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Dell EMC NFV Ready Bundle for VMware

Deployment and Configuration Guide for vCloud 2.0

Dell Engineering
August 2017

A Dell EMC Deployment and Configuration Guide

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Revisions

Date	Description
April 2017	Initial release
August 2017	Update to initial release

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Table of contents

Document scope

The information in this document addresses the following:

- Network Functions Virtualization Infrastructure (NFVI) being the entirety of all hardware and software components to support virtual network Functions
- Virtualized Infrastructure Management (VIM) to support hardware and software components, and to manage NFVI
- A greenfield deployment of the VMware vCloud NFV 2.0 platform using the following versions:

Note: For more VMware vCloud NFV 2.0 information, see the *VMware vCloud NFV 2.0 Release Notes* and the *VMware vCloud NFV 2.0 Reference Architecture* links in Appendix B**.**

  - VMware vCenter Server 6.5.0e
  - VMware vSphere Hypervisor (ESXi) 6.5.0d
  - VMware Virtual SAN (vSAN) 6.6
  - VMware NSX for vSphere 6.3.1
  - VMware vRealize Orchestrator Appliance 7.2.0
  - VMware vRealize Operations Manager 6.5
  - VMware vRealize Log Insight 4.3
  - VMware vCloud Director for Service Providers 8.20
- Design considerations used to implement the NFVI platforms that accommodate the level of requirements for the service providers, partners, technical staff, and Dell EMC technical architects and engineers

This document does not address:

- Deployment of an environment using VMware vSphere Replication, VMware vSphere Data Protection, or VMware Site Recovery Manager
- Support escalations outside of the signed support agreement
- Assumption of operations, maintenance, or communications outside of the Dell EMC signed support agreements

Individuals using this document are considered to be Dell EMC technical architects, engineers, and associates who participated in the series of architecture design, proof-of-concept, briefing sessions, or technology partner programs.

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1 Physical wiring

The following image demonstrates the physical wiring that supports the vCloud NFV 2.0 architecture. It is based on the Dell EMC Networking S4048T-ON and S6000-ON switches and Dell PowerEdge R630 servers
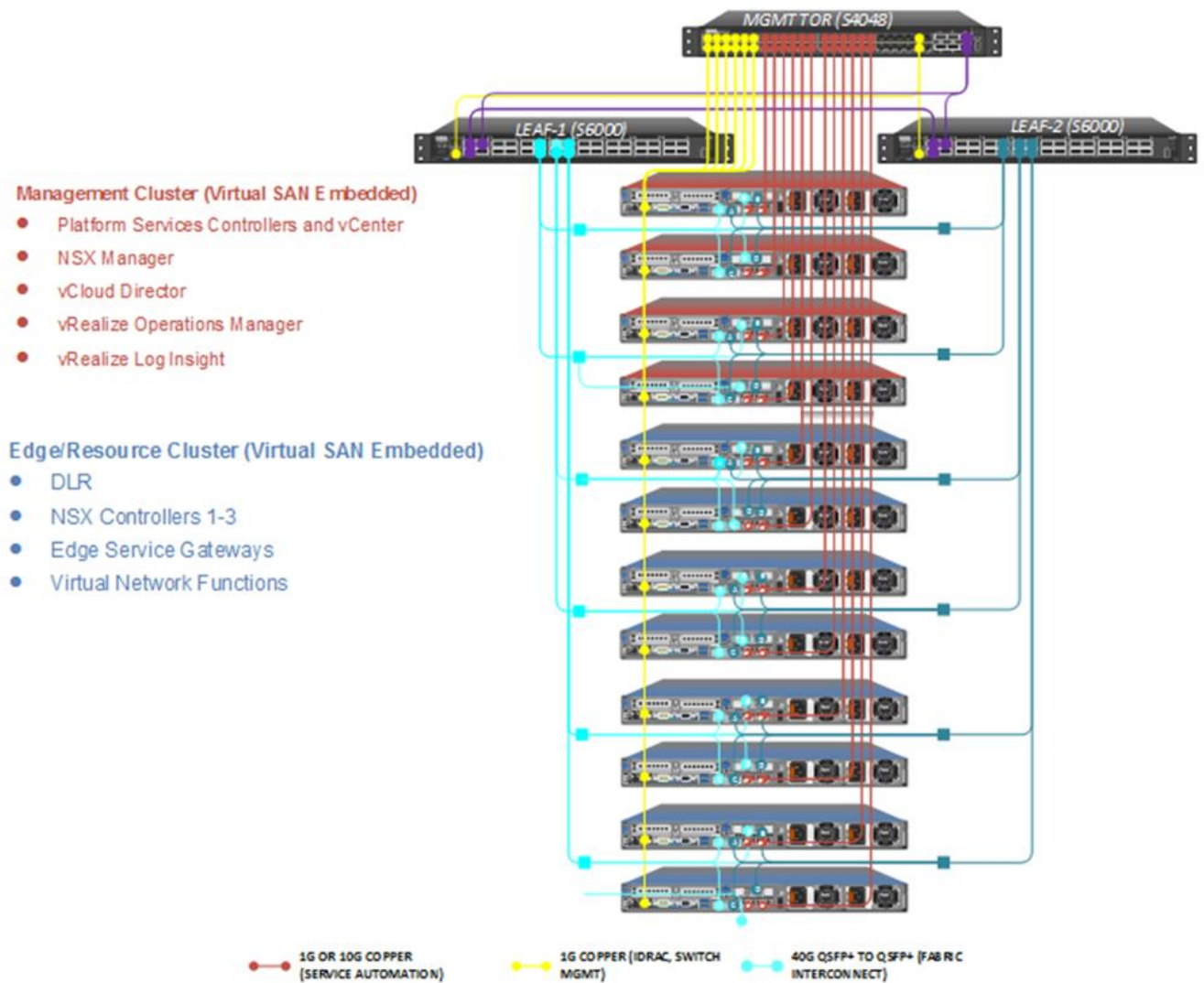

Figure 1   Proposed physical wiring configuration for vCloud NFV 2.0 architecture

2 Base physical network configuration without VTEP

Each server has a total of 4 x 10Gb SFP+ ports along with 2 x1G Base-T interfaces. The ports are physically connected to the top-of-rack (ToR) switches and to the management switch. Each switch port is tagged with the VLAN required to connect to the network.

> **Note:** See Appendix A for the required switch configuration details.

The vCloud NFV architecture assembles components into three different functions: Management, Edge, and Resource. Previous VMware vCloud NFV reference architectures had these functions mapped directly to a vSphere cluster/pod.

> **Note:** Throughout the remainder of this document, the terms *cluster* and *pod* are used interchangeably.

The following image shows the vCloud NFV 2.0 is an alternative design that uses two pods, has been introduced: The new design combines the Edge and Resource pods into a single pod and leaves the management components in the Management pod. The Virtual Network Functions (VNF) and networking functions such as Edge Service Gateway (ESG) and NSX controllers, are assigned to the Edge/Resource pod. An overview of the clusters and networking is shown following:
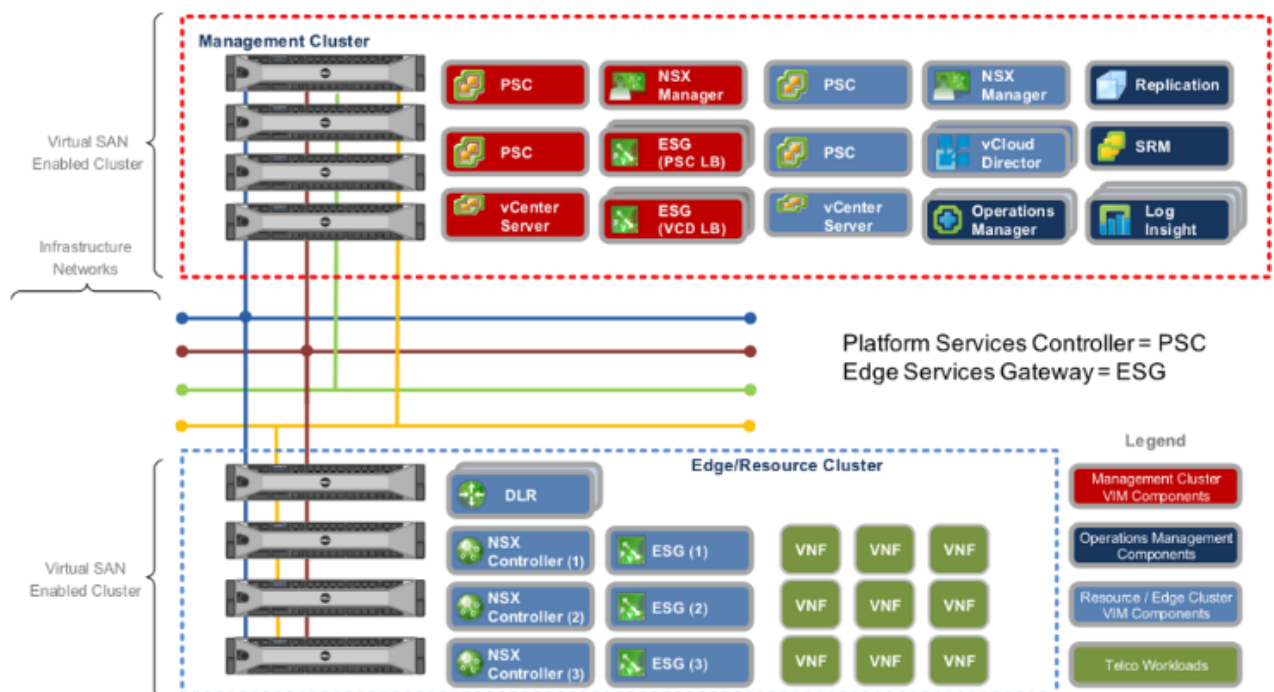

Figure 2   vCloud NFV 2.0 two pod architecture

This document is based on the two pod alternative.

3 System updates

Each hardware element of the Network Functions Virtualization Infrastructure (NFVI) has the most recent version of firmware.

> **Note:** To view the hardware components and current version of firmware, see the **System Inventory** section within the iDRAC user interface (UI).

Manual updates using the Virtual Console and Lifecycle Controller are necessary for the 12x host machines. To run the updates, perform the following steps:

1. Log in to the iDRAC user interface (UI) and launch the **Virtual Console**.
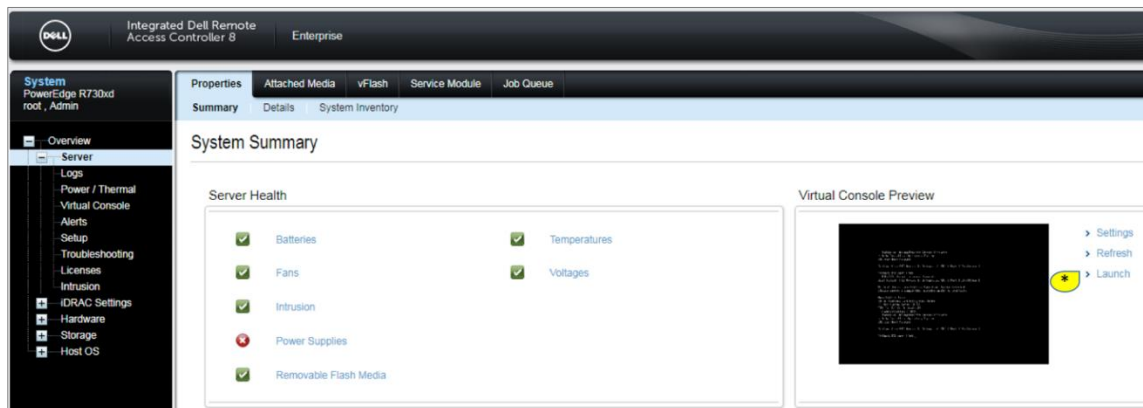
Figure 3   Launch iDRAC Virtual Console

2. From the virtual console, click **Next Boot** and select **Lifecycle Controller** from the list provided.
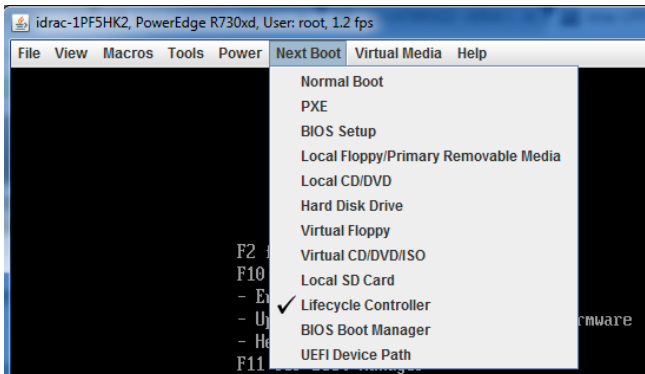
Figure 4   Set Next Boot on iDRAC Virtual Console

3. Click **Power** then **Power Cycle System (cold boot)** on the Virtual Console, to reboot the server.
4. After the server has rebooted, select **Firmware Update** then **Launch Firmware Update** from the **Lifecycle Controller** screen.

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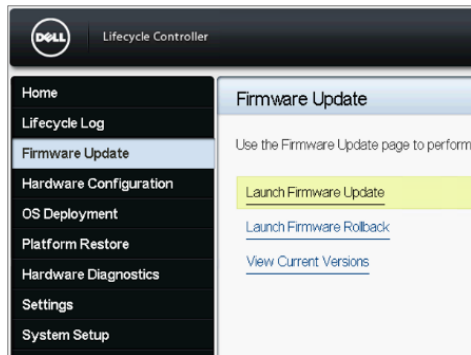
Figure 5   Launch Firmware Update from Lifecycle Controller

5. From the **Select Update Repository** screen, select the repository location for the catalog and update packages. For this example, the **FTP Server** option is used.

Figure 6   Update repository server setting

6. Accept the default FTP address without credentials if the server has the Internet access, then click **Test Network Connection**.
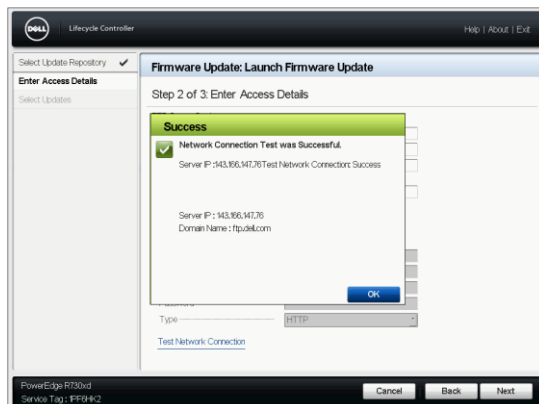
Figure 7   Network Connection Test screen

7. Click the **OK** button, and then click **Next** to continue.
    The system takes a few minutes to check for latest versions on the repository and present the available system updates.
8. Verify that all the required updates are selected, then click **Apply**.
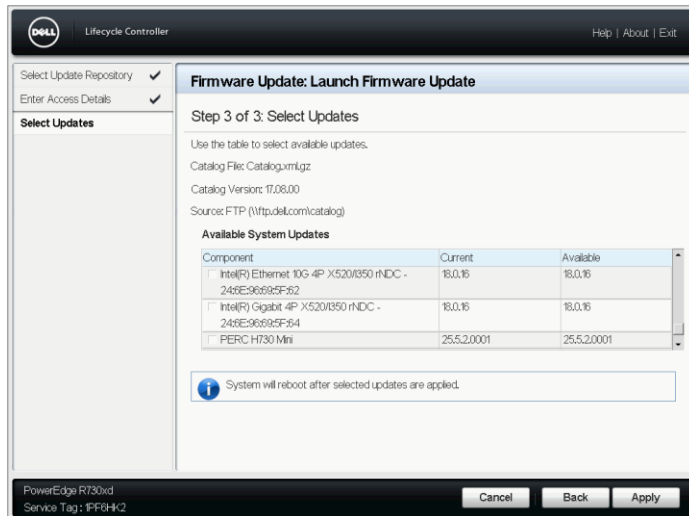
Figure 8   Apply available updates via Lifecycle Controller

The following versions were used on the setup:

Table 1   Sample setup configurations

| Component	Version
BIOS	2.3.4
PERC H730P Mini RAID controller	25.5.0.0018
Lifecycle Controller	2.41.40.40
Dell 32-Bit uEFI Diagnostics	4239A33
Dell OS Driver Pack	16.10.10
SSD Disks	L380
Spinning disks	FJ23
BP13G+EXP	3.31
Intel® I350 and 520s	17.5.10

Note: To update the network switches, see the *Dell EMC Open Networking S6010-ON* and *Dell EMC Open Networking S4048T-ON* manuals in Appendix B.

Alternatively, Dell OpenManage Essentials can perform an automatic inventory of all Dell servers.

Note: OME can perform an automatic inventory of all Dell EMC servers and identify the ones that must be updated. Updates can then be scheduled directly from the graphical user interface (GUI) without going into the virtual console of each server.

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4 VMware vSphere install process

The *vSphere Installation and Setup Guide for VMware vSphere 6.5, VMware ESXi 6.5, and vCenter Server 6.5* document describes the setup process for small and large environments. In this example, a small option is applied using two VMware vCenter Server appliances with an embedded Platform Services Controller (PSC). One is deployed for the Management cluster, and the other is deployed for the Edge/Resource cluster.

> **Note:** The vCenter Server appliance can be configured on High Availability (HA), however, a large-scale production deployment should set up replicated pairs of vCenter and PSC for full-fault tolerance.
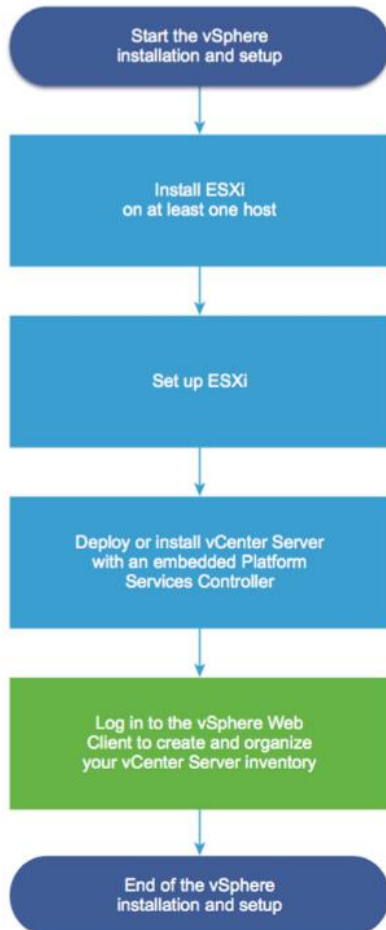

Figure 9   vSphere installation workflow

5 VMware vCenter install process

The *Deploying the vCenter Server Appliance and Platform Services Controller Appliance* section of the *vSphere Installation and Setup Guide for VMware vSphere 6.5, VMware ESXi 6.5, and vCenter Server 6.5* explains the installation process and alternatives. The process of installing an embedded VMware vCenter with Platform Services Controller (PSC) is used for both Management and Edge/Resource clusters. After it is deployed, High Availability (HA) is enabled to protect catastrophic failures.

For a greenfield deployment, select **Install on a new Virtual SAN cluster containing the target host** in the **Select datastore** step. This guides you through the vSAN setup before deploying vCenter.
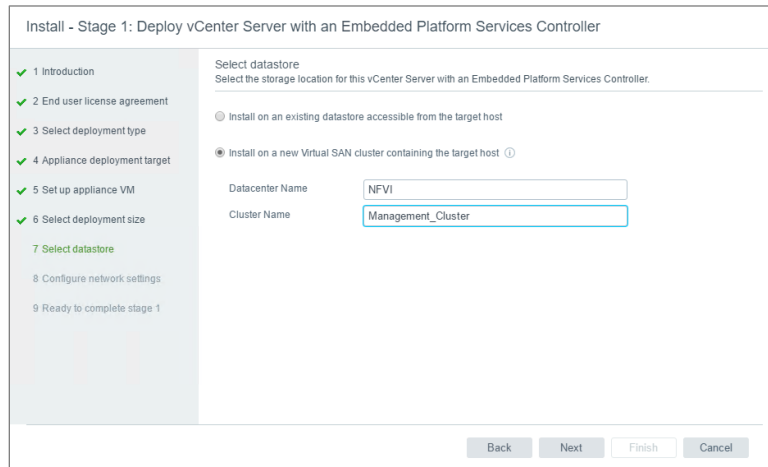
Figure 10   vCenter datastore selection
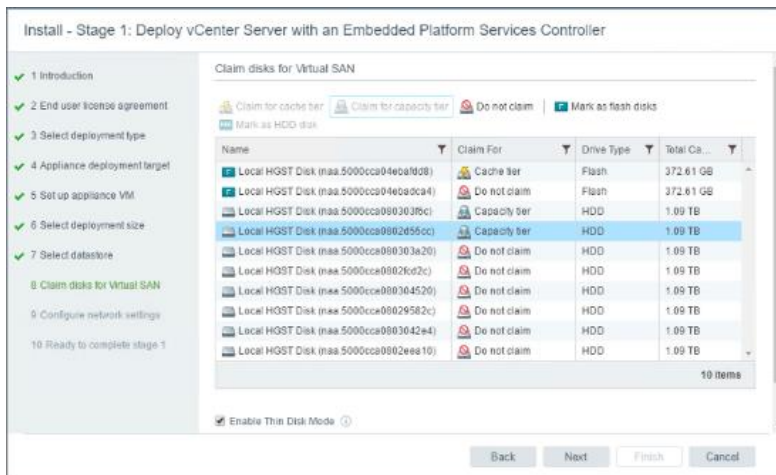
Figure 11   vSAN datastore disk selection

Note: The vCenter deployment on a brand new ESXi host, uses the VM Network associated to vSwitch0 default port group. A port group that requires special configuration such as a VLAN ID, will not be accessible after it is deployed. When this occurs, the following screen displays and recommends changes to guarantee network connectivity to the vCenter deployment before completing the setup in Stage 2:

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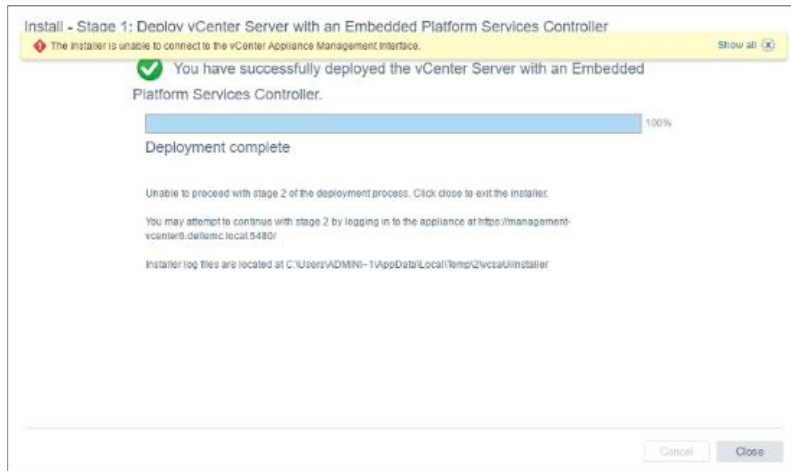
Figure 12   vCenter Appliance Management interface error

After the management vCenter appliance is set up, enter the appropriate program licenses.

Note: The VMware vCenter, VMware vSphere with Operations Management, and VSAN licenses must all be entered before proceeding to the next step.

Installation of the resource vCenter should be complete after the management cluster is fully set up.

6 Configure virtual networking

VMware recommends the separation of resources within a cluster (see *VMware vCloud NFV Reference Architecture Guide* in Appendix B), with each containing at least four ESXi servers for the vSAN deployments as shown in the Management Pod following image. The Management pod hosts VIM components for both the Management and Edge/Resource pods.

Note: Management components shown in red and Edge/Resource components are shown in blue.
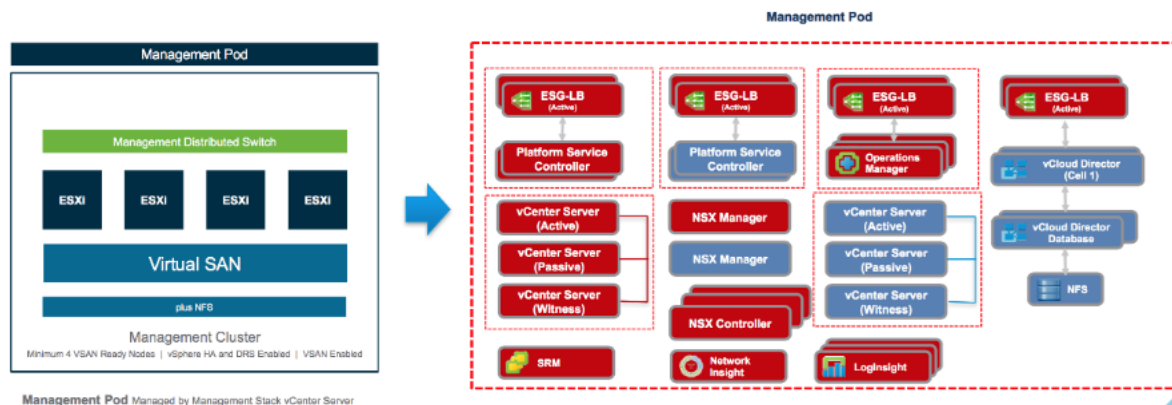

Figure 13   Management pod servers and components

After the installation of VMware vCenter and the application the appropriate licenses is complete, create the management cluster to enable the vSAN, Distributed Resource Scheduler (DRS), and High Availability (HA), after the VMware vSphere Distributed Switch (VDS) has been configured.

For a greenfield deployment the process, is as follows:

1. Create a data center (NFVI data center for example) by adding each of the hosts that are part of the Management pod.
2. Create required distributed vSwitches.
3. Create a management pod to enable vSAN as indicated in the Deploy VMware Virtual SAN clusters section.

6.1 Create data center and add management hosts

After the data center has been created, add at least four hosts to create the management cluster.
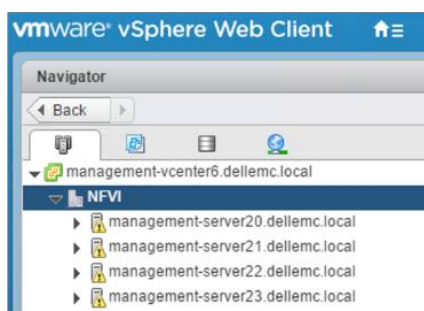
Figure 14   Servers listed within management cluster

6.2   Create required virtual distributed switches

Taken from the *Architecting a vCloud NFV Platform RA v2.0 Guide*, the following image shows the underlying Virtual Distributed Switch (VDS) configuration suggested for the Management and Edge/Resource clusters:
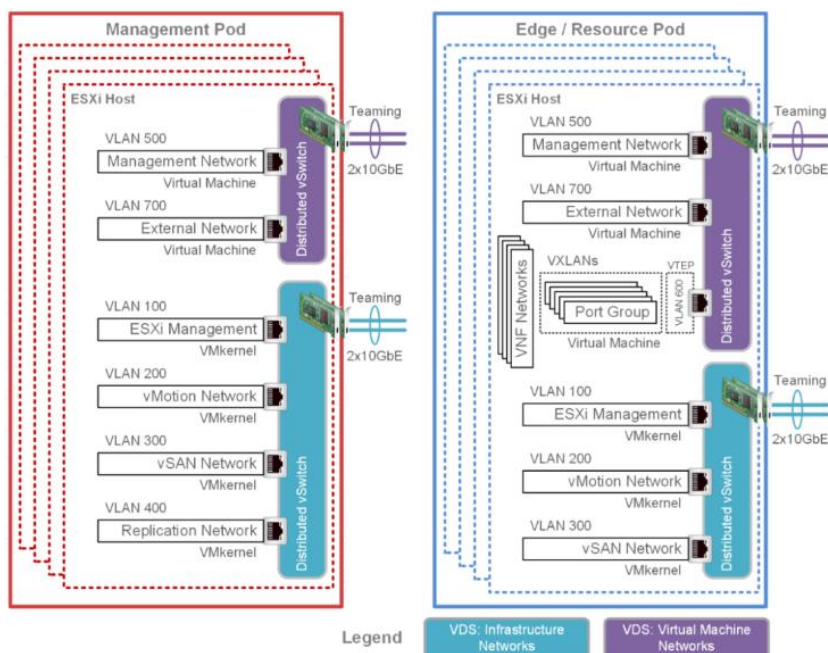
Figure 15   Suggested Management and Edge/Resource pod configurations

While the number of NICs and VDSs to use is not suggested, the port groups and the VMkernel services shown in the image below, are required. Teamed interfaces are optional for a proof of concept or test deployment however, they are mandatory in a production environment with Fault Tolerance requirements.

To create the required virtual distributed switches, perform the following:

Note: See Appendix B for information about accessing the *vSphere Networking VMware vSphere 6.5, VMware ESXI 6.5, and vCenter Server 6.5* guide.

1.   Select the data center, and create a distributed switch.

2. Select **Distributed Switch 6.5**.
3. Select the required number of uplinks.

> **Note:** The number of require uplinks depends on the number of physical NICs assigned to the VDS.
> **Note:** Do not create a default port group at this time.

4. Click **Finish**.
   After the VDS is created, management hosts can be added to it.
5. Right click VDS and select **Add and Manage Hosts**.

> **Note:** Template mode can be used if all the hosts have identical NIC layout.
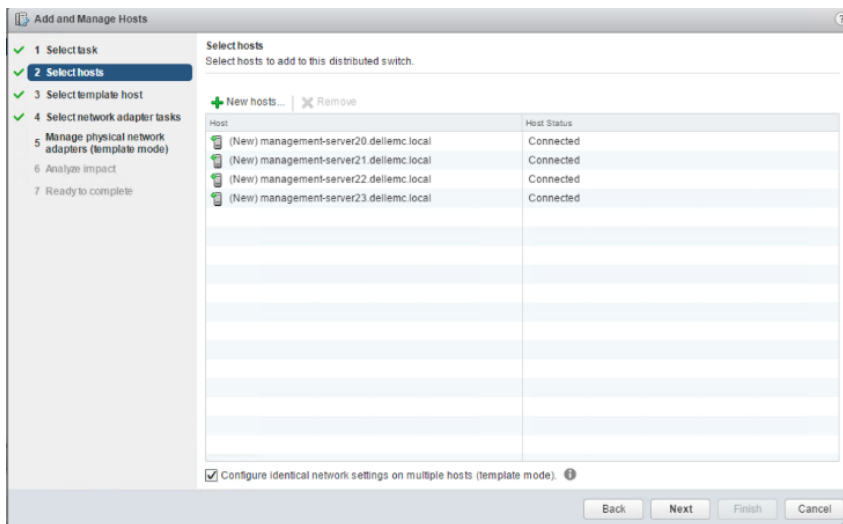
Figure 16   Host selection in template mode

6. Select **Manage physical network adapters** to associate the uplinks to this DVS, then click **Next**.
7. Click to select the uplinks to be associated with the VDS.
8. Click **Next**.
   The **Manage physical network adapters, template mode,** window displays.
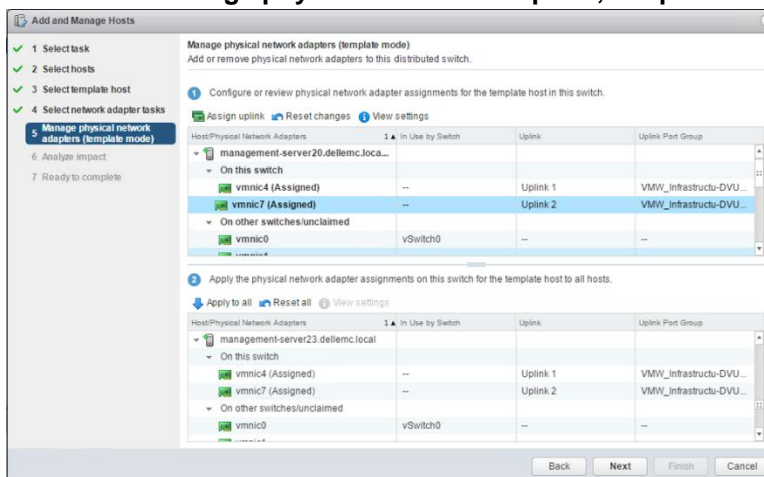
Figure 17   Configure network adapters in template mode

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Note: Select Apply to all to use the same configuration on each of the selected hosts.

9. Analyze the impact, click **Next**, and then click **Finish**.
10. For each of the networks created in this section, select the appropriate VLAN ID, and add port groups to the VDS.
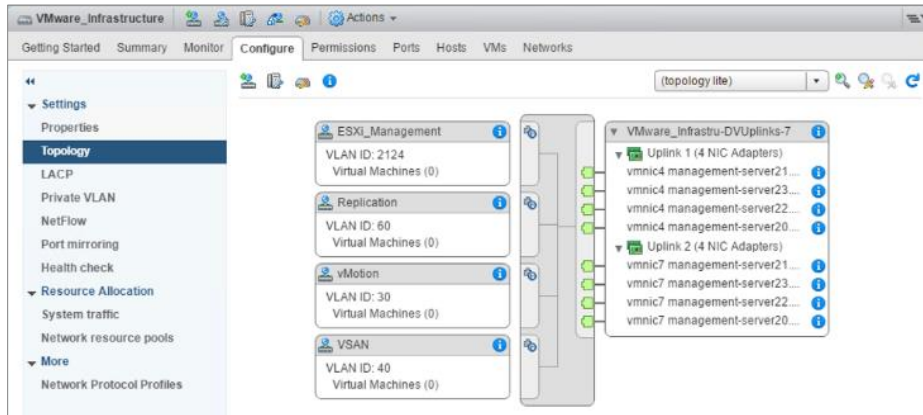
Figure 18   Port group configuration

11. Create more management VMkernel interfaces for the ESXi servers and add them to the **ESXi_Management** port group.
12. Right click the VDS and select **Manage Host Networking** as the task.
13. Select **the Manage VMkernel adapters** as the network adapter task for the ESXi management, VSAN, vMotion and the Replication options, and associate them with the appropriate distributed port group.
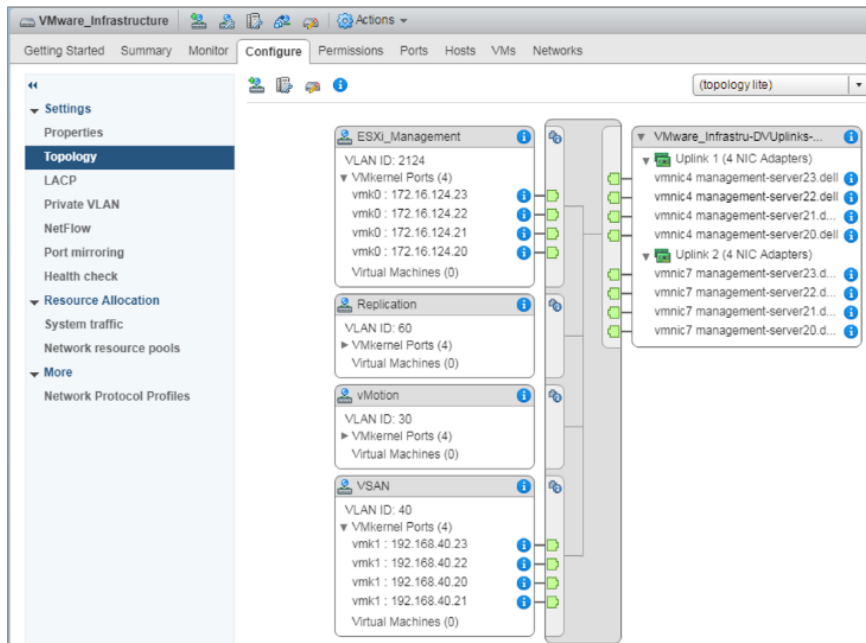
Figure 19   View of configured VDS infrastructure

14. To add other DVS or port groups, repeat the steps preceding.

7 Deploy VMware Virtual SAN clusters

Each server has a mix, or hybrid, of solid state and spinning drives for storage deployment. For VMware vSAN, the solid-state disks are required for the cache tier, while the spinning disks make up the capacity tier. Each Dell EMC server is configured for a host bus adapter (HBA) in non-RAID mode since the vSAN software handles the redundancy and storage cluster information.

There are two types of clusters: Management and Edge/Resource. To make the hardware configuration simple, the HY-4 Series vSAN Ready Nodes were selected. These modified systems accommodate more performance in the resource cluster and limit disk capacity in the management and edge clusters.

Note: For more information about the vSAN Ready Node program, see Appendix B for information about accessing the *Administering VMware Virtual SAN* document and the VMware vSAN Ready Node Configurator.

To create a vSAN cluster using Management Servers, perform the following steps:

1. Right-click a data center in the vSphere Web Client and select **New Cluster**.
2. Enter a name for the cluster in the **Name** text box.
3. Verify that the **DRS** and **vSphere HA** check boxes are not selected.
4. Locate the **vSAN** option and click to place a check in the **Turn ON** check box, then click **OK**. The cluster displays in the inventory.
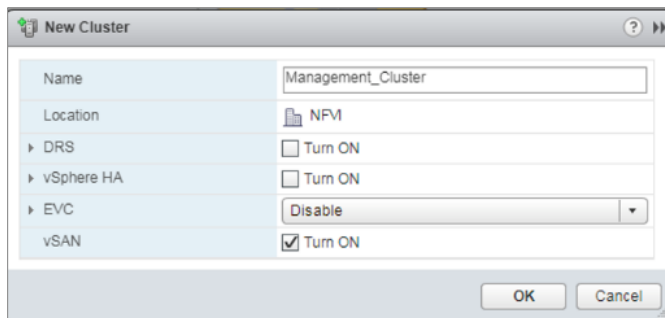
Figure 20   Management cluster creation with vSAN enabled

5. In the left-navigation, click **vSAN** to expand the section.
6. Click **General**, then the **Configure** tab.
7. Verify that the **Add disks to storage** option is set to **Manual**, and that **Networking mode** is set to **Unicast**.

Note: Unicast networking for vSAN is supported on the ESXi server version 6.5e and above.

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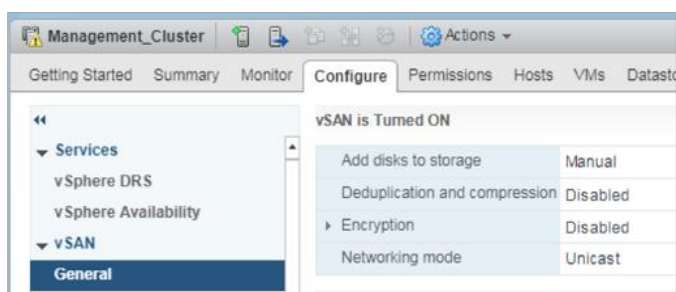
Figure 21   Default vSAN configuration

8. Right click the cluster and assign the VSAN license to the cluster.
9. Add the servers to the cluster.

Note: Currently, only the node used for vCenter installation should have disks claimed for the vSAN.
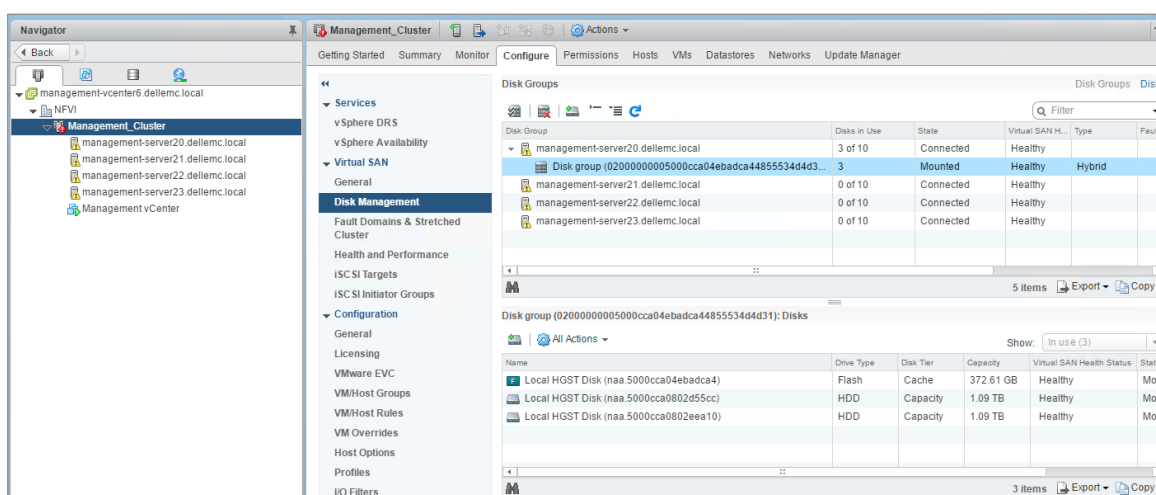
Figure 22   vSAN disk management

10. Click **Cluster**, then click **Configure**, **vSAN**, then **Disk Management** to create a disk group for each of the servers on the cluster.

Note: The following image shows the setup that supports the vSAN on the management cluster.

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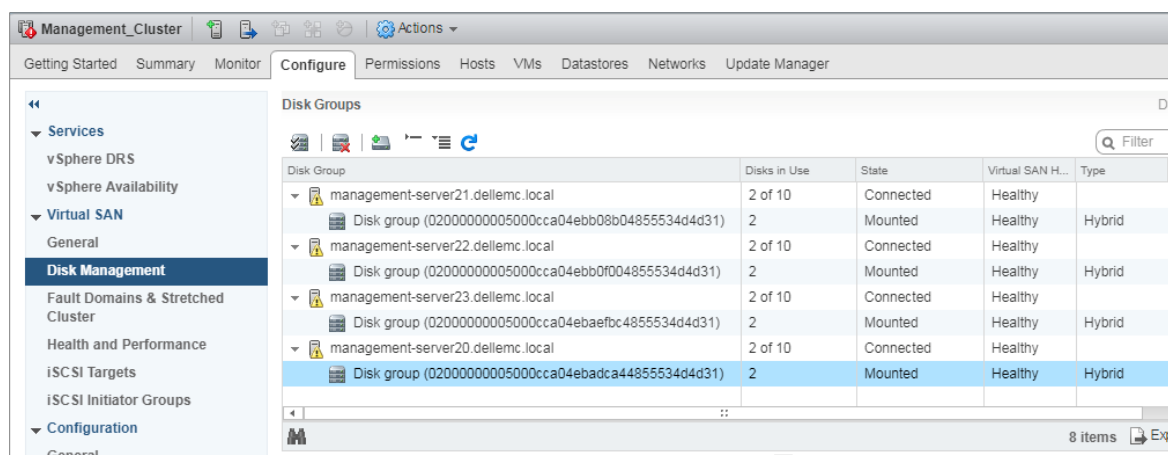
Figure 23   vSAN for Management cluster with disk groups configured

11. Click **Cluster**, **Monitor**, **vSAN**, **Health**, and then **Retest** to perform a vSAN health check.
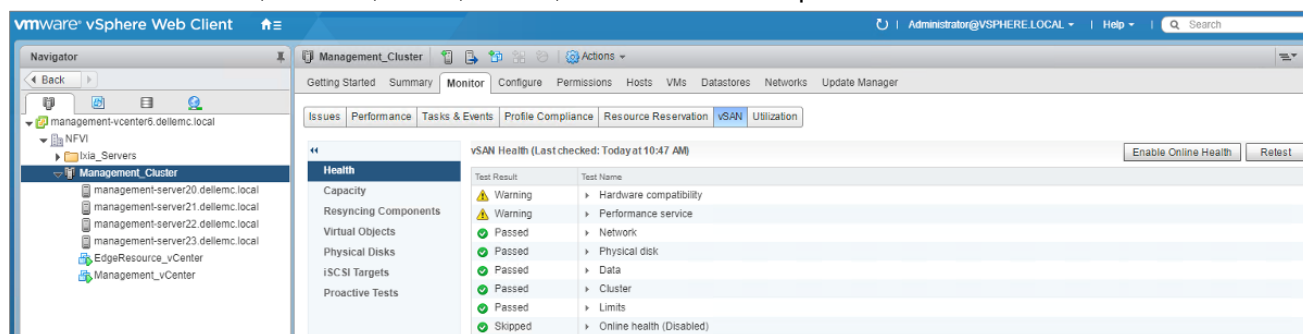
Figure 24   Performing vSAN health check

Note: Persistent storage should be used for logs, stack traces, and memory dumps. It should not be part of the vSAN datastore as a failure on the vSAN impacts accessibility to the log information. Either reserve a disk on each server for this purpose or configure the ESXi dump and the Syslog collector on each host to send logging information to vCenter.

12. After the vSAN clusters have been created and tested, use the *System logs are stored on non-persistent storage* and *Configuring syslog on ESXi* knowledge base articles to assist with updating the system logging location in each file.

13. Use the *Enabling VMware High Availability and VMware Distributed Resource Scheduler in a cluster* knowledge base article to help you enable Distributed Resource Scheduler (DRS) and High Availability (HA).

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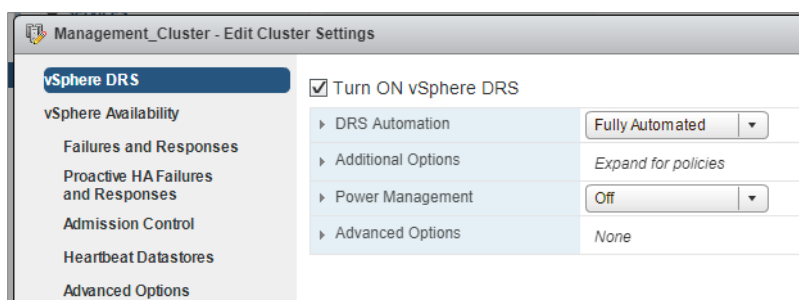
Figure 25   Enabling DRS
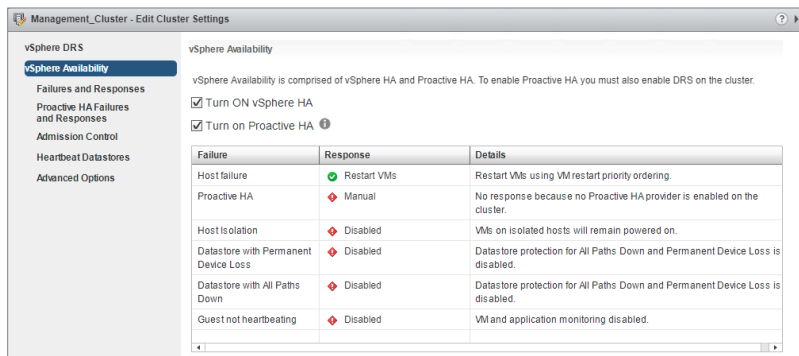
Figure 26   Enabling HA

14. Click the **Monitor** tab again to verify vSphere DRS and vSphere HA health.

8 Deploy NSX for VMware vSphere Manager

The following instructions outline the steps necessary to deploy the NSX managers for the Management and Edge/Resource cluster. See the *NSX Installation Guide* link in Appendix B for more details.

Note: vCloud NFV 2.0 uses NSX release 6.3.1.

1. Deploy the OVF templates for NSX Manager 1 (Management Cluster) and NSX Manager 2 (Edge/Resource cluster).
2. After deployed, connect each NSX manager to the corresponding VMware vCenter by logging in to the web interface of each manager.
3. Select **Manage vCenter Registration**.
4. Using the *Install and Assign NSX for vSphere License* instructions found in the *NSX Installation Guide* (see Appendix B to access the document link), apply the NSX licenses to each vCenter.
5. Log out of the **vSphere Web Client** then log back in.
   A new **Networking and Security** icon displays on the home screen.
6. Click **Home**, **Networking & Security**, and then **Installation.**
7. Select the **NSX Manager**, and then **Add a new controller**.

Note: This step can be repeated for controllers 2 and 3.
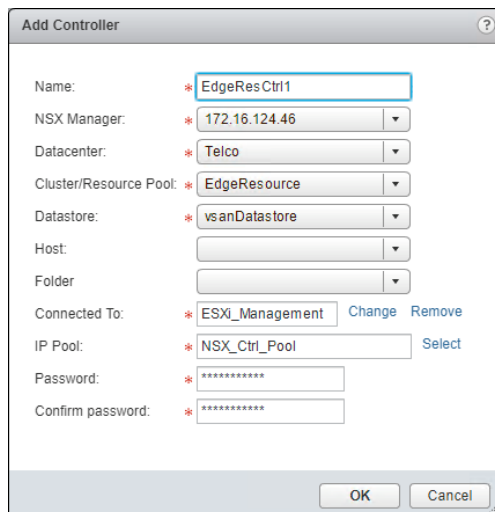
Figure 27   Adding controller to NSX Manager

8. Using the range for the controllers to connect over the management port group, make a new IP pool.

Note: The total time to deploy each controller is approximately 4 minutes.

9. Use the *Exclude Virtual Machines from Firewall protection* instructions found in the *NSX Installation Guide* (see Appendix B to access the document link) to exclude vCenter Server from any future firewall rules.
10. Following the information provided in the *Prepare Host Clusters for NSX* instructions provided in the *NSX Installation Guide* (see Appendix B to access the document link)*,* ensure that the prerequisites outlined in that section, have been addressed.

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11. After the prerequisites have been addressed, log in to the vSphere web Client.
12. Click **Home**, **Networking & Security**, **Installation**, and then click the **Host Preparation** tab.
13. Click **Actions** and then **Install**.
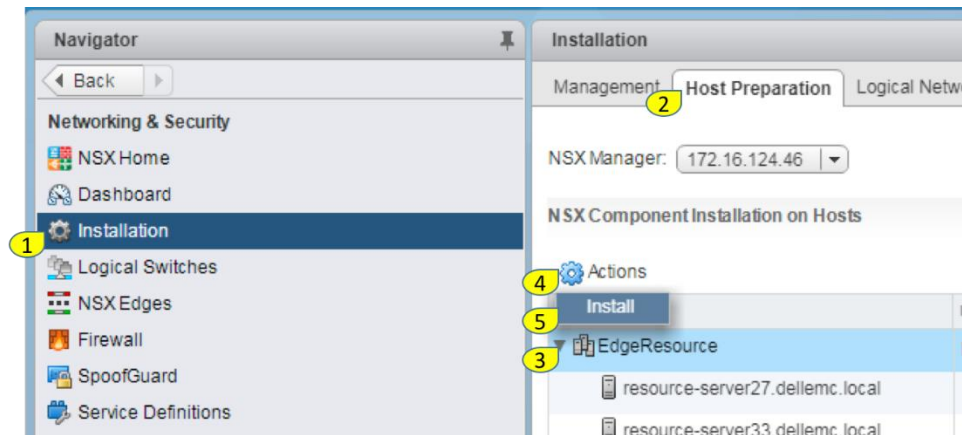
Figure 28   Installing NSX on ESXi servers

14. Repeat the same procedure for the management cluster on the management vCenter, which is managed by a separate NSX Manager.
15. For the Resource cluster, configure VXLAN by selecting **Not Configured** in the VXLAN column and edit the **VXLAN Settings**.

Note: The segment ID range is 5000 – 7999.
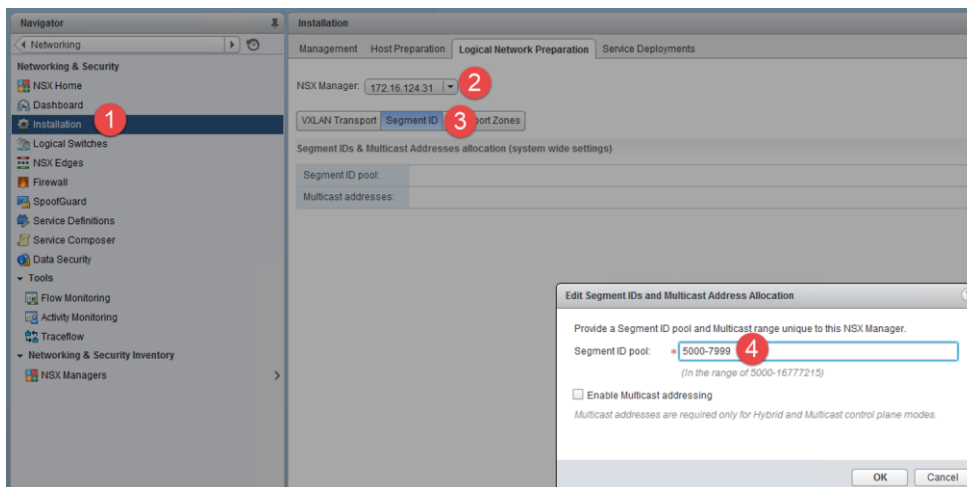
Figure 29   Addition of local networks

9 Add a transport zone

A transport zone defines the span of a logical switch/network, and defines a collection of ESXi hosts that can communicate with each other in the physical infrastructure. Communication between ESXi hosts in the underlay happens with a VXLAN tunnel end point (VTEP) IP as source and destination. It is important to understand the relationship between the VTEP, a VMware vSphere Distributed Switch (VDS), transport zone, and logical switch to understand the VMware NSX VXLAN-based overlay networking.

Each ESXi host is identified by the NSX manager with the help of a unique VTEP IP assigned during the host preparation process of the NSX installation. A VDS is a group of VTEPs and uplink ports, part of a given cluster. A VDS can be centrally configured and managed through vCenter networking. A transport zone combines compute and edge VDSs, with a logical switch typically associated with it. Broadcast domain of the L2 logical switch is limited by the scope of the transport zone. By this definition, the scope of a logical switch can extend across multiple clusters. Hosts in the management cluster never have to be part of the transport zone, as logical networks should not span across management hosts.

Figure 30   Transport zone configuration in NSX Manager

To add a transport zone, perform the following steps:

1. Log in to the vSphere Web Client.
2. From the vSphere Web Client main screen, click **Home**, **Networking & Security**, and then **Installation**.
3. Click the **Logical Network Preparation** tab.
4. Click **Transport Zones**, and then click the green **New Transport Zone** icon.
    The **New Transport Zone** screen displays.
5. In the **New Transport Zone** dialog box, enter the desired name in the **Name:** field and a description for the transport zone, in the **Description:** field.
6. Click to select one of the following control plane mode options:
    *   **Multicast** – Multicast used in the physical network are used for the VXLAN control plane
    *   **Unicast** – VXLAN control plate handled by the NSX Controller Cluster
    *   **Hybrid** – Offloads local traffic replication to a physical network
7. Click to place a check in the box next to each of the clusters to be part of the Transport Zone.
8. Click **OK**.

10 VMware vCloud Director deployment

Reference the *vCloud Director Installation and Upgrade Guide* in <u>Appendix B</u> to obtain detailed installation and upgrade instructions for the VMware vCloud Director v8.20.

To deploy the VMware vCloud Director, perform the following steps:

1. Install Microsoft® Windows Server® 2012 R2.

Note: A database server configured with 16GB of memory, 100GB storage, and four CPUs is adequate for most vCloud Director clusters.

2. Next, install Microsoft® SQL Server® 2008 R2.
3. Mount the SQL Server ISO file to a virtual machine (VM) CD or DVD.
4. Open the **Windows File Explorer** on the CD or DVD and double-click the **setup.exe** listing to begin the installation.
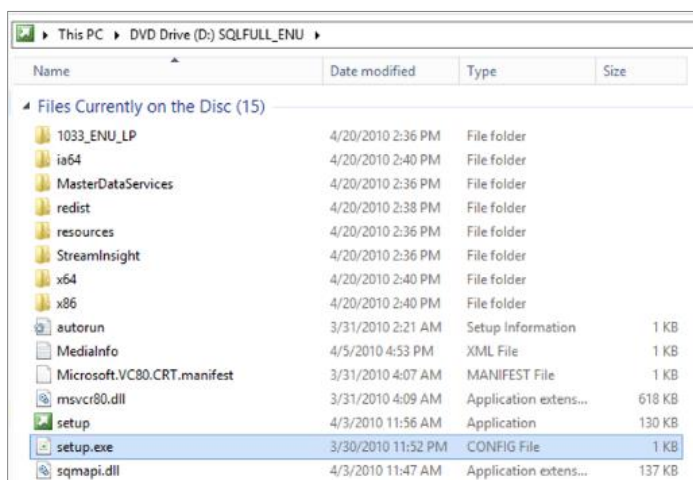
Figure 31   Mounting SQL ISO for installation

5. Once complete, click **Security** to view the **Server Properties** screen.
6. In the **Server authentication** section, verify that **SQL Server and Windows Authentication mode** is selected.
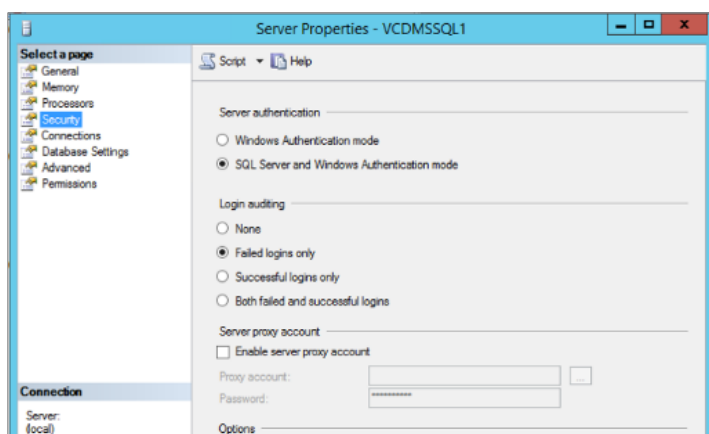
Figure 32   SQL server security settings

7. Create SQL tables for VCD and run the following commands in the Windows DOS shell:

Note: These commands should be performed by a user with administrator access.

```
sqlcmd
use master
go
drop database vcloud (if the database is been created before)
go

CREATE DATABASE vcloud
ON
( NAME = vcloud,
    FILENAME = 'C:\vcloud.mdf',  SIZE = 100MB, FILEGROWTH = 10%
)
LOG ON
( NAME = vcdb_log, FILENAME = 'C:\vcloud.ldf', SIZE = 1MB, FILEGROWTH =
10%
) ;
GO

USE [vcloud]
GO
ALTER DATABASE [vcloud] SET SINGLE_USER WITH ROLLBACK IMMEDIATE;
ALTER DATABASE [vcloud] SET ALLOW_SNAPSHOT_ISOLATION ON;
ALTER DATABASE [vcloud] SET READ_COMMITTED_SNAPSHOT ON WITH NO_WAIT;
ALTER DATABASE [vcloud] SET MULTI_USER;
GO

USE [vcloud]
GO
CREATE LOGIN [vcloud] WITH PASSWORD = 'vcloudpass', DEFAULT_DATABASE
=[vcloud],
```

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```
DEFAULT_LANGUAGE =[us_english], CHECK_POLICY=OFF
GO
CREATE USER [vcloud] for LOGIN [vcloud]
GO

USE [vcloud]
GO
sp_addrolemember [db_owner], [vcloud]
GO
```

8. Create a VM for CentOS 7.

Note: Version 5 of the *vCloud Director Hardware and Software Requirements* guide indicates 2G of memory and approximately 1G of free space for the VM. A VM with 100GB of storage, two vCPUs and 16GB of RAM is sufficient.

9. Add iconfig functions for convenience by installing the net-tools package.

```
yum install net-tools
```

10. Enter the following commands to stop and disable the NetworkManager:

```
systemctl stop NetworkManager
systemctl disable NetworkManager
```

11. Add two IP addresses to the server (one for http, and one for consoleproxy) by entering the following information to the `/etc/sysconfig/network-scripts/ifcfg-ens192` file (or to an applicable network script):

```
BOOTPROTO=none
ONBOOT=yes
DEVICE=ens192
ONBOOT=yes
IPADDR0=172.16.124.61
PREFIX0=24
IPADDR1=172.16.124.62
PREFIX1=24
GATEWAY=172.16.124.1
DNS1=8.8.8.8
DNS2=172.16.101.235
```

12. Use the following command to restart the network:

```
systemctl restart network
```

13. Enter the following command to install the VCD required Linux libraries:

```
yum install libICE libSM libX11 libXau libXdmcp libXext libXi libXt
libXtst redhat-lsb wget
```

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14. Use the following information to create a self-signed SSL certificate for http modifying the required IP and DNS information:

Note: The keytool is located at: `/opt/vmware/vcloud-director/jre/bin/keytool`

```
/opt/vmware/vcloud-director/jre/bin/keytool -keystore certificates.ks -
alias http -storepass dangerous -keypass dangerous -storetype JCEKS -
genkeypair -keyalg RSA -keysize 2048 -validity 365 -dname
"CN=localhost.localdomain, OU=Engineering, O=Dell Corp, L=Santa Clara
S=California C=US" -ext "san=dns:vcloud.dellemc.local,ip:172.16.124.61"
```

15. Use the following information to create a self-signed SSL certificate for consoleproxy modifying the required IP and DNS information:

```
/opt/vmware/vcloud-director/jre/bin/keytool -keystore certificates.ks -
alias consoleproxy -storepass dangerous -keypass dangerous -storetype
JCEKS -genkeypair -keyalg RSA -keysize 2048 -validity 365 -dname
"CN=localhost.localdomain, OU=Engineering, O=Dell Corp, L=Santa Clara
S=California C=US" -ext "san=dns:vcloud2.dellemc.local,ip:172.16.124.62"
```

16. Copy and save the certificate file to the `/opt/keystore` folder for VCD access.

Note: The `certificates.ks` file holds the certificates for both http and consoleproxy

```
[root@localhost ~]# mkdir -p /opt/keystore
[root@localhost ~]# mv certificates.ks /opt/keystore/
```

17. Start the VCD installation and select **Yes** to run the configure script.
18. Since VCD will be installed in stand-alone mode, omit the step to mount a shared transfer server storage using the following command:

```
[root@localhost ~]# ./vmware-vcloud-director-distribution-8.20.0-
5070903.bin
```

19. Run the configure script and provide the information pertaining to your system:

```
Would you like to run the script now? (y/n)? y
Welcome to the vCloud Director configuration utility.
Please enter your choice for the HTTP service IP address:
        1. 172.16.124.61
        2. 172.16.124.62
        3. 127.0.0.1
        4. [fe80:0:0:0:250:56ff:feb9:8b49%ens192]
        5. [0:0:0:0:0:0:0:1%lo]
Choice [default=1]: 1

Please enter your choice for the remote console proxy IP address:
        1. 172.16.124.62
        2. 127.0.0.1
        3. [fe80:0:0:0:250:56ff:feb9:8b49%ens192]
```

```
            4. [0:0:0:0:0:0:0:1%lo]
Choice [default=1]: 1

Please enter the path to the Java keystore containing your SSL
certificates and
private keys: /opt/keystore/certificates.ks
Please enter the password for the keystore:dangerous

Syslog host name or IP address [press Enter to skip]:
No syslog host was specified, disabling remote audit logging.


The following database types are supported:
        1. Oracle
        2. Microsoft SQL Server
Enter the database type [default=1]: 2
Enter the host (or IP address) for the database: 172.16.124.60
Enter the database port [default=1433]:
Using default value "1433" for port.

Enter the database name [default=vcloud]:
Using default value "vcloud" for database name.

Enter the database instance [Press enter to use the server's default
instance]:
Using server's default instance name.

Enter the database username: vcloud
Enter the database password: vcloudpass
Connecting to the database:
jdbc:jtds:sqlserver://172.16.124.60:1433/vcloud;socketTimeout=90;prepareSQ
L=2
......................................./Database configuration complete.

vCloud Director configuration is now complete.

Once the vCloud Director server has been started you will be able to
access the first-time setup wizard at this URL:
        https://vcd.dellemc.local

Would you like to start the vCloud Director service now? If you choose not
to start it now, you can manually start it at any time using this command:
service vmware-vcd start

Start it now? [y/n] y

Starting vmware-vcd-watchdog:                              [  OK  ]
```

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```
Starting vmware-vcd-cell                                    [  OK  ]
```

20. To disable the function that allows the VCD service to start automatically during system boot, enter the following command:

```
chkconfig --del vmware-vcd
```

21. Enter the following command to turn off the `iptable` service:

```
service iptables stop
chkconfig iptables off
```

Note: Depending on the CentOS version installed, `firewalld` should be disabled.

```
service firewalld stop
chkconfig firewalld off
```

22. After the installation is complete, allow the web server come up.
23. Open a web browser and enter the following URL:

```
https://<your CentOS ip address>
```

Note: VMware recommends the use of either Mozilla Firefox or Google Chrome as each browser program has been tested. VMware recommends that one of these two applications be selected and consistently used for VCD purposes.

24. Enter the VCD license key, then complete the setup wizard.
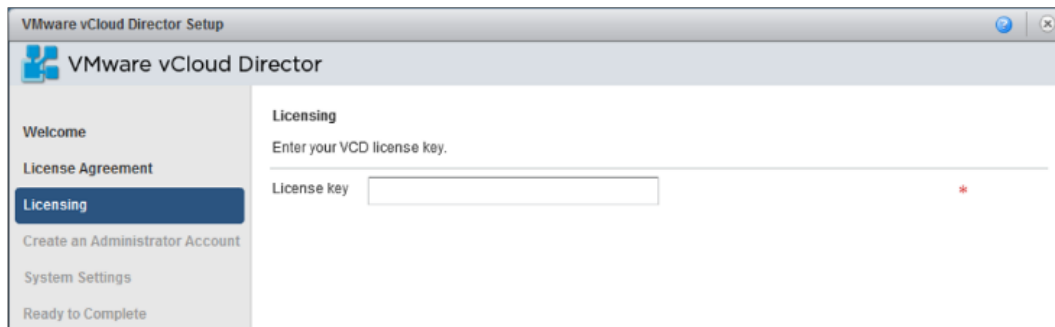
Figure 33   VMware vCloud Director License key screen

25. Log in to the VCD using the newly created credentials.
26. From the **Home** screen, click **Attach vCenter**.
    The **Attach New vCenter** window displays.
27. Enter the **Host name or IP address**, **Port Number**, **User name**, **Password**, and **vCenter name** credentials for the Edge/Resource vCenter in the fields provided.

Note: It is important to identify how NSX was registered with vCenter. From the **NSX Manager**, check the vCenter registration. If shown, use the FQDN in the window below, otherwise use the IP.

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Figure 34   Attach New vCenter to VCD

     28. Click **Next**.

        The **Connect to vShield Manger** window displays.

     29. From the **Connect to vShield Manager** screen, enter the **Hostname or IP address**, **User name**, and **Password** for the NSX Manager, in the fields provided.

Figure 35   Attach NSX to VCD

Note: Use the vCenter to verify how the NSX manager is registered and use the FQDN or IP accordingly.

Check the *vCloud Director Installation and Upgrade Guide* in for information on how to provision cloud resources on VCD and use them for automated deployments.

11 Install and Deploy VMware vRealize Operations Manager

To install and deploy the VMware vRealize Operations Manager, perform the following steps:

1. Highlight the management cluster and deploy the vRealize Operations Manager OVA template.
2. Designate the name, location, and configuration size of the environment to be used for the appliance.

Note: For a POC environment, select a small size.

3. Click to highlight the vSAN datastore for the storage location.
4. Select the management network as the destination network for **Network 1**.
5. Customize the template according to the parameters of your network.
6. Review the settings then click **Finish**.
7. Power on the virtual appliance and use a web browser to configure the newly added node.
8. From the new cluster user interface (UI), select **Express Installation** to create a new vRealize Operations Manager cluster.

Note: This node becomes the master.

9. Enter a password for the admin user, then complete the setup.
10. After a few minutes, the UI prompts for user name and password.
11. The application wizard prompts you to enter a license to complete the installation.
12. After the installation is complete, use the **vRealize Operations Manager** to add the Management and Edge/Resource vCenter.
13. Click **Administration**, **Solutions**, **VMware vSphere**, and then **Configure**.
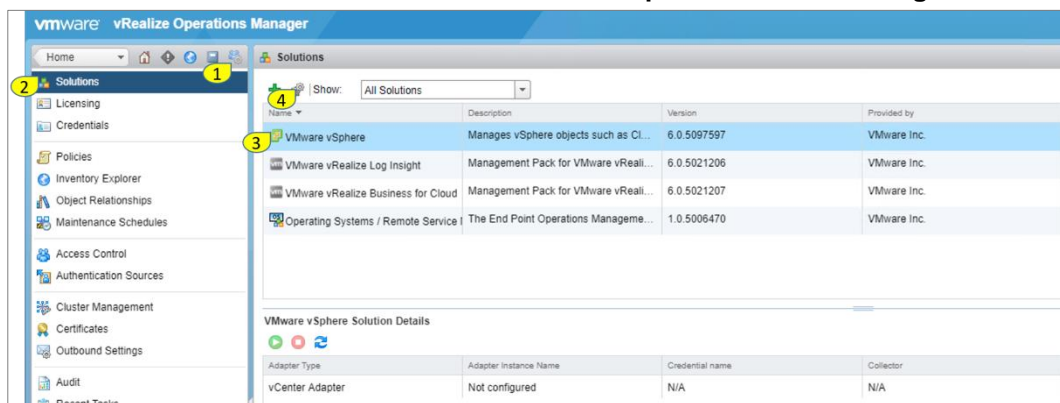
Figure 36   Addition of vCenter to vRealize Operations Manager

14. Click the **+** sign to enter the required credentials to the vCenter.

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Figure 37   vCenter SSO credentials

15. Click **Test Connection**, then click **Save Settings**.
16. Repeat the steps for the Edge/Resource vCenter.
17. The vRealize Operations Manager begins collecting information about vCenter and its linked hosts and services.
18. Click the **Home** icon to display information.

Figure 38   VMware vRealize Home screen with vCenter additions

12 Install and Deploy VMware vRealize Log Insight 4.3

The VMware vRealize Log Insight is a virtual appliance that must be deployed in the vSphere environment. Before installing vRealize Log Insight, consider the following:

- Verify that you have a copy of the vRealize Log Insight virtual appliance `.ova` file
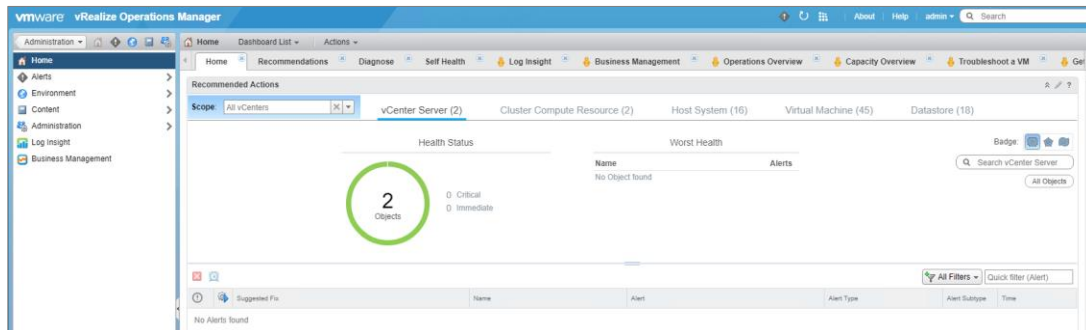- You have the necessary authorization or permission to deploy OVF templates
- Meet the minimum resource requirements to perform the installation
- You are aware of the appliance sizing recommendations

Once these prerequisites have been addressed, proceed with the installation and deployment process:

1. Highlight the Management cluster and deploy the vRealize Log Insight Manager OVA template.
2. Designate the name and location to be used for the appliance.
3. Review the details of the template then click **Next**.
   The license agreement displays.
4. Click **Accept** to approve the terms outlined in the license agreement, then select the size of the environment to be configured.

Note: For a POC environment, select a small size.

5. Click to highlight the vSAN datastore for the storage location.
6. Select the management network as the destination network for **Network 1**.
7. Customize the template according to the parameters of your network.
8. Review the settings then click **Finish** to initiate the import and deployment of the OVF package.
9. Once the template is deployed, start the virtual machine (VM).
10. Open a web browser then navigate to the following URL through the wizard:

   ```
   https://<vloginVM IP address>
   ```

   The **Welcome to VMware Log Insight** window displays.

11. Click the **Next** button to continue.
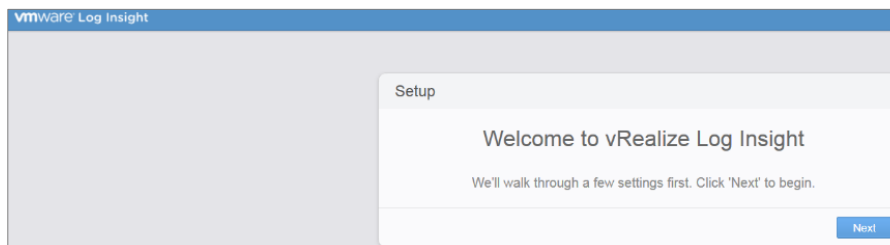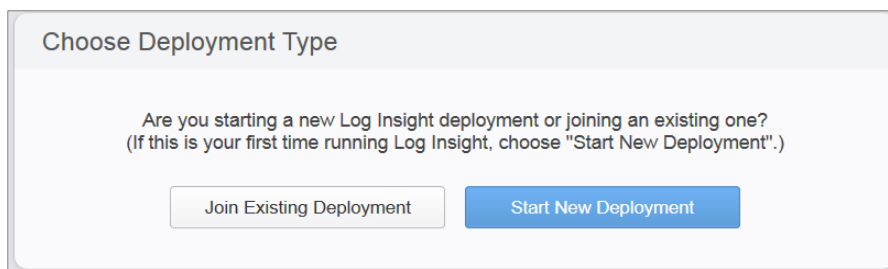
Figure 39   VMware vRealize Log Insight Welcome message

The **Choose Deployment Type** window displays.

12. Click the **Start New Deployment** button to continue.

Figure 40   VMware vRealize Log Insight Choose Deployment window

The **Admin Credentials** window displays.

13. In the **Admin Credentials** window, enter the **Email**, **New password**, and **Confirm new password** information in the required fields.

Figure 41   VMware vRealize Log Insight credentials

14. Click the **Save and Continue** button.
15. On the **vSphere Integration** screen, enter the **Hostname**, **Username**, and **Password** credentials in the required fields as shown below:

Figure 42   VMware vSphere Integration license credentials

16. Repeat the previous step to add the Edge/Resource vCenter and the vRealize Operations server.

17. Log in to the **vRealize Operations Manager** and add the vRealize Log Insight server.

Note: The deployment may take several minutes to complete.

Figure 43   Addition of VMware vRealize Log Insight to VMware vRealize Operations

18. Click the **Dashboards** tab to access the event information from vCenter.
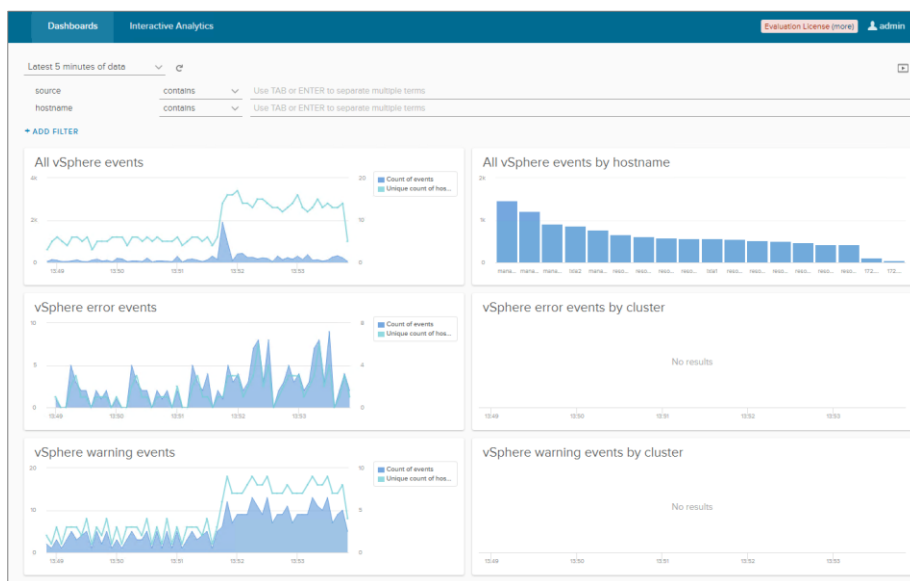
Figure 44   VMware vRealize Log Insight dashboard

13 NSX Manager data backup and restore

VMware recommends that a scheduled backup of the NSX Manager data be performed immediately following the installation of the NSX Manager.

> **Note**: For complete instructions on performing a backup of the NSX manager, see the _NSX Administration Guide_ and follow the steps listed in the Backup and Restore section on page 345.

A Switch configurations

The following sections provide the necessary configurations required for the VLAN to connect to the network:

A.1 S6010top configuration

```
Username: dellnfv
Target Name: S6010a
Password:


******
You are now connected to the target.
******

Leaf-1>
Leaf-1>Jan 23 23:30:17: %STKUNIT1-M:CP %SEC-5-LOGIN_SUCCESS: Login successful on
console

Leaf-1>
Leaf-1>en


 The SupportAssist EULA acceptance option has not been selected. SupportAssist
 can be enabled once the SupportAssist EULA has been accepted. Use the:
 'support-assist activate' command to accept EULA and enable SupportAssist.

Leaf-1#Jan 23 23:30:20: %STKUNIT1-M:CP %SEC-4-ENABLE_PASSW_NOT_CONFIGURED:
Enable password is required for authentication but not configured (by default
from console)
Jan 23 23:30:20: %STKUNIT1-M:CP %SEC-5-AUTHENTICATION_ENABLE_SUCCESS: Enable
authentication success  on console

Leaf-1#sh run
Current Configuration ...
! Version 9.10(0.1)
! Last configuration change at Thu Dec  8 09:32:32 2016 by default
!
boot system stack-unit 1 primary system: A:
boot system stack-unit 1 secondary system: B:
boot system stack-unit 1 default system: A:
!
hardware watchdog stack-unit 1
hardware watchdog stack-unit 2
hardware watchdog stack-unit 3
```

```
hardware watchdog stack-unit 4
hardware watchdog stack-unit 5
hardware watchdog stack-unit 6
!
hostname Leaf-1
!
protocol lldp
!
redundancy auto-synchronize full
!
protocol spanning-tree rstp
 no disable
 hello-time 1
 max-age 6
 forward-delay 4
 bridge-priority 0
!
vlt domain 1
 peer-link port-channel 127
 back-up destination 192.168.0.2
 primary-priority 1
 system-mac mac-address 02:11:22:33:44:01
 unit-id 0
!
stack-unit 1 quad-port-profile
2,4,6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,28,30,32
!
stack-unit 1 provision S6010-ON
!
stack-unit 1 port 11 portmode quad
!
stack-unit 1 port 12 portmode quad
!
stack-unit 1 port 13 portmode quad
!
stack-unit 1 port 14 portmode quad
!
stack-unit 1 port 15 portmode quad
!
stack-unit 1 port 16 portmode quad
!
interface fortyGigE 1/1
 description To Mgmt-1 Fo1/53
 no ip address
!
 port-channel-protocol LACP
  port-channel 126 mode active
```

```
 no shutdown
!
interface fortyGigE 1/2
 description To Leaf-2 Fo1/2
 no ip address
 no shutdown
!
interface fortyGigE 1/3
 description To Leaf-2 Fo1/3
 no ip address
 no shutdown
!
interface fortyGigE 1/4
 no ip address
 shutdown
!
interface fortyGigE 1/5
 no ip address
 shutdown
!
interface fortyGigE 1/6
 no ip address
 shutdown
!
interface fortyGigE 1/7
 no ip address
 shutdown
!
interface fortyGigE 1/8
 no ip address
 shutdown
!
interface fortyGigE 1/9
 no ip address
 shutdown
!
interface fortyGigE 1/10
 no ip address
 shutdown
!
interface TenGigabitEthernet 1/11/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
```

```
interface TenGigabitEthernet 1/11/2
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/2
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
```

```
 no shutdown
!
interface TenGigabitEthernet 1/13/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/2
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/2
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/3
 no ip address
 mtu 9216
```

```
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/2
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/2
```

```
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/4
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface fortyGigE 1/17
 no ip address
 shutdown
!
interface fortyGigE 1/18
 no ip address
 shutdown
!
interface fortyGigE 1/19
 no ip address
 shutdown
!
interface fortyGigE 1/20
 no ip address
 shutdown
!
interface fortyGigE 1/21
 no ip address
 shutdown
!
interface fortyGigE 1/22
 no ip address
 shutdown
!
interface fortyGigE 1/23
 no ip address
 shutdown
```

```
!
interface fortyGigE 1/24
 no ip address
 shutdown
!
interface fortyGigE 1/25
 no ip address
 shutdown
!
interface fortyGigE 1/26
 no ip address
 shutdown
!
interface fortyGigE 1/27
 no ip address
 shutdown
!
interface fortyGigE 1/28
 no ip address
 shutdown
!
interface fortyGigE 1/29
 no ip address
 shutdown
!
interface fortyGigE 1/30
 no ip address
 shutdown
!
interface fortyGigE 1/31
 no ip address
 shutdown
!
interface fortyGigE 1/32
 no ip address
 shutdown
!
interface ManagementEthernet 1/1
 ip address 192.168.0.1/30
 no shutdown
!
interface ManagementEthernet 2/1
 no shutdown
!
interface ManagementEthernet 3/1
 shutdown
!
```

```
interface ManagementEthernet 4/1
 shutdown
!
interface ManagementEthernet 5/1
 shutdown
!
interface ManagementEthernet 6/1
 shutdown
!
interface Port-channel 126
 description To Mgmt-1 Po126
 no ip address
 portmode hybrid
 switchport
 vlt-peer-lag port-channel 126
 no shutdown
!
interface Port-channel 127
 description vlt interconnect
 no ip address
 channel-member fortyGigE 1/2,1/3
 no shutdown
!
interface Vlan 1
!untagged Port-channel 126-127
!
interface Vlan 30
 description VMware vMotion Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 35
 description VMware vMotion Resource
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 40
 description Virtual SAN Network
 ip address 192.168.1.2/24
 mtu 9216
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
```

```
!
interface Vlan 45
 description Virtual SAN Resource Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 50
 description VMware vSphere Replication
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 60
 description VMware vSphere Replication
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2123
 description External Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2124
 description ESXi Management
 no ip address
 tagged Port-channel 126
 untagged TenGigabitEthernet 1/11/1-1/16/4
 no shutdown
!
line console 0
line vty 0
line vty 1
line vty 2
line vty 3
line vty 4
line vty 5
line vty 6
line vty 7
line vty 8
line vty 9
```

```
!
reload-type
 boot-type normal-reload
 config-scr-download enable
!
end
Leaf-1#
```

A.2   S6010bot configuration

```
Username: dellnfv
Target Name: s6010b
Password:
Invalid username, target name or password.
Username: dellnfv
Target Name: S6010b
Password:


******
You are now connected to the target.
******

Leaf-2>Jan 24 00:28:03: %STKUNIT1-M:CP %SEC-5-LOGIN_SUCCESS: Login successful on
console

Leaf-2>en


 The SupportAssist EULA acceptance option has not been selected. SupportAssist
 can be enabled once the SupportAssist EULA has been accepted. Use the:
 'support-assist activate' command to accept EULA and enable SupportAssist.

Leaf-2#Jan 24 00:28:06: %STKUNIT1-M:CP %SEC-4-ENABLE_PASSW_NOT_CONFIGURED:
Enable password is required for authentication but not configured (by default
from console)
Jan 24 00:28:06: %STKUNIT1-M:CP %SEC-5-AUTHENTICATION_ENABLE_SUCCESS: Enable
authentication success  on console

Leaf-2#sh run
Current Configuration ...
! Version 9.10(0.1)
! Last configuration change at Wed Dec  7 09:16:30 2016 by default
! Startup-config last updated at Wed Dec  7 09:16:31 2016 by default
!
boot system stack-unit 1 primary system://A
```

```
boot system stack-unit 1 secondary system://B
boot system stack-unit 1 default system://A
!
hardware watchdog stack-unit 1
hardware watchdog stack-unit 2
hardware watchdog stack-unit 3
hardware watchdog stack-unit 4
hardware watchdog stack-unit 5
hardware watchdog stack-unit 6
!
hostname Leaf-2
!
protocol lldp
!
redundancy auto-synchronize full
!
protocol spanning-tree rstp
 no disable
 hello-time 1
 max-age 6
 forward-delay 4
!
vlt domain 1
 peer-link port-channel 127
 back-up destination 192.168.0.1
 system-mac mac-address 02:11:22:33:44:01
 unit-id 1
!
stack-unit 1 quad-port-profile
2,4,6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,26,28,30,32
!
stack-unit 1 provision S6010-ON
!
stack-unit 1 port 11 portmode quad
!
stack-unit 1 port 12 portmode quad
!
stack-unit 1 port 13 portmode quad
!
stack-unit 1 port 14 portmode quad
!
stack-unit 1 port 15 portmode quad
!
stack-unit 1 port 16 portmode quad
!
interface fortyGigE 1/1
 description To Mgmt-1 Fo1/54
```

```
 no ip address
!
 port-channel-protocol LACP
  port-channel 126 mode active
 no shutdown
!
interface fortyGigE 1/2
 description To Leaf-1 Fo1/2
 no ip address
 no shutdown
!
interface fortyGigE 1/3
 description To Leaf-1 Fo1/3
 no ip address
 no shutdown
!
interface fortyGigE 1/4
 no ip address
 shutdown
!
interface fortyGigE 1/5
 no ip address
 shutdown
!
interface fortyGigE 1/6
 no ip address
 shutdown
!
interface fortyGigE 1/7
 no ip address
 shutdown
!
interface fortyGigE 1/8
 no ip address
 shutdown
!
interface fortyGigE 1/9
 no ip address
 shutdown
!
interface fortyGigE 1/10
 no ip address
 shutdown
!
interface TenGigabitEthernet 1/11/1
 no ip address
 portmode hybrid
```

```
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11/3
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11/4
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/1
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/3
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12/4
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/1
 no ip address
```

```
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13/4
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/1
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/3
 no ip address
 mtu 9216
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14/4
 no ip address
 portmode hybrid
```

```
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/1
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/3
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15/4
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/1
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/2
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/3
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16/4
 no ip address
```

```
 portmode hybrid
 switchport
 no shutdown
!
interface fortyGigE 1/17
 no ip address
 shutdown
!
interface fortyGigE 1/18
 no ip address
 shutdown
!
interface fortyGigE 1/19
 no ip address
 shutdown
!
interface fortyGigE 1/20
 no ip address
 shutdown
!
interface fortyGigE 1/21
 no ip address
 shutdown
!
interface fortyGigE 1/22
 no ip address
 shutdown
!
interface fortyGigE 1/23
 no ip address
 shutdown
!
interface fortyGigE 1/24
 no ip address
 shutdown
!
interface fortyGigE 1/25
 no ip address
 shutdown
!
interface fortyGigE 1/26
 no ip address
 shutdown
!
interface fortyGigE 1/27
 no ip address
 shutdown
```

```
!
interface fortyGigE 1/28
 no ip address
 shutdown
!
interface fortyGigE 1/29
 no ip address
 shutdown
!
interface fortyGigE 1/30
 no ip address
 shutdown
!
interface fortyGigE 1/31
 no ip address
 shutdown
!
interface fortyGigE 1/32
 no ip address
 shutdown
!
interface ManagementEthernet 1/1
 ip address 192.168.0.2/30
 no shutdown
!
interface ManagementEthernet 2/1
 no shutdown
!
interface ManagementEthernet 3/1
 no shutdown
!
interface ManagementEthernet 4/1
 no shutdown
!
interface ManagementEthernet 5/1
 no shutdown
!
interface ManagementEthernet 6/1
 no shutdown
!
interface Port-channel 126
 description To Mgmt-1 Po126
 no ip address
 portmode hybrid
 switchport
 vlt-peer-lag port-channel 126
 no shutdown
```

DELLEMC

```
!
interface Port-channel 127
 description vlt interconnect
 no ip address
 channel-member fortyGigE 1/2,1/3
 no shutdown
!
interface Vlan 1
!untagged Port-channel 126-127
!
interface Vlan 30
 description VMware vMotion Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 35
 description VMware vMotion Resource
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 40
 description Virtual SAN Network
 no ip address
 mtu 9216
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 45
 description Virtual SAN Resource Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 50
 description VMware vSphere Replication
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 60
```

```
 description VMware vSphere Replication
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2123
 description External Network
 no ip address
 tagged TenGigabitEthernet 1/11/1-1/16/4
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2124
 description ESXi Management
 no ip address
 tagged Port-channel 126
 untagged TenGigabitEthernet 1/11/1-1/16/4
 no shutdown
!
line console 0
line vty 0
line vty 1
line vty 2
line vty 3
line vty 4
line vty 5
line vty 6
line vty 7
line vty 8
line vty 9
!
reload-type
 boot-type normal-reload
 config-scr-download enable
!
end
Leaf-2#
```

DELLEMC

A.3   S4048tmgmt configuration

```
Username: dellnfv
Target Name: S4048
Password:


******
You are now connected to the target.
******

Jan 23 23:59:31: %STKUNIT1-M:CP %SEC-5-LOGIN_SUCCESS: Login successful on
console
Mgmt-1>en


 The SupportAssist EULA acceptance option has not been selected. SupportAssist
 can be enabled once the SupportAssist EULA has been accepted. Use the:
 'support-assist activate' command to accept EULA and enable SupportAssist.

Mgmt-1#Jan 23 23:59:35: %STKUNIT1-M:CP %SEC-4-ENABLE_PASSW_NOT_CONFIGURED:
Enable password is required for authentication but not configured (by default
from console)
Jan 23 23:59:35: %STKUNIT1-M:CP %SEC-5-AUTHENTICATION_ENABLE_SUCCESS: Enable
authentication success  on console

Mgmt-1#sh run
Current Configuration ...
! Version 9.10(0.1)
!
boot system stack-unit 1 primary system: A:
boot system stack-unit 1 secondary system: B:
boot system stack-unit 1 default system: A:
!
hardware watchdog stack-unit 1
hardware watchdog stack-unit 2
hardware watchdog stack-unit 3
hardware watchdog stack-unit 4
hardware watchdog stack-unit 5
hardware watchdog stack-unit 6
!
hostname Mgmt-1
!
protocol lldp
 advertise management-tlv management-address system-name
!
```

DELLEMC

```
redundancy auto-synchronize full
!
username dellnfv password 7 c631ec61d69f34f4c30557870d3323e7 privilege 15
username admin password 7 1d28e9f33f99cf5c privilege 15
!
stack-unit 1 provision S4048T-ON
!
interface TenGigabitEthernet 1/1
 description idrac-F940SD2-172.16.124.11
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/2
 description idrac-F932SD2-172.16.1ion idrac-F933SD2-172.16.124.13
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/3
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/4
 description idrac-F931SD2-172.16.124.14
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/5
 description idrac-DPHCSD2-172.16.124.15
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/6
 description idrac-DPHBSD2-172.16.124.16
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/7
 description idrac-DPHDSD2-172.16.124.17
 no ip address
 switchport
 no shutdown
```

DELLEMC

```
!
interface TenGigabitEthernet 1/8
 description idrac-DPH9SD2-172.16.124.18
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/9
 description idrac-DPW7SD2-172.16.124.19
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/10
 description idrac-DPW9SD2-172.16.124.20
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/11
 description idrac-DPW6SD2-172.16.124.21
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/12
 description idrac-DPW8SD2-172.16.124.22
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/13
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/14
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/15
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/16
```

```
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/17
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/18
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/19
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/20
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/21
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/22
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/23
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/24
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/25
 no ip address
 switchport
```

```
 no shutdown
!
interface TenGigabitEthernet 1/26
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/27
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/28
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/29
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/30
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/31
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/32
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/33
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/34
 no ip address
 switchport
 no shutdown
!
```

```
interface TenGigabitEthernet 1/35
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/36
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/37
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/38
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/39
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/40
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/41
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/42
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/43
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/44
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/45
 no ip address
 switchport
 no shutdown
!
```

```
interface TenGigabitEthernet 1/46
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/47
 no ip address
 no shutdown
!
interface TenGigabitEthernet 1/48
 description To Core Lab Infra
 no ip address
 switchport
 no shutdown
!
interface fortyGigE 1/49
 no ip address
 shutdown
!
interface fortyGigE 1/50
 no ip address
 shutdown
!
interface fortyGigE 1/51
 no ip address
 shutdown
!
interface fortyGigE 1/52
 no ip address
 shutdown
!
interface fortyGigE 1/53
 description To Leaf-1 Fo1/1
 no ip address
!
 port-channel-protocol LACP
  port-channel 126 mode active
 no shutdown
!
interface fortyGigE 1/54
 description To Leaf-2 Fo1/1
 no ip address
!
 port-channel-protocol LACP
  port-channel 126 mode active
 no shutdown
!
```

DELLEMC

```
interface ManagementEthernet 1/1
 no ip address
 shutdown
!
interface ManagementEthernet 2/1
 no shutdown
!
interface ManagementEthernet 3/1
 no shutdown
!
interface ManagementEthernet 4/1
 no shutdown
!
interface ManagementEthernet 5/1
 shutdown
!
interface ManagementEthernet 6/1
 shutdown
!
interface Port-channel 126
 description To Leaf-1 Leaf-2 Po126
 no ip address
 portmode hybrid
 switchport
 no shutdown
!
interface Vlan 1
!untagged Port-channel 126
!
interface Vlan 2
 description VLT Heartbeat
 no ip address
 untagged TenGigabitEthernet 1/45-1/46
 shutdown
!
interface Vlan 30
 description VMware vMotion Mgmt&Edge
 ip address 192.168.2.1/24
 tagged Port-channel 126
 no shutdown
!
interface Vlan 35
 description VMware vMotion Resource
 ip address 192.168.4.1/24
 tagged Port-channel 126
 no shutdown
!
```

```
interface Vlan 40
 description Virtual SAN Network
 ip address 192.168.1.1/24
 tagged Port-channel 126
 no shutdown
!
interface Vlan 45
 description Virtual SAN Resource Network
 ip address 192.168.3.1/24
 tagged Port-channel 126
 no shutdown
!
interface Vlan 50
 description Tenant Management
 ip address 192.168.5.1/24
 tagged Port-channel 126
 no shutdown
!
interface Vlan 60
 description VMware vSphere Replication
 ip address 192.168.6.1/24
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2123
 description External Network
 ip address 172.16.123.2/24
 tagged TenGigabitEthernet 1/48
 tagged Port-channel 126
 no shutdown
!
interface Vlan 2124
 description ESXi Management
 ip address 172.16.124.2/24
 tagged TenGigabitEthernet 1/48
 tagged Port-channel 126
 untagged TenGigabitEthernet 1/1-1/36
 no shutdown
!
management route 0.0.0.0/0 172.16.123.1
!
ip route 0.0.0.0/0 172.16.124.1
!
no ip telnet server enable
!
ip ssh server enable
!
```

DELLEMC

```
line console 0
line vty 0
line vty 1
line vty 2
line vty 3
line vty 4
line vty 5
line vty 6
line vty 7
line vty 8
line vty 9
!
ip dhcp server
 excluded-address 172.16.124.1 172.16.124.199
 excluded-address 172.16.124.254
!
 pool 1
  network 172.16.124.0/24
  default-router 172.16.124.1
  domain-name nfv.local
  dns-server 8.8.8.8 8.8.4.4
  lease 0 0 1
!
 pool 2
  network 192.168.1.0/24
  default-router 192.168.1.1
  domain-name vsphere.local
  dns-server 8.8.8.8 8.8.4.4
  lease 0 6 0
!
 pool 3
  network 192.168.2.0/24
  default-router 192.168.2.1
  domain-name vsphere.local
  dns-server 8.8.8.8 8.8.4.4
  lease 0 6 0
!
 pool 4
  network 192.168.3.0/24
  default-router 192.168.3.1
  domain-name vsphere.local
  dns-server 8.8.8.8 8.8.4.4
  lease 0 6 0
!
 pool 5
  network 192.168.4.0/24
  default-router 192.168.4.1
```

```
   domain-name vsphere.local
   dns-server 8.8.8.8 8.8.4.4
   lease 0 6 0
 !
 pool 6
   network 172.16.123.0/24
   default-router 172.16.123.1
   domain-name vsphere.local
   dns-server 8.8.8.8 8.8.4.4
   lease 0 0 1
 !
 pool 7
   network 192.168.5.0/24
   default-router 192.168.5.1
   domain-name vsphere.local
   dns-server 8.8.8.8 8.8.4.4
   lease 0 6 0
 !
 pool 8
   network 192.168.6.0/24
   default-router 192.168.6.1
   domain-name vsphere.local
   dns-server 8.8.8.8 8.8.4.4
   lease 0 6 0
 no disable
 !
reload-type
 boot-type normal-reload
 config-scr-download enable
 !
end
Mgmt-1#
```

DELLEMC

B   Documentation resources

The following documents that have been referenced throughout this document, are available to reference or download:

VMware vCloud NFV 2.0 Release Notes

VMware vCloud NFV 2.0 Reference Architecture

Dell EMC Open Networking – S6010-ON

Dell EMC Open Networking – S4048T-ON

vSphere Installation and Setup for VMware vSphere 6.5, VMware ESXi 6.5, and vCenter Server 6.5

vSphere Networking VMware vSphere 6.5, VMware ESXI 6.5, and vCenter Server 6.5

Administering VMware Virtual SAN

VMware vSAN Ready Node Configurator

VMware NSX for vSphere 6.3.1 Release Notes

NSX Installation Guide

vCloud Director 8.20 for Service Providers Release Notes

vCloud Director Installation and Upgrade Guide

VMware vCloud Director Documentation Center

VMware vRealize Operations Manager 6.5 Information Center

vRealize Log Insight Product Page

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