# VMware Integration for VxRail Fabric Automation SmartFabric User Guide, Release 1.1 September 2019



#### Notes, cautions, and warnings

(i) NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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# SmartFabric vCenter

The Dell EMC Open Manage Network Integration (OMNI) is an efficient REST API-based plug-in, which is integrated with VMware's vCenter. The plugin enables vCenter to easily deploy and manage a large virtual network of VMs and physical underlay on a VxRail HCl stack.

Using OMNI, day two operations and management of the hyperconverged fabric is a breeze. OMNI provides visibility into the virtual environment and dynamic infrastructure configuration deployment.

#### Dell EMC fabric solutions for HCI

As hyperconverged domains scale, the network fabric becomes the critical piece of successful deployment. Dell EMC fabrics deliver:

- On-demand scalability to remain competitive, the modern data center requires the capability to dynamically grow and shrink based on business requirements. Dell EMC SmartFabrics and Dell EMC VxRail together provide an intelligent and capable architecture that scales on-demand, and increases the efficiency of the data center.
- Increased availability at scale robust and redundant fabrics and storage are an absolute necessity for today's data center. A single failure should not cause a full-service interruption.

#### Dell EMC SmartFabric

SmartFabric is a one-of-a-kind feature, part of the Dell EMC SmartFabric OS10 flagship networking operating system. SmartFabric creates a fully integrated solution between the fabric and a hyperconverged domain infrastructure such as VxRail.

Customer can quickly and easily deploy and automate data center networking fabrics. SmartFabric enables faster time to production for hyperconverged and private cloud environments — at any scale — while being fully interoperable with existing data center infrastructure.

With SmartFabric Services, customers can quickly and easily deploy and automate data center networking fabrics. This enables faster time to production for hyperconverged and private cloud environments, at any scale while being fully interoperable with existing data center infrastructure.

#### Dell EMC VxRail key benefits

Faster time production time

- · Plug-and-play fabric formation for VxRail
- Define the fabric policy in VxRail Manager
- · SmartFabric to automate all fabric functions

Integrated lifecycle

- Fabric creation, expansion, and maintenance follow VxRail appliance model
- HCI fabric operations fully managed through VxRail Manager/vCenter

Better infrastructure visibility

- · Tight integration between VxRail appliance and switches
- Fabric connectivity extended to switches required for VxRail solutions only

#### Improved SLA

- Fully validated software stack recommendation
- · Protection from human-error due to predictable and repeatable HCI fabric experience

Enhanced support experience

- · World-class Dell EMC HCl and fabric services
- Fabric that is integrated into VxRail services and support experience

#### VxRail domain deployed with manual network configuration

In previous VxRail deployments, the HCl administrator used VxRail Manager to automate the domain deployment, and scale out lifecycle management. vCenter is used to deploy applications and application networking. The physical network is manually configured and typically requires a network administrator to configure the switches.



#### VxRail domain deployed with SmartFabric

With SmartFabric, the automation boundary is now extended to include Dell EMC top of rack (ToR) switches. The HCl administrator can deploy the VxRail domain, however, the ToR switches are automatically configured to provide the required networking services for the VxRail domain.



# **Getting started**

This information describes the component requirements.

#### Dell EMC VxRail

• Dell EMC VxRail release 4.7.410 or 4.7.211 with VMware vCenter 6.7 Update 2 (U2) or later.

#### **Dell EMC ToR switches**

 Dell EMC S4112F-ON, S4112T-ON, S4128F-ON, S4128T-ON, S4148F-ON, S4148T-ON, S5212F-ON, S5224F-ON, S5248F-ON, and S5296F-ON running Dell EMC SmartFabric OS10, release 10.4.3.4 or later.

#### SmartFabric vCenter

- Dell EMC SmartFabric for VMware vCenter
- · VMware vCenter ESXi 6.7 or later
- · Web browser to interact with the VMware vSphere client and SmartFabric integration

#### **Quick steps**



- 1. Enable SmartFabric for VxRail on ToR switches. Upgrade ToR switches to the required SmartFabric OS10 software version, then enable SmartFabric for VxRail.
- 2. Deploy VxRail domain using VxRail Manager. VxRail Manager automatically discovers the SmartFabric environment, and automates the network fabric for VxRail fabric deployment.
- 3. Deploy SmartFabric for vCenter. Create VM and register it with the vCenter used for the VxRail domain. SmartFabric provides single-pane management of ToR network fabric through vCenter and fabric automation for all VM networks and vMotion operations.

#### 4. Leverage zero-touch fabric automation for Day 2 VxRail Operations.

#### Additional resources

- Dell EMC SmartFabric OS10 User Guide, release 10.4.3.0
- Dell EMC VxRail Appliance Administration Guide, release 4.7.x
- Dell EMC VxRail Appliance Software 4.7.x Release Notes
- Dell EMC VxRail Multirack Deployment Guide
- Dell EMC VxRail QuickStart Guide
- Dell EMC VxRail Network Planning Guide

# **ON-Series switch installation**

This information describes how to install a Dell EMC PowerSwitch ON-Series switch in your network.

If your switch came preinstalled with Dell EMC SmartFabric OS10 release 10.4.3.4 or later, see Log into OS10.

#### (i) NOTE: For detailed hardware installation steps, see the product-specific *Installation Guide* at www.dell.com/support/.

#### Supported hardware

- · S4112F-ON, S4112T-ON
- · S4128F-ON, S4128T-ON
- · S4148F-ON, S4148T-ON
- · S5212F-ON
- · S5224F-ON
- · S5248F-ON
- · S5296F-ON

#### **Topics:**

- Download OS10 image and license
- Installation using ONIE
- Log into OS10
- Install OS10 license

## **Download OS10 image and license**

This information explains how to download an OS10 image and license.

OS10 may come factory-loaded and is available for download from the Dell Digital Locker (DDL). A factory-loaded OS10 image includes a perpetual license. An OS10 image that you download has a 120-day trial license, and requires a perpetual license to run beyond the trial period.

For more information, see the Setup Guide that is shipped with your device and these FAQs:

- Frequently asked Questions
- My Account FAQs

#### Download OS10 image and license

- Reinstall the license on a Dell EMC open network installation environment (ONIE) switch with a factory-installed OS10 image and license
- Install operating system10 on a Dell EMC ONIE switch without an OS or license installed
- Upgrade the OS10 image

Your OS10 purchase allows you to download software images posted within the first 90 days of ownership. To extend the software entitlement, you must have a Dell EMC ProSupport or ProSupport Plus contract on your hardware.

#### **Reinstall license on factory-loaded OS10**

OS10 runs with a perpetual license on an ONIE-enabled device with OS10 factory-loaded. The license file is installed on the switch. If the license becomes corrupted or wiped out, you must download the license from DDL under the purchaser's account and reinstall it.

- 1. Sign in to DDL using your account credentials.
- 2. Locate the hardware product name with the entitlement ID and order number.
- 3. Check that the device service tag displays in the Assigned To: field on the Products page.
- 4. Click Key Available for Download.
- 5. Select how to receive the license key by email message or downloaded to your local device.
- 6. Click Submit
- 7. Save the License.zip file and follow the steps in Install OS10 license.

#### Download OS10 for a switch without OS installed

You can purchase the operating system10 image with an after point-of-sale (APoperating system) order for a Dell EMC ONIE-enabled device that does not have a default operating system or license installed. After the order is complete, you receive an email message notification with a software entitlement ID, order number, and link to the DDL.

To extend the entitled download period, bind the software entitlement to the switch service tag to be the same time as the support contract. By default, OS10 software entitlement allows you to download OS10 software images posted before the purchase date and within 90 days of the date.

- 1. Sign into DDL using your account credentials.
- 2. Locate your entitlement ID and order number that is sent by email message, then select the product name.
- 3. On the **Product** page, the Assigned To: field on the Product tab is blank; click **Key Available for Download**.
- 4. Enter the device service tag that you purchased the OS10 for in the Bind to: and Re-enter ID: fields. This step binds the software entitlement to the service tag of the switch.
- 5. Select how to receive the license key by email message or downloaded to your local device, then click **Submit** to download the License.zip file.
- 6. Select the Available Downloads tab, select the OS10 release to download, then click Download.
- 7. Read the Dell End User License Agreement. Scroll to the end of the agreement, then click Yes, I agree.
- 8. Select how to download the software files, then click **Download Now**.

#### Unpack binary image and store on local server

1. After you download the OS10 image, unpack the .tar file and store the OS10 binary image to a local server. For example, to unpack a .tar file on a Linux server or from the ONIE prompt:

tar -xf tar\_filename

2. Generate a checksum for the downloaded OS10 binary image by running the md5sum command on the image file. Ensure that the generated checksum matches the checksum that is extracted from the .tar file.

md5sum image\_filename

3. Copy the OS10 image file to a local server using the copy command.

See Installation using ONIE and Install OS10 license for complete installation and license information.

#### Download an image for OS10 upgrade

- 1. Sign into DDL using your account credentials.
- 2. Locate the entry for your entitlement ID and order number that is sent by email message, then select the product name.
- 3. Select the Available Downloads tab, select the OS10 release to download, then click Download.
- 4. Read the Dell End User License Agreement. Scroll to the end of the agreement, then click Yes, I agree.
- 5. Select how to download the software files, then click Download Now.
- 6. Unpack the binary image and store on a local server.

See Upgrade OS10 for complete upgrade information.

## Installation using ONIE

This information explains how to install OS10 using ONIE.

CAUTION: Installing OS10 or another operating system using ONIE erases all software configuration on the switch. The configuration settings are not recoverable. Store a regular backup of the switch configuration locally.

If you purchase an ONIE-only switch or if you want to replace an existing operating system, download an OS10 image (see Download OS10 image), then install an OS10 software image using ONIE-based autodiscovery or a manual installation:

- Automatic installation ONIE discovers network information including the dynamic host configuration protocol (DHCP) server, connects to an image server, and downloads and installs an image automatically.
- Manual installation Manually configure your network information if a DHCP server is not available, or if you install the OS10 software image using USB media.

#### System setup

Verify that the system is connected correctly before installation:

Connect a serial cable and terminal emulator to the console serial port — required serial port settings are 115200, 8 data bits, no flow control, and no parity.

 Connect the Management port to the network if you prefer downloading an image over a network. To locate the Console port and the Management port, see the Getting Started Guide shipped with your device or the platform-specific Installation Guide at www.dell.com/support.

#### Install OS10

During bootup, press ESC to display the ONIE boot menu. An ONIE-enabled device boots with preloaded diagnostics and ONIE software.

+	+
*ONIE:	Install OS
ONIE:	Rescue
ONIE:	Uninstall OS
ONIE:	Update ONIE
ONIE:	Embed ONIE
ONIE:	Diag ONIE
+	

- Install OS Boots to the ONIE prompt and installs an OS10 image using the automatic discovery process. When ONIE installs a
  new operating system (OS) image, the previously installed image and OS10 configuration are deleted.
- Rescue Boots to the ONIE prompt and allows for manual installation of an OS10 image or updating ONIE.
- Uninstall OS Deletes the contents of all disk partitions, including the OS10 configuration, except ONIE and diagnostics.
- Update ONIE Installs a new ONIE version.
- Embed ONIE Formats an empty disk and installs ONIE.
- Diag ONIE Runs system diagnostics.

After the ONIE process installs an OS10 image and you later reboot the switch in ONIE: Install OS mode (default), ONIE takes ownership of the system and remains in Install mode — ONIE Install mode is sticky — until a OS10 image successfully installs again. To boot the switch from ONIE for any reason other than installation, select the ONIE: Rescue or ONIE: Update ONIE option from the ONIE boot menu.

# CAUTION: During an automatic or manual OS10 installation, if an error condition occurs that results in an unsuccessful installation, perform Uninstall OS first to clear the partitions if there is an existing OS on the device. If the problem persists, contact Dell EMC Technical Support.

#### Manual installation

If a DHCP server is not available, you can manually install an OS10 software image. If the IP address for the Management port (eth0) is not automatically discovered, ONIE sets the IP address to 192.168.3.10. You must manually configure the Management port and configure the software image file to start installation.

- 1. Save the OS10 software image on an SCP/TFTP/FTP server.
- 2. Power up the switch and select ONIE Rescue for manual installation.
- **3.** (Optional) Stop DHCP discovery if the device boots to ONIE Install.

\$ onie-discovery-stop

**4.** Configure the IP addresses on the Management port, where *x.x.x.x* represents your internal IP address. After you configure the Management port, the response is up.

```
$ ifconfig eth0 x.x.x.x netmask 255.255.0.0 up
```

5. Configure the default gateway, where x.x.x.x represents your gateway IP address.

```
$ route add default gateway x.x.x.x
```

6. Install the software on the device. The installation command accesses the OS10 software from the specified SCP, TFTP, or FTP URL, creates partitions, verifies installation, and reboots itself.

```
$ onie-nos-install image_filename location
```

For example, enter

ONIE:/ # onie-nos-install ftp://a.b.c.d/PKGS\_OS10-Enterprise-x.x.xx.bin

Where *a.b.c.d* represents the location to download the image file from, and *x.x.xx* represents the version number of the software to install.

The OS10 installer image creates several partitions, including OS10-A (active and default) and OS10-B (standby). After installation completes, the switch automatically reboots and loads OS10.

#### Install manually using USB drive

You can manually install the OS10 software image using a USB device. Verify that the USB device supports a FAT or EXT2 file system. For instructions to format a USB device in FAT or EXT2 format, see the accompanying Windows documentation for FAT formatting or Linux documentation for FAT or EXT2 formatting.

- 1. Plug the USB storage device into the USB storage port on the switch.
- 2. Power up the switch to automatically boot using the ONIE: Rescue option.
- **3.** (Optional) Stop ONIE discovery if the device boots to ONIE: Install.

\$ onie-discovery-stop

4. Create a USB mount location on the system.

```
$ mkdir /mnt/media
```

5. Identify the path to the USB drive.

\$ fdisk -1

6. Mount the USB media plugged in the USB port on the device.

```
$ mount -t vfat usb-drive-path /mnt/media
```

7. Install the software from the USB, where /mnt/media specifies the path where the USB partition is mounted.

```
$ onie-nos-install /mnt/media/image_file
```

The ONIE autodiscovery process discovers the image file at the specified USB path, loads the software image, and reboots the switch. See the ONIE User Guide for more information.

## Log into OS10

This information explains how to log into OS10.

To log into an OS10 switch, power up and wait for the system to perform a power-on self-test (POST). Enter admin for both the default user name and user password. For better security, change the default admin password during the first OS10 login. The system saves the new password for future logins. After you change the password through the CLI, enter the write memory command to save the configuration.

```
OS10 login: admin
Password: admin
Last login: Mon Mar 25 13:58:27 2019 on ttyS0
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
  _*
        Dell EMC Network Operating System (OS10)
                                                   *_
_ *
                                                   * _
  Copyright (c) 1999-2019 by Dell Inc. All Rights Reserved.
_*
                                                   * _
_ *
```

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OS10# write memory

## Install OS10 license

If OS10 is factory-loaded on your switch, you do not need to install an OS10 license. If you download OS10 on a trial basis, OS10 comes with a 120-day trial license. To continue with uninterrupted use, purchase and install a perpetual license to avoid the OS10 device rebooting every 72 hours.

After you install OS10 and log in, install the license to run OS10 beyond the trial license period. For more information, see Download OS10 image and license. The OS10 license is installed in the */mnt/license* directory.

- 1. Download the License.zip file from DDL (see Download OS10 image and license).
- 2. Open the zip file and locate the license file in the Dell folder. Copy the license file to a local or remote workstation.
- 3. Install the license file from the workstation in EXEC mode.

license install {ftp: | http: | localfs: | scp: | sftp: | tftp: | usb:} filepath/filename

- ftp://userid:passwd@hostip/filepath Copy from a remote FTP server
- http://hostip/filepath Copy from a remote HTTP server
- http://hostip Send request to a remote HTTP server.
- localfs://filepath Install from a local file directory.
- scp://userid:passwd@hostip/filepath Copy from a remote SCP server.
- sftp://userid:passwd@hostip/filepath Copy from a remote SFTP server.
- tftp://hostip/filepath Copy from a remote TFTP server.
- usb://filepath Install from a file directory on a storage device that is connected to the USB storage port on the switch.
- filepath/filename Enter the directory path where the license file is stored.

#### (i) NOTE: When installing a license through a VRF instance, OS10 supports only some file transfer methods.

File transfer method	Default VRF	Management VRF <sup>1</sup>	Nondefault VRF
FTP	Yes	Yes	No
HTTP	Yes	Yes	No
localfs	Yes	Yes	Yes
SCP	Yes	Yes	No
SFTP	Yes	Yes	No
TFTP	Yes	Yes	No
USB	Yes	Yes	Yes

<sup>1</sup> Before you configure the Management VRF for use in OS10 license installation, delete all IP addresses on the Management interface.

#### Install license — SCP

```
OS10# license install scp://user:userpwd@10.1.1.10/CFNNX42-NOSEnterprise-License.xml License installation success.
```

#### Install license — localfs

1. Copy the license file from the FTP server location to the home directory on the system.

```
OS10# copy ftp://admin:admin@10.11.95.101//home/admin/LADF/7B900Q2-NOSEnterprise-
License.XML
home://7B900Q2-NOSEnterprise-License.XML
```

2. (Optional) Use the show copy-file status command to check the status of the file copy.

File Size:	3795 bytes
Transfer Rate:	8 kbps

3. Verify that the license is present in the home directory.

4. Run the license install command and specify the path to the home directory location where the license was downloaded in step 1.

```
OS10# license install localfs://home/admin/7B900Q2-NOSEnterprise-License.XML [ 5784.994389] EXT4-fs error (device dm-0): ext4_has_uninit_itable:3039: comm CPS_API_instanc: Inode table for bg 0 marked as needing zeroing License installation success.
```

#### Install license using management VRF

```
OS10(config)# ip vrf management
OS10(conf-vrf)# interface management
OS10(conf-vrf)# exit
OS10(config)# ip sftp vrf management
OS10(config)# exit
OS10# license install sftp://user:userpwd@10.1.1.10/CFNNX42-NOSEnterprise-License.xml
```

License installation success.

#### Verify license installation

OS10# show license status

System Information

Vendor Name Product Name Hardware Version Platform Name PPID Service Tag Product Base Product Part Number License Details	: : : : :	DELL S4128F-ON A01 x86_64-dellemc_s4128_c2538-r0 CN0X4XRXCES007980029 9CLSG02
Software Version License Type License Duration License Status License location	: : : : :	OS10-Enterprise 10.4.3.0 PERPETUAL Unlimited Active /mnt/license/9CLSG02.lic

#### Troubleshoot license installation failure

An error message displays if the installation fails.

```
License installation failed
```

- 1. Verify the installation path to the local or remote license location.
- 2. Check the log on the remote server to find out why the FTP or TFTP file transfer failed.
- 3. Ping the remote server from the switch use the ping and traceroute commands to test network connectivity. If the ping command fails:
  - If the remote server is reachable through the Management route, check if the Management route is configured correctly.
  - If the remote server is reachable through a front-panel port, check if the static or dynamic route is present.
- 4. Install the server with the license file on the same subnet as the switch.
- 5. Check if the server is up and running.

# **Enable SmartFabric for VxRail**

This information explains how to enable SmartFabric for VxRail.

1. Log into the Linux shell.

```
S4128F-1# system "sudo -i"
We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:
    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.
[sudo] password for admin:
root@S4128F-1:~#
```

2. Run the VxRail personality with sudo privilege to set the default ICLs and uplinks for the platform and reboots the switch in Fabric mode.

#### i NOTE: Dell EMC Services works with you to define the values for the script.

- 3. Enter Y to enable SmartFabric for VxRail and reboot the switch automatically.
- 4. Run the VxRail personality to enable the VxRail personality profile. Use the options to override the default configurations for ICLs, uplinks, management VLANs, uplink breakouts, and uplink dynamic LAG configurations.

#### (i) NOTE: To enable the VxRail personality profile for a single switch, use the -i None option.

<pre>root@OS10:~# sfs_enable usage: Create VxRail Cl</pre>	_vxrail_personality.py -h uster [-h] [-d DOMAIN] [-u UPLINK] [-i ICL] [-t] [-1] [-b
{4X50GE,2X50GE,2X40GE,1 5GE,4X10GEFixedFormFact	<pre>X100GE, 4X25GEFixedFormFactor, 1X40GE, 2X100GE, 4X10GE, 8X10GE, 8X25GE, 4X2 or}]</pre>
	[-m MANAGEMENT_VLAN] [-j JUMPBOX_INTERFACE] [-a ADDITIONAL_BREAKOUT]
This command creates a switches with the inform	SmartFabric Services cluster of Dell EMC OS10EE mation provided below.
optional arguments:	
-h,help	show this help message and exit
-d DOMAIN,domain D	OMAIN
	Domain-Id for the SmartFabric Services cluster
-u IIDI INK unlink II	IORMATION. ACCEPTED VALUES [1254].
	Uplink Interfaces separated by a comma (,). If empty,
	it takes the default value for the platform. If there
	is no uplink, provide 'None/Null'
-i ICL,icl ICL	VLT Inter Chassis Link(ICL) interfaces separated by a
	comma (,). If empty, it takes the default value for
	the platform. If there is no ICL value (in case of
t toggod	Single node cluster), input the value as 'None/Null'
-t,tagged	on the TOR unlink ports. By default Unlinks are not
	tagged. Default management VLAN 1 is untagged on
	Uplink interfaces.
-1,lacp mode	Flag to indicate if LACP is to be enabled on the TOR
_	uplink ports to the spine switches. By default LACP on
	TOR uplink ports is not enabled.
{4X50GE, ZX50GE, ZX40GE, 1.	AIUUGE, 4AZOGEFIXEdFORMFACCOF, IA4UGE, ZAIUUGE, 4AIUGE, 8AIUGE, 8AZOGE, 4AZ
{4X50GE, 2X50GE, 2X40GE, 1	X100GE.4X25GEFixedFormFactor.1X40GE.2X100GE.4X10GE.8X10GE.8X25GE.4X2
5GE,4X10GEFixedFormFact	or}
	The breakout mode for uplink interfaces.

i NOTE: Options are case-sensitive, for example, enter 2X50GE not 2x50ge.

#### **Topics:**

- Configure extended options
- OS10 SmartFabric mode
- Validate SmartFabric
- Disable SmartFabric
- Supported topologies

## **Configure extended options**

This information explains the extended options including the optional jump box interface, and breakout access ports connected to endhosts such as VxRail nodes, or generic servers at 10 GE speed.

#### Jump box interface

You can connect a laptop to any switch port of the S5200 or S4100 Series switch. Note that the switch port may need breakout and copper transceiver depending on the laptop network adapter type. This specific switch port is referred to as the *jumpbox interface*.

The jump box interface and breakout type can be configured when enabling the VxRail personality profile. For example, to configure SmartFabric Services for an S5200-ON Series on port group 1/1/1, connected to the VxRail nodes at 10G speed and assigned interface 1/1/1 to the jump box host, use this syntax:

# sfs\_enable\_vxrail\_personality.py -a '4X10GEFixedFormFactor{port-group1/1/1}' -j 1/1/1:1

() NOTE: It is mandatory to create a jump box interface if the VxRail Manager is to be accessed through the spine switch. This connectivity can be achieved with the Management interface VLAN on all transit switches by distinguishing between the external Management VLAN and the internal Management VLAN. The external Management VLAN must pass through the spine switch.

#### Port breakout

SmartFabric supports switch port breakouts during VxRail personality profile configuration. The personality profile supports all port breakout modes.

NOTE: Breakout configurations do not take place immediately after the switch resets. Allow between 30–60 seconds for the breakout configurations to take place after the switch cluster is configured with configurations such as VLT, port channels, and so on.

S41xx platform personality profile

-d DOMAIN,domain I	DOMAIN
	Domain-Id for the SmartFabric Services cluster
	formation. Accepted Values [1254].
-u UPLINK,uplink U	JPLINK -
· · ·	Uplink Interfaces separated by a comma (,). If empty,
	it takes the default value for the platform. If there
	is no uplink, provide 'None/Null'
-i ICL,icl ICL	VLT Inter Chassis Link(ICL) interfaces seperated by a
	comma $(,)$ . If empty, it takes the default value for
	the platform. If there is no icl value (in case of
	single node cluster), input the value as 'None/Null'
-t,tagged	Flag to indicate if management VLAN is tagged on the
	on the TOR uplink ports. By default Uplinks are not
	tagged. Default management VLAN 1 is untagged on
	Uplink interfaces.
-a,active mode	Flag to indicate if LACP is to be enabled on the TOR
—	uplink ports to the spine switches. By default lacp on
	TOR uplink ports is not enabled.
-b {2X50GE,4X25GE,4X1	.0GE},breakout_uplink {2X50GE,4X25GE,4X10GE}
	The breakout mode for uplink interfaces.
-m MANAGEMENT_VLAN, -	management_vlan MANAGEMENT_VLAN
	Public Management VLAN (Untagged VLAN). By default
	management VLAN is 1.
-j JUMPBOX_INTERFACE,	jumpbox_interface JUMPBOX_INTERFACE
	The jumpbox interface.
-a ADDITIONAL_BREAKOU	<pre>JT,additional_breakout ADDITIONAL_BREAKOUT</pre>
	The additional breakouts of phy-ports or port-groups.
	The format is -a '4X10GE{phy-port1/1/2,phy-
	port1/1/3};1X40GE{phy-port1/1/4,phy-port1/1/5}'. The
	available breakouts are ['1X40GE', '4X10GE']

S52xx platform personality profile

```
root@OS10:~# sfs enable vxrail personality.py -h
usage: Create VxRail Cluster [-h] [-d DOMAIN] [-u UPLINK] [-i ICL] [-t] [-1]
                              [-b
{4X50GE,2X50GE,2X40GE,1X100GE,4X25GEFixedFormFactor,1X40GE,2X100GE,4X10GE,8X10GE,8X25GE,4X25GE
,4X10GEFixedFormFactor}]
                              [-m MANAGEMENT_VLAN] [-j JUMPBOX_INTERFACE]
                             [-a ADDITIONAL BREAKOUT]
This command creates a SmartFabric Services cluster of Dell EMC OS10EE
switches with the information provided below.
optional arguments:
  -h, --help
                        show this help message and exit
  -d DOMAIN, --domain DOMAIN
                        Domain-Id for the SmartFabric Services cluster
                        formation. Accepted Values [1..254].
  -u UPLINK, --uplink UPLINK
                        Uplink Interfaces separated by a comma (,). If empty,
                        it takes the default value for the platform. If there
                        is no uplink, provide 'None/Null'
  -i ICL, --icl ICL
                        VLT Inter Chassis Link(ICL) interfaces separated by a
                        comma (,). If empty, it takes the default value for
                        the platform. If there is no ICL value (in case of
                        single node cluster), input the value as 'None/Null'
  -t, --tagged
                        Flag to indicate if management VLAN is tagged on the
                        on the TOR uplink ports. By default Uplinks are not
                        tagged. Default management VLAN 1 is untagged on
                        Uplink interfaces.
  -1, --lacp mode
                        Flag to indicate if LACP is to be enabled on the TOR
                        uplink ports to the spine switches. By default LACP on
                        TOR uplink ports is not enabled.
  -b
{4X50GE,2X50GE,2X40GE,1X100GE,4X25GEFixedFormFactor,1X40GE,2X100GE,4X10GE,8X10GE,8X25GE,4X25GE
,4X10GEFixedFormFactor}, --breakout uplink
{4X50GE,2X50GE,2X40GE,1X100GE,4X25GEFixedFormFactor,1X40GE,2X100GE,4X10GE,8X10GE,8X25GE,4X25GE
,4X10GEFixedFormFactor}
                        The breakout mode for uplink interfaces.
  -m MANAGEMENT VLAN, --management vlan MANAGEMENT VLAN
                        Public Management VLAN (Untagged VLAN). By default
                        management VLAN is 1.
```

```
-j JUMPBOX_INTERFACE, --jumpbox_interface JUMPBOX_INTERFACE
The jumpbox interface.
-a ADDITIONAL_BREAKOUT, --additional_breakout ADDITIONAL_BREAKOUT
The additional breakouts of phy-ports or port-groups.
The format is -a '4X10GE{phy-port1/1/2,phy-
port1/1/3};1X40GE{phy-port1/1/4,phy-port1/1/5}'. The
available breakouts are ['4X50GE', '2X50GE', '2X40GE',
'1X100GE', '4X25GEFixedFormFactor', '1X40GE',
'2X100GE', '4X10GE', '8X10GE', '8X25GE', '4X25GE',
'4X10GEFixedFormFactor']
```

## **NOTE:** FixedFormFactor and port-group are intended to be used only when breaking out interfaces on S5200-ON Series switches.

#### S4100-ON Series breakout types

The S4112-ON supports breakout types of 50G, 40G, 25G, and 10G on ports 13, 14, and 15. The S4128-ON supports breakout types of 50G, 40G, 25G, and 10G on ports. Only the S4148-ON Series switches support switch-port-profile configuration which has different speed settings per profile.

Breakout 40G ports

The S4148-ON Series switch-port-profile determines the enabled front-panel ports, supported breakout modes, and unified ports. You can change the switch-port-profile to customize uplink and unified port operation, and the availability of front-panel data ports.

Profile-1 is used for 10 GbE and 100 GbE uplinks (default on S4148-ON Series switches), and profile-2 is used for 40 GbE uplinks.

```
OS10(config) # switch-port-profile 1/1 ?
 profile-1
            [DEFAULT]
             Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7-10: 1x100g default mode, 4x25g, 4x10g, 2x50g;
             Port 27,28: Unavailable in this profile
  profile-2 Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7-10: 1x40g default mode, 4x10g;
             Port 27,28: 1x40g default mode,4x10g
  profile-3 Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7-10: 1x100g default mode, 1x40g, 4x25g, 4x10g;
             Port 27,28: 1x40g default mode,4x10g
  profile-4 Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7-10: 1x100g default mode, 1x40g, 2x50g, 4x10g;
             Port 27,28: 1x40g default mode,4x10g
  profile-5 Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7,9: 1x100g default mode, 1x40g, 4x25g, 4x10g;
             Port-group 8,10: 1x40g default mode,4x10g;
                Port 27,28: 1x40g default mode,4x10g
  profile-6 Supported Breakout Modes: Port-group 1-6: 1x10g;
             Port-group 7,9: 1x100g default mode,1x40g,2x50g,4x10g;
             Port-group 8,10: 1x40g default mode,4x10g;
             Port 27,28: 1x40g default mode,4x10g
```

1. Change the switch-port-profile from default profile-1 to the wanted profile in Full Switch mode.

```
OS10(config)# switch-port-profile 1/1 profile-2
Warning: Switch port profile will be applied only after a save and reload. All management
port configurations will be retained but all other configurations will be wiped out after
the reload.
OS10(config)# end
```

2. Save the configuration, then reload the switch.

OS10# write memory OS10# reload Proceed to reboot the system? [confirm yes/no]:yes

3. After the system reloads, enable the VxRail personality profile for an uplink breakout, OR a server-facing breakout.

```
# sfs_enable_vxrail_personality.py -u "1/1/25:1,1/1/26:1" -b 4X10GE
```

Server-facing port breakout

```
# sfs_enable_vxrail_personality.py -a '4X10GE{port-group1/1/25}'
```

4. Verify the switch-port-profile.

#### S5200-ON Series breakout types

S5200-ON Series breakout configuration is done using port-groups, unlike physical port configuration on the S4100-ON Series. Use the show port-group command to view the individual port or switch interfaces of each port-group. This command also displays the current/default port speed of the port-group. Port breakout supports 50G, 100G, and 2x100G ports depending on the port being used for breakout.

#### (i) NOTE: Only the S5248-ON switch ports have 2x100G ports.

Breakout 100G port

# sfs enable vxrail\_personality.py -b '4X25GE' -u "1/1/53:1,1/1/54:1"

Breakout 2x100G port

# sfs enable vxrail personality.py -b '8X10GE' -u "1/1/49:1, 1/1/51:1"

Breakout server-facing 100G port

```
# sfs enable vxrail personality.py -a '4X10GE{port-group1/1/16}'
```

Breakout server-facing 2x100G port

```
# sfs_enable_vxrail_personality.py -a '8X25GE{port-group1/1/13}'
```

#### **Breakout examples**

S5200-ON Series — Breakout interfaces eth1/1/1-4 (port-group1) for VxRail 10GE connection

- # sfs\_enable\_vxrail\_personality.py -a '4X10GEFixedFormFactor{port-group1/1/1}' -j 1/1/1:1
- Uplink is eth1/1/1-4, breaking out to 10GE
- Jump box is eth1/1/1:1 at 10GE
- Depending on the specific model type of the S5200-ON Series switch, a default uplink interface is selected. In this case, the SF5212F-ON uses eth1/1/13 as the default uplink.
- Port-channel is static (without the -l option)

S5212F-ON — Breakout interfaces eth1/1/1 (port-group1) and eth1/1/11 (port-group3) for VxRail 10GE connection

# sfs\_enable\_vxrail\_personality.py -a '4X10GEFixedFormatFactor{port-group1/1/1,portgroup1/1/3}' -t -1 -j ethernet1/1/1:1

- Uplink is eth1/1/13 (10 GE) >> default
- Jump box is eth1/1/1:1 at 10GE
- Port-channel LACP enable on uplinks using -1
- Tag all VLANs on uplinks using -t
- Management VLAN left on VLAN 1 as default

S5212F-ON — Breakout interfaces eth1/1/1 (port-group1) and eth1/1/11 (port-group3) for VxRail 10GE connection

```
# sfs_enable_vxrail_personality.py -b '4x10GE' -u 1/1/14:1 -a '4X10GEFixedFormFactor{port-
group1/1/1,port-group1/1/3}'
```

Uplink is eth1/1/14, breaking out to 10GE >> default

• Jump box is eth1/1/1 at 10GE

· Port-channel is static (without the -1 option)

S5212F-ON — Breakout interface eth1/1/1 (port-group1) for VxRail 10GE connection

```
# sfs_enable_vxrail_personality.py -b '4x25GE' -u 1/1/14:2 -a '4X10GEFixedFormFactor' {port-
group1/1/1} -j ethernet1/1/1:1
```

• Uplink is eth1/1/14:2, breaking out to 25GE

Jump box is eth1/1/1 at 10GE

S4100-ON Series — Breakout interface eth1/1/25 and eth 1/1/26 for VxRail 10GE connection

# sfs\_enable\_vxrail\_personality.py -b '4X10GE' -u '1/1/25:1,1/1/26:1' -j ethernet1/1/1

- Uplinks are eth1/1/25:1 and 1/1/26:1, breaking out to 10GE
- Jump box is eth1/1/1

S4112T-ON — Breakout interface eth1/1/15:1 for VxRail 25GE connection

```
# sfs enable vxrail personality.py -b '4x25GE' -u 1/1/15:1 -j ethernet1/1/1:1
```

- Uplink is eth1/1/15:1, breaking out to 25GE
- Jump box is eth1/1/1

## **OS10 SmartFabric mode**

This information describes the available commands that are a subset of the OS10 CLI configuration commands. All other CLI commands are not available when in SmartFabric mode.

For complete CLI configuration information, see the Dell EMC SmartFabric OS10 User Guide, release 10.4.3.0.

#### SmartFabric mode

- clock configure clock parameters
- end exit to EXEC mode
- exit exit from the current mode
- help display available commands
- hostname set the system hostname
- · interface configure the Management interface, VLAN interface, or an interface range
- ip name-server configure the IP address of a name server (up to three name servers)
- logging configure system logging
- management route configure the IPv4/IPv6 management route
- no delete or disable commands in Configuration mode
- ntp configure network time protocol
- snmp-server configure the simple network management protocol server
- · spanning-tree disable disable spanning-tree globally
- · mac-flush-timer set the time used to flush MAC address entries
- mode enable spanning-tree mode such as multiple spanning-tree (MST) mode or rapid spanning-tree protocol (RSTP) mode
- mst configure MST mode
- rstp configure RSTP mode
- $\cdot$  vlan configure spanning-tree on a VLAN range
- username create or modify user credentials

#### **Operating mode differences**

#### Full switch mode

All configuration changes you save are retained after you reload the switch

#### SmartFabric mode

- · All switch interfaces are assigned to VLAN1 by default, and are in the same Layer 2 (L2) bridge domain
- · All configuration changes are saved in the running configuration, by default
- · Use the show running-configuration command to display the current configuration

Only the configuration changes that you make using the OS10 administrative commands — supported in both modes — are saved and retained. All other CLI configuration commands are disabled.

- clock
- hostname
- ip name-server
- · logging
- management route
- ntp
- snmp-server
- spanning-tree
- username

() NOTE: Although front-panel port interfaces operate in Layer 2 (L2) mode by default, L2 bridging is disabled. Verify configuration changes using feature-specific show commands such as show interface and show vlan, instead of show running-configuration.

## Validate SmartFabric

This information explains how to validate SmartFabric for VxRail.

- 1. Log into the Linux shell.
- 2. Run the VxRail personality with sudo privilege to validate the OS10 switch configuration in SmartFabric and display all the test cases and results.

```
# sfs validate vxrail personality.py
```

```
Checking VxRail Personality Profile and profile ...
Chosen Profile is vxrail - Test status - passed
Switch-Operting Mode is SmartFabric Mode - Test status - passed
Checking the ICL status.
Chosen ICL = ['ethernet1/1/29', 'ethernet1/1/30'] Programmed ICLs = ['ethernet1/1/29',
'ethernet1/1/30'] - Test status - passed
The ICL interface ethernet1/1/30 operational status is up - Test status - passed The ICL interface ethernet1/1/29 operational status is up - Test status - passed
Checking the Uplink status.
Chosen Uplinks = ['ethernet1/1/25', 'ethernet1/1/26'] Programmed Uplinks = ['ethernet1/1/25', 'ethernet1/1/26'] - Test status - passed
The uplink interface ethernet1/1/25 operational status is up - Test status - passed
The uplink interface ethernet1/1/26 operational status is up - Test status - passed
Checking management VLAN
                           1 is programmed and operational up . - Test status - passed
Chosen management VLAN
Checking control VLAN
The control VLAN 3939 is programmed and operational up . - Test status - passed
Checking VLT VLAN
The VLT VLAN is programmed and operational up . - Test status - passed
```

## **Disable SmartFabric**

This information explains how to disable SmartFabric Services for VxRail.

() NOTE: These steps do not retain the configuration set on the switch fabric by SmartFabric. If you perform these steps on an active VxRail cluster, the cluster is disabled and it forces a rebuild.

- 1. Log into the Linux shell.
- 2. Run the VxRail personality with sudo privilege to delete all user configurations that are completed through SmartFabric Services and reboot the OS10 switch in Full Switch mode. Running this command allows you to configure the switch manually using the OS10 CLI.

```
# sfs_disable.py
Turning off SmartFabric Services will erase all the configuration performed through
SmartFabric Services and the switch will removed from SmartFabric cluster and the switch
will now have to be manually configured.
For workloads that were communicating with the SmartFabric Services Master need to be
```

```
reconfigured for manual deployment. Are you sure you want to continue with the changes by rebooting the OS10 node?.(y/n) \,
```

3. Enter Y to disable SmartFabric Services for VxRail configuration and reboot the switch automatically.

# **Supported topologies**

This information captures only certified, tested, and supported topologies as it pertains to Dell EMC SmartFabric and VxRail HCl deployments.

#### Topology 1



- No redundancy at the customer device
- VLT on the Dell EMC switches
- Single uplinks from each Dell EMC ToR. These uplinks can be configured as single static port channels with LACP if wanted. Both ends of the uplink must match port channel configurations.
- VxRail node connections use the rNDC connections only.
- No stretched VxRail cluster

#### Topology 2



# Redundancy at the customer device, allowing for the creation of redundant uplinks from the Dell EMC ToR to the customer device, and the opposite way

- · VLT on the Dell EMC ToR; vPC, MLAG, VLT, or similar capability at the customer device
- Dual uplinks from each Dell EMC ToR, and the number of uplinks can be more than two if wanted.
- VxRail node connections use the rNDC connections only.
- Two separate "Fabrics" have been created.
- No stretched VxRail cluster

# **OpenManage Network Integration**

OpenManage Network Integration (OMNI) is a component of SmartFabric Services that integrates with VMware vCenter for zero-touch fabric automation of the physical network infrastructure corresponding to the virtual network operations within vCenter. OMNI also serves as a front-end management application SmartFabric Service instances, enabling administrators to manage and operate one or more network fabrics that are deployed with SmartFabric Services.

# **OMNI virtual appliance**

The OMNI virtual appliance is delivered as a single OVA file that can be deployed as a stand-alone virtual machine or deployed as a plug-in for VMware vCenter. The OMNI OVA file can be downloaded from the Dell Support portal at <a href="https://www.dell.com/support/home/us/en/19/product-support/product/dell-openmanage-network/drivers">https://www.dell.com/support/home/us/en/19/product-support/product-support/product-support/product-support/product-support/dell-openmanage-network/drivers</a>.

For VxRail deployments and other environments with VMware vCenter, it is recommended to deploy OMNI as a plug-in to vCenter to enable Zero-Touch automation of physical network fabric for corresponding virtual network configurations, provide greater visibility into physical network connectivity for virtual network interfaces, and provide single pane of management of the network fabrics through vCenter GUI.

OMNI virtual machine deployment is currently tested and supported only on the VMware ESXi hypervisor, even though it is expected that the OVA could be deployed in other x86 hypervisors.

## **OMNI system requirements**

#### VMware ESXi

- Virtualization-ready x86 server
- · VMware ESXi 6.7 U1, U2 (recommended); ESXi 6.5, U1, U2, U3
- VMware vSphere Enterprise Plus license
- Virtual appliance (OVA)
- · 2vCPU
- 16G memory
  - 20G available disk space (higher disk sizes may be required depending on fabric size and data retention requirements)

#### More requirements

- Web browser Chrome (version 72.0.3626.121 and later) and Firefox (version 68.0 and later) recommended
- vSphere web client 6.5 U1, U2, U3 supported for Flash client; not supported for HTML5 client
- vSphere web client 6.7 (all versions) non supported for Flash client; supported for HTML5 client

## **OMNI networking requirements**

A single OMNI appliance can manage one or more SmartFabric instances. It is required that OMNI has network connectivity to each of the SmartFabric Instances. Each SmartFabric instance elects a single switch as a master node (SFS Master) and OMNI communicates with the SFS Master node for all fabric operations.

#### SmartFabric Master out-of-band management network

For OMNI to discover and start managing a SmartFabric instance, OMNI requires connectivity with the SFS Master out-of-band IPv4 address. A network interface for the OMNI virtual machine must have IP reachability to the switch out-of-band management network.

#### SmartFabric Master in-band client control network

When OMNI is deployed on a VxRail node or a generic server that is directly connected to the SmartFabric instance that it is managing, then OMNI can communicate with the SmartFabric Master using the client control network (3939). A network interface for the OMNI virtual machine must have access to this client control network, and an IPv6 address must be assigned to establish IPv6 connectivity with the SFS Master virtual IPv6 address.

(i) NOTE: Even when OMNI is deployed in-band, it is recommended to set up connectivity with the out-of-band Management network of the switches in the network fabric to separate management traffic with user data traffic, and also to enable faster image downloads to the switches.

#### **Topics:**

- Create virtual machine
- Log into VM console
- SmartFabric vCenter setup
- vCenter registration
- Dashboard
- Monitoring

## **Create virtual machine**

This information describes how to import the SmartFabric OVA file into the content library, then create a virtual machine (VM).

#### Download and install OVA

You can add items to a content library by importing files from your local system. You can import an OVA package to use as a template for deploying virtual machines.

- 1. Download the OVA from the VMware Solution Exchange or Dell EMC Networking Support, then store the OVA image locally.
- 2. Select Hosts and Domains, select the domain that the plug-in needs to manage, then select Action > Deploy OVF Template.

	VxRail-Virtual-SAN-Cluster-6e3ead96-d1c7-49c8-87a0-78b1     Summary Monitor Configure Permissions Notic Ville Datastores Netw	24c60	da1	ACTIONS +	
Wolar-Victure SAN-Currer-Selevate-chc7-allos     wolar-Victure SAN-Currer-Selevate-chc7-allos     wolarship work Currer	Total Processors 04 Total Vendors Malgastors 0			Taw Vitual Machine .	Or Fac 30 F
Venositi2 veral cluster1				Depay OVF Template	Unit 011 00 Caserdy 101/
B OMEN-20				🕷 New Vilap	Singe Page 1
🔂 UMware vCenter Server Platform Services Co.				Storage	Gaul 216 TB Calledy 7.5
A sufficient Manager	Related Objects		vspher	Host Inothes	•
C. com and a	Datacenter Dit Vidas-Datacenter			Edit Default VM Compatibility.	
			Ouster	🖓 Assign License.	
	Indebuce via		0.400	Settings	
	Tame		Anto	Move To	Viter
	Augued Tap Category Description			Tags & Custom Attributes	
				Add Permission	
				Alarna	
			107	X Defete	Na terra la displaz
	1	100	EM.	Update Manager	
	Autors, Barrow	i dhatey	Update	Manager	NAN •
			10	st Baseline Comphance	Complant (never checked)
	Ouster Resources V Precheck Remediation State () Itemstation State University	The manufaction Status University Device Charlosop			
	vSAN Overvew	^			
	v649 Casacity 2.05.78		0.00	CONFLIGNCE	Go to Settings to activate Wishows.

3. Select Local file, click Choose Files and select OMNI.ova from a local source, then click Next.

1 Select an OVF template	Select an OVF template			
2 Select a name and folder	Select an OVF template from remote URL or local file system			
3 Select a compute resource	Enter a LIDL to download and install the OVE package from the Internet, or browse to a			
4 Review details	Enter a UKL to download and install the OVP package from the internet, or browse to a			
5 Select storage	CD/DVD drive.			
6 Ready to complete	URL .			
	Local file			
	Chasse Files OMMI and			
	Choose riles OMINI.ova			

4. Select a name and folder for the VM, then click Next.

1 Select an OVF template     2 Select a name and folder	Select a name and folder Specify a unique name and target location
3 Select a compute resource 4 Review details	Virtual machine name: OMNI
5 Select storage 6 Ready to complete	Select a location for the virtual machine.
	✓
	> 🗈 VxRail-Datacenter

 ${\bf 5.}~$  Select the destination compute resource, then click  ${\bf Next}.$ 

2 Select a name and folder	Select a compute resource Select the destination compute resource for this operation
4 Review details	VRail-Datacenter
5 Select storage	VxRail-Virtual-SAN-Cluster-6e3ead96-d1c7-49c8-87a0-78b924c60da1
6 Ready to complete	
	Compatibility
	Compatibility Compatibility checks succeeded.
	Compatibility Compatibility checks succeeded.

6. Review and verify the template details, then click Next.

<ul> <li>1 Select an OVF template</li> <li>2 Select a name and folder</li> <li>2 Select a name and folder</li> </ul>	Review details Verify the template details.		
A Review details     5 License agreements     6 Select storage	The OVF packag a security risk. Re accept the advan	e contains advanced configuration options, which might pose eview the advanced configuration options below. Click next to cced configuration options.	
7 Select networks 8 Ready to complete	Publisher	dellemonetwork-appliance (Untrusted certificate)	
	Download size	842.9 MB	
	Size on disk	2.0 GB (thin provisioned)	
		39.1 GB (thick provisioned)	
	Extra configuration	virtualhw.productcompatibility = hosted nvram = ovf:/file/file2	

7. Accept the end-user license agreement (EULA), then click Next.

<ul> <li>1 Select an OVF template</li> <li>2 Select a name and folder</li> </ul>	License agreements The end-user license agreement must be accepted.
<ul> <li>3 Select a compute resource</li> <li>4 Review details</li> </ul>	Read and accept the terms for the license agreement.
5 License agreements 6 Select storage 7 Select networks 8 Ready to complete	END USER LICENSE AGREEMENT This Software (meaning application, microcode, firmware, and operating system software in object code format) and associated materials contain proprietary and confidential information, and its use is subject to, and expressly conditioned upon acceptance of, this End User License Agreement and the documents incorporated by reference below ("E-EULA"). This E-EULA is a legally binding agreement between the entity that has obtained the Software ("End User") and Licensor (which may be a Dell Inc. Affiliate or an authorized reseller ("Reseller"), as explained below). If End User has a written, signed agreement with a Dell Inc. Affiliate that expressly provides for the licensing of the Software then the agreement and not the E-EIII A will coursen.
	End User may have an employee or an employee of a vendor ("You") download and install the software on End User's behalf. This E-EULA becomes binding on End User I accept all license agreements.

8. Select the VSAN datastore for the configuration and disk files, then click Next.

<ul> <li>2 Select a name and folder</li> </ul>	Select storage Select the storage for the configuration and disk files					
<ul> <li>3 Select a compute resource</li> <li>4 Review details</li> <li>5 License agreements</li> <li>6 Select storage</li> <li>7 Select networks</li> </ul>	Encrypt this virtual machine Select virtual disk format: VM Storage Policy:	As defin Datastor	ed in the VM storag	e policy 🗸		
8 Ready to complete	Name	Capacity	Provisioned	Free	Тур	
	DE300183106581-01-01-s	216 GB	10.73 GB	205.27 GB	VN	
	DE300183106584-01-01	216 GB	10.73 GB	205.27 GB	VN	
	DE300183106608-01-01	216 GB	10.73 GB	205.27 GB	VN	
	VxRail-Virtual-SAN-Datas	6.55 TB	2.06 TB	4.52 TB	Vir	
	< Compatibility	_			,	
	✓ Compatibility checks succe	eded.				

9. Select a destination network for each network source, then click **Next**. The VxRail Management Network must be assigned to the VxRail internal Management network. The default VLAN ID for this network is 3939. The vCenter Server network must be connected to the port group where the vCenter is reachable for plug-in deployment of the VM.

<ul> <li>1 Select an OVF template</li> <li>2 Select a name and folder</li> </ul>	Select networks Select a destination network for each source network.			
<ul> <li>3 Select a compute resource</li> <li>4 Review details</li> </ul>	Source Network	Ŧ	Destination Network	Ŧ
<ul> <li>5 License agreements</li> </ul>	VxRail Management Network		VxRail Management-6e3ead	196-d1c7-49c8-8
✓ 6 Select storage	vCenter Server Network		vCenter Server Network-6e3	3ead96-d1c7-49
8 Ready to complete				2 items
	IP Allocation Settings			
	IP allocation:	St	atic - Manual	
	IP protocol:	IP	√4	

10. Click Finish to start creation of the VM, then power on the VM.

<ul> <li>1 Select an OVF template</li> <li>2 Select a name and folder</li> </ul>	Ready to complete Click Finish to start creation.	
<ul> <li>3 Select a compute resource</li> <li>4 Review details</li> </ul>		
<ul> <li>5 License agreements</li> <li>6 Select storage</li> </ul>	Provisioning type	Deploy from template
7 Select networks	Name	OMNI
8 Ready to complete	Template name	OMNI-3.0.20praveen_testing
	Download size	842.9 MB
	Size on disk	39.1 GB
	Folder	VxRail-Datacenter
	Resource	VxRail-Virtual-SAN-Cluster-6e3ead96-d1c7-49c8-87a0- 78b924c60da1
	Storage mapping	1
	All disks	Datastore: VxRail-Virtual-SAN-Datastore-6e3ead96-dtc7-49c8-87a0- 78b924c60da1; Format: As defined in the VM storage policy
	Network mapping	2
	VxRail Management Network	VxRail Management-6e3ead96-d1c7-49c8-87a0-78b924c60da1

## Log into VM console

The SmartFabric VM console allows you to configure the software to best suit your needs.

You can configure SmartFabric through the VM console after you complete the authentication step. The VM console automatically closes after 10 minutes (default), and can be customized to meet your needs.

- Two NICs ens160 for IPv4 static/dynamic and ens192 for IPv6 link local with IPv4 disabled
- Hostname, domain, and DNS server
- User password

- · Self-signed SSH and TLS certificate regeneration
- Third-party SSH and TLS certificate installation
- SmartFabric password for the fabric
- · Reboot and logout
- Export support bundle
- Display connectivity status with vCenter Server
- Display connectivity status with SmartFabric
- Supports up to 10 vCenter Server instances
- Supports up to 16 SmartFabric domains

This information describes how to log into the VM console.

- 1. After the new VM powered on, open the VM console.
- $\ensuremath{\text{2. Enter admin}}\xspace{-1mm} \ensuremath{\text{admin}}\xspace{-1mm} \ensuremath{\admin}}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xspace{-1mm} \ensuremath{\admin}\xsp$

Debian GNU/Linux 9 dellemc–networkappliance ttyi
dellemc-networkappliance login: admin Password: Linux dellemc-networkappliance 4.9.0-7-amd64 #1 SMP Debian 4.9.110-3+deb9u2 (2018-08-13) x86_64
The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY ND WARRANTY, to the extent permitted by applicable law. Updating the password from default value Changing password for admin. (current) UNIX password: Enter new UNIX password: Retype new UNIX password:

3. If this is a first-time login, change the password.

After the passwords are successfully updated, self-signed certificates are created. You can change the certificates later with menu options.

(i) NOTE: The sudo password is the same as the password set for the admin user.

(i) NOTE: Root user is disabled by default. To set the password to enable root user, use the SmartFabric menu. You can only access root user through the console.

# SmartFabric vCenter setup

This information describes how to set up the appliance with the required network interface configurations, and registration with vCenter and SmartFabric. The latest version supports up to 10 vCenters and 16 SmartFabric domains.

As part of the initial setup, interface profiles can first be configured using an SSH client to configure the vCenter and SmartFabric registration. Using SSH, you can copy and paste into the window to lessen the chances of entering the wrong password.

1. Select 0. Full Setup.



2. Select Edit a connection, then click OK.



3. Select Wired Connection 1, then click Edit Connection.

Ethernet	* <add></add>
<u>Wired connection 1</u>	<edit></edit>
Wired connection 2	<delete></delete>
	+ <back></back>

4. Verify Ethernet (ens160) is connected to the vCenter reachable network. Change the Profile name to vcenter server network, then click <Show> to the right of IPv4 configuration.

Edit Connection	
Profile name vcenter server network Device 00:50:56:AF:97:A2 (ens160)	
+ ETHERNET	<show></show>
<ul> <li>IPv4 CONFIGURATION <automatic></automatic></li> <li>IPv6 CONFIGURATION <ignore></ignore></li> </ul>	<show> <show></show></show>
<pre>[X] Automatically connect [X] Available to all users</pre>	
	<cancel> <cok></cok></cancel>

5. Select Manual/DHCP, set the DNS servers, set the Search Domains, then click <Hide>.

	Edit Connectio	n	
Profile name Device	vCenter Server Mgmt 00:50:56:92:9D:C1 (en	s160)	
= ETHERNET			<show></show>
IPv4 CONFIGURATION Addresses Gateway DNS servers Search domains	<manual> 16.1.1.41/24 <add> 16.1.1.254 16.1.1.60 <add> st.vxrail.cluster1 <add></add></add></add></manual>	<remove> <remove> <remove></remove></remove></remove>	<hide></hide>
Routing [ ] Never use this [ ] Ignore automat: [ ] Require IPv4 ac	(No custom routes) <e network for default r ically obtained routes ddressing for this con</e 	dit> oute nection	
= IPv6 CONFIGURATION [X] Automatically con [X] Available to all	<ignore> mect users</ignore>		<show></show>
			<cancel> <ok></ok></cancel>

6. Click **<Show>** to the right of IPv6 configuration, disable IPv6, click **<Hide>**, then click **OK**.



7. Select Wired Connection 2, then click Edit Connection.



8. Verify Ethernet (ens192) is connected to the IPv6 VxRail management network. This is known as the VxRail internal Management network, and IPv6 is required for this network.

Edit Connection	
Profile name vXrail Management Network Device 00:50:56:AF:53:EC (ens192)	
+ ETHERNET	<show></show>
<pre>     IPv4 CONFIGURATION <disabled>     IPv6 CONFIGURATION <link-local> </link-local></disabled></pre>	<show> <show></show></show>
<pre>[X] Automatically connect [X] Available to all users</pre>	
	<cancel> <ok></ok></cancel>

9. Change the name to vxrail management network, disable the IPv4 address on this interface, select IPv6 to be the link-local address, then click OK.



10. Your connection list is now updated with vCenter and VxRail profile names. Click **Back** to activate the connection profiles.

Ethernet • vcenter server network •Xrail Management Network	<add> <edit> <delete></delete></edit></add>
	<back></back>

#### Activate connection profiles

(i) NOTE: To populate DNS entries automatically, each profile must be deactivated, then activated.

1. Select Activate a Connection, then click OK.



2. Select the vcenter server network profile, then click Deactivate. Repeat for the vxrail management network.



3. Select the vcenter server network profile, then click Activate. Repeat for the vxrail management network.

Ethernet (ens160) +	(Activate)
* vcenter server network	(notivato)
Ethernet (ens192) vXrail Management Network	
Connecting	
•	<back></back>

- 4. Click **Back**, then **OK** to exit the network management UI.
- 5. Configure the valid NTP Server IP address or hostname, then click Enter. Go to the next section for the SSL certificate installation.

(i) NOTE: If the NTP Server is not configured, the SmartFabric appliance VM synchronizes with the ESXi server time zone.

## vCenter registration

This information describes how to install an optional SSL certificate, register the vCenter plug-in, and register SmartFabric.

SSL certificates have been automatically generated after the password is successfully updated. For more information, see Log into VM console.

(i) NOTE: Multiple OMNI instances cannot be mapped to a single vCenter instance. If a situation where multiple VxRail clusters exist with their own respective fabric instances, Dell EMC recommends to map these fabric instances to a single vCenter instance. For example, VxRail cluster1 will ideally have its own vCenter-1 VM instance, and the same is true for VxRail cluster 2 with its own vCenter-2 VM instance. In this case, OMNI-1 will map to vCenter-1, and OMNI-2 will map to vCenter-2.

If you do not want to create individual OMNI to vCenter mappings, you do have the option of mapping multiple fabric instances to a single OMNI mapped to a single or primary vCenter instance.

1. Select N to not install the SSL certificate now, or select Y to install the SSL certificate, then enter the remote SCP server IP/ hostname, username, and file path to the SSL certificate.



2. Enter the OMNI IP or FQDN to register with the vCenter instance. If an FQDN has been created for the OMNI plug-in, **do not** use the IP address of the OMNI plug-in.

NTP Server IP/Hostname: 16.1.6.60 2019-04-08 21:22:31 NFO [setup.sh] Deleting NTP server entry 2019-04-08 21:22:33 INFO [setup.sh] Adding 16.1.1.60 as an NTP server 2019-04-08 21:22:33 INFO [setup.sh] Restarting NTP service Install SSL certificates from remote Server [y]? n 2019-04-08 21:22:41 INFO [setup.sh] Registering OMNI Plugin with vCenter 2019-04-08 21:22:41 INFO [setup.sh] Registering OMNI Plugin with vCenter 2019-04-08 21:22:41 INFO [setup.sh] Starting Heb Server service 2019-04-08 21:22:41 INFO [setup.sh] Starting Heb Server service 2019-04-08 21:22:41 INFO [setup.sh] Stopping Application Server and Zero Touch Management applicati on services Removed /etc/system/multi-user.target.wants/vcenterappgunicorn.service. 2019-04-08 21:22:41 INFO [setup.sh] OMNI Application Server Service Stop successful Removed /etc/system/multi-user.target.wants/delivcenterapp.service. 2019-04-08 21:22:41 INFO [setup.sh] OMNI Zero Touch Management Application Service Stop successful Removed /etc/system/multi-user.target.wants/delivcenterapp.service. 2019-04-08 21:22:41 INFO [setup.sh] OMNI Zero Touch Management Application Service Stop successful Removed /etc/system/multi-user.target.wants/delivcenterapp.service.

- 3. Enter the vCenter Server username and vCenter Server password. Repeat this step to register each vCenter instance (up to 10).
  - NTP Server 1P/Hostname: 16.11.60 2019-04-08 21:22:39 INFO [setup.sh] Adding 16.1.1.60 as an NTP server 2019-04-08 21:22:39 INFO [setup.sh] Adding 16.1.1.60 as an NTP server 2019-04-08 21:22:39 INFO [setup.sh] Restarting NTP service Install SSL certificates from remote Server [y]? n 2019-04-08 21:22:41 INFO [setup.sh] Registering ONNI Plugin with vCenter 2019-04-08 21:22:41 INFO [setup.sh] Starting Web Server service 2019-04-08 21:22:41 INFO [setup.sh] Starting Web Server service 2019-04-08 21:22:41 INFO [setup.sh] Starting Web Server service 2019-04-08 21:22:41 INFO [setup.sh] Stopping Application Server and Zero Touch Management applicati on services Removed /etc/systemd/system/multi-user.target.wants/vcenterappgunicorn.service. 2019-04-08 21:22:41 INFO [setup.sh] ONNI Application Server Service Stop successful Removed /etc/systemd/system/multi-user.target.wants/vcenterapp.service. 2019-04-08 21:22:41 INFO [setup.sh] ONNI Application Server Service Stop successful Removed /etc/systemd/system/multi-user.target.wants/vcenterapp.service. 2019-04-08 21:22:41 INFO [setup.sh] ONNI Application Server Service Stop successful Removed /etc/system/siniticuser.target.wants/vcenterapp.service. 2019-04-08 21:22:41 INFO [setup.sh] ONNI Application Server Service Stop successful Removed /etc/system/siniticuser.target.wants/vcenterapp.service. 2019-04-08 21:22:41 INFO (setup.sh] ONNI Application Server Service Stop successful Removed /etc/system/siniticuser.target.wants/vcenterapp.service. 2019-04-08 21:22:41 INFO (setup.sh] ONNI Application Server Server Setup successful Removed /etc/system/siniticuser.target.wants/setup.sh] Custer1 Vcenter Server FQDN to use for registration: delleme-osl0-plugin.st.vxrali.cluster1 Vcenter Server Bername: administrator@vsphere.local Vcenter Server Resended
- 4. Enter the REST user password used during the VxRail cluster configuration through VxRail Manager.



#### (i) NOTE: The REST user password is only requested once. Use caution to avoid entering an incorrect password.

The registration response displays before going to the full SmartFabric menu. SSH is enabled on the IP configured on ens160 (vCenter Server Network), and root SSH is not enabled.

5. The SmartFabric OMNI plug-in registration with vCenter status displays. Press Enter to continue.



6. Logout of all vCenter sessions that you have registered, then log back into the registered vCenter.

(i) NOTE: You cannot register the same vCenter instance from another SmartFabric VM.

## Map multiple fabric instances to a single OMNI plug-in

This information explains how to map fabric instances to a single vCenter instance. If you do not want to create individual OMNI to vCenter mappings, you have the option of mapping multiple fabric instances to a single OMNI mapped to single or primary vCenter instance.

#### Prepare the Management IP address

- 1. Configure a Management IP address on all Dell EMC ToRs enabled with SmartFabric Services.
- 2. Verify that the OMNI VM can ping or reach the Management IP addresses of all of the Dell EMC ToR switches enabled with SmartFabric Services.

#### Add additional fabric instances

- To add additional fabric instances, the OMNI plug-in VM uses the Master role switch IP Management address.
- 1. Verify the Master role switch.

```
switch# system bash
admin@switch:~$ cps_get_oid.py observed/dnv-cluster/cluster
```

Command output:

```
admin@mk-s4112F-02-SFS2:~$ cps_get_oid.py observed/dnv-cluster/cluster
dnv-cluster/cluster/node-state = UP
dnv-cluster/cluster/virtual-ip-address = fdel:53ba:e9a0:cccc:0:5eff:fe00:101
dnv-cluster/cluster/role = MASTER
dnv-cluster/cluster/service-tag = 161SNK2
dnv-cluster/cluster/cps-group-name = dnv
dnv-cluster/cluster/master-node-service-tag = 161SNK2
```

2. Click Add SmartFabric Instance to add additional fabric instances.

vm vSphere Client Menu	✓ Q Search in all environments	C				
OpenManage Network Integration	ISTANCE 172.17.180.65:443 -					
Griome						
<ul> <li>SmartFabric Instance</li> <li>Ide153bare/so0cccc:05</li> </ul>	DOLLEMC					
G 172 17 180 35	SmartFabric					
	CREFRESH + ADD SMARTFABRIC INSTANCE = DELETE SMARTFABRIC INSTANCE @ UPDATE EXTENSION					
	SmartFabric Instance					
	O fdet 53bareha0 cccc 0 5ett fe00 101					
	0 172.17 180.35					
	OpenManage Network Integration (OMNI) offers a single pane of glass through VMware vSphere for operation and ma	nagement of D				

- 3. Enter the Master IP management address.
- 4. Enter the REST\_USER API admin password used during deployment of the VxRail cluster through VxRail Manager. Use **admin** for the password if no password has been defined.
- 5. Click Update Extension to synchronize OMNI with the newly added fabric instances.

## Dashboard

This information describes how to access SmartFabric vCenter through the vSphere Client. A shortcut is available from the vSphere Client left-pane within the menu dropdown and shortcuts view.

(i) NOTE: Before you use the plug-in, you must set up a Dell EMC SmartFabric appliance in vSphere.

A Home	d Home ct	ni + sit + home						
Shortcuts	♦ Shortcuts	ctrl + alt + 1						
Hosts and Ousters	Hosts and Clusters	ctrl + at + 2						
VMs and Templates	VMs and Templates	cht+at+3	181	0	-	100	Photo:	
Storage	Storage	ctri + at + 4	Storage	Networking	Content	Global	Linked	
Content Libraries	Networking	ctri + alt + S			Libraries	Inventory Lists	Domans	
Global Inventory Lists	Content Libraries	ctri + at + 6						
OpenManage Network Integr	📑 Giobal Inventory List	s chi + șit + 7						
Auto Deploy	P OpenManage Netwo	rk Integration	8	122		0	1	
	Policies and Profiles		VM	VM Storage	Host Profiles	Update	VxRait	
Developer Center	Auto Deploy		Customization Specifications	Policies		Manager		
VxRail	Developer Center							
	VRealize Operations							
Administration O Update Manager	VxRait							
A Taria	administration							
Events	👌 Update Manager							
Tags & Custom Attributes	Tasks	-						
	Events							

When you select SmartFabric, the home page displays information about the SmartFabric domains being managed. This page also allows you to update extensions if available. Information includes:

- · Switch details that are part of the SmartFabric domain
- · Operating system version
- Lifecycle status
- List of networks created

<b>G</b> Home		
SmartFabric Instance	(DekLEMC)	
	SmartFabric	
	CREFFELM * ADD SMARTYABBIC INSTANCE + BELETE WEATYABBIC INSTANCE OVPOATE EXTENSION	
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		3-2 472 100
	OpenManage Network Integration (OMNI) offers a single pane of glass through VMware vSphere for operation and management of Delt EMC SmartFabric OSIO Enterprise Edition.	
	Plugin Information Links	
	User Guide Release Notes	

## Monitoring

This information describes supported deployment, virtual standard switch (VSS), distributed virtual switch (DVS), and usage.

#### Supported deployment

A single SmartFabric instance manages up to 16 SmartFabric domains. You can register the SmartFabric instance with up to 10 separate instances of vCenter that have the hosts that are connected to a managed SmartFabric domain.

#### Virtual standard switch

When you configure port groups of a VSS with VLANs, the respective *active and standby* physical adapter interfaces are automatically configured by SmartFabric vCenter on the top of racks (ToRs) and uplink of the SmartFabric. This is shown as tasks on the registered vCenter tasks pane. VLAN changes are reflected on the ToRs and SmartFabric Uplink seamlessly. Any unused VLANs in the domains purge automatically.

#### (i) NOTE: Deleting port groups or the VSS itself will clear all unused VLANs from the SmartFabric.

#### **Distributed virtual switch**

When you configure port groups of a DVS with VLANs, the respective *active* and *standby* physical adapter interfaces of the hosts that are part of the DVS are automatically configured by SmartFabric on the ToRs and SmartFabric Uplink. This is shown as tasks on the registered vCenter tasks pane. Each host has a separate task that is created for this task. VLAN changes are reflected on the ToRs and SmartFabric Uplink seamlessly. Any unused VLANs in the domains purge automatically.

#### (i) NOTE: Deleting port groups or the DVS itself clears all unused VLANs from the SmartFabric.

Distributed virtual switch (DVS) provides an option to change the VLAN of uplink port-groups. SmartFabric ignores port-group configuration if the VLAN type port-group is set to VLAN trunking or private VLAN.

Dell EMC recommends keeping the DVS uplink in Trunking mode and configures the virtual port groups with VLANs for each network. SmartFabric configures the respective VLANs on the ToRs and SmartFabric Uplinks.

# System management

This information explains common SmartFabric system management operations.

#### Appliance reboot

Configurations are persistent. Any services running are enabled at startup and continue to run. If the services stop, the services must be brought up again to monitor the domain.

Go to SmartFabric Console Login and select **Option 7. Reboot Appliance**. Recommendation is to enable auto start for the VM after power on of the host or domain after the first setup. This ensures that the domain is always managed properly by the plug-in.

#### Change appliance DNS

SmartFabric requires vCenter FQDN to be resolved properly for it to connect stemless. Any change in DNS must be updated on the application through **Option 2. Interface Configuration Menu**. You must then set the proper DNS for the interface which connects to the respective vCenter; see note.

#### Connect to multiple vCenter networks

SmartFabric by default comes with only two network adapters. To connect to multiple vCenter servers across different networks, you must edit the VM to add multiple adapters from vCenter.

Configure all interfaces through **Option 2. Interface Configuration Menu** with the proper IP and DNS. Activate and deactivate the new connections, register the plug-in with vCenter, and then SmartFabric starts managing the network adapter changes.

#### Change appliance SSL certificates

The SmartFabric appliance uses certificates to generate a thumbprint of the appliance for vCenter registration. To update the package with proper thumbprint, you must complete the registration process again to avoid connection failures between the appliance and vCenter.

Go to the SmartFabric home page, select **Update Extension**. The UI picks up the changes and starts communicating with the SmartFabric appliance.

#### Upgrade plugin package on vCenter

You can upgrade the plug-in package on new releases without having to deploy a new SmartFabric appliance. For more information, see the Upgrade SmartFabric vCenter plugin.

#### Plugin sync behavior

When you power off the SmartFabric VM, any changes you make on the respective hosts through vCenter do not reflect on the fabric. When you power on the VM (registering), the plug-in syncs all the states of VLANs for all the hosts.

#### VxRail switch add

When SmartFabric detects any new VxRail switch added to the registered vCenter, the switch changes will not be synced for 20 minutes for the VxRail Manager to finish setting up the switch for the domain. After the 20 minute timer expires, the plug-in will start syncing the states of the host if it is part of the managed domain.

#### (i) NOTE: Although the vCenter IP address can be used, we recommend using only the vCenter hostname.

#### **Topics:**

- Host network inventory
- Fabric summary
- User uplinks
- Port breakout
- Jump port
- Password change
- Upgrade image
- Server interface profile
- Fabric topology
- Switch replacement

## Host network inventory

This information describes how to view information about physical Dell EMC PowerSwitch infrastructure running SmartFabric OS10.

#### Host network inventory page

Select a host in vCenter, select the Monitor tab, then select OMNI vCenter in the monitor sidebar.

#### **Refresh button**

Click Refresh to update the host network inventory data and display updated contents.

#### Physical adapter table

Select a switch to view detailed information. The table is default-sorted by descending switch name to group physical adapters belonging to the same switch.

		1 STITLEPOOLS	Field Descentes rectificants	oposies				
Issues and Alarms All Issues Triggered Alarms     Performance Overview Advanced	Hos	t Networ	rk Inventory					
Advanced • Tasks and Events Tasks Events Hardware Health		Server v Physical Adapter	Logical Switch 🕴 🔻	MAC Address	v Physical Switch Node	٣	Physical Switch Interface	
		📕 vmnicā	VMware HCA Distributed Switch	00.0a1715/5/a0	607H0XC2		ethemetVVI.	
Performance		C smrit Viter	VMware HCM Distributed Switch	00:0a1775/5a1	FX8HXC2	ethechet/1/9	ethemet/2/9	
Health		💓 vmmc4	DSwitch	19.12 te 24.82.00	FXSH0022		port-channell	
OpenManage Network _		vmnc5	DSwitch	19 12 1e 20 82 01	607H0022		port-channel3	
		wusb0	2 vSwtichORACyust	54.4810735633				
		wmnic3		18.12.1e.20.78.c1				

- Physical adapter physical network adapter name
- · Virtual switch name of switch the physical adapter is connected to
- MAC address MAC address of the physical adapter
- · Physical switch physical switch that is connected to the fabric
- · Physical switch interface physical switch port this server network adapter is wired to

#### Logical switch

Displays information about the logical switch that is connected to the selected physical adapter.

 Switch tab — includes name of switch, MTU in bytes of switch, physical adapters connected to the switch. and uplink ports on the switch

A REAL PROPERTY AND A REAL	O M vmnc2		1812 Nr. 2x178 cO				
Trippered Alarms	1000						10779905
Performance	Logical Custon						
Advanced.	Logical Switch						
Tasks and Events	Switch Port Groups VMs						
Events	100	United Parts					
Handware Health	VMeanwerkOA Dubrisuted Switch 500 vminc0 vminc1 0userini 1userini2						
Heath OpenManage Network .							
	Physical Switch						_
	Physical Switch Onboard Interface N	ietworks					
	Physical Switch Onboard Interface N Aenon States	ietworks sotorface Sister	Auto Neg	Current Spece	MTU	Native VLAN	

Port groups tab — includes the name of port groups, and VLAN IDs for each port group

and depends	Getsette								
101	beine Physica adapter	<ul> <li>Supartieter</li> </ul>		COLUMN TAX		Para later and		Physical Institute Physical	
0.4	() Prind	Vesare vitre benchmarker beilde		1012038-01090		101224		Atheniseth/1y/f	
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Petamator vitai Prostal Ven agine Haditi	Logical Switch								
	3100 Personal Action								
	Sellor Part Dougs VML								
	hele				19,411-01				
	Drustinal				9.0				
	Disette DV/genes (1)				0.4266				
									0.291249
	Physical Switch								
	Orbund Interface Instruction								
	NALLY R								
	Admin Distan	orientaria dialan	Auto (165)		formed lighted		M <sup>2</sup> N	Ratine 16,400	
	Ended	17410	2sailed		10000 Mb		1210		

 $\cdot$   $\,$  VMs tab — includes the name of VMs of that host that is connected to a single virtual switch

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Issues and Alarms	O 😹 vmnic0	VMware HCIA Distributed	00.0a.f7.f5 c2.90	607HXC2	ethernett/1/2	
All Issues	0	Switch	000+045-346	Exterior	athematiOUS	
Tripgered Alarms	C month	VMixare HCA Distributed Switch	0000000000000	Panetonya.	En la cara da	
Overview	O Montes	DSwitch	18.12.14.28.7150	FX8H0KC2	port-channe@	
Advanced	O minits	DSwitch	19121w2d7151	607H0(C2	port-channel2	
Tasks and Events	O mrnc2	2 vSwitch0	18121e.2078.e0			
Tasks	C 🖬 vusto	2 vSwitchORACvusio	54 48 10 to ee 51			
Hardware Health	🔿 🖬 vmnic3		1872162878-et			
Performance Health OpenManage Network .	Logical Switch Switch Port 0	iroups VMS	•			

#### Physical switch

Displays information about the onboard interface. This information displays only when there is a physical connection between the VxRail domains and OMNI.

· Onboard interface

AT Issues Trippered Alarms	Lopical Switch					
Performance	cogree oniter					
Overview	Switch Port Groups	VMs				
Advanced						
Tasks and Events	Name					
Events	() ONNE					
Hardware Health	B VMware vCenter Se	rver Appliance				
VSAN	(a) VMware vCenter Se (b) 104-even vCenter Se	rver Platform Services Controli				
Performance	(B VYCat Manager	g insignit				
OpenManage Network			1.5.05.995			
	Physical Switch					
	Criboard interface N	etworks				
	Admin Status	Interface Status	Auto Neg	Current Speed	letty	Native VLAN
	Endlied	Unik Up	Disabled	10000 Mb	9216	1

- $\cdot$   $\;$  Admin Status configured state of the physical interface
- · Interface Status current operations state of the physical switch port
- $\cdot$   $\;$  Auto Neg negotiation status of the physical interface
- Current Speed current operational speed of the physical interface
- MTU maximum transmitting unit configured on the physical interface
- · Native VLAN untagged default VLAN for the physical switch
- Networks

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r Instate and Alarms					
All Issues	Lookal Switch				
Performance	Logical Switch				
Overview	Cultrin Dout General Main				
Advanced	Sweth Port Groups VMS				
Tasks and Events	Carterio				
Tasks	Rate				
Events	(p cMN)				
Hardware Health	B Visitate vCenter Server Applant	19			
VSAN	B VMware vSealize Loo Insold				
Menormance	/b VxRail Manager				
OnerManana National		1-5 of 5 VMs			
and the approximation of the					
	Physical Switch				
	and the second se				
	Criboard interface Networks				
	Network Name	y Network M	Ψ.	VLAN	
	Network Name VM_Network_8	<ul> <li>Verlesses tol network n615</li> </ul>	7	VLAN 1615	7
	Network Name VM_Network_8 VY0000n Network	Y Network M rectwork/615 rectwork/612	7	VLAN 1615 1612	Ŧ
	Network Name VM_Setwork_B Vmotion Network Vsan Network	v Network 10 network-1615 network-1612 network-1613	7	VLAN 1615 1612 1613	Ŧ

- Network Name name of the VLAN network
- Network ID unique identifier of the fabric network
- · VLAN tagged VLAN of the switch port

## **Fabric summary**

This information describes the selected Fabric Summary. Select the fabric from the left-pane to view details on the fabric. Click **Refresh** at any time to update details.

	SmartFabric Instance 10.11.1	1.22							
	Summary Configure	Topology							
martFabric Instance									
G 10 11 181 22									
C 10.71.181.21	Fabric Details Carree	SH .							
	Fabric Id: 1								
	Activity		v States				v Timestang		
	Create		Finished				Feb 11, 2019		
									1-1-st 1LAs Cycl
	Nodes								
	No-de ld	v Model	v	Software Version		v No	e Ruite	v Status	
	F38H01C2	54148F-ON		10.4.1.2P1		Lei		Online	
	607-0122	S4148F-ON		10.41.2Pt		Lei		Online	
									1-24
	Networks								
	Network Id				r VLAN				
	Network-200				200				
	Network-1613				1013				
	Network-1015				1615				
	Network-1614				1014				
	Network-1616				1616				1-5 of 7 Networks
	AutoFabricUplink-103	TINC UPLINK NETWORKS							
	AutoFabricUplink-103	INCOURTING NETWORKS			v.an				

## **User uplinks**

This information describes how to create, edit, or delete fabric uplinks. You can create uplinks on each fabric with available interfaces which are not part of an existing uplink, server connected ports, or part of a SmartFabric automation and jump port.

Once you have created an uplink, you can then associate networks to the uplink and change or modify interfaces. These user-managed uplinks require configuration of networks through SmartFabric vCenter.

(i) NOTE: If you delete an uplink, any unused networks and ports will be available for future use.

- 1. Select SmartFabric vCenter, then select **SmartFabric**.
- 2. Select the specific SmartFabric instance, select Configure, then select User Uplinks.



#### Create user uplinks

You can create an uplink by selecting the fabric with a unique user-given name, then select the interfaces and networks through the wizard interface to create a user uplink.

1. Select the Uplink Name, select the fabric, then click Next.

Create Liplick	Celect Unlink Name		
Create Oplink	Select Oplink Name		^
1 Select Uplink Name	Enter Uplink Name	1000 Best	
2 Interface Selection		Upink+Ptoa	
3 Network Selection	Fabric *	102 ·	1
			.
		CANCEL NEXT	

2. Click Select Interfaces, select the interfaces to add to the fabric uplink from the top list, then click Add.

Create Uplink	Interface Selection		
1 Select Uplink Name	Select interfaces to add		
2 Interface Selection	Switch ID	Ŧ	Interface Name T
3 Network Selection	PX6HXC2		FX6HXC2:ethernet/V/30:2
	FX6HXC2		FX6HXC2:ethernet1/1/30:4
	FX6HXC2		FX6HXC2:ethernet1/1/6
	PX6HXC2		FX6HXC2:ethernet1/1/1
	PX6HXC2		FX6HXC2:ethernetl/1/29:3
	FX6HXC2		FX6HXC2:ethernet1/1/12
	FX6HXC2		FX6HXC2:ethernett/V29:1

3. The interfaces are now selected for the fabric uplink; click Next.

		When it is introduced which many the unit of when	
607HXC2		607HXC2:ethernetI/I/29	
607HXC2		607HXC2:ethernetI/1/26:1	
607HXC2		607HXC2:ethernet1/1/49	
Interfaces to be added:		Interface Name	Ŧ
C EVELVOS		EX6HXC2-athernet1/1/30:1	
L] PAORACZ		CANTING2. EDITED FOR 9 30 1	
	607HXC2     607HXC2     formation of the second secon	607HXC2     607HXC2     for the added:     xREMOVE     Switch 10     v	607HXC2     607HXC2:ethernetVI/26:1     607HXC2:ethernetVI/26:1     607HXC2:ethernetVI/49  Interfaces to be added:      xREMOVE     switch ID.     y Interface Name

4. Select networks to add to the fabric uplink from the top list, then click Add.

reate Uplink	Network Selection				
1 Select Uplink Name	Select networks to add				
2 Interface Selection	Network ID	т	Vlan		Ŧ
3 Network Selection	network-1615		1615		
	network-1614		1614		
	Network-401		401		
	network-1613		1613		
	network-1612		1612		
	Networks to be added:				
				CANCEL	BACK

5. The networks are now selected for the fabric uplink; click **Finish**.

Create Uplink	Network Selection	·	
1 Select Uplink Name	Network-401	401	
2 Interface Selection	network-1613	1613	
2 Interface Selection	network-1612	1612	
3 Network Selection			
	Networks to be added:		
	Networks to be added:	.Ψ. Vian ID	Ť
	Networks to be added:	γ Vian ID 1615	Ŧ
	Networks to be added:	τ Viah ID 1615 1614	Ť
	Networks to be added:	τ Vian ID 1615 1614	*

#### Edit user uplink

- (i) NOTE: You can only edit user-created uplinks. Default system uplinks cannot be edited.
- 1. Select the uplink, then click Edit.

3Home	SmartFabric Instance 10.11.181.22								
martFabric Instance	summary congree reporting		Parameters						
@10.11.101.22	USER UPLINKS PORT BREAKOUT	TEOR RMUL	PASSWORD	CHANGE	UPGRADE	SERVER INTERFACE PRO	FILE		
	Name		Uptina v 10	Fidencial.	6	Uplink Details			
			AutoFatinou 102	509-102		Name	Upins_1		
	O Uplink_1		Upink_1	102		Upline ID	Upinik_1		
	O Uptinid		Upies2	102		туре	Normal		
				1-2473-004	14	Mandar Interface v	Status	v arty v	Type v
						RX6POXC2 #thematly//?	Operationally	9216	PhysicalEtherre
						FX8HXC2 ethemets/V5	OperationalDo	wn 92%	PhysicalEtherne
									1 - 2 of 2 martine
						Network Name		Vian ID	
						Network-401		401	
						metwork-1615		1615	

2. Add or delete the interfaces to change, then click **Next**. The new interface selection displays at the bottom.

	Interface Selecti	011	
	607HXC2	607HXC2;ethernet1/1/46	
1 Interface Selection	607HXC2	607HXC2:ethernet1/1/45	
2 Network Selection	607HXC2	607HXC2:ethernet1/1/22	
	607HXC2	607HXC2:ethernet1/1/25	
	607HXC2	607HXC2:ethernet1/1/36	
	607HXC2	607HXC2:ethernet1/1/26	
	607HXC2	607HXC2:ethernet1/1/29	
	607HXC2	607HXC2:ethernet1/1/49	
	Interfaces to be add	ded: T Interface Name	
		EVEL DUPPLIATE AND ATT BIC	
	FX6HXC2	FX6HXC2:ethernett/1/6	

**3.** Add or delete the networks to change; the new network selection displays at the bottom.

	Network Selection		
	Network-401	401	
1 Interface Selection	fake-network	400	
2 Network Selection	network-1612	1612	
	network-1615	1615	
	network-1614	1614	
	network-1613	1613	
	Network-401	401	
	Networks to be added	:	
	Networks to be added	i.	
	Networks to be added           × REMOVE NETWORKS           Network ID	Υ Vian ID	τ
	Networks to be added	т Vian ID 1612	τ
	Networks to be added	т Vian ID 1612 1615	π
	Networks to be added  REMOVE NETWORKS       Network ID       network-1612       network-1615       Network-401	т Vian ID 1612 1615 401	Ŧ
	Networks to be added  REMOVE NETWORKS    Network ID    network-1612    network-1615    Network-401	т Vlan ID 1612 1615 401	Ŧ

#### 4. Click Finish.

#### Delete user uplink

() NOTE: You can only delete user-created uplinks. Default system uplinks cannot be deleted.

1. Select the uplink to delete, then click **Delete**.

	Delete User Uplink	
	Are you sure to delete the user uplink: Uplink-Prod ?	

2. Click Delete.

## Port breakout

This information describes how to display and configure breakout-capable ports. You can choose any breakout mode available on the configuration to move back and forth.

- 1. Select SmartFabric vCenter, then select **SmartFabric**.
- 2. Select the specific SmartFabric instance, select **Configure**, then select **Port Breakout**.
  - (i) NOTE: Only breakout-capable ports are listed in the Port Breakout table. The S4148F/T/U/FE-ON switch port breakout is based on the switch-port-profile configuration (see Configure extended options).
- 3. Select the port to display breakout port details.

슈Home SmartFabric Instance	SmartFabric Instance 10.11.181.22 Summary Configure Topology		
La 10.11.181.21	USER UPLINKS PORT BREAKOUT JUMP PORT	PASSWORD CHANGE UPGRA	DE SERVER INTERFACE PROFILE
10.11.181.22			
	Node ID Y	Interface y Breakout Profile y	Breakout Port Details
	О Ехенхса	port1/1/26	Profile 4x25GE
	O FX6HXC2	phy- 2X50GE	Node ID FX6HXC2 Interface Name phy-port/1/30
	О рхбнхс2	phy- portI/1/25	Memberleterfare v Status v MTU v Tune v
	FX6HXC2	phy- 4X25GE	ethernett/V30:1 Down 9216 PhysicalEtherne
	O 607HXC2	portVV25	ethernett/U/30:2 Down 9216 PhysicalEthern
	O 607HXC2	phy- 2X50GE	ethernetl/U/30:3 Down 9216 PhysicalEtherne ethernetl/U/30:4 Down 9216 PhysicalEtherne
	O 607HXC2	port1/1/29	
	0 607HXC2	port1/1/29 1X100GE	

#### 4. Select breakout mode, then click Submit.

Interface ID	phy-port1/1/29	
Mode *	2X50GE	•

## Jump port

This information describes jump port operations. Only one port per switch can be configured as a jump port. You can select any available port that is not part of an uplink or intercluster link, or connected to an ESXi server which is part of SmartFabric deployment.

If you would like to change an existing jump port, you must unconfigure it, then add the new jump port. Removing a jump port makes the port available for all traffic, and can be connected to a VxRail switch.

#### Add new jump port

- 1. Select SmartFabric vCenter, then select **SmartFabric**.
- 2. Select the specific SmartFabric instance, select Configure, then select Jump Port.
- 3. Select the switch, select the interface, then click Add Jump Port.

ŵHome	SmartFabric Instance 10.11.	181.22			
<ul> <li>SmartFabric Instance</li> </ul>	Summary Configure	Topology			
<b>10.11.181.22</b>	USER UPLINKS PORT BR	REAKOUT JUMP PORT	ASSWORD CHANGE	UPGRADE S	ERVER INTERFACE PROFILE
	C + ADD JUMP PORT	× DELETE			
	Node ID	T Configured T			
	FX6HXC2	No			
	O 607HXC2	Yes			

4. Enter the VLAN description, then click Add.

#### Reconfigure jump port

- 1. Select the switch that is configured with a jump port, then click **Delete** to delete the jump port.
- 2. Follow the steps in Add new jump port.

## **Password change**

This information describes how to change the password for the SmartFabric domain.

(i) NOTE: If you change the password, the SmartFabric password must be updated on theVxRail Manager as well.

- 1. Select SmartFabric vCenter, then select SmartFabric.
- 2. Select the specific SmartFabric instance, select Configure, then select Password Change.

A	SmartFabric Ins	tance 10.11.181.22				
WHome	Summary	Configure Topolog	Ŋ.			
SmartFabric Instance		-	Province and		(	
10.11.181.22	USER UPLINKS	PORT BREAKOUT	JUMP PORT	PASSWORD CHANGE	UPGRADE	SERVER INTERFACE PROFILE
10.11.181.21						
	Smart Fabric F	Password Change				
	Username *	REST	_USER			
	Current Password	ē				
		_ st	ow Current Passv	rord		
	New Password *					
		_ \$P	ow New Passwor	d		
	Confirm New Pas	sword *				
		_ st	ow Confirm New	Password		

- **3.** Enter the current password for the SmartFabric domain.
- 4. Enter the new password for the SmartFabric domain, then confirm the new password again.
- 5. Click Submit. An alert displays at the top after the operation completes.

# Upgrade image

This information describes how to upgrade the OS10 image of the fabric. Fabric upgrade displays a list of user-uploaded images to SmartFabric vCenter.

#### Upload image

- 1. Select SmartFabric vCenter, then select SmartFabric.
- 2. Select the specific SmartFabric instance, select Configure, then select Upgrade.

OpenManage Network Integra	100 INSTANCE 10.11.182.66:443 *	
Wome SmartFabric Instance I0.11.181.22	SmartFabric Instance 10.11.181.22 Summary Configure Topology USER UPLINKS PORT BREAKOUT JUMP PORT PASSWORD CHANGE UPGRADE SERVER INTERFACE PROFILE UPGRADE SERVER INTERFACE PROFILE UPGRADE PROFILE Name PKGS_OS10-Enterprise-10.4.3.1170stretch-installer-x86_64.bin	
		1 - 1 of 1 in
	1	,

3. Click Upload, click Choose File, navigate to the image file, and select the file, then click Upload.

Upload Image	
Image	Choose File PKGS_OSIO-Enter_ler-x86_64.bit
UPLOAD	
	CANCEL

4. Click Close. You can repeat these steps to upload more images.

Upload Image	
PKGS_OSIO-Enterprise-10.4.3.1170stretch-installer-x86_64.1 uploaded.	bin successfully
	CLOSE

5. Click **Yes** to confirm the upgrade.

Confirm Upgrade	
Upgrade SmartFabric: with image: PKGS_OS10-Enter 10.4.3.1P1.201stretch-installer-x86_64.bin. The entire fabric upgrade process will start in the burner up to 60 minutes. Do you wish to continue? (SmartFabric will automatically reboot when upgrade)	erprise- ackground and may take de is completed)
	NO YES

#### Delete image

1. Select the image to delete, then click **Delete**.

(n)Home	SmartFabric Instance 10.11.181.22	
00	Summary Configure Topology	
SmartFabric Instance		
Lange 10.11.181.22	USER UPLINES POST BREAKOUT UND POST PASSWORD CHANGE UPGRADE SERVER INTERFACE PROFILE	
	C UPCOND DELETE UPGRADE	
	Name	
	PKUS_USID-Enterprise-KU4.3.LI/USID-etch-installer-X86_54.Din	
		1

- 3. Click **Yes** to delete the image, or **No** to cancel.

#### Upgrade fabric

1. Select the image to upgrade, then click **Upgrade**.

(n) Home	SmartFabric Instance 10.11.181.22	
SmartEabric Instance	Summary Configure Topology	
-10.11.181.22		
_	USER UPLINKS PORT BREAKOUT JUMP PORT PASSWORD CHANGE UPGRADE SERVER INTERFACE PROFILE	
	C UPLOAD DELETE UPGRADE	
	Name	
	Name  PKGS_OS10-Enterprise-10.4.3.1.170stretch-installer-x86_64.bin	

2. Click Yes to confirm the upgrade, or No to cancel the upgrade. The successful image upgrade message displays.

#### (i) NOTE: One switch is upgraded at a time so that there is no loss of connectivity for the VxRail cluster.

The vCenter Task Console displays including the status of the upgrade task. The percentage that is completed on vCenter shows 50% complete when the image has finished uploading the SmartFabric image, and 100% when SmartFabric completes the upgrade.

vm vSphere Client	Menu w O, Search				C	Øv	Amer		SPHERELS	DOL V	0
d Home	Task Console										
+ shortcuts	4 Percent P Net										
Hosts and Outliers	Task Norme v	Tarpet v	finter v	Details		88. 4	Qu. ~ 1	in. v	Co. ~	$\mathbb{D} \mathfrak{m}_{+} =$	5e. ~
VMs and Templates	OSIO Smart Fabric upgrade task	Merceyan	0 O	Uploading PHDS, V0044,10411514 pm to 1011/0122		Villai-	20 ms - 0	1349			10.11.
G Storage	OSIO Smart Fabric upgrade task	Mecuyaa	<ul> <li>Companied</li> </ul>	image upload onto 10.11.181.20 felied		Voltai-	21 mi - 0	1349	03/9/.	19.6	10.11.
Networking     Content Literation	Check new notifications	Ø 107082.000	<ul> <li>Companied</li> </ul>			VMa	566 mi - 0	1349	03/9/.	907 mi	10.11.
Contract Eventory Lists	OSIO Smart Fabric update task	Internet 10	<ul> <li>Companied</li> </ul>	Configuration changes for host-450 succeeded		Voltai-	Sec. 0	1349	03/96	16	1011.
-	OSIO Smart Fabric update task	C TOTAL COLOR	✓ Companied	Configuration changes for host-454 successeded		Voltai-	Sec. 0	1349	03/96	16	1011.
Policies and Profiles	OSIO Smart Fabric update task	C TOTORA RA	<ul> <li>Companied</li> </ul>	Configuration changes for host 75 successivel		Voltai-	Sec. 0	1349	03/96	16	1011.
Interactive Operations	OSIO Smart Fabric update task	CONCEPTION D	✓ Completed	Configuration changes for host-10 succeeded		Voltai-	12 mi - 0	1349	03/96	24	1011.
HP ONIN	OSPO Smart: Fabric update task	C NORMOND	<ul> <li>Completed</li> </ul>	Configuration changes for host-27 successivel		Voltai-	12 mi - 0	1349	03/96	24	1011.
annistation 5	OSIO Smart Fabric update task	C NORMONIO NO	<ul> <li>Completed</li> </ul>	Configuration changes for host 75 successful		Voltai-	15 mi - 0	1349	03/96-	76	1011.
🔆 Update Manager	OSIO Smart Fabric update task	C NORMER AND	<ul> <li>Completed</li> </ul>	Configuration changes for host 75 successful		Voltai-	12 mi - 0	1349.	03/96-	14	10.11.
	OSIO Smart Fabric update task	Conception	<ul> <li>Completed</li> </ul>	Configuration changes for host 75 succeeded		Voltai	Sec. 0	1349	03/96	16	1011.
C Taxas	OSIO Smart: Fabric update task	Conception	<ul> <li>Companied</li> </ul>	Configuration changes for host-27 successivel		Voltai-	15 mi - 0	1349	03/96	24	1011.
	OSIO Smart: Fabric update task	C NORTHER BO	<ul> <li>Completed</li> </ul>	Configuration changes for host-13 succeeded		Voltai	12 mi - 0	1349	03/96	24	10.11.
Tage & Culture Attribu.	OSIO Smart Fabric update task	In the second s second second sec	<ul> <li>Completed</li> </ul>	Configuration changes for host-27 successivel		Voltai-	21 mi 0	1349.	03/96-	2.4	10.11.
	OSIO Smart: Fabric update task	C NORTHER BO	<ul> <li>Completed</li> </ul>	Configuration changes for host-13 succeeded		Voltai	1.00	1349	03/94	24	1011.
14 New Search	OSIO Smart: Fabric update task	C NORMOND	<ul> <li>Completed</li> </ul>	Configuration changes for host-27 successivel		Voltai	10 mil - 1	1349.	03/94	24	1011.
	OSIO Smart Fabric update task	Nonception	<ul> <li>Completed</li> </ul>	Configuration changes for host-13 succeeded		Voltai-	54 mil - 1	1349.	03/96	2.4	1011.
	OSIO Smart Fabric update task	C KONNECKO	V Completed	Configuration changes for host-27 successful		Voltai	2	1346.	03494.	2+	4041.

## Server interface profile

This information describes how to configure a SmartFabric server interface profile.

The Server Interfaces Profile List displays a list of Server Profile IDs and their respective onboard status. Select a profile to view details pertaining to that specific profile including:

- Interface ID
- Fabric ID
- Native VLAN
- · Networks (if applicable) including the network name and VLAN ID

#### **Create profile**

- 1. Select SmartFabric vCenter, then select **SmartFabric**.
- 2. Select the specific SmartFabric instance, select Configure, then select Server Interface Profile.

USER	UPLINKS	PORT BREAKOUT	JUMP PORT	PASSWORD CHANGE	UPGRADE	SERVER INTERFACE PROFIL
Ser	ver In	terfaces	Profile L	_ist		
c	+ ADD	Ø ED/T = DEL	£11E			
0	Server Interfa	ce Profile ID T	Onboard Status 🔻			
0	000af7t5c2t	0	true			
0	000af7t5c29	1	true			
	f8f21e2d78e	рі — Л	false			
0	f8f21e2d78e	0	faise			

- **3.** Click **Add** to create a Server Interfaces Profile.
- 4. Enter the name of the new profile, then click Next.



5. Click Select Networks, select the networks to assign to the profile, then click Add.

Create Serv Profile	Select Networks		×
1 Provide an In	Network Name	v Vian ID v	
2 Select Netwo	Network-402	402	
1	Network-403	403	
	network-1613	1613	1-2 of 2 networks
	2	7 - 9 of 10 networks < 1 2 3 4	>
			FINISH

6. (Optional) Click Create Network, enter the name of a new network to assign to the profile, then click Create.



#### 7. Click Finish.



#### Edit profile

1. Select the Server Interface Profile from the display, then click Edit.

G)Home	SmartFabric Instance 10.1	101.22						
mutfahris Indanse	Summary Configure	Topology						
☐10.11.181.22								
G 10.11.181.21	USER UPLINKS PORT B	REAKOUT JUMP PORT	PASSWORD CHANGE	UPGRADE	SERVER INTERF	ACE PROFILE		
	Server Interfa	aces Profile L	ist					
	+ ADD @ EDIT × DEL	676						
	Server Interface Profile ID	T Onboard Status      Υ	Server Interf	ace Profile	e Detail			
	000af7t5c290	true	Interface ID		000af715c	290		
	000af7t5c291	true	Fabric ID		102			
	18121e2078e1	false	Native Vian		1			
	18121e2d78e0	false						
	181214267150	true	Onboard Interface		Status v	MTU T	Туре	,
	1 1 - 5 of 23 Server Inter	ace Profile 1 2 5 >	100		OperationalUp		PhysicalEthern	et
		-	607H0KC2.ether	netVV2				
			Network Name		Ŧ	Vian ID		,
			network-1615			1615		
			network-1613			1613		
			Network-401			401		
			network-1614			1614		

2. (Optional) Select the network to edit from the Server Interface Profile, then click Add.

Create Serv Profile	Select Networks			×
	+ ADD CANCEL			NETWORKS
1 Provide an In	Network Name	τ Vian ID	Ŧ	*
2 Select Netwo	Network-402	402		
	Network-403	403		
	network-1613	1613		1-2 of 2 networks
	2	7 - 9 of 10 networks < 1 - 2	3 4 >	
				_
				FINISH

3. Click Remove Network, then click Finish.

#### Delete single profile

- 1. Select the Server Interface Profile from the display, then click **Delete**.
- 2. Click **Delete** to confirm removal of the Server Interface Profile.

#### Delete multiple profiles

1. Select the Server Interface Profiles from the display, then click **Delete**.

Delete Server I	nterface Profile	(s)}
Are you sure you wa 000bf7f5d291	ant to delete 3 serve 544810fdbb33	r interface profile(s)? 544810fdee51
DELETE	L	

2. Click Delete to confirm removal of the Server Interfaces Profile.

# Fabric topology

This information explains how to display the fabric topology and switch information. Switch information includes destination interface, destination switch, interface ID, interface name, switch ID, and type.

- 1. Select SmartFabric vCenter, then select **SmartFabric**
- 2. Select the specific SmartFabric Instance, then click Topology.
- **3.** Mouse over a fabric to display switch details.

<b>G</b> Home	SmartFabric Instance 10.11.181.22
CmartEabric Instance	Summary Configure Topology
10.11.181.21	CREFRESH
	Mouseover fabric node for details

4. Click Refresh Topology Data to update the topology information.

## Switch replacement

This information explains how to switch a SmartFabric environment with another switch running SmartFabric.

- 1. Capture all wiring connections from the Dell EMC switch to be replaced. Pay close attention to all the switch ports being used, or uplinks and interlink connections (links between the Dell EMC switches).
- 2. Write these configurations:
  - Hostname
  - Management IP address if any
  - DNS and NTP IP addresses if configured
  - Spanning-tree mode; SmartFabric Services run RPVST by default
  - Other spanning-tree parameters
- 3. Ensure that the new Dell EMC switch has the same OS10 version as the existing Dell EMC show.

```
# show version
```

4. Enable SmartFabric Services on the new switch and define the uplinks, interlink ports, plus any other more parameters such as management VLAN, LACP, VLAN tagging, and so on.

For example, if the uplink port is 1/1/4 and the interlink ports are 1/1/6,1/1/8, no VLAN tagging, LACP auto, management VLAN 1 as default.

```
# sfs_enable_vxrail_personality.py -i 1/1/6,1/1/8 -u 1/1/4 -1
```

- 5. Reload the switch.
- 6. Connect the new switch to the existing switch running SmartFabric currently. Make all connections between the switches, uplinks, and VxRail nodes.
- 7. The new switch reboots, and during the reboot, the database configuration on the new switch will be updated by the existing switch to establish a synchronized database between both switches. Allow several minutes for this to take place.
- 8. Once the configurations have synchronized, review the command outputs on both switches as they should match.

```
# show vlan
```

This command shows a primary and secondary peer status depending on which switch the command is run on.

# show vlt 255

# show lldp neighbor

# Lifecycle management

This information explains common lifecycle operations including upgrading of the SmartFabric solution including VxRail nodes, SmartFabric OS10, SmartFabric vCenter appliance, and switch replacement.

These are the required steps to upgrade the SmartFabric solution:

- 1. Upgrade all VxRail nodes (see Upgrade VxRail nodes).
- 2. Upgrade OpenManage Network Integration (see Upgrade image).
- 3. Upgrade SmartFabric OS10 (see Upgrade OS10).

#### **Topics:**

- Upgrade OS10
- Upgrade SmartFabric vCenter appliance
- Upgrade VxRail nodes

## **Upgrade OS10**

This information describes upgrading of individual switches. You can upgrade the entire fabric through SmartFabric (see Upgrade image). **Download OS10 binary** 

- 1. Download and unpack the new OS10 binary image (see Download OS10 image and license), then copy the binary image to a local server.
- 2. (Optional) Back up the current running configuration to the startup configuration in EXEC mode.

copy running-configuration startup-configuration

**3.** Back up the startup configuration in EXEC mode.

copy config://startup.xml config://backup file name

4. Download the new OS10 binary image from the local server in EXEC mode.

image download server-filepath

5. (Optional) View the current software download status in EXEC mode.

show image status

#### Install OS10 binary

- () NOTE: The image install command installs the image binary to the standby partition. If the active partition contains modified files or custom packages, they will not be available in the standby partition. You must back up modified files, then reinstall the packages after downloading the software image.
- 1. Install the OS10 image in EXEC mode.

image install image-url

2. (Optional) View the status of the current software install in EXEC mode.

show image status

3. Change the next boot partition to the standby partition in EXEC mode. Use the active parameter to set the next boot partition from standby to active.

boot system standby

4. (Optional) Verify that the next boot partition has changed to standby in EXEC mode.

show boot detail

5. Reload the new software image in EXEC mode.

reload

6. Install the OS10 license. See Install OS10 license for complete instructions.

#### Verify OS10 version

```
OS10# show version
Dell EMC SmartFabric OS10
Copyright (c) 1999-2019 by Dell Inc. All Rights Reserved.
OS Version: 10.4.3.0
Build Version: 10.4.3.85
Build Time: 2019-02-18T17:06:10-0800
System Type: S4048-ON
Architecture: x86_64
Up Time: 2 days 05:58:01
```

## Upgrade SmartFabric vCenter appliance

This information explains how to upgrade the OMNI appliance. You must be in the Appliance Console to use these steps. Once you upgrade the appliance, you must then register the appliance with the vCenter Server.

## () NOTE: OMNI 1.0 to version 1.1 upgrade is not supported. See the *VMware Integration for VxRail Fabric Automation SmartFabric release notes* for a workaround.

- 1. Download the OMNI upgrade image and store the image locally.
- 2. Select 7. Upgrade Appliance.



The display lists all the applications to be upgraded along with the old and new versions. Upgrading requires restarting the services. **3.** Enter **Y** to continue.

>=3.6->vcenterapp==0.1.0)
Requirement already satisfied: more-itertools>=4.0.0 in /usr/local/lib/python3.5/dist-packages (from putest<4.0.>=3.6->vcenterapp==0.1.0)
Requirement already satisfied: atomicwrites>=1.0 in /usr/local/lib/python3.5/dist-packages (from pyt
est<4.0,>=3.6->vcenterapp==0.1.0)
Requirement already satisfied: pluggy>=0.7 in /usr/local/lib/python3.5/dist-packages (from pytest<4.
0,>=3.6->vcenterapp==0.1.0)
Requirement already satisfied: pathlib2>=2.2.0; python_version < "3.6" in /usr/local/lib/python3.5/d ist-packages (from pytest<4.0,>=3.6->vcenterapp==0.1.0)
Requirement already satisfied: setuptools in /usr/lib/python3/dist-packages (from pytest<4.0,>=3.6-> vcenterapp==0.1.0)
Requirement already satisfied: attrs>=17.4.0 in /usr/local/lib/python3.5/dist-packages (from pytest<
Requirement already satisfied: pbr>=0.11 in /usr/local/lib/python3.5/dist-packages (from mock<3.0,>=
2.0->vcenterapp==0.1.0)
Requirement already satisfied: asnicrypto>=0.21.0 in /usr/local/lib/python3.5/dist-packages (from cr uptography>=2.2.1->puppenssl<(19.0.0.>=18.0.0->vcenterapp==0.1.0)
Requirement already satisfied: cffi!=1.11.3,>=1.7 in /usr/local/lib/python3.5/dist-packages (from cr
yptography>=2.2.1->pyopenss1<19.0.0,>=18.0.0->vcenterapp==0.1.0)
Requirement already satisfied: MarkupSafe>=0.23 in /usr/local/lib/python3.5/dist-packages (from Jinj
a2>=2.10->flask<2.0,>=1.0->vcenterapp==0.1.0)
Requirement already satisfied: pycparser in /usr/local/lib/python3.5/dist-packages (from cffi!=1.11. 3,>=1.7->cryptography>=2.2.1->pyopenssl<19.0.0,>=18.0.0->vcenterapp==0.1.0)
Installing collected packages: vcenterapp
Successfully installed vcenterapp-0.1.0
setup.sh -> /home/isengard/setup.sh
P15.label -> //nome/isengard/r1s.label
2018-10-19 12:42:15 INFO [setup.sh] Starting all services
2018-10-19 12:42:15 INFO [Setup.sh] UMNI 2010 Touch Management Application Service Start successful
2018-10-19 12:42:15 INFO [setup.sh] UMNI Application server service start successful
2018-10-19 12:42:15 INFU [setup.sh] UMNI Web server service start successful
2018-10-19 12:42:15 INFO [setup.sh] Removing upgrade files
2010-10-13 12:42:16 INFU [Setup.sn] FlugIn need to be update registration to vCenter for new UI cha
nges 2019 10 19 12:12:15 TVEO, facture chi Seccion will be alaced new. Blacco log back in
process for the last true in the section of the sec
press tenter; to continue

After the upgrade completes, the session logs out.

- **4.** Press **Enter** to continue.
- 5. Select 5. OMNI Web Client Plugin Menu to register the plug-in, then select Register/Update OMNI vSphere Client Plugin with vCenter.



6. Enter the FQDN to use for registration, then repeat the steps to update the plug-in with the vCenter Server.

() NOTE: Before you can use the plug-in, you must set up a Dell EMC SmartFabric vCenter Appliance (see SmartFabric network integration). You can get to the SmartFabric home page using the shortcuts in vCenter. Find the shortcuts in the vCenter sidebar, inside the vCenter Menu dropdown list, and in the vCenter Shortcuts view.

A Home	A Home ctri + all + home						
* shortcuts	Shortcuts     Ctil + all + 1						
Hosts and Ousters	Hosts and Clusters Ctrl + alt + 2					-	
VMs and Templates	VMs and Templates ch1 + alt + 3	1	Q	-	0	6	
Q Networking	Storage ctri + at + 4	Storage	Networking	Content	Global Inventory Lists	Linked Domains	
Content Libraries	Networking ctrl + alt + 5						
Global Inventory Lists	Content Libraries ctrl + alt + 6						
CopenManage Network Integr	Global Inventory Lists ctrl + sit + 7						
Policies and Profiles	OpenManage Network Integration	8	18		0	22	
CA Auto Deploy cb Developer Center	Policies and Profiles	VM	VM Storage	Host Profiles	Update	VxRait	
vRealize Operations	🐉 Auto Deploy	Specifications	-00045		manager		
😰 VxRail	Developer Center						
Administration	vRealize Operations						
O Update Manager	(X) VxRait						
Ch. Tanks	administration						
To Events	O Update Manager						
Tags & Custom Attributes	Tasks						
	C Events						

#### Unregister SmartFabric appliance from vCenter

These steps are used to unregister the appliance from the vCenter. If you would like to move SmartFabric to a different vCenter, you must unregister the appliance before moving it to a new vCenter.

- 1. Log into the SmartFabric console.
- 2. Select option 4. SmartFabric vSphere Client Plugin Menu.
- 3. Select option 2. Unregister SmartFabric vSphere Client Plugin with vCenter, then press Enter to continue.



4. Provide the vCenter credentials to unregister the plug-in from the vCenter Server.

i NOTE: Once the unregistration completes, you must log out of the vCenter Server to delete the SmartFabric menu.

## **Upgrade VxRail nodes**

This information describes upgrading of all VxRail nodes using VxRail Manager.

#### Updating system software

Use the System tab on the VxRail cluster Configure window to install updates for the system software installed on your VxRail appliance.

#### () NOTE: You may not be able to update your system software if:

- You are using a stretch cluster VxRail configuration
- You have standard vSphere licenses
- Your cluster is in an unhealth state or has critical health alarms

Open a service request or contact your sales representative or reseller to update your system.

#### Access the vSphere Client

- 1. Open the vSphere Clients, then click Hosts and Clusters from the left navigation bar.
- 2. Select your VxRail cluster, then select the **Configure** tab.
- 3. Select VxRail > System from the inner left navigation bar to display the System tab.
- 4. Click Update in the Help Information section.
- 5. (Optional) Scroll the System Software Installed on this Cluster List to view the system software installed on your VxRail appliance. If a new version is available, click Internet Upgrade.

#### Upgrade options

- 1. Click **Upgrade** to view the upgrade options, then click **Internet Upgrade** to download a new version of the software. If you do not have Internet access, click **Local Upgrade** to use upgrade from local storage.
- 2. Click **Continue** to start the software upgrade.
- Enter your login information for the VxRail Manager and vCenter Server, the PSC root account and password, and the vCenter Server administrator account and password, then click Submit.
- 4. Click **Refresh** to reload the System Software Installed on this Cluster screen. The new software version displays in the Installed Components List.

For complete information, see Dell EMC VxRail Appliance Administration Guide, release 4.7.x.

# Troubleshooting

This information troubleshoots the SmartFabric vCenter appliance connectivity, SmartFabric errors, and UI population errors.

#### SmartFabric appliance connectivity

Check the IP and DNS settings and connection status.

1. Select 2. Interface Configuration Menu.



2. Select 1. Show Interfaces (q to close view).



3. Select 2. Show Connection Status.



4. Issue a curl https request from the SmartFabric vCenter appliance console to the plug-in appliance IP configured on ens160.

#### SmartFabric error

Check ens192 has IPv6 link-local address that is enabled and is up.

#### (i) NOTE: Multiple fabric or vCenter registrations are shown in Status SmartFabric Management Service.

1. Select 2. Status SmartFabric Managment Service.

OMNI Management Service Menu         1. Start OMNI Management Service         2. Status OMNI Management Service         3. Stop OMNI Management Service         5. Create Support Bundle         5. Create Support Bundle         6. Exit         Enter selection [1 - 6]: 2         2018-10-22 13:41:08 INF0 [setup.sh] OMNI Zero Touch Management Application Service inactive         2018-10-22 13:41:08 INF0 [setup.sh] OMNI Application Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Meb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh] OMNI Heb Server Service active         2018-10-22 13:41:05 INF0 [setup.sh]		
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press [enter] to continue	2018	3-10-22 13:41:10.555 OMNI is Registered with 10.11.181.7 SmartFabric Host
	nres	ss [enter] to continue

All services must be active. If they are not all active, restart the service by selecting **4. Restart SmartFabric Management Service**. Confirm that the error is resolved.

2. Confirm the password that is supplied during registration is correct. If not correct, reregister the plug-in to update the SmartFabric password on the appliance.

#### **Configure NTP server**

- i NOTE: If the NTP server is not configured, the SmartFabric vCenter appliance VM will not synchronize with the data center.
- 1. Select 2. Interface Configuration Menu.



2. Select 5. Configure NTP Server.

```
OMNI Interface Configuration Menu

1. Show Interfaces

2. Show Connection Status

3. Configure Interfaces

4. Show NTP Status

5. Configure NTP Server

6. Exit

Enter selection [1 - 6]: 5

NTP Server IP/Hostname [16.1.1.60]: 16.1.1.60
```

3. Enter the Validate NTP Server IP address/host name.

#### NTP server status

1. Select 2. Interface Configuration Menu.



2. Select 4. Show NTP Server.



3. Enter the Validate NTP Server IP address/host name.

#### UI is not populated

() NOTE: If any IP or SSL certificate changes on the SmartFabric VM, click Update Extension on the SmartFabric vCenter dashboard.

Check the service status on the plug-in VM.

- 1. Select 4. Restart SmartFabric Management Service.
- 2. Select 2. Status SmartFabric Management Service to list the registered vCenter and SmartFabric the VM is managing. Confirm that all services are active.

#### Create support bundle

- 1. Select 4. SmartFabric Management Service Menu.
- 2. Select 5. Create Support Bundle to create a support bundle at /tmp/support-bundle.tar.gz on the SmartFabric VM.

OMNI Management Service Menu	
Start OMNI Management Service Status OMNI Management Service Restart OMNI Management Service Create Support Bundle Change Application Log Level Exit	
iter selection [1 – 6]: 5	
18-11-06 15:09:39 INFO [setup.sh]	Creating Support Bundle
18-11-06 15:09:39 INFO [setup.sh]	UMNI Appliance Version
18-11-06 15:09:39 INFO [setup.sh]	Removing old support-hundle file
18-11-06 15:09:39 INFO [setup.sh]	Support Bundle creation successful
18-11-06 15:09:39 INFO [setup.sh] ress [enter] to continue	Support Bundle available for SCP at /tmp/support-bundle.tar.gz

**3.** From an external host, scp using *admin* to transfer the support bundle file out. SCP credentials for the SmartFabric appliance are the same as the SmartFabric appliance console password. By default, the username and password is admin/admin.

#### (i) NOTE: Recommendation is to set the log level change to DEBUG before creating the support bundle.

#### Change log level

- 1. Select 4. SmartFabric Management Service menu.
- 2. Select 6. Change Application Log Level to display the current log level and switch accordingly.



# (i) NOTE: By default, the SmartFabric appliance comes with a log-level of ERROR. The appliance log can be swapped between ERROR to DEBUG, or the opposite way.

3. Stop if the log level is already on the wanted log level.

#### Reset SmartFabric VM password

1. Reboot the VM from vCenter, then select Advanced Options for Debian GNU/Linux.

GNU GRUB version 2.02~beta3-5	
Debian GNU/Linux #Advanced options for Debian GNU/Linux	
Use the [ and ] keys to select which entry is highlighted. Press enter to boot the selected OS, `e' to edit the commands before booting or `c' for a command-line.	

2. Press e to highlight Debian GNU/Linux, with Linux 4.9.0-7amd64.

(recovery mode)

3. Use the arrow keys to go to the line starting with linux and ending with ro quiet.

	GNU	GRUB version 2.02~beta3-5
0,msdos1h cf2-4f54-b6d 4f54-b6d4-9c	set root= if [ x\$fe: search int-efi=hd0,m 4-9cd2637269b else search d2637269b8 fi	'hd0,msdos1' ature_platform_search_hint = xy ]; then -roo-floppyfs-uuidset=roothint-bios=hd\ sdos1hint-baremetal=ahci0,msdos1 17249b09-d\ 8 no-floppyfs-uuidset=root 17249b09-dcf2-\
	echo	Loading Linux 4.9.0-7-amd64
	linux	/vmlinuz-4.9.0-7-amd64 root=/dev/mapper/dhc\
p182206-	-vg-root ro	quiet
	ecno initrd	Loading initial ramdisk /initrd.img-4.9.0-7-amd64
Minimum H completion command- menu.	Emacs-like sci ons. Press Cti line or ESC ti	reen editing is supported. TAB lists rl-x or F10 to boot, Ctrl-c or F2 for a o discard edits and return to the GRUB

4. Append init=bin/bash after ro quiet.

	set root=' if [ x\$fea search -	hd0,msdosi' Hure_platform_search_hint = xy ]; then -no-floppyfs-uuidset=roothint-bios=hd∖
,msdos1h: :f2-4f54-b6d	nt-efi=hd0,ms -9cd2637269b8	dosihint-baremetal=ahci0,msdosi 17249b09-d∖ }
4f54-b6d4-9c0	search -	-no-floppyfs-uuidset=root 17249b09-dcf2-∖
	t1 echo	Loading Linux 4 9 8-7-amd64
0182206	linux vg-root ro q	/vmlinuz-4.9.0-7-amd64 root=/dev/mapper/dhc\ uiet init=/bin/bash_
	ecno initrd	LOBOING INITIAI RAMOISK /initrd.img-4.9.0-7-amd64

5. Press Ctrl-X to boot into the shell with root access.

[ 1.646683] piix4\_smbus 0000:00:07.3: SMBus Host Controller not enabled! [ 1.831813] sd 0:0:0:0: [sda] Assuming drive cache: write through HARNING: Failed to connect to lumetad. Falling back to device scanning. WARNING: Failed to connect to lumetad. Falling back to device scanning. /dev/mapper/dhcp--182--206--ug-root: clean, 45750/2416640 files, 595071/9652224 blocks bash: cannot set terminal process group (-1): Inappropriate ioctl for device bash: no job control in this shell root@(none):/#

6. Remount the / directory.

```
# mount / -re -o remount
```



8. Reset the VM from vCenter. You should be able to login through the new password for the SmartFabric VM.

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