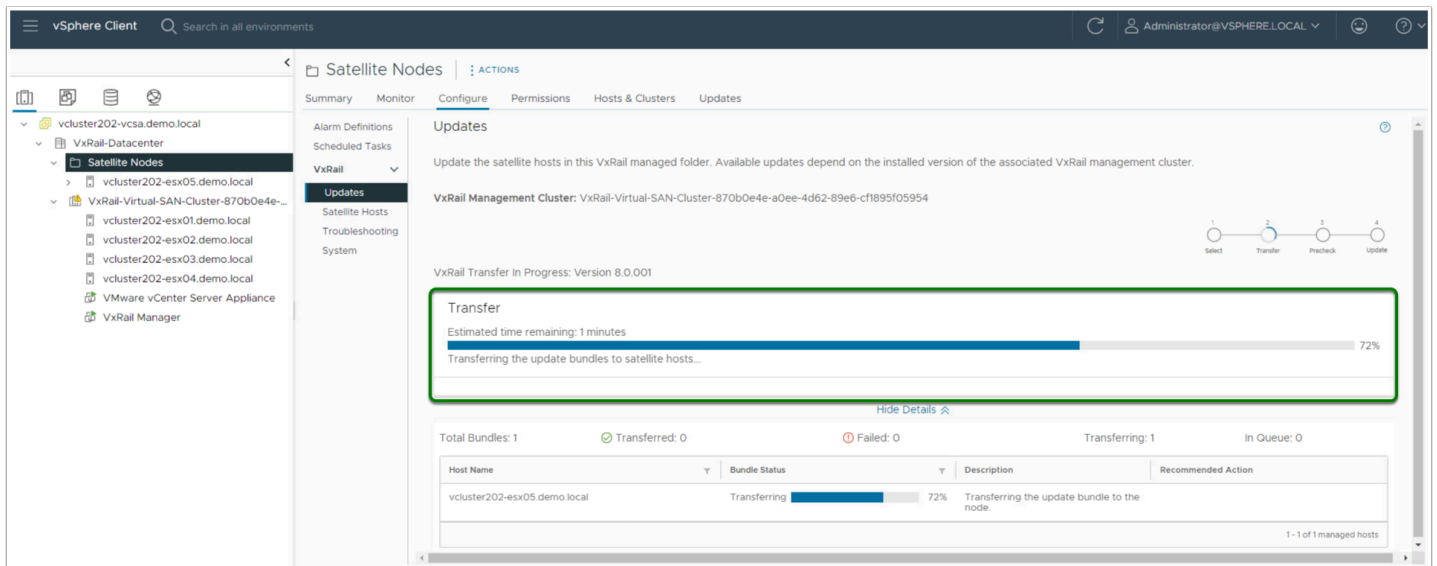
 **Note:** All nodes in a managed folder will be updated to the same software version. If different versions between nodes are desired, create multiple folders and group nodes by desired software version.

To upload the recovery bundle onto the satellite nodes in the managed folder, click **SELECT and TRANSFER**.

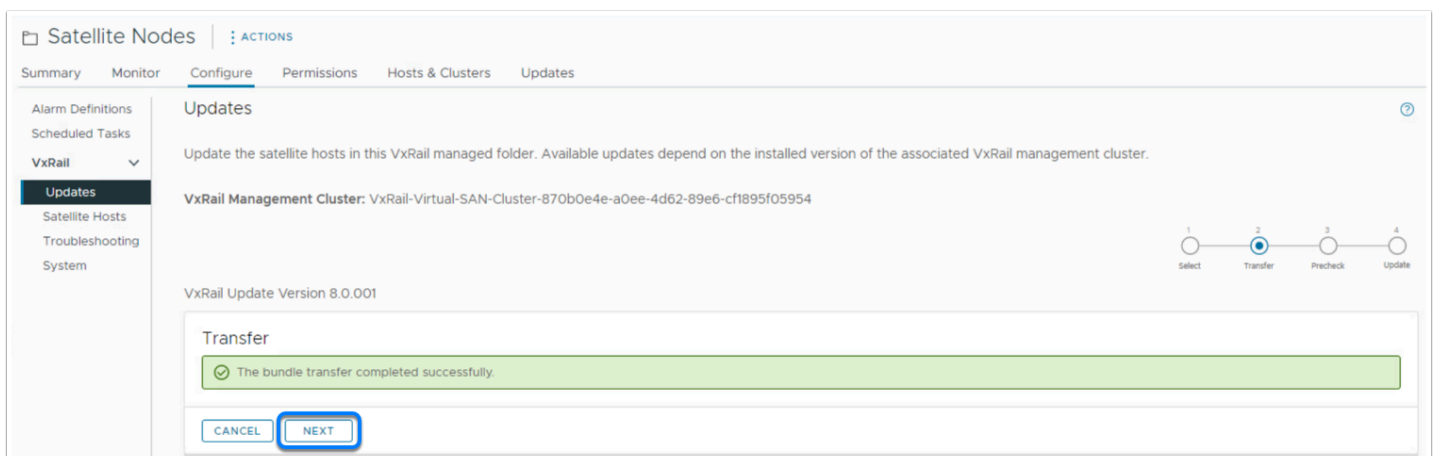




Now you can monitor the progress of the recovery bundle transfer onto the satellite node. If there were multiple satellite nodes in the folder, you can see the progress for each transfer job.



Once the job is completed, click **NEXT**.



Click **PRECHECK**

Updates

Update the satellite hosts in this VxRail managed folder. Available updates depend on the installed version of the associated VxRail management cluster.

**VxRail Management Cluster:** VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

1

2

3

4

Select

Transfer

Precheck

Update

VxRail Update Version 8.0.001

Precheck(optional)

You have the option to run a detailed precheck to assess whether your VxRail environment is ready for update.

PRECHECK

CANCEL

NEXT

After running the pre-check we can begin the update process.

Click **NEXT**

Updates

Update the satellite hosts in this VxRail managed folder. Available updates depend on the installed version of the associated VxRail management cluster.

**VxRail Management Cluster:** VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

1

2

3

4

Select

Transfer

Precheck

Update

VxRail Update Version 8.0.001

Precheck(optional)

✓

The pre-check completed successfully and did not identify any errors or warnings.

CANCEL

NEXT

Click **UPDATE**

Updates

Update the satellite hosts in this VxRail managed folder. Available updates depend on the installed version of the associated VxRail management cluster.

**VxRail Management Cluster:** VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

1

2

3

4

Select

Transfer

Precheck

Update

VxRail Update Version 8.0.001

Update

Click UPDATE to update now or schedule the update.

UPDATE

CANCEL

BACK

The update can be performed now or scheduled for a future time. In this lab we will check **Update Now**.

Check the box acknowledging that the VMs will be shutdown and restarted as part of the update process

Click **OK**

Schedule

Select to update your VxRail cluster now or schedule update for later.

☒ Update Now
☐ Schedule Update

MM/DD/YYYY
HH : MM
Use a 24-hour clock

☒ I understand that VMs will be automatically powered off before the host update and automatically powered on after the host update. I also understand that I should manually power off VMs before starting the update if the VMs need to be powered off in a particular sequence.

CANCEL OK

The automated update process will now begin. This process will take **~5 minutes**.

Progress can be monitored as shown below.

Updates

Update the satellite hosts in this VxRail managed folder. Available updates depend on the installed version of the associated VxRail management cluster.

VxRail Management Cluster: VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

1 2 3 4  
Select Transfer Precheck Update

VxRail Update In Progress: Version 8.0.001

Update
13%

Hide Details

Host Name	Status	Description	Recommended Action
vcluster202-esx05.demo.local	Running 13%	Updating the node.	--

1 - 1 of 1 managed hosts

The process will progress through the following steps:

- Check node compatibility
- Transfer recovery bundle to node
- Shut down VMs
- Put node in maintenance mode
- Update node
- Exit maintenance mode
- Restart VMs

Status will be indicated once complete.

## Verify Completion

Where: Satellite node **vcluster202-esx05.demo.local** > **Monitor** > **VxRail** > **Physical View**

Check the node information pane on the right and scroll down for the updated **Component Versions**.

The screenshot shows the vSphere Client interface for a VxRail node. The left sidebar shows a tree view with the following structure:

- vcluster202-vcsa.demo.local
  - VxRail-Datacenter
    - Satellite Nodes
      - vcluster202-esx05.demo.local** (selected)
      - VxRail-Virtual-SAN-Cluster-870b0e4e-...

The central pane shows the 'Monitor' tab for the selected node. It displays various metrics and a 'Front View' of the node. The 'Back View' shows the physical components of the node.

On the right, the 'Component Versions' pane is visible, showing the following information:

Component	Version
BIOS	1.8.2
BMC	6.00.30.00
HBA	16.17.01.00
Expander Back Plane	3.72
BOSS	2.5.13.3024
CPLD Firmware	1.0.2
IDSDM Firmware	2.0
<b>Component Versions</b>	
VMware ESXi	8.0.0-20513097
VxRail VIB	8.0.000-20793511
HBA Driver	17.00.13.00-2vmw800

Congratulations, you have successfully updated the VxRail satellite node!

## Module Conclusion

Congratulations on completing Module 4.

In this module, we covered:

- How to add a VxRail Satellite Node
- How to update a VxRail Satellite Node

Satellite nodes are a great addition to the VxRail family, empowering deployments at the edge. Satellite nodes are great for edge deployments because of their smaller footprint and lower costs (hardware and licensing).

In the next module, we will experience the simplicity of the VxRail cluster expansion process.

[Click here to jump straight back to the Lab Modules overview.](#)

# **Module 5 - Cluster Expansion or Scaling Out (15 min / Intermediate)**

# Add Nodes to a Cluster

## Cluster Expansion (Scaling Out)

In this module you will learn the ease and simplicity of adding a node to your VxRail cluster. This is a very simple process. One of the core benefits provided by VxRail is to allow a configuration to start small, at the right cost to satisfy the current demands, and then grow the configuration as needed, in small increments.

The expansion requires that the new node has been physically cabled to the cluster. When you power on a new node that is connected to the same network as the VxRail cluster, this node is automatically discovered by VxRail Manager. You can then start the wizard that will guide you through the steps to add the node to the cluster.

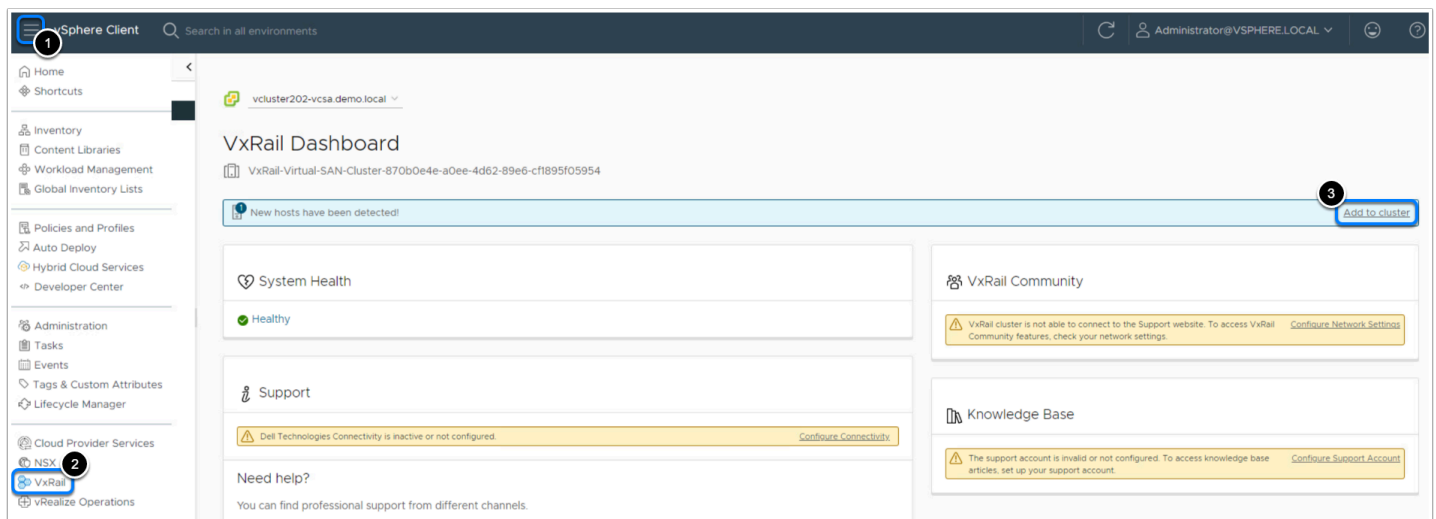
Note: Only the first 3 nodes in a cluster need to be identical. Additionally, VxRail clusters must be entirely all flash or entirely hybrid.

## The Add Node Wizard

There are several navigational ways to get to the Add Node function including:

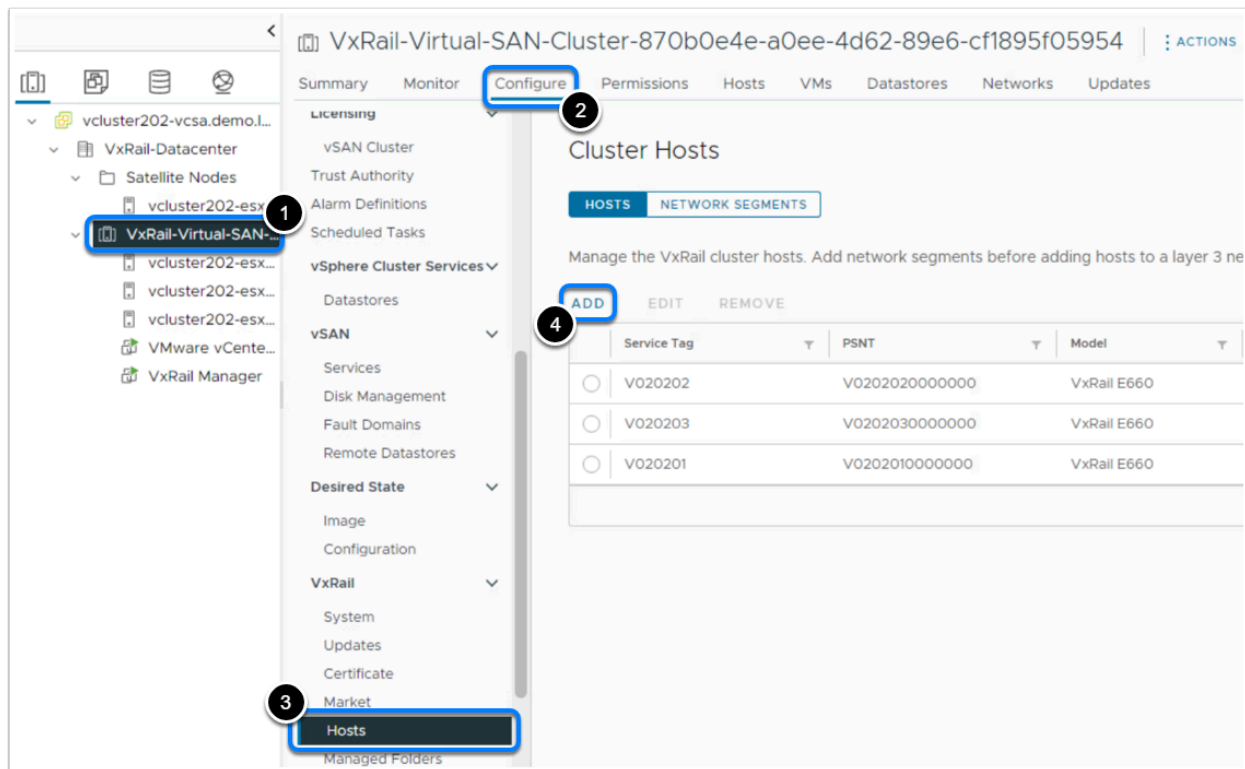
Where: Click **≡ > VxRail > Add to Cluster**

Note: This option will navigate to the option shown below.



Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx > Configure > VxRail > Hosts**

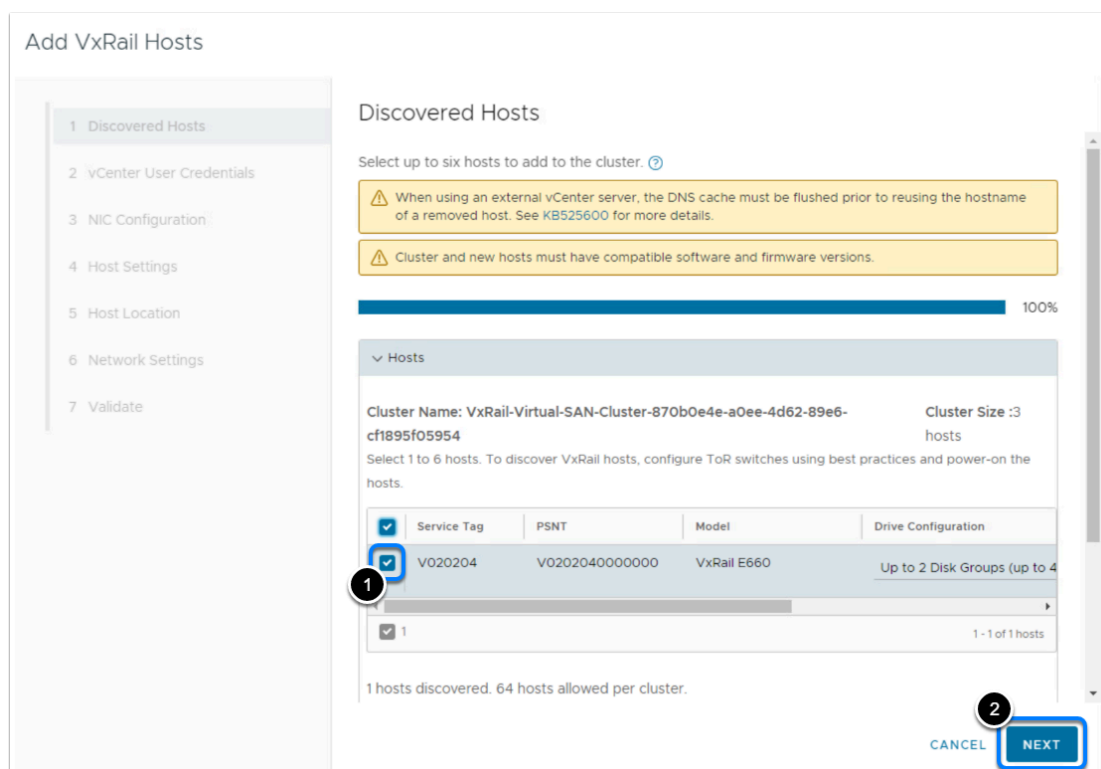
Click **Add** to start the Add VxRail Hosts wizard.




## Step 1 Discovered Hosts

Select the new node to be added **V020204**.

Click **NEXT**.





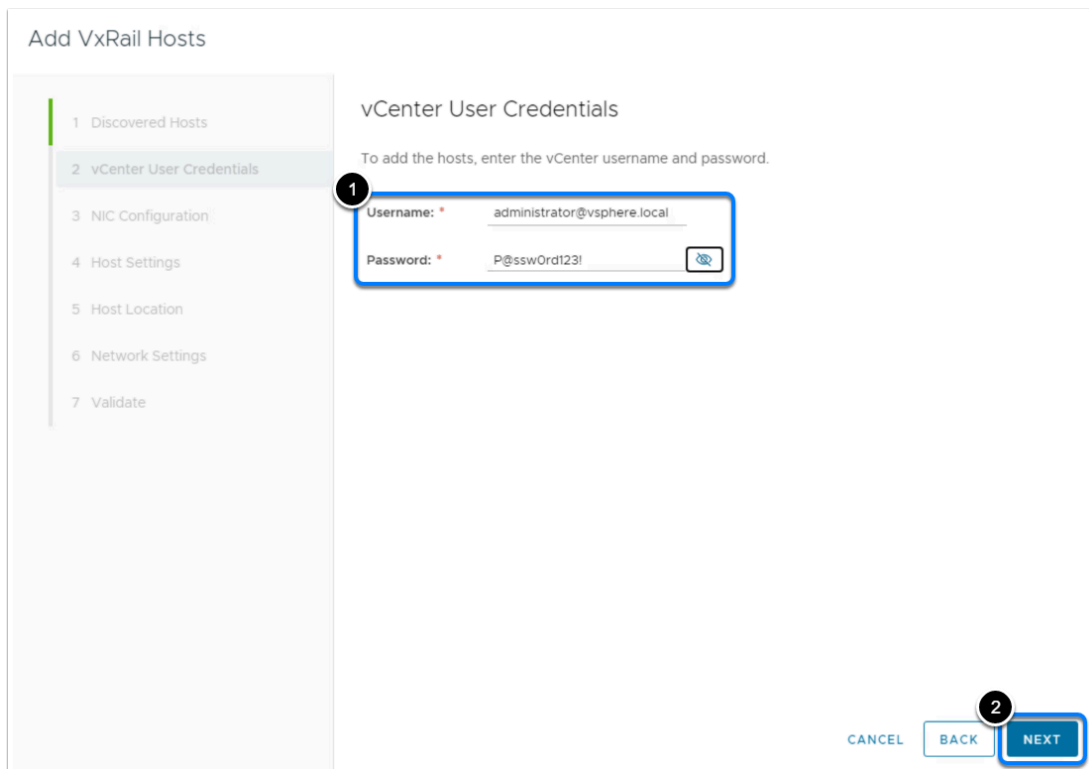
 Up to 6 nodes can be selected at a time for the cluster expansion procedure.

## Step 2 vCenter User Credentials

Enter the vSphere credentials for the user that will be performing this operation.

- Username: **administrator@vsphere.local**
- Password: **P@ssw0rd123!**

Click **NEXT**.



Add VxRail Hosts

1 Discovered Hosts

2 vCenter User Credentials

3 NIC Configuration

4 Host Settings

5 Host Location

6 Network Settings

7 Validate

vCenter User Credentials

To add the hosts, enter the vCenter username and password.

Username: \* administrator@vsphere.local

Password: \* P@ssw0rd123!

CANCEL BACK NEXT

## Step 3 NIC Configuration

Under **Select Configuration** select the host configuration to duplicate from the drop-down.

In this case select any host because they are all configured the same.

Add VxRail Hosts

1 Discovered Hosts  
2 vCenter User Credentials  
3 NIC Configuration  
4 Host Settings  
5 Host Location  
6 Network Settings  
7 Validate

### NIC Configuration

1. Select a configuration  
2. Select NICs and VMNICs

Select Configuration

NIC Configuration \* vcluster202-esx01.demo.local(VxRail E660)  
vcluster202-esx02.demo.local(VxRail E660)  
vcluster202-esx03.demo.local(VxRail E660)

NIC	VMNIC	Uplink	VDS
NDC Slot 1 Port 3 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic2	uplink1	VMware HCIA Distributed Switch
NDC Slot 1 Port 4 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic3	uplink2	VMware HCIA Distributed Switch

☐ Show new host physical summary

Select NICs and VMNICs

Host	Service Tag	Model	Physical NICs
> 1	V020204	VxRail E660	4 NDC

CANCEL BACK NEXT

Under **Select NICs and VMNICs** the selected configuration can be further customized by changing the VMNICs that are assigned to the Uplinks. In this case no change is required.

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts  
2 vCenter User Credentials  
3 NIC Configuration  
4 Host Settings  
5 Host Location  
6 Network Settings  
7 Validate

### NIC Configuration

1. Select a configuration  
2. Select NICs and VMNICs

Select Configuration

NIC Configuration \* vcluster202-esx01.demo.local(VxRail E660)  
vcluster202-esx02.demo.local(VxRail E660)  
vcluster202-esx03.demo.local(VxRail E660)

NIC	VMNIC	Uplink	VDS
NDC Slot 1 Port 3 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic2	uplink1	VMware HCIA Distributed Switch
NDC Slot 1 Port 4 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic3	uplink2	VMware HCIA Distributed Switch

☐ Show new host physical summary

Select NICs and VMNICs

Host	Service Tag	Model	Physical NICs
1	V020204	VxRail E660	4 NDC

NIC	VMNIC *	Uplink	VDS
NDC Slot 1 Port 3 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic2	uplink1	VMware HCIA Distributed Switch
NDC Slot 1 Port 4 Intel(R) Ethernet 10G 4P X550 rNDC	vmnic3	uplink2	VMware HCIA Distributed Switch

CANCEL BACK NEXT

## Step 4 Host Settings

You now need to provide host configuration settings for the new host. Provide a hostname and IP address and provide credential values for the ESXi management account.

The following hostname and IP address have already been put in DNS and now need to be entered here:

- Hostname: **vcluster202-esx04**
- IP address: **192.168.1.24**

Enter the following ESXi credential information:

- ESXi Management Username: **management**
- ESXi Management Password: **P@ssw0rd123!**
- ESXi Root Password: **Passw0rd!**

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts  
2 vCenter User Credentials  
3 NIC Configuration  
4 Host Settings  
5 Host Location  
6 Network Settings  
7 Validate

Host Settings

Host

Service Tag V020204

PSNT V0202040000000

ESXi Hostname \* ① vcluster202-esx04

Preview vcluster202-esx04.demo.local

ESXi IPv4 address \* ① 192.168.1.24

ESXi Management Username \* management

ESXi Management Password \* P@ssw0rd123!

Re-enter ESXi Management Password \* P@ssw0rd123!

ESXi Root Username root

ESXi Root Password \* Passw0rd!

Re-enter ESXi Root Password \* Passw0rd!

CANCEL BACK NEXT

## Step 5 Host Location

Host Location (optional) can be used to enter a rack name and position of the node. This information is shown in the physical view of the cluster, where the view can be ordered by node position. This is very useful in larger environments.

Enter a rack name and position (optional).

Click **NEXT**.

**Add VxRail Hosts**

1 Discovered Hosts  
2 vCenter User Credentials  
3 NIC Configuration  
4 Host Settings  
**5 Host Location**  
6 Network Settings  
7 Validate

**Host Location**

You have the option to provide host rack information.

Service Tag	PSNT	ESXi Hostname	ESXi IP Address	Rack Name	Rack Position
V020204	V02020400000000	vcluster202-esx04	192.168.1.24	1	4

**1**

**2**

CANCEL BACK **NEXT**

## Step 6 Network Settings

In step 6 we need to provide the vSAN and vSphere vMotion network addresses for the node.

When the cluster was deployed, there were 4 IP addresses assigned to each network, but only configured 3 hosts.

This means that there is an extra IP address still available in each network, so we can proceed without any changes.

However, if only 3 IP addresses had been provisioned, you would have to extend the IP pools for Management, vMotion and vSAN first.

Enter:

- vSAN IP address: **192.168.2.24**
- vMotion IP address: **192.168.3.24**

Click **NEXT**.

Add VxRail Hosts

1 Discovered Hosts  
2 vCenter User Credentials  
3 NIC Configuration  
4 Host Settings  
5 Host Location  
6 Network Settings  
7 Validate

### Network Settings

Provide the virtual network settings for the host(s) to be added to the VxRail cluster

**vSAN**

ESXi Hostname vcluster202-esx04

IPv4 address \* 192.168.2.24

Gateway IPv4 address

Subnet Mask 255.255.255.0

VLAN ID 0

**vSphere vMotion**

ESXi Hostname vcluster202-esx04

IPv4 address \* 192.168.3.24

Gateway IPv4 address

CANCEL BACK NEXT

## Step 7 Validate

The wizard now has all required information to autonomously add the new node into the VxRail cluster.

Click **VALIDATE**, to first perform a final validation of the node expansion process.

### Add VxRail Hosts

- Discovered Hosts
- vCenter User Credentials
- NIC Configuration
- Host Settings
- Host Location
- Network Settings
- Validate

### Validate

Review the information below and click VALIDATE to validate the host and network configuration.

#### Hosts

1 hosts will be added.

Service Tag	PSNT	Model	Hostname	ESXi IPv4 address	vSphere vMotion IPv4	vSAN IPv4
V020204	V020204000000	VxRail E660	vcluster202-esx04.demo.local	192.168.1.24	192.168.3.24	192.168.2.24

CANCEL
BACK
VALIDATE

During the validation process the wizard shows a progress bar and the steps it is processing. The validation process will take a few minutes to complete.

### Add VxRail Hosts

- Discovered Hosts
- vCenter User Credentials
- NIC Configuration
- Host Settings
- Host Location
- Network Settings
- Validate

### Validate

Validation in Progress ...

Expansion host IP addressavailability configuration validation...

5/29

CANCEL
BACK
VALIDATE

The final step of the node expansion process, once the validation is successfully finished, is to confirm the expansion request.

We have the option to select yes or no for placing the new node into maintenance mode. We will leave it as **No**.

Click **FINISH**.

**Add VxRail Hosts**

- 1 Discovered Hosts
- 2 vCenter User Credentials
- 3 NIC Configuration
- 4 Host Settings
- 5 Host Location
- 6 Network Settings
- 7 Validate**

**Validate**

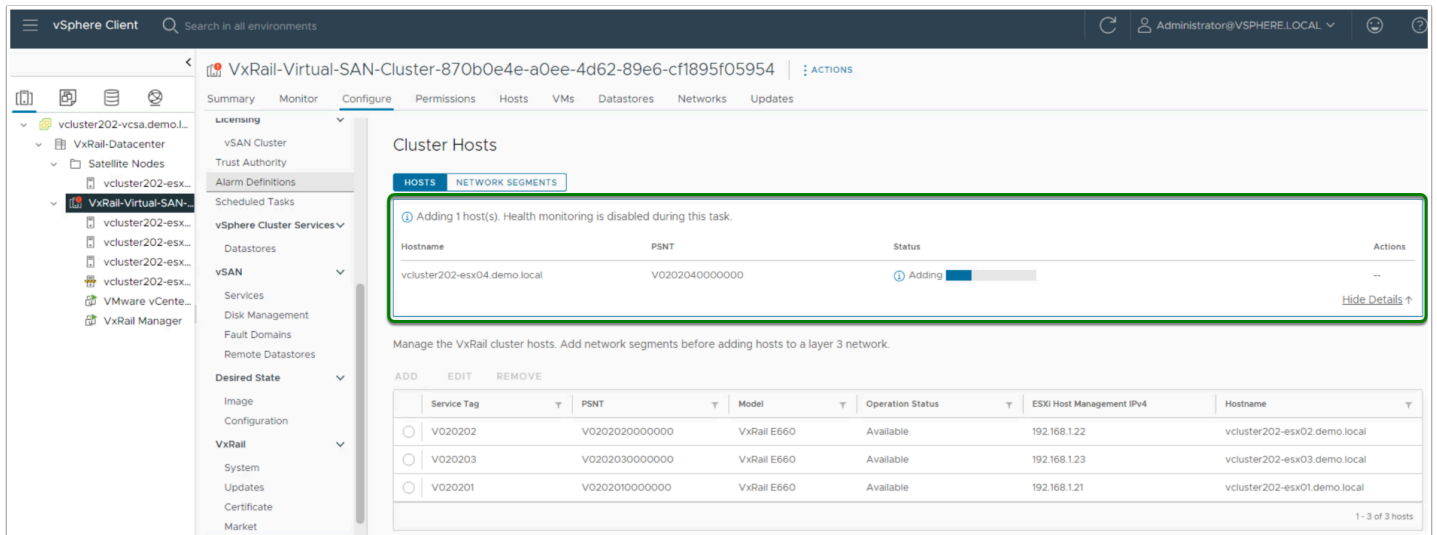
✓ The configuration was validated successfully. Click FINISH to add the hosts to the cluster.

Place Hosts in Maintenance Mode ☐ Yes ☒ No

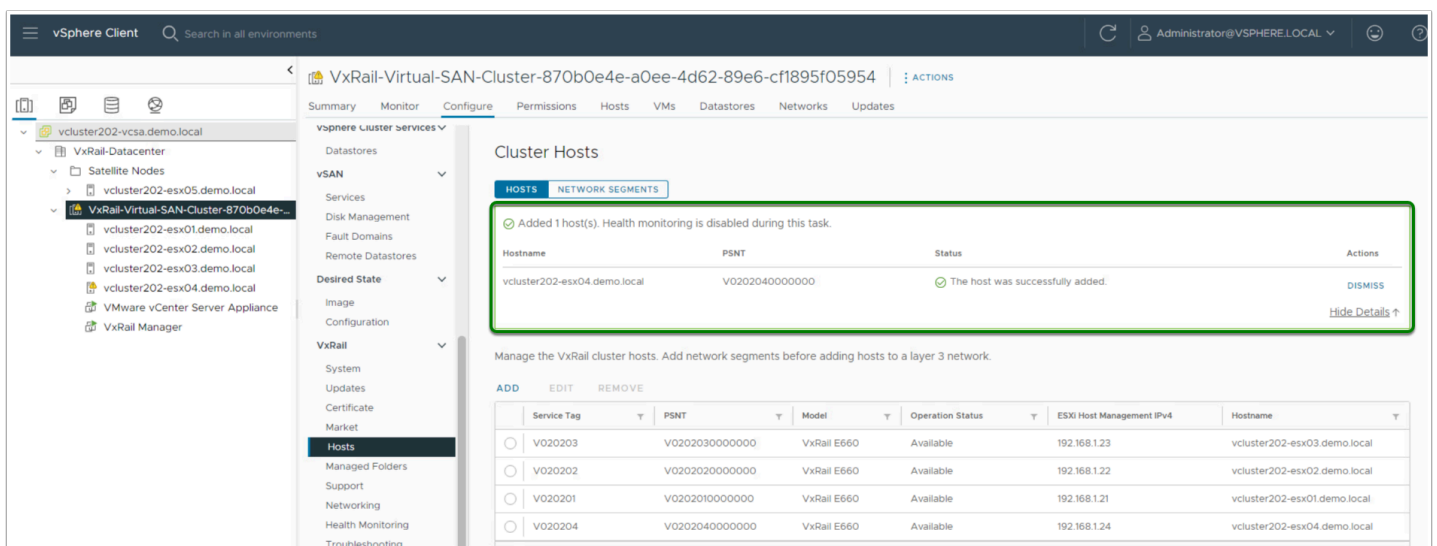
CANCEL BACK **FINISH**

💡 Putting a node in maintenance mode is only useful if other steps need to be performed after it has been added, but before it is made operational. This is used for VMware Cloud Foundation on VxRail environments, when SDDC Manager adds a node to an existing Workload Domain.

After clicking finish it will build the node and add it to the cluster. While in progress, you can monitor the expansion process in the Hosts window. This process will take **~5 minutes** to complete.



When finished, a message will briefly be displayed to notify the user that the node expansion has completed.

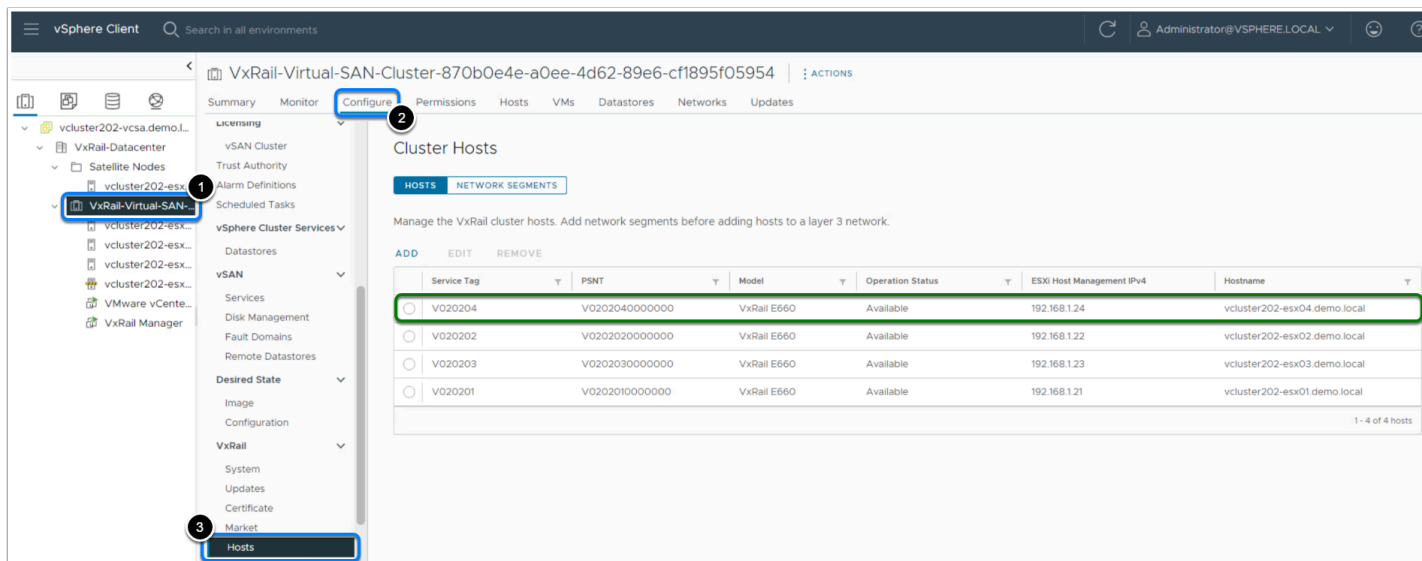


**i** When the node has been added to the cluster, a warning may be showing on the node that the host has no management network redundancy. This is unique behavior as a result of running a virtual VxRail for this hands-on lab. It has no further impact to this hands-on lab.

The VxRail cluster will now reflect the host expansion in the VxRail Hosts window.

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Hosts**





The health and other information about the new node can be observed as already demonstrated in the previous module **Monitoring and Maintenance**.

Congratulations you've now successfully expanded the VxRail cluster!

## Module Conclusion

Congratulations on completing Module 5.

In this module, you explored a key enabling aspect of the VxRail platform: its scale out functionality. This underpins the capability to start small and grow when needed. The procedure is straight forward and basically consists of the following steps:

1. Navigate to the Add Hosts function which will show the newly discovered and available hosts.
2. Start the Add Hosts Wizard.
3. Provide required credentials.
4. Validate the input.
5. Start the cluster expansion process.

In the next and last module, you will see how easy it is to perform the Lifecycle Management (LCM) process and upgrade the VxRail cluster with a few simple clicks.

[Click here to jump straight back to the Lab Modules overview.](#)

# **Module 6 - Lifecycle Management or LCM (10 min / Intermediate)**

# VxRail Lifecycle Management Introduction

## VxRail Lifecycle Management Overview

In this module you will learn and experience the ease and simplicity of updating the system software of your VxRail cluster. This is again a very easy process. One of the strengths of VxRail is the **full-stack** LCM functionality, which makes updating the cluster a simple and automated process.

The software that makes the VxRail system includes: VxRail Manager, VMware vCenter, vSAN and VMware ESXi. The composite update bundle will also include firmware of components for which an update is required (if LCM is supported for that component).

VxRail LCM has some great features including the **Compliance Report** (shows where your system is out of compliance against the Continuously Validated State), the **Update Advisory Report** (shows what your future state would look like if the selected update is performed and which components would need to be updated), and estimated update duration (to help you determine the maintenance window).

Executing the update process is quite long for a hands-on lab experience, so **there is also the option to go through the time-lapsed LCM experience by choosing to use the interactive demo** link below. The VxRail interactive demo, demonstrates how to upgrade the cluster in a streamlined experience.

Link to the [Interactive Demo](#) (select "Start" > "LCM Update")

## Predictably evolve with full stack integrations

VxRail allows you to predictably evolve by providing full stack upgrades via a singular unified update experience. VxRail is sustained as a single product. That means no more managing multiple tiers of infrastructure and the associated complexity of manually ensuring a continuously validated state across all components in the system whenever any component update is needed. With VxRail, simply download and install the pre-tested, validated, engineered, single software package to update. Whether the update included critical hypervisor fixes, BIOS updates, new firmware, or support for new hardware platforms to be used in the same cluster, it is a single package with everything that will simply work...taking you from one continuously validated state to the next continuously validated state. Best of all, the releases of VxRail software packages are synchronized to align with the delivery of VMware software within 30 days of their release. This synchronization ensures VxRail customers can stay current with the latest features and security fixes. Below is a snapshot of what a VxRail continuously validated state consists of and how VxRail ensures this integrity as users update their clusters.

# Testing the validated state

Example upgrade cadence

## SOFTWARE

VxRail	7.0.320
ESXi	7.0 U3c
vSAN	7.0 U3c

## HARDWARE

BIOS	1.3.8 (CNDYW)
HBA355i	FW: 17.15.08.00 (4CJY9) Driver: 19.00.03.00
PERC H755	FW: 52.16.1-4074 (KVYMT) Driver: 7.716.03.00
Intel X710 DP/QP	FW: 20.5.13 (M20T0) Driver: 2.1.5.0 (Ethernet)
Intel X710-T2L DP	FW: 20.5.13 (M20T0) Driver: 2.1.5.0 (Ethernet)
Intel X710-T4L QP	FW: 20.5.13 (M20T0) Driver: 2.1.5.0 (Ethernet)
Intel E810-XXV DP	FW: 20.5.13 (NVXX9) Driver: 1.6.2 (Ethernet)
BCM 57412 DP	FW: 21.85.21.91 (YPXWJ) Driver: 218.0.21.0 (RDMA)
BCM 57414 DP	FW: 21.85.21.91 (YPXWJ) Driver: 218.0.21.0 (RDMA)
Mellanox CX-6 DP	FW: 22.31.10.14 (0WF35) Driver: 4.21.71.101 (RoCE)
iDRAC	5.00.10.20 (YCFHY)
iSM	4.1.0 (C8YW2)
PM	1.0, 1.1 (E660/F, P/V670F) 1.0 (E660N, S670)
BOSS-S1	2.5.1.13.3024 (3P39V) E660/F/N, P/V670F
BOSS-S2	2.5.13.4008 (9MVC3P)
Expander backplane	1.17 (GKRX8) P/V670F

Choose your  
validated state

Seamlessly  
bypass interim  
updates

Document  
compliance  
automatically

or

7.0.350  
7.0 U3c  
7.0 U3c

or

7.0.410  
7.0 U3i  
7.0 U3i

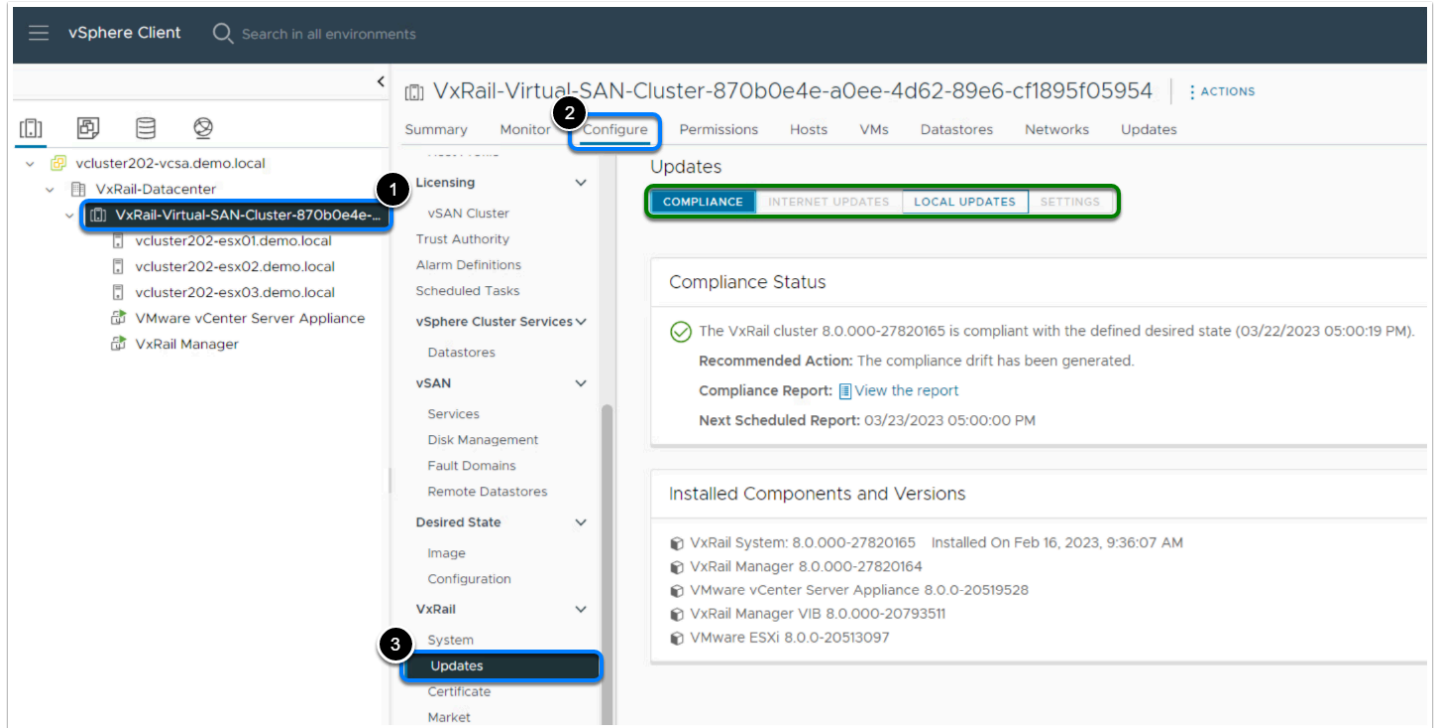
or

8.0.000  
8.0  
8.0

# Performing the full-stack update of the VxRail System Software

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Updates**

We will focus on the first 3 tabs.



## Compliance Tab

The **Compliance Status** section shows cluster compliance status and options to view/generate the **Compliance Report**, which we will cover in more detail below.

The **Installed Components and Versions** section shows current versions of the key software on the VxRail cluster.

Updates

COMPLIANCE

INTERNET UPDATES

LOCAL UPDATES

SETTINGS

Compliance Status

✓

The VxRail cluster 8.0.000-27820165 is compliant with the defined desired state (03/22/2023 05:00:19 PM).

CREATE NEW REPORT

Recommended Action: The compliance drift has been generated.

Compliance Report: [View the report](#)

Next Scheduled Report: 03/23/2023 05:00:00 PM

Installed Components and Versions

VxRail System: 8.0.000-27820165
Installed On Feb 16, 2023, 9:36:07 AM

VxRail Manager 8.0.000-27820164

VMware vCenter Server Appliance 8.0.0-20519528

VxRail Manager VIB 8.0.000-20793511

VMware ESXi 8.0.0-20513097

## Generating & Viewing the Compliance Report

Click **CREATE NEW REPORT**

Updates

COMPLIANCE

INTERNET UPDATES

LOCAL UPDATES

SETTINGS

Compliance Status

✓

The VxRail cluster 8.0.000-27820165 is compliant with the defined desired state (03/22/2023 05:00:19 PM).

CREATE NEW REPORT

Recommended Action: The compliance drift has been generated.

Compliance Report: [View the report](#)

Next Scheduled Report: 03/23/2023 05:00:00 PM

Click **CREATE**

### Create Compliance Drift Report

The report evaluates the VxRail cluster compliance using the defined desired state.

**Cluster Name:** VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

**Desired State:** 8.0.000-27820165

CANCELCREATE

The report will then be generated

Click **View the report** to open the report

### Updates

COMPLIANCEINTERNET UPDATESLOCAL UPDATESSETTINGS

#### Compliance Status

✓ The VxRail cluster 8.0.000-27820165 is compliant with the defined desired state (03/23/2023 11:55:14 AM).

**Recommended Action:** The compliance drift has been generated.

**Compliance Report:** [View the report](#)

**Next Scheduled Report:** 03/23/2023 05:00:00 PM

This opens the **Compliance Report**, which will show where the cluster may have drifted out of compliance with the current desired state. The report will detail things such as: Timestamp, Desired State, and Component/Subcomponent compliance status.

In this case all components are compliant. More detail can be seen by expanding components or changing the grouping.

Click **CLOSE** when finished.



VxRail Compliance Drift Report

Cluster Compliance Summary

Components (5)

Subcomponents (51)

Outcome:

03/23/2023 11:55:14 AM

VxRail-Virtual-SAN-Cluster-870b0e4e-a0ee-4d62-89e6-cf1895f05954

Desired State: 8.0.000-27820165

Compliant

Non-Compliant (0)

Non-Compliant (0)

Compliant (5)

Compliant (51)

Details

☒ Group by component

Status and Summary	Component Type	Component
<div> <div> Compliant </div> </div>	ESXi_HOST	vcluster202-esx02.demo.local

Status	Subcomponent	Current State (Version)
Compliant	BIOS for 15G R650/R750	1.8.2
Compliant	iDRAC for VxRail E660	6.00.30.00
Compliant	BOSS Firmware	2.5.13.3024
Compliant	Disk Controller for HBA 330 Adapter	16.17.01.00

1 - 5 of 5 components

CLOSE

## Internet Updates Tab

This tab is only relevant if the cluster has internet connectivity. If a VxRail cluster has connectivity to the internet, then it will automatically indicate when a new version is available for a cluster update. Without connectivity, the update bundle would need to be downloaded first onto a local client and provided uploaded to the VxRail Manager (Local Updates tab). In this hands-on lab, we will have to provide the bundle locally.

Below is an example of a cluster with internet connectivity. This guide will walk you through the steps of generating an update advisory report from the Internet Updates tab.

This tab can be filtered to show the **recommended** updates, or it can show **all** available updates.

This tab is also the place where an **Advisory Report** can be generated.

Updates

COMPLIANCE
INTERNET UPDATES
LOCAL UPDATES
SETTINGS

1
2
3
4

Select
Precheck
Scan
Update

RECOMMENDED SYSTEM UPDATES

VxRail System 7.0.350.27409467
RECOMMENDED

Posted on Feb 14, 2022, 8:00:00 AM

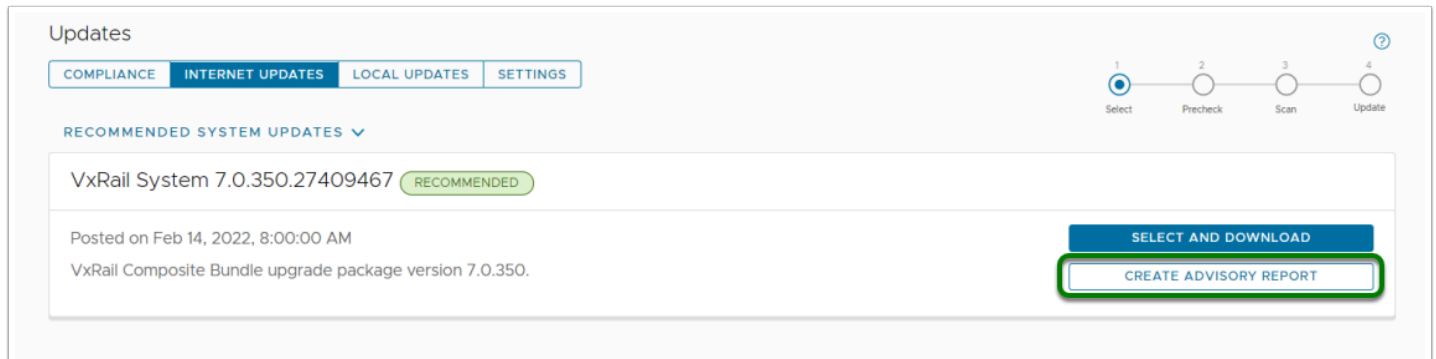
VxRail Composite Bundle upgrade package version 7.0.350.

SELECT AND DOWNLOAD

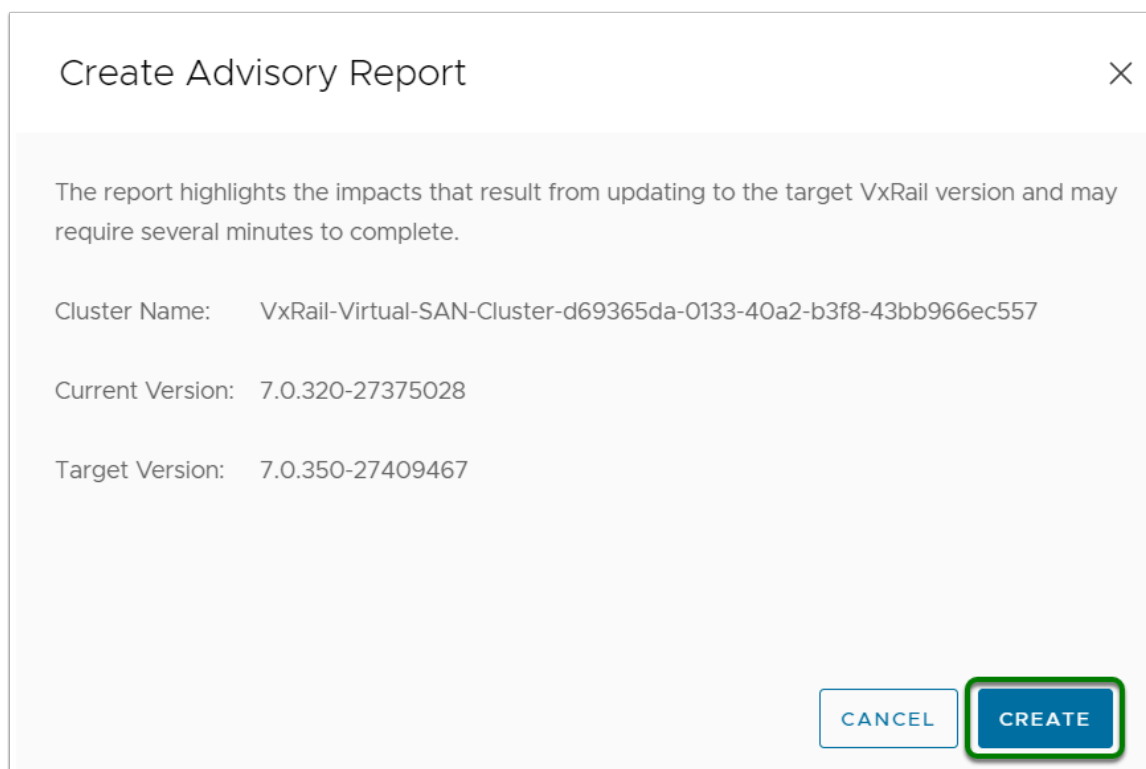
CREATE ADVISORY REPORT

## Generating & Viewing the Advisory Report

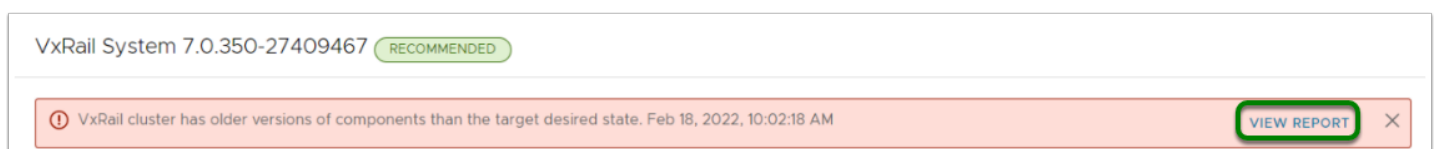
Click **CREATE ADVISORY REPORT**



Click **CREATE**



Once the report is generated Click **VIEW REPORT**



The **Advisory Report** will look very similar to the **Compliance Report** but it shows where components will be non-compliant compared to a **FUTURE** desired state or continuously validated state. This is

powerful for understanding the scope of the change required and using the information to build the change report .

VxRail Update Advisory Report
×

Cluster Compliance Summary	Components (5)	Subcomponents (54)
Outcome: <span>🔔 Update Required</span>	<span>✅ No Updates Required (1)</span>	<span>✅ No Updates Required (45)</span>
Timestamp: 02/18/2022 10:02:18 AM	<span>🔔 Updates Required (4)</span>	<span>🔔 Updates Required (9)</span>
Cluster Name: VxRail-Virtual-SAN-Cluster-d69365da-0133-40a2-b3f8-43bb966ec557		
Desired State: 7.0.350-27409467		

Details ☒ Group by component

	Status and Summary	Component Type	Component	Target Version
>	<span>🔔 3 Updates Required</span>	ESXI_HOST	vcluster101-esx02.vv003.local	--
>	<span>🔔 3 Updates Required</span>	ESXI_HOST	vcluster101-esx01.vv003.local	--
	<span>🔔 1 Update Required</span>	SOFTWARE	VxRail Manager	7.0.350
	<span>✅ No Updates Required</span>	SOFTWARE	VMware vCenter Server Appliance	7.0.3

1 - 5 of 5 components

CLOSE REPORT

## Local Updates Tab

The **Local Updates** can be used when no internet connection is available.

This is useful for example at dark sites, where the Internet Updates tab cannot be used. The update bundle can be provided locally and then uploaded to the VxRail Manager.

**Option 1** is to download the update bundle and stage its contents for a cluster update.

**Option 2** is to first generate an advisory report before proceeding with a cluster update.

Note: You will not see this screen below as Option 1 was already chosen to avoid having you wait for a long upload operation to complete.

Updates

COMPLIANCE

INTERNET UPDATES

LOCAL UPDATES

SETTINGS

1 Select

2 Precheck

3 Scan

4 Update

Option 1: Update VxRail

To update the VxRail cluster, select and upload a VxRail update bundle from your local system. Note: First download the bundle from the Dell support site to your local system.

SELECT UPDATE BUNDLE

UPLOAD

Option 2: Create Advisory Report and Update VxRail

To create an advisory report before updating the VxRail cluster, select and upload a VxRail report-and-update-options file from your local system. The advisory report highlights any impacts that will result from updating to the desired VxRail version. Note: You must first download the file from the Dell support site to your local system.

SELECT REPORT FILE

UPLOAD

The bundle upload and extraction process takes a while to complete due to the large bundle size (more than 10GB). Because we have already performed this step for you, you can start the update wizard right away and experience exactly what it is like to kick off the LCM process on an actual physical VxRail environment.

## LCM Pre-Check

The window is showing some informational messages, to inform that you can run a pre-check and that the estimated update time is 1.7 hours (this may take a minute to appear). This time estimate is calculated, and is dependent for example on the source and target version, the underlying VxRail models and the included components.

Click **PRE-CHECK**

Updates

COMPLIANCE

INTERNET UPDATES

LOCAL UPDATES

SETTINGS

1 Select

2 Precheck

3 Scan

4 Update

VxRail Update In Progress: Version 8.0.001-27889232

Precheck(optional)

You have the option to run a pre-check and identify issues before you apply the update. 'Click' PRE-CHECK to view the pre-check page.

Estimated Minimum Update Time: 1.7 hours.

Note: This estimate does not include the time to resynchronize data on the cluster. Refer to KB535956 for more details.

PRE-CHECK

CANCEL

NEXT

Click **RUN PRE-CHECK**

HOL-0301-01 - VxRail - Simplifying IT through Standardization and Automation (8.0.000)

Page 112

Updates

COMPLIANCE INTERNET UPDATES **LOCAL UPDATES** SETTINGS

VxRail Update In Progress: Version 8.0.001-27889232

1 2 3 4  
Select Precheck Scan Update

① You have the option to run a pre-check and identify issues before you apply the update.

CLOSE PRE-CHECK

**RUN PRE-CHECK**

Type in credentials:

VxRail Manager root account

- username: **root**
- password: **Vxrailtest123!**

vCenter administrator account

- username: **administrator@vsphere.local**
- password: **P@ssw0rd123!**

Note: there is an option to skip a node during a cluster update. When enabled, this feature allows for the cluster update to continue onto the next node if a node fails to enter maintenance mode. One common reason is when there is a host affinity rule applied to VMs that prevents them from being migrated onto another node.

Click **VALIDATE**

Pre-Check Credentials

VxRail Manager Credentials

VxRail Manager root account username \*

VxRail Manager root account password \*

vCenter Credentials

vCenter administrator account username \*

vCenter administrator account password \*

1

root

Vxrailtest123!

administrator@vsphere.local

P@ssw0rd123!

Update Rule

① The cluster update will continue to the next host if the current host fails before entering maintenance mode (i.e., before starting the host firmware and driver update).

Continue Update If Host Update Fails ☐ Disabled

2

CANCEL **VALIDATE** CONFIRM

Once the credentials are successfully validated, Click **CONFIRM**.

### Pre-Check Credentials

#### VxRail Manager Credentials

VxRail Manager root account username \*

root

VxRail Manager root account password \*

Vxrailtest123!

#### vCenter Credentials

vCenter administrator account username \*

administrator@vsphere.local

vCenter administrator account password \*

P@sswOrd123!

#### Update Rule

The cluster update will continue to the next host if the current host fails before entering maintenance mode (i.e., before starting the host firmware and driver update).

Continue Update If Host Update Fails

☐ Disabled

CANCEL

VALIDATE

CONFIRM

The pre-check will then run and display errors or warnings that are generated.

Note: the warnings generated in the lab are due to the structure of the lab.

Click **CLOSE PRE-CHECK**

### Updates

COMPLIANCE
INTERNET UPDATES
LOCAL UPDATES
SETTINGS

1 Select
2 Precheck
3 Scan
4 Update

VxRail Update In Progress: Version 8.0.001-27889232

The pre-check identified 4 warning(s). You can repair problems and re-run the pre-check before applying the update.

CLOSE PRE-CHECK
RUN PRE-CHECK

Pre-check completed: 03/23/2023 01:14:49 PM

Errors(0)
Warnings(4)
All(215)

<IPMI tool for node hardware> [vcluster202-esx01] IPMI tool could not find node hardware Please refer to KB See KB000043134.

<IPMI tool for node hardware> [vcluster202-esx02] IPMI tool could not find node hardware Please refer to KB See KB000043134.

<IPMI tool for node hardware> [vcluster202-esx03] IPMI tool could not find node hardware Please refer to KB See KB000043134.

<VXM certificate validity check> Modulus mismatch between server.crt and server.key. Please refer to KB See KB000198406.

Click **NEXT** to begin update process.

Updates

COMPLIANCE
INTERNET UPDATES
LOCAL UPDATES
SETTINGS

1 Select
2 Precheck
3 Scan
4 Update

VxRail Update In Progress: Version 8.0.001-27889232

VxRail Identified Warnings

03/23/2023 01:14:49 PM: The pre-check identified 4 warning(s). 'Click' PRE-CHECK to view the details.

PRE-CHECK

CANCEL
NEXT

## LCM Change Report

The LCM Change Report lists all the components in a table. The table shows the current version that is running on the component as well as the target version that the component will be running after the cluster update. It also shows whether the component update requires a node reboot. This report helps the administrator understand the scope of the changes required in the VxRail cluster to perform an update.

The Scan button on the right would look for user-managed items such as FC HBA firmware and drivers that can be uploaded and updated as part of the VxRail LCM process for a simpler and faster update experience. Items here are not part of the VxRail Continuously Validated State and requires the user to separately validate and qualify the firmware and drivers. For the purposes of this lab, we will be skipping this step.

Click **NEXT** to continue the update process.

Updates

COMPLIANCE
INTERNET UPDATES
LOCAL UPDATES
SETTINGS

1 Select
2 Precheck
3 Scan
4 Update

VxRail Update In Progress: Version 8.0.001-27889232

Change Report

All(17)
Errors(0)

CUSTOMIZE

SCAN

Status	Component	Type	Managed By	Current Version	Target Version	Host reboot
✓	BIOS for I5G R650/R750	Firmware	VxRail	1.8.2	1.8.2	Reboot not required
✓	iDRAC for VxRail E660	Firmware	VxRail	6.00.30.00	6.00.30.00	Reboot not required
✓	BOSS Firmware	Firmware	VxRail	2.5.13.3024	2.5.13.3024	Reboot not required
✓	Disk Controller for HBA 330 Adapter	Firmware	VxRail	16.17.01.00	16.17.01.00	Reboot not required
✓	NIC Firmware for I350/x520/x540/x550	Firmware	VxRail	21.5.9	21.5.9	Reboot not required
✓	NIC Driver for I350	Driver	VxRail	1.10.2.0	1.10.2.0	Reboot not required
✓	Intel NIC Driver for E810	Driver	VxRail	1.9.8.0	1.9.8.0	Reboot not required
✓	PERCCLI VIB for vSphere 8	Driver	VxRail	007.2110.0000.0000	007.2110.0000.0000	Reboot not required

1 - 8 of 17 components
<
1
/ 3
>

CANCEL
BACK
NEXT

## LCM Update

Some warnings are displayed before continuing the update, they are a good reference of things to be aware of before updating.

Click **CONTINUE UPDATE**

The screenshot shows the 'Updates' section of the VxRail interface. At the top, there are tabs for 'COMPLIANCE', 'INTERNET UPDATES', 'LOCAL UPDATES' (which is selected), and 'SETTINGS'. A progress bar at the top right shows four steps: 1. Select, 2. Precheck, 3. Scan, and 4. Update (which is the current step). Below the tabs, it says 'VxRail Update In Progress: Version 8.0.001-27889232'. The main content area has a heading 'VxRail is Ready to Update Your Cluster'. Below this heading is a yellow warning box with three warning icons and the following text: 'The update will require 1.7 hours to complete. Click UPDATE to update now or schedule the update.', 'VxRail Manager will be rebooted during this update.', 'Before you begin this update, create a snapshot of core system VMs (VxRail Manager, vCenter Server Appliance, and if applicable, Log Insight and SRS) in case of update failure.', and 'See KB000156279 to make sure that there are enough healthy nodes in the cluster. Otherwise, during the update, the system may run into a degrade state with the risk of data loss or unavailability.' To the right of the warning box is a blue 'UPDATE' button. At the bottom left of the main content area are 'CANCEL' and 'BACK' buttons.

💡 **Note:** Since we are in a virtualized environment and also due to some time constraints, **VxRail Manager and vCenter** are the only components included in our bundle. In a real, physical VxRail environment, the bundle will also contain any required upgrades for other HCI system software and component types such as:

- ESXi host, Dell PTAgent, BIOS, HBA, iDRAC, NIC, SSD, Backplane, BOSS, etc.

The LCM cluster update is the last operation to run before completing this hands-on lab.

## Step 1 Schedule

The first step in the Update VxRail wizard allows the administrator to update the VxRail cluster now or schedule the update for a later point in time. With the provided estimated duration, the administrator can now take an informed decision.

Select **Update Now** and click **NEXT**



Update VxRail

1 Schedule

2 Credentials and Settings

3 Summary

Schedule When to Apply This Update

Select to update your VxRail cluster now or schedule update for later.

☒ Update Now

☐ Schedule Update

MM/DD/YYYY

HH : MM

Use a 24-hour clock

CANCEL NEXT

## Step 2 Specification

The specification step requests the administrator to enter the credentials required for the update process.

Note: It may take a few extra seconds in this virtual environment to populate the Specification tab in the UI.

VxRail Manager root account credentials:

- username: **root**
- password: **Vxrailtest123!**

vCenter administrator account credentials:

- username: **administrator@vsphere.local**
- password: **P@ssw0rd123!**

Once again, you will be given an option to have VxRail skip a node if it fails to enter maintenance mode and continue updating the remaining nodes in the cluster. For this lab, we will keep the option disabled.

Click **NEXT**

Update VxRail

1 Schedule

2 Credentials and Settings

3 Summary

### Credentials and Settings

Enter necessary information to initiate the update process.

#### VxRail Manager Credentials

VxRail Manager root account username \* root

VxRail Manager root account password \* Vxrailtest123!

#### vCenter Credentials

vCenter administrator account username \* administrator@vsphere.local

vCenter administrator account password \* P@sswOrd123!

CANCEL BACK NEXT

## Step 3 Summary

The update process now has all required information to start and presents the target version and minimum estimated time again for confirmation.

Click **FINISH** to start the VxRail cluster update process.

Note: it may take a little bit of time for the screen to start showing progress.

The screenshot shows the 'Update VxRail' wizard in the Summary step. On the left, a sidebar lists three steps: 1 Schedule, 2 Credentials and Settings, and 3 Summary (which is highlighted). The main area is titled 'Summary' and contains the following text: 'VxRail has all the information to start the update. To initiate the update, click Finish.' Below this, there is a table with two rows: 'Target Version' with the value '8.0.001-27889232' and 'Minimum Estimated Time' with the value '1.7 hours'. At the bottom right, there are three buttons: 'CANCEL', 'BACK', and 'FINISH' (which is highlighted with a green border).

Summary	
VxRail has all the information to start the update. To initiate the update, click Finish.	
Target Version	8.0.001-27889232
Minimum Estimated Time	1.7 hours

## Monitor progress

The time to execute this update will vary depending on the amount of resources available in the virtual lab infrastructure. It will take over an hour for this update to complete. For a faster experience feel free to experience the full update process using the [VxRail interactive demo](#)!

As shown below, the update progress is shown and the estimated time remaining adjusts accordingly. (Remember that in this virtual lab we are only updating the VxRail Manager and vCenter.)

Note: During the update the VxRail Manager VM will be rebooted, which will result in the UI losing connection.

**Updates**

COMPLIANCE | INTERNET UPDATES | **LOCAL UPDATES** | SETTINGS

VxRail Update In Progress: Version 8.0.001-27889232

The update process may take significant time to complete, you can come back later to check the results.

Estimated remaining time: 98 minutes 2%

Errors(0) Warnings(0) **All(224)**

- ✓ VxRail Manager upgrade is in progress. Temporary disconnection during this process is expected. You may be prompted to log in again after this step is complete.
- ✓ Pre-upgrade hook: Validate and update root certificate.
- ✓ Pre-upgrade hook: Validate and update DNS settings.
- ✓ A Python script that is executed before the upgrade operation takes place.
- ✓ Pre-upgrade hook: Detecting the presence of cluster shutdown file residing on all nodes' local SATADOM datastores...
- ✓ Pre-checking that the VxRail Manager upgrade bundle is suitable for the appliance's existing VxRail Manager via dry run.
- ✓ Pre-checking that the postgresql database version is upgradable.
- ✓ vSAN disk balance check in progress
- ✓ Pre-checking that ESXi is in a healthy state for upgrade.

**Note:** Due to the complexity of the underlying unique virtual environment, an issue *may* arise during the many different steps that the update performs. The reason that the update is in the guide, is that it does allow the user to go through the exact same few steps that it takes to upgrade a physical VxRail cluster and once running, it is a fully automated experience until it is finished. The [online interactive demo](#) can always provide an alternative route to further explore the VxRail automated workflows, including the full LCM process.

Once the process is finished, it will show a "successfully updated" message.

Click **FINISH**

**Updates**

COMPLIANCE | INTERNET UPDATES | **LOCAL UPDATES** | SETTINGS

1 Select 2 Precheck 3 Scan 4 **Update**

✓ Your VxRail system is successfully updated.

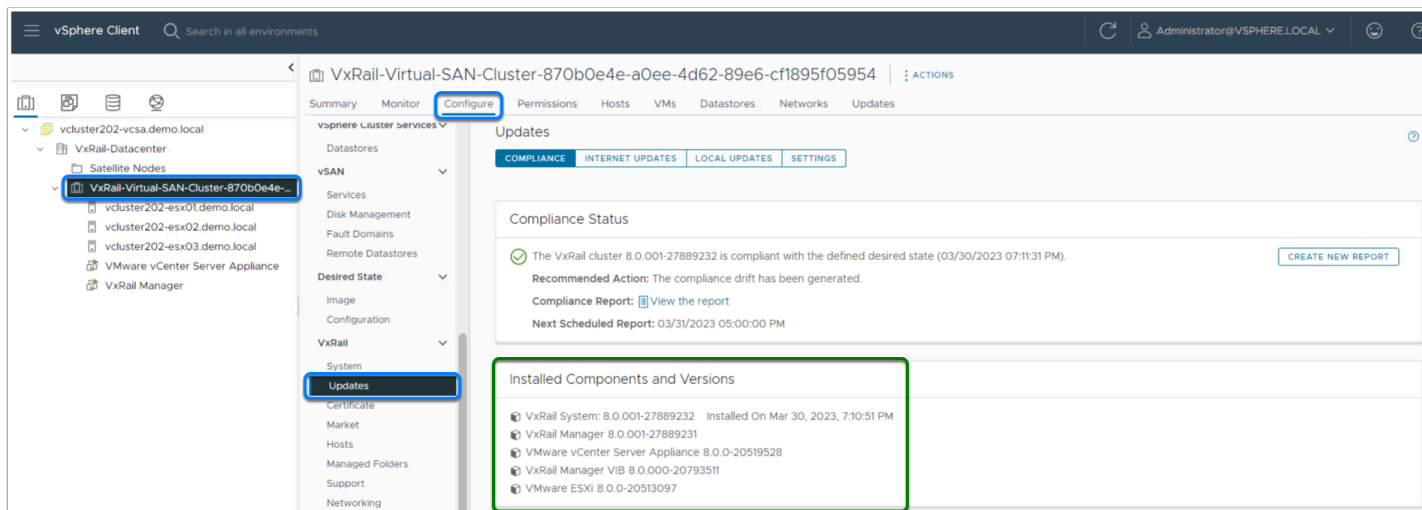
ⓘ The migration of Connectivity was skipped. [Go to the VxRail Support page to enable the Connectivity.](#)

**FINISH**

Once finished it will return you to the COMPLIANCE tab where you can see the updated versions.

We can see that the **VxRail System**, **VxRail Manager**, and **VMware vCenter Server Appliance** versions have been updated. The install date and time has also been updated.

Where: Cluster **VxRail-Virtual-SAN-Cluster-xxxx** > **Configure** > **VxRail** > **Updates**



That's all there is to it!

We just updated a VxRail cluster, which in a real environment can be full-scale and consist of a large number of nodes, but it would still go through the exact same process.

## Module Conclusion

Congratulations on completing Module 6.

In this module, you have experienced the simplicity of the VxRail *full-stack* Lifecycle Management procedure. This procedure updates the complete VxRail cluster, from system software to firmware. Whether it is 2 nodes or 64 nodes, it significantly reduces the effort to do this manually, which can be painstaking due to number of components, vendors and -last but not least- the amount of testing required.

The administrator is now more empowered than ever, with tools like the compliance and advisory reports, estimated update duration, and the ability to schedule updates. These tools enable the administrator to perform updates with even more confidence.

You went through the following steps to perform the update of the VxRail cluster:

1. Access the LCM functionality
2. Provide credentials for the update and start the process
3. Monitor update progress

This was the last module and finishes the VxRail Hands-On Lab. Thank You!

[Click here to jump straight back to the Lab Modules overview.](#)