

VxRail Fabric Automation

SmartFabric Services User Guide

Notes, cautions, and warnings

 **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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VxRail fabric automation

Enterprises are driving IT transformation with hyper-converged infrastructure (HCI) for superior business agility and accelerated time to value. HCI dramatically simplifies IT operations, improves infrastructure efficiency, and lowers costs.

Dell EMC VxRail is the only fully-integrated, preconfigured, and tested HCI appliance powered by VMware vSAN, and is the standard for transforming VMware infrastructures. VxRail delivers cloud-like agility, improved scalability, and simplified IT management offered as engineered HCI appliances.

In an HCI environment, the network deployed should be evolved to match the characteristics of the HCI infrastructure it is enabling.

- The network should be agile by accelerating the time-to-value of the HCI investment, and should simplify and facilitate the scale-out capabilities of the hyper-converged solution.
- The operational and technological silos between compute, storage, and network need to be broken down and the network must offer tighter integration of workflows and processes with HCI.
- The network solution should offer flexibility and choice allowing HCI environments to grow linearly or incrementally as business and user requirements evolve.

Customers can choose to deploy adhoc networking systems, but that entails all additional costs and risks that come with reassessing, modifying, and potentially re-architecting the HCI network as the environment scales.

OS10 Enterprise Edition SmartFabric Services

Dell EMC Networking OS10 Enterprise Edition SmartFabric Services delivers an integrated network fabric for VxRail enabling autonomous fabric deployment, expansion, and lifecycle management of the network infrastructure.

SmartFabric Services for VxRail key benefits

Faster time production time

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

Integrated lifecycle

- Fabric creation, expansion, and maintenance follows 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 nodes required for VxRail solutions only

Improved SLA

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

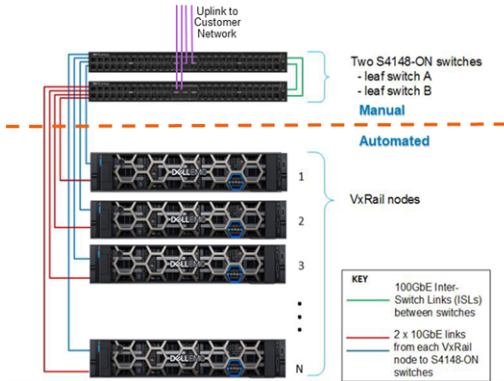
Enhanced support experience

- World-class Dell EMC HCI and fabric services

- Fabric integrated into VxRail services and support experience

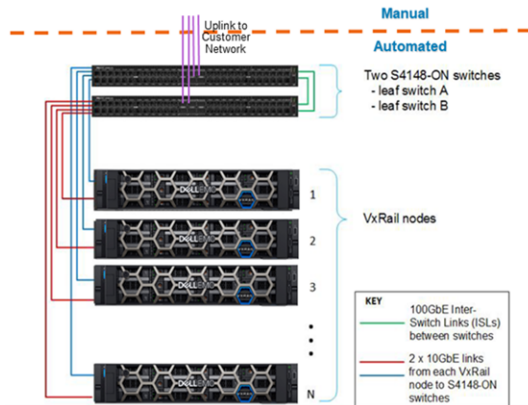
VxRail cluster deployed with manual network configuration

In previous VxRail deployments, the HCI administrator used the VxRail Manager to automate the cluster 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 cluster deployed with SmartFabric Services

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



Getting started

This information describes the component requirements.

Dell EMC VxRail

- Dell EMC VxRail release 4.7.0 with VMware vCenter 6.7.0 Update 1 (U1) or later

Dell EMC ToR switches

- Dell EMC Networking S4112F-ON, S4112T-ON, S4128F-ON, S4128T-ON, S4148F-ON, and S4148T-ON switches running OS10 Enterprise Edition, release 10.4.1.4 or later
- Web browser to interact with the VMware vSphere client and OMNI integration

Dell EMC OpenManage Network Integration (OMNI)

- Dell EMC OMNI for VMware vCenter

Quick steps

- 1 Enable SmartFabric Services for VxRail on ToR switches.
Upgrade ToR switches to the required Dell EMC Networking OS10 Enterprise Edition software version, and enable SmartFabric Services for VxRail.
- 2 Deploy VxRail cluster using VxRail Manager.
Use VxRail Manager to deploy the VxRail cluster normally. VxRail Manager automatically discovers that it is in SmartFabric Services environment, and automates the network fabric for VxRail fabric deployment.
- 3 Deploy OMNI for vCenter.
Deploy OMNI for vCenter VM and register it with the vCenter used for the VxRail cluster day 2 operations. OMNI provides single-pane management of ToR network fabric through vCenter and fabric automation for all VM networks and vMotion operations.

Additional resources

- [Dell EMC Networking OS10 Enterprise Edition User Guide, release 10.4.1.0](#)
- [Dell EMC VxRail Appliance Administration Guide, release 4.5.x](#)
- [Dell EMC VxRail Appliance Software 4.5.x Release Notes](#)
- [Dell EMC VxRail QuickStart Guide](#)

ON-Series switch installation

This information describes how to install a Dell EMC Networking ON-Series switch in your network. If your switch came pre-installed with OS10 release 10.4.1.4 or later, see [Log into OS10](#).

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

Topics:

- [Download OS10 image and license](#)
- [Installation using ONIE](#)
- [Log into OS10](#)
- [Install OS10 license](#)

Download OS10 image and license

OS10 Enterprise Edition 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.

Download an OS10 image and license to:

- Re-install the license on a Dell EMC open network installation environment (ONIE) switch with a factory-installed OS10 image and license
- Install OS10 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.

Re-install license on factory-loaded OS10

OS10 Enterprise Edition 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 re-install 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 or downloaded to your local device.
- 6 Click **Submit**.

- 7 Save the License.zip file and follow the steps in [Install OS10 license](#).

Without OS installed

You can purchase the OS10 Enterprise Edition image with an after point-of-sale (APOS) order for a Dell EMC ONIE-enabled device that does not have a default OS or license installed. After the order is complete, you receive an email 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 sent by email, 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 you purchased the OS10 Enterprise Edition 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 or downloaded to your local device.
- 6 Click **Submit** to download the License.zip file.
- 7 Select the **Available Downloads** tab, select the OS10 Enterprise Edition release to download, then click **Download**.
- 8 Read the Dell End User License Agreement. Scroll to the end of the agreement, then click **Yes, I agree**.
- 9 Select how to download the software files, then click **Download Now**.

After you download the OS10 Enterprise Edition image, you need to unzip the .tar file:

- Extract the OS10 binary file from the .tar file using any file archiver/compressor software. For example, to unzip a .tar file on a Linux server or from the ONIE prompt, enter:

```
tar -xf tar_filename
```

- On a Windows server, some Windows unzip applications insert extra carriage returns (CR) or line feeds (LF) when they extract the contents of a .tar file. The additional CRs or LFs may corrupt the downloaded OS10 binary image. Turn off this option if you use a Windows-based tool to untar an OS10 binary file.
- 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 extracted from the .tar file.

```
md5sum image_filename
```

After you unzip the OS10 Enterprise Edition and download the license, see [Installation using ONIE](#) and [Install OS10 license](#) for complete installation and license information.

Installation using ONIE

If you purchase an ONIE-only switch or if you want to replace an existing OS, you can install an OS10 software image using ONIE-based auto-discovery 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. For complete information about manual installation, see the *Dell EMC Networking OS10 Enterprise Edition User Guide*.

If OS10 is pre-installed on a switch, zero-touch deployment (ZTD) is enabled by default. ZTD automatically downloads and installs an OS10 image in the standby partition. For complete information on ZTP, see the *Dell EMC Networking OS10 Enterprise Edition User Guide*.

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

If ONIE is installed on a device, press F2 to enter BIOS mode or press ESC to display the ONIE boot menu. An ONIE-enabled device boots up with pre-loaded 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 the 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 an 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.

Log into OS10

To log in to OS10 Enterprise Edition, power up the device 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 Sep 20 13:58:27 2018 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) 1999-2018 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 the OS10 Enterprise Edition 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 as described in [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 connected to the USB storage port on the switch.
- `filepath/filename` — Enter the directory path where the license file is stored.

Install license

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

Verify license installation

```
OS10# show license status
System Information
```

```
-----
Vendor Name      :      Dell EMC
Product Name     :      S4112T-ON
Hardware Version :      X01
Platform Name    :      x86_64-dellemc_s5100_c2538-r0
PPID             :      CN0X4XRXCES007980029
Service Tag      :      9CLSG02
License Details
```

```
-----
Software        :      OS10-Enterprise
Version         :      10.4.1E(X)
License Type    :      EVALUATION
License Duration:      120 days
License Status  :      80 day(s) left
License location:      /mnt/license/9CLSG02.lic
-----
```

Enable SmartFabric Services for VxRail

This information explains how to enable SmartFabric Services 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.

```
# sfs_enable_vxrail_personality.py

Turning on SmartFabric Services will reset the switch and erase any existing network
configuration.
In SmartFabric Mode, users can only configure a limited system level settings manually. All
network configuration will be driven by SmartFabric Services.

These are the values that will be applied in the VxRail personality after the reboot -
The domain value will be chosen as the default value - 1.
The uplink lag will be in static mode and members are default for the platform -
ethernet1/1/25,ethernet1/1/26.
The ICL members will be the default for the platform - ethernet1/1/29,ethernet1/1/30.
The managment VLAN will be the default value - 1.
Are you sure you want to continue with the changes by rebooting the OS10 node?.(y/n)
```

- 3 Enter **Y** to enable SmartFabric Services 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.

```
# sfs_enable_vxrail_personality.py -h

usage: Create VxRail Cluster [-h] [-d DOMAIN] [-u UPLINK] [-i ICL] [-t] [-a]
                             [-b {2X50GE,4X25GE,4X10GE}] [-m MANAGEMENT_VLAN]

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
```

```

-t, --tagged          single node cluster), input the value as 'None/Null'
                    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,4X10GE}, --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

```

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

Topics:

- [Breakout uplink ports](#)
- [OS10 SmartFabric Services mode](#)
- [Validate SmartFabric Services](#)
- [Disable SmartFabric Services](#)

Breakout uplink ports

This information explains breakout uplink port support. Breakout on the uplink ports of the S4100-ON Series switches are supported only during VxRail personality enabling (such as `sfs_enable_vxrail_personality.py`). For more information on the VxRail personality profiles, see [Enable SmartFabric Services](#).

NOTE: Breakout cannot be enabled or changed after the VxRail personality profile is enabled. Breakout is not supported through OMNI.

Default speeds

The uplink port default speed on a S4100-ON Series switch is 100G. SmartFabric Services supports three breakout options — 2x50G, 4x25G, and 4x10G.

NOTE: 40G breakout is not supported on the S4112-ON and S4128-ON uplinks.

Breakout 40G ports

Only the S4148-ON supports 4x40G uplink ports.

- 1 Change the switch-port-profile from default profile-1 to profile-2 in Full Switch mode.

```

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

```

```

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
OS10# write memory
OS10# reload

```

Proceed to reboot the system? [confirm yes/no]:yes

- 2 Save the configuration, then reload the switch.
- 3 After the system reloads, enable the VxRail personality profile.

Breakout 25G ports

This sample configuration shows how to configure 4x25G uplink ports on the S4128-ON.

```

root@OS10:~# sfs_enable_vxrail_personality.py -h
usage: Create VxRail Cluster [-h] [-d DOMAIN] [-u UPLINK] [-i ICL] [-t] [-a]
      [-b {2X50GE,4X25GE,4X10GE}] [-m MANAGEMENT_VLAN]

```

This script create a cluster group of OS10 switch nodes with the below information provided.

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 seperated 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,4X10GE}, --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.

```

```

root@OS10:~# sfs_enable_vxrail_personality.py -u 1/1/25:1,1/1/26:1 -b '4X25GE'

```

Turning on SmartFabric Services will reset the switch and erase any existing network configuration.

In SmartFabric Mode, users can only configure a limited system level settings manually. All network configuration will be driven by SmartFabric Services.

These are the values that will be applied in the VxRail personality after the reboot -

```
The domain value will be chosen as the default value - 1.
The uplink lag will be in static mode and members are ethernet1/1/25:1,ethernet1/1/26:1. The
uplink member will breakout with the mode 4X25GE.
The ICL members will be the default for the platform -
ethernet1/1/27,ethernet1/1/28,ethernet1/1/29,ethernet1/1/30.
The management VLAN will be the default value - 1.
```

```
Are you sure you want to continue with the changes by rebooting the OS10 node?.(y/n) y
```

OS10 SmartFabric Services 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 Services mode.

For complete CLI configuration information, see the [Dell EMC Networking OS10 Enterprise Edition User Guide, release 10.4.1.0](#).

SmartFabric Services 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
- `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 Services mode

All switch interfaces are assigned to VLAN 1 by default, and are in the same 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 Services

This information explains how to validate SmartFabric Services for VxRail.

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

```
# sfs_validate_vxrail_personality.py

Checking VxRail Personality Profile and profile...
Chosen Profile is vxrail - Test status - passed
Switch-Opening 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
Chosen management VLAN 1 is programmed and operational up . - Test status - passed
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 Services

This information explains how to disable SmartFabric Services for VxRail.

- 1 Log into the Linux shell.
- 2 Run the VxRail personality with sudo privilege to remove all user configurations 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 be 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.

OpenManage network integration

This information explains the Dell EMC Networking OpenManage Network Integration (OMNI) features. OMNI offers a single pane of glass through VMware vSphere for operation and management of Dell EMC data center switches running OS10 Enterprise Edition, release 10.4.1.4 and later.

As you deploy virtual networks, OMNI allows you to discover, configure, and monitor Dell EMC switches. Combined with Dell EMC SmartFabric Services, OMNI instantly and transparently automates Dell EMC fabric configuration — reducing manual and error-prone intervention and increasing deployment and configuration speeds.

System administrators have greater visibility into standard and distributed virtual switches, port groups, VLANs, maximum transmission units (MTUs), virtual MAC addresses, and physical interfaces, and so on.

NOTE: The OMNI plugin supports ToR fabric with multi-cluster deployment.

Configuration options

The OMNI VM console allows you to configure the software to best suit your needs. You can configure OMNI through the VM console after you complete the authentication step.

NOTE: The VM console and web servers automatically close after a period of inactivity. The default is 10 minutes.

- 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

Topics:

- [Create virtual machine](#)
- [Log into VM console](#)
- [OMNI Setup](#)
- [SSL certificate installation](#)
- [OpenManage Network Integration Home](#)
- [OMNI monitoring](#)

Create virtual machine

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

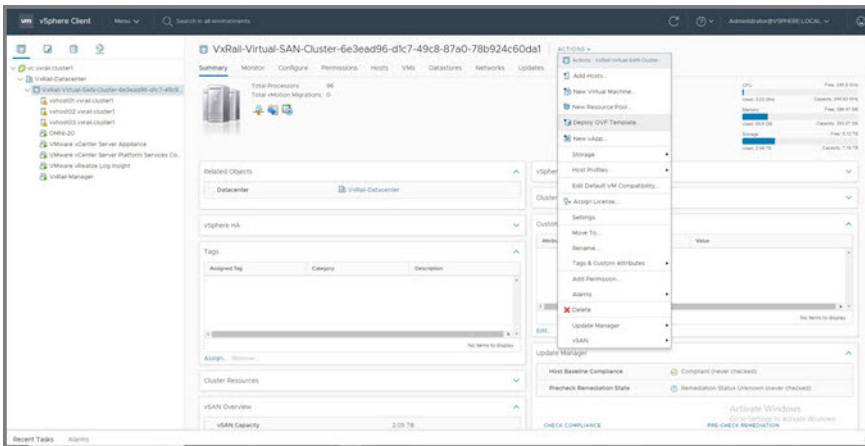
Quick steps

- 1 Download and install the OVA.
- 2 Create a virtual machine (VM).
- 3 Log into the VM console.
- 4 Configure interface connection profiles.
- 5 Activate the connection profiles.
- 6 vCenter plugin registration and OS10 SmartFabric connection setup.

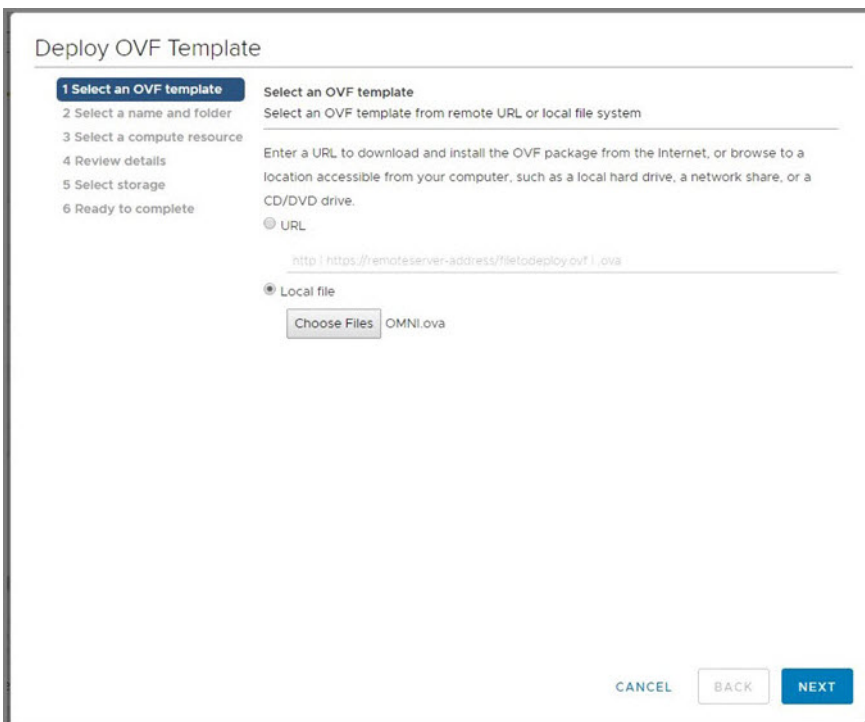
Download and install OVA

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.

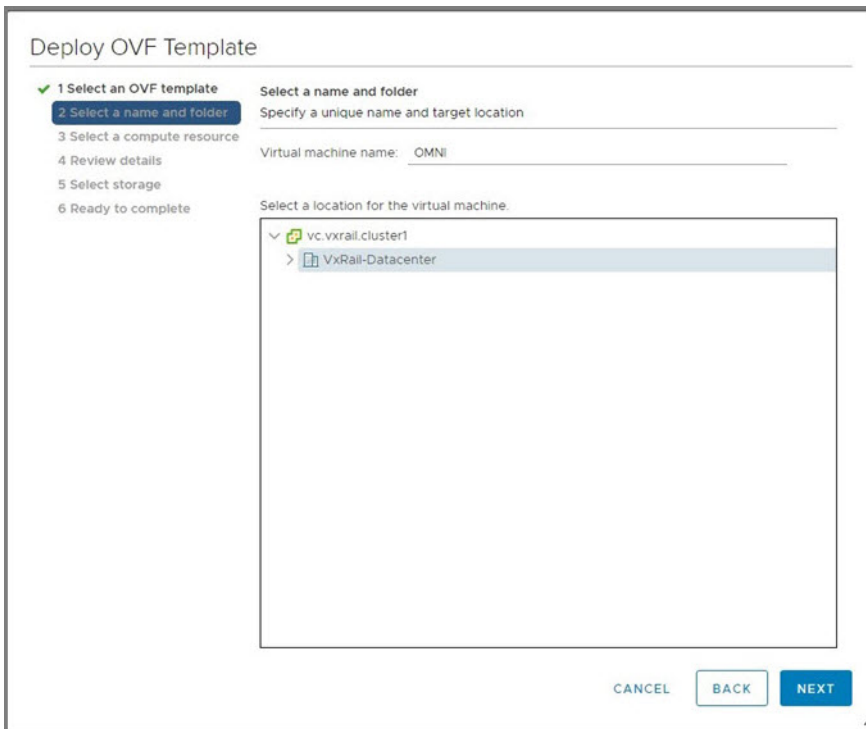
- 1 Download and store the OVA image locally.
- 2 Select **Hosts and Clusters**, select the cluster that the plugin needs to manage, then select **Action > Deploy OVF Template**.



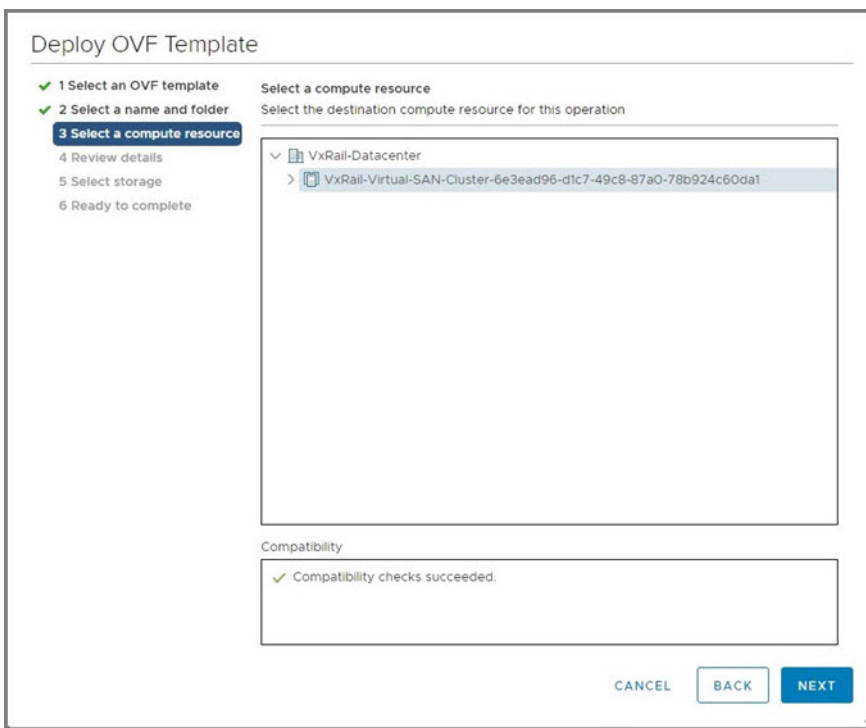
- 3 Select **Local file**, click **Choose Files** and select OMNI .ova from a local source, then click **Next**.



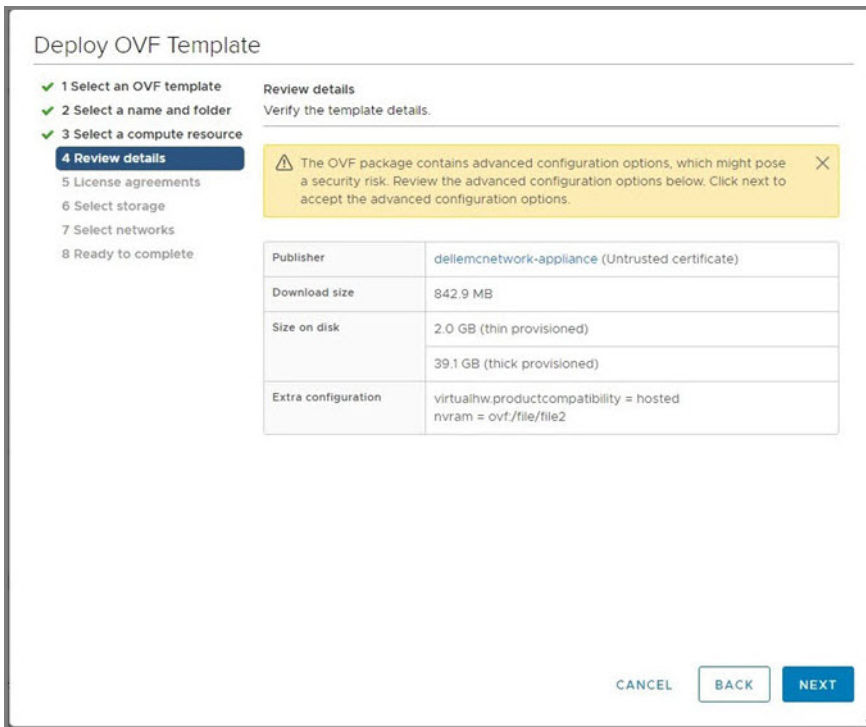
- 4 Select a name and folder for the VM, then click **Next**.



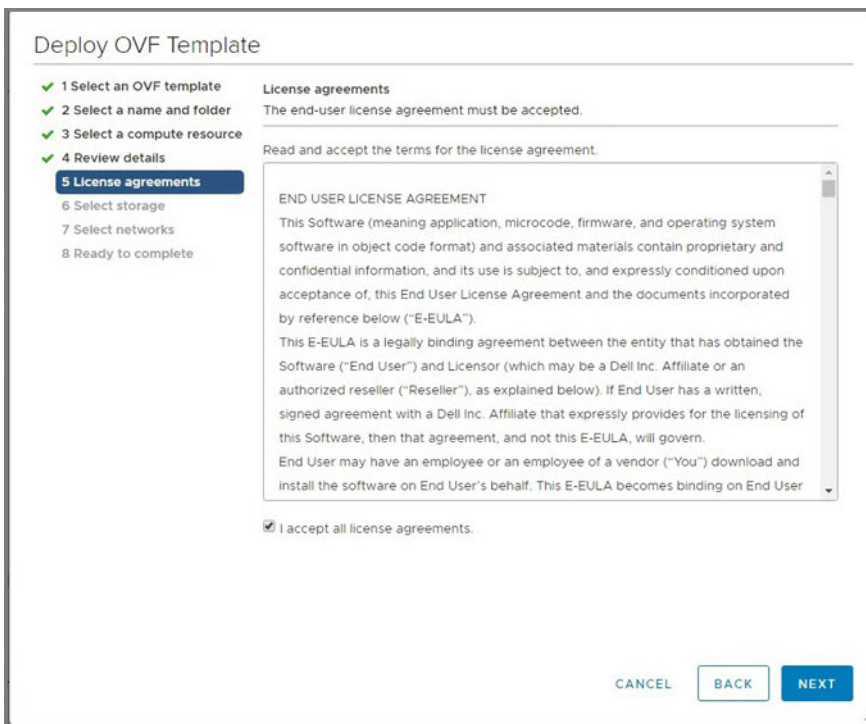
5 Select the destination compute resource, then click **Next**.



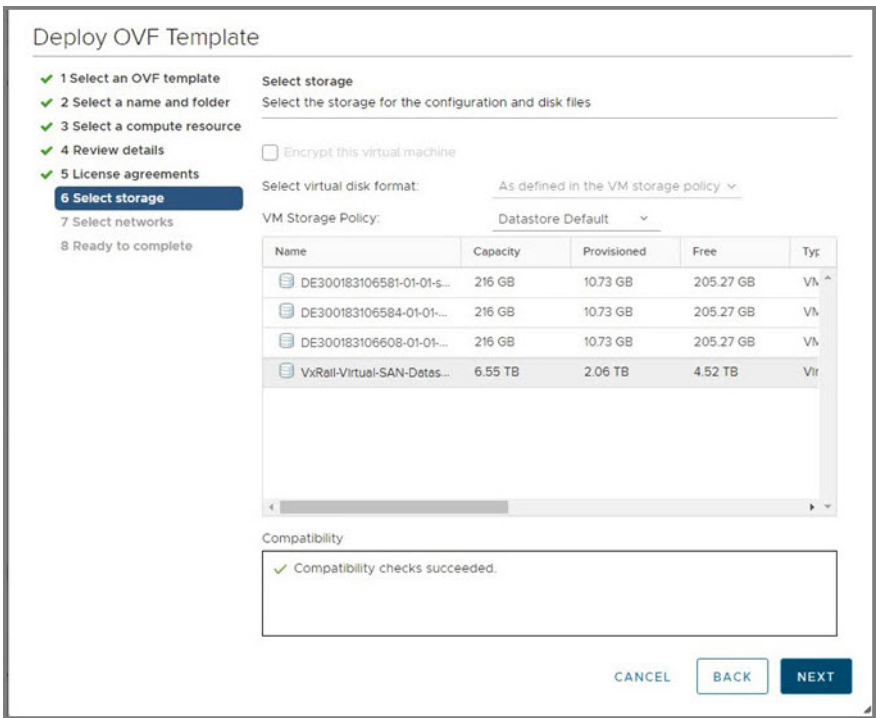
6 Review and verify the template details, then click **Next**.



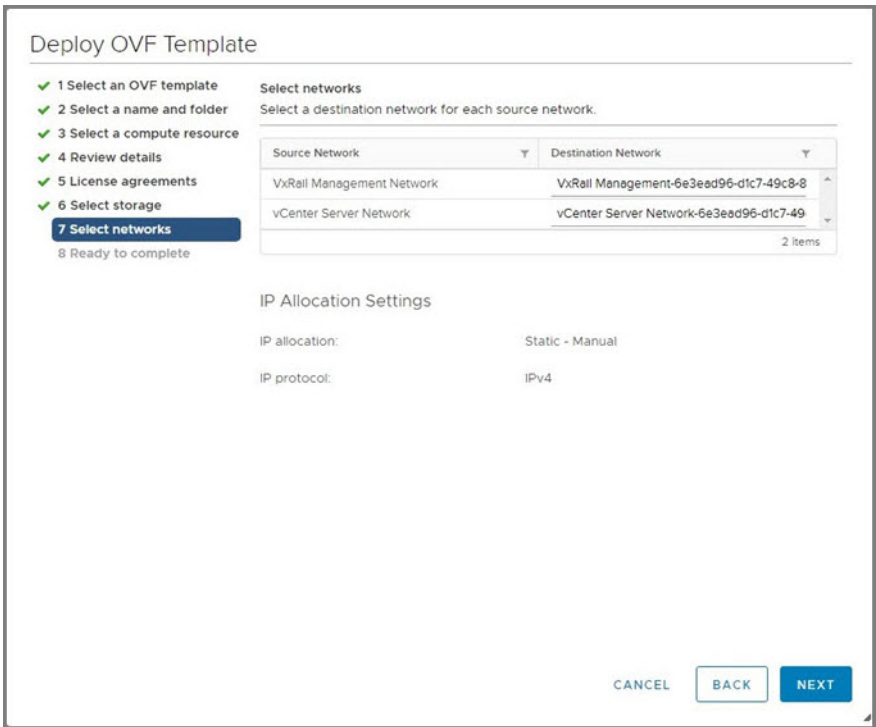
7 Accept the end-user license agreement (EULA), then click **Next**.



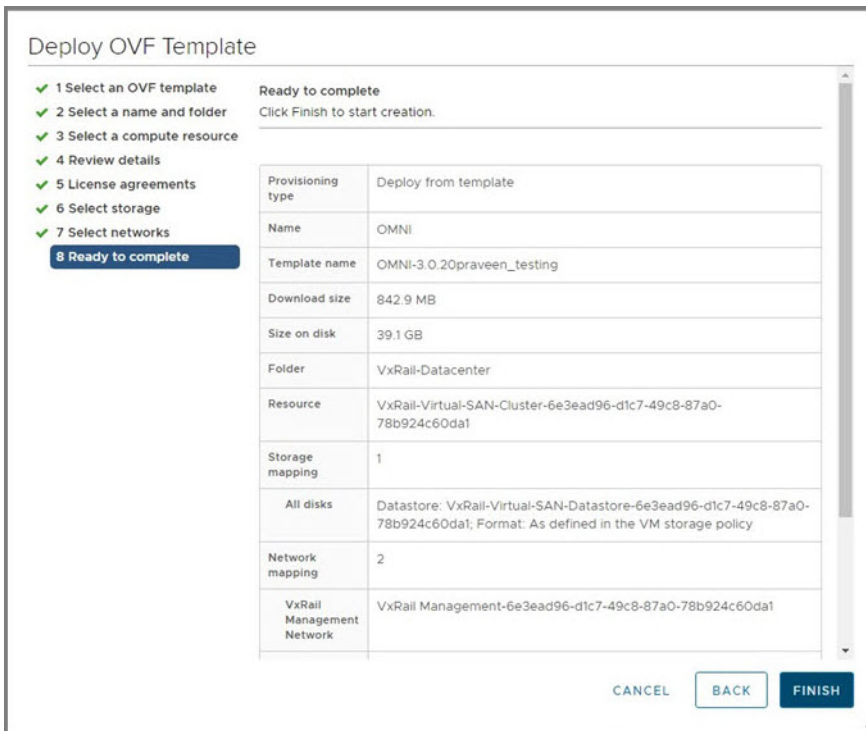
8 Select the storage for the configuration and disk files, then click **Next**.



9 Select a destination network for each network source, then click **Next**. The VxRail Management network must be connected to port group 3939 that has SmartFabric connectivity. The vCenter Server network must be connected to the port group where the vCenter is reachable for plugin deployment of the VM.



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



Log into VM console

This information describes how to log into the VM console.

- 1 After the new VM powered on, open the VM console.
- 2 Enter `admin` for both the default username and password.

```

Debian GNU/Linux 9 dellemc-networkappliance tty1
dellemc-networkappliance login: isengard
Password:
Login incorrect
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 NO 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.

- ① **NOTE:** The `sudo` password is the same as the password set for the `admin` user.
- ① **NOTE:** Root user is disabled by default. To set the password to enable root user, use the OMNI menu. You can only access root user through the console.

OMNI Setup

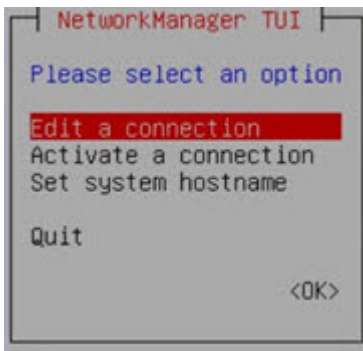
This information describes how to setup the appliance with the required network interface configurations, and registration with vCenter and SmartFabric.

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.

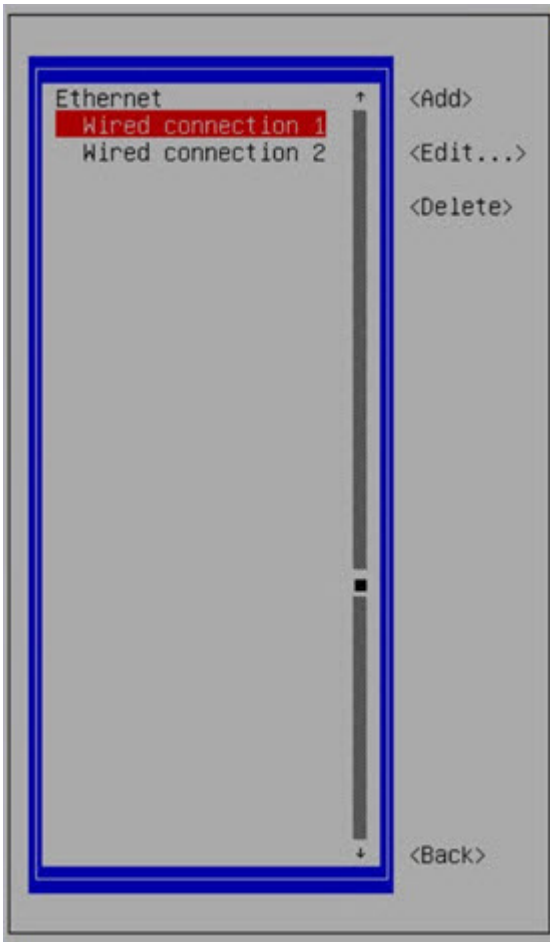
- 1 Select **0. Full Setup**.

```
#####
Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
#####
Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI VSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout
Enter selection [0 - 10]:
```

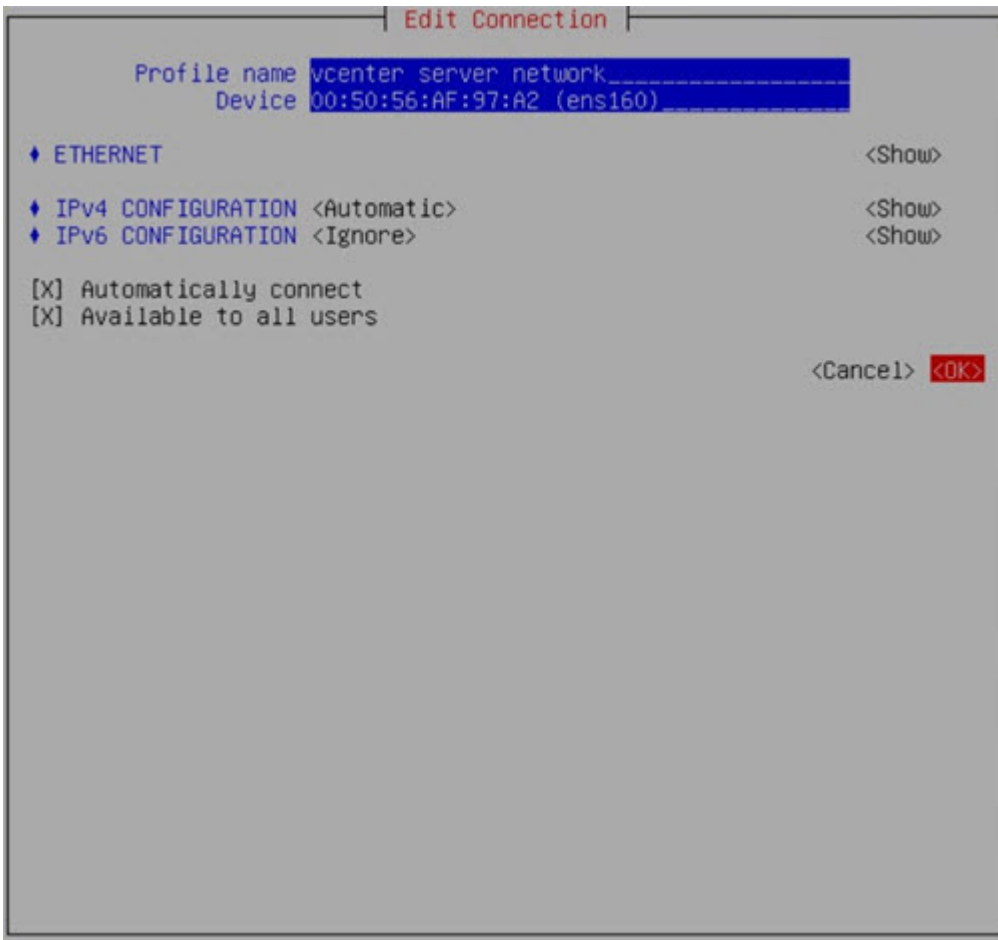
- 2 Select **Edit a connection**, then click **OK**.



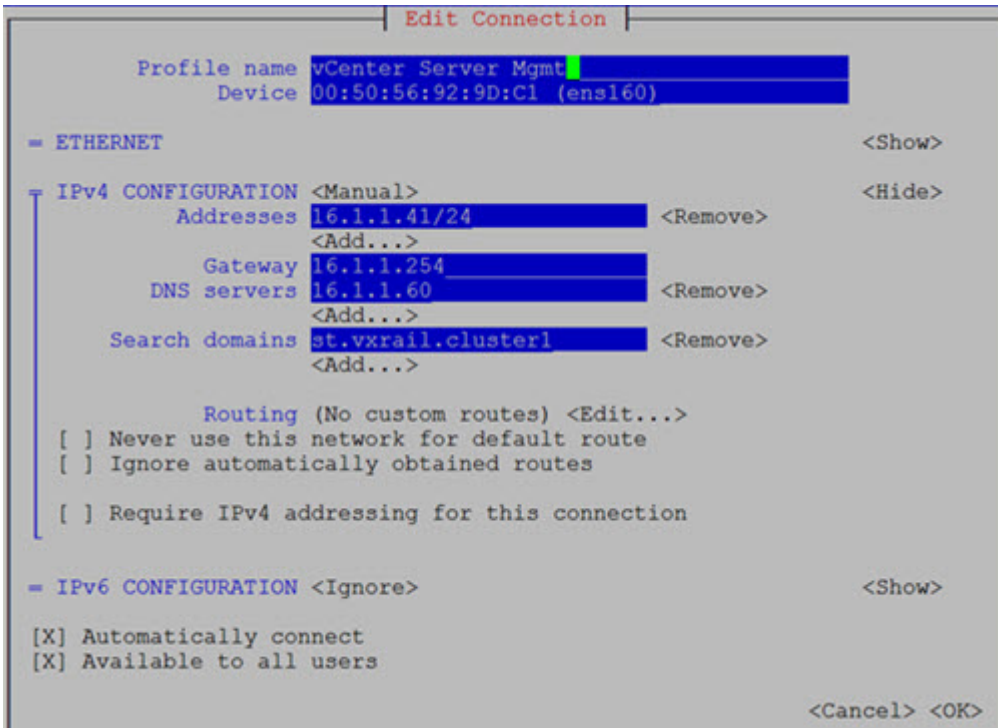
- 3 Select **Wired Connection 1**, then click **Edit Connection**.



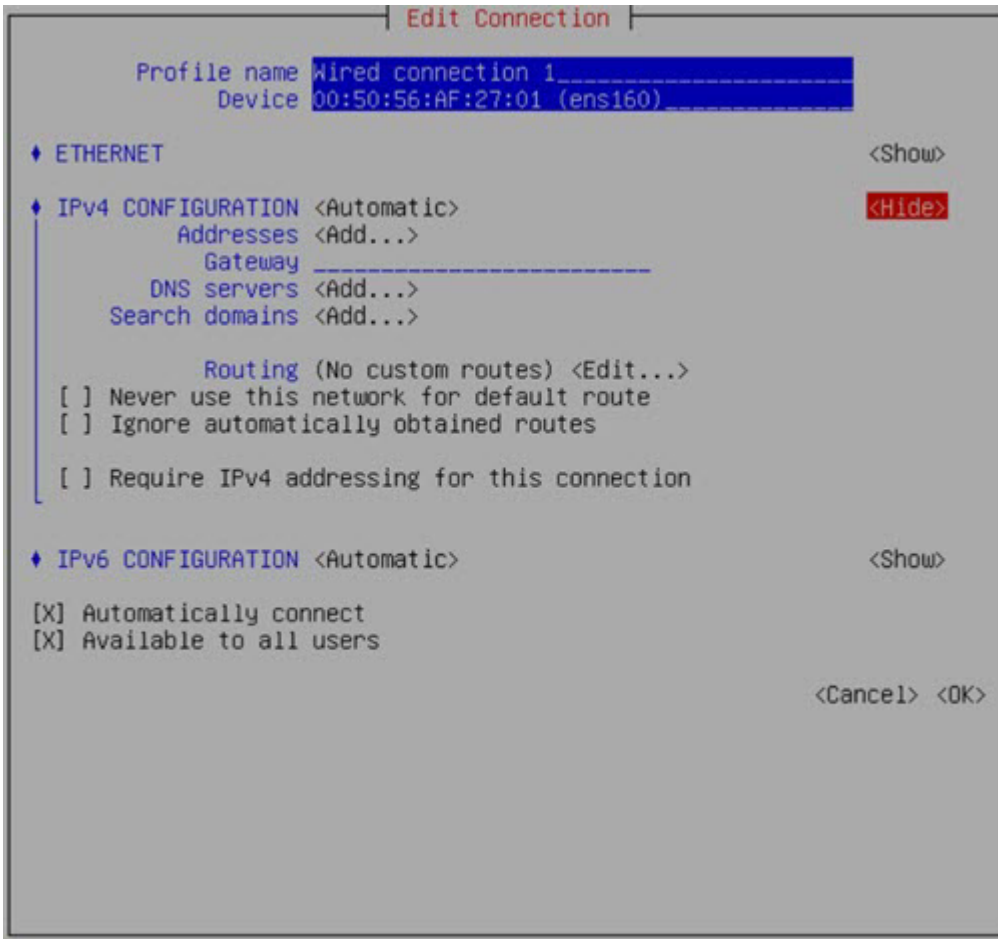
4. Verify Ethernet (ens160) is connected to the vCenter reachable network. Change the Profile name to **vcenter server network**, then click **<Show>** to the right of IPv4 configuration.



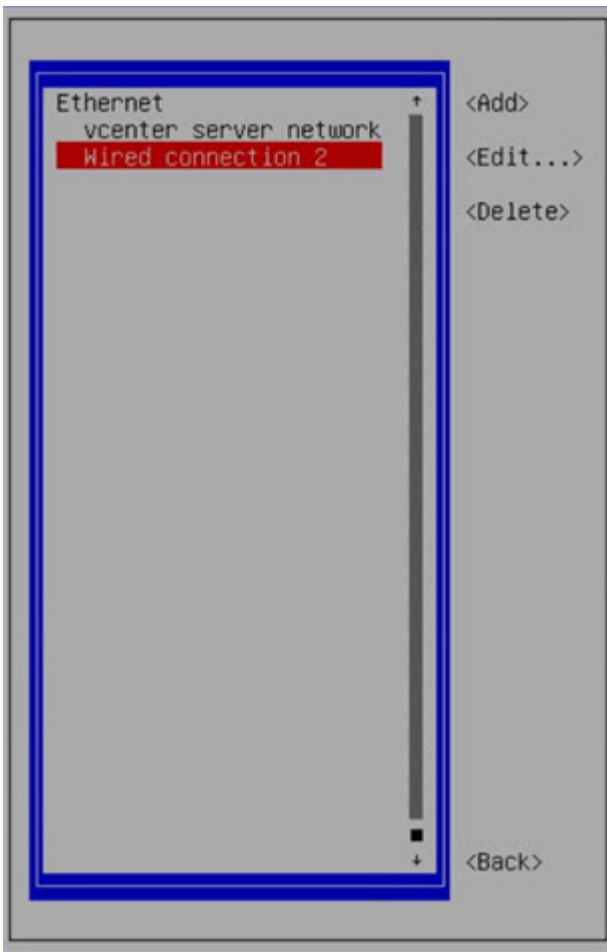
- 5 Select **Manual/DHCP**, set the DNS servers, set the Search Domains, then click **<Hide>**.



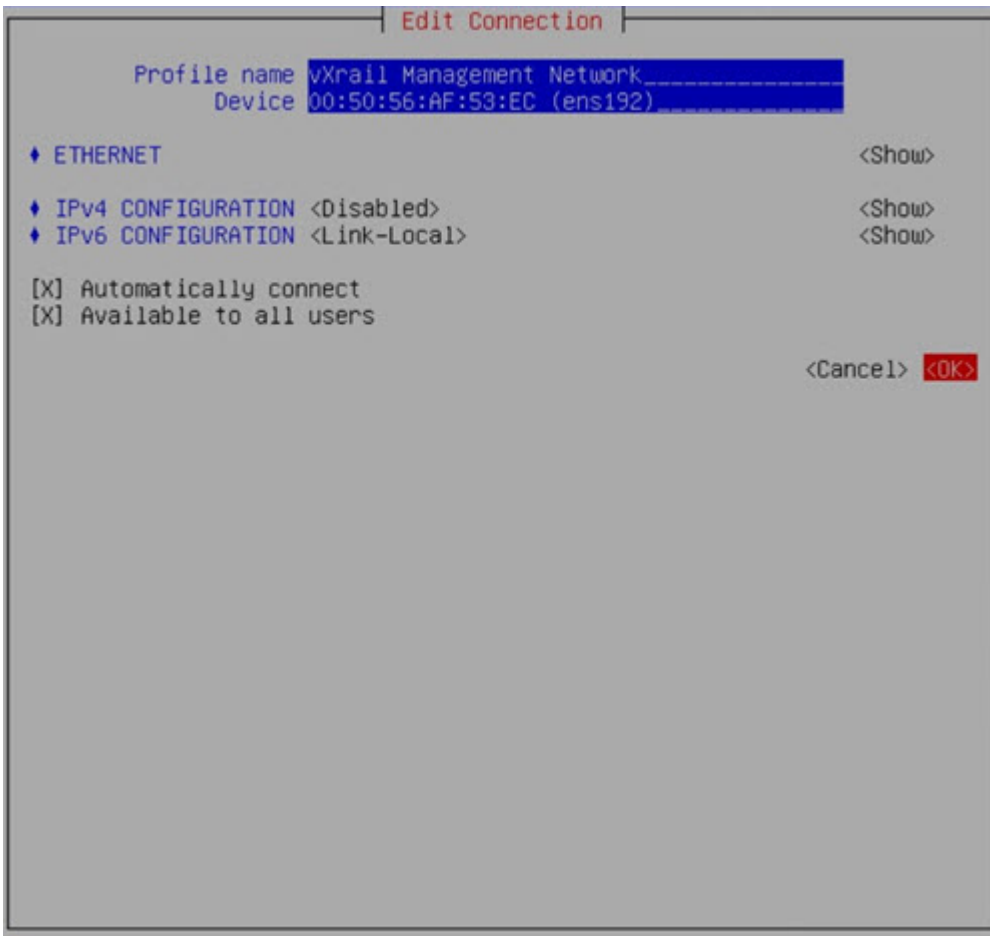
- 6 Click **<Show>** to the right of IPv6 configuration, disable IPv6, click **<Hide>**, then click **OK**.



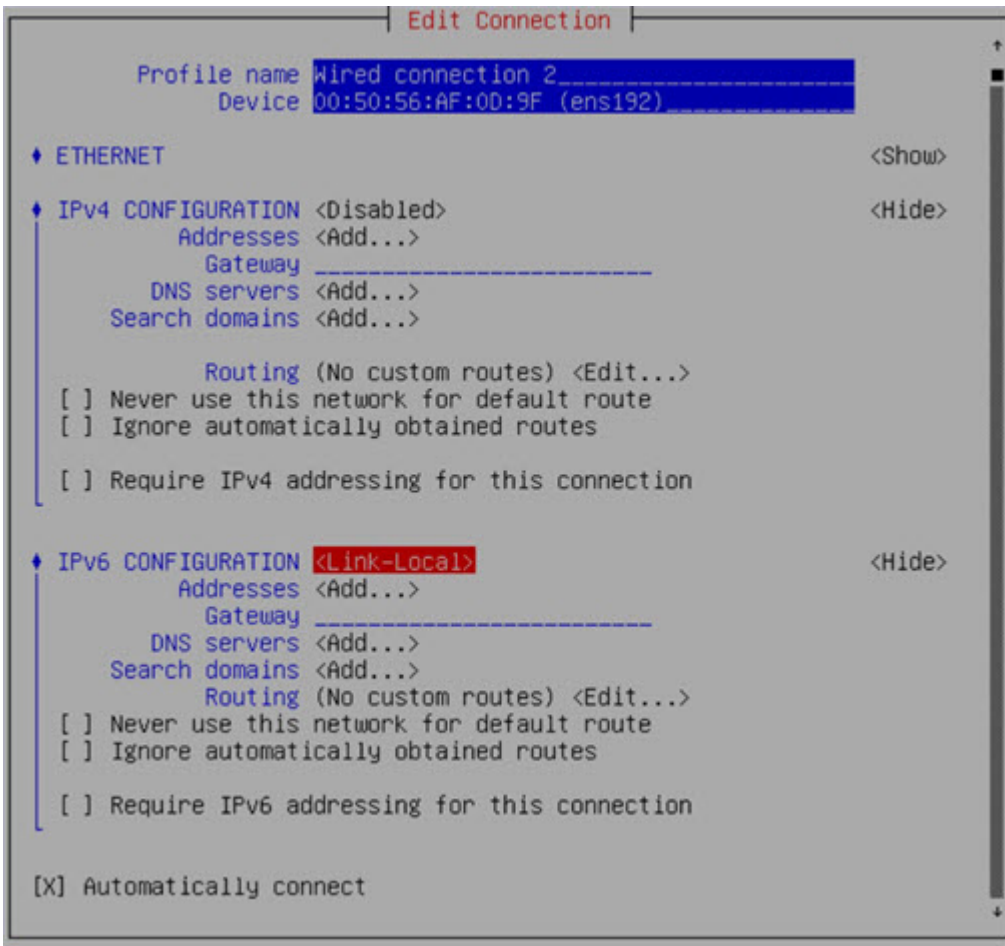
- 7 Select **Wired Connection 2**, then click **Edit Connection**.



- 8 Verify Ethernet (ens192) is connected to the IPv6 VxRail management network.



- 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**.



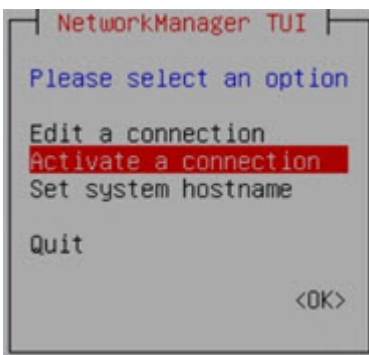
10 Your connection list is now updated with vCenter and VxRail profile names. Click **Back** to activate the connection profiles.



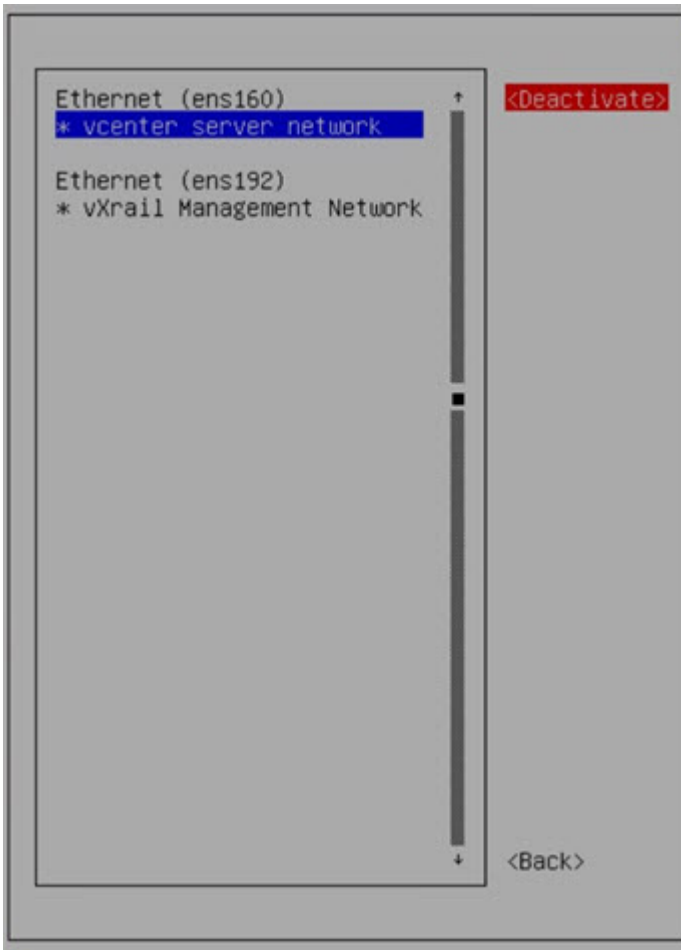
Activate connection profiles

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

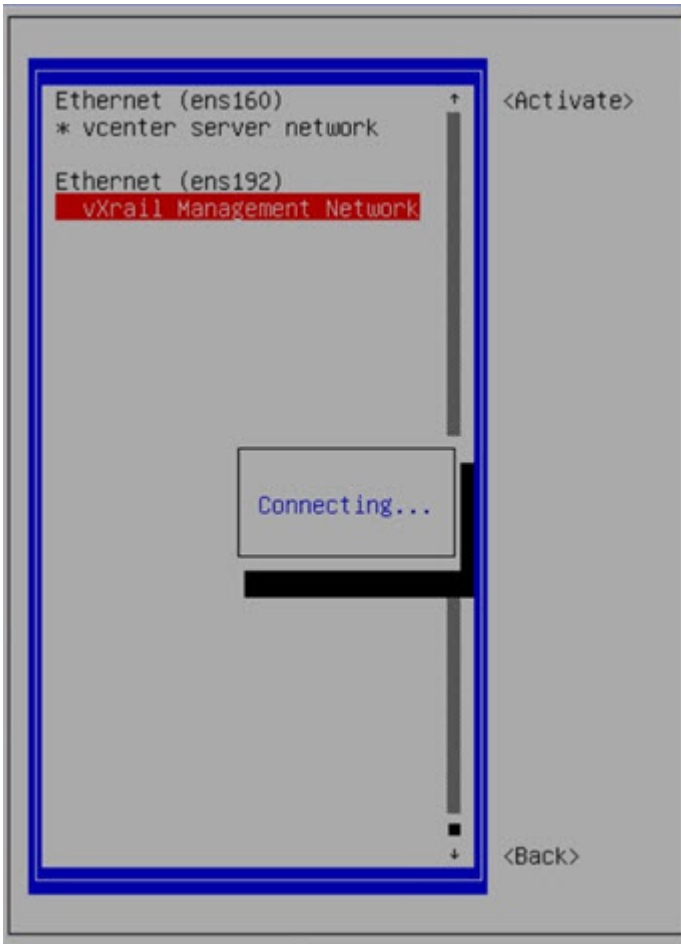
- 1 Select **Activate a Connection**, then click **OK**.



- 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.



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

NOTE: If the NTP Server is not configured, the OMNI appliance VM will not synchronize with the data center.

SSL certificate installation

This information describes how to install an optional SSL certificate, register the vCenter plugin, and register SmartFabric Services.

NOTE: SSL certificates have been automatically generated after the password is successfully updated. For more information, see [Log into VM console](#).

- 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.

```

2018-11-26 16:59:39 INFO [setup.sh] Generating NTP config
NTP Server IP/Hostname: 16.1.1.60
2018-11-26 16:59:51 INFO [setup.sh] Adding 16.1.1.60 as an NTP server
2018-11-26 16:59:51 INFO [setup.sh] Restarting NTP service
Install SSL certificates from remote Server [y]? _

```

- 2 Enter the vCenter Server fully-qualified domain name (FQDN). If a domain name exists, do not provide the vCenter IP address.
- 3 Enter the vCenter Server username and vCenter Server password.


```

Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
=====
Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI VSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout

Enter selection [0 - 10]: 0

Install SSL certificates from remote Server [y]? n
2018-11-12 16:46:06 INFO [setup.sh] Registering OMNI Plugin with vCenter
2018-11-12 16:46:06 INFO [setup.sh] Starting Web Server service
2018-11-12 16:46:06 INFO [setup.sh] OMNI Web Server Service active
2018-11-12 16:46:06 INFO [setup.sh] Stopping Application Server and Zero Touch Management application services
2018-11-12 16:46:06 INFO [setup.sh] OMNI Application Server Service inactive
2018-11-12 16:46:06 INFO [setup.sh] OMNI Zero Touch Management Application Service inactive
Appliance IP : 16.1.1.41
vCenter Server FQDN: vc.st.vxrail.cluster1
vCenter Server Username: administrator@vsphere.local
vCenter Server Password:

```

- 4 Enter the OS10 SmartFabric user password. If the VxRail Management Network profile (ens192) is not activated, you are prompted for the SmartFabric IPv4 address.

```

Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
=====
Menu
-----
0. Full Setup
1. Show Version
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3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI VSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout

Enter selection [0 - 10]: 0

Install SSL certificates from remote Server [y]? n
2018-11-12 16:46:06 INFO [setup.sh] Registering OMNI Plugin with vCenter
2018-11-12 16:46:06 INFO [setup.sh] Starting Web Server service
2018-11-12 16:46:06 INFO [setup.sh] OMNI Web Server Service active
2018-11-12 16:46:06 INFO [setup.sh] Stopping Application Server and Zero Touch Management application services
2018-11-12 16:46:06 INFO [setup.sh] OMNI Application Server Service inactive
2018-11-12 16:46:06 INFO [setup.sh] OMNI Zero Touch Management Application Service inactive
Appliance IP : 16.1.1.41
vCenter Server FQDN: vc.st.vxrail.cluster1
vCenter Server Username: administrator@vsphere.local
vCenter Server Password:
Smart Fabric VIP: fd1:53ba:e9a0:cccc:0:5eff:fe00:1100
OS10 SmartFabric Rest User Password:
Retype OS10 SmartFabric Rest User Password:

```

NOTE: The OS10 SmartFabric user password is only requested once. Use caution to avoid entering an incorrect password.

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

- 5 The OMNI extension registration with vCenter status displays. Press **Enter** to continue.

```

Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
-----

Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI vSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout

Enter selection [0 - 10]: 0

Install SSL certificates from remote Server [y]? n
2018-11-12 16:46:06 INFO [setup.sh] Registering OMNI Plugin with vCenter
2018-11-12 16:46:06 INFO [setup.sh] Starting Web Server service
2018-11-12 16:46:06 INFO [setup.sh] OMNI Web Server Service active
2018-11-12 16:46:06 INFO [setup.sh] Stopping Application Server and Zero Touch Management application services
2018-11-12 16:46:06 INFO [setup.sh] OMNI Application Server Service inactive
2018-11-12 16:46:06 INFO [setup.sh] OMNI Zero Touch Management Application Service inactive
Appliance IP : 16.1.1.41
vCenter Server FQDN: vc.st.vxrail.cluster1
vCenter Server Username: administrator@vsphere.local
vCenter Server Password:
Smart Fabric VIP: fd61:53ba:e9a0:cccc:0:5eff:fe00:1100
OS10 SmartFabric Rest User Password:
Retype OS10 SmartFabric Rest User Password:
2018-11-12 16:54:20,703 Extension Registration succeed with: vc.st.vxrail.cluster1
2018-11-12 16:54:20 INFO [setup.sh] Starting Application Server and Zero Touch Management application services
2018-11-12 16:54:20 INFO [setup.sh] OMNI Zero Touch Management Application Service active
2018-11-12 16:54:20 INFO [setup.sh] OMNI Application Server Service active
press [enter] to continue...

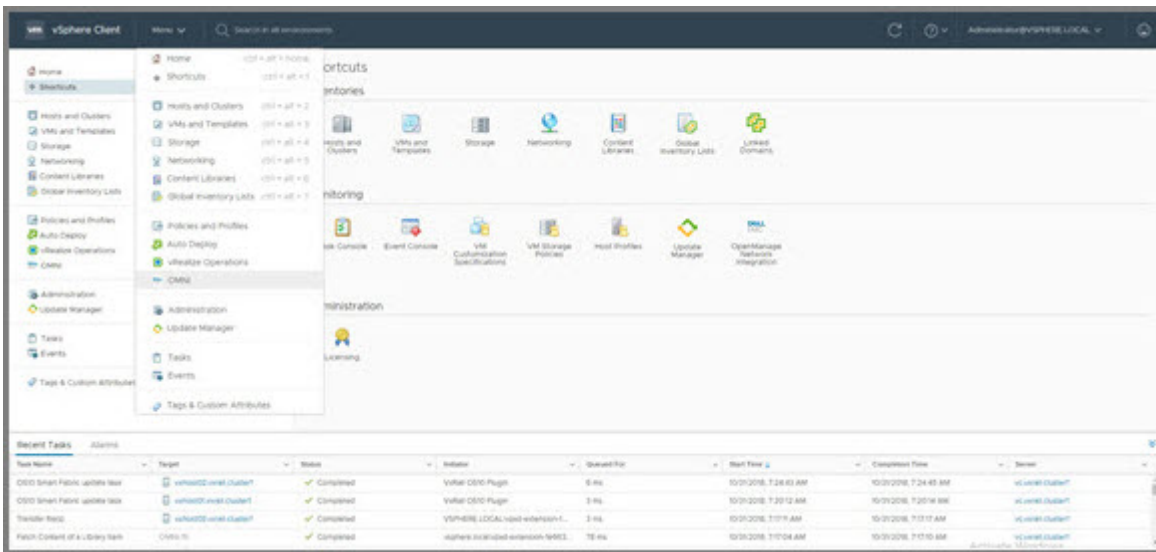
```

6 Logout of the vCenter session, then log back into the registered vCenter.

NOTE: Before you use the plugin, you must setup a Dell EMC OpenManage Networking Integration Appliance in vSphere.

OpenManage Network Integration Home

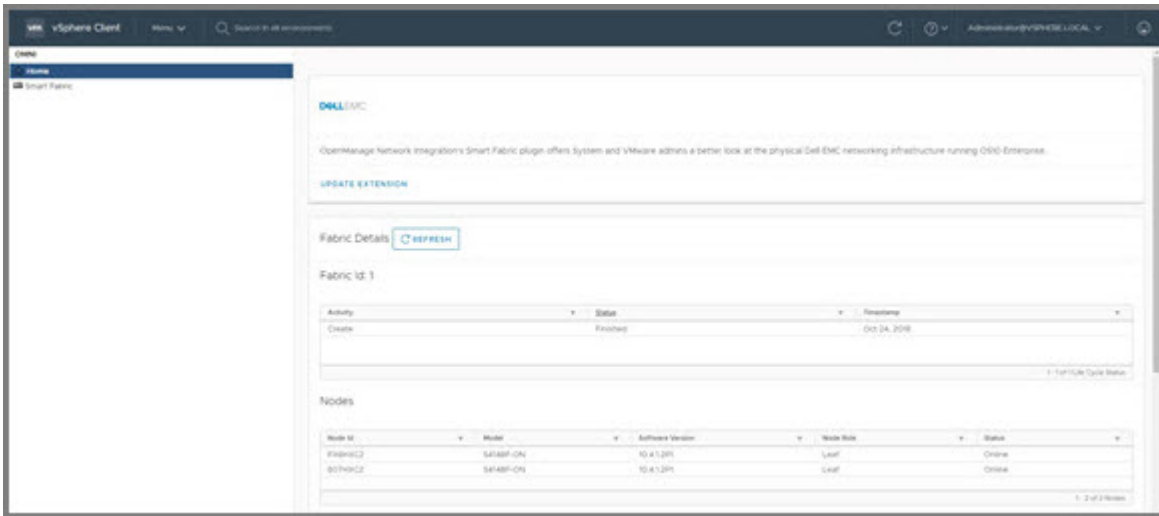
This information describes how to access the OpenManage Network through the vCenter. There is a shortcut in the vCenter sidebar, inside the vCenter menu dropdown, and in the vCenter shortcuts view.



When you select OpenManage Network integration, the OpenManage Network Home page displays information about the Fabric being managed. This page also allows you to update extensions if available.

This information displays for the Fabric being managed:

- Node details that are part of the Fabric
- OS version
- Lifecycle status
- List of networks created on the Fabric



OMNI monitoring

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

Supported deployment

A single VM plugin manages only one Fabric. You can register the VM plugin to up to 10 separate instances of vCenter that have the hosts connected to the same Fabric.

NOTE: Multiple VM plugin instances in the same vCenter are not supported. VLAN trunking and private VLANs are not supported.

Virtual standard switch

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

Deleting the port groups or the VSS itself will clear all unused VLANs from the Fabric.

Distributed virtual switch

On the OMNI plugin registered vCenter, when you configure the 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 the plugin on the ToRs and Uplink of the Fabric. This is shown as tasks on the registered vCenter tasks pane. Each host has a separate task created for this task. VLAN changes are reflected on the ToRs and Fabric Uplink seamlessly. Any unused VLANs in the clusters purge automatically.

Deleting the port groups or the DVS itself clears all unused VLANs from the Fabric.

DVS provides changing the VLAN of the uplink port groups. The plugin takes this as the priority, therefore, any changes on the virtual port groups are ignored if you configure the DVS uplink as a VLAN type. Any trunking configuration is ignored by the plugin.

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

 **NOTE: Changing the VLAN in the vCenter Server Network port group is not supported. This activity will disable VxRail cluster management.**

OMNI system management

This information explains common OMNI 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 cluster.

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

Change appliance IP

The OMNI appliance IP is used during the registration process and any change to the IP after registration with vCenter requires the registration process to be done again to update the package, as the UI will query the IP on the registered package.

Go to the OMNI Home page, select **Update Extension** for the UI to pick up the changes and start communicating with the new appliance IP.

Change appliance DNS

OMNI 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.

Connect to multiple vCenter networks

OMNI 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 plugin with vCenter, and then OMNI starts managing the network adapter changes.

Change appliance SSL certificates

The OMNI 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 OMNI Home page, select **Update Extension**. The UI picks up the changes and start communicating with the OMNI appliance.

Upgrade plugin package on vCenter

You can upgrade the plugin package on new releases without having to deploy a new OMNI appliance. The plugin package upgrade process requires the new UI changes to push to the vCenter through the registration process, which then updates the plugin on vCenter.

- 1 Download the OMNI upgrade bundle to a Linux-based SCP server.
- 2 Go the OMNI Home page, then select **7. Upgrade Appliance**.
- 3 Enter the IP address of the SCP server.
- 4 Enter the credentials of the SCP server.

- 5 Enter the path to the OMNI upgrade bundle.
- 6 Reboot the virtual appliance.

Plugin sync behavior

When you power off the OMNI 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 plugin syncs all the states of VLANs for all the hosts.

Node add

When the OMNI detects any new node added to the registered vCenter, the node changes will not be synced for 20 minutes for the VxRail Manager to finish setting up the node for the cluster. After the 20 minute timer expires, the plugin will start syncing the states of the host if it is part of the managed cluster.

Topics:

- [Host network inventory](#)
- [Port reset](#)
- [Password change](#)

Host network inventory

This information describes how to view information about physical Dell EMC Networking infrastructure running on OS10 Enterprise Edition.

Host network inventory page

Select a host in vCenter, select the **Monitor** tab, then select **OpenManage Network Integration** 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.

The screenshot shows the vCenter interface for a host named 'vxhost03.vxrail.cluster1'. The 'Monitor' tab is active, and the 'OpenManage Network Integration' sidebar is visible. The main content area displays the 'Host Network Inventory' page with a 'REFRESH' button and a table of physical adapters.

Server Physical Adapter	Logical Switch	MAC Address	Physical Switch Node	Physical Switch Interface
vmnic0	VMware HCL Distributed Switch	00:0a:17:15:15:a0	607HXC2	ethernet1/1/3
vmnic1	VMware HCL Distributed Switch	00:0a:17:15:15:a1	FX5HX2	ethernet1/1/9
vmnic4	DSwitch	15:12:1e:2d:82:00	FX5HX2	port-channel3
vmnic5	DSwitch	15:12:1e:2d:82:01	607HXC2	port-channel3
vusb0	vSwitchDRACvusb	54:48:10:7d:bb:33		
vmnic3		15:12:1e:2d:78:c1		
vmnic2		15:12:1e:2d:78:c0		

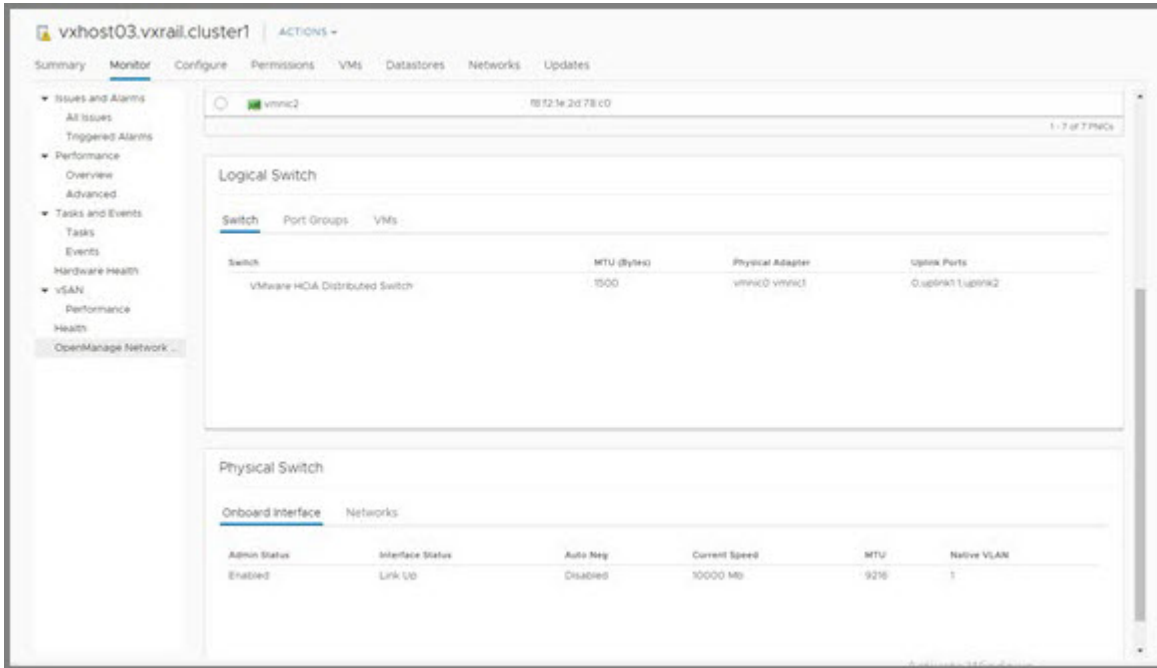
- Physical adapter — physical network adapter name
- Virtual switch — name of switch the physical adapter is connected to
- MAC address — MAC address of the physical adapter

- Physical switch node — physical switch in part of the fabric
- Physical switch interface — physical switch port this server NIC is wired to

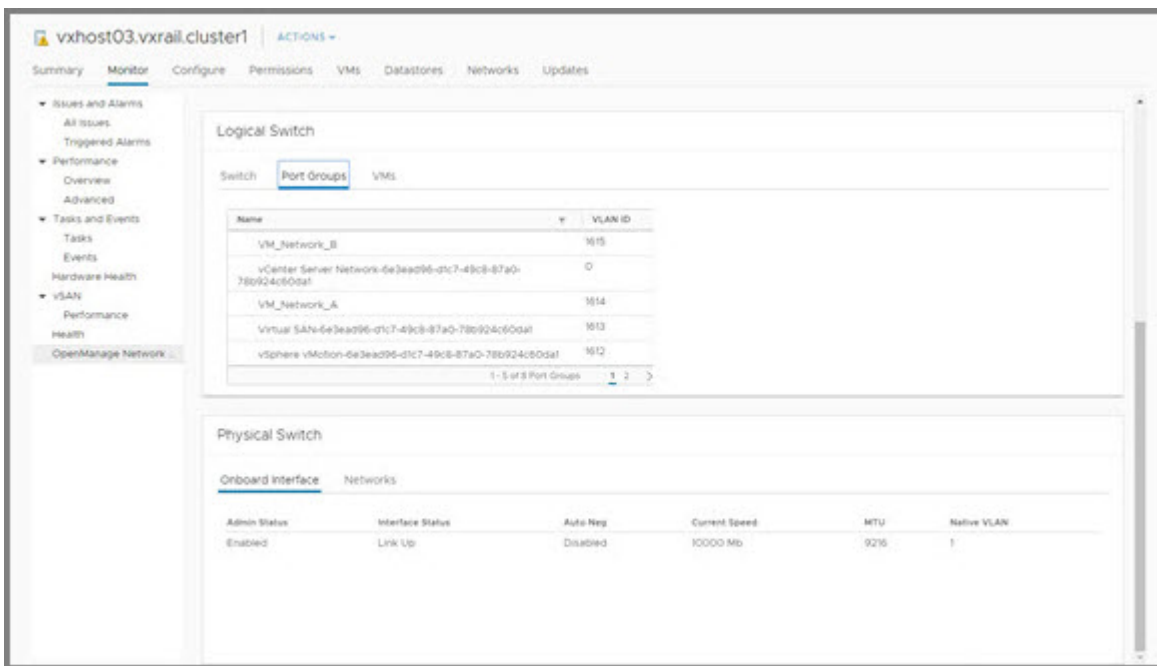
Virtual switch card

Displays information about the switch connected to the selected physical adapter.

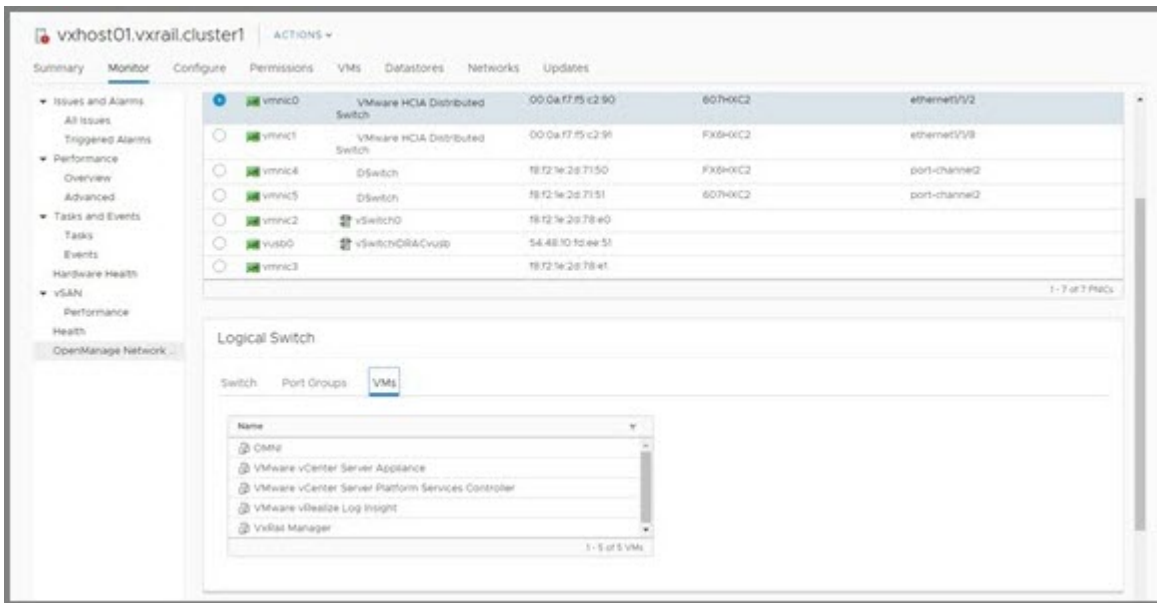
- Switch tab — includes name of switch, MTU in bytes of switch, physical adapters connected to the switch, and uplink ports on the switch



- Port groups tab — includes name of port group, and VLAN IDs of port group



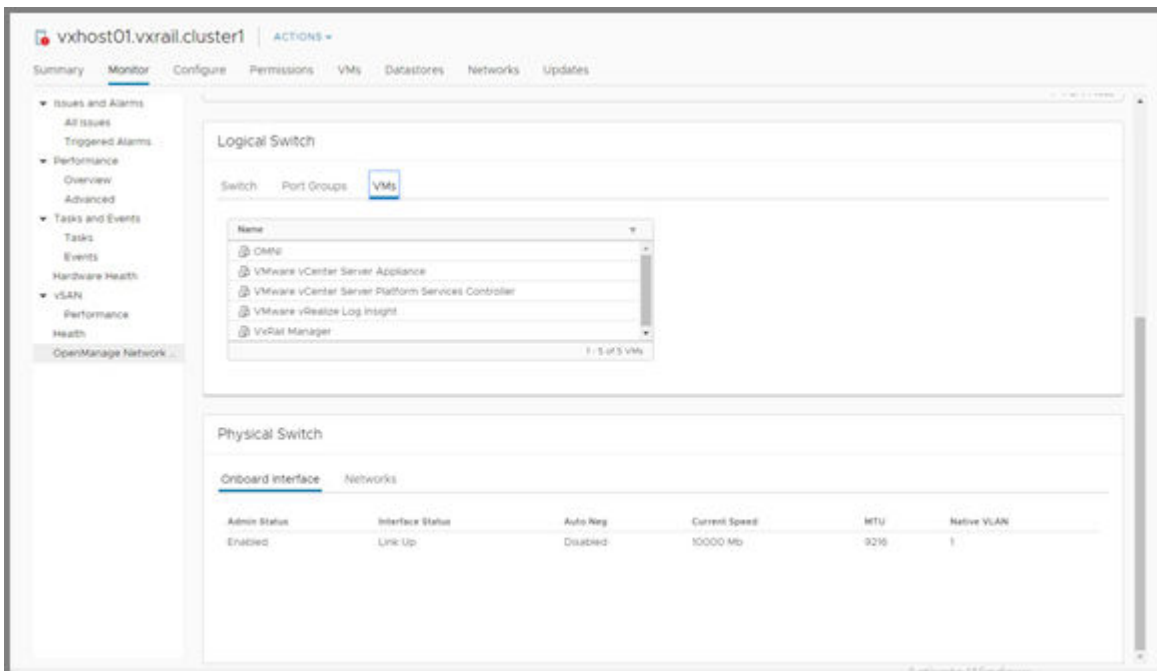
- VMs tab — includes the name of VMs of that host using the connected vCenter switch



Physical switch card

Displays information about the onboard interface card. This information displays only when there is a physical connection between the VxRail nodes and the fabric.

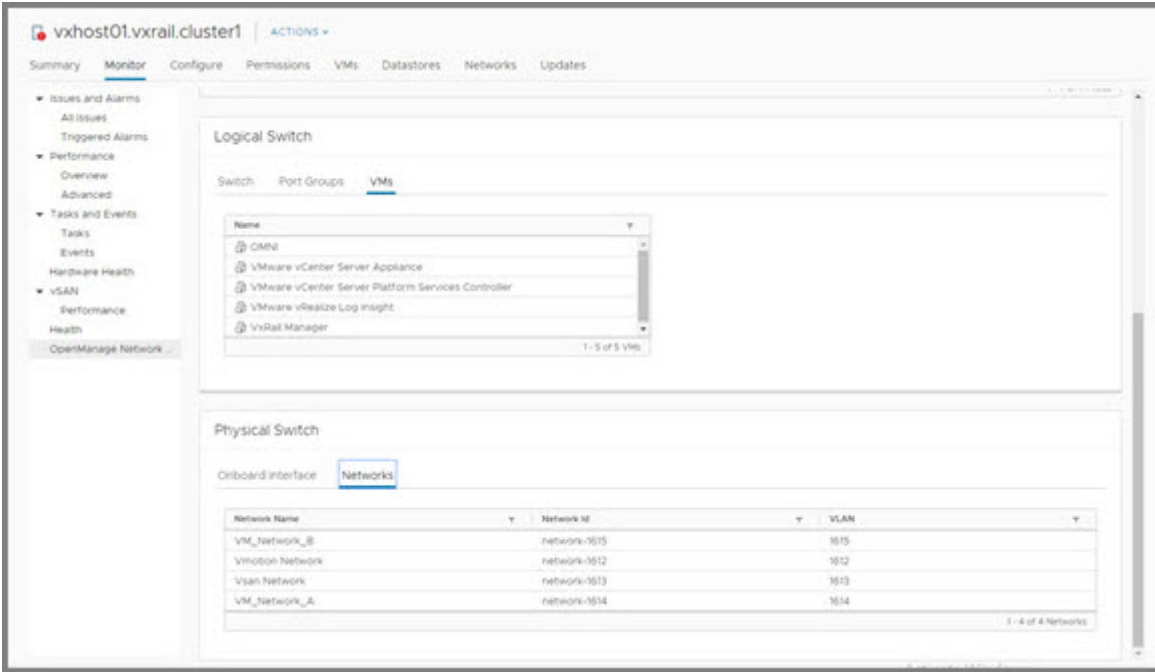
- Onboard interface



- Admin Status — configured state of the physical interface
- Interface Status — current operations state of the physical switch port
- Auto Neg — negotiation status of the physical interface
- Current Speed — current operational speed of the physical interface
- MTU — minimum transmitting unit configured on the physical interface

- Native VLAN — untagged VLAN the switch port is part of

- Networks



- Network Name — name of the Smart Fabric network
- Network ID — unique identifier of the Smart Fabric network
- VLAN — tagged VLAN of the switch port

Port reset

This information describes how to toggle between the jump port and the ESXi data port.

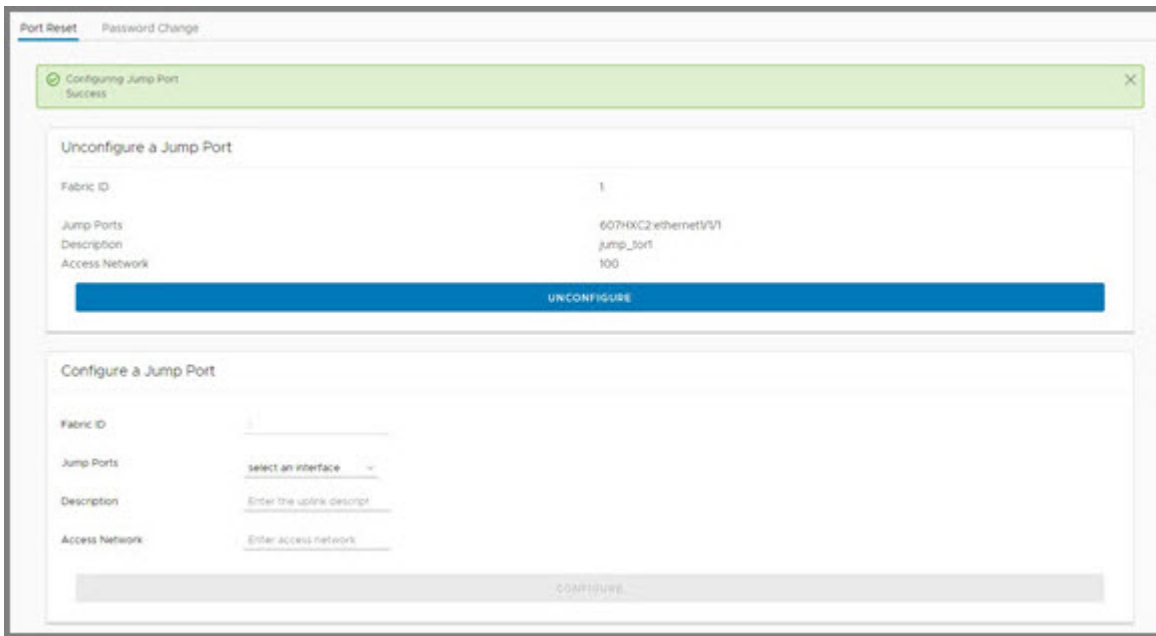
Configure jump port

NOTE: Ensure your laptop is connected to port 1/1/1 before you configure the port as a jump port or configuration may not apply correctly.

Configure port 1 on the switch to enable connectivity by laptop to the network for building new VxRail clusters.

NOTE: This option is not available when there are no unconfigured jump ports.

- 1 Select **OpenManage Network > Smart Fabric > Port Reset**.
- 2 Select an interface from the drop-down that you want the jump port configured to.



- 3 Enter a description for the jump port.
- 4 Enter the access network for the jump port.
- 5 Click **Configure**. An alert displays at the top after the operation completes.

Unconfigure jump port

This operation reverts access VLAN configuration on the port 1 and configures the port with default ESXi data port configuration.

NOTE: This option is not available when there are no configured jump ports.

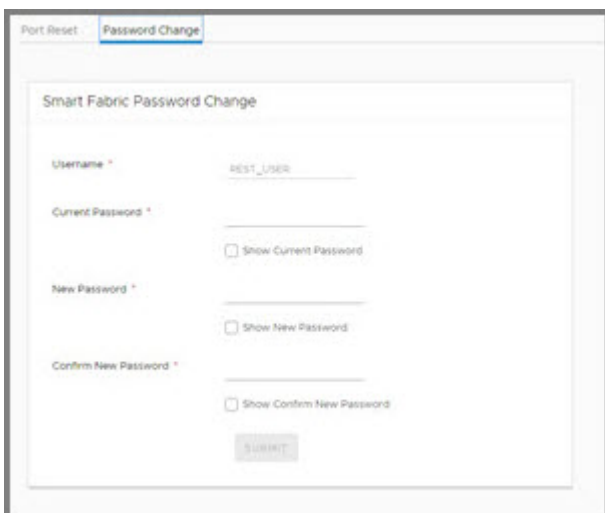
- 1 There may be one or more configured jump ports available. Find the card describing the jump port to unconfigure.
- 2 Click **Unconfigure**. An alert displays at the top after the operation completes.

Password change

This information describes how to change the authentication password for the Smart Fabric REST API.

NOTE: The SmartFabric password must match the VxRail password. If you change this password, you must unregister, then re-register the appliance.

- 1 Select **OpenManage Network > Smart Fabric > Password Change**.



- 2 Enter the current password for the Smart Fabric REST API.
- 3 Enter the new password for the Smart Fabric REST API, then confirm the new password again.
- 4 Click **Submit**. An alert displays at the top after the operation completes.

Lifecycle management

This information explains common lifecycle operations including upgrading OS10, upgrading the vCenter plugin, and switch replacement.

Topics:

- [Upgrade OS10](#)
- [Upgrade OMNI extension vCenter plugin](#)
- [Switch replacement](#)

Upgrade OS10

To upgrade OS10, download a new OS10 Enterprise Edition image from the DDL.

- 1 Sign into [DDL](#) using your account credentials.
- 2 Locate the entry for your entitlement ID and order number, then select the product name.
- 3 Select the `Available Downloads` tab on the Product page.
- 4 Select the OS10 Enterprise Edition image to download, then click `Download`.
- 5 Read the Dell End User License Agreement, then scroll to the end of the agreement and click `Yes, I agree`.
- 6 Select how you want to download the software files, then click `Download Now`.

Install the OS10 image on an ONIE-enabled switch with an installed OS10 license. See [Install OS10 license](#) for complete instructions.

Upgrade OMNI extension vCenter plugin

This information explains how to upgrade the OMNI extension vCenter plugin, and unregister the OMNI extension plugin from vCenter.

- 1 Select **7. Upgrade Appliance**.

```

#####
Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
#####

Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI Web Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show Eula
10. Logout

Enter selection [0 - 10]: 7
2018-10-19 12:31:35 INFO [setup.sh] Getting the upgrade file
Remote SCP Server IP/Hostname: 10.11.182.197
Username: delaware
Path to the upgrade zip file: /home/delaware/sdk/delaware/Dell0HMS0vaSetup/packer/uploads/uploads.zip
The authenticity of host '10.11.182.197 (10.11.182.197)' can't be established.
ECDSA key fingerprint is SHA256:0Dxo1cImixJ2E1i/TV3M19zveuCMesALha3vaJHNMGg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.11.182.197' (ECDSA) to the list of known hosts.
delaware@10.11.182.197's password:

```

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

```

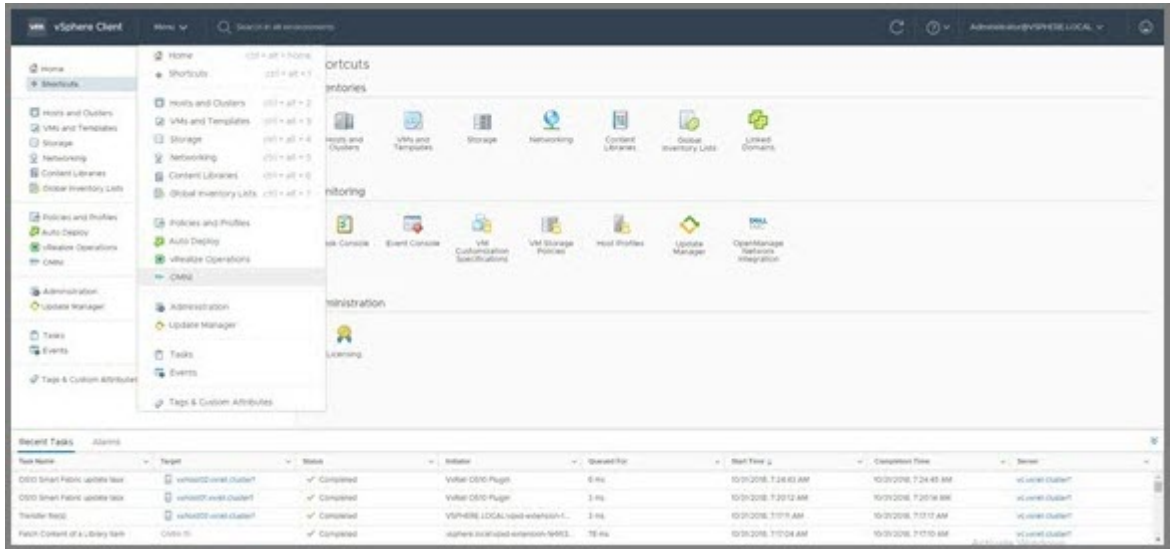
>=3.6->vcenterapp=0.1.0)
Requirement already satisfied: more-itertools>=4.0.0 in /usr/local/lib/python3.5/dist-packages (from pytest<4.0,>=3.6->vcenterapp=0.1.0)
Requirement already satisfied: atomicwrites>=1.0 in /usr/local/lib/python3.5/dist-packages (from pytest<4.0,>=3.6->vcenterapp=0.1.0)
Requirement 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/dist-packages (from pytest<4.0,>=3.6->vcenterapp=0.1.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.5/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<4.0,>=3.6->vcenterapp=0.1.0)
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: asn1crypto>=0.21.0 in /usr/local/lib/python3.5/dist-packages (from cryptography>=2.2.1->pyopenssl<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 cryptography>=2.2.1->pyopenssl<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 Jinja2>=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'
'r1s.label' -> '/home/isengard/r1s.label'
2018-10-19 12:42:15 INFO [setup.sh] Starting all services
2018-10-19 12:42:15 INFO [setup.sh] OMNI Zero Touch Management Application Service Start successful
2018-10-19 12:42:15 INFO [setup.sh] OMNI Application Server Service Start successful
2018-10-19 12:42:15 INFO [setup.sh] OMNI Web Server Service Start successful
2018-10-19 12:42:15 INFO [setup.sh] Removing upgrade files
2018-10-19 12:42:16 INFO [setup.sh] Plugin need to be update registration to vCenter for new UI changes
2018-10-19 12:42:16 INFO [setup.sh] Session will be closed now. Please log back in.
press [enter] to continue...

```

After the upgrade completes, the session logs out.

- 3 Press **Enter** to continue.
- 4 Select **5. OMNI Web Client Plugin Menu** to re-register the plugin.

NOTE: Before you can use the plugin, you must set up a Dell EMC OpenManage Networking Integration Appliance (see [OpenManage network integration](#)). You can get to the OpenManage Network Integration Home page using the OpenManage Network Integration shortcuts in vCenter. Find the shortcuts in the vCenter sidebar, inside the vCenter Menu dropdown list, and in the vCenter Shortcuts view.



Unregister OMNI extension plugin from vCenter

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

```
-----
OMNI Visphere Client Plugin Menu
-----
1. Register/Update OMNI Visphere Client Plugin with vCenter
2. Unregister OMNI Visphere Client Plugin with vCenter
3. Check OMNI Visphere Client Plugin with vCenter
4. Exit

Enter selection [1 - 4]: 2
2018-11-12 17:04:12 INFO [setup.sh] Unregistering OMNI Plugin with vCenter
2018-11-12 17:04:12 INFO [setup.sh] Stopping Application Server and Zero Touch Management application services
Removed /etc/systemd/system/multi-user.target.wants/vcenterappunicrn.service.
2018-11-12 17:04:13 INFO [setup.sh] OMNI Application Server Service Stop successful
Removed /etc/systemd/system/multi-user.target.wants/dellvcenterapp.service.
2018-11-12 17:04:17 INFO [setup.sh] OMNI Zero Touch Management Application Service Stop successful
vCenter Server IP(s): sr.1vcentralcluster
vCenter Server Username: administrator@visphere.local
vCenter Server Password:
2018-11-12 17:05:03.451 Extension un-registration Error: Cannot complete login due to an incorrect user name or password.
2018-11-12 17:05:03 INFO [setup.sh] Starting Application Server and Zero Touch Management application services
Created symlink /etc/systemd/system/multi-user.target.wants/dellvcenterapp.service - /etc/systemd/system/dellvcenterapp.service.
2018-11-12 17:05:03 INFO [setup.sh] OMNI Zero Touch Management Application Service Start successful
Created symlink /etc/systemd/system/multi-user.target.wants/vcenterappunicrn.service - /etc/systemd/system/vcenterappunicrn.service.
2018-11-12 17:05:03 INFO [setup.sh] OMNI Application Server Service Start successful (plugin version 1.0.20).
Press [enter] to continue...
```

4 Provide the vCenter credentials to unregister the plugin from the vCenter Server.

NOTE: Once the unregistration completes, the OMNI menu disappears only if the vCenter Server is restarted.

Switch replacement

You may need to contact Customer Support to arrange for repair or replacement. For more information about switch replacement, see www.dell.com/support.

Troubleshoot vCenter plugin

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

OMNI appliance connectivity

Check the IP and DNS settings and connection status.

- 1 Select **2. Interface Configuration Menu**.

```

=====
Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
=====

Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI VSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout

Enter selection [0 - 10]:

```

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

```

=====
OMNI Interface Configuration Menu
-----

1. Show Interfaces
2. Show Connection Status
3. Configure Interfaces
4. Exit

Enter selection [1 - 4]: 1
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.11.16 netmask 255.255.255.0 broadcast 172.16.11.255
    inet6 fe80::250:56ff:fe90:8933 prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:90:89:33 txqueuelen 1000 (Ethernet)
    RX packets 1006533 bytes 326206527 (311.0 MiB)
    RX errors 0 dropped 29 overruns 0 frame 0
    TX packets 474187 bytes 151107008 (144.1 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ens192: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet6 fe80::bb22:fa82:7af:7eef prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:90:8e:71 txqueuelen 1000 (Ethernet)
    RX packets 138667 bytes 97056260 (92.5 MiB)
    RX errors 0 dropped 12 overruns 0 frame 0
    TX packets 91800 bytes 14969719 (14.2 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1 (Local Loopback)
    RX packets 4194 bytes 98006172 (36.2 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4194 bytes 98006172 (36.2 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[END]

```

- 3 Select **2. Show Connection Status**.

```

=====
OMNI Interface Configuration Menu
-----

1. Show Interfaces
2. Show Connection Status
3. Configure Interfaces
4. Exit

Enter selection [1 - 4]: 2
DEVICE TYPE STATE CONNECTION
ens160 ethernet connected Wired connection 1
ens192 ethernet connected Wired connection 2
lo loopback unmanaged --
press [enter] to continue...

```

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

SmartFabric error

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

NOTE: Multiple fabric or vCenter registrations will be shown in Status OMNI Management Service.

- 1 Select **2. Status OMNI Management Service.**

```
-----
OMNI Management Service Menu
-----
1. Start OMNI Management Service
2. Status OMNI Management Service
3. Stop OMNI Management Service
4. Restart OMNI Management Service
5. Create Support Bundle
6. Exit

Enter selection [1 - 6]: 2
2018-10-22 13:41:08 INFO [setup.sh] OMNI Zero Touch Management Application Service inactive
2018-10-22 13:41:08 INFO [setup.sh] OMNI Application Server Service active
2018-10-22 13:41:08 INFO [setup.sh] OMNI Web Server Service active
2018-10-22 13:41:10,553 OMNI is Registered with 10.11.182.103 vCenter Host
2018-10-22 13:41:10,555 OMNI is Registered with 10.11.181.7 SmartFabric Host
press [enter] to continue...
```

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

- 2 Confirm the password supplied during registration is correct. If not correct, re-register the plugin to update the SmartFabric password on the appliance.

Configure NTP server

NOTE: If the NTP server is not configured, the OMNI appliance VM will not synchronize with the data center.

- 1 Select **2. Interface Configuration Menu.**

```
=====
Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
=====

Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI vSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout

Enter selection [0 - 10]:
```

- 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.**


```

Welcome to Dell EMC OpenManage Network Integration (OMNI) Management
-----
Menu
-----
0. Full Setup
1. Show Version
2. Interface Configuration Menu
3. Install SSL Certificates from Remote Server
4. OMNI Management Service Menu
5. OMNI vSphere Client Plugin Menu
6. Password/SSL Configuration Menu
7. Upgrade Appliance
8. Reboot Appliance
9. Show EULA
10. Logout
Enter selection [0 - 10]:

```

2. Select **4. Show 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]: 4
NTP is configured
NTP Server: 16.1.1.60

```

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

UI is not populated

NOTE: If any IP or SSL certificate changes on the OMNI VM, click Update Extension on the OMNI Plugin Home Page.

Check the service status on the plugin VM.

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

Create support bundle

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

```

-----
OMNI Management Service Menu
-----
1. Start OMNI Management Service
2. Status OMNI Management Service
3. Stop OMNI Management Service
4. Restart OMNI Management Service
5. Create Support Bundle
6. Change Application Log Level
7. Exit

Enter selection [1 - 6]: 5
2018-11-06 15:09:39 INFO [setup.sh] Creating Support Bundle..
2018-11-06 15:09:39 INFO [setup.sh] OMNI Appliance Version .....(3.0.7)
2018-11-06 15:09:39 INFO [setup.sh] OMNI Web Client Plugin Version .....(1.0.7)
2018-11-06 15:09:39 INFO [setup.sh] Removing old support-bundle file
2018-11-06 15:09:39 INFO [setup.sh] Support Bundle creation successful
2018-11-06 15:09:39 INFO [setup.sh] Support Bundle available for SCP at /tmp/support-bundle.tar.gz
press [enter] to continue...

```

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

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

Change log level

1. Select **4. OMNI Management Service menu**.
2. Select **6. Change Application Log Level** to display the current log level and toggle accordingly.

```

-----
OMNI Management Service Menu
-----
1. Start OMNI Management Service
2. Status OMNI Management Service
3. Stop OMNI Management Service
4. Restart OMNI Management Service
5. Create Support Bundle
6. Change Application Log Level
7. Exit

Enter selection [1 - 6]: 6
2018-11-06 15:11:41 INFO [setup.sh] Current Application Log Level: ERROR

Existing Log Level will be replaced. Proceed? [y]? y
2018-11-06 15:11:44 INFO [setup.sh] Changing Application Log Level to: DEBUG
2018-11-06 15:11:44 INFO [setup.sh] Stopping Application Server and Zero Touch Management applicati
on services
2018-11-06 15:11:44 INFO [setup.sh] OMNI Application Server Service inactive
2018-11-06 15:11:44 INFO [setup.sh] OMNI Zero Touch Management Application Service inactive
2018-11-06 15:11:44 INFO [setup.sh] Starting Application Server and Zero Touch Management applicati
on services
Created symlink /etc/systemd/system/multi-user.target.wants/dellvcenterapp.service -> /etc/systemd/sy
stem/dellvcenterapp.service.
2018-11-06 15:11:44 INFO [setup.sh] OMNI Zero Touch Management Application Service Start successful
Created symlink /etc/systemd/system/multi-user.target.wants/vcenterappunicorn.service -> /etc/system
d/system/vcenterappunicorn.service.
2018-11-06 15:11:45 INFO [setup.sh] OMNI Application Server Service Start successful
2018-11-06 15:11:45 INFO [setup.sh] Log Level Change successful
press [enter] to continue...

```

NOTE: By default, the OMNI appliance comes with a log-level of ERROR. The appliance log can be swapped between ERROR to DEBUG, or vice versa.

3. Abort if the log level is already on the desired log level.

Reset OMNI 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**.

```

GNU GRUB version 2.02~beta3-5

*Debian GNU/Linux, with Linux 4.9.0-7-amd64
Debian GNU/Linux, with Linux 4.9.0-7-amd64 (recovery mode)

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. ESC to return previous
menu.

```

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

set root='hd0,msdos1'
if [ x${feature_platform_search_hint} = xy ]; then
  search --no-floppy --fs-uuid --set=root --hint-bios=hd\
0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1 17249b09-d\
cf2-4f54-b6d4-9cd2637269b8
else
  search --no-floppy --fs-uuid --set=root 17249b09-dcf2-\
4f54-b6d4-9cd2637269b8
fi
echo 'Loading Linux 4.9.0-7-amd64 ...'
linux /vmlinuz-4.9.0-7-amd64 root=/dev/mapper/dhc\
p--182--206--vg-root ro quiet
echo 'Loading initial RAMdisk ...'
initrd /initrd.img-4.9.0-7-amd64

Minimum Emacs-like screen editing is supported. TAB lists
completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a
command-line or ESC to discard edits and return to the GRUB
menu.

```

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

```

GNU GRUB version 2.02~beta3-5

set root='hd0,msdos1'
if [ x${feature_platform_search_hint} = xy ]; then
  search --no-floppy --fs-uuid --set=root --hint-bios=hd\
0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1 17249b09-d\
cf2-4f54-b6d4-9cd2637269b8
else
  search --no-floppy --fs-uuid --set=root 17249b09-dcf2-\
4f54-b6d4-9cd2637269b8
fi
echo 'Loading Linux 4.9.0-7-amd64 ...'
linux /vmlinuz-4.9.0-7-amd64 root=/dev/mapper/dhc\
p--182--206--vg-root ro quiet init=bin/bash
echo 'Loading initial RAMdisk ...'
initrd /initrd.img-4.9.0-7-amd64

Minimum Emacs-like screen editing is supported. TAB lists
completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a
command-line or ESC to discard edits and return to the GRUB
menu.

```

- 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
WARNING: Failed to connect to lvm2md. Falling back to device scanning.
WARNING: Failed to connect to lvm2md. Falling back to device scanning.
/dev/mapper/dhcp--182--206--vg-root: clean, 45758/2416648 files, 595871/9652224
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
```

- 7 Change the password for `admin` using `passwd admin`, then enter and confirm the new password.

```

[ 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
WARNING: Failed to connect to lvm2md. Falling back to device scanning.
WARNING: Failed to connect to lvm2md. Falling back to device scanning.
/dev/mapper/dhcp--182--206--vg-root: clean, 45758/2416648 files, 595871/9652224
blocks
bash: cannot set terminal process group (-1): Inappropriate ioctl for device
bash: no job control in this shell
root@(none):/# mount / -rw -o remount
root@(none):/# passwd admin
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@(none):/#

```

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