

Create your VMware laboratory for vRealize Suite test

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*For my second half
without you
I would not find the power
to conquer the world*

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Introduction

This document could help you to build your own laboratory or provide you basic technical knowledge for some of VMware technology. How to simple install and configure few tool for learning and fun. At the end of this guide you will have prepared full laboratory based on VMware technology to provide cloud solutions and other tools from vRealize Suite and NSX.

NTP

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. In operation since before 1985, NTP is one of the oldest Internet protocols in current use. NTP was designed by David L. Mills of the University of Delaware.

NTP is intended to synchronize all participating computers to within a few milliseconds of Coordinated Universal Time (UTC). It uses the intersection algorithm, a modified version of Marzullo's algorithm, to select accurate time servers and is designed to mitigate the effects of variable network latency. NTP can usually maintain time to within tens of milliseconds over the public Internet, and can achieve better than one millisecond accuracy in local area networks under ideal conditions. Asymmetric routes and network congestion can cause errors of 100 ms or more.

The protocol is usually described in terms of a client-server model, but can as easily be used in peer-to-peer relationships where both peers consider the other to be a potential time source. Implementations send and receive timestamps using the User Datagram Protocol (UDP) on port number 123. They can also use broadcasting or multicasting, where clients passively listen to time updates after an initial round-trip calibrating exchange. NTP supplies a warning of any impending leap second adjustment, but no information about local time zones or daylight saving time is transmitted. (wikipedia)

In Our Lab we will be using NTP server on CentOS server

Prerequisites

Username: root

Password: P@ssw0rd

Build

Firstly we need to deploy Virtual Machine which will be used to provide Time Servers for all servers in our LAB environment.

Our VM has

OS	CentOs 6.7 minimal	
RAM	2GB	
CPU	1vCPU	
HDD	16GB thin	
Network	1 NIC	10.10.10.140

We need to install our Linux system in default configuration. Before we will continue we need to create clone of that VM for another solution. Before cloning we need install VMware Tools.

VMware Tools

Mount VMware tools in your CD-ROM

Login to your CentOS

Create two folder one in tmp and second in mnt directory

```
mkdir /tmp/tools
```

```
mkdir /mnt/cdrom
```

Mount your CD-ROM to mnt directory and copy tools to tmp.

```
mount /dev/cdrom /mnt/cdrom/
```

```
cp /mnt/cdrom/VMwareTools-10.0.6-3560309.tar.gz /tmp/tools/
```

```
unpack tar xvf /tmp/tools/VMwareTools-10.0.6-3560309.tar.gz
```

and install tools in default configuration

```
./vmware-install.pl --default
```

NTP Configuration

After VMware Tools installed and clone VM we will start to configure NTP

Install ntp via yum

```
yum install ntp
```

Configure file /etc/ntp.conf and add your Time Servers

```
# Hosts on local network are less restricted.
restrict 10.10.10.0 mask 255.255.255.0 nomodify notrap

# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
server 0.pl.pool.ntp.org iburst
server 1.pl.pool.ntp.org iburst
server 2.pl.pool.ntp.org iburst
server 3.pl.pool.ntp.org iburst
```

Restart NTP and turn off iptables (never do this in prod environment)

After Configuration create a Snapshot to save clear VM that you can back after something will be broken.

Active Directory

Active Directory (AD) is a directory service that Microsoft developed for Windows domain networks. It is included in most Windows Server operating systems as a set of processes and services. Initially, Active Directory was only in charge of centralized domain management. Starting with Windows Server 2008, however, Active Directory became an umbrella title for a broad range of directory-based identity-related services.

A server running Active Directory Domain Services (AD DS) is called a domain controller. It authenticates and authorizes all users and computers in a Windows domain type network—assigning and enforcing security policies for all computers and installing or updating software. For example, when a user logs into a computer that is part of a Windows domain, Active Directory checks the submitted password and determines whether the user is a system administrator or normal user. Also, it allows management and storage of information, provides authentication and authorization mechanisms, and establishes a framework to deploy other related services: Certificate Services, Federated Services, Lightweight Directory Services and Rights Management Services (Wikipedia)

Prerequisites

Username: Administrator@vcap.domain.local

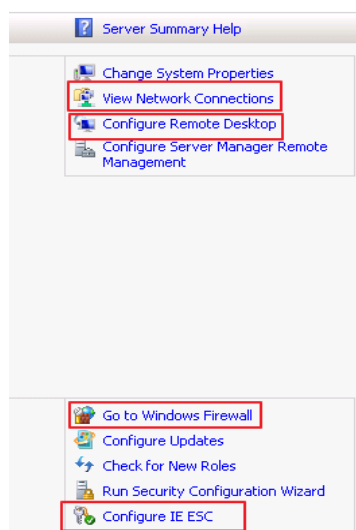
Password: P@ssw0rd

Build

Our VM has

OS	Windows Server 2008R2	
RAM	4GB	
CPU	1vCPU	
HDD	40GB thin	
Network	1 NIC	10.10.10.141

On this VM we need to install Windows Server 2008R2. After installation, we need to turn off firewall (only in lab). Set static IP and turn off IE ESC. Allow access via Remote Desktop and clone this VM for template



Install Active Directory

Click on menu start and run *dcpromo* tool for creating forest and domain. Run it in advanced mode.



On the next information screen press NEXT and after that you will have page with creating new domain in new forest.



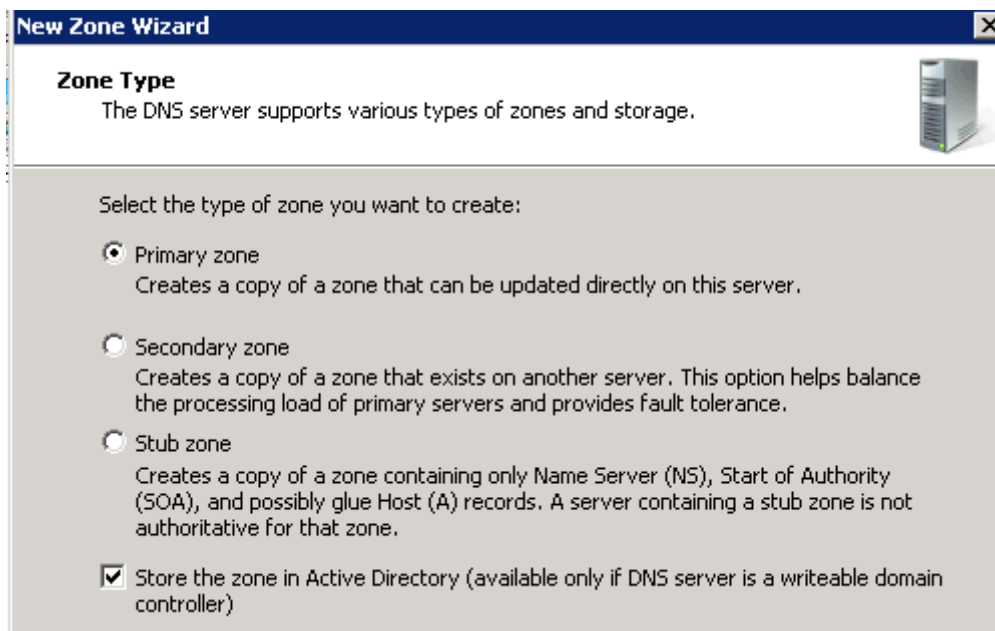
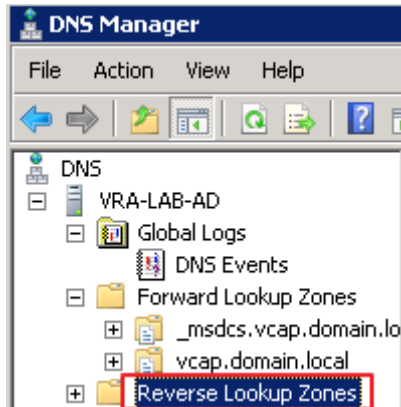
Specify the FQDN for domain. In our LAB we will use ***vcap.domain.local***


On the rest screen leave default values. Only on page with password setting you need to set your own password. In this LAB we will using **P@ssw0rd.**


Reboot your VM and now you can log-in via your Domain Admin.

Configure DNS

On Active directory Server create reverse lookup zone for your domain which is needed for the rest configuration.




New Zone Wizard 


Active Directory Zone Replication Scope 

You can select how you want DNS data replicated throughout your network.

Select how you want zone data replicated:

- To all DNS servers running on domain controllers in this forest: vcap.domain.local
- To all DNS servers running on domain controllers in this domain: vcap.domain.local
- To all domain controllers in this domain (for Windows 2000 compatibility): vcap.domain.local
- To all domain controllers specified in the scope of this directory partition:

New Zone Wizard 

Reverse Lookup Zone Name 


A reverse lookup zone translates IP addresses into DNS names.


To identify the reverse lookup zone, type the network ID or the name of the zone.

- Network ID:

The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order.

If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create zone 0.10.in-addr.arpa.
- Reverse lookup zone name:

New Zone Wizard 

Reverse Lookup Zone Name 

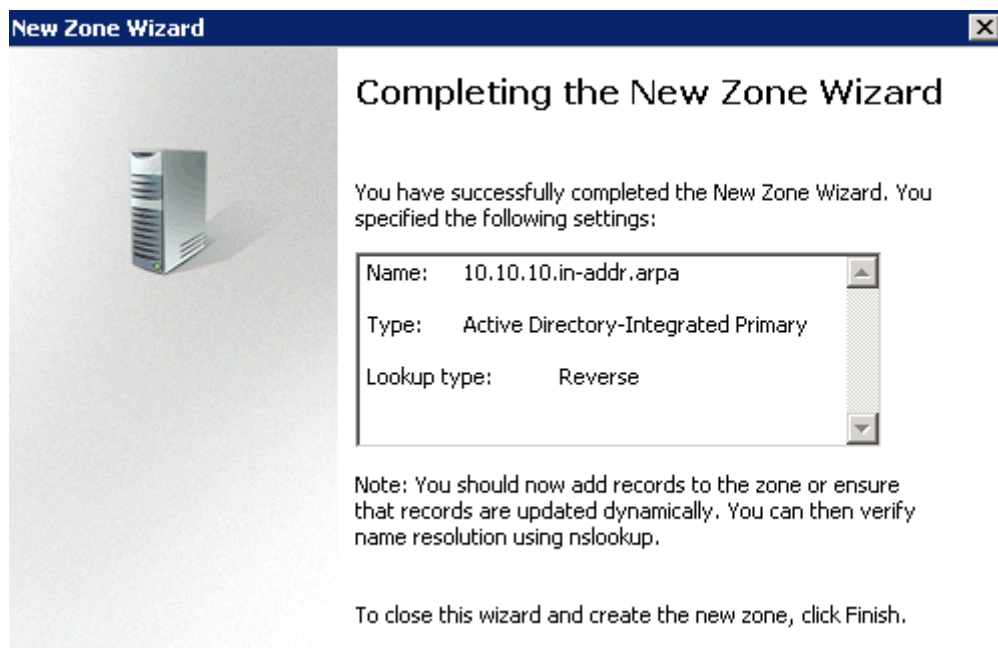
A reverse lookup zone translates IP addresses into DNS names.

To identify the reverse lookup zone, type the network ID or the name of the zone.

- Network ID:

The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order.

If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create zone 0.10.in-addr.arpa.
- Reverse lookup zone name:



After domain configuration you can create another VM with windows server for SQL.

Microsoft SQL

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network (including the Internet). (wikipedia)

Prerequisites

Username: Administrator@vcap.domain.local

Password: P@ssw0rd

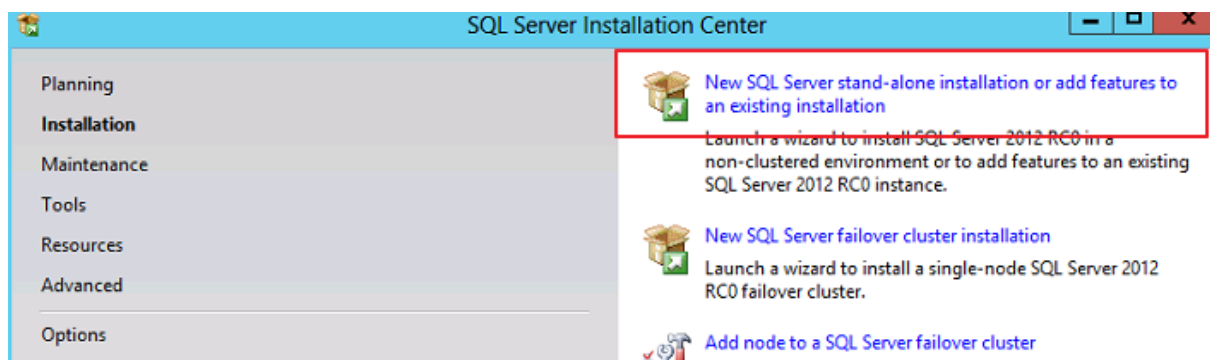
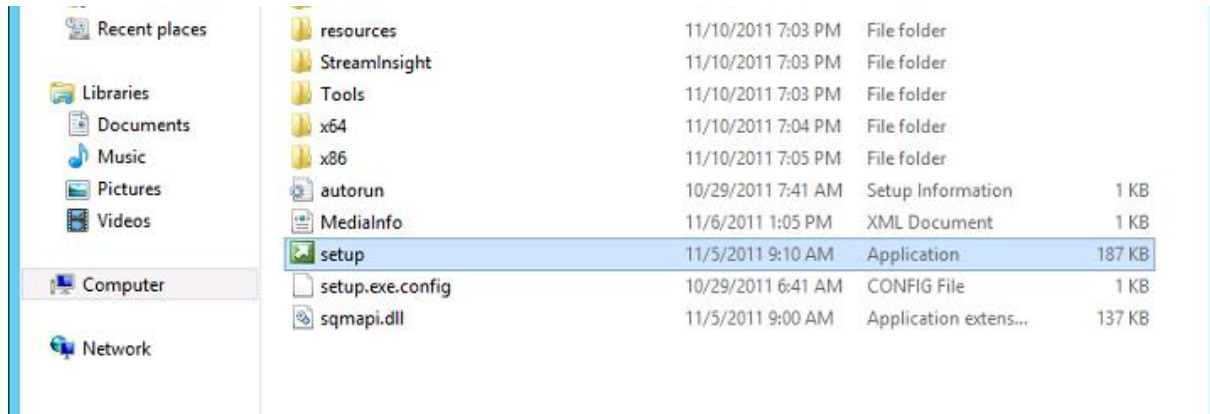
Build

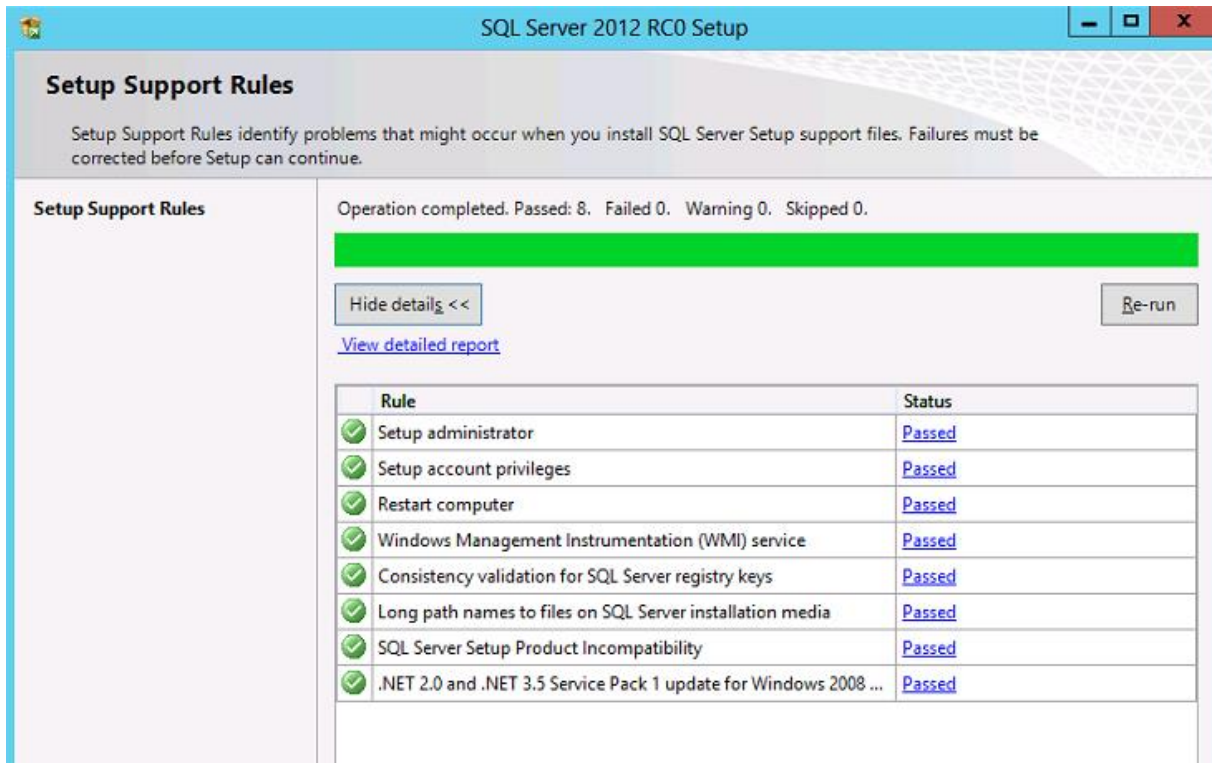
Our VM has

OS	Windows Server 2008R2	
RAM	4GB	
CPU	1vCPU	
HDD	40GB thin	
Network	1 NIC	10.10.10.151

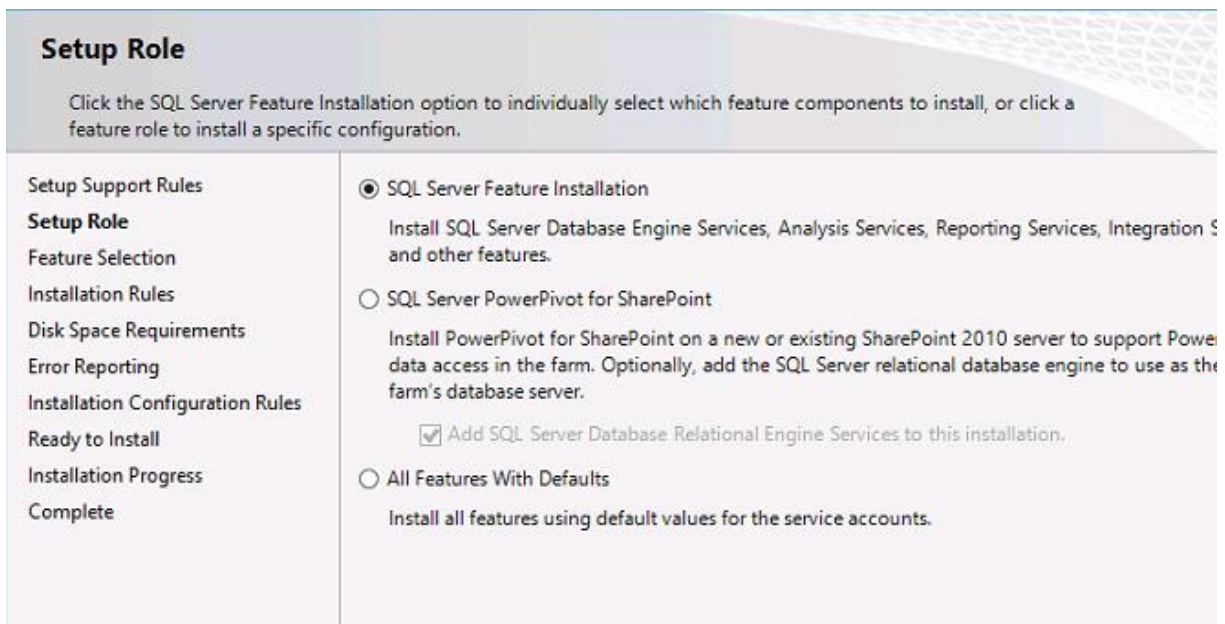
The SQL Server is clone of our previous Windows Server 2008R2 which we create before install Active Directory.

For our LAB environment we will be using Microsoft SQL Server 2012.

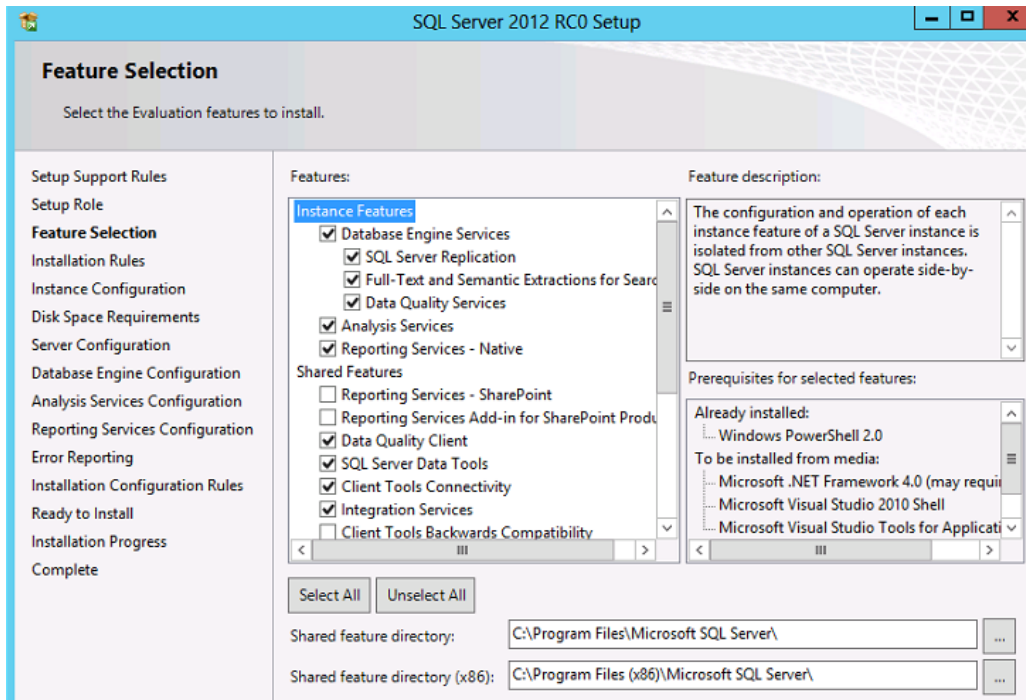




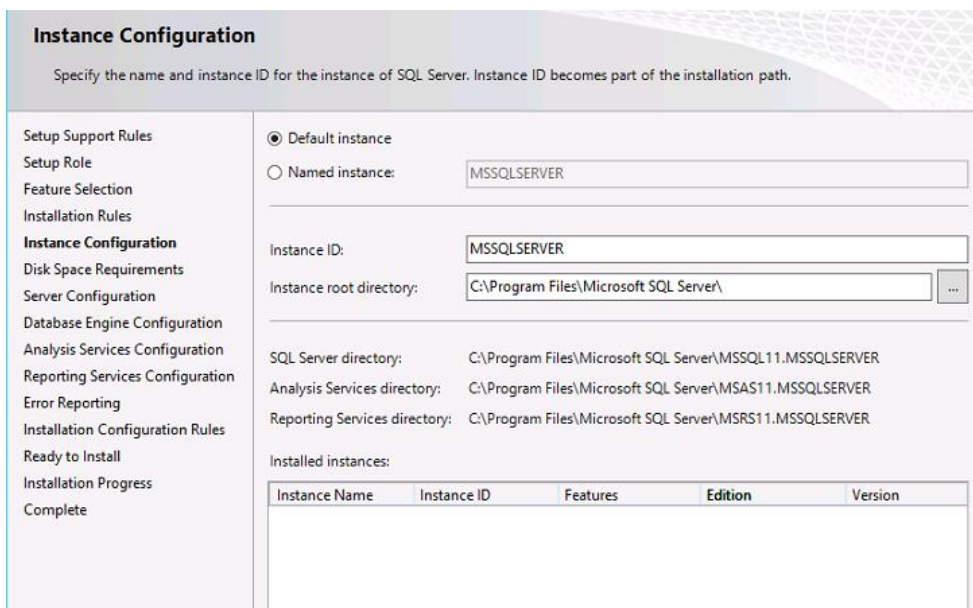
After some prereq



On the Feature Selection page, please select the features you would like to install. For Lab purpose we need Database Engine service and Management Studio.

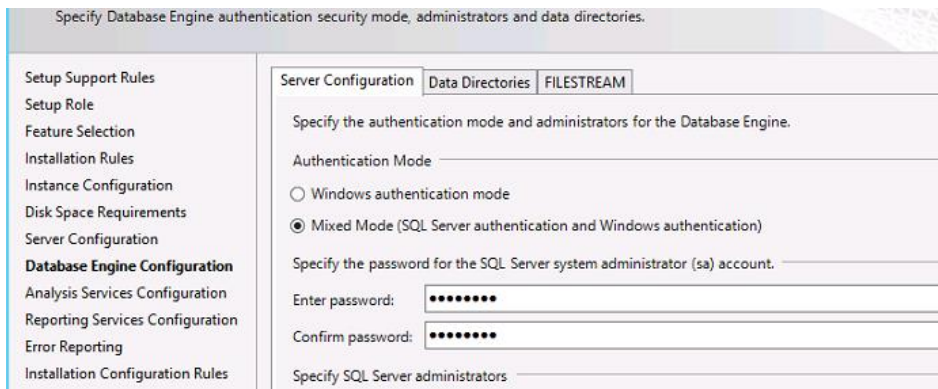


On the Instance Configuration page, select a default or named instance for your installation, and select the directory where you want to install the features you have chosen

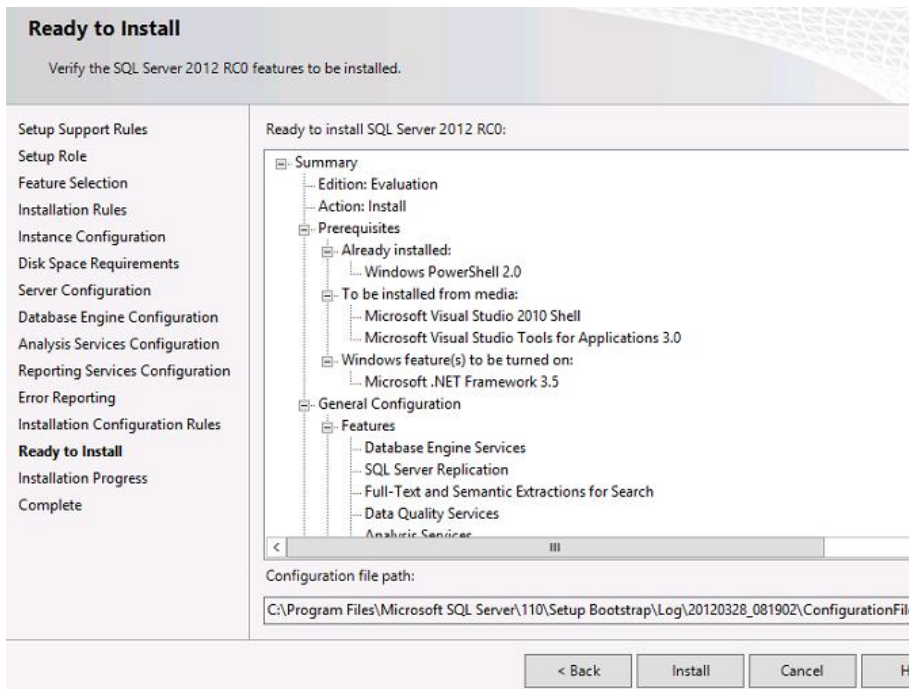


On the Database Engine Configuration page, choose the authentication mode to use for your SQL Server installation.

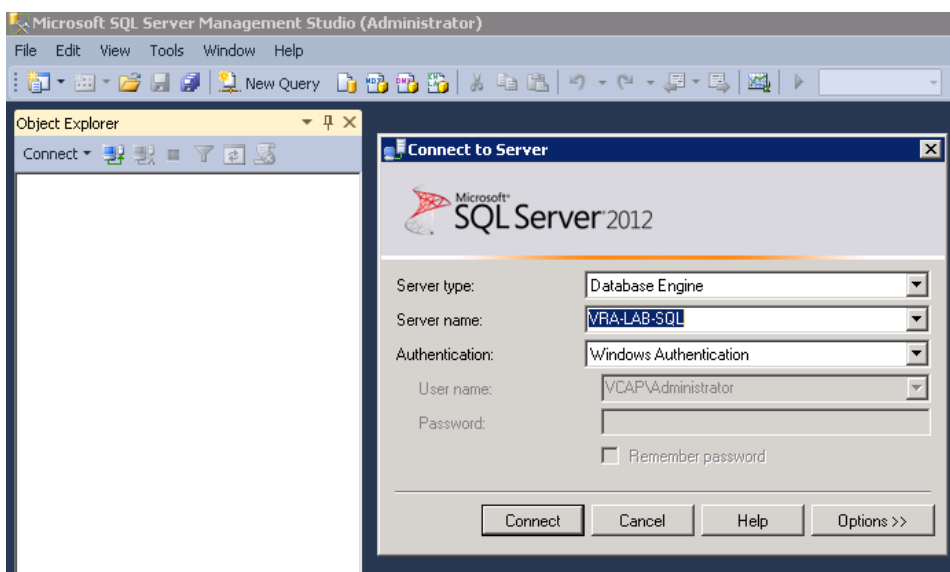
Enter and confirm the password for the (sa) login when you choose Mixed Mode Authentication. Add current user for SQL Server administrators which should be domain admin.



For the rest screen leave default values, and on confirmation screen press install



After couple of minutes we will have your SQL Server Installed and can confirm that via Management Studio



ESXi

Another element in our lab will be the infrastructure of ESXi servers. VMware ESXi (formerly ESX) is an enterprise-class, type-1 hypervisor developed by VMware for deploying and serving virtual computers. As a type-1 hypervisor, ESXi is not a software application that one installs in an operating system (OS); instead, it includes and integrates vital OS components, such as a kernel.

The name ESX originated as an abbreviation of Elastic Sky X. (wikipedia)

Prerequisites

Username: root

Password: P@ssw0rd

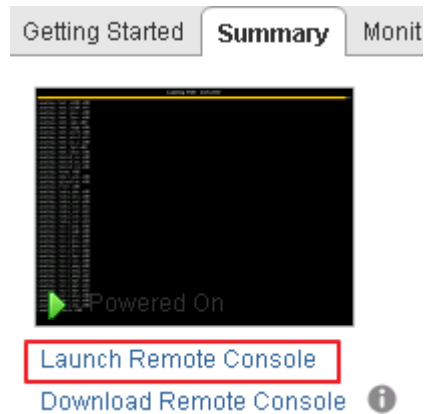
Build

We need in our purpose 4-6 ESXi. In this lab we will install 4

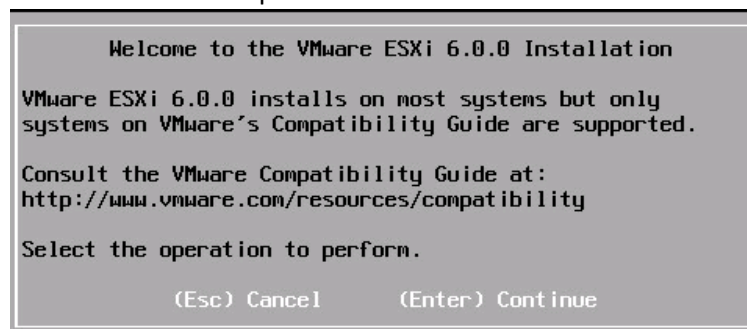
OS	ESXi 6.5	
RAM	16GB	
CPU	2vCPU	
HDD	10GB,40GB,100GB,100GB thin	
Network	8 NIC	10.10.10.144 10.10.10.145 10.10.10.146 10.10.10.147

In this lab all ESXi hosts are virtual. I've created 4 VM and made simple install of ESXi OS.

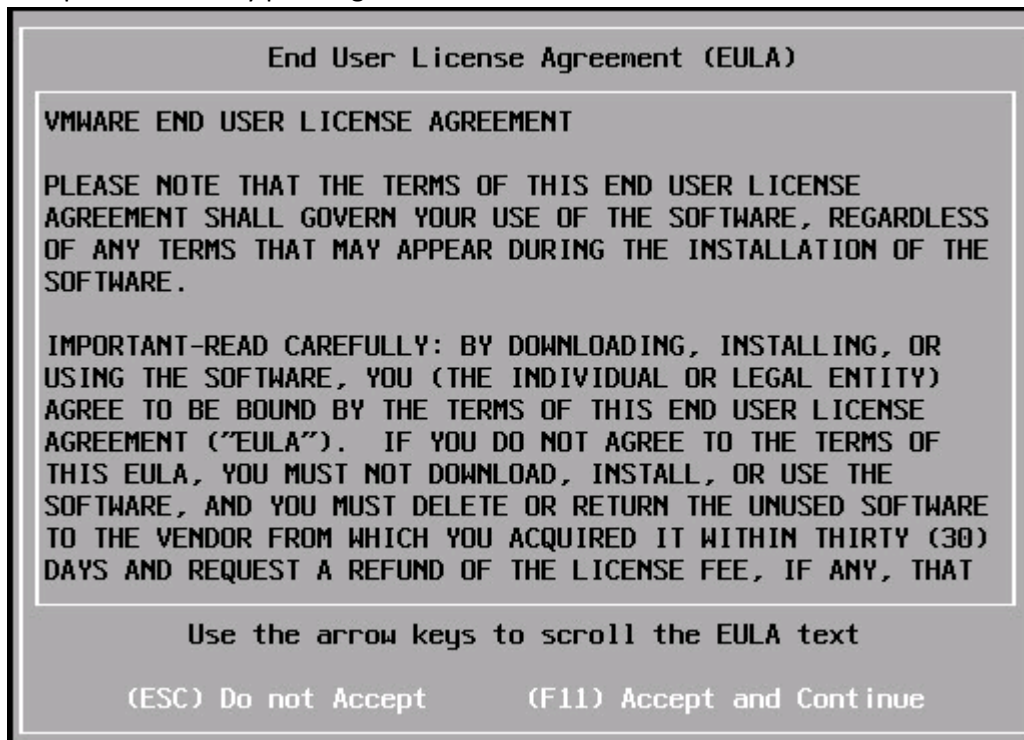
Launch Remote Console



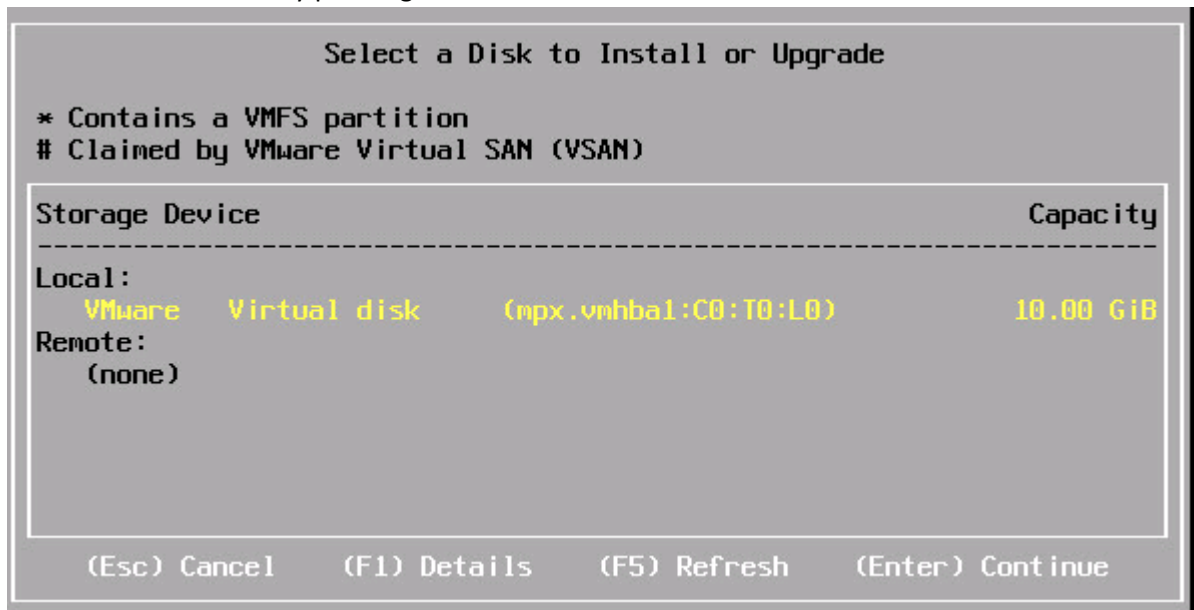
On Welcome Screen press **Enter**



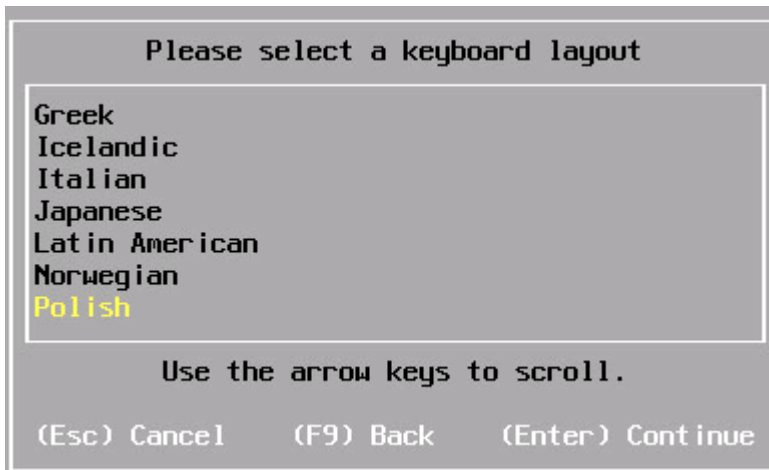
Accept the license by pressing **F11**



Choose local hard disk by pressing **Enter**



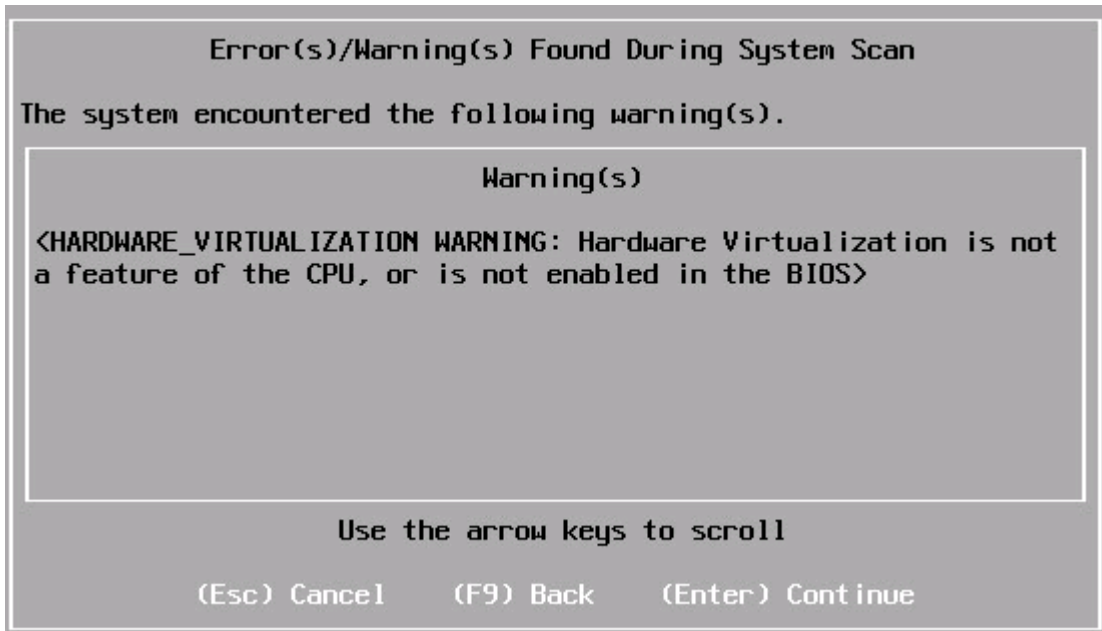
Change Keyboard Layout



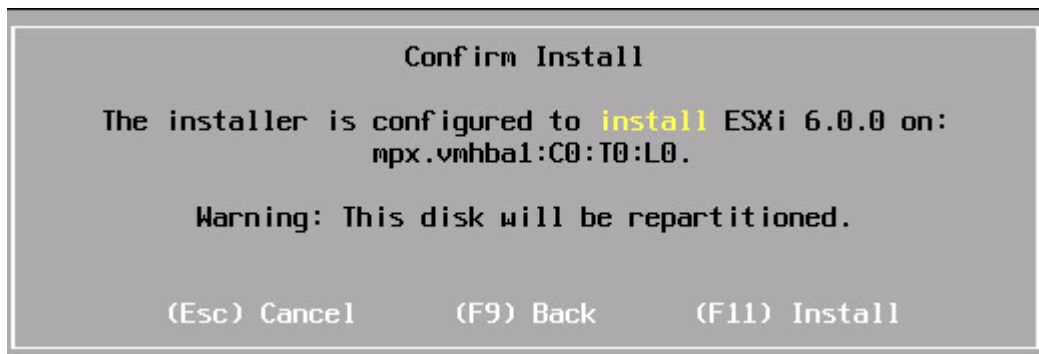
Set passwod (P@sswOrd)



Check errors and warning and press **Enter**



Press **F11** to install ESXi on local disk



Press Enter to Reboot your Host

vCenter

Another element in our lab will be the infrastructure of ESXi servers. VMware vCenter Server provides a centralized platform for managing your VMware vSphere environments, so you can automate and deliver a virtual infrastructure with confidence. (vmware.com)

Prerequisites

Username: root

Password: P@ssw0rd

Username: Administrator@vsphere.local

Password: P@ssw0rd

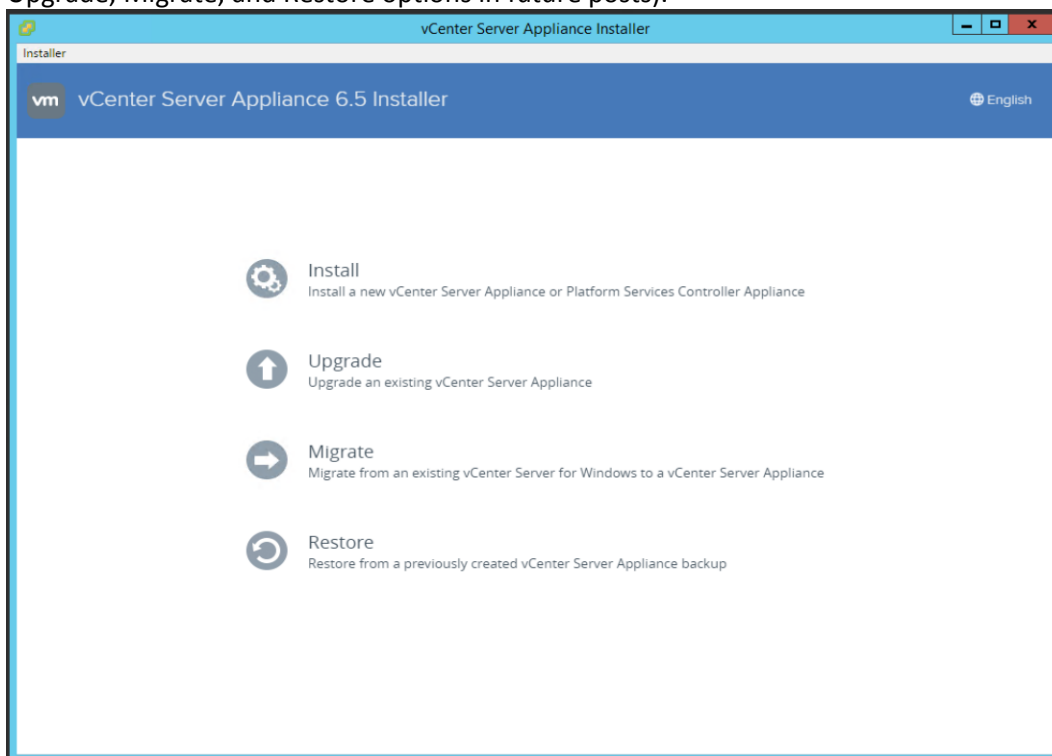
Build

We will be using vCenter appliance

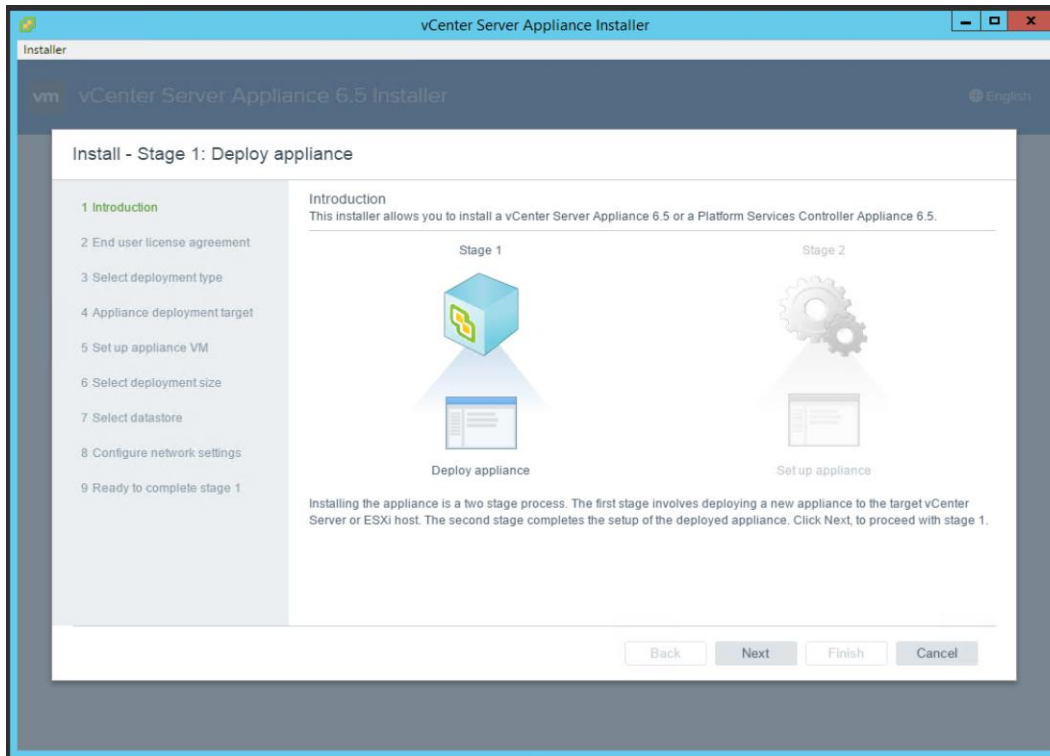
OS	vCenter Appliance 6.5	
RAM	10GB	
CPU	2vCPU	
HDD		
Network	1 NIC	10.10.10.142

Deployment

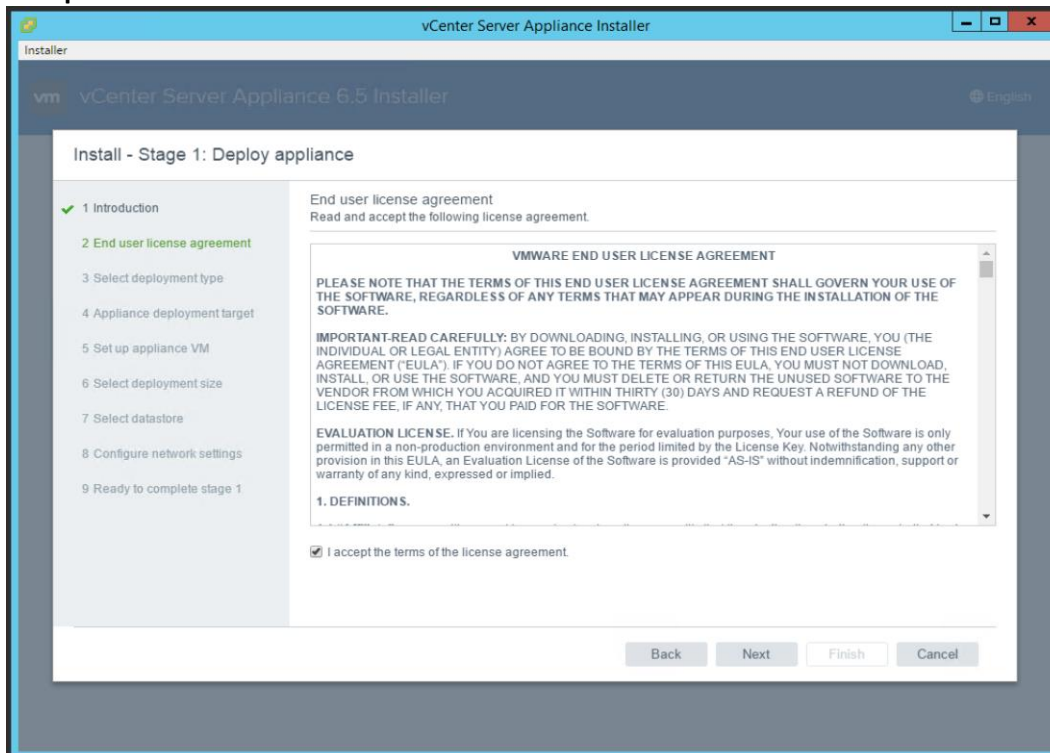
Log on to a domain-joined server, mount the VCSA installation media, and click **Install** (more on the Upgrade, Migrate, and Restore options in future posts).



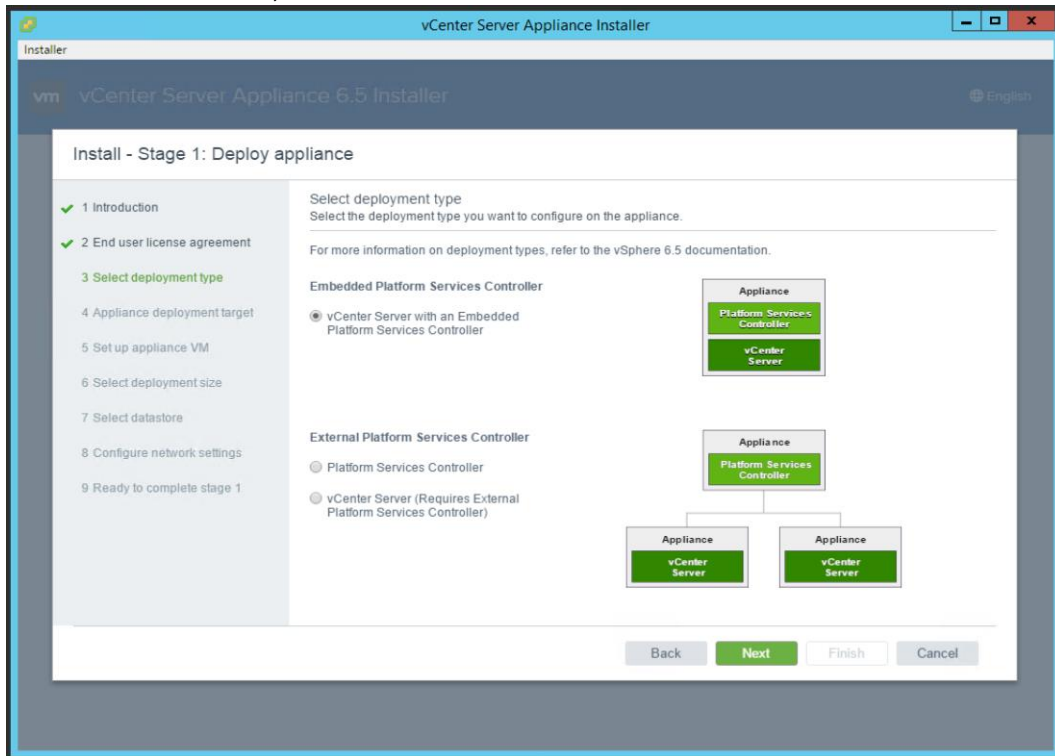
Click **Next** at the Introduction screen.



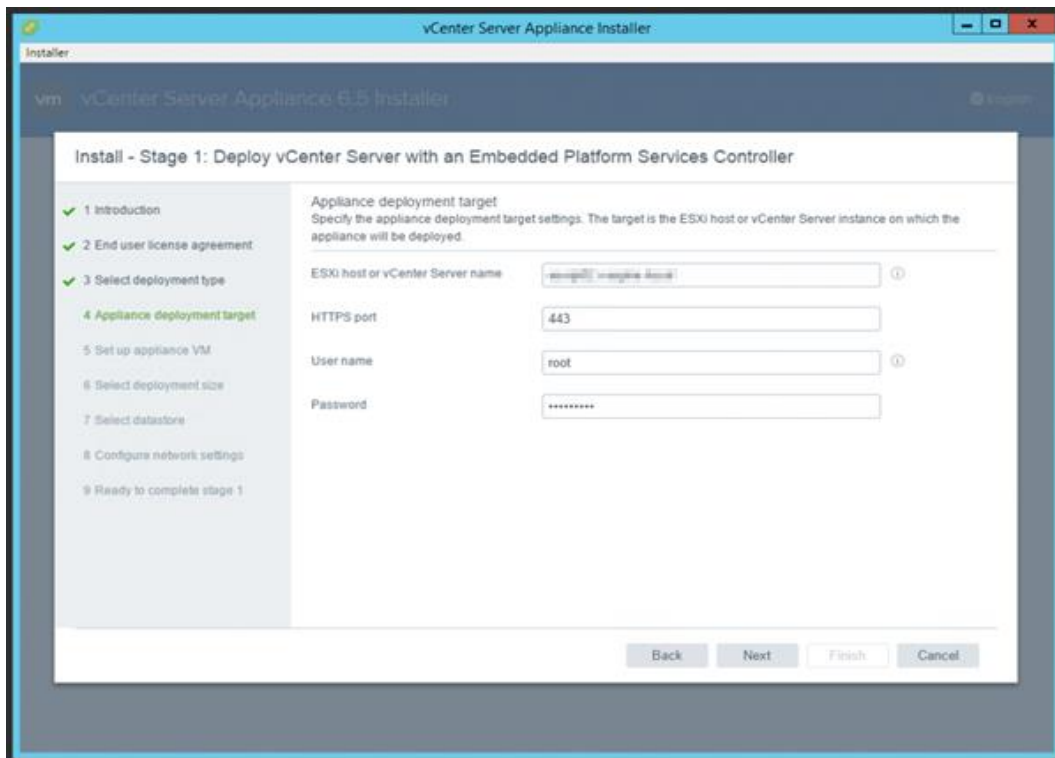
Accept the **EULA** and click **Next**.



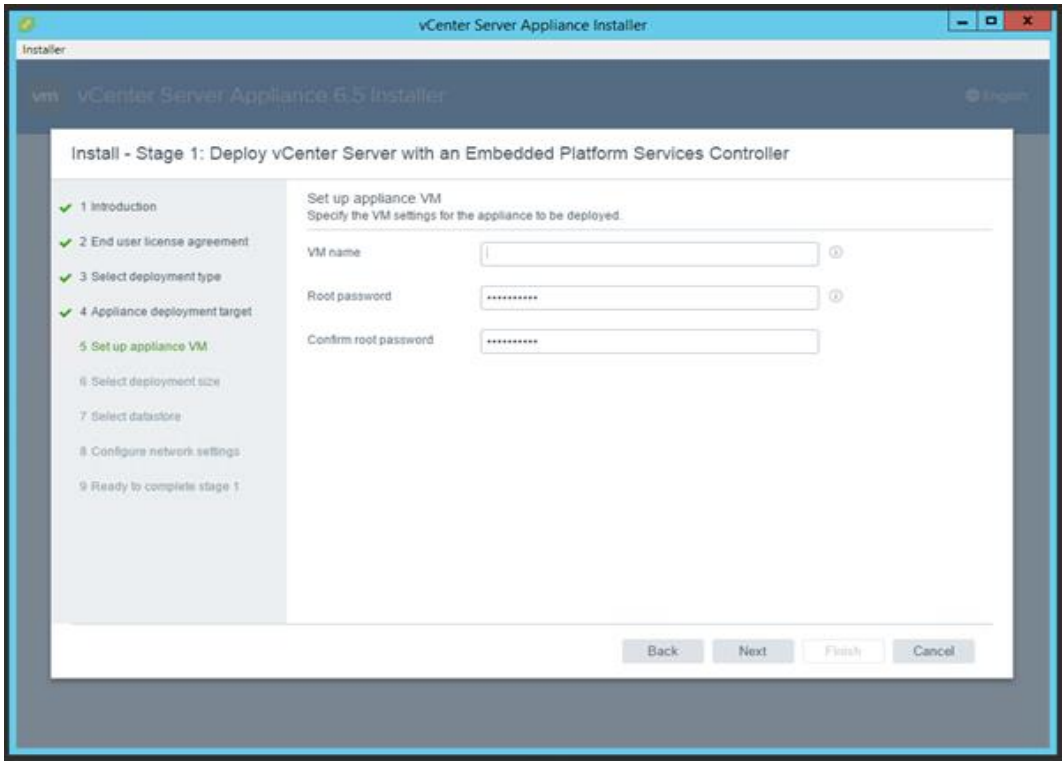
For this installation, we will be deploying the **vCenter Server with an Embedded Platform Services Controller**. Once done, click **Next**.



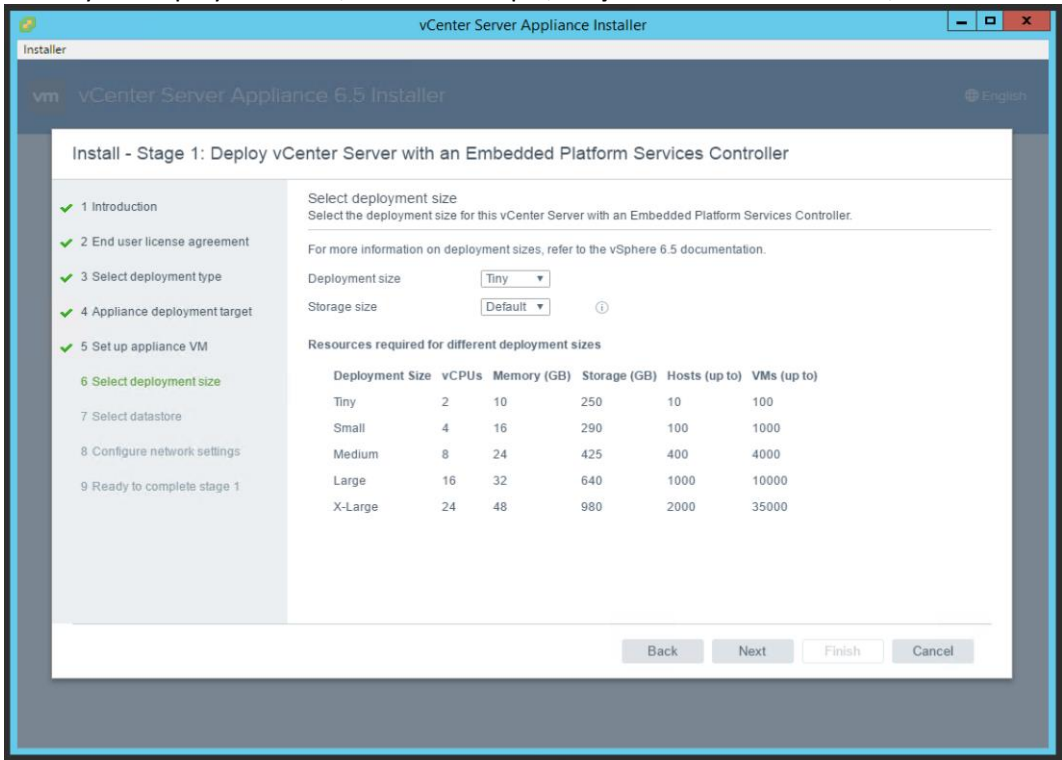
Configure the **Appliance Deployment Target** by entering the target ESXi host, HTTPS port, and user credentials, and click **Next**.



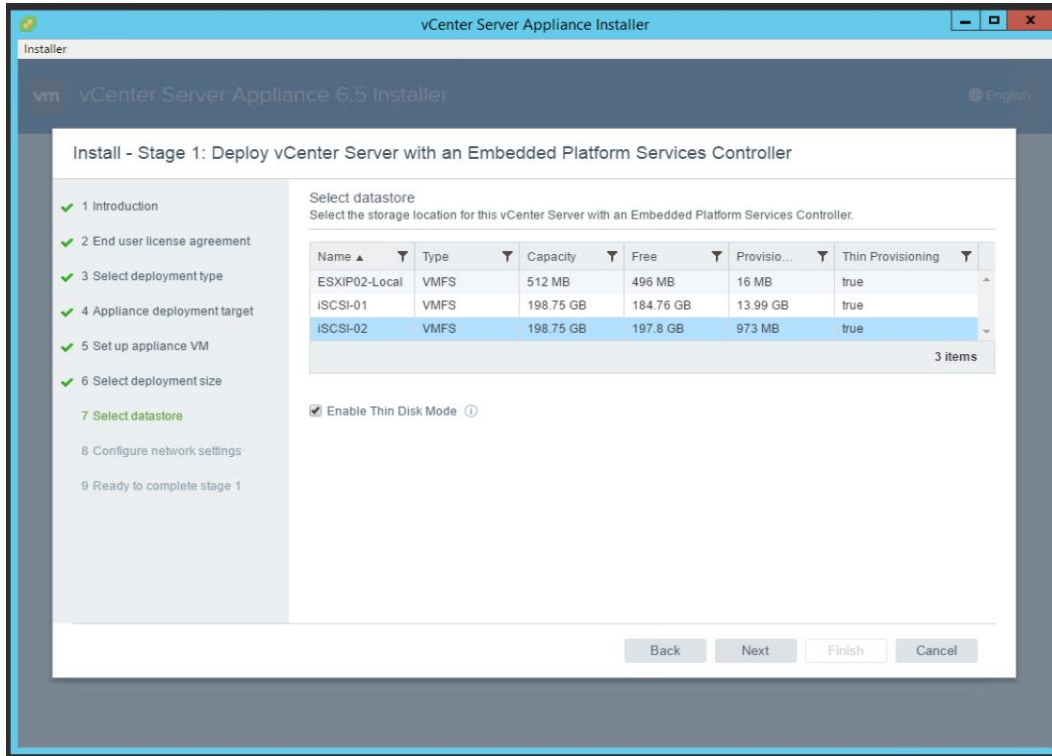
Configure up the **appliance virtual machine** by specifying a VM name, and Root credentials. Our name will be **vCenter-01**



Select your deployment size; for this example, **Tiny** will suffice. Once done, click Next.



Select a suitable datastore for the new VM, and click **Next**.



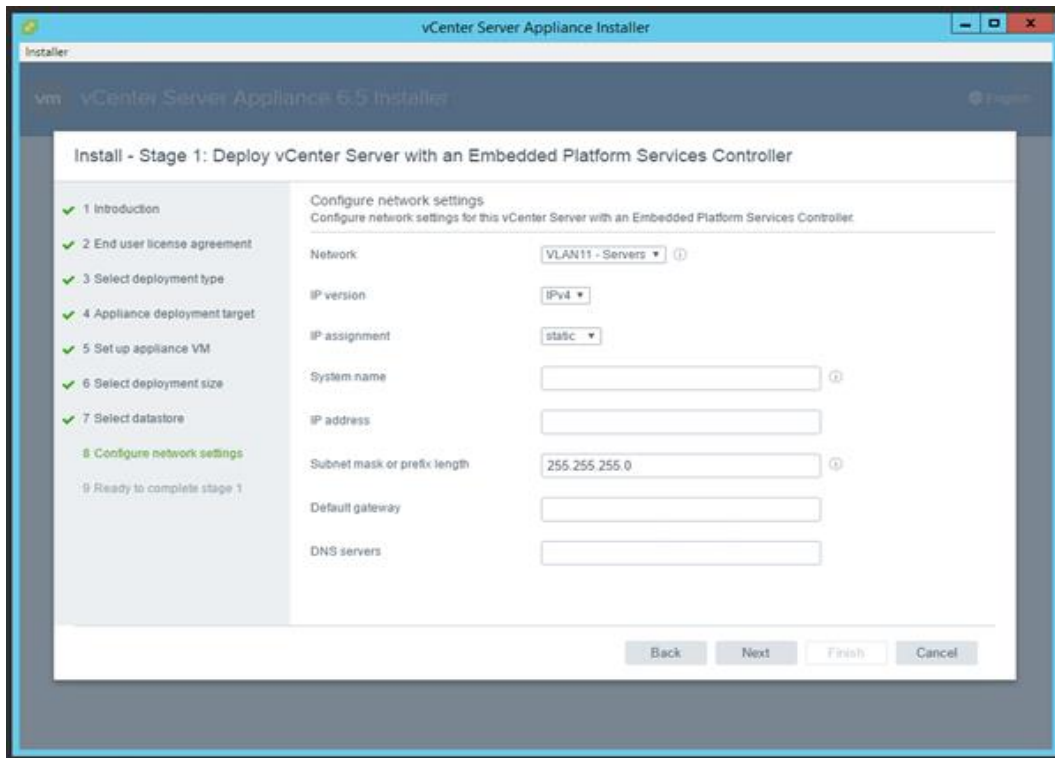
Configure the **network settings** accordingly, and click **Next**.

IP Address 10.10.10.142/24

GW: 10.10.10.1

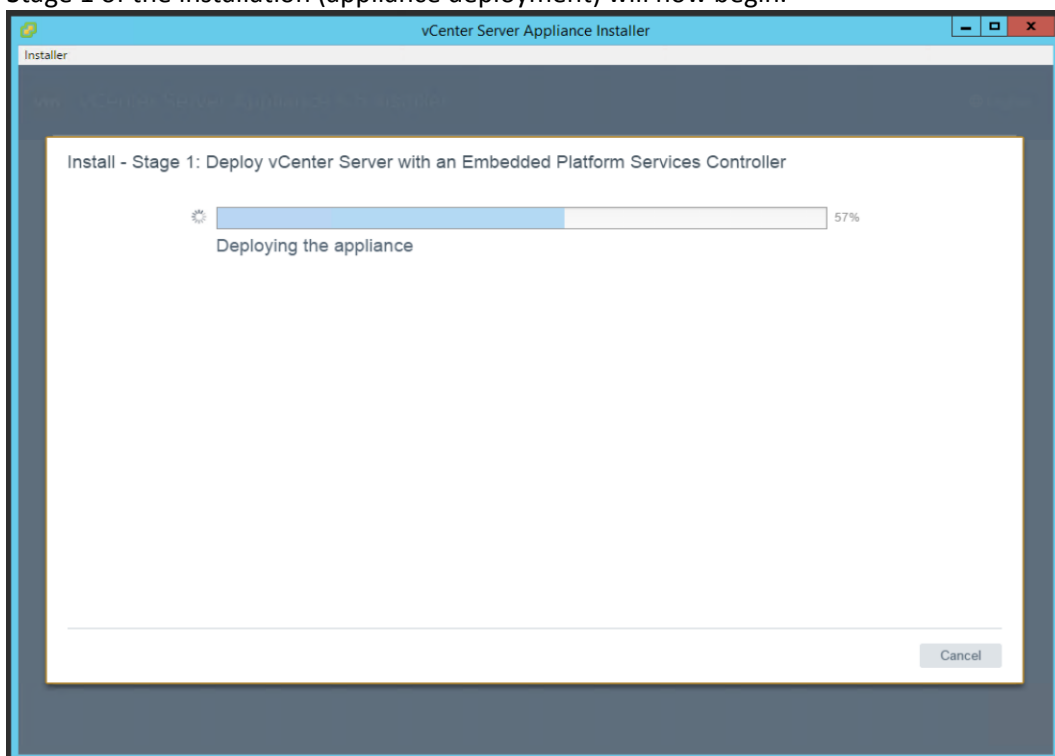
DNS: 10.10.10.141

System Name: vCenter-01.vcap.domain.local

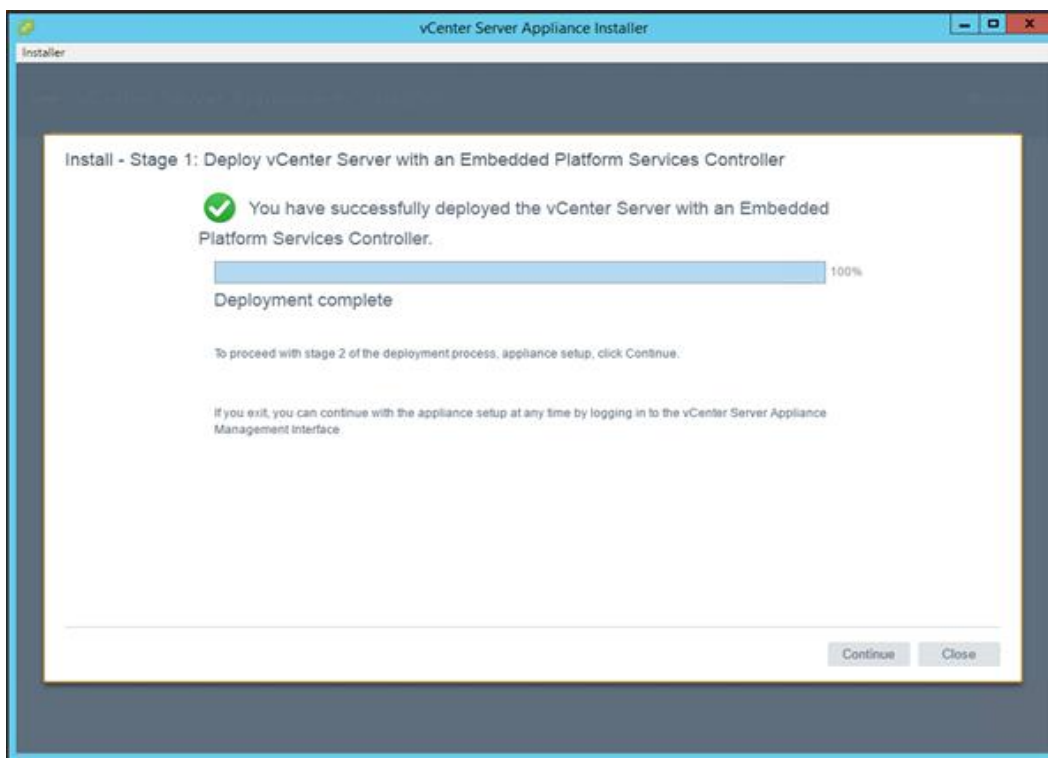


Confirm the configuration and click **Finish**.

Stage 1 of the installation (appliance deployment) will now begin.

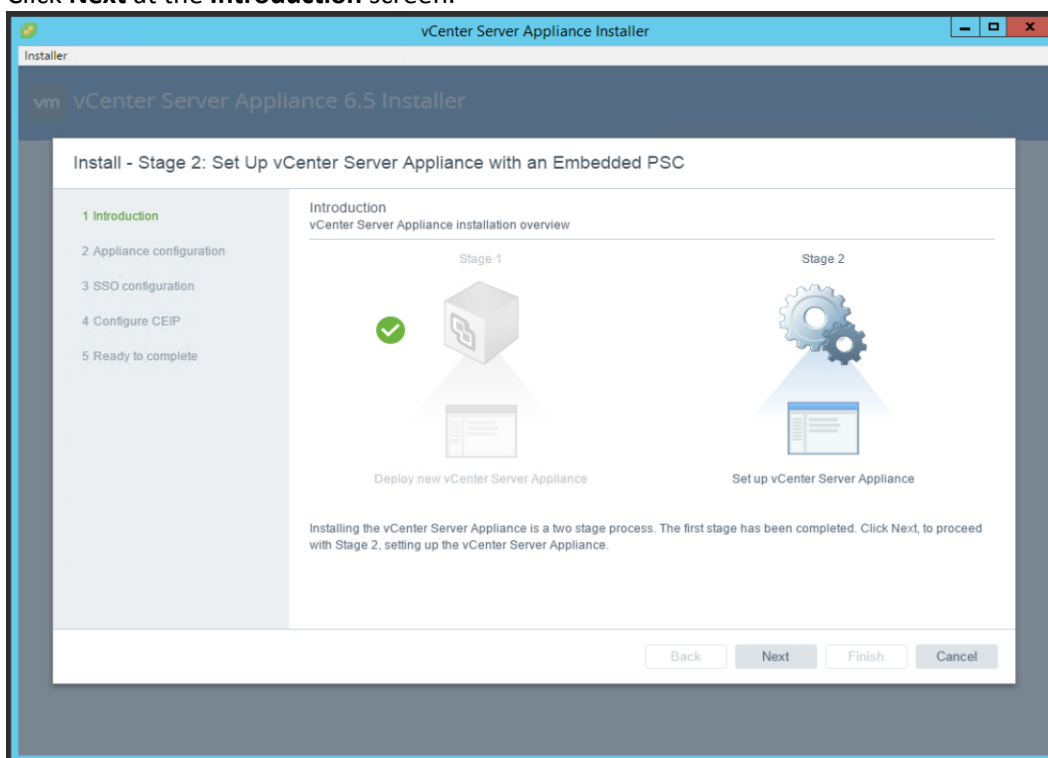


Once installation is complete, click **Continue** to configure the appliance.



Configuration

Click **Next** at the **Introduction** screen.



Configure **NTP** settings for our NTP server and click **Next**.

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

- 1 Introduction
- 2 Appliance configuration
- 3 SSO configuration
- 4 Configure CEIP
- 5 Ready to complete

Appliance configuration

Time synchronization mode: Synchronize time with NTP servers

NTP servers (comma-separated list):

SSH access: Disabled

i For vCenter Server High Availability (HA), enable SSH access.

Back Next Finish Cancel

Complete the **vCenter SSO configuration**, and click **Next**.

vCenter Server Appliance Installer

vm vCenter Server Appliance 6.5 Installer

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

- 1 Introduction
- 2 Appliance configuration
- 3 SSO configuration
- 4 Configure CEIP
- 5 Ready to complete

SSO configuration

SSO domain name: vsphere.local

SSO user name: administrator

SSO password:

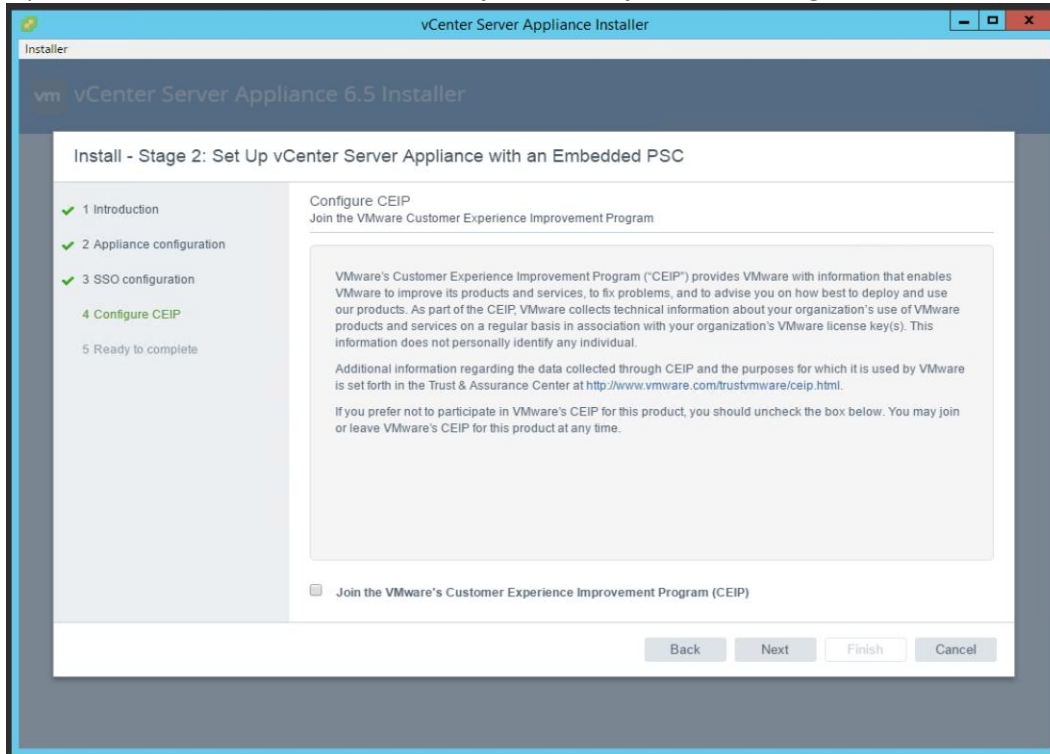
Confirm password:

Site name:

i In vCenter 6.5, joining a vCenter with embedded PSC to an external PSC is not supported. For more information on recommended vCenter and PSC topologies, refer to the vCenter Server documentation.

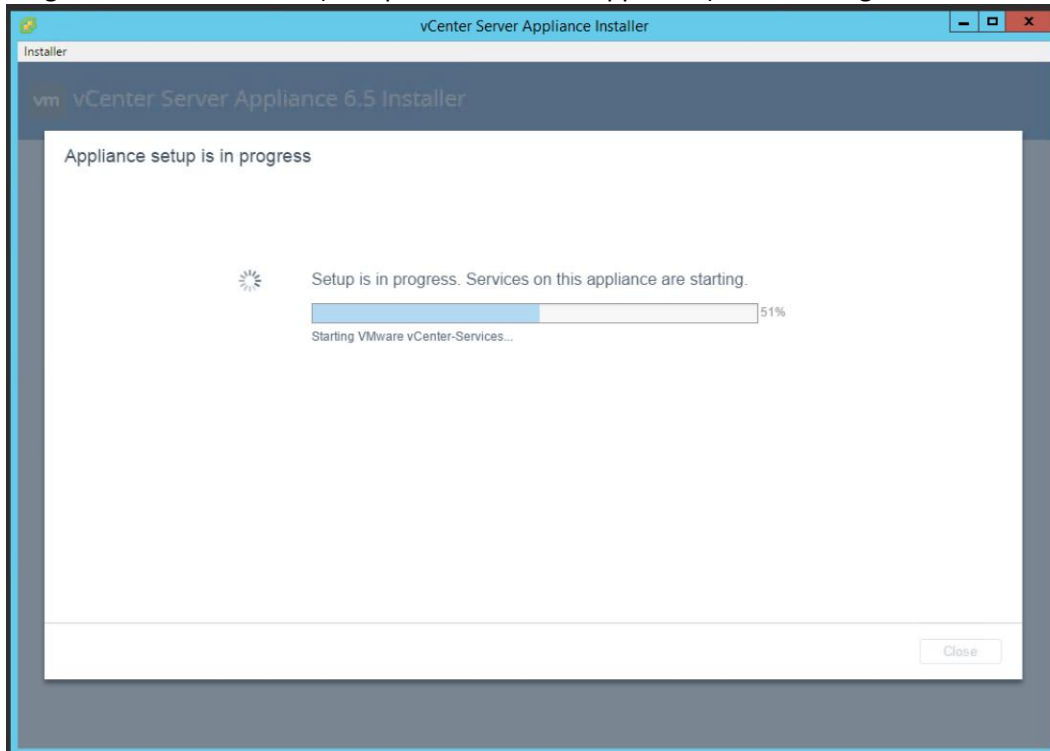
Back Next Finish Cancel

Opt in/out of the **VMware Customer Experience Improvement Program** and click **Next**.

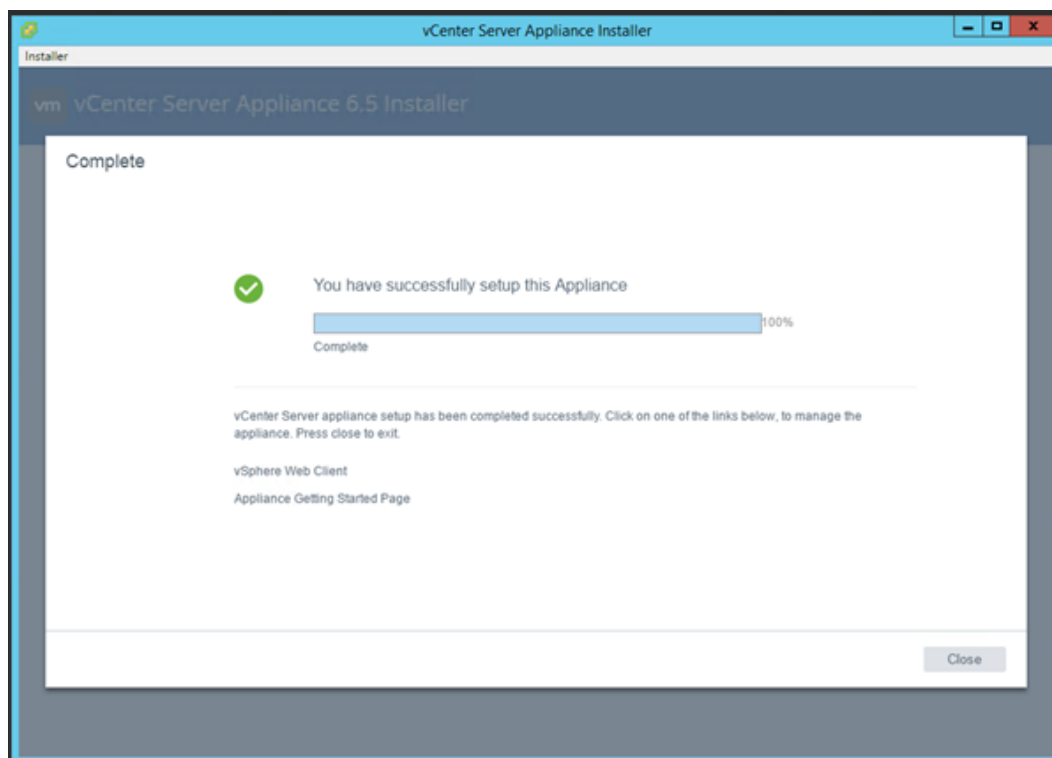


Review the **Summary** and click **Finish**.

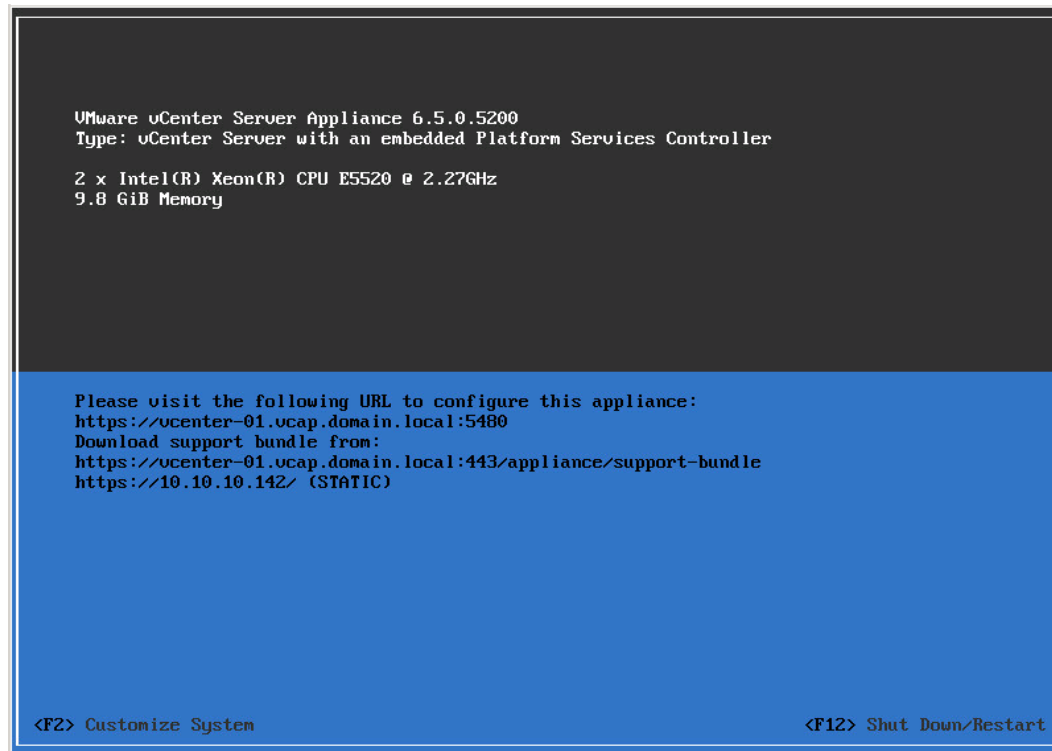
Stage 2 of the installation (set up vCenter Server Appliance) will now begin.



Once complete, you will be presented with your FQDN for your new vCenter Server.



Looking at the console of the vCSA, and we are presented with a very familiar grey and blue (instead of grey and yellow) interface. Appliance URLs are visible here, as well as basic management/configuration tasks.



The new vCenter Server Appliance can now be accessed via the default URLs and, depending on your choice of interface (either the new vSphere Client or older vSphere Web Client), there are now two URLs to remember.

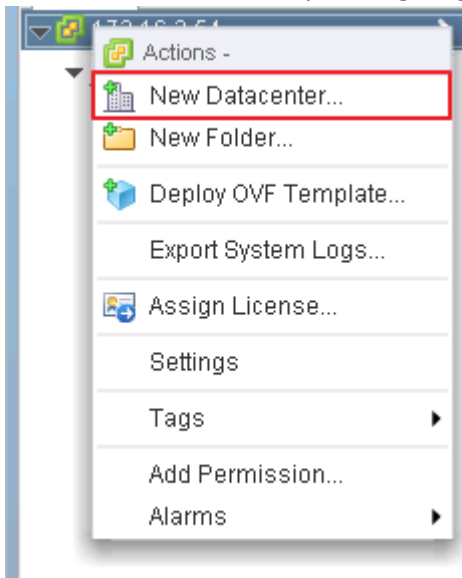
- **vSphere Web Client** – http://<vcenter_fqdn>/vsphere-client)
- **vSphere Client** – http://<vcenter_fqdn>/ui.

vCenter Configuration

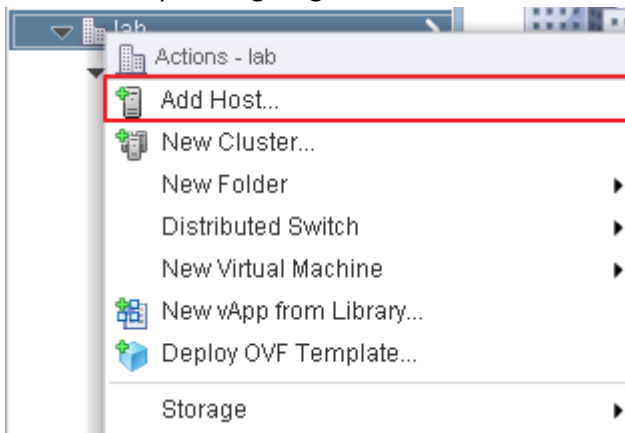
After we deploy our vCenter Appliance we can configure datacenter, clusters and hosts with storage and networking.

Add ESXi

Create new Datacenter by clicking a right mouse button and



Add a Host by clicking a right mouse button on Datacenter



Enter IP address from first Host

 A screenshot of the 'Add Host' wizard in vCenter. The wizard has five steps: 1 Name and location, 2 Connection settings, 3 Host summary, 4 VM location, and 5 Ready to complete. Step 1 is selected. The main area contains the following fields:

- Host name or IP address: A text input field with a blue border.
- Location: A dropdown menu showing 'lab'.
- Type: A dropdown menu showing 'ESXi'.

Provide credentials

Add Host

✓ 1 Name and location

2 Connection settings

3 Host summary

4 VM location

5 Ready to complete

Enter the administrative account information for the host and establish a permanent account for its operations.

User name:

Password:

Accept the SHA key. Compare with your DATA collected in **LAB-02**

Chose the license

Add Host

✓ 1 Name and location

✓ 2 Connection settings

✓ 3 Host summary

4 Assign license

5 Lockdown mode

6 Resource pool

7 Ready to complete

Licenses

+ | 🔑 | 📄

	License	License Key
<input checked="" type="radio"/>	➔ License 1	H19D-CH08
<input type="radio"/>	👤 Evaluation License	--

Leave disabled lockdown mode

Add Host

✓ 1 Name and location

✓ 2 Connection settings

✓ 3 Host summary

✓ 4 Assign license

5 Lockdown mode

6 Resource pool

7 Ready to complete

When enabled, lockdown mode prevents remote users from logging directly into this host. The host will only be local console or an authorized centralized management application.

If you are unsure what to do, leave lockdown mode disabled. You can configure lockdown mode later by editing host settings.

Disabled

Normal
The host is accessible only through the local console or vCenter Server.

Strict
The host is accessible only through vCenter Server. The Direct Console UI service is stopped.

Repeat step from 2-7 to add second ESXi Host

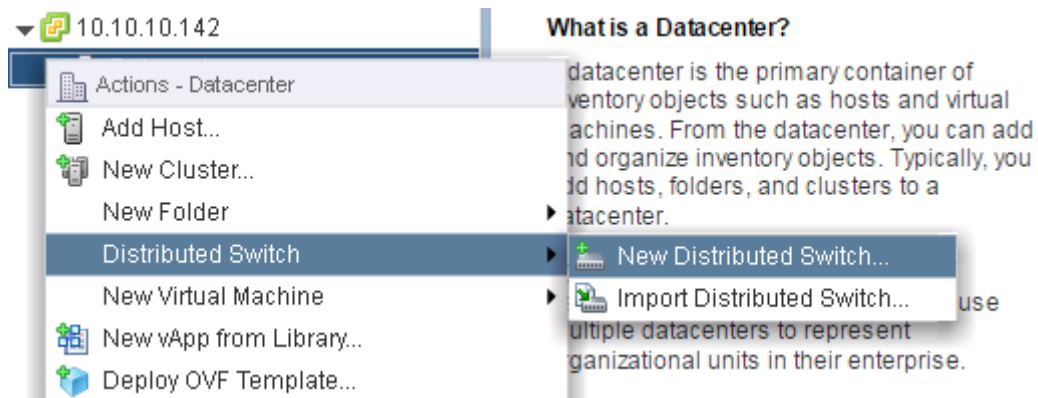
Configure Network

VMware vSphere Distributed Switch (VDS) provides a centralized interface from which you can configure, monitor and administer virtual machine access switching for the entire data center. The VDS provides:

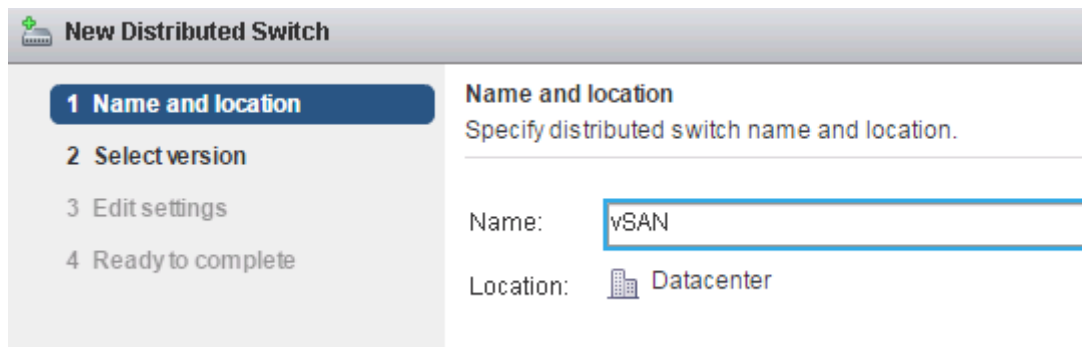
Simplified virtual machine network configuration

Enhanced network monitoring and troubleshooting capabilities

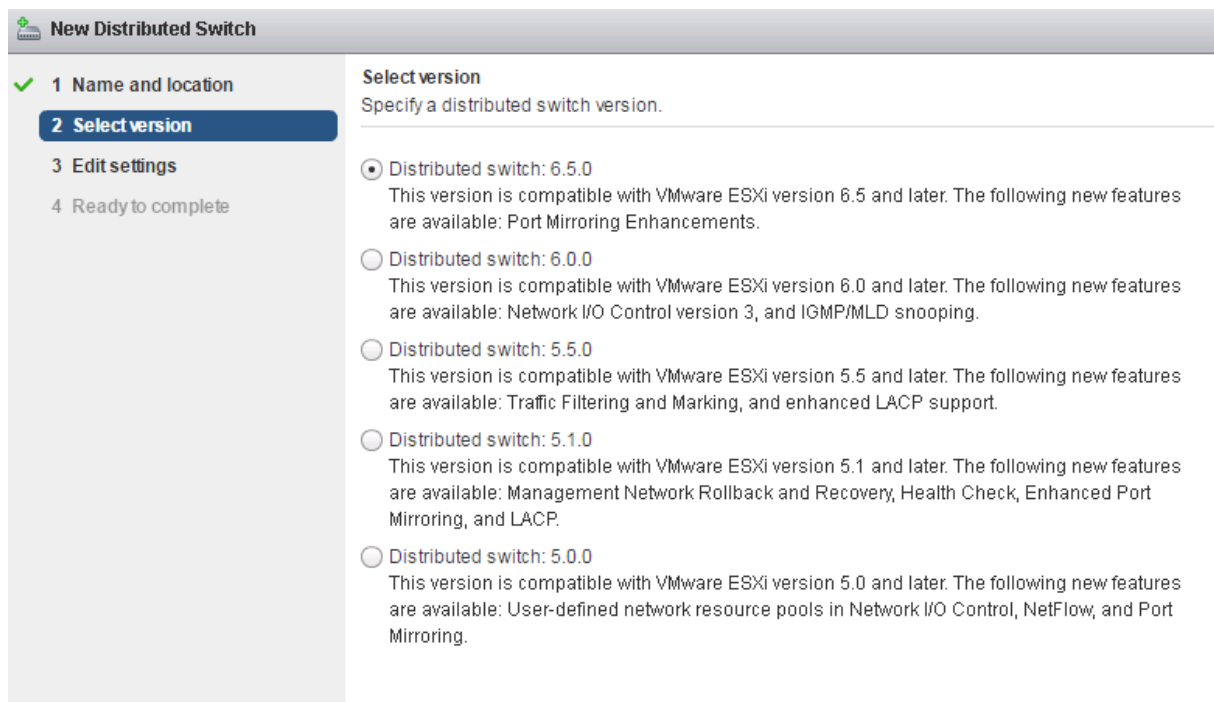
Support for advanced VMware vSphere networking features (vmware.com)



Provide name for this distributed switch



Choose version



Select number of uplinks (physical interface per host)

New Distributed Switch

- ✓ 1 Name and location
- ✓ 2 Select version
- 3 Edit settings**
- 4 Ready to complete

Edit settings
Specify number of uplink ports, resource allocation and default port group.

Number of uplinks:

Network I/O Control:

Default port group: Create a default port group

Port group name:

New Distributed Switch

- ✓ 1 Name and location
- ✓ 2 Select version
- ✓ 3 Edit settings
- 4 Ready to complete**

Ready to complete
Review your settings selections before finishing the wizard.

Name: vSAN
Version: 6.5.0
Number of uplinks: 1
Network I/O Control: Enabled
Default port group: DPortGroup-vSAN

Suggested next actions

- New Distributed Port Group
- Add and Manage Hosts

i These actions will be available in the Actions menu of the new distributed switch.

Add hosts to the newly created switch.

vSAN

TEST

Actions - vSAN

- Distributed Port Group
- Add and Manage Hosts...**
- Migrate VMs to Another Network...
- Upgrade

Add and Manage Hosts

- 1 Select task**
- 2 Select hosts
- 3 Select network adapter tasks
- 4 Manage physical network adapters
- 5 Manage VMkernel network adapters
- 6 Analyze impact
- 7 Ready to complete

Select task
Select a task to perform on this distributed switch.

- Add hosts**
Add new hosts to this distributed switch.
- Manage host networking**
Manage networking of hosts attached to this distributed switch.
- Remove hosts**
Remove hosts from this distributed switch.
- Add host and manage host networking (advanced)**
Add new hosts and manage networking of hosts already attached to this distributed switch. Use this option to unify the network configuration of new and existing hosts.

Add and Manage Hosts

- ✓ 1 Select task
- 2 Select hosts**
- 3 Select network adapter tasks
- 4 Manage physical network adapters
- 5 Manage VMkernel network adapters
- 6 Analyze impact
- 7 Ready to complete

Select hosts
Select hosts to add to this distributed switch.

+ New hosts... | ✕ Remove

Host
Selects hosts to attach to the switch.

We can do this for all servers at one time

Select new hosts

Incompatible Hosts

<input checked="" type="checkbox"/> Host	Host State	Cluster
<input checked="" type="checkbox"/> 10.10.10.144	Connected	vSAN
<input checked="" type="checkbox"/> 10.10.10.145	Connected	vSAN
<input checked="" type="checkbox"/> 10.10.10.146	Connected	vSAN
<input checked="" type="checkbox"/> 10.10.10.147	Connected	vSAN

Configure identical network settings on multiple hosts (template mode). i

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- 3 Select template host**
- 4 Select network adapter tasks
- 5 Manage physical network adapters (template mode)
- 6 Manage VMkernel network adapters (template mode)
- 7 Analyze impact
- 8 Ready to complete

Select template host
Select a template host to apply its network configuration on this switch to the other hosts.

Host	Physical Adapters - On This Switch / All	VMkernel Adapters - On This Switch
<input checked="" type="radio"/> 10.10.10.144 (template)	0 / 8	0 / 2
<input type="radio"/> 10.10.10.145	0 / 8	0 / 2
<input type="radio"/> 10.10.10.146	0 / 8	0 / 2
<input type="radio"/> 10.10.10.147	0 / 8	0 / 2

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Select template host
- 4 Select network adapter tasks**
- 5 Manage physical network adapters (template mode)
- 6 Manage VMkernel network adapters (template mode)
- 7 Analyze impact
- 8 Ready to complete

Select network adapter tasks
Select the network adapter tasks to perform.

- Manage physical adapters (template mode)**
Add physical network adapters to the distributed switch, assign them to uplinks, or remove existing ones.
- Manage VMkernel adapters (template mode)**
Add VMkernel network adapters to this distributed switch, migrate them from other switches, assign them to distributed port groups, configure their settings, or remove existing ones.
- Migrate virtual machine networking**
Migrate VM network adapters by assigning them to distributed port groups on the distributed switch.

Sample distributed switch

The diagram illustrates a sample distributed switch with three main components:

- VMkernel port group:** Contains a sub-group for VMkernel ports with a single adapter named 'vmk'. It is associated with the task 'Manage VMkernel adapters'.
- Uplink port group:** Contains a sub-group for Uplink with a single adapter named 'vmnic'. It is associated with the task 'Manage physical adapters'.
- VM port group:** Contains a sub-group for Virtual Machines with a single adapter named 'vm'.

Arrows indicate the flow of configuration from the tasks to the respective port groups within the switch.

Choose your proper vmnic in our LAB this will be vmnic7

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Select template host
- ✓ 4 Select network adapter tasks
- 5 Manage physical network adapters (template mode)**
- 6 Manage VMkernel network adapters (template mode)
- 7 Analyze impact
- 8 Ready to complete

Manage physical network adapters (template mode)
Add or remove physical network adapters to this distributed switch.

1 Configure or review physical network adapter assignments for the template host

Assign uplink Reset changes View settings

Host/Physical Network Adapter	Uplink
vmnic1	--
vmnic3	vSwitch0
vmnic4	Second
vmnic5	Second
vmnic6	--
vmnic7	--

Assign the selected physical network adapter to an uplink on this switch.

Uplink	Assigned Adapter
Uplink 1 (Auto-assign)	--

2 Apply the physical network adapter assignments on this switch for the template host to all hosts.

Apply to all Reset all View settings

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Select template host
- ✓ 4 Select network adapter tasks
- ✓ 5 Manage physical network adapters (template mode)
- 6 Manage VMkernel network adapters (template mode)**
- 7 Analyze impact

Manage VMkernel network adapters (template mode)
Manage and assign VMkernel network adapters to the distributed switch.

1 Configure or review the settings of the VMkernel network adapters of

Assign port group **+ New adapter** Edit adapter Remove

Host/VMkernel Network Adapters	In Use by Switch
10.10.10.144 (template)	
On this switch	
On other switches	

10.10.10.144 - Add Networking

1 Select target device

2 Connection settings

2a Port properties

2b IPv4 settings

3 Ready to complete

Select target device
Select a target device for the new connection.

Select an existing network

DPortGroup-vSAN

Select an existing standard switch

New standard switch

You need to mark vSAN as this will be used for our vSAN cluster

10.10.10.144 - Add Networking

✓ **1 Select target device**

2 Connection settings

2a Port properties

2b IPv4 settings

3 Ready to complete

Port properties
Specify VMkernel port settings.

VMkernel port settings

Network label: DPortGroup-vSAN

TCP/IP stack: Default

Available services

Enabled services:

- vMotion
- Provisioning
- Fault Tolerance logging
- Management
- vSphere Replication
- vSphere Replication NFC
- Virtual SAN

10.10.10.144 - Add Networking

1 Select target device
 2 Connection settings
 2a Port properties
 2b IPv4 settings
 3 Ready to complete

IPv4 settings
Specify VMkernel IPv4 settings.

Obtain IPv4 settings automatically
 Use static IPv4 settings

IPv4 address:
 Subnet mask:
 Default gateway: Override default gateway for this adapter

 DNS server addresses: 10.10.10.141
 8.8.8.8

10.10.10.144 - Add Networking

1 Select target device
 2 Connection settings
 2a Port properties
 2b IPv4 settings
 3 Ready to complete

Ready to complete
Review your settings selections before finishing the wizard.

Distributed port group: DPortGroup-vSAN
 Distributed switch: vSAN
 TCP/IP stack: Default
 vMotion: Disabled
 Provisioning: Disabled
 Fault Tolerance logging: Disabled
 Management: Disabled
 vSphere Replication: Disabled
 vSphere Replication NFC: Disabled
 Virtual SAN: Enabled

IPv4 settings

IPv4 address: 192.168.1.10 (static)
 Subnet mask: 255.255.255.0
 Default gateway for IPv4: 192.168.1.1

10.10.10.144 - Apply VMkernel network adapter configuration to other hosts

The other hosts will receive the VMkernel network adapter configuration of the host on this switch.

The following VMkernel network adapters on the template host use static IP addresses. In the IP settings for each adapter, enter as many IP addresses as the number of hosts on which the template settings will be applied.

vmk1 (new)

Port group: DPortGroup-vSAN

Services: Virtual SAN

IPv4 settings of the template adapter: 192.168.1.10 / 255.255.255.0

IPv4 addresses (3 required): i

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Select template host
- ✓ 4 Select network adapter tasks
- ✓ 5 Manage physical network adapters (template mode)
- ✓ 6 Manage VMkernel network adapters (template mode)
- 7 Analyze impact**
- 8 Ready to complete

Analyze impact
Review the impact this configuration change might have on some network dependent services.

Overall impact status: ✓ No impact

Host / Impact Analysis per Service	Status
10.10.10.144 iSCSI	✓ No impact
10.10.10.145 iSCSI	✓ No impact
10.10.10.146 iSCSI	✓ No impact
10.10.10.147 iSCSI	✓ No impact

Add and Manage Hosts

- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Select template host
- ✓ 4 Select network adapter tasks
- ✓ 5 Manage physical network adapters (template mode)
- ✓ 6 Manage VMkernel network adapters (template mode)
- ✓ 7 Analyze impact
- 8 Ready to complete**

Ready to complete
Review your settings selections before finishing the wizard.

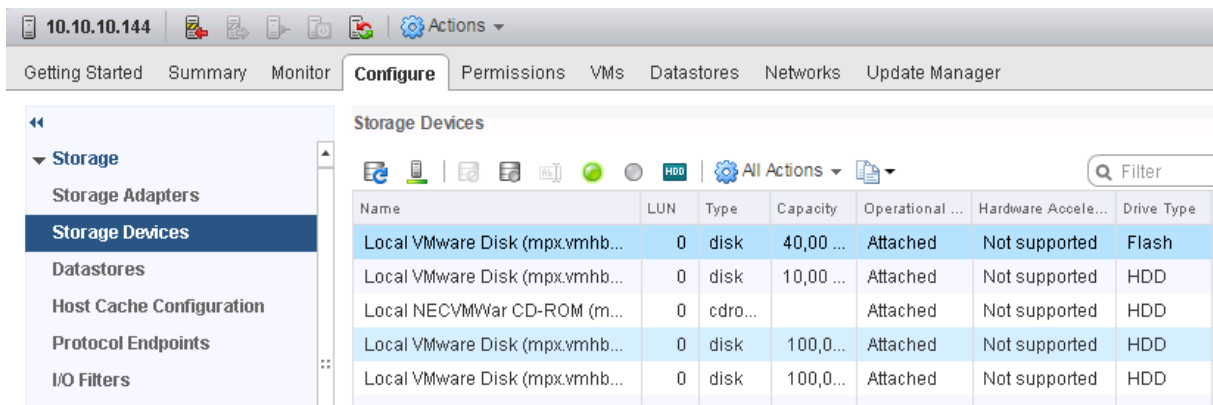
Number of managed hosts
Hosts to add: 4

Number of network adapters for update
Physical network adapters: 4
New VMkernel network adapters: 4

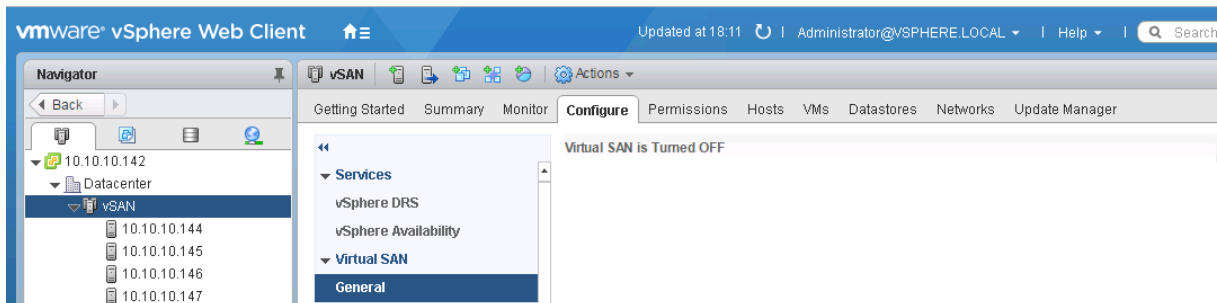
vSAN

vSAN is radically simple, enterprise-class software-defined storage powering VMware hyper-converged infrastructure. Accelerate infrastructure modernization with VMware vSAN™ to make IT a strategic, cost-effective advantage for your company. By powering the leading Hyper-Converged Infrastructure (HCI) solutions, vSAN helps customers evolve their data center without risk, control IT costs and scale to tomorrow's business needs. vSAN, native to the market-leading hypervisor, delivers flash-optimized, secure storage for all of your critical vSphere workloads. vSAN is built on industry-standard x86 servers and components that help lower TCO by up to 50% versus traditional storage. It delivers the agility to easily scale IT and offers the industry's first native HCI encryption. New enhanced stretched clusters and intelligent, 1-click operations further lower costs for affordable site protection (50% less than leading traditional solutions) and simple day-to-day management. Seamless integration with VMware vSphere® and the entire VMware stack makes it the simplest storage platform for virtual machines— whether running business-critical databases, virtual desktops or next-generation applications. (vmware.com)

On lab we can mark our disk as flash, so we don't need to buy SSD drives for cache.



Name	LUN	Type	Capacity	Operational ...	Hardware Aceele...	Drive Type
Local VMware Disk (mpx.vmh...	0	disk	40,00 ...	Attached	Not supported	Flash
Local VMware Disk (mpx.vmh...	0	disk	10,00 ...	Attached	Not supported	HDD
Local NECVMWar CD-ROM (m...	0	cdro...		Attached	Not supported	HDD
Local VMware Disk (mpx.vmh...	0	disk	100,0...	Attached	Not supported	HDD
Local VMware Disk (mpx.vmh...	0	disk	100,0...	Attached	Not supported	HDD



Virtual SAN is Turned OFF

vSAN - Configure Virtual SAN

1 Virtual SAN capabilities

2 Network validation

3 Ready to complete

Virtual SAN capabilities
Select how you want your Virtual SAN cluster to behave.

Disk Claiming

Add disks to storage: **Automatic**

All empty disks on the included hosts will be automatically claimed by Virtual SAN.
Remote disks will not be claimed in Automatic mode.

Deduplication and Compression

Enable

Allow Reduced Redundancy

Fault Domains and Stretched Cluster

Do not configure

Configure two host Virtual SAN cluster

Configure stretched cluster

Configure fault domains

Licensing

A license must be assigned to the cluster in order to create disk groups or consume disks automatically.

Choose previously created switch

1 Virtual SAN capabilities

2 Network validation

3 Ready to complete

Network validation
Check the Virtual SAN network settings on all hosts in the cluster.

View: **Virtual SAN VMkernel adapters** Filter

Name	Network	IP Address	VSAN Enabled
10.10.10.144 vmk1	DPortGroup-vSAN	192.168.1.10	Yes
10.10.10.145 vmk1	DPortGroup-vSAN	192.168.1.11	Yes
10.10.10.146 vmk1	DPortGroup-vSAN	192.168.1.12	Yes
10.10.10.147 vmk1	DPortGroup-vSAN	192.168.1.13	Yes

1 Virtual SAN capabilities

2 Network validation

3 Ready to complete

Ready to complete
Review your settings selections before finishing the wizard.

Deduplication and Compression	No
Add disks to storage	Automatic
Fault Domains and Stretched Cluster	Do not configure

Reconfigure Virtual SAN cluster

vSAN

0 %

On-disk Format Version

Disk format version ✔ All 12 disks on version 3.0

Disk Groups

Disk Groups [Disks](#)

Disk Group	Disks in Use	State	Virtual
10.10.10.144 Disk group (00000000000766d686261303a313a30)	3 of 3	Connected	Health
10.10.10.145 Disk group (00000000000766d686261303a313a30)	3 of 3	Connected	Health
10.10.10.146 Disk group (00000000000766d686261303a313a30)	3 of 3	Connected	Health
10.10.10.147 Disk group (00000000000766d686261303a313a30)	3 of 3	Connected	Health

8 items [Export](#) [Copy](#)

10.10.10.144: Disks

All Actions

Show: **In use (3)**

Name	Drive Type	Disk Tier	Capacity	Virtual
Local VMware Disk (mpx.vmhba0:C0:T1:L0)	Flash	Cache	40,00 GB	H
Local VMware Disk (mpx.vmhba0:C0:T3:L0)	HDD	Capacity	100,00 GB	H
Local VMware Disk (mpx.vmhba0:C0:T2:L0)	HDD	Capacity	100,00 GB	H

Health Service

[Edit settings ...](#)

Health service status i Enabled

Health service version 6.5.0.0

Health check interval 60 minutes

HCL Database

[Update from file...](#)

[Get latest version online](#)

Last updated Today

Support Assistant

[Upload Support Bundles to Service Request...](#)

Last upload time --


Performance Service is Turned ON

[Turn off](#)

[Edit storage policy ...](#)

Stats object health ✔ Healthy

Stats object UUID 60ee1159-77e9-4d0e-0973-0050568c1c28

Stats object storage policy  [Virtual SAN Default Storage Policy](#)

Compliance status ✔ Compliant

vsanDatastore	✔ Normal	vsan	791,94 GB
---------------	---	------	-----------

vRealize Operation Manager

Now we will add two tools from vRealize Suite before we will be adding NSX and we finally get vRealize Automation

VMware vRealize™ Operations Manager delivers intelligent operations management with application-to-storage visibility across physical, virtual, and cloud infrastructures. Using policy-based automation, operations teams automate key processes and improve IT efficiency.(vmware.com)

Prerequisites

Username: admin

Password: P@ssw0rd

Username: Administrator@vsphere.local

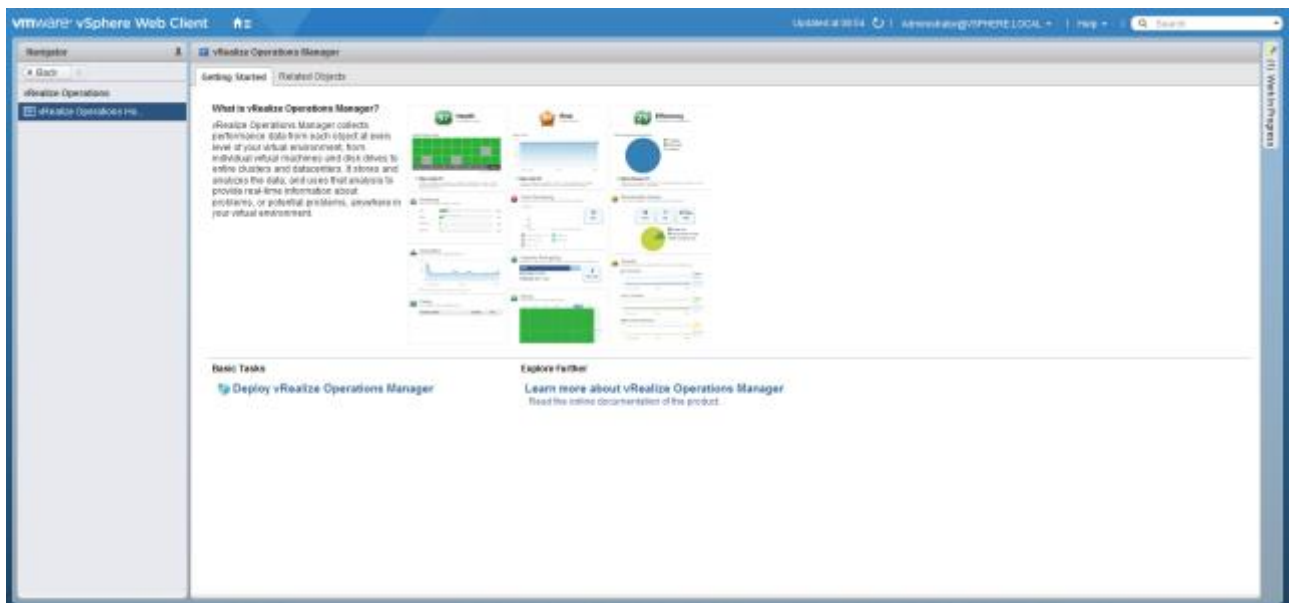
Password: P@ssw0rd

Build

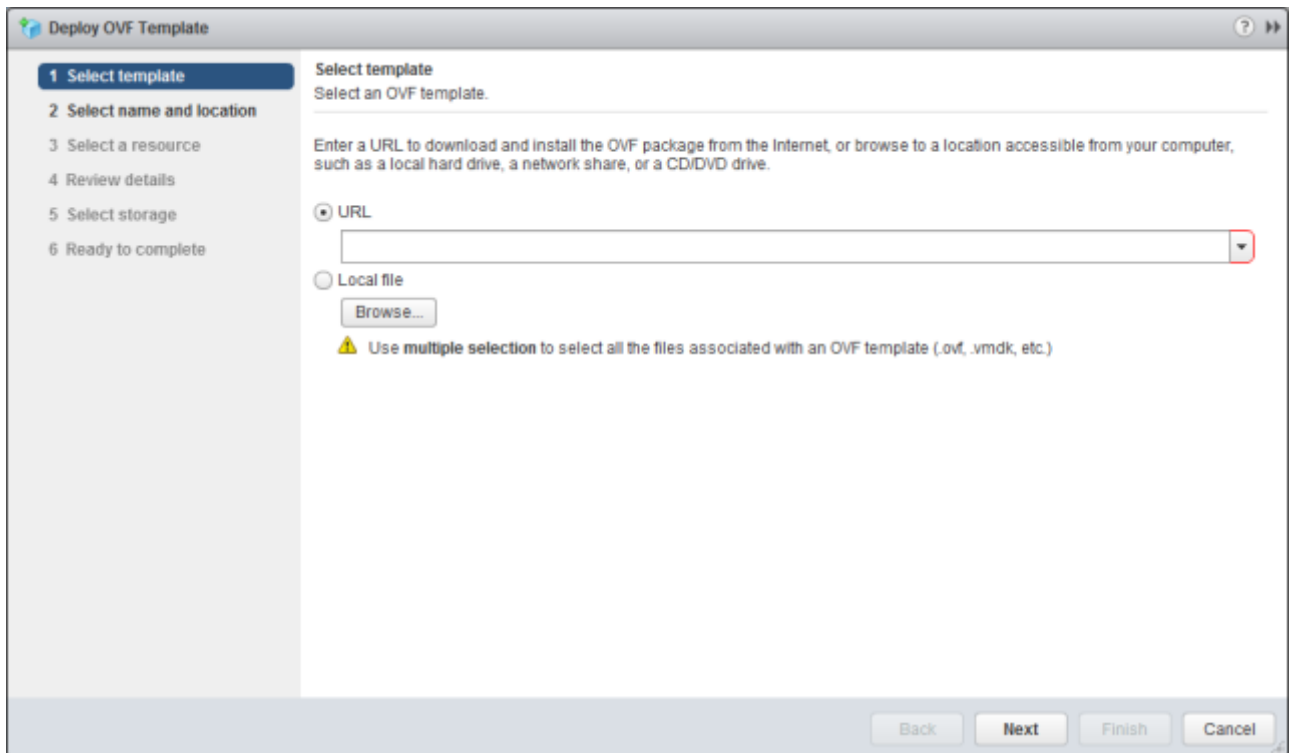
OS	vRealize Operation Manager Appliance	
RAM	8GB	
CPU	2vCPU	
HDD		
Network	1 NIC	10.10.10.152

Deploy OVA

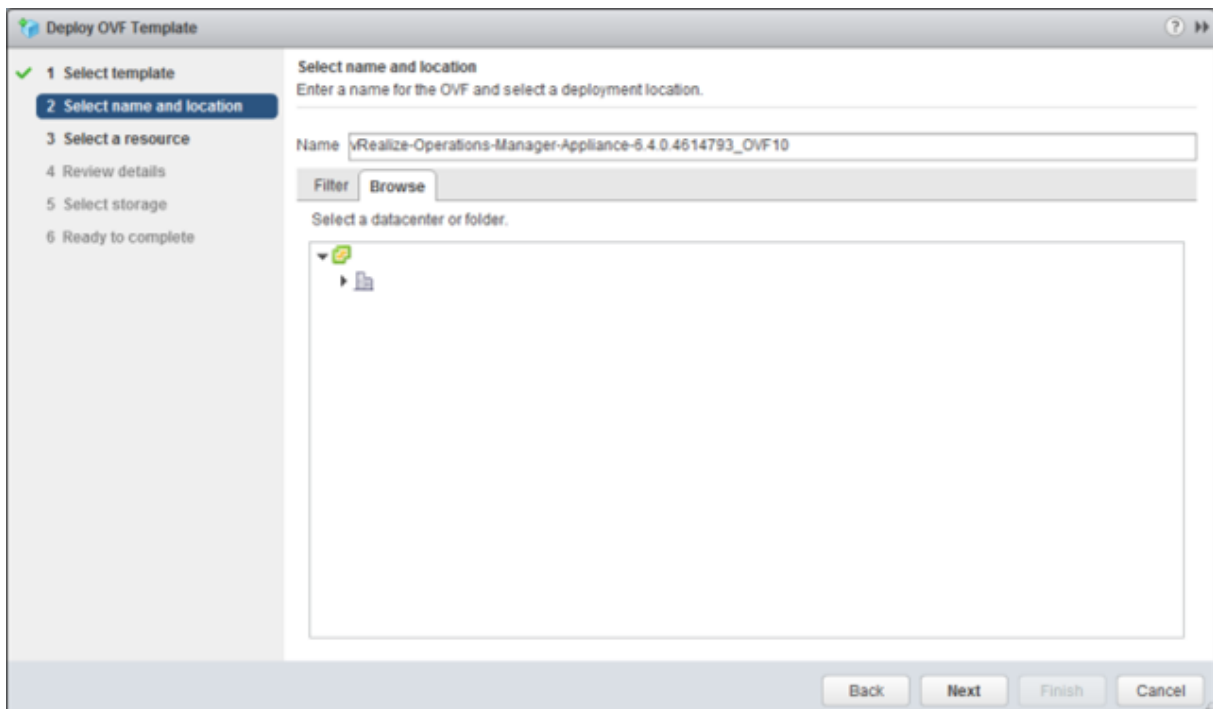
Navigate to the vSphere web client home page, click **vRealize Operations Manager** and select **Deploy vRealize Operations Manager**.



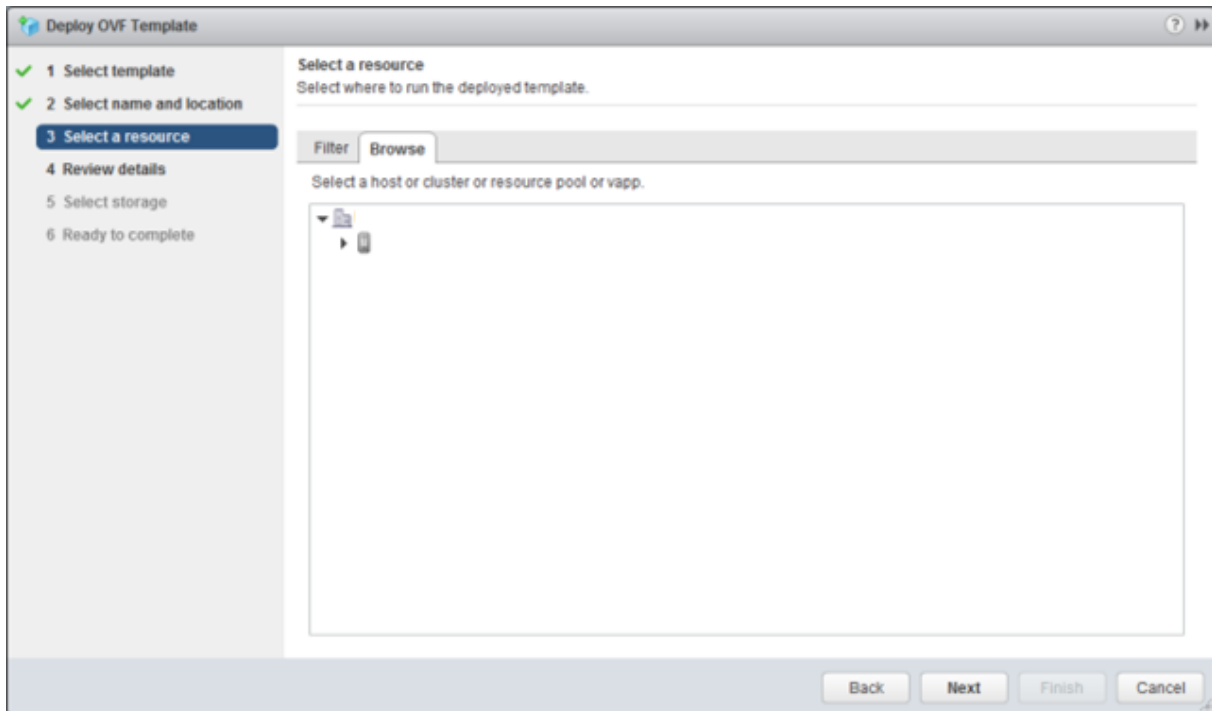
The OVF template wizard will open. Browse to the location of the OVA file downloaded earlier and click Next.



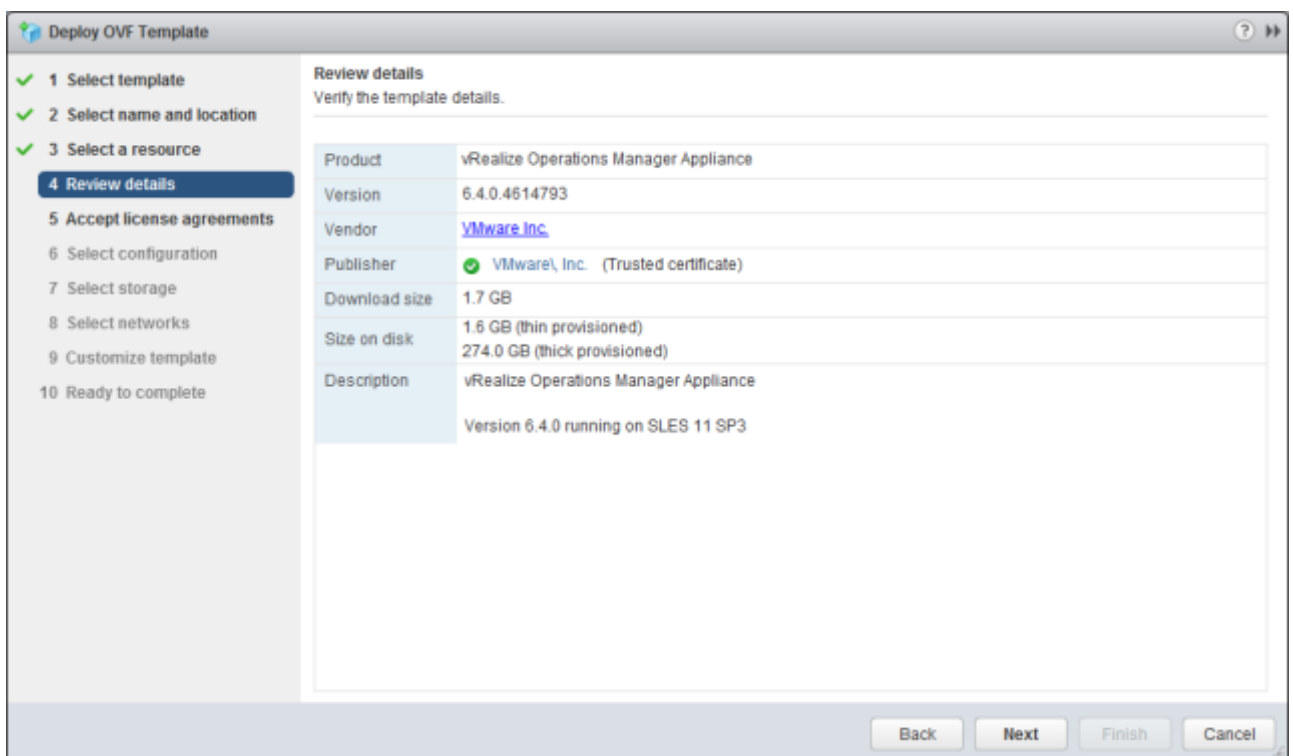
Enter a name for the virtual appliance, and select a location. Click **Next**.



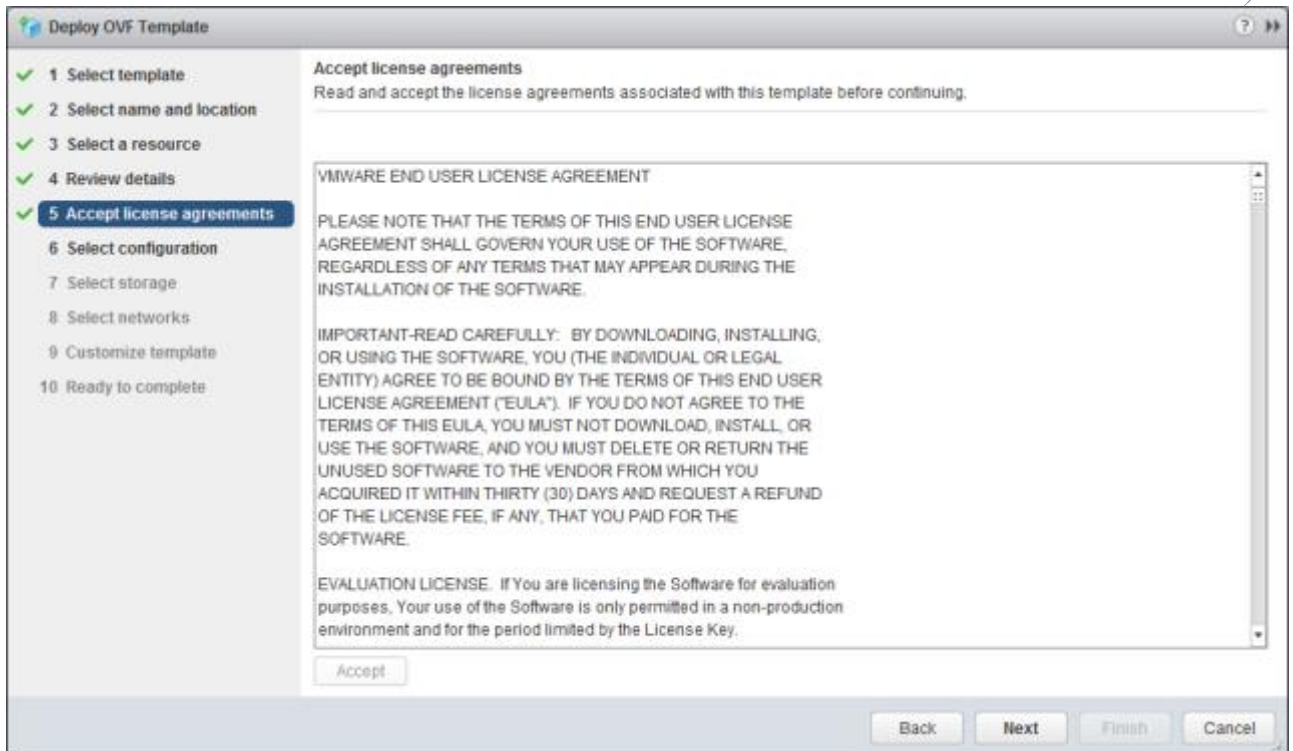
Select the host or cluster compute resources for the virtual appliance and click **Next**.



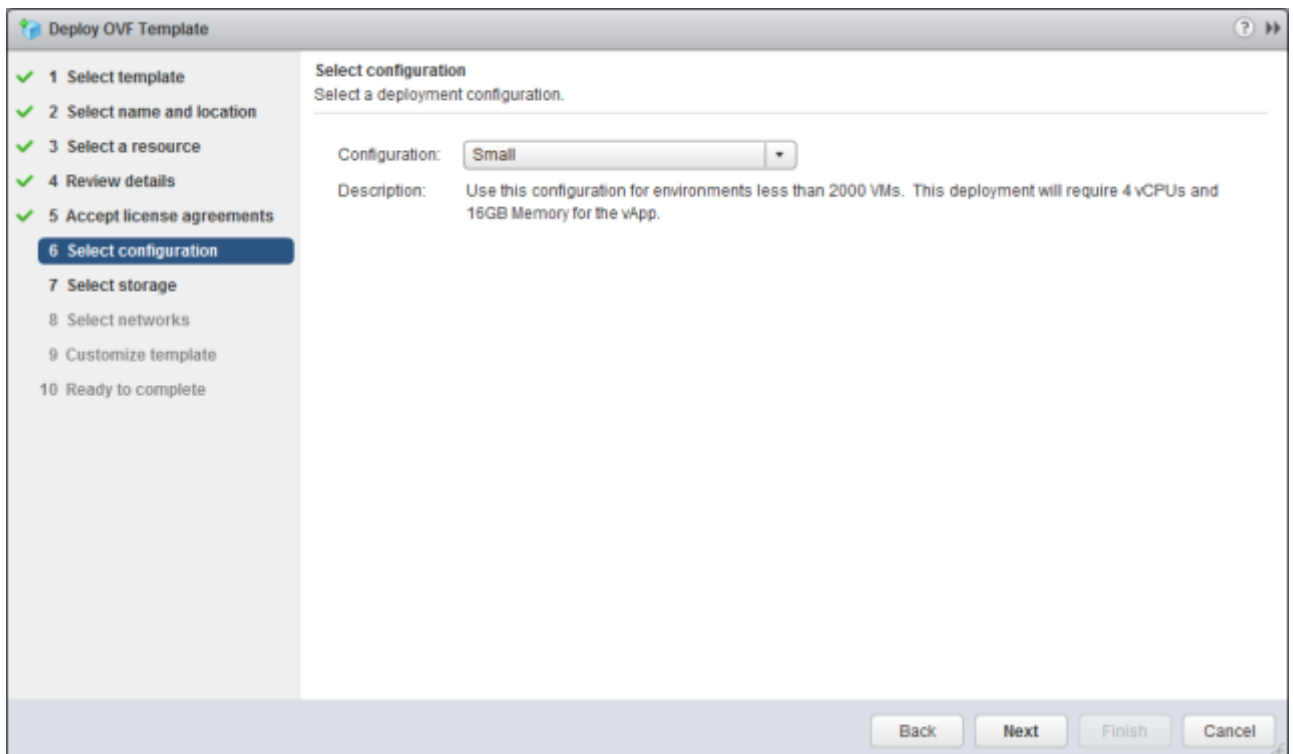
Review the details of the OVA, click **Next**.



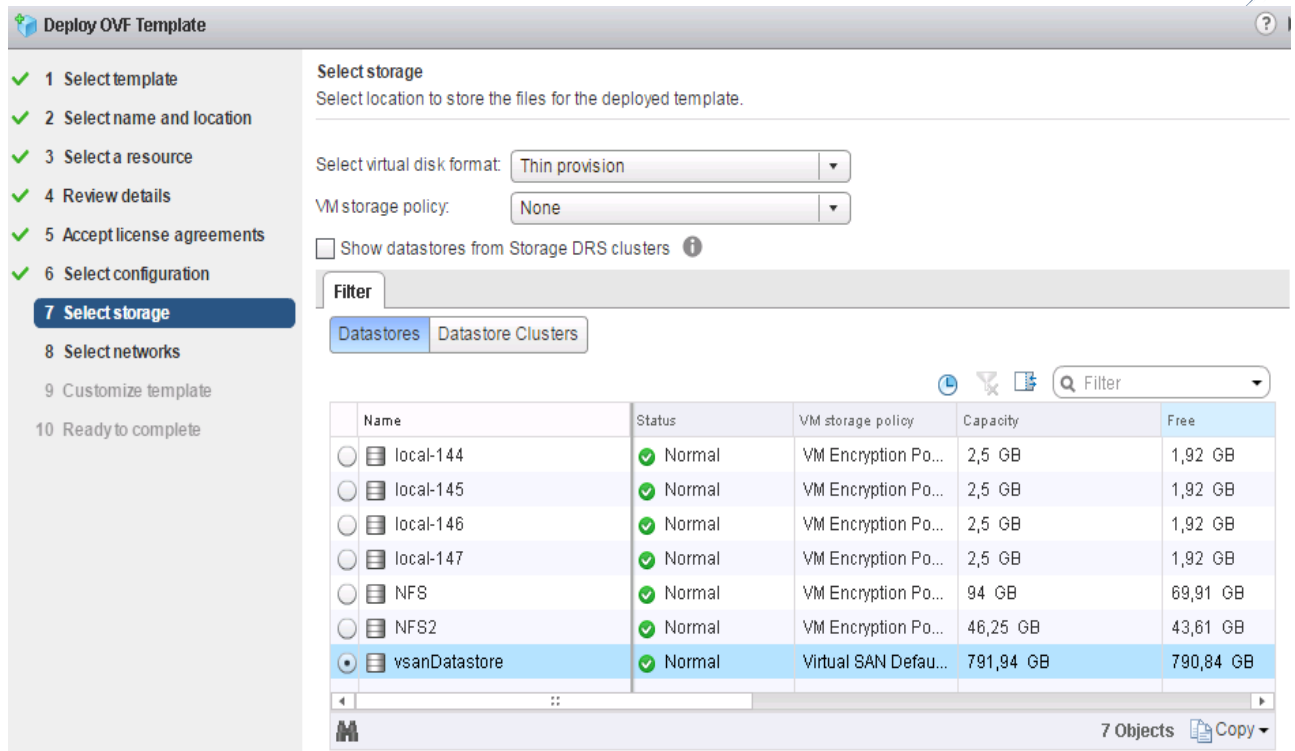
Accept the EULA and click **Next**.



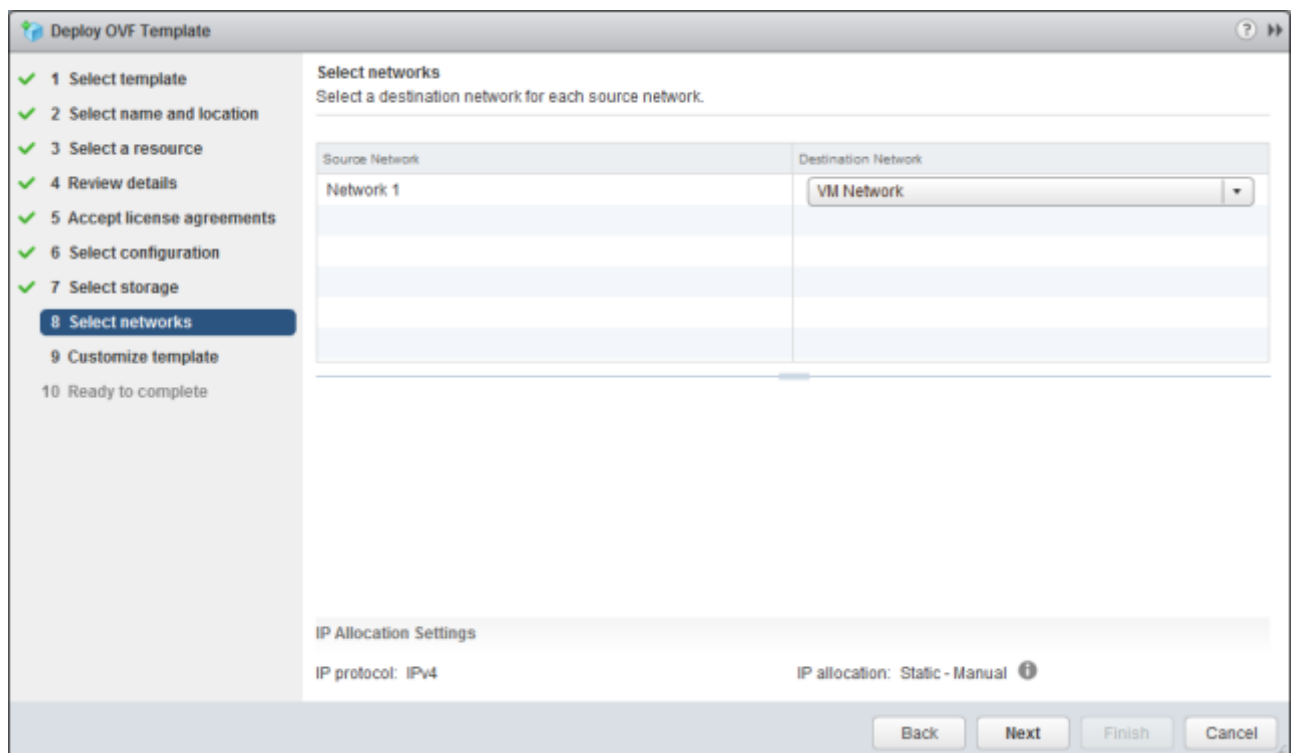
Select the configuration size based on the considerations listed above, then click **Next**.



Select the storage for the virtual appliance, click **Next**.



Select the network for the virtual appliance, click **Next**.



Configure the virtual appliance network settings, click **Next**.

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 Select a resource
- ✓ 4 Review details
- ✓ 5 Accept license agreements
- ✓ 6 Select configuration
- ✓ 7 Select storage
- ✓ 8 Select networks
- 9 Customize template**
- 10 Ready to complete

Customize template
Customize the deployment properties of this software solution.

ⓘ All properties have valid values [Show next...](#) [Collapse all...](#)

Networking Properties	4 settings
DNS	The domain name servers for this VM (comma separated). Leave blank if DHCP is desired.
Default Gateway	The default gateway address for this VM. Leave blank if DHCP is desired.
Network 1 IP Address	The IP address for this interface. Leave blank if DHCP is desired.
Network 1 Netmask	The netmask or prefix for this interface. Leave blank if DHCP is desired.
Please add the amount of disk space required before powering up the node.	2 settings
Application	

Back Next Finish Cancel

Click **Finish** on the final screen to begin deploying the virtual appliance.

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 Select a resource
- ✓ 4 Review details
- ✓ 5 Accept license agreements
- ✓ 6 Select configuration
- ✓ 7 Select storage
- ✓ 8 Select networks
- ✓ 9 Customize template
- 10 Ready to complete**

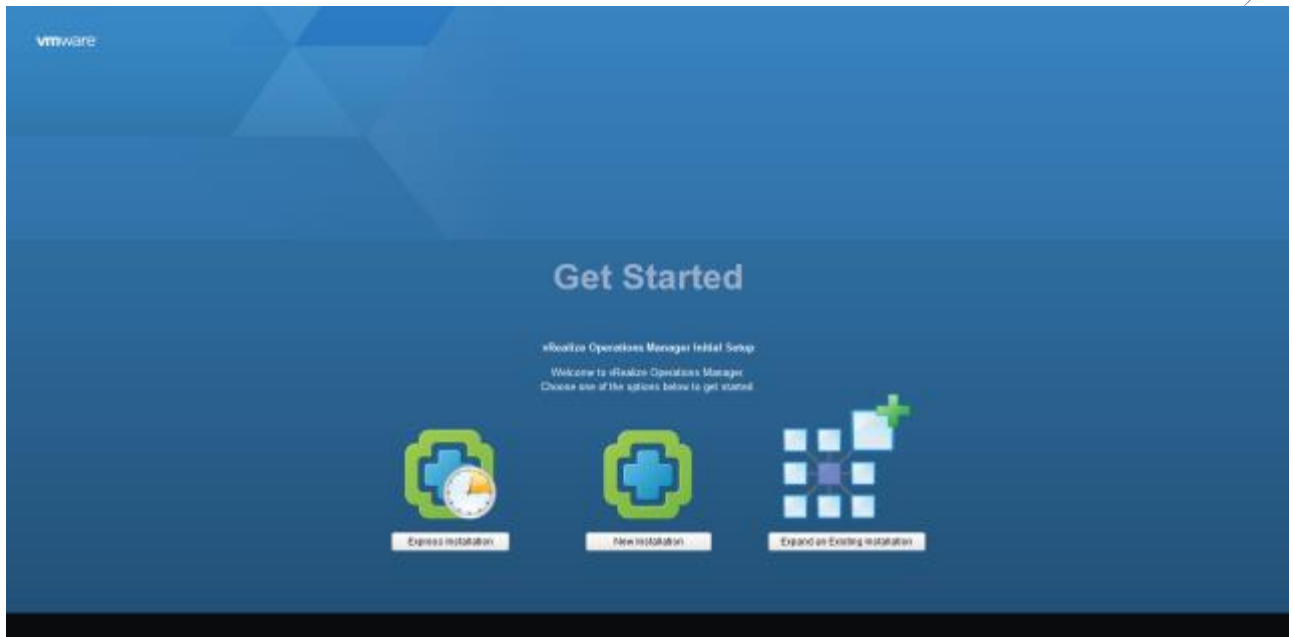
Ready to complete
Review configuration data.

Name	vROM
Source VM name	vRealize-Operations-Manager-Appliance-6.4.0.4614793_OVF10
Download size	1.7 GB
Size on disk	1.6 GB
Datacenter	Leeds
Resource	
Deployment configuration	Small
Storage mapping	1
Network mapping	1
IP allocation settings	IPv4, Static - Manual
Properties	DNS = Default Gateway = Network 1 IP Address = Network 1 Netmask = IPv6 = False Timezone setting = EtcUTC

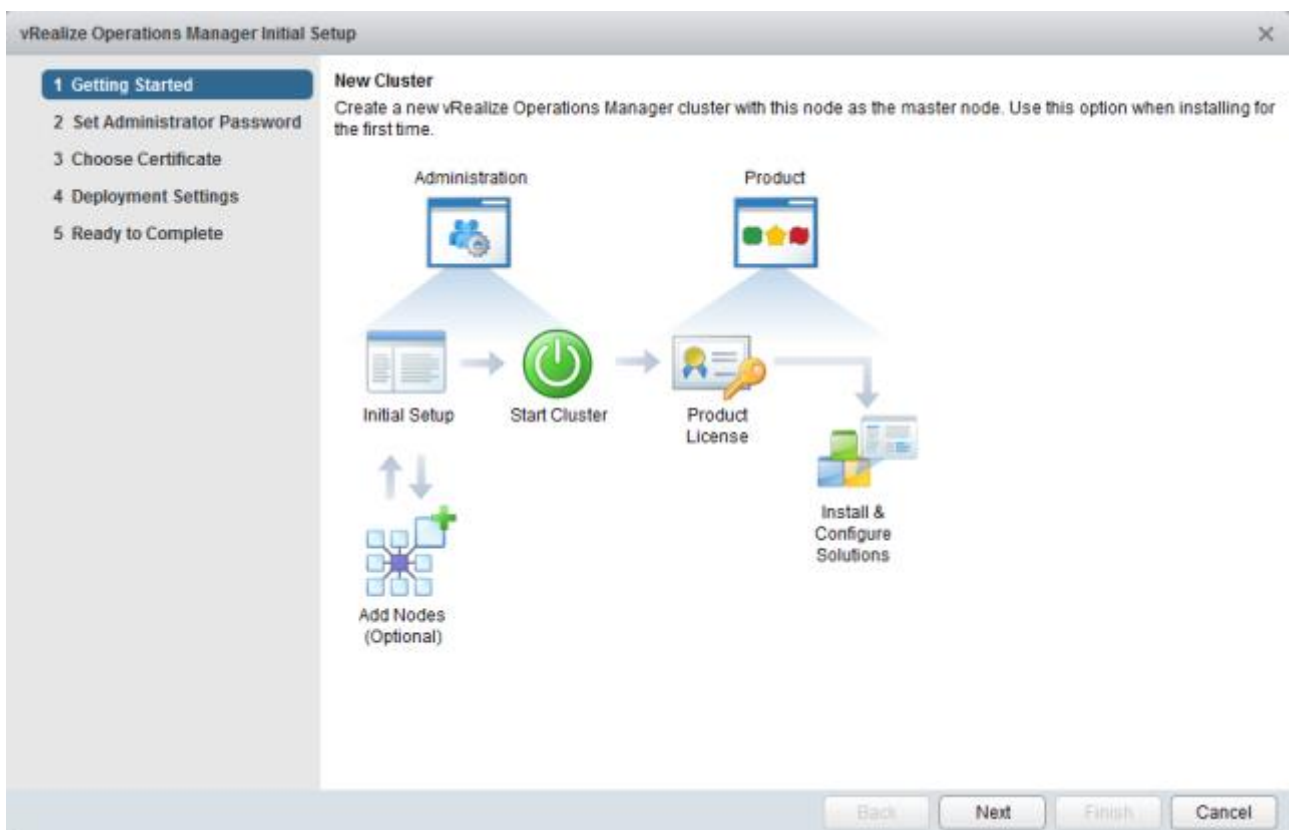
Back Next Finish Cancel

Setup

Once the virtual appliance has been deployed and is powered on, open a web browser to the FQDN or IP address configured during deployment. Select **New Installation**.



Click **Next** to begin the setup wizard.



Configure a password for the admin account and click **Next**.

vRealize Operations Manager Initial Setup

1 Getting Started
2 Set Administrator Password
 3 Choose Certificate
 4 Deployment Settings
 5 Ready to Complete

Set the Administrator account password
 Set the Administrator account password for this deployment of vRealize Operations Manager.

User name: admin

New password:

Re-enter password:

Passwords must meet the following requirements:

- Be at least eight characters long
- Be different from your user name
- Contain lowercase, uppercase, numeric, and non-alphanumeric characters

Back Next Finish Cancel

On the certificate page select either the default certificates or custom.

vRealize Operations Manager Initial Setup

1 Getting Started
 2 Set Administrator Password
3 Choose Certificate
 4 Deployment Settings
 5 Ready to Complete

Choose a certificate
 Select the server certificate that will be used for secure communication with the system. You can supply one of your own or use the default certificates generated by the vRealize Operations Manager system.

The certificate file must meet these criteria:

- The file is encoded in PEM format
- The certificate is valid for Server Authentication
- All certificates in the chain are included
- The private key is included
- The private key is not secured with a password

Please refer to the certificate documentation for details.

Use the default certificates
 Install a certificate

Select a PEM file to import Browse...

Certificate Information

Back Next Finish Cancel

Enter the host name for the master node and an NTP server, click **Next**.

vRealize Operations Manager Initial Setup

- ✓ 1 Getting Started
- ✓ 2 Set Administrator Password
- ✓ 3 Choose Certificate
- 4 Deployment Settings**
- 5 Ready to Complete

Deployment Settings

Enter general settings for this cluster deployment.

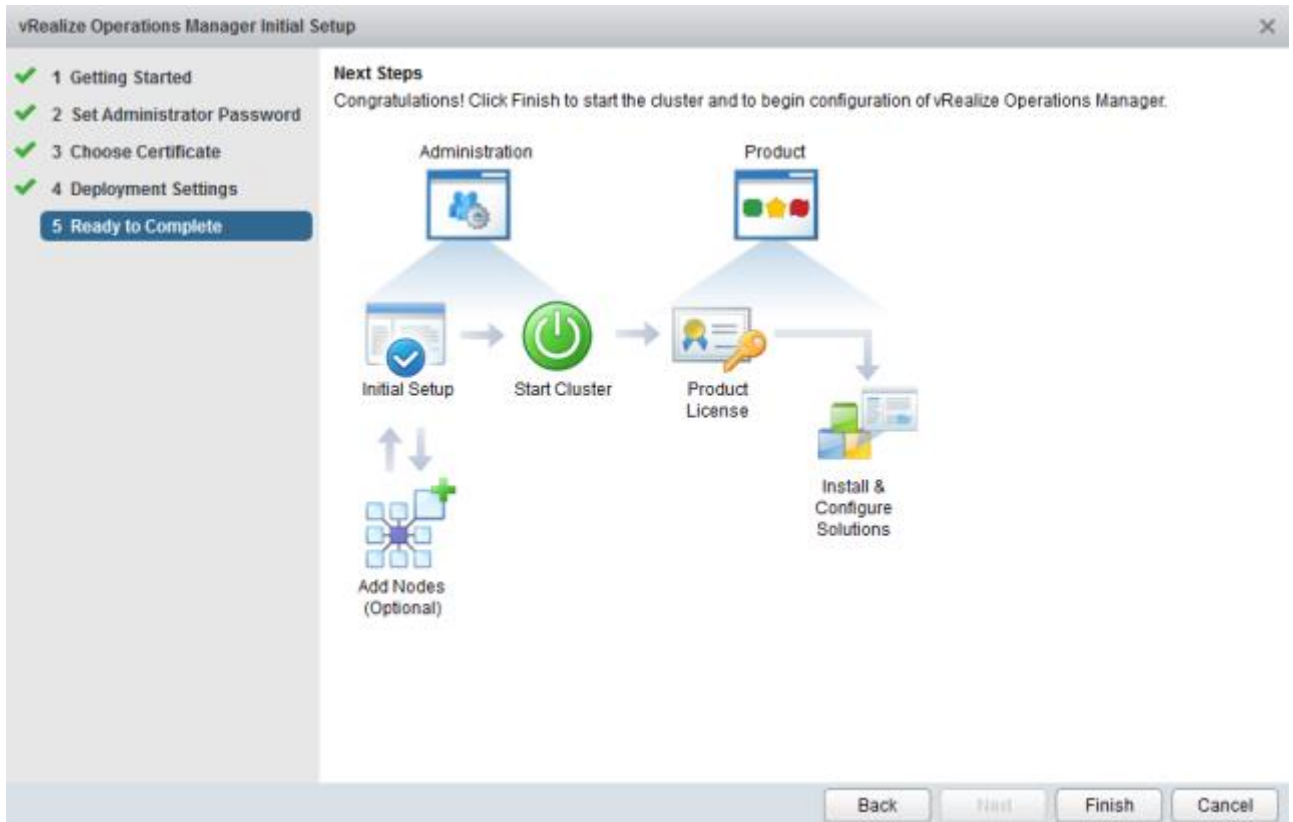
Cluster Master Node Name:

Enter Network Time Protocol servers that will be used to synchronize time across nodes in the cluster.

NTP Server Address:

NTP Servers	Status

Click **Finish**.



Since we are deploying a single node cluster we will now click **Start vRealize Operations Manager**. Depending on the size of the cluster it may take 10-30 minutes to fully start up.



Confirm that the cluster has adequate nodes for the environment and click **Yes** to start up the application.

Confirm First Application Startup

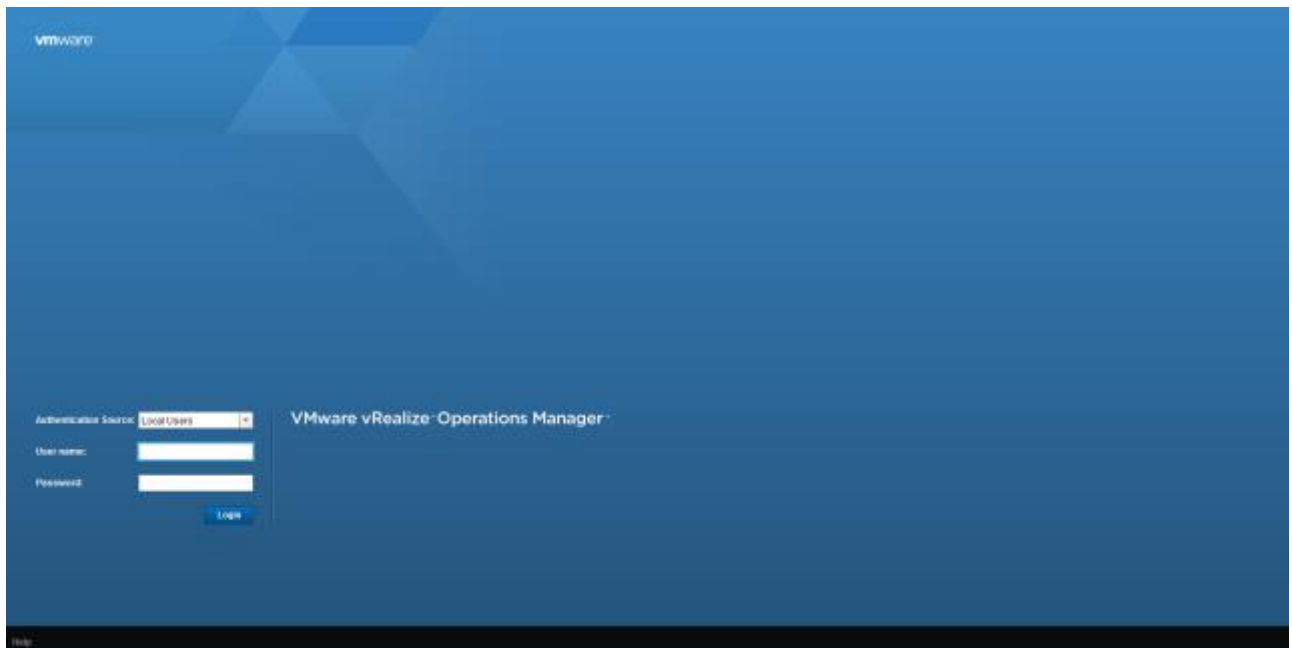
Before starting the vRealize Operations Manager for the first time, ensure your cluster has an adequate number of nodes to manage your environment efficiently. To add another node to the cluster, use a web browser to navigate to the node you want to add and choose Expand Existing Installation during the installation process.

Click Yes to start the application. The first start may take a few minutes to complete. Click No to return to Initial Setup Status Details page.

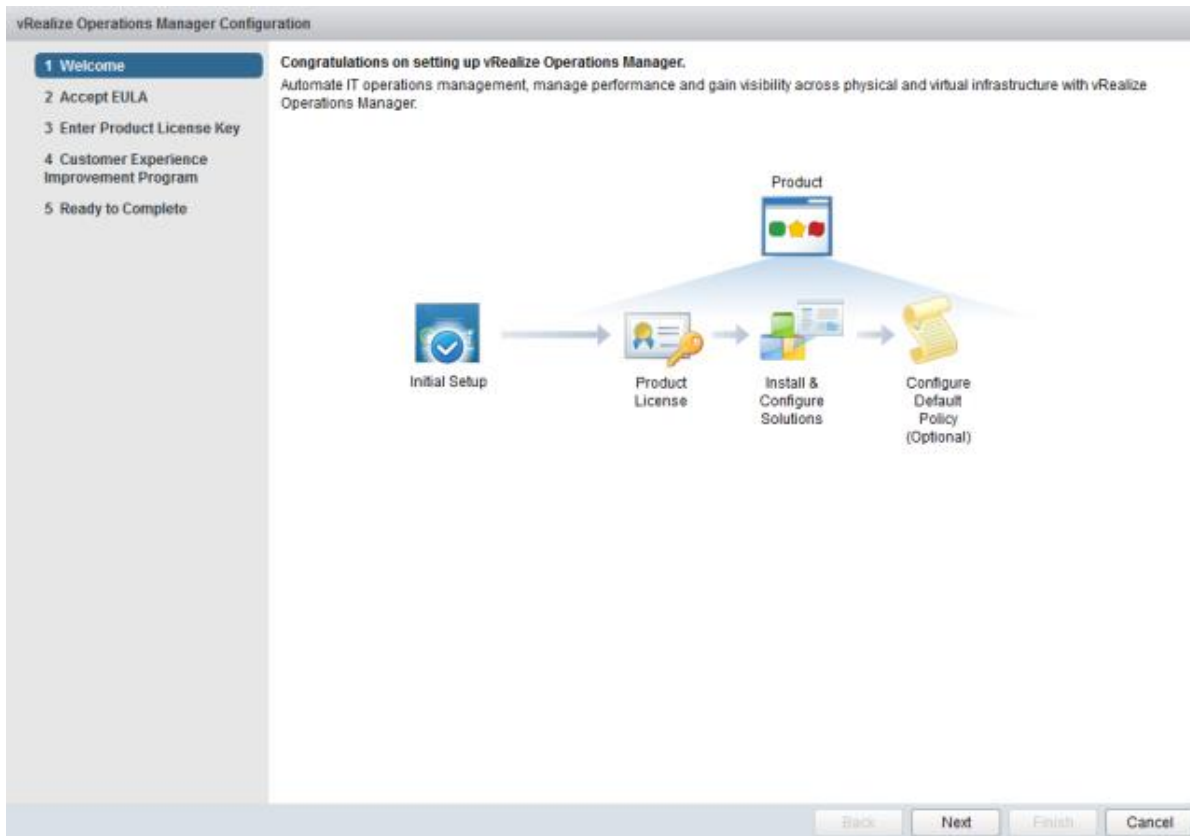
Yes

No

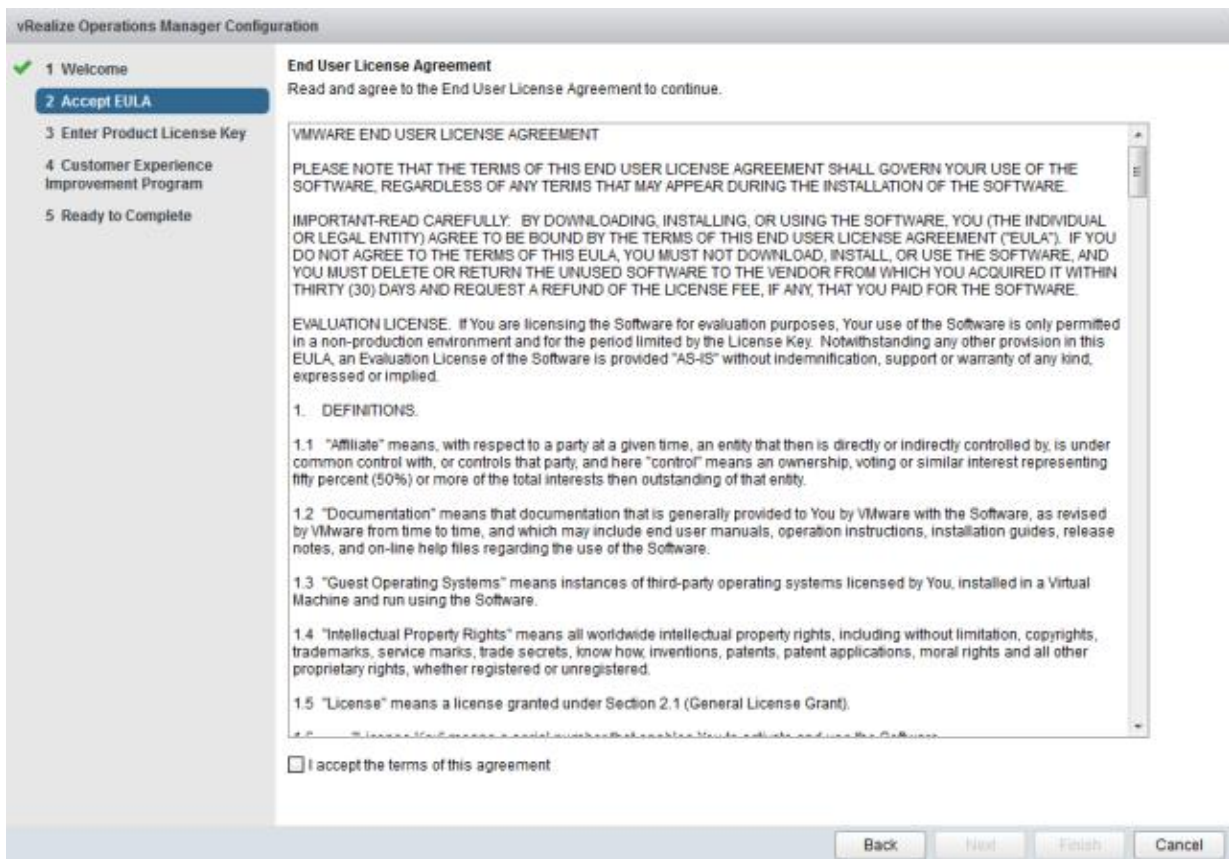
After the cluster has started you will be diverted to the user interface. Log in with the admin details configured earlier.



The configuration wizard will automatically start, click **Next**.



Accept the EULA and click **Next**.



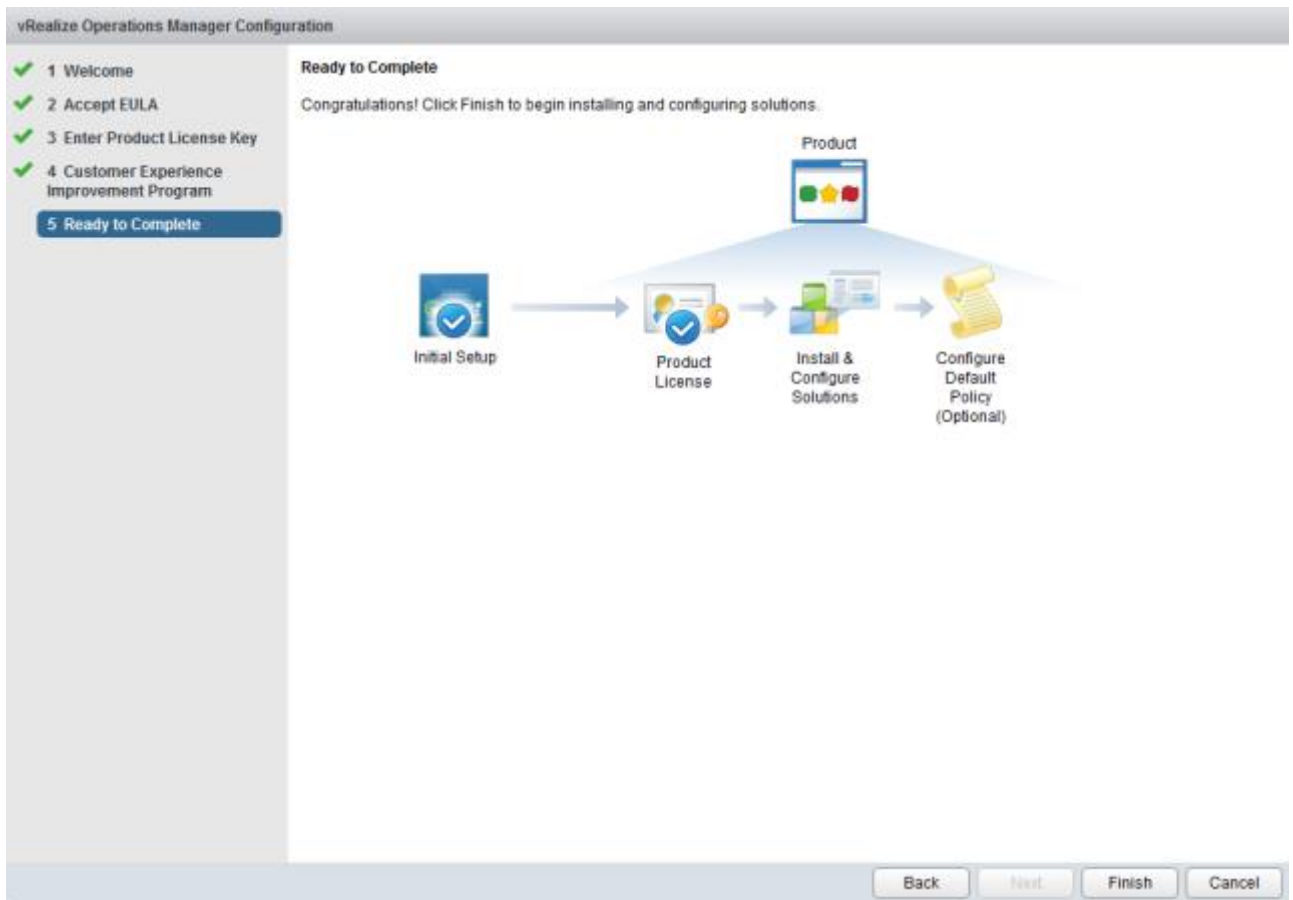
Enter the license key or use the 60 day product evaluation. Click **Next**.

The screenshot shows the 'vRealize Operations Manager Configuration' wizard at step 3, 'Enter Product License Key'. The left sidebar shows a progress list with steps 1 through 5. Step 3 is highlighted in blue. The main content area has the title 'Enter vRealize Operations Manager product license key' and a sub-header 'If you do not have your license key you can retrieve it from My VMware.' Below this, there are two radio button options: 'Product Evaluation (no key required)' which is selected, and 'Product Key:' followed by a text input field and a 'Validate License Key' button. At the bottom right, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

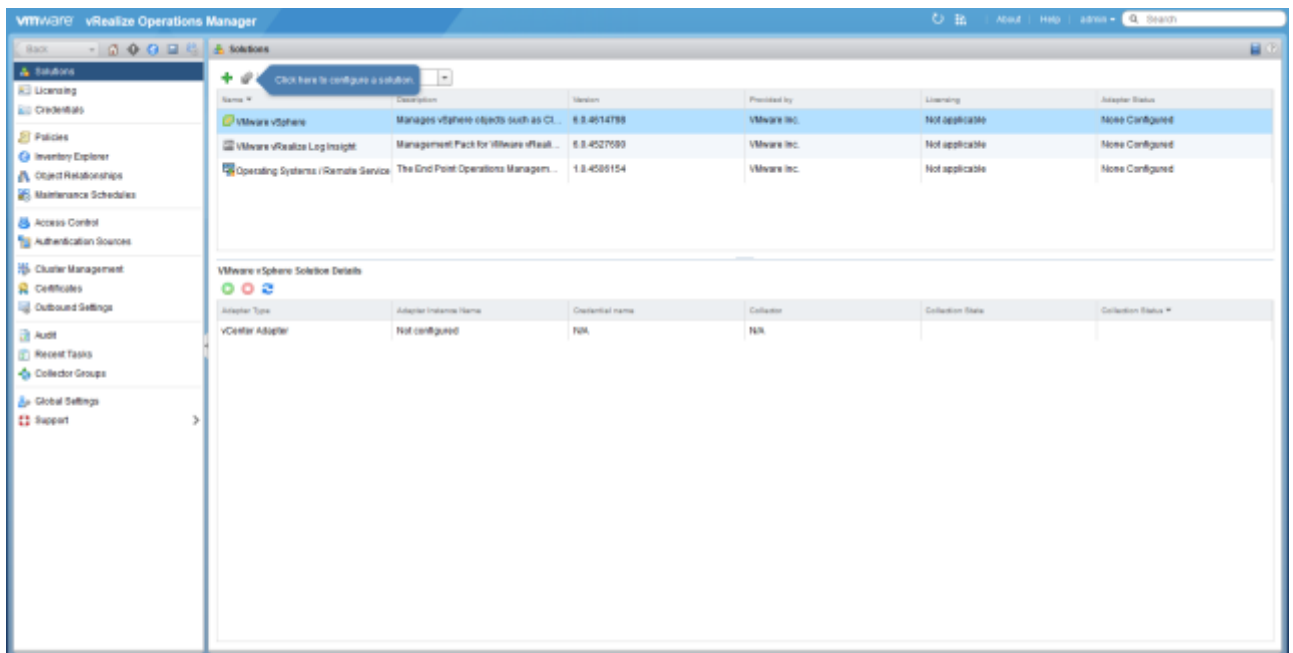
Select whether or not to join the VMware Customer Experience Improvement Program and click **Next**.

The screenshot shows the 'vRealize Operations Manager Configuration' wizard at step 4, 'Customer Experience Improvement Program'. The left sidebar shows a progress list with steps 1 through 5. Step 4 is highlighted in blue. The main content area has the title 'Customer Experience Improvement Program' and a sub-header 'VMware's Customer Experience Improvement Program ("CEIP") provides VMware with information that enables VMware to improve its products and services, to fix problems, and to advise you on how best to deploy and use our products. As part of the CEIP, VMware collects technical information about your organization's use of VMware products and services on a regular basis in association with your organization's VMware license key(s). This information does not personally identify any individual.' Below this, there is a paragraph of additional information regarding data collection and a link to the Trust & Assurance Center. At the bottom, there is a checkbox labeled 'Join the VMware Customer Experience Improvement Program' which is checked. At the bottom right, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

Click **Finish**.



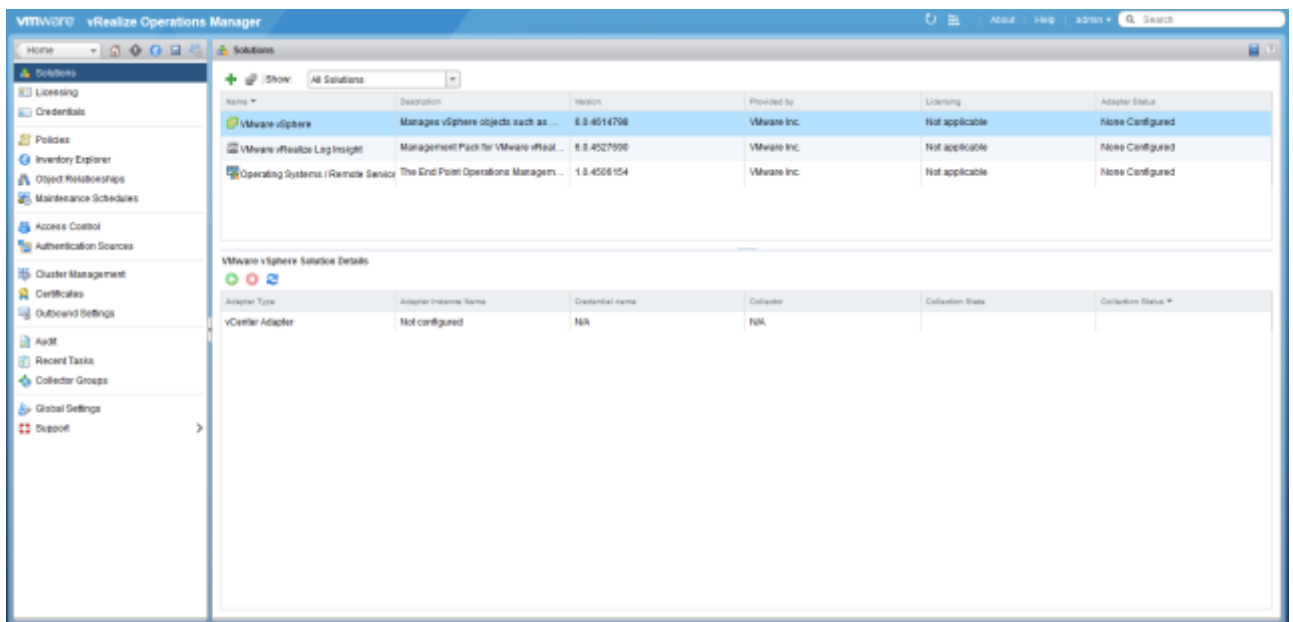
The vRealize Operations Manager dashboard will be loaded. The installation process is now complete. The admin console can be accessed by browsing to <https://10.10.10.152/ui/> where is the IP address of FQDN of your vRealize Operations Manager appliance or server.



Post Installation

After first setup we need to secure the console by creating a root account. Browse to the vROps appliance in vSphere and open the console. Press **ALT + F1** and log in as **root**. You will be prompted to create a root password. All other work in this post is carried out using the vRealize Operations web interface.

The next step is to configure the vCenter Adapter to collect and analyse data. Select **Administration** from the left hand navigation pane. From the **Solutions** menu select **VMware vSphere** and click the **Configure** icon.



Enter the vCenter Server details and credentials with administrator access.

Manage Solution - VMware vSphere

Adapter Type	Description	Instances	Version	Provided by	Reset Default Content
vCenter Adapter	Provides the connection information ...	0	2.0.4614801	VMware Inc.	

+ ×

Instance Name ▲

Instance Settings

Display Name

Description

Basic Settings

vCenter Server

Credential

vCenter Actions

Enable Actions Enable Disable

Alternate Action Credentials (optional)

▶ **Advanced Settings**

Page 1 of 1

Click **Test Connection** to validate connectivity to the vCenter Server.

Manage Solution - VMware vSphere

Adapter Type	Description	Instances	Version	Provided by	Reset Default Content
vCenter Adapter	Provides the connection information ...	0	2.0.4614801	VMware Inc.	

+ ×

Instance Name ▲

Instance Settings

Display Name

Description

Basic Settings

vCenter Server

Credential

vCenter Actions

Enable Actions Enable Disable

Alternate Action Credentials (optional)

▶ **Advanced Settings**

Info

Test was successful.

Page 1 of 1

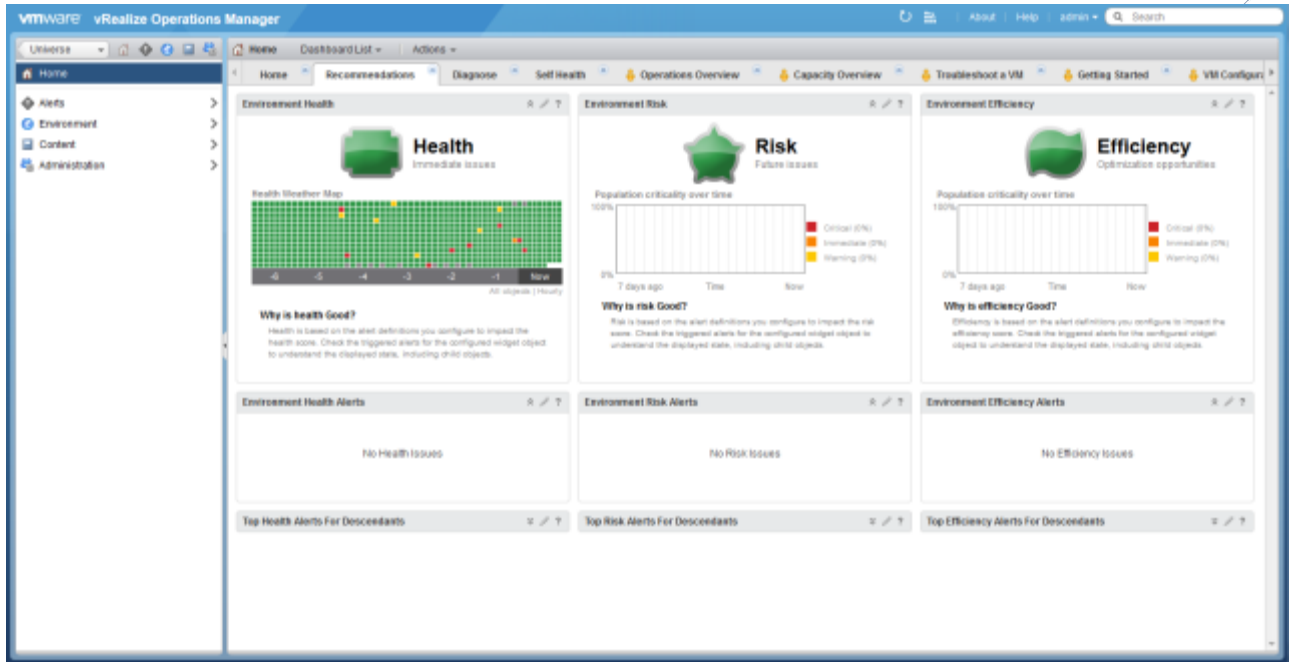
Expand **Advanced Settings** and review the default settings, these can be changed if required. Click **Define Monitoring Goals** and review the default policy, again this can be changed to suit your environment.

When you're ready click **Save Settings** and **Close**. The vCenter adapter will now begin collecting data. Collection cycles begin every 5 minutes, depending on the size of your environment the initial collection may take more than one cycle.

VMware vSphere Solution Details

Adapter Type	Adapter Instance Name	Credential name	Collector	Collection State
vCenter Adapter		admin	vRealize Operations Manager Colle...	Collecting

Once data has been collected from the vCenter Server go back to the **Home** page and browse the different tabs and dashboards.



vRealize LogInsight

vRealize Log Insight delivers heterogeneous and highly scalable log management with intuitive, actionable dashboards, sophisticated analytics and broad third-party extensibility. It provides deep operational visibility and faster troubleshooting across physical, virtual and cloud environments. (vmware)

Prerequisites

Username: admin

Password: P@ssw0rd

Username: Administrator@vsphere.local

Password: P@ssw0rd

Build

OS	vRealize Operation Manager Appliance	
RAM	4GB	
CPU	2vCPU	
HDD		
Network	1 NIC	10.10.10.165

Deployment

Download the VMware vRealize Log Insight 4.0 virtual appliance [here](#). Log into the vSphere web client and right click the host or cluster where the appliance will be deployed, select **Deploy OVF Template**. Browse to the location of the downloaded OVA file and click **Next**. Review the template details and click **Next**.

Deploy OVF Template

- ✓ 1 **Select template**
- ✓ 2 **Select name and location**
- ✓ 3 Select a resource
- 4 Review details
- 5 Accept license agreements
- 6 Select configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Select template
Select an OVF template.

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

URL

Local file

1 file(s) selected, click Next to validate

⚠ Use **multiple selection** to select all the files associated with an OVF template (.ovf, .vmdk, etc.)

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 **Select name and location**
- ✓ 3 Select a resource
- 4 Review details
- 5 Accept license agreements
- 6 Select configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Select name and location
Enter a name for the OVF and select a deployment location.

Name

Select a datacenter or folder.

- 10.10.10.142
 - ▶ Datacenter
 - ▶ TEST_Datacenter

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 **Select a resource**
- 4 Review details
- 5 Accept license agreements
- 6 Select configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Select a resource
Select where to run the deployed template.

Filter **Browse**

Select a host or cluster or resource pool or vapp.

- ▼ Datacenter
 - ▶ vSAN

Deploy OVF Template

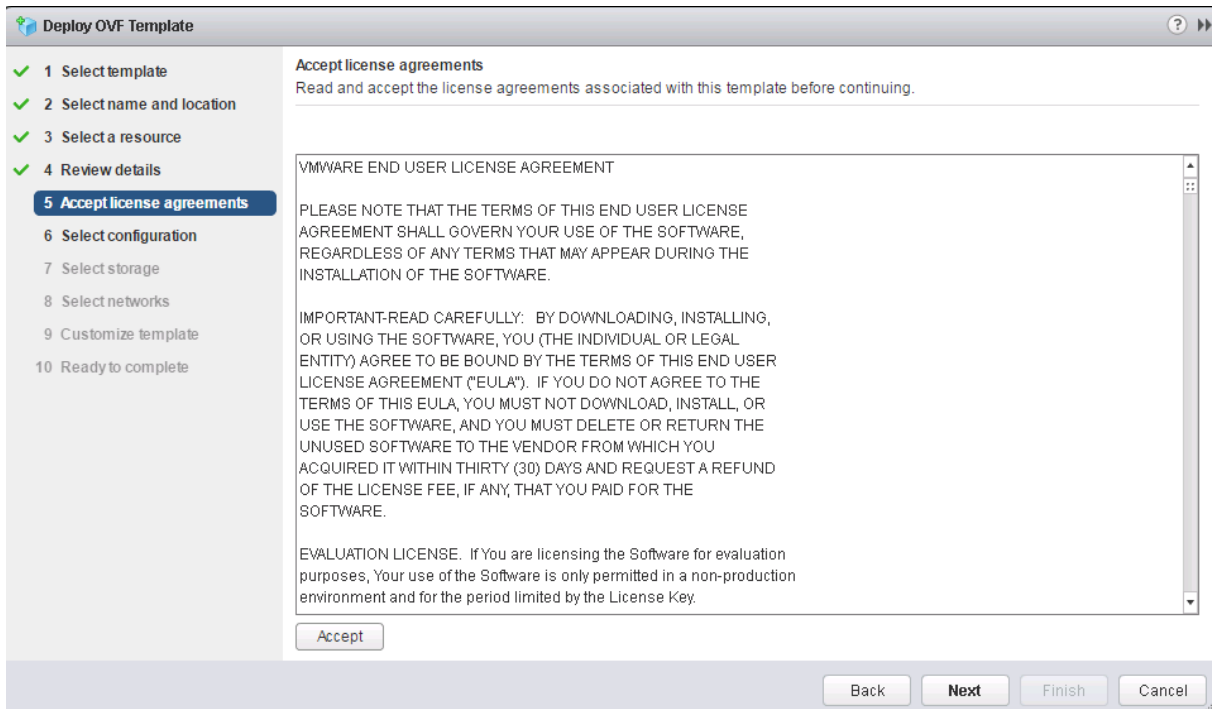
- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 Select a resource
- 4 **Review details**
- 5 Accept license agreements
- 6 Select configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Review details
Verify the template details.

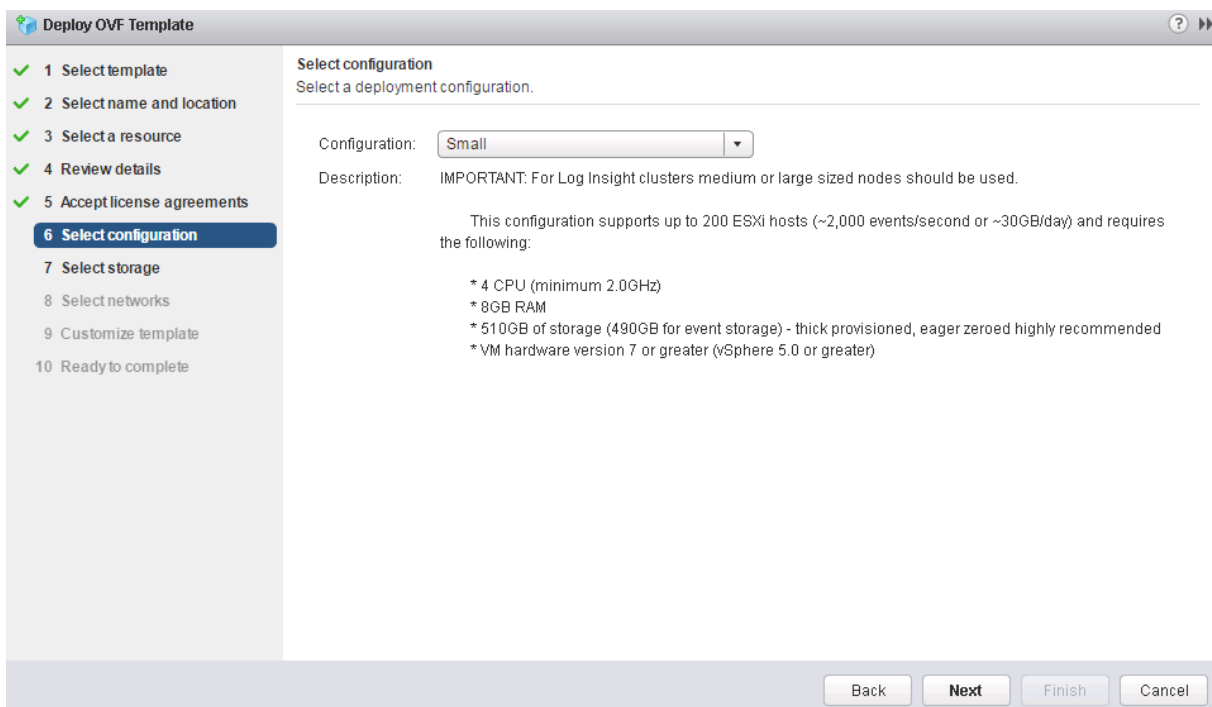
⚠ The OVF package contains advanced configuration options, which might pose a security risk. Review the advanced configuration options below. Click next to accept the advanced configuration options.

Product	VMware vRealize Log Insight
Version	4.0.0
Vendor	VMware Inc.
Publisher	✓ VMware\, Inc. (Trusted certificate)
Download size	860,4 MB
Size on disk	Unknown (thin provisioned) 570,5 GB (thick provisioned)
Description	VMware vRealize Log Insight
Extra configuration	keyboard.typematicindelay = 2000000

Accept the license agreement and click **Next**.



Select the appropriate deployment configuration and click **Next**. See above for sizing assistance.



Select the datastore to use and click **Next**. Select the network to use and click **Next**.

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 Select a resource
- ✓ 4 Review details
- ✓ 5 Accept license agreements
- ✓ 6 Select configuration
- 7 Select storage**
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Select storage
Select location to store the files for the deployed template.

Select virtual disk format:

VM storage policy:

Show datastores from Storage DRS clusters ⓘ

Filter

Name	Status	VM storage policy	Capacity	Free
local-144	✓ Normal	VM Encryption Po...	2,5 GB	1,92 GB
local-145	✓ Normal	VM Encryption Po...	2,5 GB	1,92 GB
local-146	✓ Normal	VM Encryption Po...	2,5 GB	1,92 GB
local-147	✓ Normal	VM Encryption Po...	2,5 GB	1,92 GB
NFS	✓ Normal	VM Encryption Po...	94 GB	69,86 GB
NFS2	✓ Normal	VM Encryption Po...	46,25 GB	43,61 GB
vsanDatastore	✓ Normal	Virtual SAN Defau...	791,94 GB	790,84 GB

7 Objects

Deploy OVF Template

- ✓ 1 Select template
- ✓ 2 Select name and location
- ✓ 3 Select a resource
- ✓ 4 Review details
- ✓ 5 Accept license agreements
- ✓ 6 Select configuration
- ✓ 7 Select storage
- 8 Select networks**
- 9 Customize template
- 10 Ready to complete

Select networks
Select a destination network for each source network.

Source Network	Destination Network
Network 1	<input type="text" value="DPortGroup"/>

Description - Network 1
The "Network 1" network

IP Allocation Settings

IP protocol: IP allocation: Static - Manual ⓘ

Enter the network settings for the virtual appliance. Expand **Other properties** and configure a root password. Once complete click **Next**. When adding DNS servers do not specify more than 2 DNS entries.

Deploy OVF Template

1 Select template
2 Select name and location
3 Select a resource
4 Review details
5 Accept license agreements
6 Select configuration
7 Select storage
8 Select networks
9 Customize template
10 Ready to complete

Customize template
Customize the deployment properties of this software solution.

All properties have valid values [Show next...](#) [Collapse all...](#)

Property	Description
Networking Properties	7 settings
DNS	The domain name servers for this VM (comma separated). Leave blank if DHCP is desired. WARN not specify more than two DNS entries or no DNS entries will be configured!
DNS domain	The domain name server domain for this VM. Note this option only works if DNS is specified above
DNS searchpath	The domain name server searchpath for this VM (comma or space separated). Note this option on DNS is specified above.
Default Gateway	The default gateway address for this VM. Leave blank if DHCP is desired.
Hostname	The hostname or the fully qualified domain name for this VM. Leave blank if DHCP is desired.
Network 1 IP Address	The IP address for this interface. Leave blank if DHCP is desired.

Back Next Finish Cancel

Review the summary page, tick **Power on after deployment**, and click **Finish**. The appliance console has a similar look and feel to ESXi. If you ever need to use the command line login with the root account. The password should be set during the OVA deployment, if you missed it then the root password is blank.

```

VMware vRealize Log Insight 4.0.0 Build 4624504

Visit VMware vRealize Log Insight:
http://10.10.10.165/

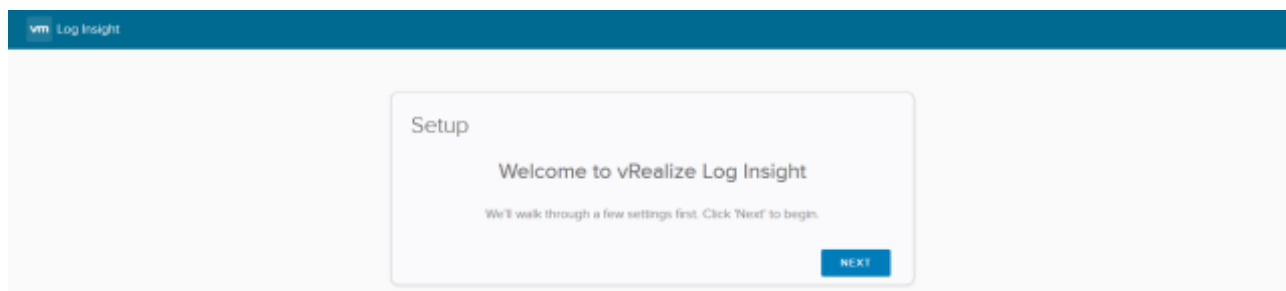
To access the console, use CTRL+ALT+F1.
- If using a Windows keyboard, press WindowsKey+Alt+F1
  or press Ctrl+Alt+Space, then release the spacebar while
  holding down Ctrl+Alt, and then press F1.
- If using a Mac keyboard, press Fn+Ctrl+Alt+F1.
- If the above key combinations do not work, check your keyboard mapping.

To switch back to this screen, use CTRL+ALT+F2.
- Use the above key combinations but replace F1 with F2.

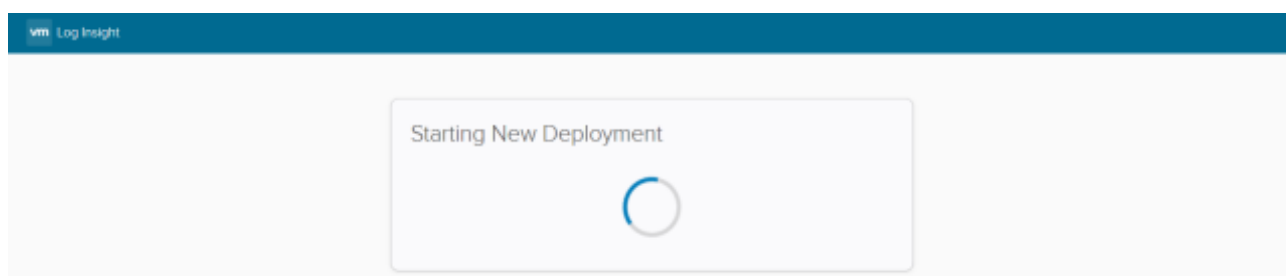
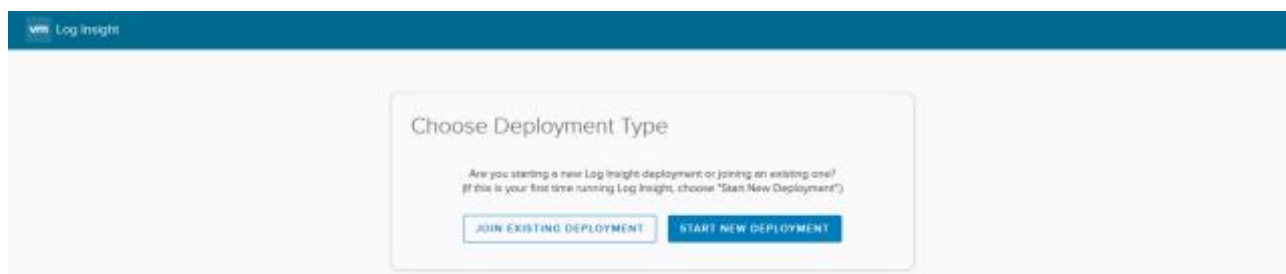
```

Configuration

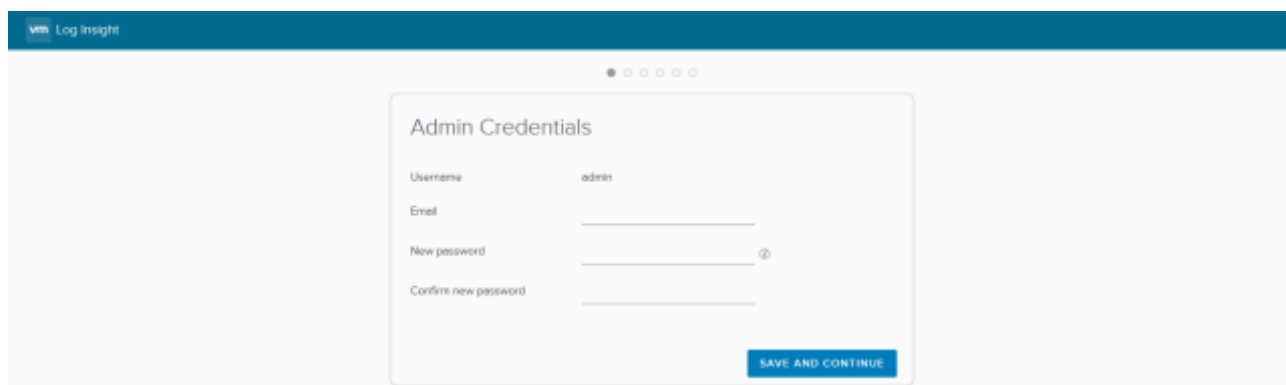
Open a web browser and connect to the IP address or FQDN of the newly deployed appliance. The setup wizard will autostart, click **Next**.



Click **Start New Deployment**.



Enter an email address and new password for the admin user, click **Next**.



Enter a license key and click **Save and Continue**.

Configure system notification settings and click **Save and Continue**.

Enter the NTP server(s) to use and click **Test**. If the test succeeds click **Save and Continue**.

Configure the SMTP server to use and click **Save and Continue**.

VMware Log Insight

SMTP Configuration

SMTP settings are used to enable outgoing email for alerts and important system notifications.

SMTP Server: localhost

Port: 25

SSL (SMTPS): ⓘ

STARTTLS Encryption: ⓘ

Sender: loginsight@example.com ⓘ

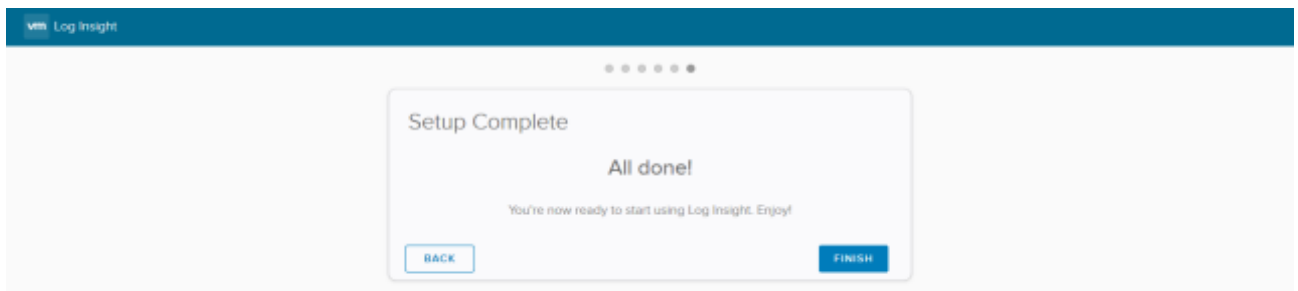
Username: Optional

Password: Optional

Email address: [SEND TEST EMAIL](#)

[BACK](#) [SKIP](#) [SAVE AND CONTINUE](#)

On the setup complete page click **Finish**.



The vRealize Log Insight appliance is now deployed and can begin collecting data. In this example we will be configuring vSphere Integration to automatically collect logs and events from vCenter Server and ESXi hosts. Click **Configure vSphere Integration**.

VMware Log Insight | Dashboards | Interactive Analytics | admin

Ready to Ingest Data

Log Insight is configured and ready to collect logs. Here are some ways you can get log data into Log Insight:

- vSphere Integration**
 Log Insight can integrate with vSphere to automatically ingest events from vCenter Server and logs from ESXi hosts.
[Configure vSphere integration >](#)
- Agents**
 Log Insight has collection agents available to send files and event logs from Linux or Windows to Log Insight.
[Download and install Agents >](#)
- Syslog**
 Log Insight can ingest data from any source via syslog. Just set the Log Insight server as your syslog destination.

You can also visit the [Admin Page](#) to enable Active Directory, Archiving, vRealize Operations integration and more. For additional documentation, see the [Online Help](#).

Enter the connection details of the vCenter Server. To configure only specific hosts to send logs to Log Insight click **Advanced options**. Test the connection and when you're ready click **Save**.

NSX

NSX enables the creation of entire networks in software and embeds them in the hypervisor layer, abstracted from the underlying physical hardware. All network components can be provisioned in minutes, without the need to modify the application. (vmware.com)

Prerequisites

Username: admin

Password: P@ssw0rd

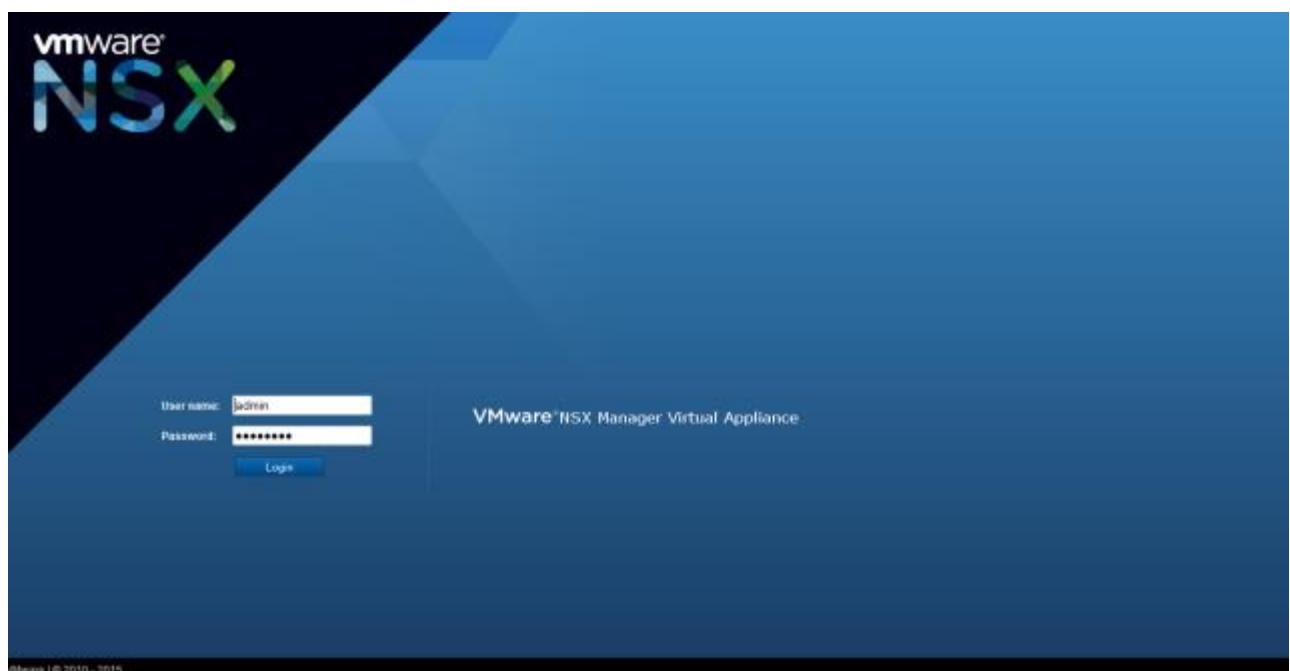
Build

OS	NSX Manager	
RAM	4GB	
CPU	2vCPU	
HDD	60GB	
Network	1 NIC	10.10.10.150

Installing NSX Manager

NSX Manager is deployed and registered with vCenter Server on a 1:1 mapping. Upon registration a plug-in is injected into the vSphere web client to enable deployment and management of logical networks and services.

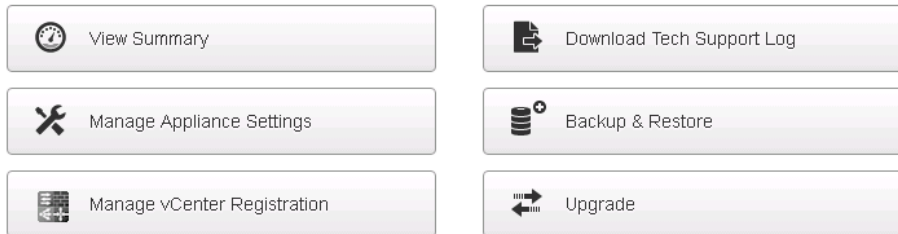
Deploy the OVA file to the vCenter, in the customisation options configure the appliance network settings. Once the NSX Manager appliance is deployed and powered on open a web browser to the configured IP address. Log in with the **admin** account, if you didn't change the password during deployment the default password is **default**.



Click **Manage vCenter Registration**,



NSX Manager Virtual Appliance Management



under **vCenter Server** click **Edit**. Enter the name of the vCenter server to register NSX Manager and the relevant credentials, click **Ok**. Configure the vCenter settings under **Lookup Service URL** by clicking **Edit**, enter the vCenter host name and SSO details, click **Ok**.

Lookup Service URL Unconfigure Edit

For vCenter versions 5.5 and above, you may configure Lookup Service and provide the SSO administrator credentials to register NSX Management Service as a solution user. It is also recommended to set the NTP server for SSO configuration to work correctly.

Lookup Service URL:	https://10.10.10.142:443/lookupservice/sdk
SSO Administrator User Name:	Administrator@vsphere.local
Status:	● Connected

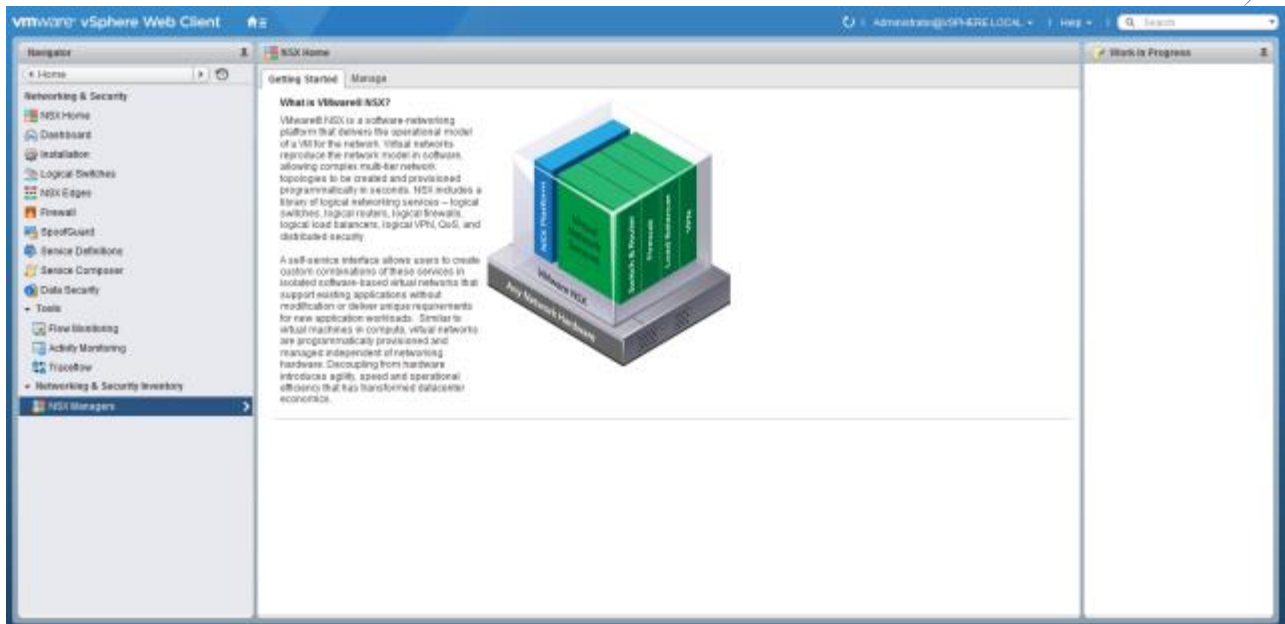
vCenter Server Edit

Connecting to a vCenter server enables NSX Management Service to display the VMware Infrastructure inventory. HTTPS port (443) needs to be opened for communication between NSX Management Service, ESX and VC. For a full list of ports required, see section 'Client and User Access' of Chapter 'Preparing for Installation' in the 'NSX Installation and Upgrade Guide'.

If your vCenter server is hosted by a vCenter Server Appliance, please ensure that appropriate CPU and memory reservation is given to this appliance VM. After successful configuration of vCenter on NSX Manager, you need to log out of any active client sessions on vSphere Web Client and log back in to enable NSX user interface components.

vCenter Server:	10.10.10.142
vCenter User Name:	Administrator@vsphere.local
Status:	● Connected - Last successful inventory update was on Tue, 09 May 2017 17:20:04 GMT

After configuring NSX Manager restart the VMware vSphere Web Client on the vCenter Server the NSX Manager was registered with. You may also need to restart your browser. Log in to the vSphere web client and browse to **Networking & Security**, click **NSX Managers** and verify the newly deployed NSX Manager is present.



To configure additional permissions select the NSX Manager and click **Manage, Users**. Here you can add, edit, and remove users and permissions. Each role provides a description of the level of access, for more information on NSX permissions click [here](#). To add Active Directory permissions to NSX Manager select the **Domains** tab, and click the green plus symbol to add the LDAP details.

To apply a license key to NSX Manager select the **Administration** option from the home page of the vSphere web client, click **Licenses, Assets, Solutions**. Highlight **NSX for vSphere** and click the **All Actions** drop down menu, select **Assign License**. Add a new license key or assign an existing license key and click **Ok**.

NSX Controllers

NSX controller is an advanced distributed state management system that controls virtual networks and overlay transport tunnels.

NSX controller is the central control point for all logical switches within a network and maintains information of all virtual machines, hosts, logical switches, and VXLANs. The controller supports two new logical switch control plane modes, Unicast and Hybrid. These modes decouple NSX from the physical network. VXLANs no longer require the physical network to support multicast in order to handle the Broadcast, Unknown unicast, and Multicast (BUM) traffic within a logical switch. The unicast mode replicates all the BUM traffic locally on the host and requires no physical network configuration. In the hybrid mode, some of the BUM traffic replication is offloaded to the first hop physical switch to achieve better performance. (vmware.com)

Prerequisites

Username: admin

Password: \$DwHp5T#3D~=-

Build

OS	NSX Controllers	x3
RAM	4GB	

CPU	2vCPU	
HDD	20GB	
Network	1 NIC	10.10.10.137 10.10.10.138 10.10.10.139

Log into the vSphere web client and select Networking & Security. From the left hand navigator pane click **Installation**. In the NSX Controllers section click the green plus symbol to add a controller.

The screenshot shows the VMware vSphere Web Client interface. The left-hand navigation pane is expanded to 'Networking & Security' > 'Installation'. The main content area shows the 'NSX Managers' section with a table containing one entry:

NSX Manager	IP Address	vCenter	Version
10.10.10.150	10.10.10.150	10.10.10.142	6.3.0.5007049

Below the table, there is a section for 'NSX Controller nodes' with a green plus icon and an 'Actions' button.

Populate the fields in the Add Controller wizard. For the IP Pool click **Select**; each NSX Controller uses an IP address from the IP Pool. Create a new pool click **New IP Pool**.

Add Controller ?

Name: *

NSX Manager: *

Datacenter: *

Cluster/Resource Pool: *

Datastore:

Host:

Folder:

Connected To: * Select Remove

IP Pool: * Select

Password: *

Confirm password: *

To create a new IP Pool fill in the details in the Add Static IP Pool wizard. The IP Pool used can be shared with other services (i.e. doesn't have to be dedicated to NSX Controllers) as long as there are enough free IP addresses in the pool for all 3 controllers.

Add Static IP Pool

Name: *

Gateway: *
A gateway can be any IPv4 or IPv6 address.

Prefix Length: *

Primary DNS:

Secondary DNS:

DNS Suffix:

Static IP Pool: *
for example 192.168.1.2-192.168.1.100 or
abcd:87:87::10-abcd:87:87::20

When you have configured the IP Pool click **Ok** on the Add Controller wizard. The first controller will now be deployed.

NSX Controller nodes

+ x 📄 ⚙️ Actions

Name	Controller Node	NSX Manager	Status
	controller-1		Deploying

When the deployment has completed repeat the process a further two times, using the same IP Pool. You may notice the password field is absent when deploying the second and third controllers; subsequent NSX controllers are configured with the same root password as the first deployed controller.

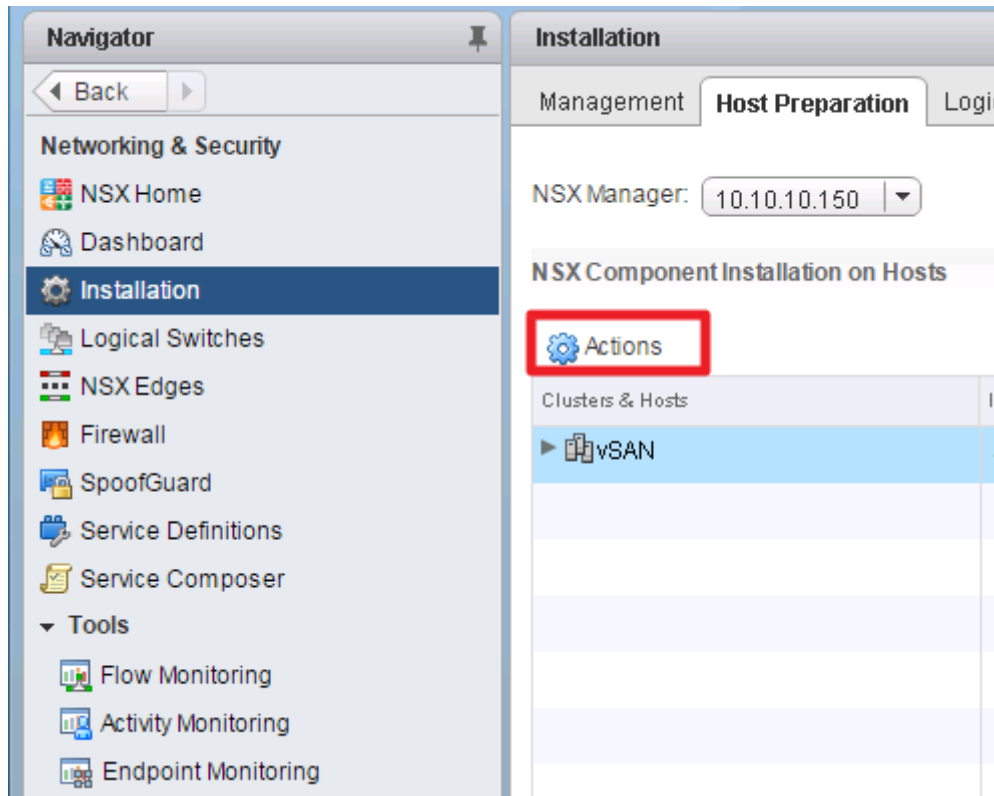
NSX Controller nodes

+ x 📄 ⚙️ Actions 🔍 Filter

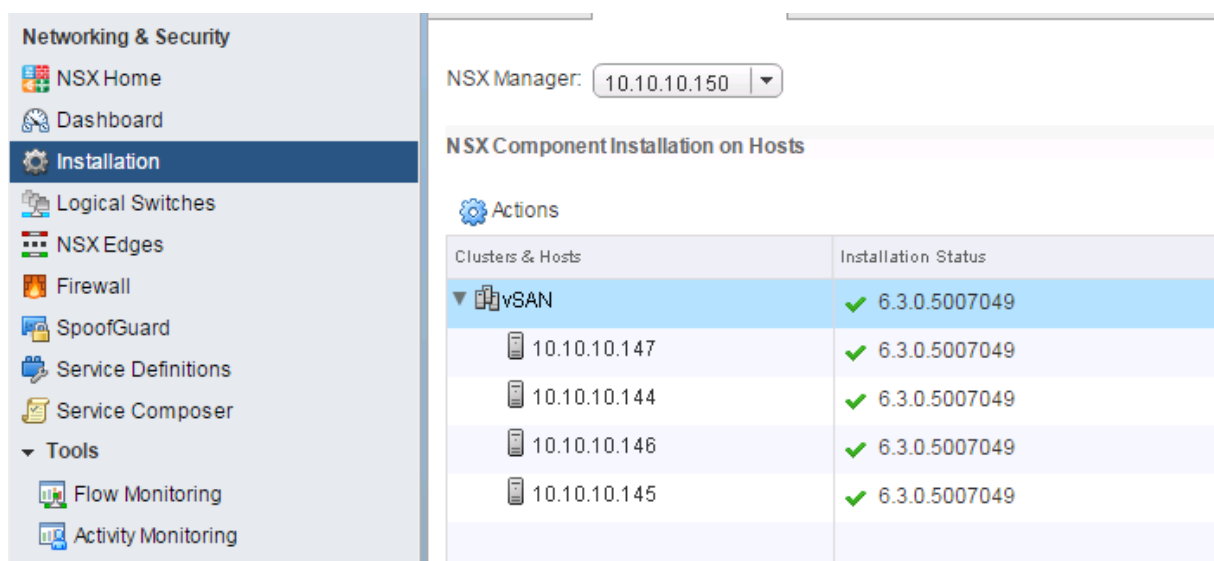
Name	Controller Node	NSX Manager	Status	Peers	Software Version
C03	10.10.10.139 controller-5	10.10.10.150	✓ Connected		6.3.49347
C01	10.10.10.137 controller-3	10.10.10.150	✓ Connected		6.3.49347
C02	10.10.10.138 controller-4	10.10.10.150	✓ Connected		6.3.49347

Host Preparation

Log into the vSphere web client and select **Networking & Security**. From the left hand navigator pane click **Installation**. Select the **Host Preparation** tab. Highlight the cluster you want to prepare for NSX and click **Actions**, from the drop down menu click **Install**.



Click **Yes** to confirm the install, the NSX kernel modules will now be pushed out to the hosts in the selected cluster. The installation status will change to Installing, and then a green tick with the version number.



VTEP Interfaces

VXLAN-Pool	10.10.10.156-10.10.10.160
------------	---------------------------

Stay within the Host Preparation tab, in the VXLAN for each cluster click **Not Configured**. Select the distributed switch and VLAN to use for the VTEP interfaces. Ensure the MTU size of the VTEP configuration and underlying network is at least 1600. Select the IP addressing option (you can create a new IP Pool in the **Use IP Pool** drop down menu). Specify the VMkernel NIC teaming policy and click **Ok**.

Configure VXLAN Networking ? >>

Switch: *

VLAN: *

MTU: *

VMKNic IP Addressing: * Use DHCP
 Use IP Pool

VMKNic Teaming Policy: *

VTEP: *

The VMkernel interfaces will now be configured on the specified distributed switch, once complete the VXLAN configuration of the cluster will show configured and a green tick.

NSX Manager:

NSX Component Installation on Hosts

Actions

Clusters & Hosts	Installation Status	Firewall	VXLAN
▼ vSAN	✓ 6.3.0.5007049	✓ Enabled	✓ Configured
10.10.10.147	✓ 6.3.0.5007049	✓ Enabled	
10.10.10.144	✓ 6.3.0.5007049	✓ Enabled	
10.10.10.146	✓ 6.3.0.5007049	✓ Enabled	
10.10.10.145	✓ 6.3.0.5007049	✓ Enabled	

VXLAN Network Identifiers

Switch to the **Logical Network Preparation** tab and click **Segment ID**. Click **Edit** to create the Segment ID Pool. Enter the range for the pool 5000-6000, and click **Ok**

Edit Segment IDs and Multicast Address Allocation ?

Provide a Segment ID pool and Multicast range unique to this NSX Manager.

Segment ID pool: *

(In the range of 5000-16777215)

Enable Multicast addressing

Multicast addresses are required only for Hybrid and Multicast control plane modes.

Management
Host Preparation
Logical Network Preparation
Service Deployments

NSX Manager:

VXLAN Transport
Segment ID
Transport Zones

Segment IDs & Multicast Addresses allocation (system wide settings)

Segment ID pool:	5000-6000
Multicast addresses:	

Transport Zone

Still under the **Logical Network Preparation** tab, select **Transport Zones**. Click the green plus symbol to add a new zone. In this example we will be using **Unicast** mode, allowing the NSX Controllers to look after the control plane. There are further network and IP requirements if you want to use multicast or hybrid modes. Add the clusters you want your VXLAN networks to span to the transport zone, click **Ok**.

☰ **New Transport Zone** ? >>

Name:

Description:

Replication mode:

Multicast
Multicast on Physical network used for VXLAN control plane.

Unicast
VXLAN control plane handled by NSX Controller Cluster.

Hybrid
Optimized Unicast mode. Offloads local traffic replication to physical network.

Select clusters that will be part of the Transport Zone

	Name	NSX vSwitch	Status
<input checked="" type="checkbox"/>	vSAN	Main	<input checked="" type="checkbox"/> Normal

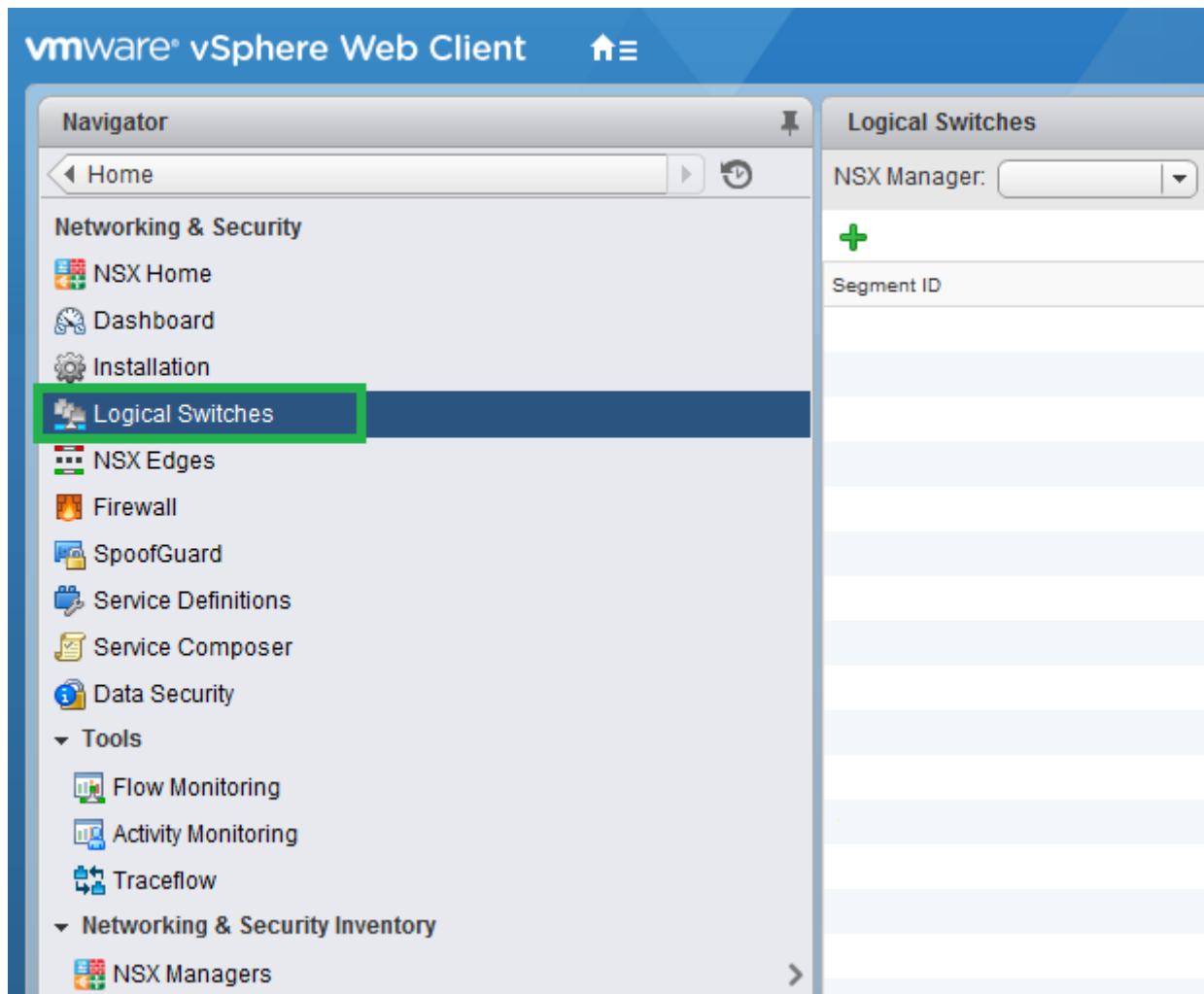
VXLAN Transport
Segment ID
Transport Zones

+ | | | | | Actions ▾

Name	Description	Scope	Control Plane Mode
Global		Global	Unicast

Logical Switches

From the left hand navigation pane locate **Logical Switches**.



Click the green plus symbol to add a new logical switch. Enter a name and description, the Transport Zone we created earlier will automatically be selected, tick **Unicast** mode and click **Ok**. **Enable IP Discovery** is enabled by default, this option minimises ARP traffic flooding within the logical switch.

New Logical Switch
? >>

Name: *

Description:

Transport Zone: * Change Remove

Replication mode: Multicast
Multicast on Physical network used for VXLAN control plane.

Unicast
VXLAN control plane handled by NSX Controller Cluster.

Hybrid
Optimized Unicast mode. Offloads local traffic replication to physical network.

Enable IP Discovery

Enable MAC Learning

OK
Cancel

Now the logical switch is created we will see the new port group listed under the relevant distributed switch. Port groups created as NSX logical switches start with **vxw-dvs-virtualwire-**. Virtual machines can be added to a logical switch using the Add Virtual Machine icon, or by selecting the port group in the traditional Edit Settings option direct on the VM.

< Back
Getting Started
Summary
Monitor
Configure
Permissions
Ports

10.10.10.142

- ▼ Datacenter
 - none
 - VM Network
 - ▼ Main
 - DPortGroup
 - Main-DVUplinks-165
 - vxw-dvs-165-virtualwire-2...

vxw-dvs-165-virtualwire-2-sid-5001-LAB2

Port binding: Static binding

Port allocation: Elastic

VLAN ID: --

▼ Distributed Port Group Details
► Policies

photon-temp - Edit Settings

Virtual Hardware | VM Options | SDRS Rules | vApp Options

CPU	1	
Memory	2048	MB
Hard disk 1	15,625	GB
SCSI controller 0	LSI Logic Parallel	
Network adapter 1	vww-dvs-165-virtualwire-2-sid-5001-1	<input checked="" type="checkbox"/> Connected
CD/DVD drive 1	Host Device	<input type="checkbox"/> Connected
Floppy drive 1	Host Device	<input type="checkbox"/> Connected
Video card	Specify custom settings	
VMCI device		
Other Devices		
Upgrade	<input type="checkbox"/> Schedule VM Compatibility Upgrade...	

Virtual machines added to a logical switch at this stage only have connectivity with each other. To create VXLAN subnets, route traffic between different logical switches, and route traffic outside of VXLAN subnets; we need an Edge Services Gateway or Distributed Logical Router

Edge Services Gateway

NSX Edge provides network edge security and gateway services to isolate a virtualized network. You can install an NSX Edge either as a logical (distributed) router or as a services gateway.

The NSX Edge logical (distributed) router provides East-West distributed routing with tenant IP address space and data path isolation. Virtual machines or workloads that reside on the same host on different subnets can communicate with one another without having to traverse a traditional routing interface.

The NSX Edge gateway connects isolated, stub networks to shared (uplink) networks by providing common gateway services such as DHCP, VPN, NAT, dynamic routing, and Load Balancing. Common deployments of NSX Edge include in the DMZ, VPN Extranets, and multi-tenant Cloud environments where the NSX Edge creates virtual boundaries for each tenant. (vmware.com)

Prerequisites

Username: admin

Password: \$DwHp5T#3D~=-

Build

OS	NSX Manager	
RAM	512 MB	
CPU	1vCPU	
HDD	500MB	
Network	9 NIC	OUTSIDE - 10.10.10.161 INSIDE - 10.10.20.1

From the left hand navigation pane select **NSX Edges**, click the green plus symbol to create a new Edge. Select **Edge Services Gateway**. Assign a name that will be displayed in the vSphere inventory and click **Next**.

New NSX Edge [?] [▶]

1 Name and description

- 2 Settings
- 3 Configure deployment
- 4 Configure interfaces
- 5 Default gateway settings
- 6 Firewall and HA
- 7 Ready to complete

Name and description

Install Type: **Edge Services Gateway**
Provides common gateway services such as DHCP, Firewall, VPN, NAT, Routing and Load Balancing.

Logical (Distributed) Router
Provides Distributed Routing and Bridging capabilities.

Name: *

Hostname:

Description:

Tenant:

Deploy NSX Edge
Select this option to create a new NSX Edge in deployed mode. Appliance and interface configuration is mandatory to deploy the NSX Edge.

Enable High Availability
Enable HA, for enabling and configuring High Availability.

Back Next Finish Cancel

Configure the admin password (needs to be 12 characters plus the usual requirements) and logging level. You may want to enable SSH for troubleshooting purposes, this can also be enabled at a later date if required. Click **Next**.

New NSX Edge

1 Name and description
2 **Settings**
3 Configure deployment
4 Configure interfaces
5 Default gateway settings
6 Firewall and HA
7 Ready to complete

Settings

CLI credentials will be set on the NSX Edge appliance(s). These credentials can be used to login to the read only command line interface of the appliance.

User Name: * admin

Password: *

Confirm password: *

Enable SSH access

Enable auto rule generation
Enable auto rule generation, to automatically generate service rules to allow flow of control traffic.

Edge Control Level Logging: EMERGENCY

Set the Edge Control Level Logging

Back Next Finish Cancel

Select the datacentre and appliance size

Click the green plus symbol to add an Edge appliance.

New NSX Edge

1 Name and description
2 Settings
3 Configure deployment
4 Configure interfaces
5 Default gateway settings
6 Firewall and HA
7 Ready to complete

Configure deployment

Datcenter: *

Appliance Size: Compact Large X-Large Quad Large

NSX Edge Appliances

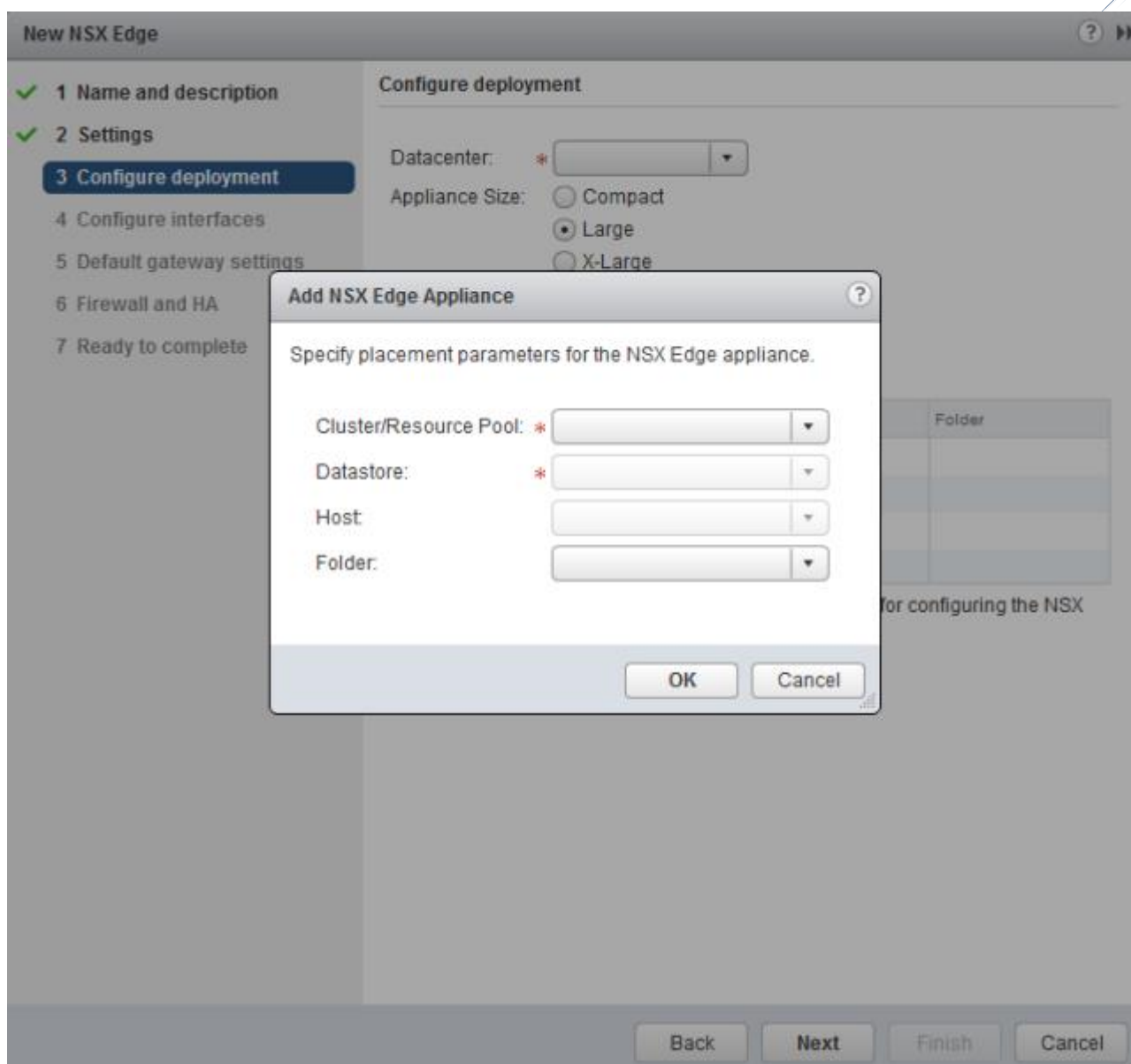
+ / - / x

Resource Pool	Host	Datastore	Folder

Specifying a resource pool and datastore is mandatory for configuring the NSX Edge appliance.

Back Next Finish Cancel

Configure the vSphere placement parameters and click **Ok**. When you have finished adding the Edge appliances click **Next**.



We must now add the Edge interfaces, click the green plus symbol.

New NSX Edge ? ▶▶

- ✓ 1 Name and description
- ✓ 2 Settings
- ✓ 3 Configure deployment
- 4 Configure interfaces**
- 5 Default gateway settings
- 6 Firewall and HA
- 7 Ready to complete

Configure interfaces

Configure interfaces of this NSX Edge

+ ✎ ✕

vNIC#	Name	IP Address	Subnet Prefix Length	Connected To

Back **Next** **Finish** **Cancel**

Configure the NSX Edge interfaces:

vNIC#: 0




Name: *

Type:


Connected To: [Change](#) [Remove](#)

Connectivity Status: Connected Disconnected

Configure Subnets:

Primary IP Address	Secondary IP Addresses	Subnet Prefix Length
10.10.10.161		24

1 items 

Comma separated lists of Secondary IP Addresses. Example: 1.1.1.1,1.1.1.2,1.1.1.3

MAC Addresses:


You can specify a MAC address or leave it blank for auto generation. In case of HA, two different MAC addresses are required.

MTU:

Options: Enable Proxy ARP Send ICMP Redirect

Reverse Path Filter:

Fence Parameters:

Edit NSX Edge Interface 

vNIC#: 1




Name: *

Type:


Connected To: [Change](#) [Remove](#)

Connectivity Status: Connected Disconnected

Configure Subnets:

Primary IP Address	Secondary IP Addresses	Subnet Prefix Length
10.10.20.1	10.10.20.2	24

1 items 

Comma separated lists of Secondary IP Addresses. Example: 1.1.1.1,1.1.1.2,1.1.1.3

MAC Addresses:

You can specify a MAC address or leave it blank for auto generation. In case of HA, two different MAC addresses are required.

MTU:

Options: Enable Proxy ARP Send ICMP Redirect

Reverse Path Filter:

When the required interfaces have been added click **Next**. Depending on your routing configuration you may need to add a default gateway, click **Next**.

The screenshot shows the 'New NSX Edge' configuration wizard. The left sidebar lists seven steps: 1 Name and description, 2 Settings, 3 Configure deployment, 4 Configure interfaces, 5 Default gateway settings (highlighted), 6 Firewall and HA, and 7 Ready to complete. The main area is titled 'Default gateway settings' and contains a checkbox for 'Configure Default Gateway' which is currently unchecked. Below this are four input fields: 'vNIC:' with a dropdown menu showing 'ESG1', 'Gateway IP:' (empty), 'MTU:' with the value '1500', and 'Admin Distance:' with the value '1'. At the bottom of the wizard are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

Tick **Configure Firewall default policy** and set the default traffic policy to **Accept**, enable logging if required

On the summary page click **Finish** to finalize the installation. The ESG will now be deployed, the details are listed on the NSX Edges page.

Id	Name	Type	Tenant	Version
edge-1	GW	NSX Edge	Default	6.3.0

Once an Edge is deployed you can add or change the existing configuration, such as interfaces, by double clicking the Edge. For our LAB purpose we need to configure NAT rules to have Internet access

Create Source NAT rule for VM assigned to Logical Switch

Order	Rule Id	Rule T...	Action	Applied On	Original				Translated		Status	Logging	Descrip...	
					Protocol	Source IP	Source Ports	Destination IP	Destination Ports	IP Address				Port Range
1	196618	USER	SNAT	Outside	any	10.10.20.0/24	any	any	any	10.10.1.0.161	any	✓	⊘	

IaaS

Prerequisites

Username: Administrator@vcap.domain.local

Password: P@ssw0rd

Build

Our VM has

OS	Windows Server 2008R2	
RAM	4GB	
CPU	1vCPU	
HDD	40GB thin	
Network	1 NIC	10.10.10.153

The IaaS Server is clone of our Windows Server 2008R2 which we create before install Active Directory.

Host preparation for IaaS is very simple we need to run good prepared script for this created by **Brian Graf**

Script

```

=====
# Generated On: 12/4/2014 9:46 AM
# Generated By: Brian Graf
# Technical Marketing Engineer - Automation
# Organization: VMware
# Twitter: @vTagion
# vRA 6.2 Pre-Req Automation Script v1
=====
#-----
#=====USAGE=====
# For Windows Server 2008 & 2012
# This script has been created to aid in
# Configuring the settings for the vRA 6.2
# Pre-Req Checker. This script will set all
# Pre-Req's except for enabling TCP/IP in
# MS SQL, which needs to be performed manually
# And the services will need to be restarted.
#-----
#=====REQUIREMENTS=====
# For this script to run successfully be sure:
# *To run PowerShell as administrator
# *To have admin rights on the server
#-----

#=====EDITOR'S NOTE=====
# In order for this script to work on servers that
# have proxied or restricted access to the Internet,
# it is necessary to configure a local source repository
# or else the features and roles requiring .NET 3.5 will fail.
# To do so, configure the variable called $InstallSource
# below making sure to set the path appropriately. In
# this example, the source is provided by mounting the
# installation CD as drive D.

```

```

# - Chip Zoller, Senior Virtualization Engineer, Worldpay US

# -----
# USER CONFIGURATION - EDIT AS NEEDED
# -----

# Set IIS default locations to be used with IIS role
$InetPubRoot = "C:\Inetpub"
$InetPubLog = "C:\Inetpub\Log"
$InetPubWWWRoot = "C:\Inetpub\WWWRoot"

# ----- Dot Net 4.5.2 -----
# Specify what the installer will do if .NET is not 4.5.2
# 1 - use a local .NET installer, 2 - Auto-Download from the internet and
# proceed , 3 - Exit the script
$menuoption = ""
$dotnetlocalpath = ""

# ----- Server 2012 -----
# Specify what the installer will do for installing framework components
# 1 - use a local 2012 iso sources folder, 2 - Auto-Download from Microsoft
# servers internet and proceed , 3 - Exit the script
$frameworkmenuoption = ""
# Set install source location if unable to directly connect to the Internet
# Example of Mounted 2012 ISO source path (ex D:\sources\sxs)
$InstallSource = ""
# This applies ONLY to 2012

# ----- NT Rights -----
#Specify how you would like to obtain and run NTRights.exe
# 1 - use a local NTRights.exe file , 2 - Auto-Download from the internet
# and proceed , 3 - Exit the script
$NTRightsmenuoption = ""
#Example C:\Temp\NTRights.exe
$NTRightsInstallSource = ""
#Account to use for Batch Logon and Secondary Logon Services (if left blank
# will default to local administrators group)
# Example Corp\vcacservice or Eng\Smithj
$domainAdminAcct = ""

# ----- Java 1.7 -----
# Specify what the installer will do if Java is not 1.7
# 1 - use a local Java installer, 2 - Auto-Download from the internet and
# proceed , 3 - Exit the script
$javamenuoption = ""
$javalocalpath = ""

# -----
# END OF USER CONFIGURATION
# -----

# ----Do not modify beyond this point----
$errorActionPreference="SilentlyContinue"
$errorActionPreference="Continue"

# -----
# CHECK POWERSHELL SESSION
# -----
$Elevated = New-Object Security.Principal.WindowsPrincipal(
[Security.Principal.WindowsIdentity]::GetCurrent() )
& {

```

```

    if ($Elevated.IsInRole(
[Security.Principal.WindowsBuiltInRole]::Administrator ))
    {
        write-host "PowerShell is running as an administrator." -
ForegroundColor Green
    } Else {
        throw "Powershell must be run as an administrator."
    }

    if( [IntPtr]::size * 8 -eq 64 )
    {
        Write-Host "You are running 64-bit PowerShell" -ForegroundColor
Green
    }
    else
    {
        Write-Host "You are running 32-bit PowerShell" -ForegroundColor Red
        Throw "Please run using 64-bit PowerShell as administrator"
    }
}
# -----
#         END OF POWERSHELL CHECK
# -----

# -----
#         CHECK FOR .NET FRAMEWORK
# -----

# .NET FRAMEWORK 4.5.2 is required for vRA 6.2 to run properly
# Check to see if .Net 4.5.2 is present
$DNVersion = Get-ChildItem 'HKLM:\SOFTWARE\Microsoft\NET Framework
Setup\NDP' -Recurse | Get-ItemProperty -name Version -EA 0 | Where-Object {
$_ .PSChildName -match '^(?!S)\p{L}'} | Sort-Object version -Descending |
Select-Object -ExpandProperty Version -First 1
$DNVersions = $DNVersion.Split(".")
$DNVersionMajor = $DNVersions[0]
$DNVersionMinor = $DNVersions[1]
$DNVersionBuild = $DNVersions[2]

# If .Net is older than 4.5, stop installer until .Net is upgraded
# .NET Framework 4.5.2 Build is 4.5.51209
if ($DNVersionMajor -eq 4 -and $DNVersionMinor -eq 5 -and
$DNVersionBuild -ge 51209 ){ Write-Host ".NET version on this server is
$DNVersion " -ForegroundColor Green
}else{
    Write-Host "vRA 6.2 requires .Net framework version 4.5.2 to
continue" -ForegroundColor Red
    if ($menuoption -eq ""){
        do{
            Write-Host "
            (1) - I have the .Net 4.5.2 installer and want to install it from a
local folder
            (2) - I have internet access and want to download and install it
automatically
            (3) - Exit this script" -ForegroundColor Yellow
            $menuoption = read-Host -Prompt "Choose a number to proceed: "

```

```

    } Until ($menuoption -eq "1" -or $menuoption -eq "2" -or
$menuoption -eq "3")
    Switch ($menuoption){
    "1" {
        if (($dotnetlocalpath -eq "") -or (Test-Path -Path
"$dotnetlocalpath" -ErrorAction SilentlyContinue -eq $false)){
            do {
                $dotnetlocalpath = Read-Host -Prompt "Unable to
locate file. Where is the .NET 4.5.2 installer located locally? (example
c:\temp\dotnetinstaller.exe)"
            } while ((Test-path -Path $dotnetlocalpath -ErrorAction
SilentlyContinue) -eq $false)}
            Write-Host "Attempting to Install .NET 4.5.2. Please be
patient." -ForegroundColor Green
            Write-Verbose ""
            $InstallDotNet = Start-Process $dotnetlocalpath -
ArgumentList "/q /norestart" -Wait -PassThru
            Write-Host "Dot Net Installation finished. Proceeding
with Server configuration." -ForegroundColor Green
        }
    "2" {
        if (!(test-path -Path "c:\Temp")){
            Write-Host "Creating folder C:\Temp" -ForegroundColor
Green
            New-Item -ItemType Directory -Force -Path "C:\Temp"
        }
        Write-Host "Preparing to Download .NET 4.5.2" -
ForegroundColor Green
        Write-Host "Attempting to Download .NET 4.5.2. Please be
patient." -ForegroundColor Green
        $download = New-Object Net.WebClient
        $url =
"http://download.microsoft.com/download/E/2/1/E21644B5-2DF2-47C2-91BD-
63C560427900/NDP452-KB2901907-x86-x64-AllOS-ENU.exe"
        $file = ("C:\Temp\DotNet452.exe")
        $download.Downloadfile($url,$file)
        if (!(Test-Path -Path "C:\Temp\DotNet452.exe")) {Write-Host
"Uh Oh. For some reason we were unable to download the .NET Installer
correctly" -ForegroundColor Yellow
            Throw "Please check your internet connection and rerun this
script" } else {Write-Host "File downloaded successfully... Proceeding" -
ForegroundColor Green}
            Write-Host "Attempting to Install .NET 4.5.2. Please be
patient." -ForegroundColor Green
            Write-Verbose ""
            $InstallDotNet = Start-Process $file -ArgumentList "/q
/norestart" -Wait -PassThru
            Write-Host "Dot Net Installation finished. Proceeding with
Server configuration." -ForegroundColor Green
        }
    "3" { Exit }
    }
#     }
#
# -----
#           END OF .NET FRAMEWORK CHECK
# -----

```



```

# -----
#       Check Operating System Version
# -----

# Grab the OS Name
$os = (get-WmiObject -class Win32_OperatingSystem).caption

# Overwrite $OS variable with smaller string
switch -wildcard ($os) {
"*2008*" {
    Write-Host "OS = $os" -ForegroundColor Green
    $os = "2008"
}
"*2012*" {
    Write-Host "OS = $os" -ForegroundColor Green
    $os = "2012"
}
Default {Write-Host "The current operating system, $os, is not supported at
this time" }
}

# -----
#       END OF OS VERSION CHECK
# -----

# Begin installations

# -----
#       BEGIN ROLE AND FEATURE INSTALL
# -----

# Loading feature installation modules
Write-Host "Importing Server Manager " -ForegroundColor Yellow
Import-Module ServerManager

Write-Host "Installing IIS roles " -ForegroundColor Yellow
if ($os -eq "2008") {
# Installing roles specified in vCAC 6 Pre-req checker
Add-WindowsFeature -Name Web-Webserver,Web-Http-Redirect,Web-Asp-Net,Web-
Windows-Auth,Web-Mgmt-Console,Web-Mgmt-Compat, web-metabase
}

if ($os -eq "2012"){

if ($frameworkmenuoption -eq ""){
    do{
        Write-Host "
(1) - I have the Server 2012 ISO mounted and want to install the
framework files from a local folder
(2) - I have internet access and want to download it from Microsoft and
install it automatically
(3) - Exit this script" -ForegroundColor Yellow
        $frameworkmenuoption = read-Host -Prompt "Choose a number to
proceed: "
    } Until ($frameworkmenuoption -eq "1" -or $frameworkmenuoption -eq
"2" -or $frameworkmenuoption -eq "3"){
        Switch ($frameworkmenuoption){
            "1" {

```

```

        if (($InstallSource -eq "") -or (Test-Path -Path
"$InstallSource" -ErrorAction SilentlyContinue -eq $false)) {
            do {
                $InstallSource = Read-Host -Prompt "Unable to
locate folder. Please specify the source folder for required files (ex
D:\sources\sxs\)"
            } while ((Test-path -Path $InstallSource -ErrorAction
SilentlyContinue) -eq $false)}
            Write-Host "Attempting to Install .NET Framework.
Please be patient." -ForegroundColor Green
            Add-WindowsFeature -Name Web-Webserver,Web-Http-
Redirect,Web-Asp-Net,Web-Windows-Auth,Web-Mgmt-Console,Web-Mgmt-Compat,
web-metabase -Source $InstallSource
        }
    "2" {
        Write-Host "Preparing to Download Framework Components" -
ForegroundColor Green
        Write-Host "Attempting to Download Framework Components.
Please be patient. (~200MB)" -ForegroundColor Green
        if (Test-Connection google.com -Count 3 -ErrorAction
SilentlyContinue) {Write-Host "Internet Connection Succeeded." -
ForegroundColor Green}
        Add-WindowsFeature -Name Web-Webserver,Web-Http-
Redirect,Web-Asp-Net,Web-Windows-Auth,Web-Mgmt-Console,Web-Mgmt-Compat,
web-metabase
        Write-Host "Framework finished. Proceeding with Server
configuration." -ForegroundColor Green
    }
    "3" { Exit }
}
#
}

Write-Host "IIS role installation complete, adding features..." -
ForegroundColor Green

# -----
#      Install Correct Framework
# -----
# Run the correct command based off the OS result
switch ($os) {
"2008" {
    # Adding 2008 features specified in vCAC 6 Pre-req checker
    Write-Host "Adding Windows features " -ForegroundColor Yellow
    Add-WindowsFeature -Name AS-Net-framework, NET-Win-CFAC, NET-HTTP-
Activation, NET-Non-HTTP-Activ
    Write-Host "Features installation complete, loading IIS module " -
ForegroundColor Green
}
"2012" {

    # Adding 2012 features specified in vCAC 6 Pre-req checker
    Write-Host "Adding Windows features " -ForegroundColor Yellow
    Install-WindowsFeature -name NET-Framework-Core,net-wcf-http-
activation45
    Add-windowsfeature -name was, was-config-apis, was-Net-Environment,NET-
Non-HTTP-Activ
    Write-Host "Features installation complete, loading IIS module " -
ForegroundColor Green}
}

```

```

Default {Write-Host "The Operating System does not appear to be compatible
with this script"
Throw "This is for Windows Server 2008 and 2012"
}
}
# -----
#           END OF Framework Installation
# -----

# Loading IIS web admin module
if (Get-Module -ListAvailable WebAdministration){
    Write-host "Importing Web Admin module " -ForegroundColor Yellow
    Import-Module WebAdministration
}
else {

    throw "Webadministration is not installed on this system"
}

# Build the IIS folder structure
Write-Host "Setting up folder structure" -ForegroundColor Yellow
New-Item -Path $InetPubRoot -type directory -Force -ErrorAction
SilentlyContinue
New-Item -Path $InetPubLog -type directory -Force -ErrorAction
SilentlyContinue
New-Item -Path $InetPubWWWRoot -type directory -Force -ErrorAction
SilentlyContinue

# Set the directory access for 'Builtin\IIS_IUSRS' and 'NT
SERVICE\TrustedInstaller'
$Command = "icacls $InetPubWWWRoot /grant BUILTIN\IIS_IUSRS:(OI)(CI)(RX)
BUILTIN\Users:(OI)(CI)(RX)"
cmd.exe /c $Command
$Command = "icacls $InetPubLog /grant ""NT
SERVICE\TrustedInstaller"":(OI)(CI)(F)"
cmd.exe /c $Command

# Setting the default website location used in vCAC
Set-ItemProperty 'IIS:\Sites\Default Web Site' -name physicalPath -value
$InetPubWWWRoot

# Setting authentication values for IIS
# Anonymous Authentication needs to be disabled
# Windows Authentication needs to be enabled
Write-Host "Setting authentication values for IIS" -ForegroundColor Yellow
Set-WebConfigurationProperty -Location 'Default Web Site' -Filter
/system.webServer/security/authentication/AnonymousAuthentication -Name
Enabled -Value $true
Set-WebConfigurationProperty -Location 'Default Web Site' -Filter
/system.webServer/security/authentication/AnonymousAuthentication -Name
Enabled -Value $false

Set-WebConfigurationProperty -Location 'Default Web Site' -Filter
/system.webServer/security/authentication/windowsAuthentication -Name
Enabled -Value $false
Set-WebConfigurationProperty -Location 'Default Web Site' -Filter
/system.webServer/security/authentication/windowsAuthentication -Name
Enabled -Value $true

```

```

# Sometimes the pre-req checker cannot distinguish the values of the
Windows authentication without
# The providers being removed and added back in.
# Removing and re-adding Windows authentication providers

Write-Host "Removing & Re-Adding Windows authentication providers" -
ForegroundColor Yellow
# Authentication Providers code by Jonathan Medd
http://www.jonathanmedd.net
Get-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name providers.Collection | Select-Object -
ExpandProperty Value | ForEach-Object {Remove-WebConfigurationProperty -
Filter system.webServer/security/authentication/WindowsAuthentication -
Location 'Default Web Site' -Name providers.Collection -AtElement
@{value=$_}}
Add-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name providers.Collection -AtIndex 0 -Value "Negotiate"
Add-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name providers.Collection -AtIndex 1 -Value "NTLM"

# Extended protection needs to be enabled and disabled for vCAC to
recognize the value
# Enable and disable the Extended Protection
Write-Host "Enabling and disabling Extended Protection" -ForegroundColor
Yellow
Set-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name extendedProtection.tokenChecking -Value 'Allow'
Set-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name extendedProtection.tokenChecking -Value 'None'

# The same must happen with Kernel-Mode. This will disable then re-enable
the value
# Resetting KERNEL MODE
Write-Host "Resetting Kernel Mode" -ForegroundColor Yellow
Set-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name useKernelMode -Value $false
Set-WebConfigurationProperty -Filter
system.webServer/security/authentication/WindowsAuthentication -Location
'Default Web Site' -Name useKernelMode -Value $true

# IIS must be restarted for the changes to take effect
# Resetting IIS
Write-Host "Resetting IIS" -ForegroundColor Yellow
$Command = "IISRESET"
Invoke-Expression -Command $Command
Write-Host "IIS Reset Complete..." -ForegroundColor Green

# -----
#           END OF ROLE & FEATURE INSTALL
# -----

# -----
#           FIREWALL & SECURITY SETTINGS
# -----

```

```

# MSDTC is used for Coordinating Transactions spanning several resource
managers (databases, message queues, etc)
# The following settings will allow vCAC to function properly on the
network.
# Setting the MSDTC components
Write-Host "Setting MSDTC components in the registry. Please restart your
system after installation completes" -ForegroundColor Yellow
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
LuTransactions -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccess -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccessInbound -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccessOutbound -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcClients -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccessTransactions -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccessAdmin -Value 1
Set-ItemProperty -Path HKLM:\Software\Microsoft\MSDTC\Security -Name
NetworkDtcAccessClients -Value 1

# The Distributed Transaction Coordinator needs to have access through the
firewall
# The following line of code is all that we will use. (If the firewall is
enabled it
# Will utilize the rule, if the firewall is disabled, this can be ignored
# Creating firewall rule for DTC

#netsh advfirewall firewall set rule group="Distributed Transaction
Coordinator" new enable=Yes | Out-Null
netsh advfirewall firewall set rule group="Distributed Transaction
Coordinator" new enable=Yes

# -----
#     END FIREWALL & SECURITY SETTINGS
# -----

# -----
#     LOGON SERVICE SETTINGS
# -----

# Enabling Secondary Logon service
# If the 'Secondary Logon' service is not running, this will set the
service to
# Automatic and start the service
Write-Host "Enabling Secondary Logon Service" -ForegroundColor Yellow

    if ((Get-Service seclogon).Status -ne 'Running'){
        Set-Service Seclogon -StartupType Automatic
        Start-Service seclogon
        Write-Host "Secondary Logon Service Enabled..." -ForegroundColor
Yellow
    }

if ($NTRightsmenuoption -eq ""){
    do{
        Write-Host "

```

```

(1) - I have the NTRights.exe and want to run the file from a local
folder
(2) - I have internet access and want to download it from the internet
automatically
(3) - Exit this script" -ForegroundColor Yellow
$NTRightsmenuoption = read-Host -Prompt "Choose a number to
proceed: "
} Until ($NTRightsmenuoption -eq "1" -or $NTRightsmenuoption -eq
"2" -or $NTRightsmenuoption -eq "3"){
    Switch ($NTRightsmenuoption){
        "1" {
            if (($NTRightsInstallSource -eq "") -or (Test-Path -Path
"$NTRightsInstallSource" -ErrorAction SilentlyContinue -eq $false)) {
                do {
                    $NTRightsInstallSource = Read-Host -Prompt "Unable
to locate file. Please specify the location of ntrights.exe(ex
c:\temp\ntrights.exe)"
                } while ((Test-path -Path $NTRightsInstallSource -
ErrorAction SilentlyContinue) -eq $false)}
                Write-Host "Attempting to run NTRights.exe." -
ForegroundColor Yellow
                if ($domainAdminAcct -eq "") {$domainAdminAcct = read-
Host -Prompt "What is the domain admin account for vCAC-IAAS? (ex.
Corp\Services) " }
                Write-Host "Account specified for Batch Logon and
Secondary Service Logon is $domainAdminAcct" -ForegroundColor Yellow
            }
        "2" {
            Write-Host "Preparing to Download NTrights.exe" -
ForegroundColor Green
            Write-Host "Attempting to Download NTrights.exe." -
ForegroundColor Green
            if (!(test-path -Path "c:\Temp")){
                Write-Host "Creating folder C:\Temp" -ForegroundColor
Green
                New-Item -ItemType Directory -Force -Path "C:\Temp"
            }
            if (Test-Connection google.com -Count 3 -ErrorAction
SilentlyContinue) {Write-Host "Internet Connection Succeeded." -
ForegroundColor Green}
            $downloadNTRights = New-Object Net.WebClient
            $NTRightsurl =
"http://download.microsoft.com/download/8/e/c/8ec3a7d8-05b4-440a-a71e-
ca3ee25fe057/rktools.exe"
            $NTRightsfile = ("C:\Temp\rktools.exe")

$downloadNTRights.Downloadfile($NTRightsurl,$NTRightsfile)
            if (!(Test-Path -Path "C:\Temp\rktools.exe")) {Write-Host
"Uh Oh. For some reason we were unable to download rktools.exe correctly" -
ForegroundColor Yellow
                Throw "Please check your internet connection and rerun this
script" } else {Write-Host "File downloaded successfully... Proceeding" -
ForegroundColor Green}
            c:\Temp\rktools.exe /C /T:c:\temp
            Start-Sleep -Seconds 5
            if (!(Test-Path -Path "C:\Temp\rktools.msi")) {Write-Host
"Uh Oh. For some reason rktools.msi didn't unpack correctly" -
ForegroundColor Yellow
                Throw "There appears to be an issue with the rktools.exe,
you may need to extract the rktools and place ntrights.exe in the c:\temp

```

```

folder manually and rerun this script" } else {Write-Host "rktools.msi
unpacked successfully" -ForegroundColor Green}
    msixec /i c:\Temp\rktools.msi /Qb
    Write-Host "Waiting for ntrights.exe to appear in
C:\Program Files (x86)\Windows Resource Kits\Tools\"
    do {Start-Sleep -Seconds 5} until (Test-Path -path
"C:\Program Files (x86)\Windows Resource Kits\Tools\ntrights.exe" -
ErrorAction SilentlyContinue)
    Copy-Item "C:\Program Files (x86)\Windows Resource
Kits\Tools\ntrights.exe" c:\temp\ntrights.exe -force
    Start-Sleep -Seconds 2
    if ($domainAdminAcct -eq "") {$domainAdminAcct = read-Host
-Prompt "What is the domain admin account for vCAC-IAAS? (ex.
Corp\Services) " }
    Write-Host "Account specified for Batch Logon and Secondary
Service Logon is $domainAdminAcct" -ForegroundColor Yellow
    $NTRightsInstallSource = "C:\Temp\NTRights.exe"

    }
    "3" { Exit }
    }

Write-Host "Setting Batch Logon Rights" -ForegroundColor Yellow
#iex "c:\Temp\NTRights.exe +r SeBatchLogonRight -u $domainAdminAcct"
iex "$NTRightsInstallSource +r SeBatchLogonRight -u $domainAdminAcct"
Write-Host "Setting Secondary Logon Rights" -ForegroundColor Yellow
#iex "c:\Temp\NTRights.exe +r SeServiceLogonRight -u $domainAdminAcct"
iex "$NTRightsInstallSource +r SeServiceLogonRight -u $domainAdminAcct"

# -----
#           END LOGON SERVICE SETTINGS
# -----

# All Windows settings are now set for vCAC to install correctly
# After SQL Server is installed, make sure to enable TCP/IP and
# Restart the SQL services

# -----
#           JAVA INSTALL & CONFIG
# -----
Write-Host "Java Section " -ForegroundColor Yellow
if (dir "HKLM:\SOFTWARE\JavaSoft\Java Runtime Environment" -ErrorAction
SilentlyContinue){
$JavaVersion = dir "HKLM:\SOFTWARE\JavaSoft\Java Runtime Environment" |
select -expa pschildname -Last 1
$JavaVersions = $JavaVersion.Split(".")
$JavaVersionMajor = $JavaVersions[0]
$JavaVersionMinor = $JavaVersions[1]
$JavaVersionBuild = $JavaVersions[2]
} else {$javaversionmajor = 0}
# If .Net is older than 4.5, stop installer until .Net is upgraded
if ($JavaVersionMajor -eq 1 -and $JavaVersionMinor -ge 7 ){ Write-Host
"Java version on this server is $JavaVersion " -ForegroundColor Green
} else {
    Write-Host "vRA 6.2 requires Java JRE 1.7 64-bit or higher" -
ForegroundColor Red
    if ($javamenuoption -eq ""){
        do{
            Write-Host "

```

```

(1) - I have the Java JRE 1.7 or higher and want to install it from a
local folder
(2) - I have internet access and want to download and install it
automatically
(3) - Exit this script" -ForegroundColor Yellow
$javamenuoption = read-Host -Prompt "Choose a number to
proceed: "
} Until ($javamenuoption -eq "1" -or $javamenuoption -eq "2" -or
$javamenuoption -eq "3"){
    Switch ($javamenuoption){
        "1" {
            if (($javalocalpath -eq "") -or (Test-Path -Path
"$javalocalpath" -ErrorAction SilentlyContinue -eq $false)) {
                do {
                    $javalocalpath = Read-Host -Prompt "Unable to
locate file. Where is the Java installer located locally? (example
c:\temp\jre71.exe)"
                } while ((Test-path -Path $javalocalpath -ErrorAction
SilentlyContinue) -eq $false)}
                Write-Host "Attempting to Install Java. Please be patient."
-ForegroundColor Green
                Write-Verbose ""
                $InstallJava = Start-Process $javalocalpath -ArgumentList
"/s" -Wait -PassThru
                Write-Host "Java installation finished. Proceeding with
script." -ForegroundColor Green
            }
        "2" {
            if (!(test-path -Path "c:\Temp")){
                Write-Host "Creating folder C:\Temp" -ForegroundColor
Green

                New-Item -ItemType Directory -Force -Path "C:\Temp"
            }
            Write-Host "Preparing to Download Java JRE 1.7" -
ForegroundColor Green
            Write-Host "Attempting to Download Java. Please be
patient." -ForegroundColor Green
            $downloadjava = New-Object Net.WebClient
            $javaur1 =
"http://javadl.sun.com/webapps/download/AutoDL?BundleId=95125"
            $javafile = ("C:\Temp\javajre17.exe")
            $downloadjava.Downloadfile($javaur1,$javafile)
            if (!(Test-Path -Path "C:\Temp\javajre17.exe")) {Write-Host
"Uh Oh. For some reason we were unable to download the Java installer
correctly" -ForegroundColor Yellow
                Throw "Please check your internet connection and rerun this
script" } else {Write-Host "File downloaded successfully... Proceeding" -
ForegroundColor Green}
            Write-Host "Attempting to Install Java. Please be patient."
-ForegroundColor Green
            Write-Verbose ""
            $InstallJava = Start-Process $javafile -ArgumentList "/s" -
Wait -PassThru
            Write-Host "Java installation finished. Proceeding with
script." -ForegroundColor Green
        }
        "3" { Exit }
    }
}
# }
}

```



```

Write-Host "Setting Java_HOME variable to C:\Program Files\Java\jre7" -
ForegroundColor Green
setx /M JAVA_HOME "C:\Program Files\Java\jre7"
Write-Host "Java_HOME variable set." -ForegroundColor Green

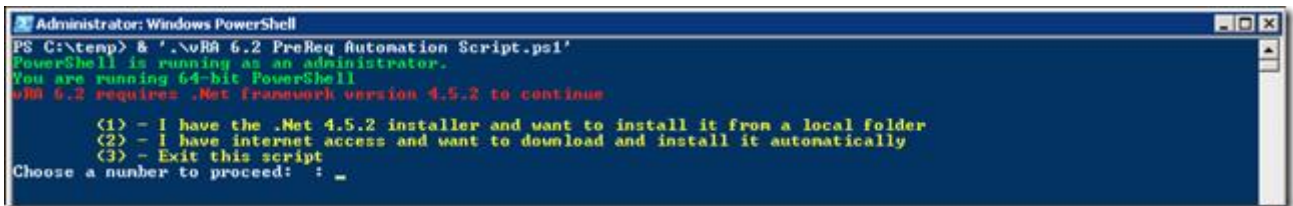
# -----
#           END JAVA INSTALL & CONFIG
# -----

Write-Host ""
Write-Host "Pre-Req settings have been completed." -foregroundcolor Green
Write-Host "Please run the prerequisite checker and verify. Proceed with
SQL pre-reqs" -ForegroundColor Green

# -----
#           END OF SCRIPT
# -----

```

How to use the script



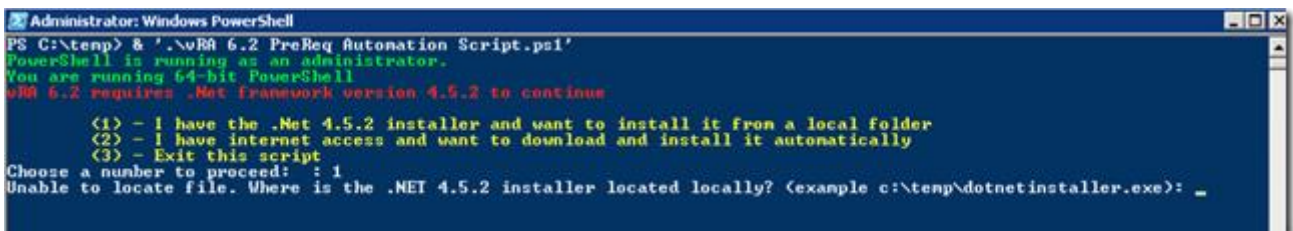
```

Administrator: Windows PowerShell
PS C:\temp> & '.\NRR 6.2 PreReq Automation Script.ps1'
PowerShell is running as an administrator.
You are running 64-bit PowerShell
NRR 6.2 requires .Net framework version 4.5.2 to continue

(1) - I have the .Net 4.5.2 installer and want to install it from a local folder
(2) - I have internet access and want to download and install it automatically
(3) - Exit this script
Choose a number to proceed: : _

```

This menu shows up if the user has not pre-set the script variables before running the script. This is just fine, but you will receive prompts throughout the duration of the script.



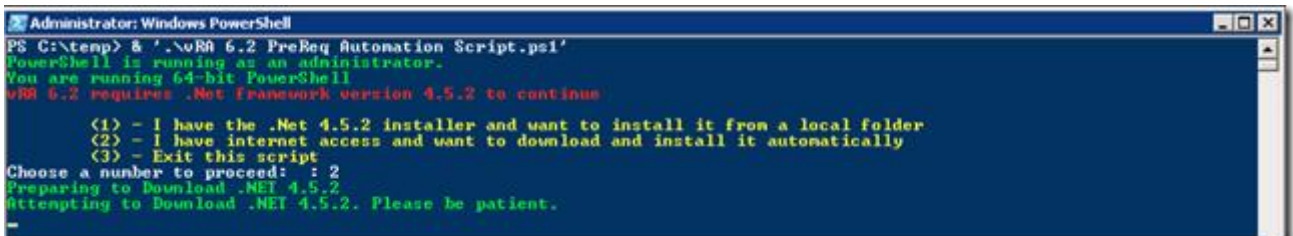
```

Administrator: Windows PowerShell
PS C:\temp> & '.\NRR 6.2 PreReq Automation Script.ps1'
PowerShell is running as an administrator.
You are running 64-bit PowerShell
NRR 6.2 requires .Net framework version 4.5.2 to continue

(1) - I have the .Net 4.5.2 installer and want to install it from a local folder
(2) - I have internet access and want to download and install it automatically
(3) - Exit this script
Choose a number to proceed: : 1
Unable to locate file. Where is the .NET 4.5.2 installer located locally? (example c:\temp\dotnetinstaller.exe): _

```

Selecting 2 will download and install .NET



```

Administrator: Windows PowerShell
PS C:\temp> & '.\NRR 6.2 PreReq Automation Script.ps1'
PowerShell is running as an administrator.
You are running 64-bit PowerShell
NRR 6.2 requires .Net framework version 4.5.2 to continue

(1) - I have the .Net 4.5.2 installer and want to install it from a local folder
(2) - I have internet access and want to download and install it automatically
(3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download .NET 4.5.2
Attempting to Download .NET 4.5.2. Please be patient.

```

To set the Secondary Logon Service and Batch Logon requirements, the NTRights.exe file must be used to do this in an automated fashion. This file is only found in the Windows 2003 Resource Kit.

```

Administrator: Windows PowerShell
PSPath          : Microsoft.PowerShell.Core\FileSystem::C:\inetpub\WWWRoot
PSParentPath    : Microsoft.PowerShell.Core\FileSystem::C:\inetpub
PSChildName     : WWWRoot
PSDrive        : C
PSProvider      : Microsoft.PowerShell.Core\FileSystem
PSIsContainer   : True
Name           : WWWRoot
Parent         : inetpub
Exists         : True
Root           : C:\
FullName       : C:\inetpub\WWWRoot
Extension      :
CreationTime    : 12/8/2014 4:28:32 PM
CreationTimeUtc : 12/9/2014 12:28:32 AM
LastAccessTime  : 12/8/2014 4:28:32 PM
LastAccessTimeUtc : 12/9/2014 12:28:32 AM
LastWriteTime   : 12/8/2014 4:28:32 PM
LastWriteTimeUtc : 12/9/2014 12:28:32 AM
Attributes      : Directory
BaseName       : WWWRoot
Mode           : d----

processed file: C:\inetpub\WWWRoot
Successfully processed 1 files; Failed processing 0 files
processed file: C:\inetpub\Log
Successfully processed 1 files; Failed processing 0 files
Setting authentication values for IIS
Removing & Re-Adding Windows authentication providers
Enabling and disabling Extended Protection
Resetting Kernel Mode
Resetting IIS

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
IIS Reset Complete...
Setting MSDIC components in the registry. Please restart your system after installation completes
Updated 4 rule(s).
Ok.

Enabling Secondary Logon Service
Secondary Logon Service Enabled...

(1) - I have the NTRights.exe and want to run the file from a local folder
(2) - I have internet access and want to download it from the internet automatically
(3) - Exit this script
Choose a number to proceed: : _

```

Choosing Menu item (2) will download the resource kit (~11MB), unzip, and use ntrights.exe.

```

Administrator: Windows PowerShell
PSChildName     : WWWRoot
PSDrive        : C

Collecting data...
..

Exists         : True
Root           : C:\
FullName       : C:\inetpub\WWWRoot
Extension      :
CreationTime    : 12/8/2014 4:28:32 PM
CreationTimeUtc : 12/9/2014 12:28:32 AM
LastAccessTime  : 12/8/2014 4:28:32 PM
LastAccessTimeUtc : 12/9/2014 12:28:32 AM
LastWriteTime   : 12/8/2014 4:28:32 PM
LastWriteTimeUtc : 12/9/2014 12:28:32 AM
Attributes      : Directory
BaseName       : WWWRoot
Mode           : d----

processed file: C:\inetpub\WWWRoot
Successfully processed 1 files; Failed processing 0 files
processed file: C:\inetpub\Log
Successfully processed 1 files; Failed processing 0 files
Setting authentication values for IIS
Removing & Re-Adding Windows authentication providers
Enabling and disabling Extended Protection
Resetting Kernel Mode
Resetting IIS

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
IIS Reset Complete...
Setting MSDIC components in the registry. Please restart your system after installation completes
Updated 4 rule(s).
Ok.

Enabling Secondary Logon Service
Secondary Logon Service Enabled...

(1) - I have the NTRights.exe and want to run the file from a local folder
(2) - I have internet access and want to download it from the internet automatically
(3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download NTRights.exe
Attempting to Download NTRights.exe.

```

Once the file has been downloaded and extracted, the script will ask for the user account to add to these services. Make sure to follow the example of using host\user_account

```

Administrator: Windows PowerShell
Name           : WWWRoot
Parent         : Inetpub
Exists        : True
Root          : C:\
FullName      : C:\Inetpub\WWWRoot
Extension     :
CreationTime  : 12/8/2014 4:28:32 PM
CreationTimeUtc : 12/9/2014 12:28:32 AM
LastAccessTime : 12/8/2014 4:28:32 PM
LastAccessTimeUtc : 12/9/2014 12:28:32 AM
LastWriteTime  : 12/8/2014 4:28:32 PM
LastWriteTimeUtc : 12/9/2014 12:28:32 AM
Attributes    : Directory
BaseName      : WWWRoot
Mode         : d-----

processed file: C:\Inetpub\WWWRoot
Successfully processed 1 files; Failed processing 0 files
processed file: C:\Inetpub\Log
Successfully processed 1 files; Failed processing 0 files
Setting authentication values for IIS
Removing & Re-Adding Windows authentication providers
Enabling and disabling Extended Protection
Resetting Kernel Mode
Resetting IIS

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
IIS Reset Complete...
Setting MSDTC components in the registry. Please restart your system after installation completes
Updated 4 rule(s).
Ok.

Enabling Secondary Logon Service
Secondary Logon Service Enabled...

    (1) - I have the NTRights.exe and want to run the file from a local folder
    (2) - I have internet access and want to download it from the internet automatically
    (3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download NTRights.exe
Attempting to Download NTRights.exe.
Internet Connection Succeeded.
File downloaded successfully... Proceeding
rhtools.msi unpacked successfully
Waiting for ntrights.exe to appear in C:\Program Files (x86)\Windows Resource Kits\Tools\
What is the domain admin account for vCAC-IAAS? (ex. Corp\Services) : SDDC-UCAC-IAAS\Administrator_

```

Java is then installed. Follow the menu items and continue

```

Administrator: Windows PowerShell
Attributes     : Directory
BaseName      : WWWRoot
Mode         : d-----

processed file: C:\Inetpub\WWWRoot
Successfully processed 1 files; Failed processing 0 files
processed file: C:\Inetpub\Log
Successfully processed 1 files; Failed processing 0 files
Setting authentication values for IIS
Removing & Re-Adding Windows authentication providers
Enabling and disabling Extended Protection
Resetting Kernel Mode
Resetting IIS

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
IIS Reset Complete...
Setting MSDTC components in the registry. Please restart your system after installation completes
Updated 4 rule(s).
Ok.

Enabling Secondary Logon Service
Secondary Logon Service Enabled...

    (1) - I have the NTRights.exe and want to run the file from a local folder
    (2) - I have internet access and want to download it from the internet automatically
    (3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download NTRights.exe
Attempting to Download NTRights.exe.
Internet Connection Succeeded.
File downloaded successfully... Proceeding
rhtools.msi unpacked successfully
Waiting for ntrights.exe to appear in C:\Program Files (x86)\Windows Resource Kits\Tools\
What is the domain admin account for vCAC-IAAS? (ex. Corp\Services) : SDDC-UCAC-IAAS\Administrator
Account specified for Batch Logon and Secondary Service Logon is SDDC-UCAC-IAAS\Administrator
Setting Batch Logon Rights
Granting SeBatchLogonRight to SDDC-UCAC-IAAS\Administrator ... successful
Setting Secondary Logon Rights
Granting SeServiceLogonRight to SDDC-UCAC-IAAS\Administrator ... successful
Java Section
vms 6.2 requires Java JRE 1.7 64-bit or higher

    (1) - I have the Java JRE 1.7 or higher and want to install it from a local folder
    (2) - I have internet access and want to download and install it automatically
    (3) - Exit this script
Choose a number to proceed: : 2_

```

Once Java has been installed, it will also set the Java_HOME variable automatically.

```

Administrator: Windows PowerShell
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
IIS Reset Complete...
Setting MSDTC components in the registry. Please restart your system after installation completes
Updated 4 rule(s).
Ok.

Enabling Secondary Logon Service
Secondary Logon Service Enabled...

    (1) - I have the NTRights.exe and want to run the file from a local folder
    (2) - I have internet access and want to download it from the internet automatically
    (3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download NTRights.exe
Attempting to Download NTRights.exe.
Internet Connection Succeeded.
File downloaded successfully... Proceeding
rkttools.msi unpacked successfully
Waiting for ntrights.exe to appear in C:\Program Files (x86)\Windows Resource Kits\Tools\
What is the domain admin account for vCAC-IAAS? (ex. Corp\Services) : SDDC-UCAC-IAAS\Administrator
Account specified for Batch Logon and Secondary Service Logon is SDDC-UCAC-IAAS\Administrator
Setting Batch Logon Rights
Granting SeBatchLogonRight to SDDC-UCAC-IAAS\Administrator ... successful
Setting Secondary Logon Rights
Granting SeServiceLogonRight to SDDC-UCAC-IAAS\Administrator ... successful
Java Section
vRA 6.2 requires Java JRE 1.7 64-bit or higher

    (1) - I have the Java JRE 1.7 or higher and want to install it from a local folder
    (2) - I have internet access and want to download and install it automatically
    (3) - Exit this script
Choose a number to proceed: : 2
Preparing to Download Java JRE 1.7
Attempting to Download Java. Please be patient.
File downloaded successfully... Proceeding
Attempting to Install Java. Please be patient.
Java installation finished. Proceeding with script.
Setting Java_HOME variable to C:\Program Files\Java\jre7

SUCCESS: Specified value was saved.
Java_HOME variable set.

Pre-Req settings have been completed.
Please run the prerequisite checker and verify. Proceed with SQL pre-reqs

PS C:\temp>

```

The Pre-Reqs are now complete.

Same task we need to do on our SQL Server.

vRealiza Automation

vRealize Automation enables IT Automation through the creation and management of personalized infrastructure, application and custom IT services (XaaS). This IT Automation lets you deploy IT services rapidly across a multi-vendor, multi-cloud infrastructure. (vmware.com)

Prerequisites

Username: root

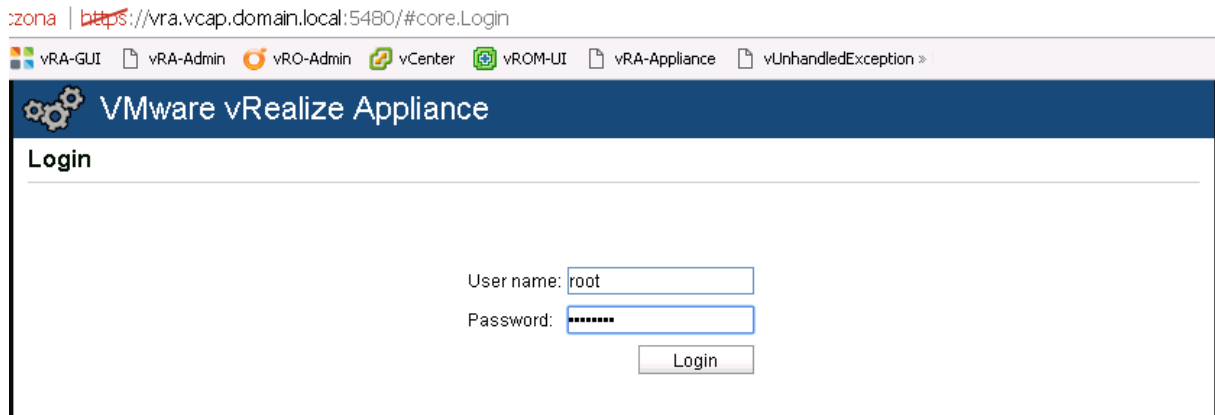
Password: P@ssw0rd

Build

OS	vCenter Appliance 6.5	
RAM	18GB	
CPU	2vCPU	
HDD		
Network	1 NIC	10.10.10.154

Deploy

deploy the vRA7 OVA, login to the appliance with the root login and password supplied during your OVA deployment.



Unlink past versions of vRA, we now have a lovely wizard that pops up and of course asks us to acknowledge that we will adhere to the End User License Agreement. Click the check mark (after

reading all of the EULA of course) and click next.

The screenshot shows a window titled "vRealize Automation Installation Wizard" with a "Logout" link in the top right corner. On the left, a sidebar contains a button labeled "End User License Agreement". The main area is titled "End User License Agreement" and includes the instruction "Read and agree to the End User License Agreement to continue". A scrollable text area contains the following text:

VMWARE END USER LICENSE AGREEMENT

PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE SOFTWARE.

IMPORTANT-READ CAREFULLY: BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY) AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE AGREEMENT ("EULA"). IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, THAT YOU PAID FOR THE SOFTWARE.

EVALUATION LICENSE. If You are licensing the Software for evaluation purposes, Your use of the Software is only permitted in a non-production environment and for the period limited by the License Key. Notwithstanding any other provision in this EULA, an Evaluation License of the Software is provided "AS-IS" without indemnification, support or warranty of any kind, expressed or implied.

I accept the terms of this agreement

At the bottom right, there are "Next" and "Cancel" buttons.

We get a deployment wizard For this lab click the minimal deployment option and select the check box next to “Install Infrastructure as a Service” option.

vRealize Automation Installation Wizard Logout

Deployment Type Help ?

Choose a deployment type for your installation and whether to install the vRealize Automation infrastructure component, IaaS. Each deployment type has different hardware and configuration requirements.

Minimal deployment

Enterprise deployment


Minimal deployments are typically used in a development environment or as a proof of concept.

For minimal deployments, you must deploy one vRealize Appliance. You can install all infrastructure components on a single Windows machine .

Install Infrastructure as a Service

Infrastructure as a Service (IaaS) allows you to rapidly model and provision servers and desktops across private or public, virtual, or hybrid cloud infrastructure.

[More information about IaaS Installation.](#)



You can click to have the diagram open in a separate window.

Since we selected the IaaS option in the last screen, we'll see there are some things we need to do on

vRealize Automation Installation Wizard Logout

✓ Deployment Type

- Installation Prerequisites**
- Prerequisite Checker
- vRealize Automation Host
- Single Sign-On
- IaaS Host
- Microsoft® SQL Server
- Distributed Execution Managers
- Agents
- vRealize Appliance Certificate
- Web Certificate
- Manager Service Certificate
- Validation
- Create Snapshots
- Installation Details
- Licensing
- Minimal

Installation Prerequisites Help ?

Before proceeding with the installation, make sure that you have set up the IaaS hosts to use in your installation. The Discovered Hosts table tells you which hosts are configured for vRealize Automation.

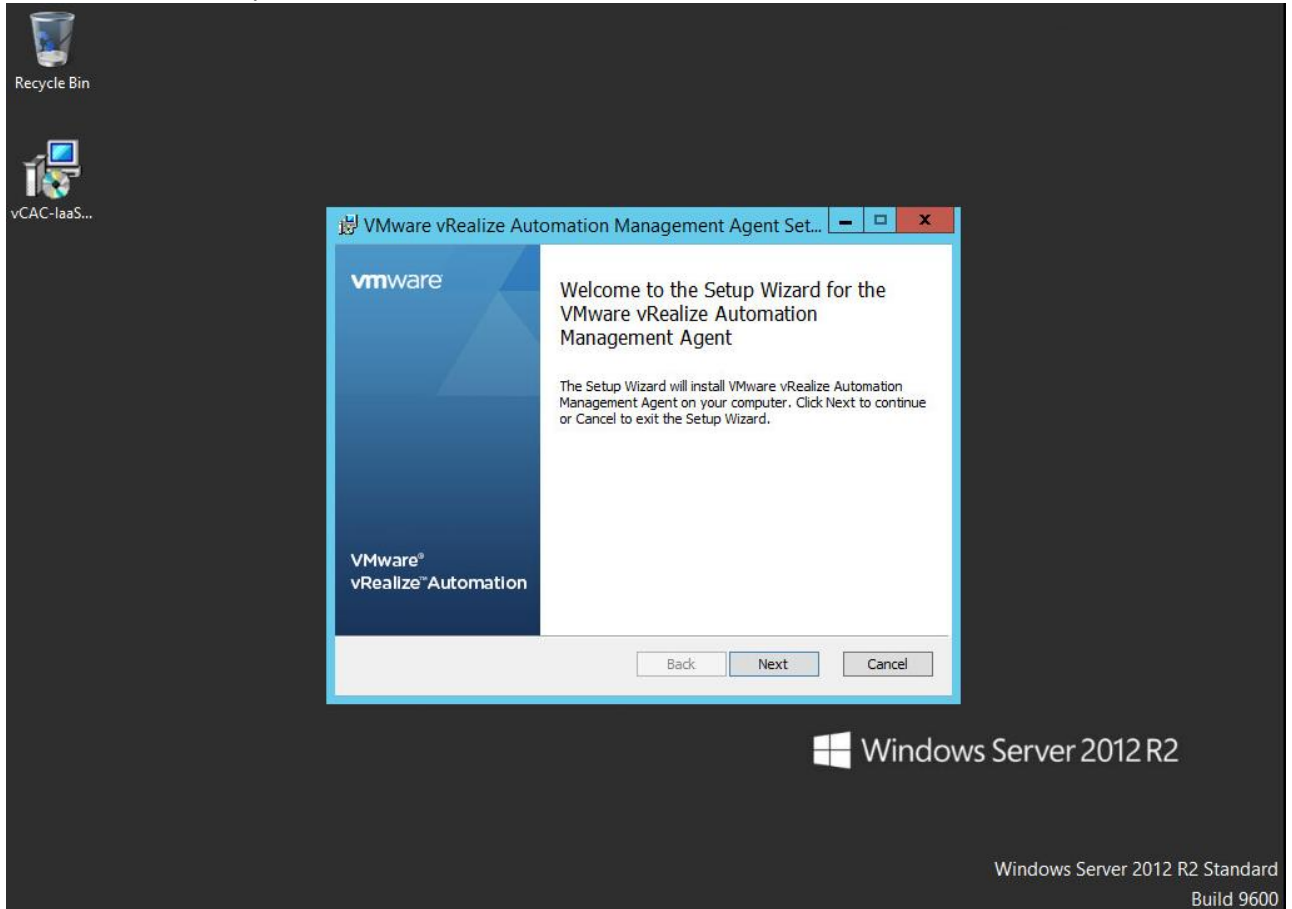
Task	For More Information
Configure IaaS servers	See Windows Server Requirements.
Install Management Agents on each IaaS host name	You can download the Management Agent installer from vCAC-iaasManagementAgent-Setup.msi You must install a Management Agent on each IaaS machine.
Set up time synchronization among virtual appliances and IaaS servers.	The same timekeeping method must be used by IaaS servers and vRealize Appliances. NTP Status: NTP Enabled: No, NTP Started: No, Use Host Time: Yes Current Time: Dec 18 15:48:15 UTC 2015 Virtual Appliance Time Sync. Mode: <input checked="" type="radio"/> Use Host Time <input type="radio"/> Use Time Server

1-1 of 0

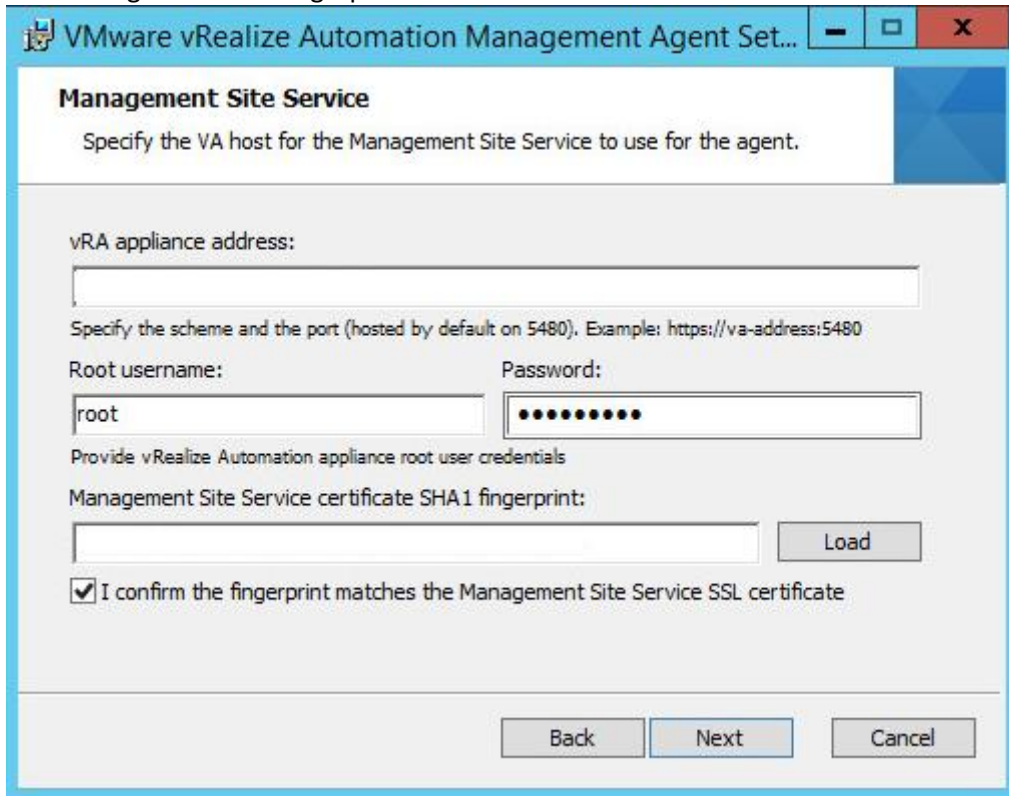
IaaS Host Name	Last Connected	Time Offset (sec)
----------------	----------------	-------------------

our IaaS servers. This is the Windows server we've stood up in addition to the vRA virtual appliance. You'll notice there is a link on this page will let you download an MSI file.

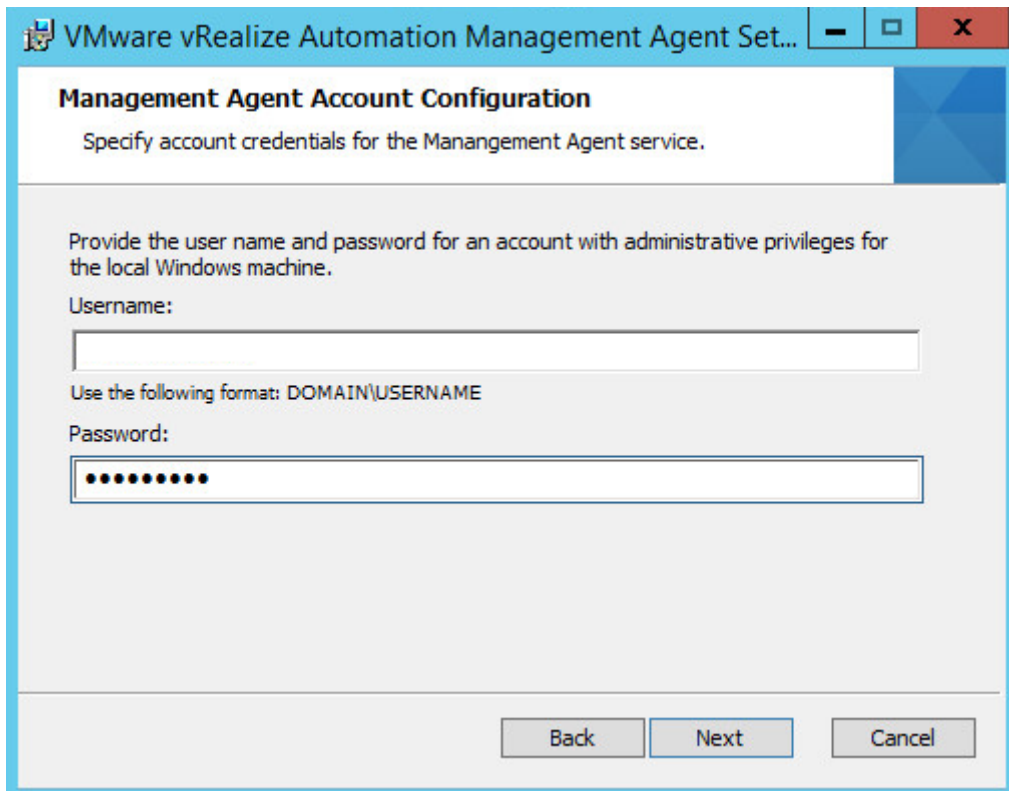
Run this installer on your Windows server



This installer will ask for the address and login information for your vRA appliance. Click the “Load” button to grab the SSL fingerprint and confirm the connection. Click Next.



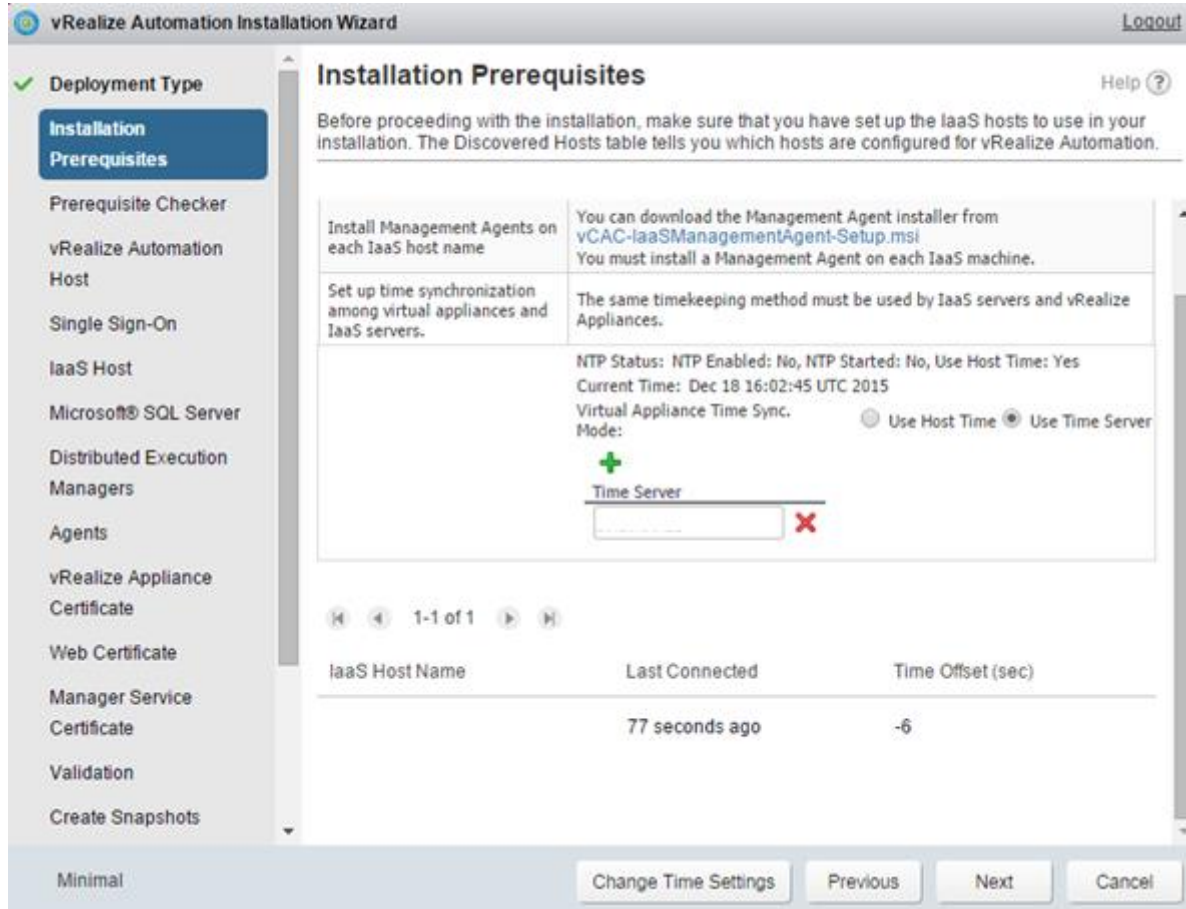
The next screen will ask you for account information that has administrative rights on your IaaS Server. This account will be used to install services and additional pre-requisite software.



The screenshot shows a Windows-style dialog box titled "VMware vRealize Automation Management Agent Set...". The main heading is "Management Agent Account Configuration" with the subtitle "Specify account credentials for the Management Agent service." Below this, there is a instruction: "Provide the user name and password for an account with administrative privileges for the local Windows machine." The form contains two input fields: "Username:" and "Password:". The password field is masked with dots. A note below the username field says "Use the following format: DOMAIN\USERNAME". At the bottom of the dialog, there are three buttons: "Back", "Next", and "Cancel".

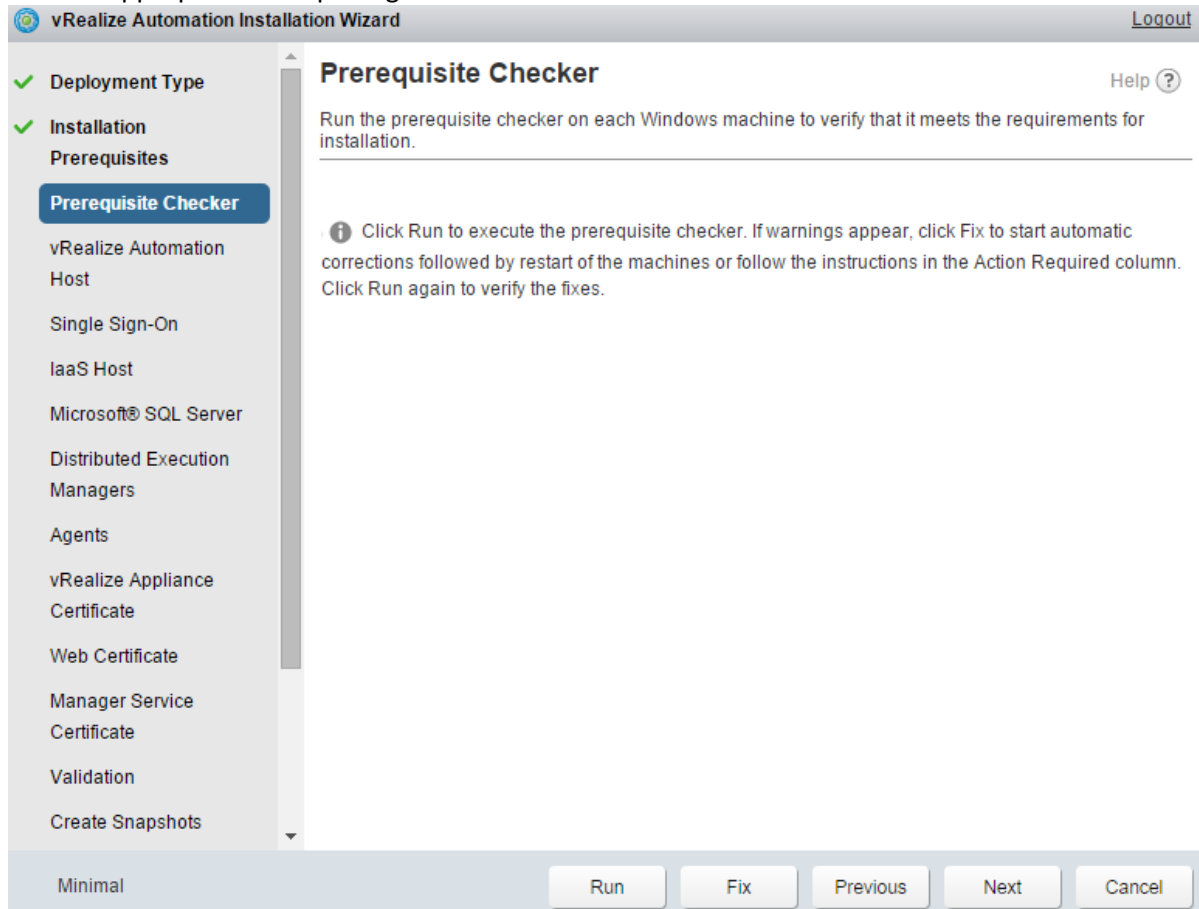
Once the installer finishes, go back to your wizard. Notice that at the bottom of the screen you were on, there is now an IaaS Server listed. Set your NTP settings (THIS IS VERY IMPORTANT !) and click

next.

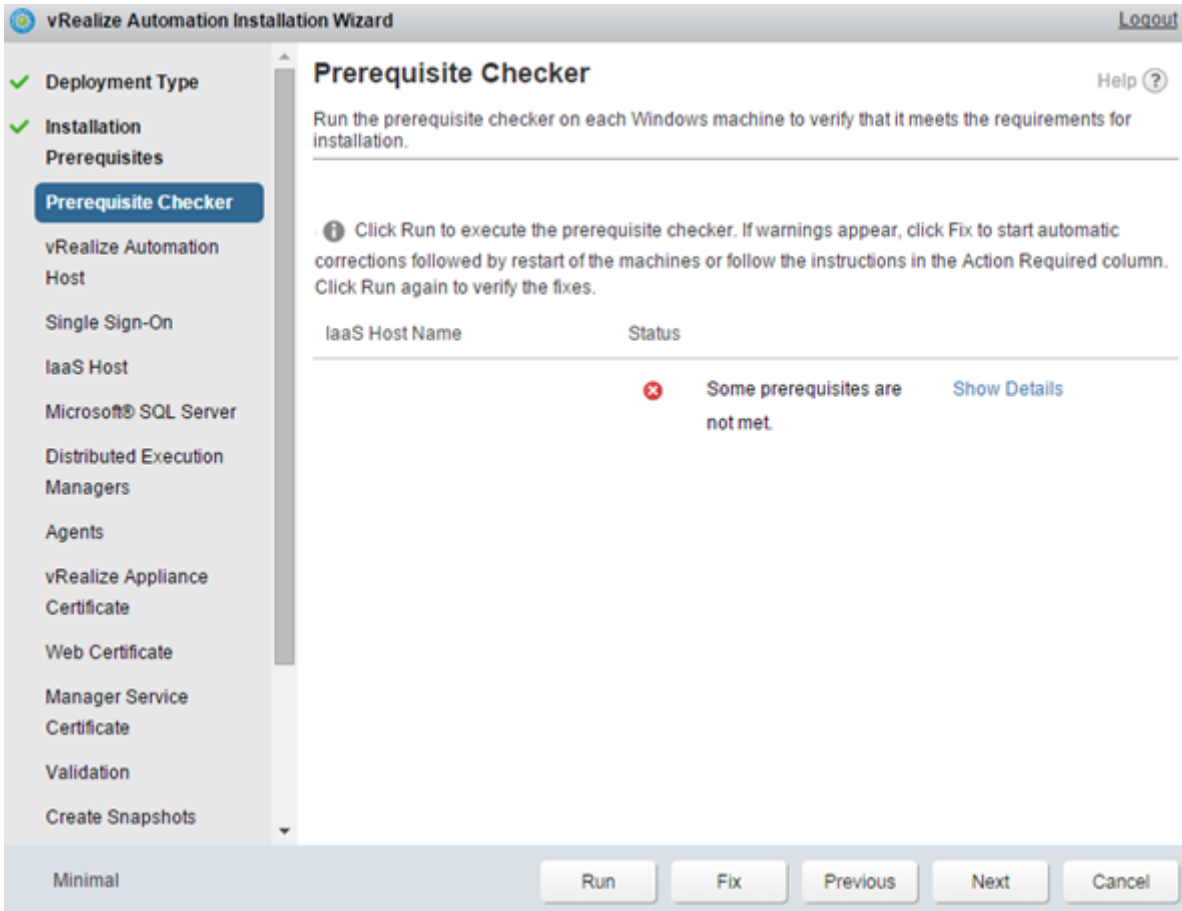


Now we are met with a prerequisite check screen. Click “Run” to test to make sure you have all the prerequisites met. This step checks to see if you have things like IIS installed on the IaaS Server,

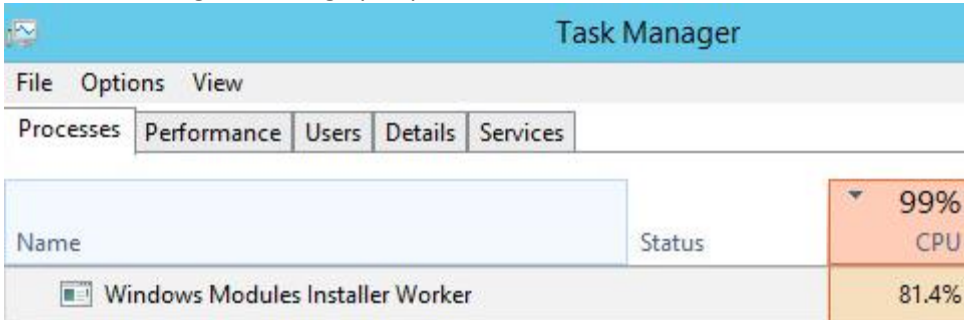
and the appropriate .NET packages etc.



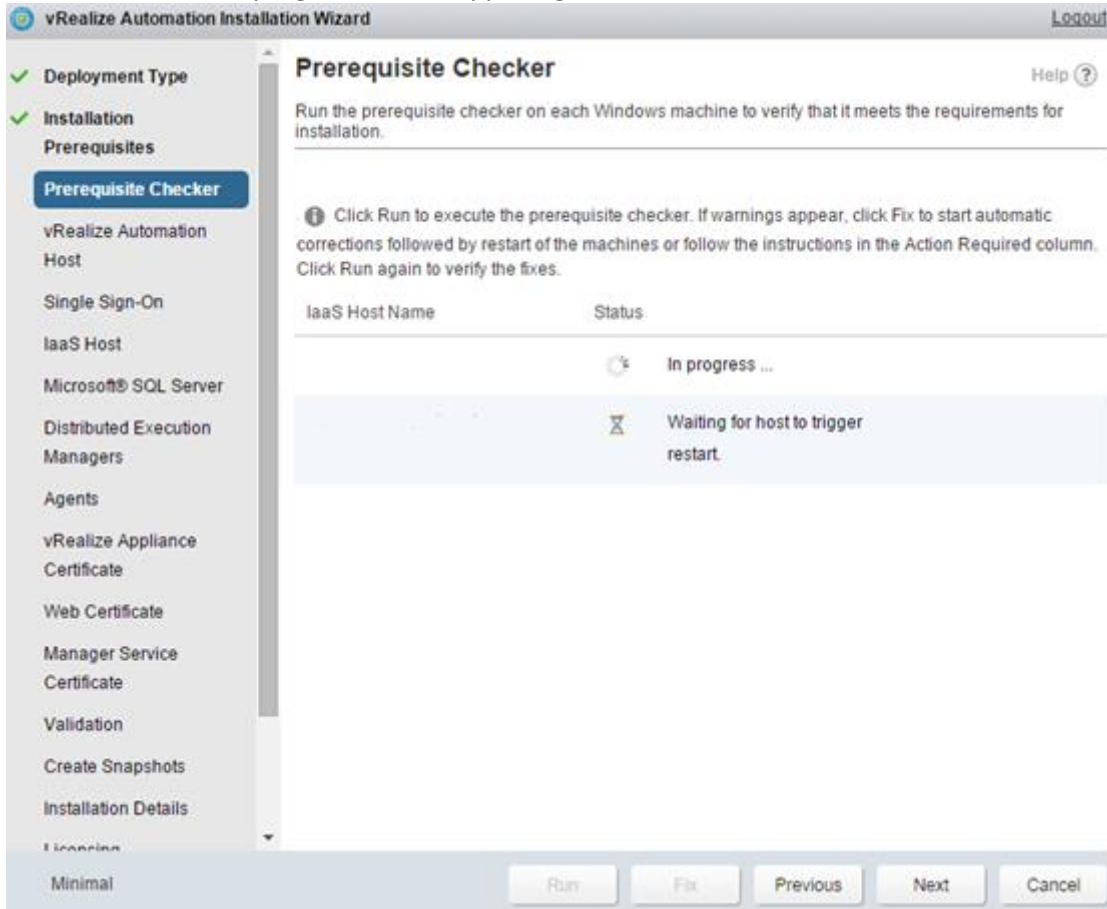
Once the check is complete you can view the details and click the “fix” button to have the installer automatically take care of them for you.



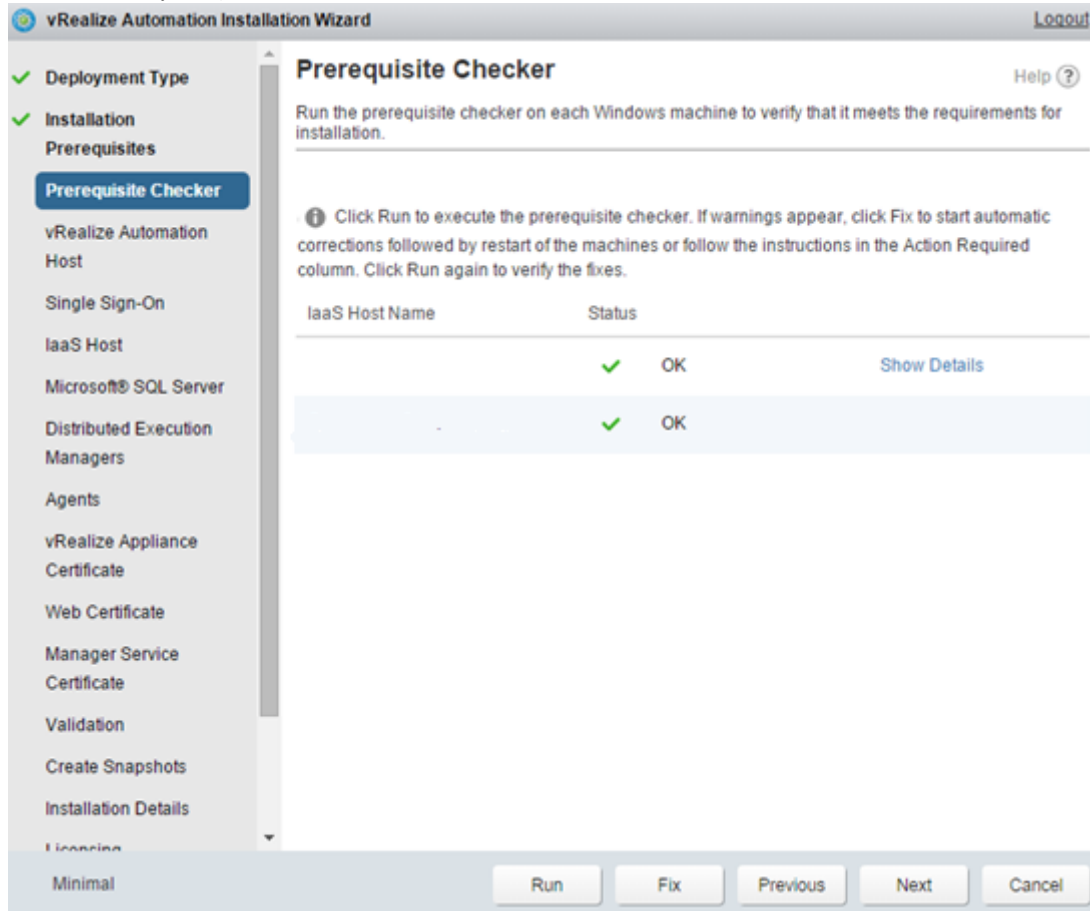
The fix step could take some time. If you aren't sure that anything is really happening or not, go over to your IaaS Server and check task manager. You'll probably find a "Windows Modules Installer Worker" running and taking up copious amounts of CPU.



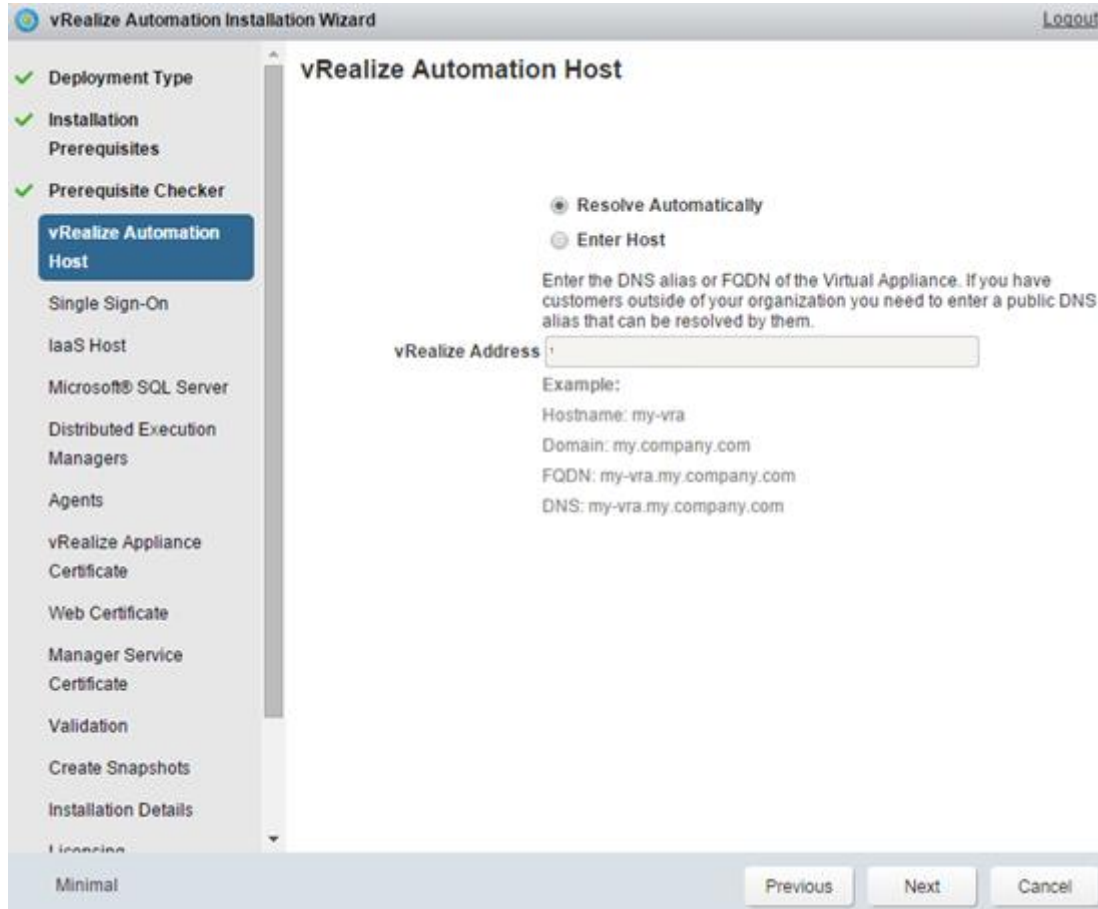
You'll also see some progress status happening in the install wizard.



Once the prerequisites have been installed and the server is rebooted (the reboot happens automatically too) click Next.



Next we're asked for the vRA host name. You could change the name here but we've chosen to grab hostname from



Enter a very strong password for your default tenant administrator account. Be sure to keep track of this since you'll need this down the road. Click Next.

vRealize Automation Installation Wizard Logout

Deployment Type
 Installation Prerequisites
 Prerequisite Checker
 vRealize Automation Host
Single Sign-On
 IaaS Host
 Microsoft® SQL Server
 Distributed Execution Managers
 Agents
 vRealize Appliance Certificate
 Web Certificate
 Manager Service Certificate
 Validation
 Create Snapshots
 Installation Details
 Licensing
 Minimal

Single Sign-On

Enter a password to assign system administrator credentials for the default tenant account.
Record the user name and password in a secure place for later use.

* Administrator password

* Confirm password

The password should:

- *be 8 characters or longer
- *have at least one uppercase character
- *have at least one lowercase character
- *have at least one numeric digit
- *have at least one special character [!@#\$\$%^&*]

just input the name of our Windows IaaS Host here. Select the IaaS host from the dropdown in order to install components on it and enter a login that has administrative credentials on the box. Also, enter a security passphrase for the SQL database to use for encryption. Click Next.

The screenshot shows the 'IaaS Host' configuration step in the vRealize Automation Installation Wizard. The left sidebar contains a list of steps, with 'IaaS Host' selected. The main area contains the following fields and instructions:

- IaaS Web Address:** A text input field with the instruction: "Enter the DNS alias or FQDN of the IaaS Web server."
- Install IaaS Components on:** A dropdown menu.
- Username:** A text input field.
- Password:** A password input field.
- Database Security:** A section header with the instruction: "Enter a passphrase for the Microsoft® SQL database. Use the same encryption passphrase for all components in a distributed environment. Record the passphrase in a secure place for later use."
- Security Passphrase:** A passphrase input field.
- Confirm Passphrase:** A confirm passphrase input field.

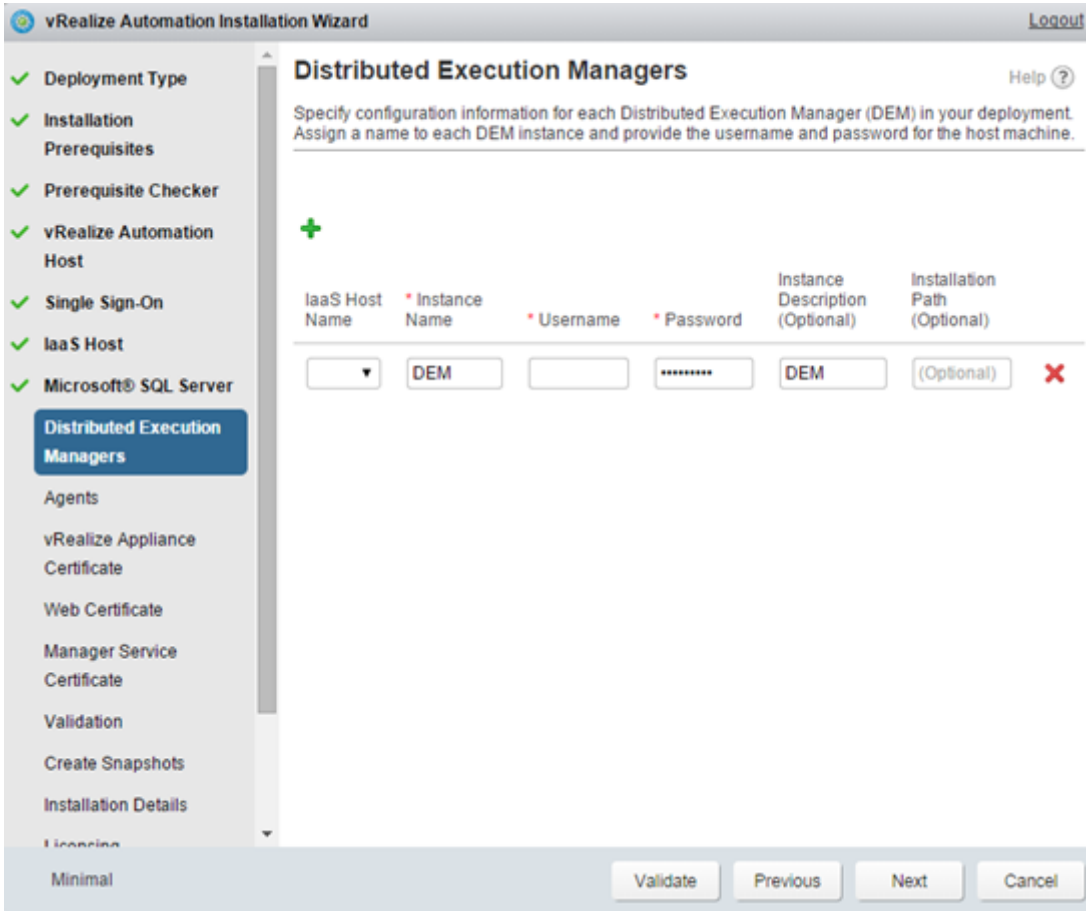
At the bottom of the wizard, there are three buttons: 'Previous', 'Next', and 'Cancel'. The 'Next' button is highlighted, indicating the user is ready to proceed.

Next enter the name of your SQL server and a name for the new database that will be created.

The screenshot shows the 'vRealize Automation Installation Wizard' window. The title bar includes 'vRealize Automation Installation Wizard' and a 'Logout' button. On the left, a navigation pane lists various steps, with 'Microsoft® SQL Server' highlighted in blue. The main content area is titled 'Microsoft® SQL Server' and contains the following text: 'Create a Microsoft® SQL server database. The database is used to maintain information about managed machines and associated elements and policies.' Below this, there are two required input fields: '* Server name:' and '* Database name:'. There are two radio button options: 'Create new database' (selected) and 'Use existing empty database'. There are two checked checkboxes: 'Default settings' and 'Windows Authentication'. A 'Security Requirements' section follows, stating: 'The account that runs the Management Agent on the main website server needs to have System Administrator rights on the SQL server. The users configured for the Website and Manager Service components need to have db_owner permission on the database.' At the bottom, there are four buttons: 'Validate', 'Previous', 'Next', and 'Cancel'.

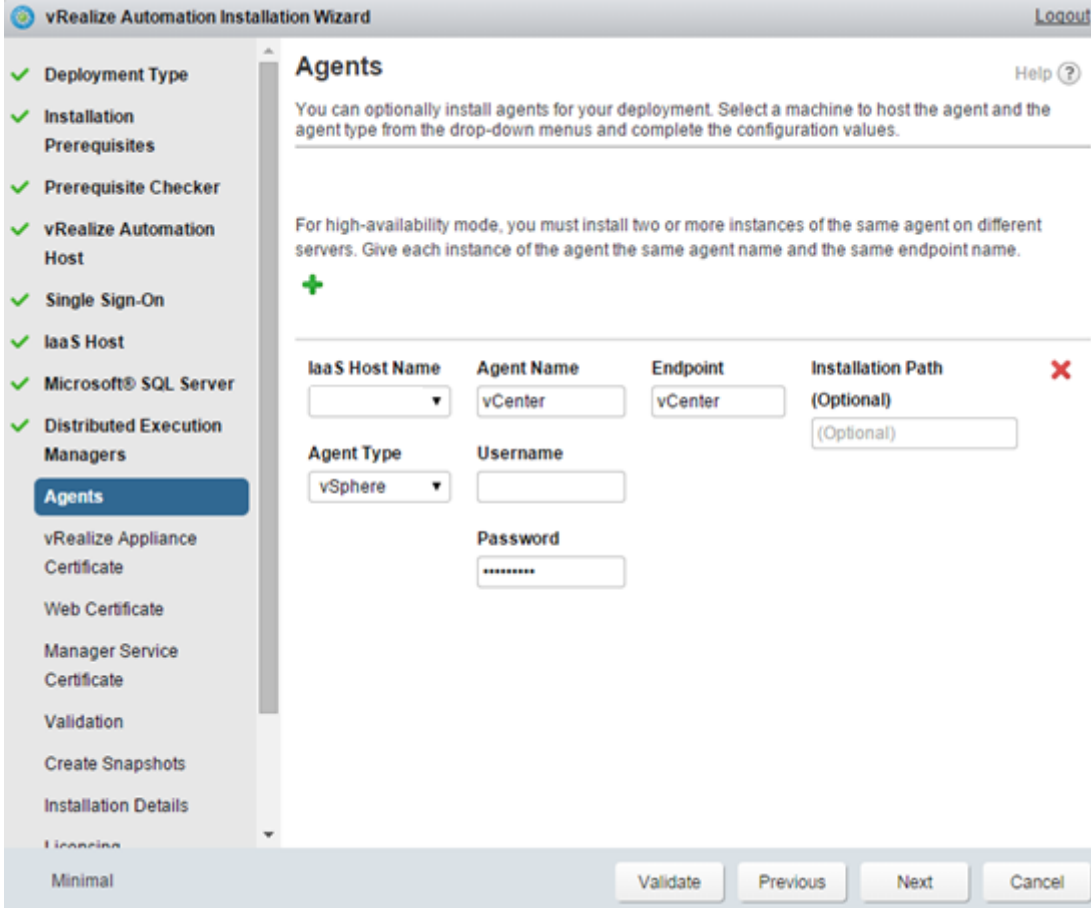
Select the name of an IaaS Host in which to install the DEM Workers. This should be simple since it's there's only one IaaS box in the simple environment of ours. Add login credentials to install the DEM

service. Click Next.



We'll perform the same operation with our DEM Agents except we need to specify an Endpoint here as well. I've named my Endpoint vCenter. The agent type is vSphere and I've provided login

information. Click Next.



Now we can import certificates that we created with our own certificate authority or we can generate self signed certs. The first cert we need to generate is the vRA appliance and web portal.

Enter the certificate information and click Next.

vRealize Automation Installation Wizard Logout

vRealize Appliance Certificate Help ?

Select a certificate type from the Certificate Action menu. If you are using a PEM-encoded certificate, for example for a distributed environment, select Import. The Generate Certificate option generates a self-signed certificate.

* Certificate Action Keep Existing
 Generate Certificate
 Import

Common Name

* Organization

* Organizational Unit

* Country Code

Serial

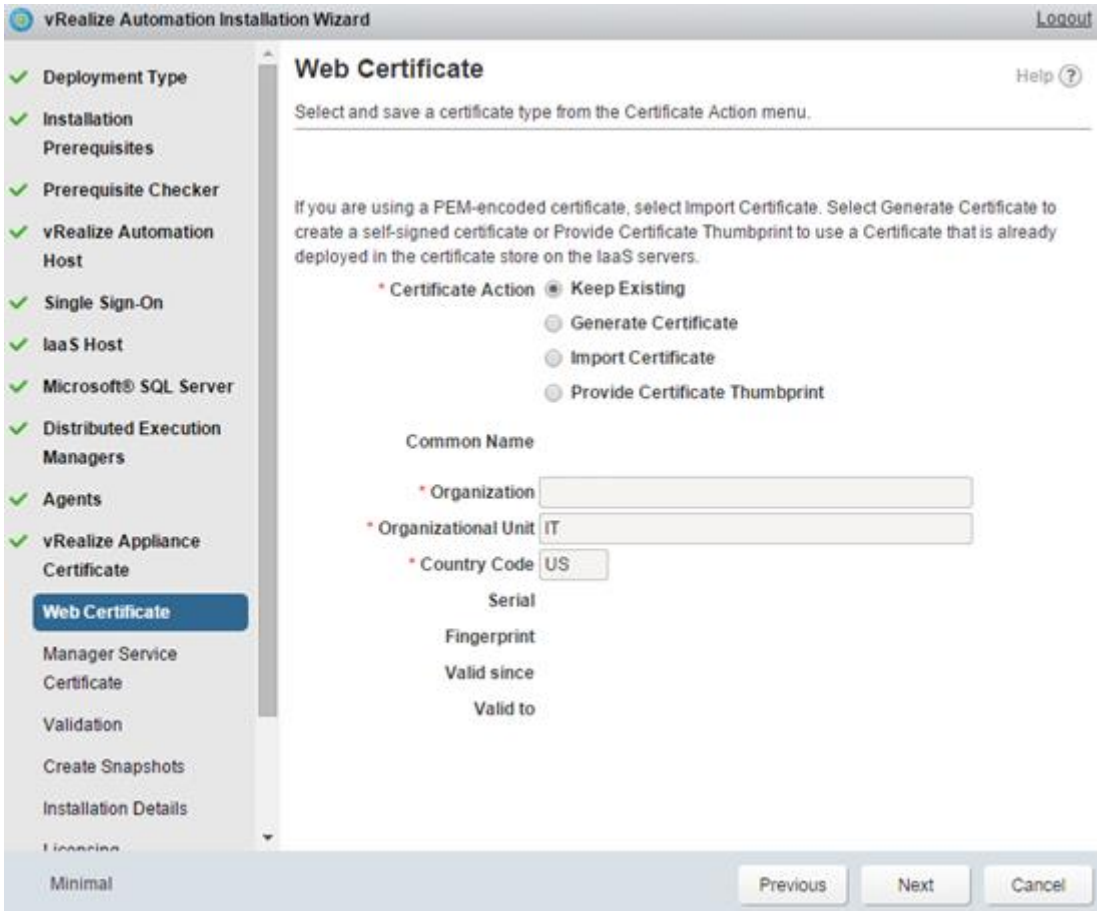
Fingerprint

Valid since

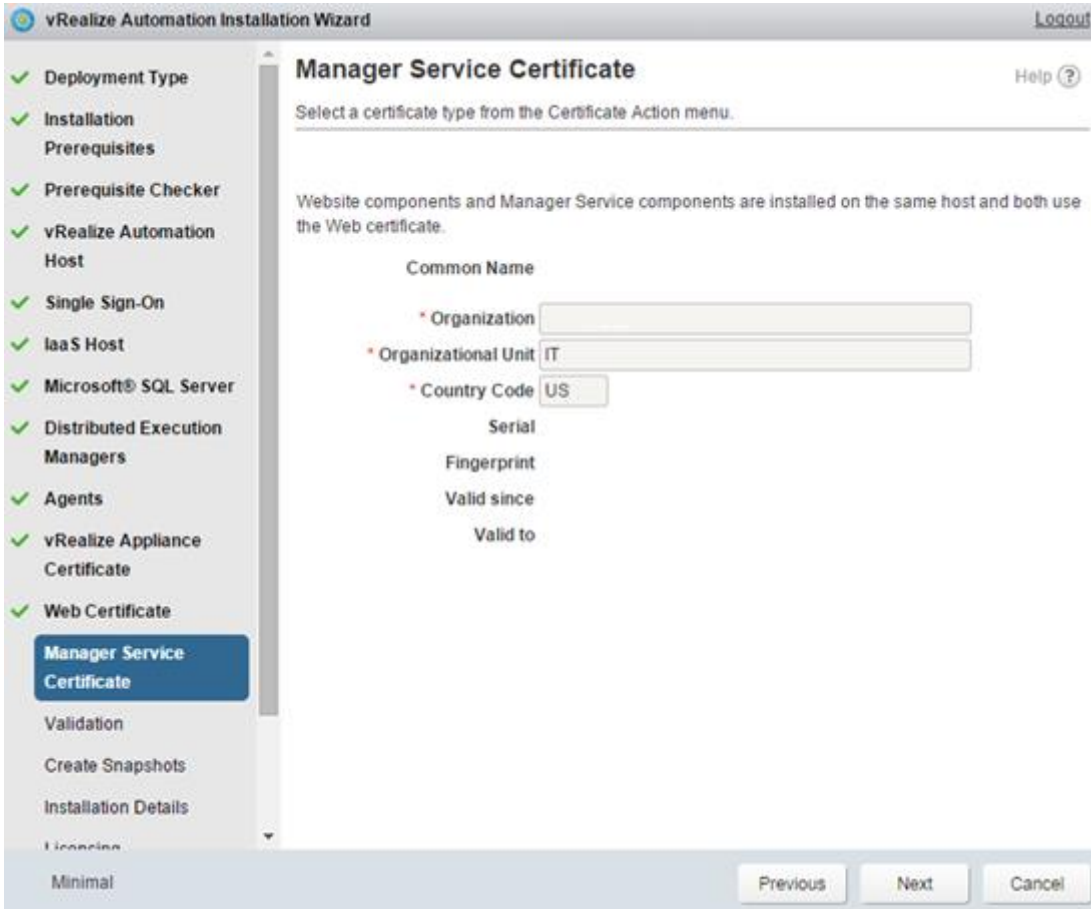
Valid to

Minimal Previous Next Cancel

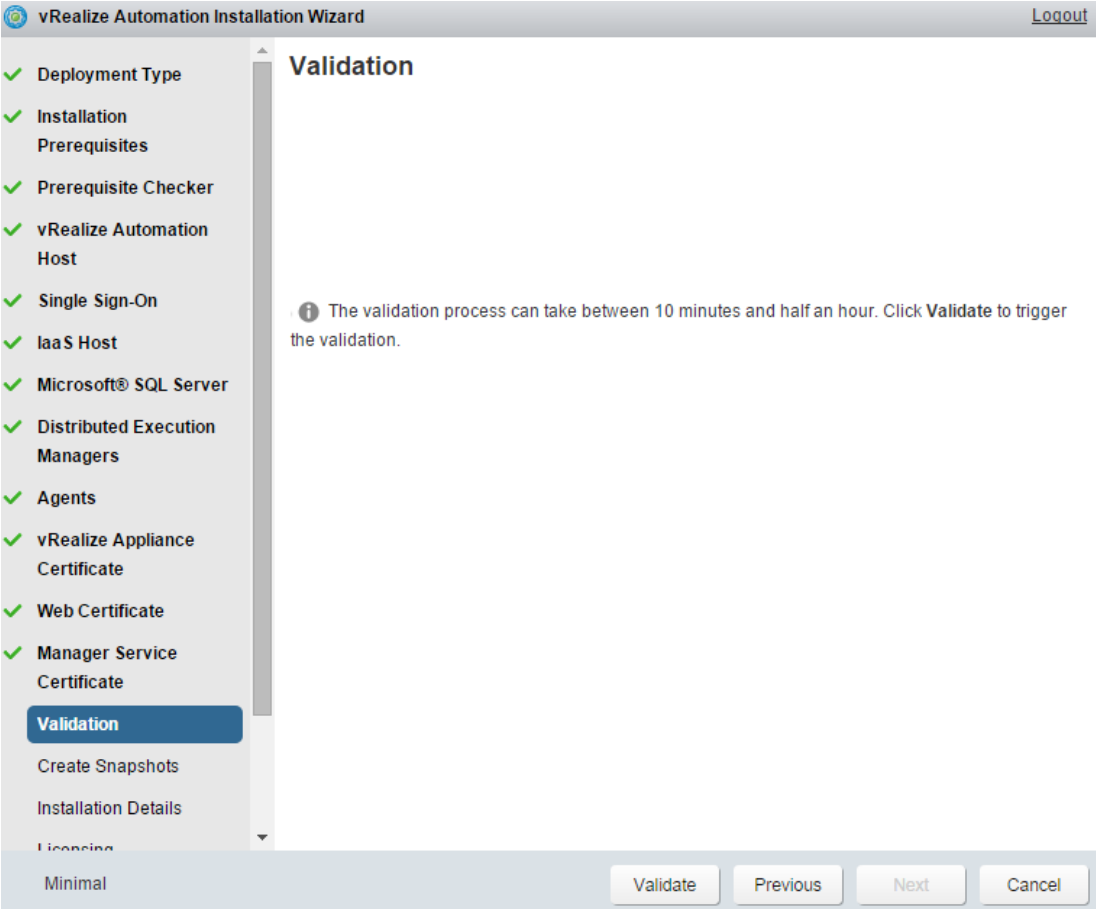
Now we need to enter the web certificate information for the IaaS Server. Enter the certificate information and click Next.



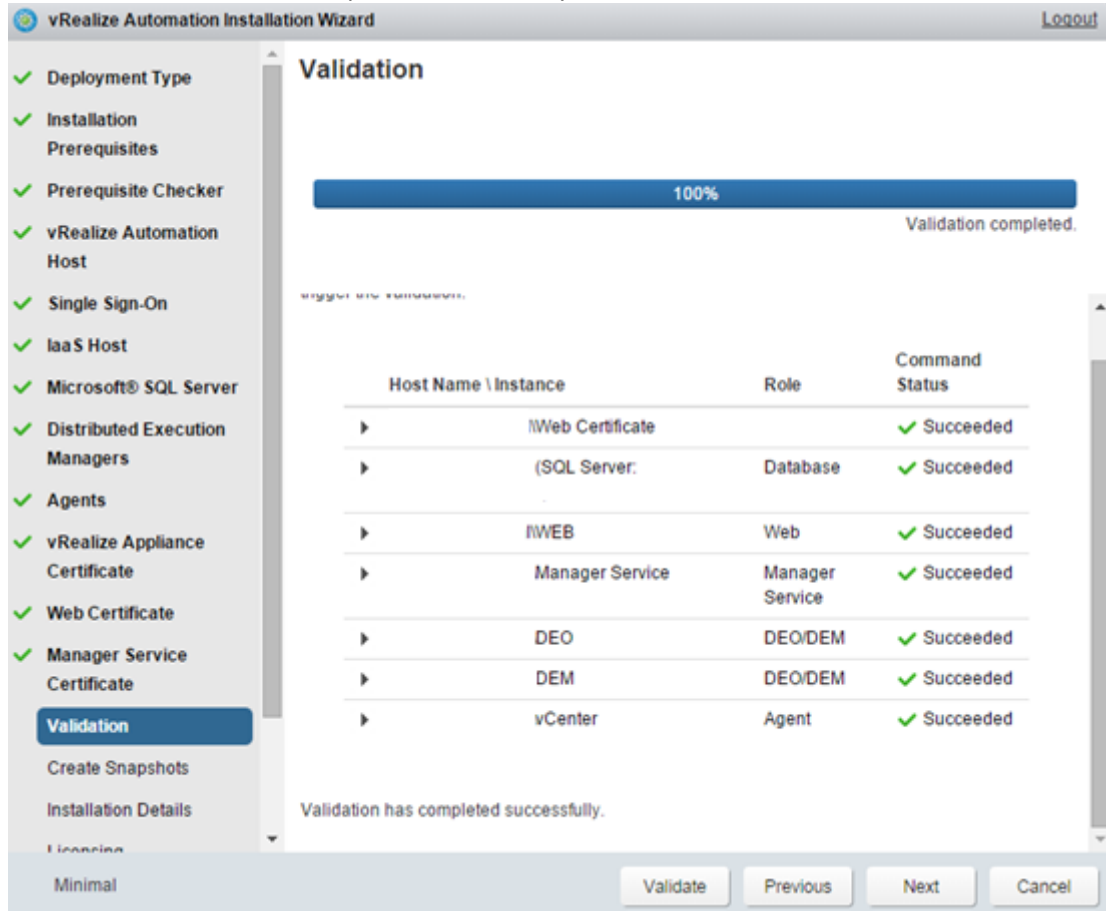
The last certificate we need to provide is the manager service certificate. Enter the certificate information and click Next.



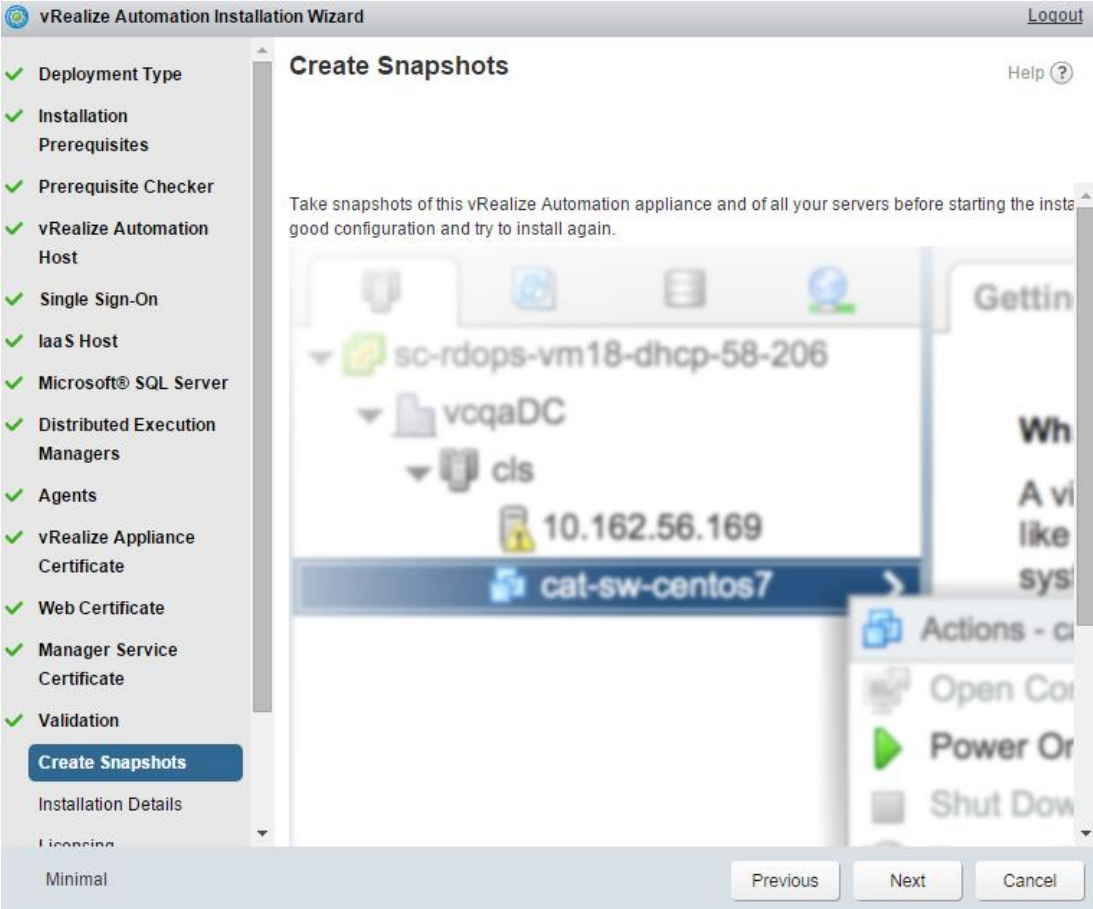
Now we're ready to validate all of our settings. Lucky for us, the wizard will do that before installing anything. Click Validate and grab a cup of coffee. This will take a bit.



Once the validation has completed successfully, Click Next.



A nice reminder will be presented to you here to take a couple of snapshots before continuing. This sounds like a pretty good plan to me. Go take your snapshots and then click Next.



You're ready to go. Click Install.

vRealize Automation Installation Wizard [Logout](#)

- ✓ Deployment Type
- ✓ Installation Prerequisites
- ✓ Prerequisite Checker
- ✓ vRealize Automation Host
- ✓ Single Sign-On
- ✓ IaaS Host
- ✓ Microsoft® SQL Server
- ✓ Distributed Execution Managers
- ✓ Agents
- ✓ vRealize Appliance Certificate
- ✓ Web Certificate
- ✓ Manager Service Certificate
- ✓ Validation
- ✓ Create Snapshots

Installation Details

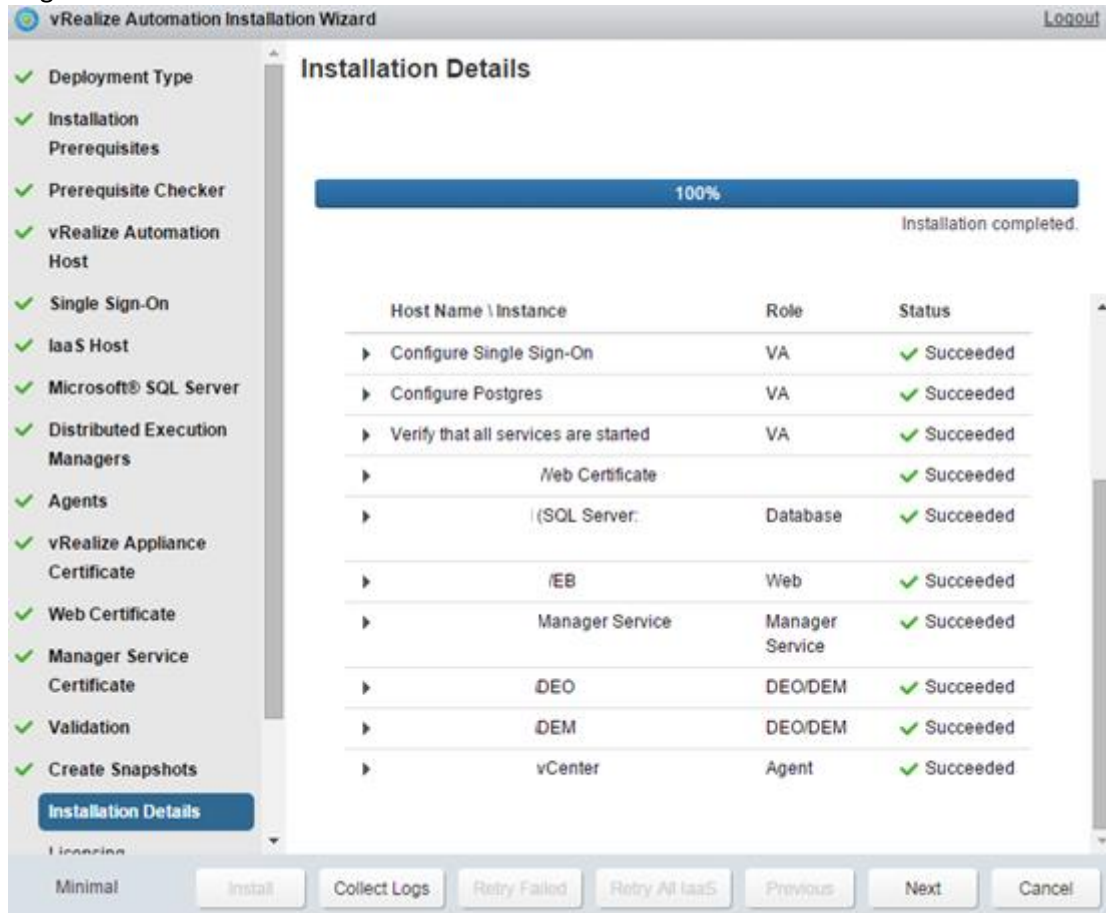
*Retry Failed** button allows retrying of single or multiple failed commands. Depending on reason for failure some commands could not be retried. If retry failed is enabled you can retry the failed command without the need to revert to snapshots.

*Retry All IaaS** button retries all installation commands for IaaS components only. All IaaS servers must be reverted to the snapshots created on the snapshot page before the installation is retried. The Microsoft® SQL database needs to be deleted if you are using an external SQL server.

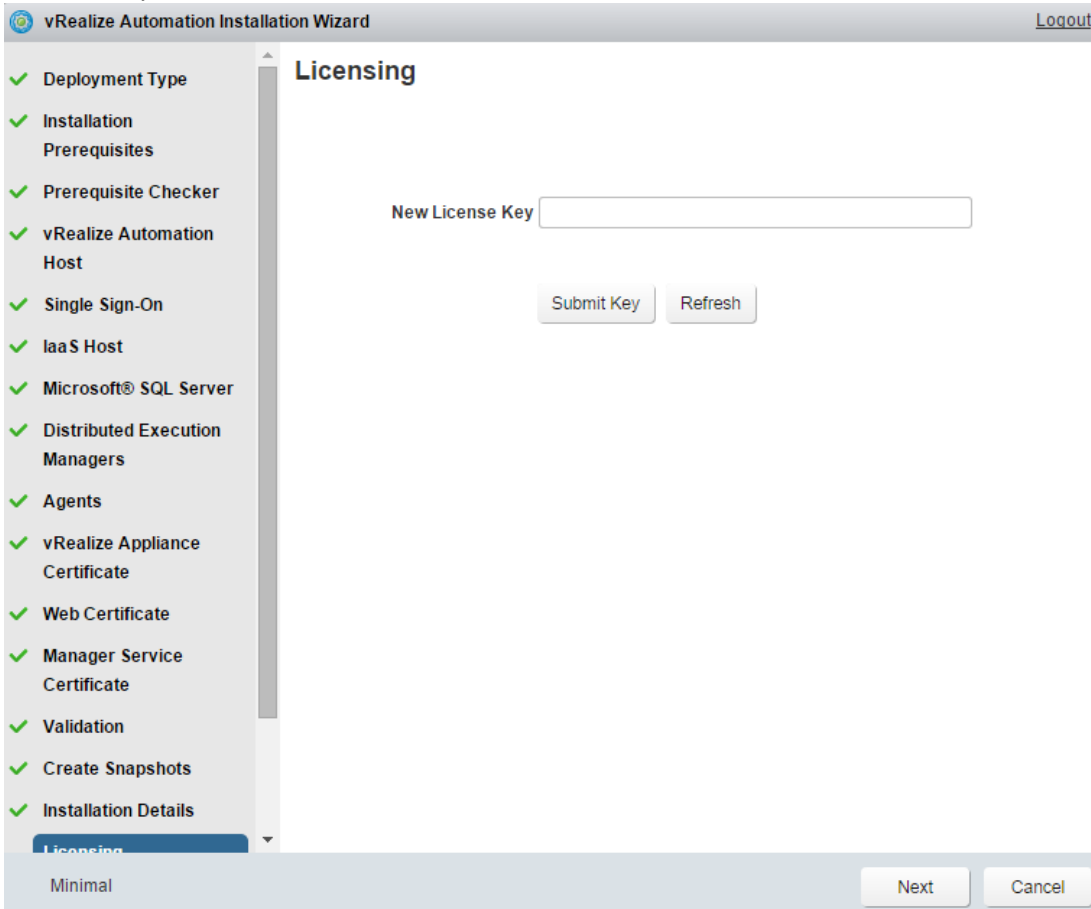
i The installation process can take between 30 minutes and two hours. Click **Install** to trigger the installation.

Minimal

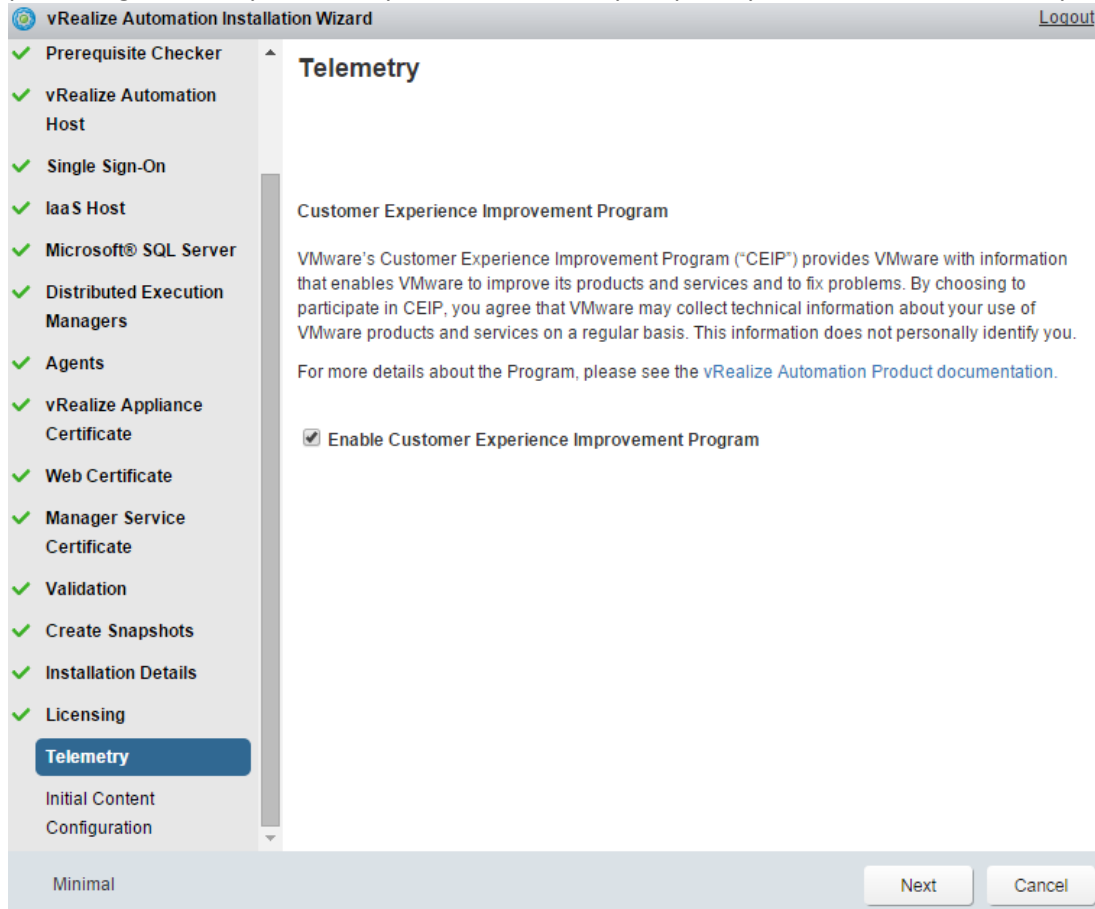
Hopefully, the install process will go flawlessly, and at the end you'll have a nice screen with a bunch of green check marks. Click Next.



AHHHHHHH! The license. Nothing is free is it. Go grab your license key and enter it in the box. Click "Submit Key". Then click "Next".



It's up to you here. If you want to submit telemetry data back to VMware so they can better the product, go for it. If you're really concerned about your privacy don't check the box. It's your call.



vRealize Automation is now installed.

The screenshot shows the 'vRealize Automation Installation Wizard' window. The title bar includes the text 'vRealize Automation Installation Wizard' and a 'Logout' link. On the left side, there is a vertical list of 17 steps, each preceded by a green checkmark, indicating they have been successfully completed. The steps are: Prerequisite Checker, vRealize Automation Host, Single Sign-On, IaaS Host, Microsoft® SQL Server, Distributed Execution Managers, Agents, vRealize Appliance Certificate, Web Certificate, Manager Service Certificate, Validation, Create Snapshots, Installation Details, Licensing, Telemetry, and Initial Content Configuration. The main area of the wizard displays the message: 'Congratulations, you have successfully installed the environment!'. At the bottom left, the text 'Minimal' is visible, and at the bottom right, there is a 'Finish' button.

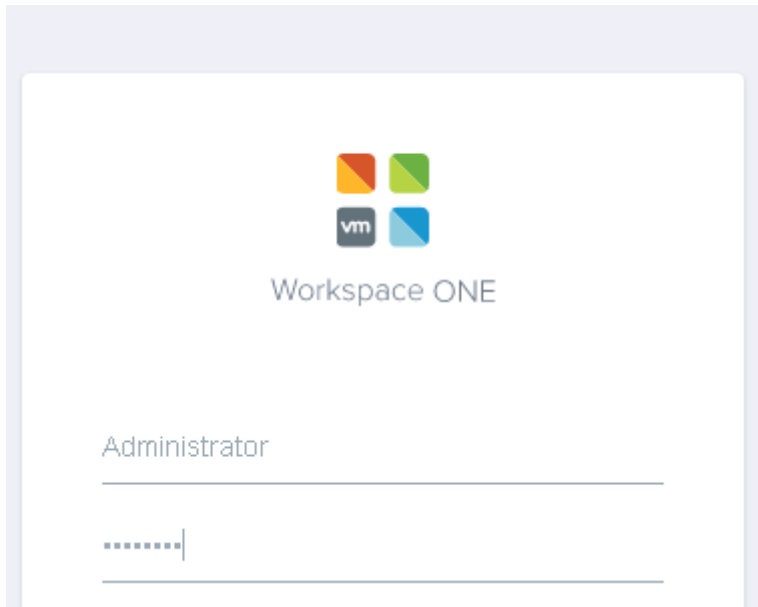
- ✓ Prerequisite Checker
- ✓ vRealize Automation Host
- ✓ Single Sign-On
- ✓ IaaS Host
- ✓ Microsoft® SQL Server
- ✓ Distributed Execution Managers
- ✓ Agents
- ✓ vRealize Appliance Certificate
- ✓ Web Certificate
- ✓ Manager Service Certificate
- ✓ Validation
- ✓ Create Snapshots
- ✓ Installation Details
- ✓ Licensing
- ✓ Telemetry
- ✓ Initial Content Configuration

Congratulations, you have successfully installed the environment!

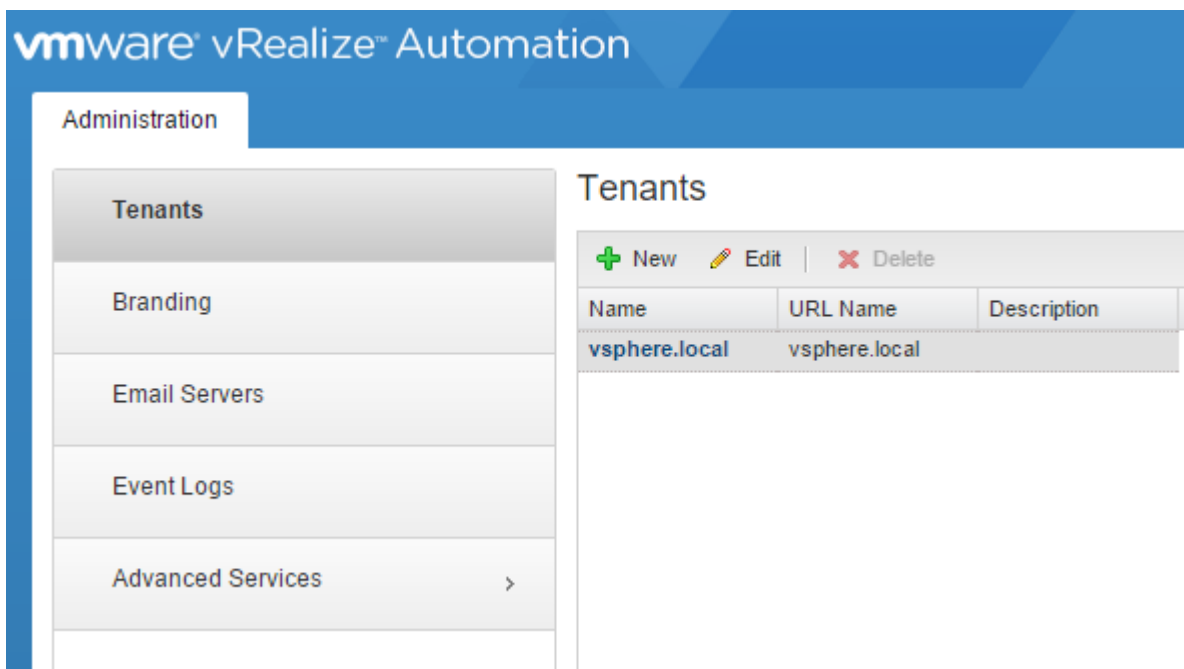
Minimal Finish

Local Account

We've got vRA installed and that's a good start. Our next step is to login to the portal and start doing some configuration. Go to <https://vra-appliance-name-orIP> and enter the administrator login that you specified during your install.



To start, let's add some local users to our vsphere.local tenant. Click on the vsphere.local tenant.



Click on the "Local users" tab and then click the "New" button to add a local account. I've created a Local Admin account that will be a local account only used to manage the default tenant configurations.

Edit Local User: LocalAdmin LocalAdmin

* First name:

* Last name:

* Email:

* User name:

* Password:

* Confirm password:

Click the Administrators Tab and add the account you just created to the Tenant Admins and IaaS Admins groups. Click Finish.

Edit Tenant: vsphere.local

General Local users **Administrators**

Tenant administrators

Select users or groups to grant the Tenant administrator role.

Search

Name (3)
LocalAdmin LocalAdmin (admin@vsphere.local)

IaaS administrators

Select users or groups to grant the IaaS administrator role.

Search

Name (2)
LocalAdmin LocalAdmin (admin@vsphere.local)

Click on the Branding Tab. If you want to change any of the look and feel of your cloud management portal, uncheck the "Use default" check box and upload headers, change colors to fit your needs.

Header
Footer

Header Logo:

Logo image will be displayed no larger than 800 x 50.

Company name:

Used in logo hover-over.

Product name:

***Background hex color:**

***Text hex color:**

LAB
Welcome, administrator. | Preferences

Log out of the portal and log back in as the new tenant administrator account.

Active Directory Authentication

In order to setup Active Directory Integrated Authentication, we must login to our default tenant again but this time as our “Tenant Administrator” instead of the system administrator account that is created during initial setup.

Once you’re logged in, click the Administration tab → Directories Management → Directories and then click the “Add Directory” button. Give the directory a descriptive name like the name of the ad domain for example. Then select the type of directory. I’ve chosen the “Active Directory (Integrated Windows Authentication)” option. This will add the vRA appliance to the AD Domain and use the computer account for authentication.

Add Directory

*** Directory Name**

Active Directory over LDAP
 Active Directory (Integrated Windows Authentication)

Directory Sync and Authentication

Select the connector that syncs users from Active Directory to the VMware Identity Manager directory.

Sync Connector

Authentication Do you want this Connector to also perform authentication?

Yes
 No

*** Directory Search Attribute**

Enter the account attribute that contains the user name.

Server Location

Check this box to use the DNS Service Location records to locate the Active Directory domains. If you do not use DNS Service Location lookup, deselect the checkbox and enter the Active Directory server host name and port.

This Directory supports DNS Service Location

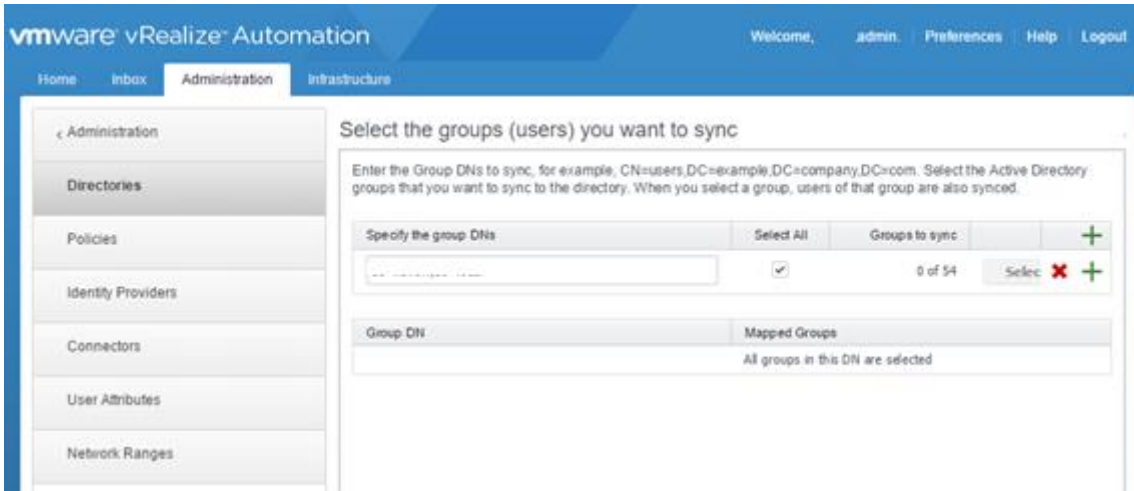
Now, select the domain you just added. Click Next.



Now we can map vIDM properties to your active directory properties. The properties I used are shown in the screenshot below. I tweaked the default values a tad bit, but for the most part, all of the properties were already mapped correctly to start with.

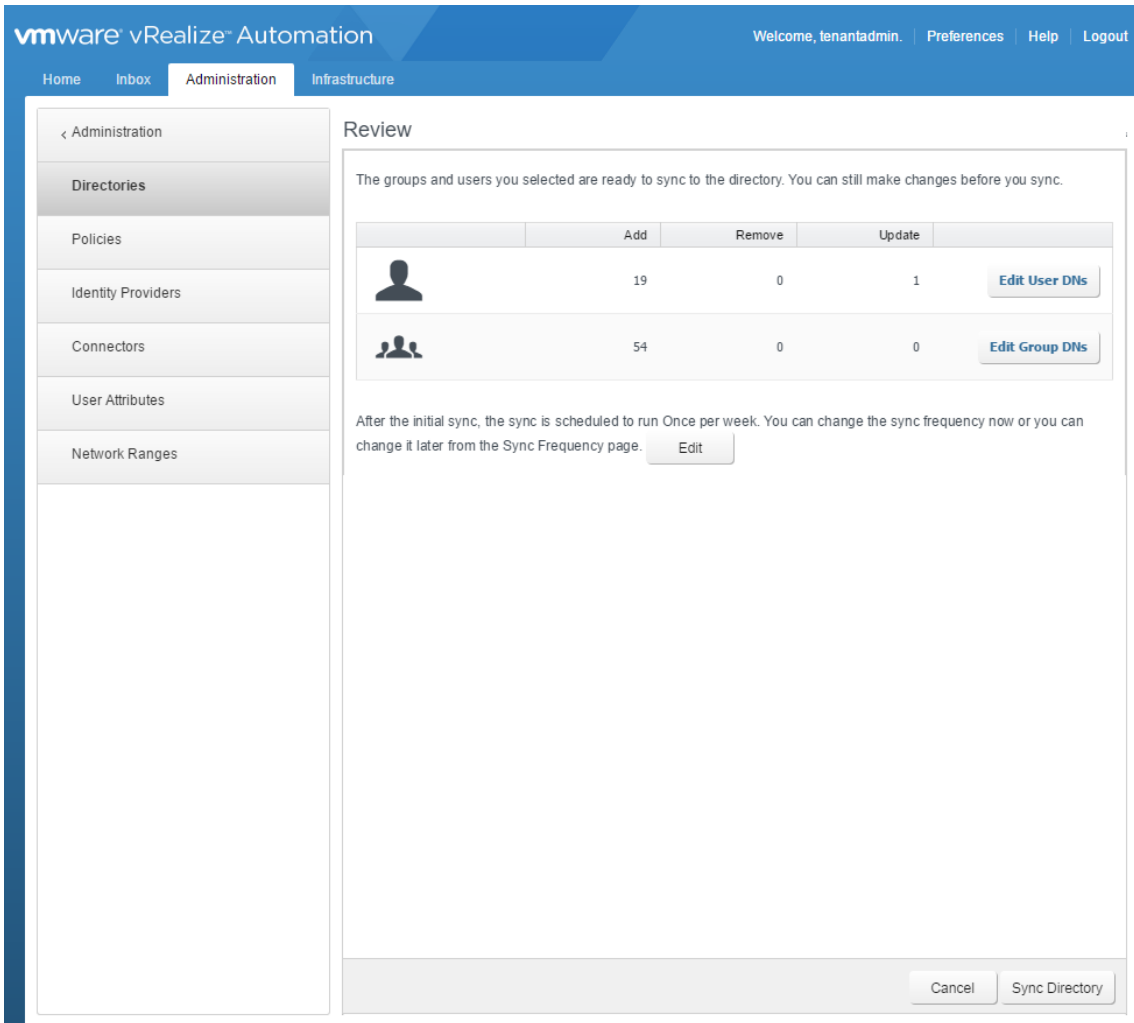


Now we enter a Distinguished Name to search for groups to sync with. I chose the root DN for my domain, and selected all of the groups. Click Next.



repeat the process with user accounts. Click Next.

The next screen shows you details about the user and groups that will be synced. You can edit your settings or click “Sync Directory” to complete the setup.



The screenshot shows the vSphere Web Client Administration console. The top navigation bar includes 'Home', 'Inbox', 'Administration', 'Infrastructure', and 'Containers'. The 'Administration' tab is active. On the left sidebar, 'Directories' is selected. The main content area displays 'Directories (1)' with a table containing one entry:

Directory Name	Type	Domains	Synced Groups	Synced Users	Last Sync	Alerts	
vcap.domain.local	Active Directory with IWA	1	41	8	8 maj 2017 01:55:02		Sync Now

Endpoints

Now that we've setup our new tenant, lets login as an infrastructure admin and start assigning some resources that we can use. To do this we need to start by adding an endpoint

In this lab we'll add a vSphere endpoint. Go to the Infrastructure Tab → Credentials and then click the "New" button to add a login. Give it a name and description that will help you remember what the credentials are used for

Credentials

Manage the credentials associated with endpoints.

The screenshot shows the 'Credentials' management interface. At the top, there are buttons for '+ New', 'Edit', and 'Delete'. Below is a table with columns for Name, Description, User Name, and Password. One credential is listed:

Name	Description	User Name	Password
Administrator	vsphere admin	Administrator@vsphere.local

Now that we've got some credentials to use, go to Infrastructure Tab → Endpoints and then click the "New" button again. Here I'm selecting Virtual → vSphere (vCenter) because thats the type of endpoint I'm connecting to. Your mileage may vary.

Fill out the name which should match the agents that were created during the installation. If you kept all of the defaults during the install, the first vCenter agent is named “vCenter” spelled exactly like this with the capital “C”. Give it a description and then enter the address. The address for a vCenter should be `https://vcenterFQDN/sdk`. Now click the ellipsis next to credentials and select the username/password combination that we created earlier.

We are using NSX so also we will add NSX

Edit Endpoint - vSphere (vCenter)

Manage a specific endpoint.

General

*** Name:**

Description:

Address:

*** Credentials:** ...

Specify manager for network and security platform

*** Address:**

*** Credentials:** ...

Custom properties: + New ✎ Edit ✖ Delete

Name	Value

Fabric Group

Now we must create a fabric group We will be using group created in our Active directory for Fabric Groups

To add a Fabric Group, login to your vRealize Automation tenant as a IaaS Administrator account which we setup in a previous post. Now go to the Infrastructure Tab → Endpoints → Fabric Groups. Click the “New Fabric Group” button to create a new group.

Edit Fabric Group
Modify the fabric group.

Name: Fabric_Administrator

Description:

Fabric administrators: FabricUsers@vcap.domain.local

Compute resources:

	Name	Endpoint	Platform Type
	vSAN	vCenter	vSphere (vCenter)

Business Group

We want to make sure that our machines don't have the same names so we'll need a scheme to set them up in some sort of pool like we do with IP addresses. To setup a machine prefix go to Infrastructure → Administration → Machine Prefixes on your Fabric account . Click the “New” button with the plus sign on it to add a new prefix. Enter a string to be used in the name that will always be added to a new machine name. Next add a number of digits to append to the end of that string, and lastly enter a number for the next machine to start with.

Machine Prefixes
Add, edit, or delete the prefixes used to create machine names. Each blueprint must specify a prefix. Any business group can use any prefix in a blueprint.

Name **Number of Digits** **Next Number**

vra	3	13
-----	---	----

Now that we created the machine prefix, we can add our business group. Go back to Administrator account and Go to Administration → Users and Groups → Business Groups. Click the “New” button

again to add a new group. When the first screen opens, Give the group a name, description and an email address in which to send business group activities. Click “Next”.

LAB Welcome, Administrator. | Preferences | Help

Home | Inbox | Design | Administration | Infrastructure | Containers

Administration

- Directory Users and Groups
- Custom Groups
- Business Groups**

Edit Business Group: Busines_Administrator

General | Members | Infrastructure

Name: Business_Administrator

Description:

***Send manager emails to:** Administrator@vcap.domain.local

Active Directory Policy: No policy selected

Custom properties:

+ New | Edit | Delete

Name	Value	Encrypted	Show in Request
------	-------	-----------	-----------------

Next, we’re presented with a screen to add users to three different roles. The group manager role will entitle the users to blueprints and will manage approval policies. The support role will be users that can provision resources on behalf of the users, and the users role will be a list of users who can request catalog items. Click “Next”.

General | **Members** | Infrastructure

Group manager role:

Name (1)

Business01 (bb01@vcap.domain.local)

Support role:

Search

Name (1)

Business02 (bb02@vcap.domain.local)

User role:

Search

Name (1)

Business03 (bb03@vcap.domain.local)

On the Infrastructure screen, select a machine prefix from the drop down.

General | Members | **Infrastructure**

Default machine prefix: vra

Active Directory container:

Business Groups

Business groups are required to create entitlements and users must

Advanced Search

+ New | Edit | Copy | Delete | Group Info

Name	Group Managers	Description
Business_Administr...	bb01@vcap.domain.local	

Reservation

Login via Fabric User. To add a reservation go to Infrastructure → Reservations. Click the “New” button to add a reservation and then select the type of reservation to be added.

Enter a Name for the reservation and the tenant (which should already be selected). Next, in the dropdown select your business group that will have access to the reservation. Leave reservation policy empty for now but enter a priority. If a business group has access to more than one reservation, the priority is used to determine which to use up first. Lastly, select “Enable this reservation”. Click “Next”.

Reservations

Reservation Policies

Network Profiles

General | Resources | Network | Properties | Alerts

* Name: LAB-Res01

Tenant: vsphere.local

* Business group: Business_Administrator

Reservation policy:

* Priority:

Enable this reservation

On the resources tab, select the compute resource and then we need to add some quotas. Quotas limit how large the reservation will be, so we can limit it by a number of machines, the amount of memory or how much storage is being used. Be sure to enter a memory amount and at least one datastore to be used for deploying cloud resources. Click “Next”.

Compute resource: vSAN (vCenter)

Machine quota: Unlimited ⓘ

*Memory (GB):	Physical	Total Reserved	Total Allocated	This Reservation
	64	20	2	20

*Storage (GB):		Storage Path	Physical	Free	Total Reserved	This Reservation Reserved	This Reservation Allocated	Priority	Disabled
	<input checked="" type="checkbox"/>	NFS	94	69	40	40	0	11	
	<input checked="" type="checkbox"/>	NFS2	46	43	20	20	16	10	
	<input type="checkbox"/>	local-144	2	2	0				
	<input type="checkbox"/>	local-145	2	2	0				
	<input type="checkbox"/>	local-146	2	2	0				
	<input type="checkbox"/>	local-147	2	2	0				

Resource pool:

On the network tab, select the networks that can be used to deploy resources and for now leave the “Network Profile” blank. The bottom section is used with NSX

General
Resources
Network
Properties
Alerts

Network:

	Network Adapter	Network Profile
<input type="checkbox"/>	DPortGroup	<input type="text"/>
<input type="checkbox"/>	DPortGroup 1	<input type="text"/>
<input type="checkbox"/>	Main-DVUplinks-165	<input type="text"/>
<input type="checkbox"/>	Secon-DVUplinks-124	<input type="text"/>
<input type="checkbox"/>	VM Network	<input type="text"/>
<input checked="" type="checkbox"/>	vxxw-dvs-165-virtualwire-2-sid-5001-LAB2	<input type="text"/>
<input type="checkbox"/>	vxxw-vmknicPg-dvs-165-0-090465c0-c7a0-4023-b762-aecd8fa9875b	<input type="text"/>

Advanced Settings

Transport zone:

Security groups: Activity Monitoring Data Collection

On the properties tab, you can add custom properties that will be associated with all catalog items deployed through this reservation. For now we’ll leave this empty. Click “Next”.

General
Resources
Network
Properties
Alerts

Key Pairs

Reservations

Reservation Policies

Network Profiles

Custom properties: + New ✎ Edit ✖ Delete

Name ↕	Value	Encrypted
<i>No items exist.</i>		

To avoid conflict with vRealize Automation properties, use a prefix such as a company or feature name followed by a dot for all custom property names.

Lastly, the alerts page we can set the thresholds on when to alert our administrators about resource usage.

Key Pairs

Reservations

Reservation Policies

Network Profiles

General Resources Network Properties **Alerts**

Set the following thresholds for each resource. The system sends email notifications when the usage for a resource exceeds the threshold

Capacity alerts: On Off

Storage: 80 %

Memory: 80 %

CPU: 80 %

Machine quota: 80 %

Recipients:

Send alerts to business group manager

Reminder frequency (days):

< Infrastructure

Key Pairs

Reservations

Reservation Policies

Network Profiles

Reservations

Review information about the listed reservations. Machine count and memory usage include onl

Advanced Search

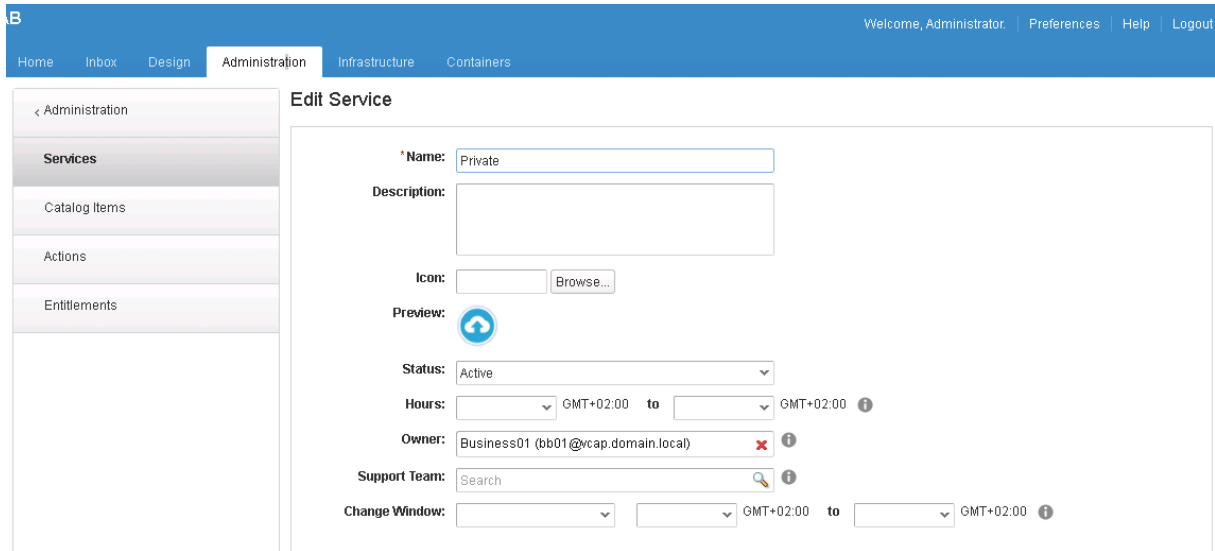
+ New Edit Delete

Name	Type	Tenant	Business Group	Prio...	Reservation Policy
LAB-Res01	vSphere (...	vsphere.I...	Busines_...	10	

Services

All blueprints must be part of a service for it to be provisioned. To create a service go to Administration tab → Catalog Management → Services. Click the “New” button to add a new service.

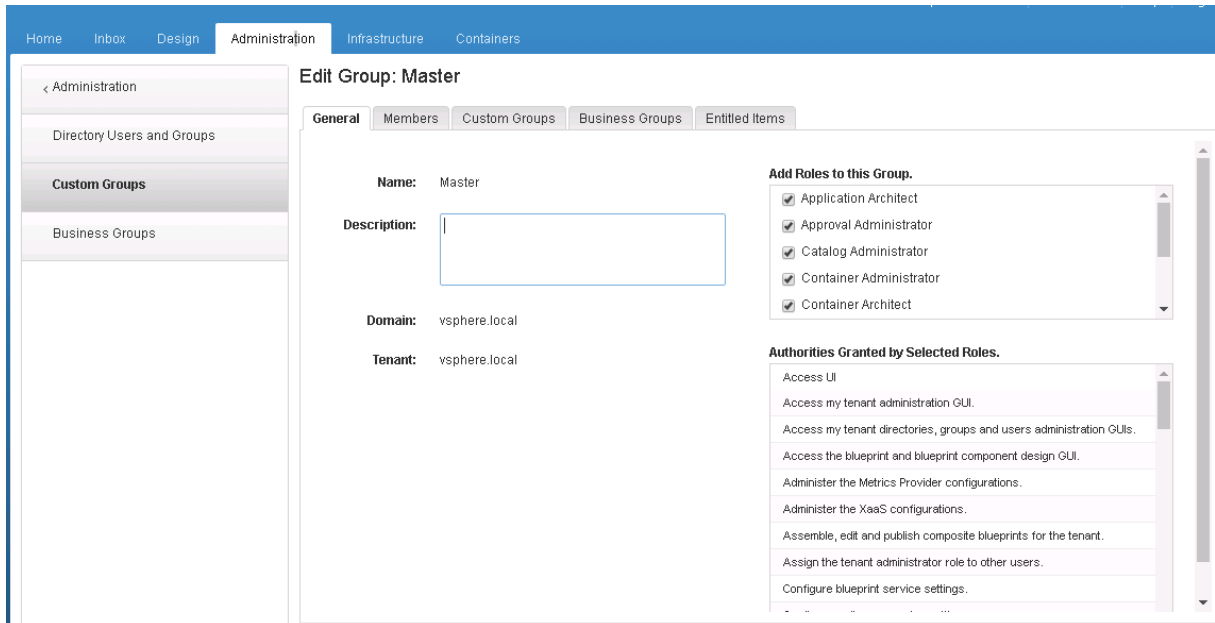
Give the service a name and description. Then click the browse button to add an icon for your service. Change the status to Active and then give it an owner. You can also set which hours the service is available to your users and the default change window for the service if you'd like. Again, I'm in a small lab so I'm not messing with this much. Click “OK”.



Custom Group

To create a custom group, login as a tenant administrator and go to the Administration Tab → Users and Groups → Custom Groups. From there click the “New” button to add a new custom group.

Once the “New Group” screen appears give it a name and description. On the right hand side, select the built in roles that you’d like to assign to this group. In our case, this is a lab and we are assigning all roles to the group and assuming that this group managed EVERYTHING in our vRA infrastructure



Blueprint

We've finally gotten most of the setup done so that we can publish our vSphere templates in vRA.

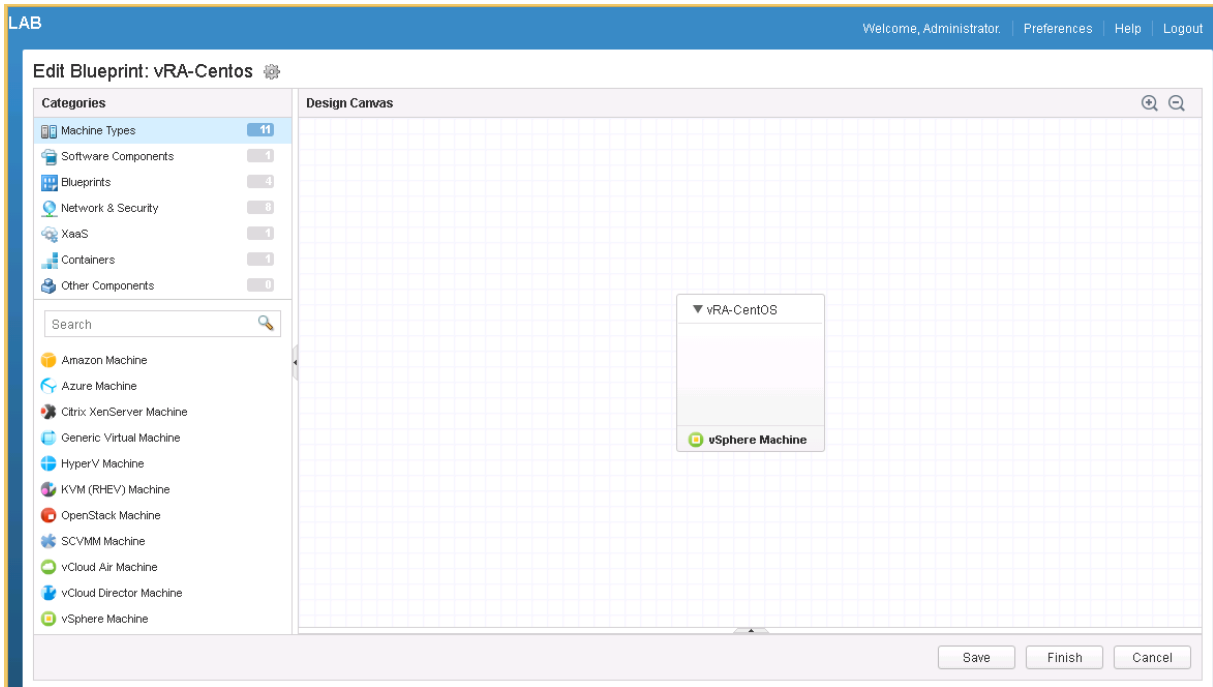
To create a blueprint in vRealize Automation 7 go to the "Design" tab.

Click the "New" button to add a new blueprint.

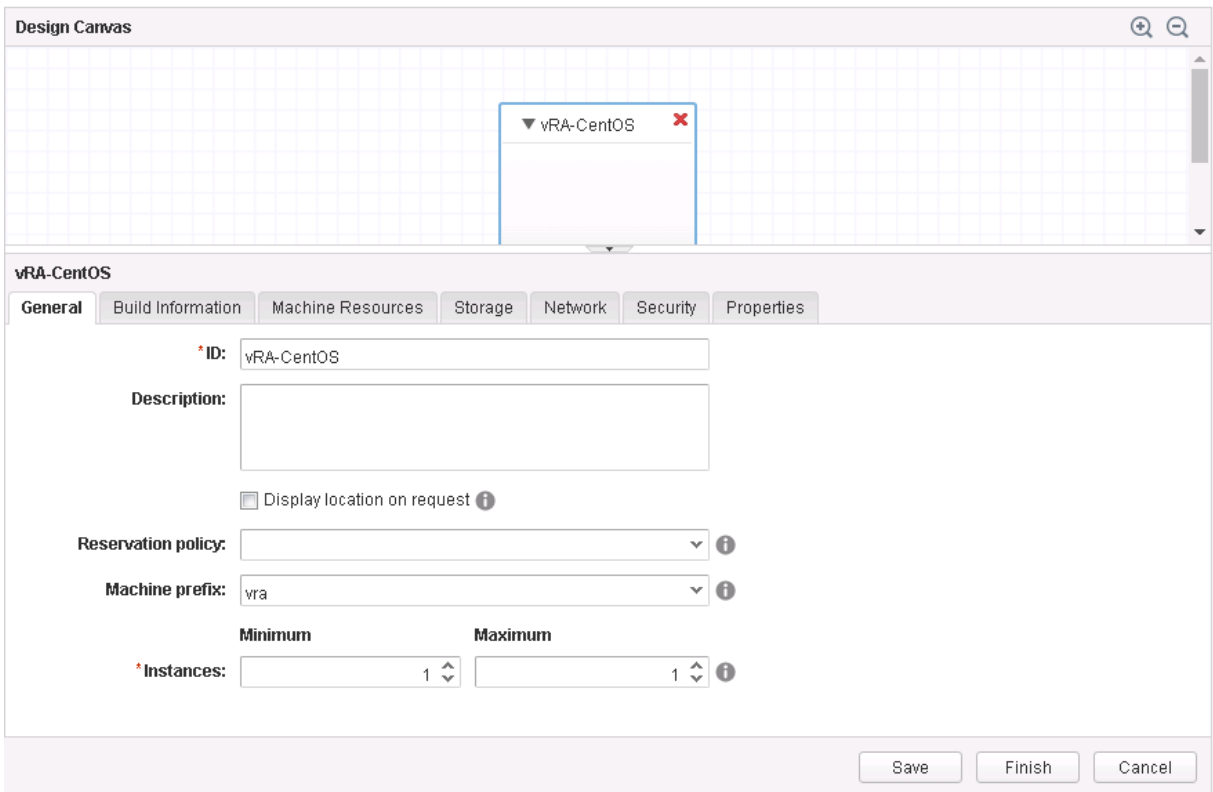
Give the new blueprint a name and a Unique ID.

Click OK.

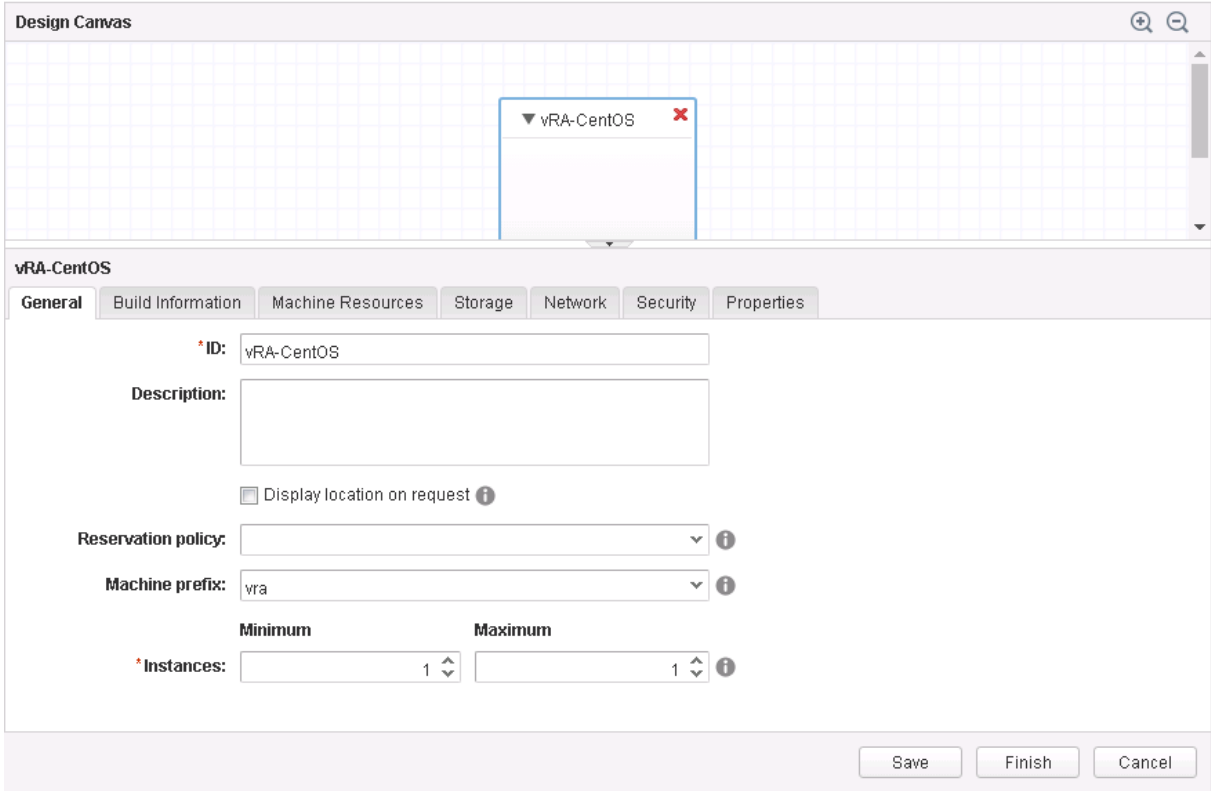
Now we've given our blueprint some basic characteristics. The next step is to put all of our "stuff" into the blueprint. For our very basic example, we are going to drag the "vSphere Machine" object onto our design canvas. This adds a vCenter template into our blueprint.



Once we've added our components into the blueprint, we need to give each of them some characteristics. To start, we're going to give the component an ID and description.



On the Build Information tab, we are going to make sure the blueprint type is "Server" and we are going to change the Action to "Clone". Click the ellipsis and select one of our vSphere templates. This template is VM with installed CentOS on our VMware environment. This is default install. And lastly on this tab enter a customization spec exactly how it is named in vSphere, including case sensitivity.



The next tab is the “Machine Resources” tab. Leave default values.



The storage tab will let us customize the sizes of our disks. We have left our disk sizes the same as vSphere template



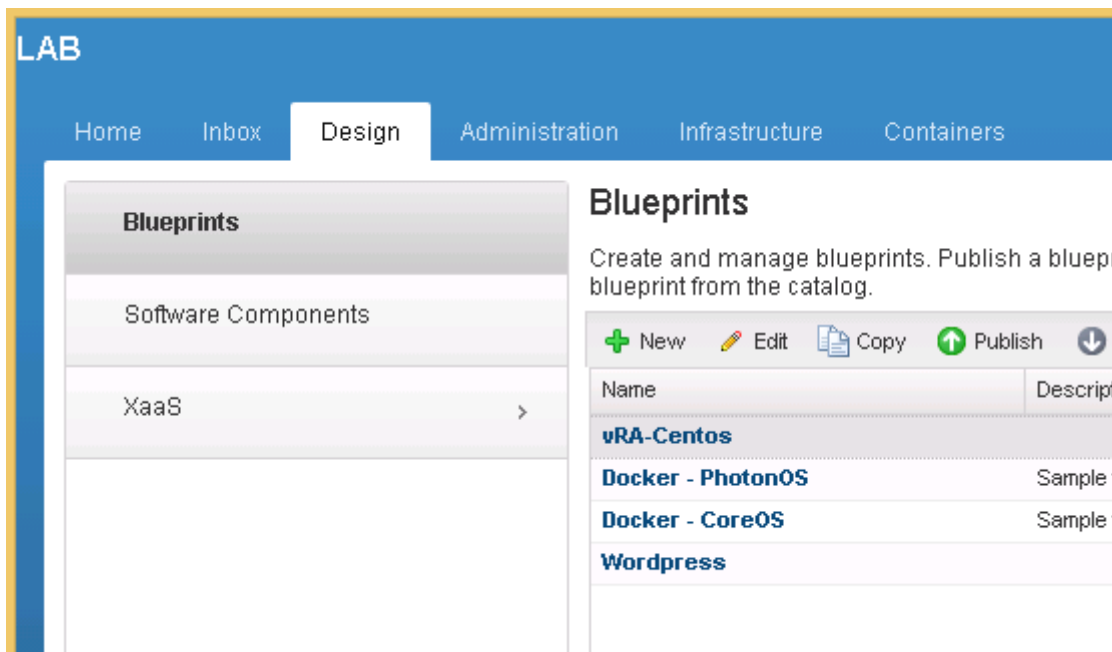
The network tab, left blank



The security tab is to be used specifically with NSX. So leave it blank for now.



Click “Finish”. When we’re done, we must publish this blueprint to be accessible by groups. Click the blueprint in the grid and then select the “Publish” button.



Entitlements

To create a new entitlement go to Administration tab → Catalog Management → Entitlements. Click the “New” button to add a new entitlement.

Under the General tab, enter a name for the entitlement and a description. Change the status to “Active” and select a Business Group.

Edit Entitlement

General | Items & Approvals

*Name: First

Description:

Expiration Date: [] []

*Status: Active

Last Updated By: Administrator@vcap.domain.local

Last Updated On: 4/28/17 7:41 AM

*Business Group: Busines_Administrator

***Users & Groups:**

All Users and Groups

Search

Name
Business01 (bb01@vcap.domain.local)
Business03 (bb03@vcap.domain.local)

Next, under the “Items & Approvals” tab, we get to pick which things this user(s) will have access to. We do not need to fill out all of these types, but we can if we choose to do so.

Edit Entitlement

General | **Items & Approvals**

Select the services, items, and actions to include in this entitlement. With the exception of actions and blueprint components, entitled items appear in the service catalog. Actions are available only after items are provisioned. To apply different levels of governance, you can configure individual services, items, and actions with different approval policies. You can change the approval policies associated with entitled items at any time.

Entitled Services +

Search

Name	Approval Policy
Private	(none)

Entitled Items +

Search

Name	Approval Policy
vRA-Centos	(none)

Entitled Actions +

Actions only apply to items defined in this entitlement

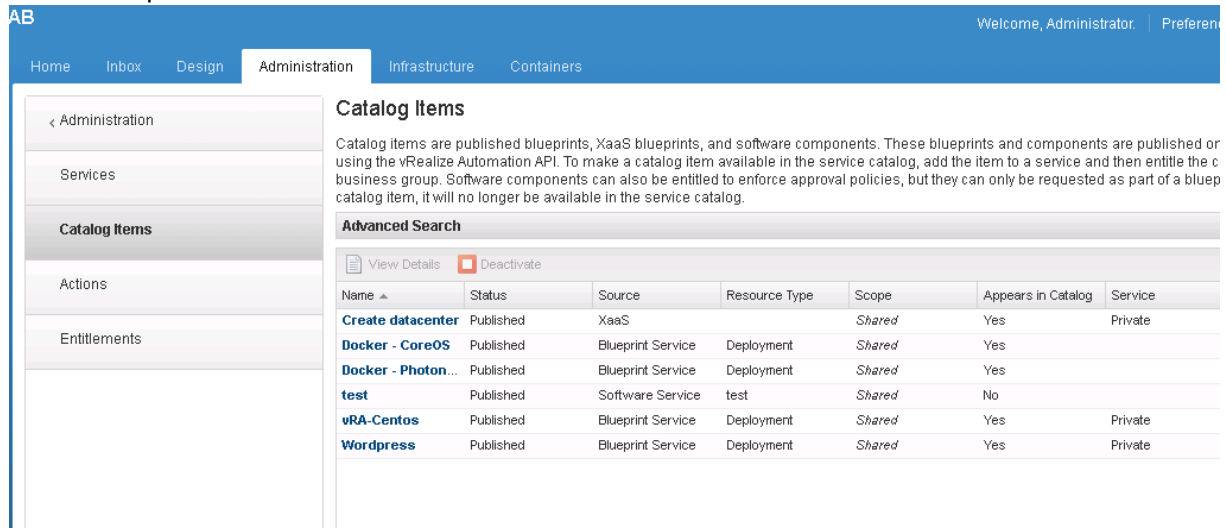
Search

Name	Approval Policy
Associate Floati...	(none)
Cancel Reconfig...	(none)
Change Lease (...)	(none)
Change Lease (...)	(none)
Change Owner ...	(none)
Connect to Rem...	(none)
Connect using C...	(none)
Connect using I...	(none)
Connect using R...	(none)
Connect using S...	(none)

Catalog Item

Log in as a tenant administrator and go to the Administration Tab → Catalog Management → Catalog Items. From here, we'll need to look for the blueprint that we've previously published. Click

on the blueprint.



LAB Welcome, Administrator. | Preferences

Home | Inbox | Design | **Administration** | Infrastructure | Containers

Administration

Services

Catalog Items

Actions

Entitlements

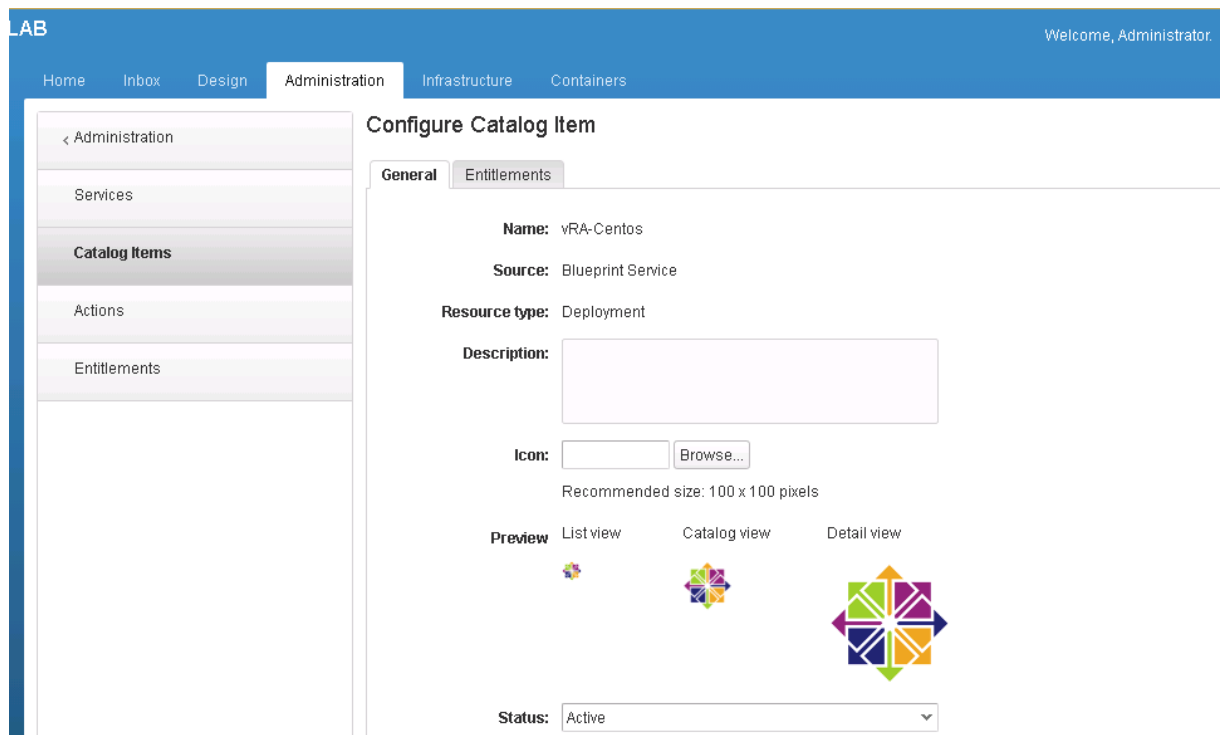
Catalog Items

Catalog items are published blueprints, XaaS blueprints, and software components. These blueprints and components are published or using the vRealize Automation API. To make a catalog item available in the service catalog, add the item to a service and then entitle the c business group. Software components can also be entitled to enforce approval policies, but they can only be requested as part of a bluep catalog item, it will no longer be available in the service catalog.

Advanced Search

Name	Status	Source	Resource Type	Scope	Appears in Catalog	Service
Create datacenter	Published	XaaS		Shared	Yes	Private
Docker - CoreOS	Published	Blueprint Service	Deployment	Shared	Yes	
Docker - Photon...	Published	Blueprint Service	Deployment	Shared	Yes	
test	Published	Software Service	test	Shared	No	
vRA-Centos	Published	Blueprint Service	Deployment	Shared	Yes	Private
Wordpress	Published	Blueprint Service	Deployment	Shared	Yes	Private

The configure catalog item screen will appear. Here, we can assign this catalog item an icon. Next, change the status to Active so that it will show up in the catalog, and lastly, select which service this catalog item should be listed under



LAB Welcome, Administrator.

Home | Inbox | Design | **Administration** | Infrastructure | Containers

Administration

Services

Catalog Items

Actions

Entitlements

Configure Catalog Item

General | Entitlements

Name: vRA-Centos

Source: Blueprint Service

Resource type: Deployment

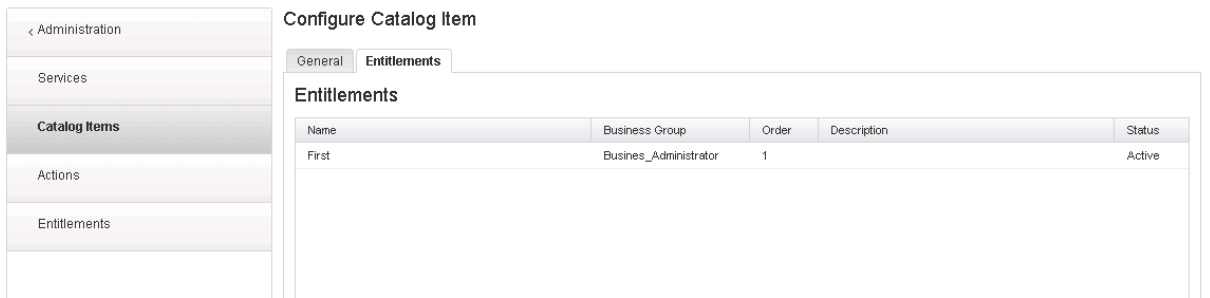
Description:

Icon:
Recommended size: 100 x 100 pixels

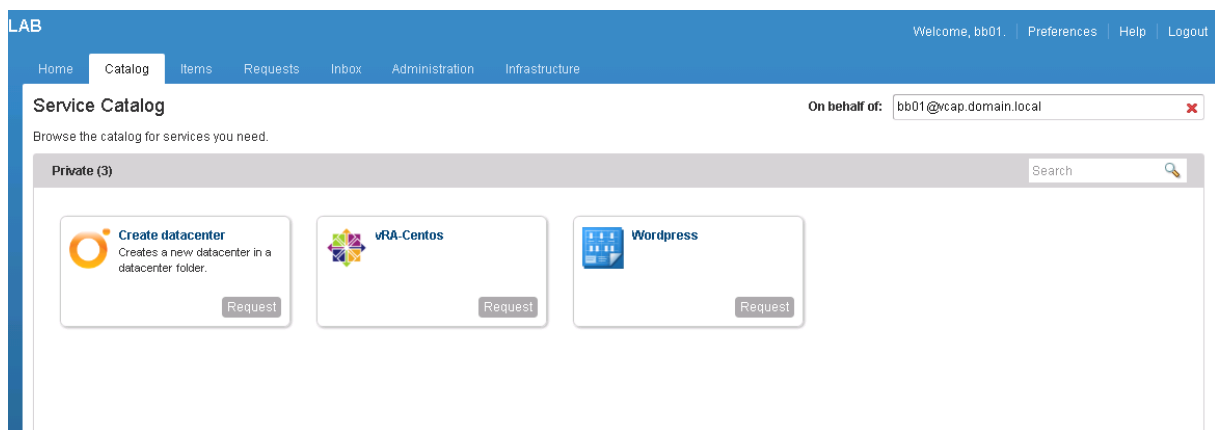
Preview List view | Catalog view | Detail view

Status: Active

If we click the entitlements tab, we'll see who has been entitled to the item. Click Finish.



When we go to the service catalog, we should see some nicely laid out items, with icons and logged in has the correct entitlements.



XaaS

XaaS Blueprint

Before you begin, make sure that the user who will be adding these new service blueprints is an XaaS Architect.

Also before creating this we need to create orchestrator endpoint

Go to Endpoints and Create new Orchestration -> vrealize Orchestrator Endpoint

LAB

Home Inbox Design Administration **Infrastructure** Containers

< Infrastructure

Endpoints

Credentials

Agents

Fabric Groups

Endpoints

Manage the endpoints that represent infrastructure sources or ex

+ New + Import

Platform Type	Address
vRealize Orchestrator	
vRealize Orchestrator	https://
vSphere (vCenter)	https://

LAB

Home Inbox Design Administration **Infrastructure** Containers

< Infrastructure

Endpoints

Credentials

Agents

Fabric Groups

Endpoints

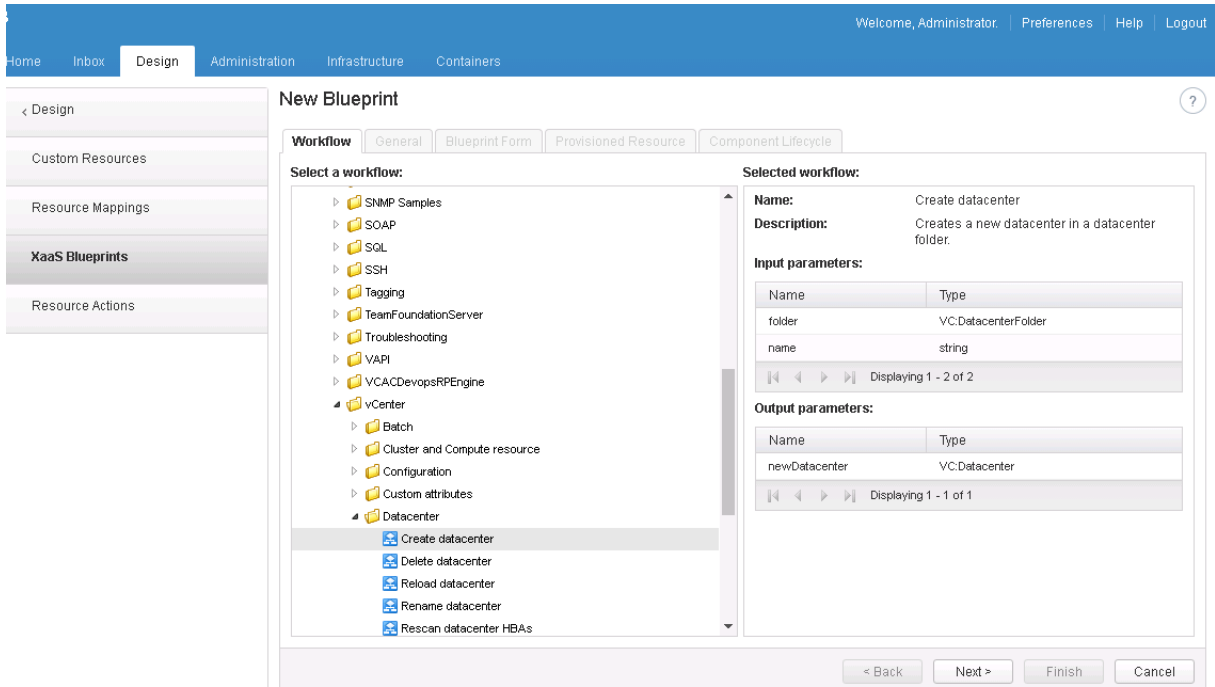
Manage the endpoints that represent infrastructure sources or ex

+ New + Import

Platform Type	Address
vRealize Orchestrator	
vRealize Orchestrator	https://
vSphere (vCenter)	https://

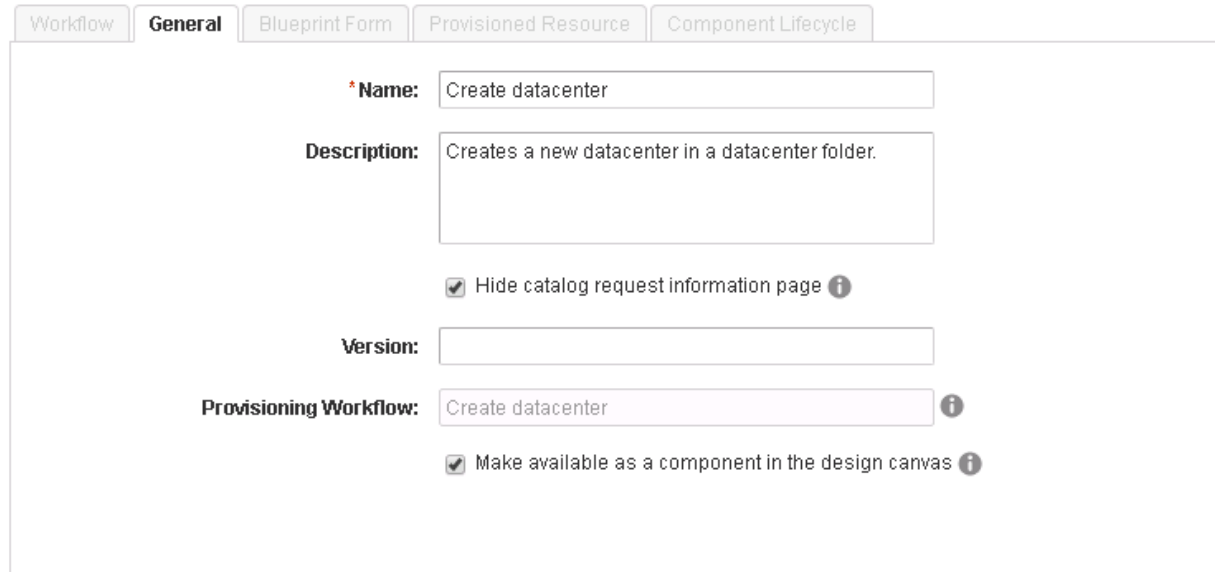
To create an XaaS Blueprint, go to the Design Tab → XaaS → XaaS Blueprints. Click the “New” button to add a new blueprint.

Select the vRO blueprint that should be added to the service catalog.

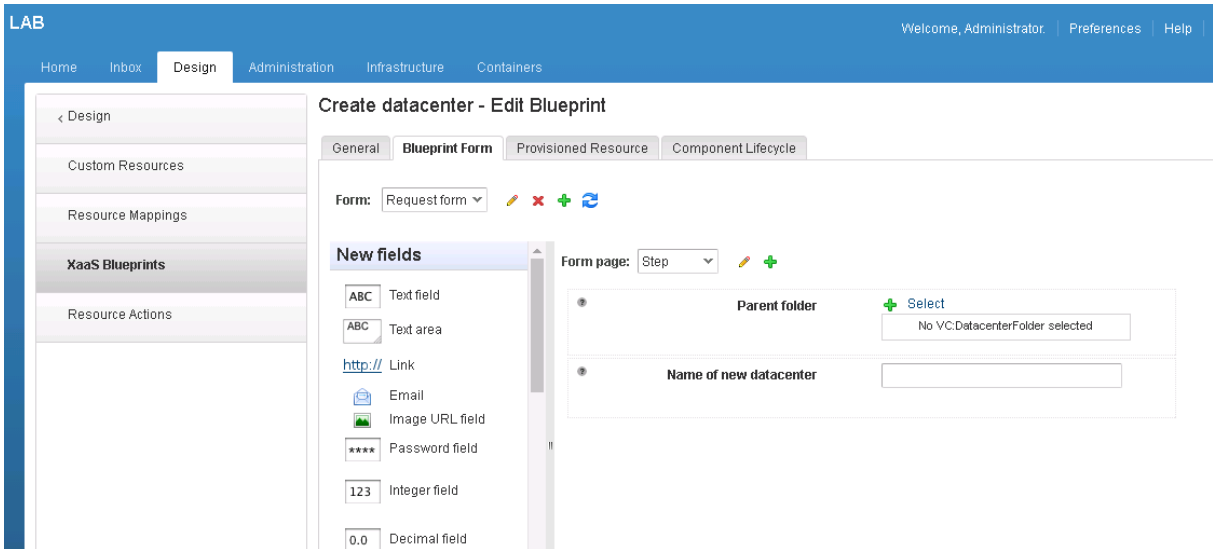


Give the blueprint a name and description. Click Next.

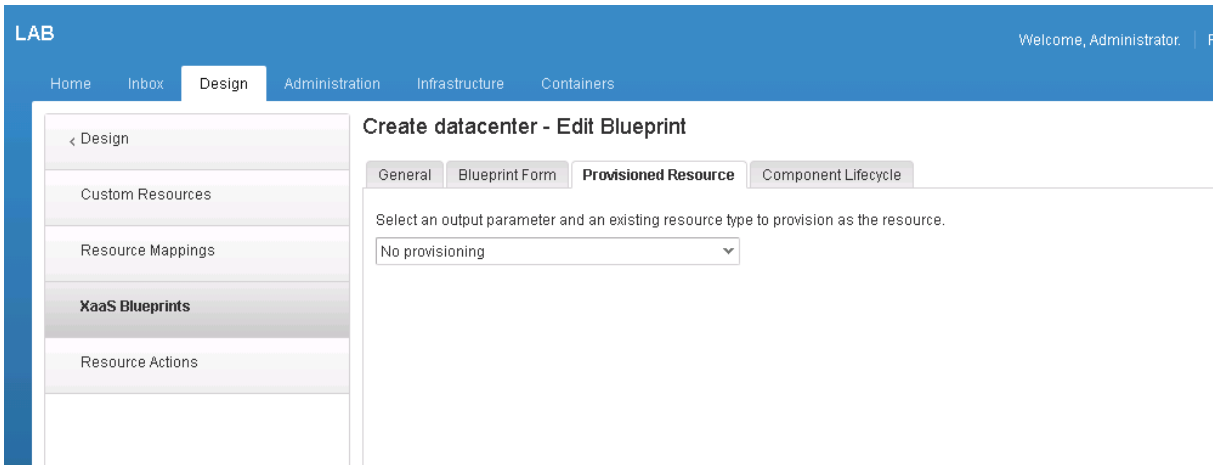
Create datacenter - New Blueprint



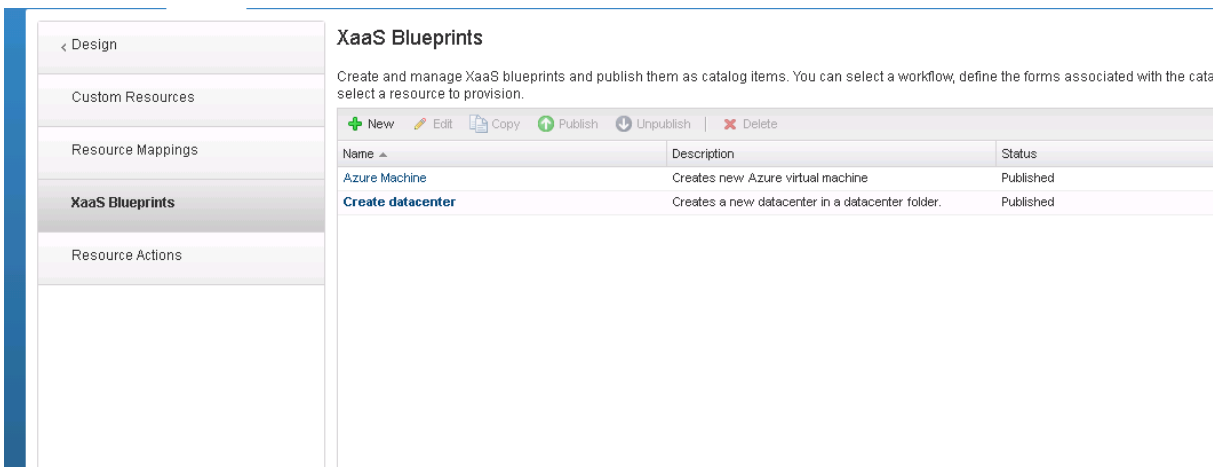
The inputs from the vRO blueprint should be added to the main form. It is possible to customize how the form will look when published to end users.



On the provisioned resource tab, leave the field at “No provisioning”.



When we're done, we will see our XaaS blueprint in the list. Now we only need to publish it and add to catalog like previously




LAB Welcome, bb01. | Preferences | Help | Logout

Home **Catalog** Items Requests Inbox Administration Infrastructure

Service Catalog On behalf of: bb01@vcap.domain.local


Browse the catalog for services you need.

Private (3) Search




Create datacenter
Creates a new datacenter in a datacenter folder.

Request



vRA-Centos

Request



Wordpress

Request

Containers

Before we can start with container we need to prepare our container host. For this solution we will use specially prepare OS from VMware called PhotonOS.

PhotonOS

Photon OS™ is a minimal Linux container host, optimized to run on VMware platforms. With the 1.0 release, we have greatly expanded the library of packages that are in our repository, making Photon OS™ more broadly applicable to a range of use-cases. We invite partners, customers and interested community members to collaborate on both running containerized applications in a virtualized environment and the potential of an operating system tightly coupled to underlying virtual infrastructure.

Optimized for vSphere - Leveraging more than a decade of experience validating guest operating systems, Photon OS is thoroughly validated on vSphere; and, because VMware is focused on the vSphere platform, we're able to highly tune the Photon OS kernel for VMware product and provider platforms.

Container support - Compatible with container runtimes, like Docker, and container scheduling frameworks, like Kubernetes.

Efficient lifecycle management - Contains a new, open-source, yum-compatible package manager - `dnf` - that makes the system as small as possible, but preserves robust yum package management capabilities. (vmware)

Prerequisites

Username: root

Password: KHykh30Fr

Build

Our VM has

OS	PhotonOS	
RAM	2GB	
CPU	1vCPU	
HDD	16GB thin	
Network	1 NIC	10.10.10.164

After PhotonOS is installed we only need to do some few steps to prepare this for container.

Login to PhotonOS and stop docker

```
systemctl stop docker
```

edit default docker configuration

```
vi /etc/default/docker
```

add this line

```
DOCKER_OPTS="-H tcp://0.0.0.0:2375 -H unix:///var/run/docker.sock"
```

Add firewall rules to accept docker connection

```
iptables -A INPUT -p tcp --dport 2375 -j ACCEPT
```

and start back docker

```
systemctl start docker
```

After those few steps we have our host for docker prepared and we can add this container on our vRA.

Container in vRA

Go to "Containers" tab and add new host

The screenshot shows the vRA interface with the 'Containers' tab selected. The 'Add Host' form is displayed, featuring the following fields:

- Address:** 10.10.10.164
- Placement zone:** Select from the placement zone list
- Login credential:** Select from the credential list
- Deployment policy:** Select from the deployment policy list
- Tags:** (Empty field)
- Custom properties:** A table with columns 'Name' and 'Value'. An example row shows 'Example: speedchecker' and 'Example: slow'.

Buttons for 'Verify' and 'Add' are located at the bottom right of the form.

Placements

Placements are used in much the same way a reservation is used with deploying virtual machines through vRA.

On Placement menu click new zone Give it a name, and either select the default placement zone or create your own.

The screenshot shows a dropdown menu for selecting a placement zone. The menu is open, displaying the following options:

- Select from the placement zone list (dropdown header)
- Search for placement zone (input field)
- Zone-1
- + New Placement Zone

After success verification we will have host in our hosts list

Hosts (1)

ON

10.10.10.164:2375


Address	http://10.10.10.164:2375
Placement zone	Zone-1
Connection	API
Containers	0
Memory	<div><div style="width: 10%;"></div></div>
CPU	<div><div style="width: 10%;"></div></div>

Templates

Now that you've got the container hosts and placement zones all figured out we can use one of the default templates to deploy as a test. I will create worpress instance


 Search for images, templates

Found Templates (26)



library/wordpress

<https://registry.hub.docker.com>

Official Yes


Trusted No

Stars 1706

The WordPress rich content management system can utilize plugins, widgets, and themes.

Provision

After you click the “Provision” button on the template you want to deploy, a new box will appear for you to select the business group that’s requesting it. In my case I only belong to a single business group so I’ve got one option. Click the “Provision” button again to start the process.



library/wordpress

<https://registry.hub.docker.com>

Official Yes

Trusted No

Stars 1706

The WordPress rich content management system can utilize plugins, widgets, and themes.

Provision

Enter additional info

Go to additional info and save this as template

Provision a Container

Basic | Network | Storage | Policy | Environment | Health Config | Log Config

Image: registry.hub.docker.com/library/wordpress

Name: wordpress_for_vRA

Command: Example: /startup.sh

Links: Service Alias Example: db

Business Administrators | Provision | Save as Template

When you save this as template you can find this again and push this to your blueprints

The screenshot shows a card for a container template named 'wordpress_for_vRA'. The card includes a logo, the name, and sections for 'Ports' and 'Command'. A vertical toolbar on the right side contains icons for edit, push, download, and close. The 'push' icon, which is a document with an arrow, is highlighted with a red rectangular box. At the bottom of the card is a blue 'Provision' button.

And on your blueprint you can find your wordpress instance which can be added to catalog

Blueprints	
Software Components	
XaaS	>

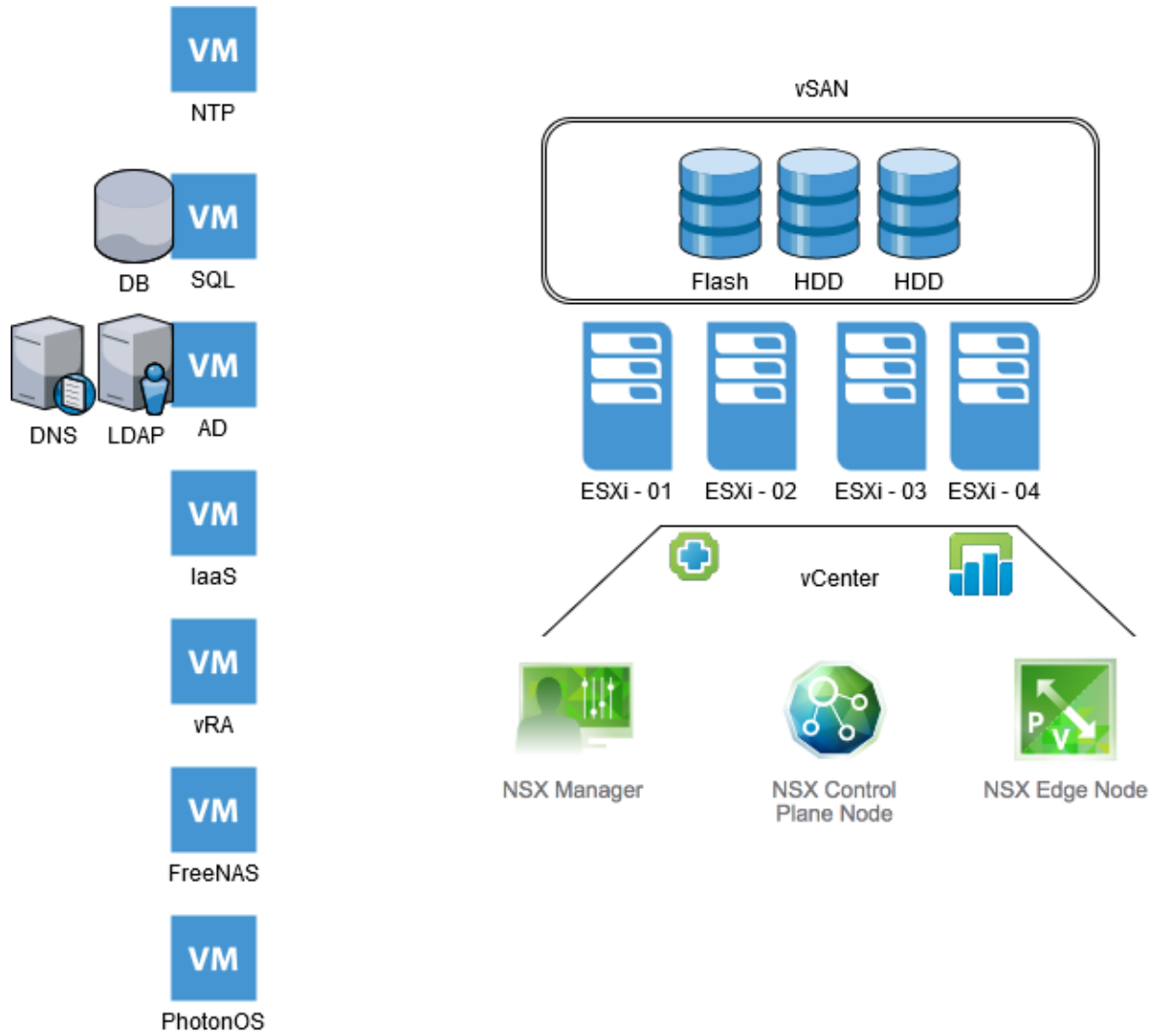
Blueprints

Create and manage blueprints. Publish a blueprint from the catalog.

+ New Edit Copy Publish	
Name	
vRA-Centos	
Docker - PhotonOS	S
Docker - CoreOS	S
Wordpress	

DESIGN

NTP	10.10.10.140
AD	10.10.10.141
vCenter	10.10.10.142
ESXi-01	10.10.10.144
ESXi-02	10.10.10.145
ESXi-03	10.10.10.146
ESXi-04	10.10.10.147
NSX-Manager	10.10.10.150
SQL	10.10.10.151
Operation Manager	10.10.10.152
IaaS	10.10.10.153
vRA	10.10.10.154
FreeNAS	10.10.10.155
NSX-Controllers	10.10.10.137- 10.10.10.139
VXLAN-Pool	10.10.10.156- 10.10.10.160
EDGE	10.10.10.161 (10.10.20.1)
vRealize Log Insight	10.10.10.165
Photon for Docker	10.10.10.164



SUMMARY

We have created a complete vRealize Suite environment that can be used for learning, to presenting client technology, or deepening knowledge with VMware Cloud. Anyone who wants to create their own environment can base on the above instructions, or use only parts of it to configure individual elements to get to know only some technologies like NSX, vRealize Operation Manager or vRealize Log Insight.