

# VMware vCenter Server<sup>™</sup> 6.0 Deployment Guide

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# Introduction

The VMware vCenter Server™ 6.0 release introduces new, simplified deployment models. The components that make up a vCenter Server installation have been grouped into two types: *embedded* and *external*. Embedded refers to a deployment in which all components—this can but does not necessarily include the database—are installed on the same virtual machine. External refers to a deployment in which vCenter Server is installed on one virtual machine and the Platform Services Controller (PSC) is installed on another. The Platform Services Controller is new to vCenter Server 6.0 and comprises VMware vCenter™ Single Sign-On™, licensing, and the VMware Certificate Authority (VMCA).

Embedded installations are recommended for standalone environments in which there is only one vCenter Server system and replication to another Platform Services Controller is not required. If there is a need to replicate with other Platform Services Controllers or there is more than one vCenter Single Sign-On enabled solution, deploying the Platform Services Controller(s) on separate virtual machine(s)—via external deployment—from vCenter Server is required.

This paper defines the services installed as part of each deployment model, recommended deployment models (reference architectures), installation and upgrade instructions for each reference architecture, postdeployment steps, and certificate management in VMware vSphere 6.0.

# VMware vCenter Server 6.0 Services

SERVICE	INSTALLED WITH
VMware AFD Service	vCenter Server and PSC
VMware Certificate Service	PSC
VMware Component Manager	vCenter Server and PSC
VMware Content Library Service	vCenter Server
VMware Directory Service	PSC
VMware ESX Agent Manager	vCenter Server
VMware HTTP Reverse Proxy	vCenter Server and PSC
VMware Identity Management Service	PSC
VMware vCenter Inventory Service	vCenter Server
VMware License Service	PSC
VMware Message Bus Configuration Service	vCenter Server
VMware Performance Charts	vCenter Server
VMware Postgres	vCenter Server (vCenter Server Appliance, Microsoft Windows if embedded database is chosen)
VMware Security Token Service	PSC
VMware Service Control Agent	vCenter Server and PSC
VMware Syslog Collector	vCenter Server
VMware System and Hardware Health Manager	vCenter Server
VMware vAPI Endpoint	vCenter Server

SERVICE	INSTALLED WITH
VMware vCenter Configuration Service	vCenter Server and PSC
VMware vCenter Workflow Manager	vCenter Server
VMware VirtualCenter Server	vCenter Server
VMware vService Manager	vCenter Server
VMware vSphere Auto Deploy Waiter	vCenter Server
VMware vSphere ESXi™ Dump Collector	vCenter Server
VMware vSphere ESXi Dump Collector Web Service	vCenter Server
VMware vSphere Profile-Driven Storage	vCenter Server
VMware vSphere Web Client	vCenter Server

Table 1. vCenter Server and Platform Services Controller Services

# Requirements

#### General

A few requirements are common to both installing vCenter Server on Microsoft Windows and deploying VMware vCenter Server Appliance<sup>™</sup>. Ensure that all of these prerequisites are in place before proceeding with a new installation or an upgrade.

- DNS Ensure that resolution is working for all system names via fully qualified domain name (FQDN), short name (host name), and IP address (reverse lookup).
- Time Ensure that time is synchronized across the environment.
- Passwords vCenter Single Sign-On passwords must contain only ASCII characters; non-ASCII and extended (or high) ASCII characters are not supported.

#### Windows Installation

Installing vCenter Server 6.0 on a Windows Server requires a Windows 2008 SP2 or higher 64-bit operating system (OS). Two options are presented: Use the local system account or use a Windows domain account. With a Windows domain account, ensure that it is a member of the local computer's administrator group and that it has been delegated the "Log on as a service" right and the "Act as part of the operating system" right. This option is not available when installing an external Platform Services Controller.

Windows installations can use either a supported external database or a local PostgreSQL database that is installed with vCenter Server and is limited to 20 hosts and 200 virtual machines. Supported external databases include Microsoft SQL Server 2008 R2, SQL Server 2012, SQL Server 2014, Oracle Database 11*g*, and Oracle Database 12*c*. When upgrading to vCenter Server 6.0, if SQL Server Express was used in the previous installation, it will be replaced with PostgreSQL. External databases require a 64-bit DSN. DSN aliases are not supported.

When upgrading vCenter Server to vCenter Server 6.0, only versions 5.0 and later are supported. If the vCenter Server system being upgraded is not version 5.0 or later, such an upgrade is required first.

Table 2 outlines minimum hardware requirements per deployment environment type and size when using an external database. If VMware vSphere Update Manager™ is installed on the same server, add 125GB of disk space and 4GB of RAM.

RESOURCES	TINY: UP TO 10 HOSTS/ 100 VIRTUAL MACHINES OR EXTERNAL PSC	SMALL: UP TO 100 HOSTS/ 1,000 VIRTUAL MACHINES	MEDIUM: UP TO 400 HOSTS/ 4,000 VIRTUAL MACHINES	LARGE: UP TO 1,000 HOSTS/ 10,000 VIRTUAL MACHINES
CPU	2	4	8	16
Memory	8GB	16GB	24GB	32GB
Disk Space	50GB 10GB (PSC)	100GB	100GB	100GB

Table 2. Minimum Hardware Requirements - Windows Installation

#### **Appliance Deployment**

vCenter Server Appliance can use either a local PostgreSQL database that is built in to the appliance, which is recommended, or an external database. Unlike Windows support for PostgreSQL, vCenter Server Appliance supports up to 1,000 hosts or 10,000 virtual machines at full vCenter Server scale. Supported external databases include Oracle Database 11g and Oracle Database 12c. External database support is being deprecated in this release; this is the last release that supports the use of an external database with vCenter Server Appliance.

When deploying vCenter Server Appliance, the target host must be ESXi 5.0 or later. In addition, prechecks such as connectivity to an external database, NTP server, DNS server, and so on, are performed on the client deploying the appliance rather than against the target host and destination port group. This does not ensure that all required connectivity is available from the ESXi host and the destination port group of vCenter Server Appliance. Users must ensure that the ESXi host and port group have the required connectivity.

Upgrading is possible only from versions 5.1 update 3 and later.

Table 3 outlines minimum hardware requirements per deployment environment type and size.

RESOURCES	TINY: UP TO 10 HOSTS/ 100 VIRTUAL MACHINES OR EXTERNAL PSC	SMALL: UP TO 100 HOSTS/ 1,000 VIRTUAL MACHINES	MEDIUM: UP TO 400 HOSTS/ 4,000 VIRTUAL MACHINES	LARGE: UP TO 1,000 HOSTS/ 10,000 VIRTUAL MACHINES
CPU	2	4	8	16
Memory	8GB	16GB	24GB	32GB
Disk Space (External PSC)	86GB (vCenter) 30GB (PSC)	106GB	245GB	295GB
Disk Space (Embedded PSC)	116GB	136GB	275GB	325GB

Table 3. Minimum Hardware Requirements - vCenter Server Appliance Deployment

# **Reference Architectures**

We examine the following architectures in this deployment guide:

- Fresh embedded deployment
- Upgrade in which all vCenter Server components are installed on a single machine
- Fresh external deployments
- Upgrade with external vCenter Single Sign-On
- Fresh vCenter Single Sign-On high availability deployment
- Upgrade of vCenter Single Sign-On high availability

#### Fresh Embedded Deployment

A fresh, or new, embedded installation is the simplest of all the deployments. In this scenario, vCenter Server and the Platform Services Controller are deployed together onto a single virtual machine.

The vCenter Server database can be either local or remote. On the Windows platform, the local PostgreSQL database is limited to 20 hosts and 200 virtual machines.

Embedded installations are recommended for standalone environments in which there is only one vCenter Server and replication to another Platform Services Controller is not required. If there is a need to replicate with other Platform Services Controllers or there is more than one vCenter Single Sign-On enabled solution, deploying the Platform Services Controller(s) on separate virtual machine(s)—via external deployment—from vCenter Server is required.



Figure 1. Embedded Architecture

### Upgrade in Which All vCenter Server Components Are Installed on a Single Machine

Upgrading vCenter Server 5.0 or vCenter Server with vCenter Single Sign-On—that is, vCenter Server 5.1 or 5.5—installed on the same virtual machine can be accomplished using the embedded deployment method.

All vCenter Server components are upgraded. If upgrading from vCenter Server 5.0, an external Platform Services Controller can be installed or an embedded one can be used. vCenter Single Sign-On in vCenter Server 5.1 and 5.5 is upgraded to a Platform Services Controller. In all upgrade scenarios, all services listed in Table 1 are installed or upgraded.

The vCenter Server database is upgraded during vCenter Server upgrade. On Windows installations using the embedded SQL Server Express database, SQL Server Express is migrated to the PostgreSQL database during the upgrade.



Figure 2. Upgraded Embedded Architecture

#### **Fresh External Deployment**

A fresh, or new, external deployment involves running the deployment wizard twice. The first time is to deploy the Platform Services Controller. After this successful deployment, vCenter Server is deployed.

The vCenter Server database can be either local or remote. On the Windows platform, the local PostgreSQL database is limited to 20 hosts and 200 virtual machines.

Deploying the Platform Services Controller externally is recommended for all but standalone vCenter Server systems.



Figure 3. External Platform Services Controller Architecture

# Upgrade External vCenter Single Sign-On

When upgrading from vCenter Server 5.1 or 5.5 and vCenter Single Sign-On is deployed externally from vCenter Server, vCenter Single Sign-On is first upgraded to a Platform Services Controller. After the Platform Services Controller has been deployed, the vCenter Server system can be upgraded.

The vCenter Server database is upgraded during the vCenter Server upgrade. In Windows installations using the embedded SQL Server Express database, SQL Server Express is migrated to the PostgreSQL database during the upgrade.



Figure 4. Upgraded External Platform Services Controller Architecture

# Fresh vCenter Single Sign-On High Availability Deployment

A fresh, or new, vCenter Single Sign-On high availability deployment is recommended when there are multiple vCenter Server systems or vCenter Single Sign-On enabled solutions that require a high level of uptime.

When deploying the Platform Services Controller externally for multiple services, availability of the Platform Services Controller must be considered. In some cases, simply having the Platform Services Controller located in a vSphere cluster with VMware vSphere High Availability enabled is sufficient. In other cases, having more than one Platform Services Controller deployed in a highly available architecture is recommended. This requires a network load balancer. In Figure 5, we examine redundant Platform Services Controllers behind a network load balancer.



Figure 5. Highly Available Platform Services Controllers

# Upgrade of vCenter Single Sign-On High Availability

Upgrading an existing vCenter Single Sign-On high availability deployment converts vCenter Single Sign-On servers to Platform Services Controllers. vCenter Single Sign-On 5.5 and previous versions do not work with vCenter Server 6.0, so upgrading vCenter Single Sign-On to Platform Services Controller is a prerequisite.

After the Platform Services Controllers are up and running, the load balancer rules must be adjusted to loadbalance the Platform Services Controller ports before attempting to upgrade vCenter Server. Session affinity is required based on source address and must-span ports. If vCenter Server initiates communication to the Platform Services Controller on port 443 and is placed on the first Platform Services Controller, all subsequent requests must also go to the first Platform Services Controller.

Upgrading from vCenter Single Sign-On high availability has been tested and validated only when upgrading from vCenter Server 5.5 and when the vCenter Single Sign-On with network load balancer guide is followed to set up the vCenter Single Sign-On high availability environment.



Figure 6. Upgrade of Highly Available Single Sign-On to Highly Available Platform Services Controller

# **Deploying vCenter Server 6.0**

# Fresh Embedded Deployment

#### Windows Deployment

- 1. Verify all prerequisites.
- 2. If using a remote database, ensure that a 64-bit DSN has been created. DSN aliases are not supported. This step is not necessary if using the local PostgreSQL database.
- 3. Mount the vCenter Server 6.0 ISO image.
- 4. If autorun does not start, execute autorun.exe.
- 5. Select vCenter Server for Windows and click Install.

0	VMware® vCenter™ Installer
vmware vSphere®	
Vilware vCenter Server VCenter Server for Windows Vilware vCenter Desktop Client vSphere Update Manager Server Download Service Vilware vCenter Support Tools vSphere Authentication Proxy	Worker Server for Windows         Marar vCenter Server is a windows application that manages datacenter access control, performed monitoring and configuration, and unifies resources from individual servers to be shared among virtual machines in the entire datacenter.         Tor a list of information you need to install this component, see the installation checklist http://www.ymware.com/         Prerequisites:         Nore
	Explore Media Exit

- 6. Click Next.
- 7. Accept the license agreements.
- 8. Select **Embedded Deployment** and click **Next**.

<b>1</b>	VMware vCenter Server 6.0.0
S	Select deployment type
	vCenter Server 6.0.0 requires a Platform Services Controller, which contains shared services such as vCenter Single Sign-On, Licensing, and Certificate Management. An embedded Platform Services Controller is deployed on the same Windows Host as vCenter Server. An external Platform Services Controllers is deployed in a separate Windows Host. For smaller installations, consider vCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Servers, consider one or more Platform Services Controllers. Refer to product documentation for more information. Note: Once you deploy vCenter Server, you can only change from an embedded to an external Platform Services Controller with a
	fresh install.  Embedded Deployment  © vCenter Server and Embedded Platform Services Controller  VCenter Server vCenter Server
	External Deployment O Platform Services Controller O vCenter Server A previously installed Platform Services Controller is required VM or Host VM or Host vCenter Server VM or Host vCenter Server
	< Back Next > Cancel

9. Verify that the FQDN is correct and click **Next**.

10. Enter a **password** and **Site name** for vCenter Single Sign-On and click **Next**.

vCenter Single Sign-On Configuration         Create or join a vCenter Single Sign-On domain.            Oreate a new vCenter Single Sign-On domain         Domain name:         vCenter Single Sign-On user name:         vCenter Single Sign-On user name:         administrator			
Domain name: vsphere.local			
- voprerenotal			
vCenter Single Sign-On password:			
Confirm password:			
Site name: Palo-Alto			
○ Join a vCenter Single Sign-On domain			
Platform Services Controller EQDN or IP address:			
vCenter Single Sign-On HTTPS port: 443			
vCenter Single Sign-On user name: administrator			
vCenter Single Sign-On password:			
Note: vCenter Single Sign-On configuration cannot be changed after deployment.			
< Back Next > Cancel			

11. Select the local system account or enter the service account **user name** and **password**.

岁 VMware vCenter Server 6.0.0 X			
vCenter Server Service Account			
Enter the vCenter Server service a	ccount information.		
By default, the vCenter Server instance runs in the Windows Local System account. To run in another administrative user account, select the option to specify a user service account and provide the account credentials. The user service account must be granted the 'Log on as a service' privilege.			
O Use Windows Local System Acc	ount		
Note: If you select this option, y	ou cannot connect to an external database using Integrated Windows authentication.		
Specify a user service account	Specify a user service account		
Account user name:	VMWARE\svcvCenter		
Account password:			
	·		
	< Back Next > Cancel		

12. Select Use an embedded database (vPostgres) or Use an external database server's DSN Name and click Next.

<b>b</b>	VMware vCenter Server 6.0.0	x
Database Settings Configure the database for this depl	oyment.	
O Use an embedded database (vPo	stgres)	
• Use an external database		
DSN Name:	VCDB v Refresh	
DB <u>u</u> ser name:		
DB gassword:		
The chosen DSN is configured t to verify authenticity.	o use Integrated Windows Authentication. SQL Server will use the credentials of the user	
to verify dualendary.		
	< Back Next > Cancel	

- 13. Unless required, leave all ports at their defaults and click **Next**.
- 14. Unless required, leave the default paths for installation and click Next.
- 15. Review and then click Install.



# vCenter Server Appliance Deployment

- 1. Mount the ISO image on PC.
- 2. Open the vcsa folder and install the plug-in.
- 3. In the root of the ISO image, double-click the vcsa-setup.html file.
- 4. Wait until you are prompted to enable the client integration plug-in to run. Click Install.

	2
vCenter*	Server Appliance <sup></sup> 6.0
Install	Upgrade

- 5. Accept the License Agreement and click Next.
- 6. Enter a target host and a User name and Password on the host with root access.

VMware vCenter Server Appliance	e Deployment		
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Connect to target server Specify the ESXi host on which to	deploy the vCenter Server Appliance.	
3 Set up virtual machine	FQDN or IP Address:	w3-tm-hp380-010.vmware.local	]
4 Select deployment type 5 Set up Single Sign-on	User name:	root	0
6 Single Sign-on Site 7 Select appliance size	Password:	••••••	]
8 Select datastore 9 Configure database 10 Network Settings 11 Ready to complete	<ul> <li>When deploying to a vSph</li> </ul>	s not in lock down mode or maintenance i tere Distributed Switch (VDS), the applian nt, it can be moved to a static or dynamic	ce must be deployed to an ephemeral
		Back	Next Finish Cancel

- 7. Click **Yes** to accept the host's certificate.
- 8. Enter an Appliance name and the root OS password you want to assign. Click Next.

VMware vCenter Server Applianc	e Deployment		
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Set up virtual machine Specify virtual machine settings	s for the vCenter Server Appliance to be de	ployed.
3 Set up virtual machine	Appliance name:	vcenter003	•
4 Select deployment type	repliance name.	Vcenterous	0
5 Set up Single Sign-on	OS user name:	root	
6 Single Sign-on Site			
7 Select appliance size	OS password:	•••••	0
8 Select datastore			_
9 Configure database	Confirm OS password:	••••••	•
10 Network Settings			
11 Ready to complete			
			Nat Fish Anal
		Back	Next Finish Cancel

9. Select Install vCenter Server with an Embedded Platform Services Controller and click Next.

VMware vCenter Server Appliance	Deployment
<ul> <li>I End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Configure database</li> <li>10 Network Settings</li> <li>11 Ready to complete</li> </ul>	Select deployment type Select the services to deploy onto this appliance.         vCenter Server 6 0 requires a Platform Services Controller, which contains shared services such as Single Sign-On, Licensing, and Certificate Management. An embedded Platform Services Controller is deployed on the same Appliance VM as vCenter Server. An external Platform Services Controller is deployed in a separate Appliance VM. For smaller installations, consider VCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Server, consider one or more external Platform Services Controllers. Refer to the vCenter Server documentation for more information.         Note: Once you install vCenter Server, you can only change from an embedded to an external Platform Services Controller with a fresh install.         Embedded Platform Services Controller         Image: Install vCenter Server with an Embedded Platform Services Controller         Image: Install vCenter Server with an Embedded Platform Services Controller
	External Platform Services Controller O Install Platform Services Controller O Install vCenter Server (Requires External Platform Services Controller) VM or Host VM or Host VCenter Server
	Back Next Finish Cancel

10. Select Create a new SSO Domain and enter an administrator vCenter SSO Password; enter an SSO Domain name such as vsphere.local and an SSO Site name such as a city or physical location name.

VMware vCenter Server Appliance	e Deployment		
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Set up Single Sign-on (SSO) Create or join a SSO domain. An	SSO configuration cannot be changed aft	er deployment.
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> </ul>	<ul> <li>Create a new SSO domain</li> <li>Join an SSO domain in an exit</li> </ul>	isting vCenter 6.0 platform services contro	ller
5 Set up Single Sign-on 6 Select appliance size	vCenter SSO User name:	administrator	
7 Select datastore 8 Network Settings	vCenter SSO Password:	•••••	0
9 Ready to complete	Confirm password:		]
	SSO Domain name: SSO Site name:	vsphere.local	0
	550 Sile fiame.	Houston	0
		Back	Next Finish Cancel

11. Select appliance size from the drop-down list and click Next.



12. Select datastore to deploy the appliance on and click Next.

VMware vCenter Server Applianc	e Deployment					
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> </ul>	Select datastore Select the storage location for this deployment The following datastores are accessible. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.					
<ul> <li>6 Select appliance size</li> <li>7 Select datastore</li> </ul>	Name	Туре	Capacity	Free	Provisioned	Thin Provisioning
8 Configure database	RDM Mappings	VMFS	4.75 GB	2.25 GB	2.5 GB	true
9 Network Settings	NFSMGMT01	NFS	500 GB	331 GB	169 GB	true
10 Ready to complete	NFSMGMT02	NFS	500 GB	306.96 GB	238.13 GB	true
	Enable Thin Di	sk Mode 🚯				
				Back 1	Vext Finish	Cancel

13. Select **Use an embedded database (vPostgres)**, which is recommended, or **Use Oracle database** and click **Next**.

VMware vCenter Server Appliance	e Deployment
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select database</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	Configure database Configure the database for this deployment ① Use an embedded database (vPostgres) ② Use Oracle database
	Back Next Finish Cancel

#### 14. Enter Network Settings and click Next.

NOTE: The FQDN and IP addresses entered here must be resolvable by the DNS server specified or the deployment will fail.

Mware vCenter Server Applianc	e Deployment			
<ul> <li>✓ 1 End User License Agreement</li> <li>✓ 2 Connect to target server</li> </ul>	Choose a network:	VM Network 🔻	θ	•
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> </ul>	IP address family:	IPv4 •	]	I
<ul> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select datastore</li> </ul>	Network type:	static •		
<ul> <li>A Configure database</li> <li>9 Network Settings</li> </ul>	Network address:	10.155.168.81	]	
10 Ready to complete	System name [FQDN or IP address]:	vcenter003.vmware.local	•	
	Subnet mask:	255.255.255.0	]	
	Network gateway:	10.155.168.253	]	
	Network DNS Servers separated by comas	10.155.168.60	]	l
	Configure time sync:	<ul> <li>Synchronize appliance time with ESX</li> <li>Use NTP servers (Separated by coming</li> </ul>		
		10.17.0.1,10.17.0.2		+
		Back	Next Finish Cancel	

15. Review and click **Finish**.

2 Connect to target server	Please review your set	ings before starting the installation.	
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select datastore</li> <li>8 Configure database</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	ESXi server info: Name: Installation type: Deployment type: Deployment configuration: Datastore: Disk mode: Network mapping: IP allocation: Time synchronization: Database: Properties:	w3-tm-hp380-010.vmware.local vcenter003 Install Embedded Platform Services Controller Tiny (up to 20 hosts, 400 VMs) NFSMGMT01 thin Network 1 to VM Network IPv4 , static 10.17.0.1,10.17.0.2 embedded SSH enabled = true SSO User name = administrator SSO User name = Houston Network 1 IP address = 10.155.168.81 Host Name = vcenter003.vmware.local Network 1 netmask = 255.255.255.0 Default gateway = 10.155.168.253 DNS = 10.155.168.60	

### Upgrade in Which All vCenter Server Components Are Installed on a Single Machine

#### Windows Upgrade

- 1. Verify all prerequisites.
- 2. Mount the vCenter Server 6.0 ISO image.
- 3. If autorun does not start, execute autorun.exe.
- 4. Select vCenter Server for Windows and click Install.

	VMware <sup>®</sup> vCenter <sup>™</sup> Installer	_ 🗆 🗙
<b>vm</b> ware vSphere		
VMware vCenter Server vCenter Server for Windows VMware vCenter Desktop Client vSphere Client vSphere Update Manager Server Download Service VMware vCenter Support Tools vSphere Authentication Proxy	VCenter Server for Windows Wiware vCenter Server is a windows application that manages datacente performance monitoring and configuration, and unifies resources from in be shared among virtual machines in the entire datacenter. For a list of information you need to install this component, see the install http://www.ymware.com/ Prerequisites: None	dividual servers to
	Exp	olore Media Exit

- 5. Click Next.
- 6. Accept the license agreements.
- 7. Enter the vCenter Single Sign-On password and the service account password if applicable. Click Next.

<b>B</b>	VMware vCenter Server 6.0.0
vCenter Single Sign-On and v Enter your vCenter Single Sign-On 5.5 a	Center Server Credentials ind vCenter Server 5.5 administrator credentials.
vCenter Single Sign-On <u>u</u> ser name:	administrator@vsphere.local
vCenter Single Sign-On gassword:	•••••
✓ Use the same credentials for vCenter	Server
vCenter Server user name:	administrator@vsphere.local
vCenter Server pass <u>w</u> ord:	
The installer has detected that the vCent credentials for this service account.:	ter Server service is running under the following service account. Enter the
Account us <u>e</u> r name:	VMWARE\svcvcenter
Account passwor <u>d</u> :	••••••
vCenter Single Sign-On domain. The vC	must be of a user with vCenter Single Sign-On administrative privileges to your existing enter Server credentials must be of a user with administrative privileges to your vCenter and domain names were used, the administrator@vsphere.local account would meet both
	< Back Nyxt > Cancel

8. Wait for the **pre-upgrade checks** to complete.



9. Accept the default ports and click **Next**.

붱	VMware vCenter Server 6.0.0
Configure Ports Configure network settings and ports for this de	eployment.
Common Ports	
HTTP Port:	80
HTTP <u>S</u> Port:	443
Syslog Service Port:	514
Syslog Service TLS Port:	1514
Platform Services Controller Ports	
Secure Token Service Port:	7444
vCenter Server Ports	
Auto Deploy Management Port:	6502
Auto Deploy Service Port:	6501
ESXi Dump Collector Port:	6500
ESXi Heartbeat Port:	902
vSphere Web Client Port:	9443
Some ports are not configurable. To proce	ed, make the following ports available:
88, 389, 636, 2012, 2014, 2020, 7080, 117	'11, and 11712
	< Back Next > Cancel

10. Accept or change the installation paths as necessary. Click  $\ensuremath{\textit{Next}}.$ 

岁 VMware vCenter	r Server 6.0.0	x
Destination Directory		
Select the storage location for this deployment.		
Install vCenter Server with an embedded Platform Services Control		
C:\Program Files\VMware\	Change	
Store data for vCenter Server with an embedded Platform Services	Controller in:	
C:\ProgramData\VMware\	Change	
Export your 5.X data to:		
C:\ProgramData\VMware\vCenterServer\export\	Change	
Note: During the upgrade, 5.x data will be stored in this directory, a this directory will not be cleaned up by the installer. Remove this directory		
	< Back Next > Cancel	

11. Check the box to verify that you have backed up this vCenter Server and its database. Click **Upgrade**.

岁 VM	VMware vCenter Server 6.0.0		
Ready to upgrade Confirm the settings below and click Upgrade.			
Deployment type: vCenter Single Sign-On user name: vCenter Single Sign-On domain: vCenter Single Sign-On site name: Installation directory: Data directory: Upgrade export directory:	vCenter Server with an embedded Platform Services Controller administrator vsphere.local PaloAlto C:\Program Files\VMware\ C:\ProgramData\VMware\ C:\ProgramData\VMware\vCenterServer\export\		
<ul> <li>VMware vCenter Server will be in evaluation mode after the upgrade.</li> <li>Activate vCenter Server through the vSphere Web Client within 60 days after the upgrade. When the evaluation period of the vCenter Server expires, all hosts will be disconnected from this vCenter Server.</li> <li>I verify that I have backed up this vCenter Server machine and the database server pointed by the 'vcenter002' DSN.</li> <li><a href="#">&lt; Back</a> Upgrade</li> <li>Cancel</li> </ul>			

12. When completed, click **Finish**.

뤙	VMware vCenter Server 6.0.0	X
<b>vm</b> ware <sup>.</sup>	Setup Completed	
	<ul> <li>Your vCenter Server 5.5 is upgraded to version 6.0.0.</li> <li>Post upgrade step(s):</li> <li>1. vCenter Server is upgraded and is now in evaluation mode. Activate vCenter Server by using the vSphere Web Client within 60 days. When the evaluation period of this vCenter Server expires, all hosts will be disconnected from this vCenter Server.</li> <li>2. Data exported to C:\ProgramData\VMware\vCenterServer\export\ directory is not cleaned up by the installer. Verify that the upgraded vCenter Server works orrectly and remove the directory and its contents.</li> <li>3. Use the vSphere Web Client to manage vCenter Server. Log in with the vCenter Single Sign-On administrator account administrator@vsphere.local.</li> </ul>	r
VMware® vCenter Server® 6.0	Launch vSphere Web Client	

### vCenter Server Appliance Upgrade

- 1. Mount the ISO image on PC.
- 2. Open the vcsa folder and install the plug-in.
- 3. In the root of the ISO image, double-click the vcsa-setup.html file.
- 4. Wait until you are prompted to enable the client integration plug-in to run. Click Upgrade.



5. Click **OK** to the supported upgrades pop-up.

#### Supported Upgrades

You can upgrade to vCenter Server Appliance 6.0 from the following versions:

- vCenter Server Appliance 5.1 U3
- vCenter Server Appliance 5.5

If you have an earlier version of the appliance, you must first upgrade it to one of the above versions, then you can upgrade it to 6.0.

Continue upgrading to vCenter Server Appliance 6.0?

С	Cancel

- 6. Accept the license agreement and click **Next**.
- 7. Enter a target host and a **User name** and **Password** on the host with root access.

VMware vCenter Server Appliance Deployment			
1 End User License Agreement 2 Connect to target server	Connect to target server Specify the ESXI host on which to deploy the vCenter Server Appliance.		
3 Set up virtual machine	FQDN or IP Address:	w3-tm-hp380-009.vmware.local	]
4 Connect to source appliance			-
5 Set up Single Sign-on	User name:	root	0
6 Select appliance size	Password:		1
7 Select datastore			1
8 Network Settings	A Before proceeding:		
9 Ready to complete	<ul> <li>Before proceeding:</li> <li>Make sure the ESXI host is not in lock down mode or maintenance mode.</li> <li>When deploying to a vSphere Distributed Switch (VDS), the appliance must be deployed to an ephemeral portgroup. After deployment, it can be moved to a static or dynamic portgroup.</li> </ul>		
		Back	Next Finish Cancel

- 8. Click **Yes** to accept the host's certificate.
- 9. Enter an Appliance name and Enable SSH if required. Click Next.

VMware vCenter Server Appliance Deployment				
<ul> <li>VMware vCenter Server Appliance</li> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Connect to source appliance</li> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select datastore</li> <li>8 Network Settings</li> <li>9 Ready to complete</li> </ul>	Set up virtual machine	the vCenter Server Appliance to be depl	loyed	
		Back	Next Finish Cancel	

10. Enter the vCenter Server version, FQDN, Password, vCenter SSO Port (443), ESXi host FQDN, user name, and password. Click Next.

VMware vCenter Server Applianc	ce Deployment	
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Connect to source appliance</li> </ul>	Existing Appliance Type vCenter Server Appliance vCenter Server IP address/FODN:	VCSA 5.5
5 Select appliance size 6 Select datastore 7 Network Settings 8 Ready to complete	vCenter Server IP address/FUDN: vCenter Administrator User name: vCenter Administrator Password:	vcsa01.vmware.local administrator@vsphere.local
	vCenter SSO Port: Appliance (OS) Root password: Temporary Upgrade Files Path: Migrate Performance & other historical data Source E SXI Host	443 /mp/vmware/cis-export-folder Enabled
	ESXi host IP address/FQDN: ESXi host user name: ESXi host password:	w3-tm-hp380-010 vmware.local root
		Back Next Finish Cancel

#### 11. Select Appliance size from the drop-down list and click Next.

VMware vCenter Server Appliance	ce Deployment	
<ul> <li>VMware vCenter Server Appliance</li> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select datastore</li> <li>8 Configure database</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	Select appliance size Specify a deployment size for the Appliance size: Description This will deploy a Tiny VM col	ne new appliance Tiny (up to 20 hosts, 400 VMs) Tiny (up to 20 hosts, 400 VMs) Small (up to 150 hosts, 3, 000 VMs) Medium (up to 300 hosts, 6,000 VMs) Large (up to 1000 hosts, 10,000 VMs) Angured with 2 vCPUs and 8 GB of memory and requires 120 GB of disk space. Server with an embedded Platform Services Controller.
		Back Next Finish Cancel

### 12. Select datastore to deploy the appliance on and click Next.

1 End User License Agreement 2 Connect to target server	Select datastore Select the storage location for this deployment					
<ol> <li>Set up virtual machine</li> <li>Select deployment type</li> <li>Set up Single Sign-on</li> </ol>		The following datastores are accessible. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.				
6 Select appliance size 7 Select datastore	Name	Туре	Capacity	Free	Provisioned	Thin Provisioning
8 Configure database	RDM Mappings	VMFS	4.75 GB	2.25 GB	2.5 GB	true
9 Network Settings	NFSMGMT01	NFS	500 GB	331 GB	169 GB	true
10 Ready to complete	NFSMGMT02	NFS	500 GB	306.96 GB	238.13 GB	true

#### 13. Review and click **Finish**.

<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Ready to complete Please review your set	tings before starting the installation.		
<ul> <li>3 Set up virtual machine</li> <li>4 Connect to source appliance</li> <li>5 Select appliance size</li> <li>6 Select datastore</li> <li>7 Network Settings</li> <li>8 Ready to complete</li> </ul>	ESXi server info: Name: Installation type: Deployment type: Deployment configuration: Datastore: Disk mode: Network mapping: IP allocation: Time synchronization: Properties:	w3-tm-hp380-009.vmware.local vcsa01 Install and Migrate Embedded Platform Services Controller Tiny (up to 20 hosts, 400 VMs) NFSMGMT01 thick Network 1 to VM Network IPv4 , dhcp SSH enabled = true SSO User name = administrator		

# Fresh External Platform Services Controller Deployment

#### Windows Deployment

- 1. Verify all prerequisites.
- 2. Mount the vCenter Server 6.0 ISO image.
- 3. If autorun does not start, execute autorun.exe.
- 4. Select vCenter Server for Windows and click Install.



#### 5. Click Next.

- 6. Accept the license agreements.
- 7. Select External Deployment Platform Services Controller and click Next.

ie B	VMware vCent	er Server 6.0.0
Select deploym		
Licensing, and Certi vCenter Server. An consider vCenter Se consider one or mo	ficate Management. An embedded Platform Se external Platform Services Controllers is deplo erver with an embedded Platform Services Con re Platform Services Controllers. Refer to prod	ch contains shared services such as vCenter Single Sign-On, ervices Controller is deployed on the same Windows Host as yed in a separate Windows Host. For smaller installations, troller. For larger installations with multiple vCenter Servers, uct documentation for more information. an embedded to an external Platform Services Controller with a
Embedded Deploy	rment Ind Embedded Platform Services Controller	VM or Host Platform Services Controller VCenter Server
<ul> <li>External Deploym</li> <li>Platform Service</li> <li>vCenter Server</li> <li>A previously inst required</li> </ul>		VM or Host VM or Host VM or Host VM or Host VCenter Server
		< Back Next > Cancel

8. Verify the system name and click **Next**.

₿	VMware vCenter Server 6.0.0
System Network Nam Configure the name of this s	
system so that the component	se for managing the local system. The system name will be encoded in the SSL certificate of the nts can communicate with each other by using this name. Enter the system name as a fully-qualified S is not available, you can provide a static IPv4 address. IPv6 is supported only by using a name.
<u>S</u> ystem Name:	psc001.vmware.local
1 Note: The System Netwo	ork Name cannot be changed after deployment.
	< Back Next > Cancel

- 9. If this is the first Platform Services Controller, select **Create a new vCenter Single Sign-On domain**. If this is an additional Platform Services Controller, select **Join a vCenter Single Sign-On domain**.
  - a. For a new vCenter Single Sign-On domain, enter a **password** for the vCenter Single Sign-On administrator, a **Domain name** such as vsphere.local, and a **Site name** such as a city or physical building name.

VMware vCenter Server 6.0.0				
vCenter Single Sign-On Configuration Create or join a vCenter Single Sign-On domain.				
Create a new vCenter Single Sign-On domain				
Domain name:	vsphere.local			
vCenter Single Sign-On <u>u</u> ser name:	administrator			
vCenter Single Sign-On password:	•••••			
Confirm password:	•••••			
<u>S</u> ite name:	Houston			
$\bigcirc$ Join a vCenter Single Sign-On domain				
Platform Services Controller EQDN or IP address:				
vCenter Single Sign-On HTTPS port:	443			
vCenter Single Sign-On <u>u</u> ser name:	administrator			
vCenter Single Sign-On password:				
<b>1</b> Note: vCenter Single Sign-On configuration cannot be changed after deployment.				
	< Back Next > Cancel			

b. To join an existing vCenter Single Sign-On domain, enter the FQDN of an existing Platform Services Controller and the vCenter Single Sign-On administrator's password. Click **Next**. Choose a site to join from the drop-down list. Click **Next**.

岁 VMware vCenter Server 6.0.0			
vCenter Single Sign-On Configuration Create or join a vCenter Single Sign-On domain.			
O Create a new vCenter Single Sign-On domain			
Domain name:	vsphere.local		
vCenter Single Sign-On <u>u</u> ser name:	administrator		
vCenter Single Sign-On <u>p</u> assword:	•••••		
Confirm p <u>a</u> ssword:	•••••		
Site name:	Houston		
Ioin a vCenter Single Sign-On domain			
Platform Services Controller <u>FQDN</u> or IP address:	psc01.vmware.local		
vCenter Single Sign-On HTTPS port:	443		
vCenter Single Sign-On <u>u</u> ser name:	administrator		
vCenter Single Sign-On password:	••••••		
Note: vCenter Single Sign-On configuration cannot be changed a			
	< Back Next > Cancel		

10. Accept the default ports and click **Next**.

- B V	Mware vCenter Server 6.0.0				
Configure Ports Configure network settings and ports for this deployment.					
Common Ports					
HTTP Port:	80				
HTTP <u>S</u> Port:	443				
Syslog Service Port:	514				
Syslog Service TLS Port:	1514				
Platform Services Controller Ports					
Secure <u>T</u> oken Service Port:	7444				
<ol> <li>Some ports are not configurable. To proceed,</li> </ol>	make the following ports available:				
88, 389, 636, 2012, 2014, 2020, 7080, 11711,					
	< Back Next > Cancel				

11. Accept or change the installation paths as necessary. Click Next.

VMware vCenter Server 6.0.0				
Destination Directory				
Select the storage location for this deployment.				
Install Platform Services Controller to:				
C:\Program Files\VMware\	Change			
	Changetin			
Store data for Platform Services Controller in:				
C:\ProgramData\VMware\	Change			
	< Back Next > Cancel	7		

12. Review and click Install.

岁 VMr	ware vCenter Server 6.0.0
Ready to install Review your settings before starting the installation.	
System Name: Deployment type: vCenter Single Sign-On configuration: vCenter Single Sign-On user name: vCenter Single Sign-On domain: vCenter Single Sign-On site name: Installation directory:	psc001.vmware.local Platform Services Controller Create a new vCenter Single Sign-On domain administrator vsphere.local Houston C:\Program Files\VMware\
Data directory:	C:\ProgramData\VMware\
	< Back Install Cancel

#### vCenter Server Appliance Deployment

- 1. Mount the ISO image on a PC.
- 2. Open the vcsa folder and install the plug-in.
- 3. In the root of the ISO image, double-click the vcsa-setup.html file.
- 4. Wait until you are prompted to enable the client integration plug-in to run. Click Install.



- 5. Accept the license agreement and click Next.
- 6. Enter a target host and a User name and Password on the host with root access.

VMware vCenter Server Appliance	e Deployment			
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Connect to target server Specify the ESXI host on which to deploy the vCenter Server Appliance.			
<ul> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Configure database</li> <li>10 Network Settings</li> <li>11 Ready to complete</li> </ul>	FQDN or IP Address: User name: Password: Before proceeding: Make sure the ESXi host When deploying to a vSpl	w3-tm-hp380-010.vmware.local w3-tm-hp380-010.vmware.local root solution is not in lock down mode or maintenance in there Distributed Switch (VDS), the applian ent, it can be moved to a static or dynamic	nce must be deployed to an ephemeral	
		Back	Next Finish Cancel	

- 7. Click Yes to accept the host's certificate.
- 8. Enter an Appliance name and the root password you want to assign. Click Next.

đ	T VMware vCenter Server Appliance Deployment				
	1 End User License Agreement 2 Connect to target server	Set up virtual machine Specify virtual machine settings fo	r the vCenter Server Appliance to be dep	loyed.	
	3 Set up virtual machine 4 Select deployment type	Appliance name:	psc01.vmware.local	0	
	5 Set up Single Sign-on	OS user name:	root		
	6 Single Sign-on Site 7 Select appliance size	OS password:		] 0	
	8 Select datastore 9 Configure database	Confirm OS password:		]	
	10 Network Settings 11 Ready to complete				
			Back	Next Finish Cancel	

9. Under External Platform Services Controller, select Install Platform Services Controller. Click Next.

2 Connect to target server	Select the services to deploy onto this appliance	e.
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	VCenter Server 6 0 requires a Platform Services Controller, which contains shared services such as Single Sign- Licensing, and Certificate Management. An embedded Platform Services Controller is deployed on the same Appliance VM as vCenter Server. An external Platform Services Controller is deployed on the same for smaller installations, consider vCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Servers, consider one or more external Platform Services Controllers. Refer to vCenter Server documentation for more information. Note: Once you install vCenter Server, you can only change from an embedded to an external Platform Services Controller with a fresh install. Embedded Platform Services Controller Install vCenter Server with an Embedded Platform Services Controller Install vCenter Server with an Embedded Platform Services Controller	
	External Platform Services Controller install Platform Services Controller Install vCenter Server (Requires External Platform Services Controller)	VM or Host Platform Services Controller VM or Host VCenter Server

- 10. If this is the first Platform Services Controller, select **Create a new SSO domain**. If this is an additional Platform Services Controller, select **Join an SSO Domain**.
  - a. For a new vCenter Single Sign-On domain, enter an administrator vCenter SSO Password, an SSO Domain name such as vsphere.local, and an SSO Site name.

T VMware vCenter Server Appliance Deployment					
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Set up Single Sign-on (SSO) Create or join a SSO domain. An SSO configuration cannot be changed after deployment.				
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> </ul>	Create a new SSO domain     Join an SSO domain in an existing vCenter 6.0 platform services controller				
6 Select appliance size	vCenter SSO User name:	administrator			
7 Select datastore 8 Network Settings	vCenter SSO Password:		0		
9 Ready to complete	Confirm password:	••••••			
	SSO Domain name:	vsphere.local	0		
	SSO Site name:	Houston	0		
		Back	Next Finish Cancel		

b. To join an existing vCenter Single Sign-On domain, enter the FQDN of an existing Platform Services Controller and the vCenter Single Sign-On administrator's password. Then click **Next**. Choose a site to join from the drop-down list. Click **Next**.

VMware vCenter Server Appliance	e Deployment	
<ul> <li>VMware vCenter Server Applianc</li> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Configure database</li> <li>10 Network Settings</li> <li>11 Ready to complete</li> </ul>	Set up Single Sign-on (SSO) Create or join a SSO domain. An S Create a new SSO domain Join an SSO domain in an exist Platform Services Controller FODN or IP address: vCenter SSO User name: vCenter SSO Password: Port:	3SO configuration cannot be changed after deployment.         ting vCenter 6.0 platform services controller         psc01.vmware.local         administrator         ••••••••         443         re to type the correct site name that you want to join. Typing in the wrong site
		Back Next Finish Cancel

11. Click **Next**. There is only one appliance size for the Platform Services Controller.



12. Select a datastore to deploy the appliance on and click  $\ensuremath{\textit{Next}}.$ 

<ul> <li>VMware vCenter Server Applianc</li> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> </ul>	Select datastore Select the storage location for this deployment The following datastores are accessible. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.					
<ul> <li>6 Select appliance size</li> <li>7 Select datastore</li> </ul>	Name	Туре	Capacity	Free	Provisioned	Thin Provisioning
8 Configure database	RDM Mappings	VMFS	4.75 GB	2.25 GB	2.5 GB	true
9 Network Settings	NFSMGMT01	NFS	500 GB	331 GB	169 GB	true
10 Ready to complete	NFSMGMT02	NFS	500 GB	306.96 GB	238.13 GB	true
	Enable Thin Di	isk Mode 🚯				
		-				
				Back	Vext Finish	Cancel

13. Enter Network Settings and click Next.

NOTE: The FQDN and IP addresses entered here must be resolvable by the DNS server specified or the deployment will fail.
VMware vCenter Server Applianc	e Deployment		
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Choose a network:	VM Network 🔻	0
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> </ul>	IP address family:	IPv4 •	
<ul> <li>✓ 5 Set up Single Sign-on</li> <li>✓ 6 Select appliance size</li> </ul>	Network type:	static 🔹	
<ul> <li>7 Select datastore</li> <li>8 Network Settings</li> </ul>	Network address:	10.155.168.73	]
9 Ready to complete	System name [FQDN or IP address]:	psc01.vmware.local	0
	Subnet mask:	255.255.255.0	]
	Network gateway:	10.155.168.253	]
	Network DNS Servers separated by comas	10.155.168.60	]
	Configure time sync:	<ul> <li>Synchronize appliance time with ESX</li> <li>Use NTP servers (Separated by com 10.17.0.1,10.17.0.2</li> </ul>	
		Back	Next Finish Cancel

### 14. Review and click **Finish**.

<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Ready to complete Please review your set	tings before starting the installation.		
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Select appliance size</li> <li>7 Select datastore</li> <li>8 Network Settings</li> <li>9 Ready to complete</li> </ul>	Name: Installation type: Deployment type: Datastore: Disk mode; Network mapping: IP allocation: Time synchronization: Properties:	w3-tm-hp380-010.vmware.local psc01.vmware.local Install Platform Services Controller NFSMGMT01 thin Network 110 VM Network IPv4 ,static 10.17.0.1,10.17.0.2 SSH enabled = true SSO User name = administrator SSO Domain name = vsphere.local SSO Site name = Houston Network 1 IP address = 10.155.168.73 Host Name = psc01.vmware.local Network 1 netmask = 255.255.255.0 Default gateway = 10.155.168.253 DNS = 10.155.168.60		

# Fresh External vCenter Server Deployment

#### Windows Deployment

- 1. Verify all prerequisites.
- 2. If using a remote database, ensure that a 64-bit DSN has been created. This step is not necessary if using the local PostgreSQL database.
- 3. Mount the vCenter Server 6.0 ISO image.
- 4. If autorun does not start, execute autorun.exe.

5. Select vCenter Server for Windows and click Install.



### 6. Click Next.

- 7. Accept the license agreements.
- 8. Under External Deployment, select vCenter Server. Click Next.

<b>1</b>	VMware vCenter Server 6.0.0
	deployment type the component to deploy.
Licensir vCenter conside conside	r Server 6.0.0 requires a Platform Services Controller, which contains shared services such as vCenter Single Sign-On, ng, and Certificate Management. An embedded Platform Services Controller is deployed on the same Windows Host as r Server. An external Platform Services Controllers is deployed in a separate Windows Host. For smaller installations, er vCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Servers, er one or more Platform Services Controllers. Refer to product documentation for more information. Once you deploy vCenter Server, you can only change from an embedded to an external Platform Services Controller with a istall.
	Ided Deployment Meter Server and Embedded Platform Services Controller VM or Host Platform Services Controller VCenter Server
O Platf	al Deployment VM or Host form Services Controller neter Server reviously installed Platform Services Controller is sired
	< Back Next > Cancel

9. Verify that the FQDN is correct and click **Next**.

10. Enter the external Platform Services Controller FQDN and vCenter Single Sign-On password. Click Enter.

VMware vCenter Server 6.0.0					
vCenter Single Sign-On registration					
Connect vCenter Server to a vCenter Single Sign-On domain in an existing Platform Services Controller.					
Platform Services Controller EQDN or IP address: psc010.vmware.local					
Note: This is the external Platform Services Controller with the	)·				
vCenter Single Sign-On HTTPS port:	443				
vCenter Single Sign-On user name:	administrator				
vCenter Single Sign-On password:					
	< Back Next > Can	:el			

11. Click  $\mathbf{OK}$  to accept the certificate.



12. Select Use Windows Local System Account or enter the service account user name and password.

₩ VMware vCenter Server 6.0.0				
vCenter Server Service Account				
Enter the vCenter Server service account information.				
By default, the vCenter Server instance runs in the Windows Local System account. To run in another administrative user account, select the option to specify a user service account and provide the account credentials. The user service account must be granted the 'Log on as a service' privilege.				
O Use Windows Local System Account				
Note: If you select this option, you cannot connect to an external database using Integrated Windows authentication.				
Specify a user service account				
Account user name: VMWARE\svcvCenter				
Account password:				
< Back Next > Cancel				

13. Select Use an embedded database (vPostgres) or Use an external database and enter the server's DSN Name. Click Next.

븅	VMware vCenter Server 6.0.0	x
Database Settings Configure the database for this deplo	yment.	
$\bigcirc$ Use an embedded database (vPos	tgres)	
• Use an external database		
<u>D</u> SN Name:	VCDB v Refresh	
DB <u>u</u> ser name:		
DB gassword:		
The chosen DSN is configured to to verify authenticity.	use Integrated Windows Authentication. SQL Server will use the credentials of the user	
	< Back Next > Cancel	

- 14. Unless required, leave all ports at their defaults and click Next.
- 15. Unless required, leave the default paths for installation and click Next.
- 16. Review and then click **Install**.

占 VV	Aware vCenter Server 6.0.0		
Ready to install Review your settings before starting the installation.			
System Name:	vcenter010.vmware.local		
Deployment type:	vCenter Server with an external Platform Services Controller		
vCenter Single Sign-On registration host:	psc010.vmware.local		
vCenter Single Sign-On user name:	administrator		
vCenter Single Sign-On domain:	vsphere.local		
vCenter Server service account:	VMWARE\svcvcenter		
Database type:	embedded (vPostgres)		
Installation directory:	C:\Program Files\VMware\		
Data directory:	C:\ProgramData\VMware\		
	< Back Install Cancel		

# vCenter Server Appliance Deployment

- 1. Mount the ISO image on a PC.
- 2. Open the vcsa folder and install the plug-in.
- 3. In the root of the ISO image, double-click the vcsa-setup.html file.
- 4. Wait until you are prompted to enable the client integration plug-in to run. Click Install.



- 5. Accept the license agreement and click **Next**.
- 6. Enter a target host, a user name, and a password on the host with root access.

5	VMware vCenter Server Appliance	e Deployment				
	1 End User License Agreement 2 Connect to target server	Connect to target server Specify the ESXi host on which to	Connect to target server Specify the ESXi host on which to deploy the vCenter Server Appliance.			
	3 Set up virtual machine	FQDN or IP Address:	w3-tm-hp380-010.vmware.local			
	4 Select deployment type			-		
	5 Set up Single Sign-on	User name: ro	root	0		
	6 Single Sign-on Site	Password:		1		
	7 Select appliance size	Fassword.	••••••	]		
	8 Select datastore	A Before proceeding:				
	9 Configure database	Make sure the FOVi heat i	is not in lock down mode or maintenance r	mada		
	10 Network Settings	<ul> <li>Make sure the ESXi host is not in lock down mode or maintenance mode.</li> <li>When deploying to a vSphere Distributed Switch (VDS), the appliance must be deployed to an ephemeral portgroup. After deployment, it can be moved to a static or dynamic portgroup.</li> </ul>				
	11 Ready to complete					
			Back	Next Finish Cancel		

- 7. Click **Yes** to accept the host's certificate.
- 8. Enter Appliance name and the root password you want to assign. Click Next.

VMware vCenter Server Applianc	e Deployment						
<ul> <li>✓ 1 End User License Agreement</li> <li>✓ 2 Connect to target server</li> </ul>	Set up virtual machine Specify virtual machine setting	Set up virtual machine specify virtual machine settings for the vCenter Server Appliance to be deployed.					
3 Set up virtual machine	Appliance name:		•				
4 Select deployment type	Applance hand.	vcenter011	0				
5 Set up Single Sign-on	OS user name:	root					
6 Single Sign-on Site							
7 Select appliance size	OS password:	•••••	0				
8 Select datastore							
9 Configure database	Confirm OS password:	•••••					
10 Network Settings							
11 Ready to complete							
			Back Next	Finish Cancel			

9. Under External Platform Services Controller, select Install vCenter Server. Click Next.



### 10. Enter the external Platform Services Controller FQDN and vCenter SSO password. Click Next.

S VMware vCenter Server Appliance Deployment				
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>Configure Single Sign-On (SSO)</li> <li>Connect vCenter Server to a SSO domain in an existing platform services controller. An SSO control to the changed after deployment.</li> </ul>				
<ul> <li>✓ 4 Select deployment type</li> <li>5 Configure Single Sign-On</li> </ul>	Platform Services Controller FQDN or IP address:	psc011.vmware.local		
6 Select appliance size 7 Select datastore	vCenter SSO User name:	administrator		
8 Configure database	vCenter SSO password:	•••••		
9 Network Settings 10 Ready to complete	vCenter Single Sign-On HTTPS Port:	443		
		Back Next Finish Cancel		

11. Select **Appliance size** from the drop-down list. Click **Next**.



12. Select datastore to deploy the appliance on. Click Next.

2 Connect to target server	Select datastore Select the storage location for this deployment					
<ol> <li>Set up virtual machine</li> <li>Select deployment type</li> <li>Set up Single Sign-on</li> </ol>	The following datastores are accessible. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.					
6 Select appliance size 7 Select datastore	Name	Туре	Capacity	Free	Provisioned	Thin Provisioning
8 Configure database	RDM Mappings	VMFS	4.75 GB	2.25 GB	2.5 GB	true
9 Network Settings	NFSMGMT01	NFS	500 GB	331 GB	169 GB	true
10 Ready to complete	NFSMGMT02	NFS	500 GB	306.96 GB	238.13 GB	true
	Enable Thin Di	isk Mode 🚯				

13. Select **Use an embedded database (vPostgres)**, which is recommended, or **Use Oracle database**. Click **Next**.



## 14. Enter Network settings and click Next.

NOTE: The FQDN or IP address entered here must be resolvable by the DNS server specified or the deployment will fail.

VMware vCenter Server Appliance	e Deployment		
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> </ul>	Network type:	static •	- ]
<ul> <li>✓ 4 Select deployment type</li> <li>✓ 5 Configure Single Sign-On</li> </ul>	Network address:	10.155.168.89	]
<ul> <li>6 Select appliance size</li> <li>7 Select datastore</li> <li>8 Configure database</li> </ul>	System name [FQDN or IP address]:	vcenter011.vmware.local	<b>0</b>
9 Network Settings 10 Ready to complete	Subnet mask:	255.255.255.0	]
	Network gateway:	10.155.168.253	]
	Network DNS Servers separated by comas	10.155.168.60	]
	Configure time sync:	<ul> <li>Synchronize appliance time with ESX</li> <li>Use NTP servers (Separated by common 10.17.0.1,10.17.0.2</li> </ul>	
	Enable ssh		
	A Before proceeding make su deployment will fail.	are there is time synchronization between	ESXi host and the NTP servers. If not,
		Back	Next Finish Cancel

15. Review and click **Finish**.



# Upgrade External vCenter Single Sign-On

- 1. Back up the vCenter Single Sign-On and vCenter Server machines.
- 2. Log in to the vCenter Single Sign-On machine.
- 3. Mount the vCenter Server 6.0 ISO image.
- 4. If autorun does not start, execute autorun.exe.
- 5. Select vCenter Server for Windows and click Install.



- 6. Click Next.
- 7. Accept the license agreements.
- 8. Enter the vCenter Single Sign-On password for the administrator@vsphere.local account. Click Next.

谩	VMware vCenter Server 6.0.0	×			
vCenter Single Sign-On Credentials					
Enter your vCenter Single Sign-On 5.5 admi	inistrator credentials.				
vCenter Single Sign-On <u>u</u> ser name:	administrator@vsphere.local	]			
vCenter Single Sign-On password:	•••••	]			
	< Back	Next > Cancel			

9. Wait for the **pre-upgrade checks** to complete.



10. Accept the default ports and click **Next**.

岁 VV	ware vCenter Server 6.0.0	x
Configure Ports Configure network settings and ports for this deployr	nent.	
Common Ports		
HTTP Port:	80	
HTTP <u>S</u> Port:	443	
Syslog Service Port:	514	
Syslog Service TLS Port:	1514	
Platform Services Controller Ports		
Secure Token Service Port:	7444	
🚯 Some ports are not configurable. To proceed, m	ake the following ports available:	
88, 389, 636, 2012, 2014, 2020, 7080, 11711, a	nd 11712	
	< Back Next > Cancel	

11. Select your installation path or take the defaults. Click  $\ensuremath{\textit{Next}}.$ 

岁 VMware vCente	er Server 6.0.0
Destination Directory	
Select the storage location for this deployment.	
Install Platform Services Controller to:	
C:\Program Files\VMware\	Change
Store data for Platform Services Controller in:	
C:\ProgramData\VMware\	Change
Export your 5.X data to:	
C:\ProgramData\VMware\vCenterServer\export\	Change
Note: During the upgrade, $5.x$ data will be stored in this directory, this directory will not be cleaned up by the installer. Remove this d	
	< Back Next > Cancel

12. Check I verify that I have backed up this vCenter Single Sign-On machine. Click Upgrade.

討	VMware vCenter Server 6.0.0	x
Ready to upgrade Confirm the settings below and click Upgrade.		
Deployment type:	Platform Services Controller	
vCenter Single Sign-On replication host:	sso02.vmware.local	
vCenter Single Sign-On user name:	administrator	
vCenter Single Sign-On domain:	vsphere.local	
vCenter Single Sign-On site name:	Palo Alto	
Installation directory:	C:\Program Files\VMware\	
Data directory:	C:\ProgramData\VMware\	
Upgrade export directory:	C:\ProgramData\VMware\vCenterServer\export\	
I verify that I have backed up this vCenter Si	ngle Sign-On machine.	
	< Back Upgrade Cancel	

- 13. Click Finish.
- 14. Log in to the vCenter Server you want to upgrade.
- 15. Mount the vCenter Server 6.0 ISO image.
- 16. If autorun does not start, execute autorun.exe.
- 17. Select vCenter Server for Windows and click Install.



#### 18. Click Next.

19. Accept the license agreements.

20. Enter the vCenter Server password for the administrator@vsphere.local account and the Account password for the service account (if applicable). Click Next.

붱	VMware vCenter Server 6.0.0	x
vCenter Server Credentials Enter your vCenter Server 5.5 administrato	or credentials.	
vCenter Server <u>u</u> ser name: vCenter Server <u>p</u> assword:	administrator@vsphere.local	
The installer has detected that the vCenter credentials for this service account.:	Server service is running under the following service account. Enter the	
Account user name:	VMWARE\svcvcenter	
Account password:	·····	
	< Back Next > Cancel	

21. Wait for the **pre-upgrade checks** to complete.

뻻	VMware vCenter Server 6.0.0	x
Running	pre-upgrade checks. This could take a few minutes	

22. Enter the vCenter Single Sign-On password for the administrator@vsphere.local account. Click Next.

岁 VMware vCer	nter Server 6.0.0	X
vCenter Single Sign-On registration Connect vCenter Server to a vCenter Single Sign-On domain in a	an existing Platform Services Controller.	
Platform Services Controller <u>FQDN</u> or IP address: Note: This is the external Platform Services Controller with the v	sso.vmware.local Center Single Sign-On you want to register with.	
vCenter Single Sign-On HTTPS port:	443	
vCenter Single Sign-On <u>u</u> ser name:	administrator	
vCenter Single Sign-On password:	••••••	
	< Back Next >	Cancel

23. Click **OK** to accept the certificate.

	Windows Security X			
Certificate Validation Please confirm that the certificate provided by the remote server matches the expected certificate. Select OK if you approve it, otherwise select Cancel.				
	VMWareDirectoryService,d Issuer: CA, CN=sso02, dc=vsphere,dc=local Valid From: 12/18/2014 to 12/15/2024 <u>Click here to view certificate</u> <u>properties</u>			
	OK Cancel			

24. Accept the default ports and click **Next**.

ġ	VMware vCenter Server 6.0.0
Configure Ports Configure network settings and ports for this dep	ployment.
Common Ports	
HTTP Port:	80
HTTP <u>S</u> Port:	443
Syslog Service Port:	514
Syslog Service TLS Port:	1514
vCenter Server Ports	
Auto Deploy Management Port:	6502
Auto Deploy Service Port:	6501
ESXi Dump Collector Port:	6500
ESXi Heart <u>b</u> eat Port:	902
vSphere Web Client Port:	9443
Some ports are not configurable. To proceed	d, make the following ports available:
2020	
	< Back Next > Cancel

25. /	Accept	or	change	the	installation	paths	as	necessary.	Click	Next.
-------	--------	----	--------	-----	--------------	-------	----	------------	-------	-------

붱	VMware vCenter Server 6.0.0
г	Destination Directory
1	Select the storage location for this deployment.
	Install vCenter Server with an external Platform Services Controller to:
	C:\Program Files\VMware\ Change
	Store data for vCenter Server with an external Platform Services Controller in:
	C:\ProgramData\VMware\ Change
	Export your 5.X data to:
	C:\ProgramData\VMware\vCenterServer\export\ Change
	Note: During the upgrade, 5.x data will be stored in this directory, and then migrated to the 6.0.0 deployment. Data exported to this directory will not be cleaned up by the installer. Remove this directory and its contents after the upgrade completes.
	< Back Next > Cancel

26. Check the box to verify that you have backed up the vCenter Server and its database. Click Upgrade.

븅 VM	ware vCenter Server 6.0.0
Ready to upgrade Confirm the settings below and click Upgrade.	
Deployment type: vCenter Single Sign-On user name: vCenter Single Sign-On domain: Installation directory: Data directory: Upgrade export directory:	vCenter Server with an external Platform Services Controller administrator vsphere.local C:\Program Files\VMware\ C:\ProgramData\VMware\vCenterServer\export\
vCenter Server expires, all hosts will be disconne	b Client within 60 days after the upgrade. When the evaluation period of the
	< Back Upgrade Cancel

27. When completed, click Finish.

<b>過</b>	VMware vCenter Server 6.0.0	x	
<b>vm</b> ware <sup>.</sup>	Setup Completed		
	Your vCenter Server 5.5 is upgraded to version 6.0.0.		
	<ol> <li>vCenter Server is upgraded and is now in evaluation mode. Activate vCenter Server by using the vSphere Web Client within 60 days. When the evaluation period of this vCenter Server expires, all hosts will be disconnected from this vCenter Server.</li> <li>Data exported to C:\ProgramData\VMware\vCenterServer\export\ directory is not cleaned up by the installer. Verify that the upgraded vCenter Server works correctly and remove the directory and its contents.</li> <li>Use the vSphere Web Client to manage vCenter Server. Log in with the vCenter Single Sign-On administrator account administrator@vsphere.local.</li> </ol>		
VMware® vCenter Server® 6.0	Launch vSphere Web Client		
	< Back Finish Cancel		

# Fresh vCenter Single Sign-On High Availability Deployment

### Windows Deployment

- 1. Complete steps 1-12 in the "Fresh External Platform Services Controller Deployment" section.
- 2. Log in to the second Windows Server to become a Platform Services Controller.
- 3. Mount the vCenter Server 6.0 ISO image.
- 4. If autorun does not start, execute autorun.exe.
- 5. Select vCenter Server for Windows and click Install.



- 6. Click Next.
- 7. Accept the license agreements.
- 8. Under External Deployment, select Platform Services Controller. Click Next.

<b>1</b>	VMware vCenter Server 6.0.0			
	ect deployment type lect the component to deploy.			
Lice vCe cor cor	vCenter Server 6.0.0 requires a Platform Services Controller, which contains shared services such as vCenter Single Sign-On, Licensing, and Certificate Management. An embedded Platform Services Controller is deployed on the same Windows Host as vCenter Server. An external Platform Services Controllers is deployed in a separate Windows Host. For smaller installations, consider vCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Servers, consider one or more Platform Services Controllers. Refer to product documentation for more information. Note: Once you deploy vCenter Server, you can only change from an embedded to an external Platform Services Controller with a fresh install.			
	vCenter Server and Embedded Platform Services Controller			
• 0	ternal Deployment Platform Services Controller vCenter Server A previously installed Platform Services Controller is required			
	< Back Next > Cancel			

9. Verify the **System Name** and click **Next**.

谩	VMware vCenter Server 6.0.0		
System Network Nar Configure the name of this			
Enter the system name to use for managing the local system. The system name will be encoded in the SSL certificate of the system so that the components can communicate with each other by using this name. Enter the system name as a fully-qualified domain name (FQDN). If DNS is not available, you can provide a static IPv4 address. IPv6 is supported only by using a name.			
<u>S</u> ystem Name:	psc002.vmware.local		
3 Note: The System Net	work Name cannot be changed after deployment.		
	< Back Next > Cancel		

岁 VMware vCenter Server 6.0.0				
vCenter Single Sign-On Configuration Create or join a vCenter Single Sign-On domain.				
O Create a new vCenter Single Sign-On domain Dormain marme:				
vCenter Single Sign-On user name:	vsphere.local administrator			
vOenter Single Sign-On <u>p</u> assword:				
Confirm p <u>a</u> ssword:				
Site name:	Default-First-Site			
Ioin a vCenter Single Sign-On domain				
Platform Services Controller FQDN or IP address:	psc001.vmware.local			
vCenter Single Sign-On HTTPS port:	443			
vCenter Single Sign-On user name:	administrator			
vCenter Single Sign-On password:	••••••			
<b>1</b> Note: vCenter Single Sign-On configuration cannot be changed after deployment.				
	< Back Next > Cancel			

10. Select Join a vCenter Single Sign-On domain and enter the FQDN and password. Click Next.

11. Click **OK** to accept the certificate from the Platform Services Controller.



12. Select Join an existing site and enter the site. Click Next.

<del>6</del>	VMware	vCenter Server 6.0.0			
vCenter Single Sign-On Site Create or join a vCenter Single Sign-On site.					
		e for this Platform Services Controller. For an existing site, VMware ollers per site. The site selection cannot be changed after install.			
Join an existing site	Houston	~			
Select this option for high ava	hiability at a single site.				
○ Create a new site					
Select this option for a multi-	site deployment.				
		< Back Next > Cancel			

13. Accept the default ports and click  $\ensuremath{\textit{Next}}.$ 

뤙	VMware vCenter Server 6.0.0	x
Configure Ports Configure network settings and ports for this de	eployment.	
Common Ports		
HTTP Port:	80	
HTTP <u>S</u> Port:	443	
Syslog Service Port:	514	
Syslog Service TLS Port:	1514	
Platform Services Controller Ports		
Secure Token Service Port:	7444	
<ol> <li>Some ports are not configurable. To proce</li> </ol>		
88, 389, 636, 2012, 2014, 2020, 7080, 117	11, and 11712	
	< Back Next > Cancel	

14. Accept or change the installation paths as necessary. Click Next.

<b>過</b>	VMware vCenter Server 6.0.0	ĸ
Destination Directory		
Select the storage location for this deployment.		
Install Platform Services Controller to:		
C:\Program Files\VMware\	Change	
Store data for Platform Services Controller in:		
C:\ProgramData\VMware\	Change	
	< Back Next > Cancel	

15. Review and click Install.

退	VMware vCenter Server 6.0.0	x
Ready to install Review your settings before starting the installa	ition.	
System Name: Deployment type:	psc002.vmware.local Platform Services Controller	
vCenter Single Sign-On configuration: vCenter Single Sign-On replication host:	Replicate with an existing vCenter Single Sign-On server psc001.vmware.local	
vCenter Single Sign-On user name: vCenter Single Sign-On domain:	administrator vsphere.local	
vCenter Single Sign-On site name:	Houston	
Installation directory: Data directory:	C:\Program Files\VMware\ C:\ProgramData\VMware\	
	< Back Install Can	cel

- 16. Log back in to the first Platform Services Controller.
- 17. Download the vCenter Single Sign-On high availability configuration scripts from the vCenter Server product download page.
- 18. Extract the vCenter Single Sign-On high availability scripts to c:\sso-ha.
- 19. Open a command prompt.
- 20. Add Python to your path by typing:

PATH=%PATH%;%VMWARE PYTHON HOME%



- 21. Change directories to c:\sso-ha.
- 22. Run:

python gen-lb-cert.py --primary-node --lb-fqdn=loadbalancerFQDN

where *loadbalancerFQDN* is the FQDN of the load balancer's virtual IP (VIP) used for load-balancing the Platform Services Controllers.

Administrator: C:\Windows\system32\cmd.exe
C:\sso-ha>python gen-lb-cert.pyprimary-nodelb-fqdn=psc010.vmware.local Initialization complete executing certTool command executing certTool command Using config file : C:\Program Files\UMware\vCenter Server\vmcad\certool.cfg Status : Success
Executing openssl command Loading 'screen' into random state - done Executing openssl command writing RSA key Modifying hostname.txt
nodifýiný server.xml Executing StopService —all INFO:root:Service: licenseService, Action: stop INFO:root:Service: vmwareServiceControlAgent, Action: stop INFO:root:Service: VMwareComponentManager, Action: stop
INFO:root:Service: rhttpproxy, Action: stop INFO:root:Service: UMwareSTS, Action: stop INFO:root:Service: UMwareIdentityMgmtService, Action: stop INFO:root:Service: UMWareOrtificateService, Action: stop INFO:root:Service: UMWareDirectoryService, Action: stop INFO:root:Service: UMWareAfdService. Action: stop
INFO:root:Service: umware-cis-config, Action: stop Executing StartServiceall INFO:root:Service: umware-cis-config, Action: start INFO:root:Service: UMWareAfdService, Action: start INFO:root:Service: Phttpproxy, Action: start
INFO:root:Service: UMWareDirectoryService, Action: start INFO:root:Service: UMWareCertificateService, Action: start INFO:root:Service: UMwareIdentityMgmtService, Action: start INFO:root:Service: UMwareSIS, Action: start INFO:root:Service: UMwareComponentManager, Action: start INFO:root:Service: licenseService, Action: start
INFO:root:Service: unwareServiceControlAgent, Action: start Copy the contents of the c:\ha to the other nodes Please copy the p12 file into the F5 loadbalancer Please copy the lb_rsa.key file and lb.crt file into the Netscaler loadbalancer C:\sso-ha\_

- 23. Set up your load balancer to balance between the two or more Platform Services Controllers on ports 443, 2012, 2014, 2020, 389, and 636.
  - a. An SSL certificate (generated earlier and stored in c:\ha) is required for port 443 only.
  - b. For configuration steps for the F5 BIG-IP, see the appendix in this document.
- 24. Create a forward and reverse DNS entry for the VIP created to load balance the Platform Services Controller traffic.
- 25. Log in to the second Platform Services Controller.

- 26. Copy the sso-ha and ha folder from the first Platform Services Controller into the c: drive.
- 27. Copy C:\ProgramData\VMware\vCenterServer\cfg\sso\keys from the first Platform Services Controller to c:\ha\keys.
- 28. Open a command prompt.
- 29. Add Python to your path by typing:

PATH=%PATH%;%VMWARE PYTHON HOME%



- 30. Change directories to c:\sso-ha.
- 31. Run:

python gen-lb-cert.py --secondary-node --lb-fqdn=loadbalancerFQDN --lb-certfolder=C:\ha --sso-serversign-folder=c:\ha\keys\

where *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing the Platform Services Controllers.



32. Repeat steps 26–32 for any additional Platform Services Controllers.

33. On one Platform Services Controller, update the endpoint URL by running:

python lstoolHA.py --hostname=FQDNofLocalMachine --lb-fqdn=loadbalancerFQDN --lb-certfolder=C:\ha --user=Administrator@SSODomain --password="password"

where *FQDNofLocalMachine* is the FQDN of the machine where the script is being run, *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load balancing the Platform Services Controllers, *SSODomain* is the vCenter Single Sign-On domain (by default vsphere.local), and *password* is the password for the vCenter Single Sign-On administrator. The password parameter is optional; if not specified, you will be prompted for it.



34. Follow the steps to install a new external vCenter Server. When asked for the Platform Services Controller, enter the FQDN of the load balancer's VIP.

# vCenter Server Appliance Deployment

- 1. Complete steps 1-14 in the "Fresh External Platform Services Controller Deployment" section.
- 2. Click Install to start the installation for the second Platform Services Controller.



- 3. Accept the license agreement and click Next.
- 4. Enter a target host and a User name and Password on the host with root access.

5	VMware vCenter Server Appliance	e Deployment			
~	1 End User License Agreement 2 Connect to target server	Connect to target server Specify the ESXi host on which to deploy the vCenter Server Appliance.			
	3 Set up virtual machine	FQDN or IP Address:	w3-tm-hp380-010.vmware.local		
	4 Select deployment type			-	
	5 Set up Single Sign-on	User name:	root	0	
	6 Single Sign-on Site	Password:		1	
	7 Select appliance size	Fassword.	••••••	]	
	8 Select datastore	A Before proceeding:			
	9 Configure database	Make sure the FOVi heat i	<ul> <li>Make sure the ESXi host is not in lock down mode or maintenance mode.</li> <li>When deploying to a vSphere Distributed Switch (VDS), the appliance must be deployed to an ephemeral portgroup. After deployment, it can be moved to a static or dynamic portgroup.</li> </ul>		
	10 Network Settings				
	11 Ready to complete				
_					
			Back	Next Finish Cancel	

- 5. Click **Yes** to accept the host's certificate.
- 6. Enter an **Appliance name** and the root **password** you want to assign. Click **Next**.

VMware vCenter Server Applianc	e Deployment			
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Set up virtual machine Specify virtual machine setting	s for the vCenter Server Appliance	to be deployed.	
<ul><li>3 Set up virtual machine</li><li>4 Select deployment type</li></ul>	Appliance name:	psc03.vmware.local	0	
5 Set up Single Sign-on 6 Single Sign-on Site	OS user name:	root		
7 Select appliance size	OS password:	•••••	0	
8 Select datastore 9 Configure database	Confirm OS password:	••••••		
10 Network Settings 11 Ready to complete				
		Back	Next Fi	nish Cancel

- Mware vCenter Server Appliance Deployment Select deployment type Select the services to deploy onto this appliance. 1 End User License Agreement ✓ 2 Connect to target server vCenter Server 6.0 requires a Platform Services Controller, which contains shared services such as Single Sign-On, Licensing, and Certificate Management. An embedded Platform Services Controller is deployed on the same Appliance VM as vCenter Server. An external Platform Services Controller is deployed in a separate Appliance VM. For smaller installations, consider vCenter Server with an embedded Platform Services Controller. For larger installations with multiple vCenter Servers, consider one or more external Platform Services Controllers. Refer to the Center Server dependentian formation. ✓ 3 Set up virtual machine 4 Select deployment type 5 Set up Single Sign-on 6 Single Sign-on Site vCenter Server documentation for more information. 7 Select appliance size Note: Once you install vCenter Server, you can only change from an embedded to an external Platform Services 8 Select datastore Controller with a fresh install. 9 Network Settings Embedded Platform Services Controller VM or Host 10 Ready to complete Platform Services Controller Install vCenter Server with an Embedded Platform Services Controller vCenter Server External Platform Services Controller VM or Host Platform Services Controller Install Platform Services Controller O Install vCenter Server (Requires External Platform Services Controller) VM or Host VM or Host vCenter Server vCenter Server Back Next Finish Cancel
- 7. Under External Platform Services Controller, select Install Platform Services Controller. Click Next.

8. Select Join an SSO domain and enter the FQDN and password. Click Next.

VMware vCenter Server Appliance Deployment				
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Set up Single Sign-on (SSO) Create or join a SSO domain. An SSO configuration cannot be changed after deployment.			
3 Set up virtual machine	Create a new SSO domain			
4 Select deployment type	<ul> <li>Join an SSO domain in an existing vCenter 6.0 platform services controller</li> </ul>			
5 Set up Single Sign-on				
6 Single Sign-on Site	Platform Services Controller FODN or IP address:	psc01.vmware.local		
7 Select appliance size	FODIN OF IF address.			
8 Select datastore	vCenter SSO User name:	administrator		
9 Network Settings				
10 Ready to complete	vCenter SSO Password:			
	Port:	443		
	Before proceeding make su name will create a new site.	re to type the correct site name that you want to join. Typing in the wrong s	ite	
		Back Next Finish Car	ncel	

9. Select Join an existing site. Choose the site and click Next.

		S VMware vCenter Server Appliance Deployment				
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	Single Sign-on Site Create or join a vCenter Single Sig	n-on site. Palo-Alto		]		
			Back	Vext	ish Cancel	

10. Click **Next**. There is only one appliance size for the Platform Services Controller.

VMware vCenter Server Applianc	e Deployment	
<ul> <li>✓ 1 End User License Agreement</li> <li>✓ 2 Connect to target server</li> </ul>	Select appliance size Specify a deployment si	ze for the new appliance
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> </ul>	Appliance size:	Platform Services Controller
<ul> <li>✓ 5 Set up Single Sign-on</li> <li>6 Select appliance size</li> </ul>		
7 Select datastore	Description	
8 Network Settings	This will deploy an ext GB of disk space.	ternal Platform Services Controller VM with 2 vCPU and 2GB of memory and requires 30
9 Ready to complete		
		Back Next Finish Cancel

<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Select datastore Select the storage location for this deployment					
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> </ul>	The following data and all of the virtua		ssible. Select the d	estination datastore	for the virtual machi	ne configuration files
6 Select appliance size 7 Select datastore	Name	Туре	Capacity	Free	Provisioned	Thin Provisioning
8 Configure database	RDM Mappings	VMFS	4.75 GB	2.25 GB	2.5 GB	true
9 Network Settings	NFSMGMT01	NFS	500 GB	331 GB	169 GB	true
10 Ready to complete	NFSMGMT02	NFS	500 GB	306.96 GB	238.13 GB	true

### 11. Select a datastore to deploy the appliance on and click **Next**.

### 12. Enter Network Settings and click Next.

NOTE: The FQDN and IP addresses entered here must be resolvable by the DNS server specified or the deployment will fail.

VMware vCenter Server Applianc	e Deployment			
<ul> <li>1 End User License Agreement</li> <li>2 Connect to target server</li> </ul>	Choose a network:	VM Network •	0	•
<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> </ul>	IP address family:	IPv4 ▼	]	
<ul> <li>✓ 5 Set up Single Sign-on</li> <li>✓ 6 Single Sign-on Site</li> <li>✓ 7 Select appliance size</li> </ul>	Network type:	static •	]	
8 Select datastore     9 Network Settings	Network address:	10.155.168.74	]	
10 Ready to complete	System name [FQDN or IP address]:	psc03.vmware.local	0	
	Subnet mask:	255.255.255.0	]	
	Network gateway:	10.155.168.253	]	
	Network DNS Servers separated by comas	10.155.168.60	]	
	Configure time sync:	<ul> <li>Synchronize appliance time with ESX</li> <li>Use NTP servers (Separated by com 10.17.0.1,10.17.0.2</li> </ul>		•
		Back	Next Finish Cancel	

13. Review and click **Finish**.

<ul> <li>3 Set up virtual machine</li> <li>4 Select deployment type</li> <li>5 Set up Single Sign-on</li> <li>6 Single Sign-on Site</li> <li>7 Select appliance size</li> <li>8 Select datastore</li> <li>9 Network Settings</li> <li>10 Ready to complete</li> </ul>	ESXi server info: Name: Installation type: Deployment type: Datastore: Disk mode: Network mapping: IP allocation: Time synchronization:	w3-tm-hp380-011.vmware.local psc03.vmware.local Install Platform Services Controller NFSMGMT01 thin Network 1 to VM Network IPv4.static	
	Properties:	10.17.0.1,10.17.0.2 SSH enabled = true SSO User name = administrator Single Sign-On instance (P = psc01,vmware.local SSO Site name = Palo-Aito Network 11P address = 10.155.168.74 HostName = psc03,vmware.local Network 11P address = 10.155.25 255.0 Default gateway = 10.155.168.253 DNS = 10.155.168.60	

14. Connect to the first Platform Services Controller via SSH.

15. Type:

shell.set --enabled True

16. Type:

shell

- 17. Download the vCenter Single Sign-On high availability configuration scripts from the vCenter Server product download page.
- 18. Extract the vCenter Single Sign-On high availability scripts to /sso-ha.
- 19. Change directories to /sso-ha.

20. Run:

python gen-lb-cert.py --primary-node --lb-fqdn=loadbalancerFQDN

where *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing the Platform Services Controllers.



- 21. Set up your load balancer to balance between the two or more Platform Services Controllers on ports 443, 2012, 2014, 2020, 389, and 636.
  - a. An SSL certificate (generated earlier) is required for port 443 only.
  - b. For configuration steps for the F5 BIG-IP, see the appendix in this document.
- 22. Create a forward and reverse DNS entry for the VIP created to load-balance the Platform Services Controller traffic.
- 23. Connect to the second Platform Services Controller via SSH.
- 24. Copy the /sso-ha and /ha folder from the first Platform Services Controller.
- 25. Copy /etc/vmware-sso/keys/ from the first Platform Services Controller to /ha/keys.
- 26. Change directories to /sso-ha.
- 27. Run:

python gen-lb-cert.py --secondary-node --lb-fqdn=loadbalancerFQDN --lb-cert-folder=/ha --sso-serversign-folder=/ha/keys

where *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing the Platform Services Controllers.

psc03:/sso-ha ₡ python gen-lb-cert.pysecondary-nodelb-fqdn=psc011.vmware.locallb-cert-folder=	/hasso-serversign-folder=/	ha/keys
Initialization complete Please make sure that you have copied the contents from HA folder in Node 1 into		
the HA folder in the local node		
Please Make that you have copied the ssoserverSign.* files and ssoServerRoot.crt file from node 1		
Press enter to continue.		
Modifying hostname.txt		
modifying server.xml		
Executing StopService vmware-stsd		
Executing StopService vmvare-sts-idmd		
Executing STSInstaller		
Executing StopServiceall		
INFO:root:Service: vmware-syslog-health, Action: stop		
INFO:root:Service: applmgmt, Action: stop INFO:root:Service: ymware-cis-license, Action: stop		
INFU:root:Service: vmware-cis-license, Action: stop INF0:root:Service: vmware-syslog, Action: stop		Theodorae, Sociality Adda
INFO:root/Service: wwware-sca, Action: stop		
INFO:root/Service: wwware-cm, Action: stop		
INFO:root:Service: vmware-rhttpproxy. Action: stop		
INFOIROOLSERVICE: VMWare-stsd, Action: stop		
INFO:root:Service: vmvare-sts-idmd, Action: stop		
INFO:root:Service: vmcad, Action: stop		
INFO:root:Service: vmdird, Action: stop		
INFO:root:Service: vmafdd, Action: stop		
Executing StartServiceall		
INFO:root:Service: vmafdd, Action: start		
INFO:root:Service: vmware-rhttpproxy, Action: start		
INFO:root:Service: vmdird, Action: start INFO:root:Service: vmcad, Action: start		
INFO:rootiservice: vmwad, Action: start INFO:rootiservice: vmware-sts-idmd, Action: start		
INFO: root/Service: vmvare-std. Action: start		
INFO:root:Service: vmvare-cm, Action: start		
INF0:root:Service: vmware-cis-license, Action: start		
INFO:root:Service: vmware-sca, Action: start		
INFO:root:Service: applmgmt, Action: start		
INFO:root:Service: vmvare-syslog, Action: start		
INFO:root:Service: vmware-syslog-health, Action: start		
psc83:/sso-ha 🖸		

28. Repeat steps 24–28 for any additional Platform Services Controllers.

29. On one Platform Services Controller, update the endpoint URL by running:

python lstoolHA.py --hostname=FQDNofLocalMachine --lb-fqdn=loadbalancerFQDN --lb-certfolder=/ha --user=Administrator@SSODomain --password=password

where *FQDNofLocalMachine* is the FQDN of the machine where the script is being run, *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing the Platform Services Controllers, *SSODomain* is the vCenter Single Sign-On domain (by default, vsphere.local), and *password* is the password for the vCenter Single Sign-On administrator. The password parameter is optional; if not specified, you will be prompted for it.

2015-01-13 18:00:18,352 INFO org.springframework.beans.factory.xml.XmlBeanDefinitionReader - Loading XML bean definitions from class path resource [com/vmware/vim/bindims/bookup/context.xml]
<pre>ar/ornoring/lookup/context.xmlj 2015-01-13 18:00:138.363 INPO _com.vmware.vim.vmoni.core.types.impl.YmodlContextImplSNonYmlidatingClassPathXmlApplicationContext - Closing com.vmware.vim.vmoni.cor</pre>
2013911310.00010.303 INTO COMENTMOTE VIEWINGTE VIEWINGT, COTES, CONSTRUCTION CONTEXCEPTION OF ACTIVATION CONTEXCEPTION CONTEXCEP
e. spes.hmpt.whouldontextimptshowhaitoathgtiassrathAlkappirationcontextmercalzed istartup date [ide Jan 13 footile uit zdis]; root of context hierarchy 2015-81-13 18:00:129,200 WAN. Com.vware.via.whomi.client.http://bigurationCompilerBaseSConnectionMonitorThreadBase - Shutting down the connection monit
or. 2015-81-13 18:08:20.055 INFO com.vmware.vim.vmomi.core.types.impl.YmodIContextimpl\$NonValidatingClassPath%mlApplicationContext - Refreshing com.vmware.vim.vmomi.
2015-01-13 10:00:20.055 INFU COM.VMWARE.VIM.VMOMI.COTE.TOPES.IMPL.MMODILONTEXTIMPLIANONALIGGTINGLIASSFORMMLAPPLICGTIONLONTEXT - RETERENTING COM.VMWARE.VIM.VMOMI. Core.tvpes.impl.WoodlContextimpliantingClassForthXikDollicationContextifddi3cab: startud date [Tue Jan 13 18:08:20 UTC 2015]: root of context interachy
core types mpi, who dion text mpi show all dating in assimily and intert type date (ne Jan 13 18:00:24 UL 2015); root of context merarchy 2015-01:13 18:00:29, 112 LNFO org, spring ramework, beans, factory, xani, Xan BeanDerinition Reader - Loading XML bean definitions for class path resource (com/wware/vi
n/binding/vmodl/context_v2.xml]
2015-01-13 18:00:20.427 INFO com.vmware.vim.vmomi.core.types.impl.YmodlContextImplSNonYalidatingClassPathXmlApplicationContext - Closing com.vmware.vim.vmomi.core.types.impl.YmodlContextImplSNonYalidatingClassPathXmlApplicationContextImplSNonYalidatingClassPathXmlApplicatingContextImplSNonYalidatingClassPathXmlApplicatingContextImplSNonYalidatingClassPathXmlApplicatingContextImplSNonYalidatingClassPathXmlApplicatingContextImplSNonYalidatingClassPathXmlApplicatingContextImplSNonYalidatingContextImplSNonYalidatingContextImplSNonYa
e.types.impl.YmodlContextImpl\$NonValidatingClassPathXmlApplicationContext@fdl3cab: startup date [Tue Jan 13 18:00:20 UTC 2015]; root of context hierarchy
2015-01-13 18:00:20,431 INFO com.vmware.vim.vmomi.core.types.impl.vmodfContextingIngINnovalidatingClassPathKalApplicationContext - Refreshing com.vmware.vim.vmomi. core.types.impl.VmodfContextimpINnovalidatingClassPathKalApplicationContextMaRbbalCS: startud date [Tue Jan 13 18:00:20 UTC 2015]; root of context theirarchy
core types mpi, woolcontextimpismonvalipatingLiassratnakikppicationcontextumedobalcs: startup date [iue jan is is/us/20 UL 2015]; root of context merarchy 2/215-011318/00/20,4031NFO or spath resource [com/wwwark/vi 2015-011318/00/20,4031NFO or spath resource [com/wwwark/vi
2013-01-15 10:00:20(45) HPU OF2;5pringtramework.beans.factory.xml.AmlbeanDefinitionReager - Loading Aml bean definitions from class path resource [com/vmware/v1 A/binding/wadd/com/ext v2, Am]
n/oincing/whoolycontext_v2.xmlj 2015-01:1318-08129.402 INFO com.vmvare.vim.vmomi.core.types.impl.YmodlContextImpl\$NonYalidatingClassPathXmlApplicationContext - Closing com.vmvare.vim.vmomi.cor
2013-01-13 10:00:20,402 HPU COM.vMware.vim.vimoni.core.types.impt.imponteringtishonvaringtingtishonvaringtingtishonvaringtingtishonvaringtingtishonvaringtingtishonvaringtingtishonvaringtingtishonvaringt
e. types.hmpl.whouldontextimpliknowalroatingLiassmathAlppircationLontextweebobalcs: startup date jue Jan 15 16:06:20 UL 2015; Foot of context interarchy 2015-01-13 18:08:24, 466 INFO com.ynware.vim.ynwair.com.text.types.hmpl.WaddContextLingISNowAlfdatingClassFahtKalkppilicationContext - Refreshing com.ynware.vim.ymware.vim.ymomi.
2013-01-15 10:00:20,400 HPU COM.VMWARE.VIM.VHOMI.CUTE.VIPES.IMPL.HMOOILCONTEXCIMPLIANOMALIUGLISSAGAKAMLAPPLICATIONCONTEXt - REFERENTING COM.VMWARE.VIM.VHOMI. Core.Vypes.impl.VmoollContextimeJNonValidatingClassFathXalApplicationContextWZaca64df; startuu date [Tue Jan 13 18:08:20 UTC 2015]; root of convente interview.
core types.mpiwoolcontextimpishonvaltaatingilassratnaikappitationcontextugadabuori startup date jiue jan is loibeizo uli 2013); root or context meraratory 2015-01-1318:00:20,408 lNFO org.springframevork.beans.factory.wul.XalBeanDefinitionReader - Loading XML bean definitions frame class path resource (com/wwware/vi
2013-01-12 10:00/20,400 LHPU Org.springinamevork.beans.factory.xmt.xmtbeanberinitionneader - Loading xmt bean derinitions from class path resource [com/vmware/vi m/binding/lookup/context.xmt]
m/ornorng/lookup/context.xmlj 2915-01-13 18:00:205.595 INFO _com.vmware.vim.vmomi.core.types.impl.YmodlContextImpl\$NonYalidatingClassPathXmlApplicationContext - Closing_com.vmware.vim.vmomi.cor
2013-01-13 10:00:20,350 HPU COM.VMWARE.VIM.VMOMI.COPE.(Spes.Impl.,MMOMICLONEXCIMPLEXCIDUCTOREXCID) COM.VMWARE.VIM.VMOMI.COPE. e. types.impl.WmodIContextImplKNonVaidatingClassPathKmlApplicationContextWarGadedf: startup date [Ture Jan 13 10:00:20 UTC 2015]: root of context hierarchy
2915-01-3 18:08:21.632 INFO con yware ym ywnoi core, types inol, Ymodi Confecting Lasse and Dialog and Confecting Conf
2013-01-13 10:00:21:02 HTV COM, WWWYE, YMM, YMOWT, CUTE, YUPES, HMLL, MULLEN CHARLEN HULLEN COM, AND
2015-01-13 18:00:121 As 10:00 rog, springframevork, basis, factory, xal, XalBeanderini, tork and roka definitions from class path resource [com/wwware/vi
abinding/so/context.xml
2015-01-13 18:00:22.058 INFO com.vmvare.vim.vmomi.core.types.impl.YmodlContextImpl\$NonYalidatingClassPathXmlApplicationContext - Closing com.vmvare.vim.vmomi.cor
etypes is [1, wood context implementation context was context implementation and the function of the start of
2015-01.3 18:00-22.366 IND converse vin sso.adnin.client.vnoni.inpl.ddminflientiml - Client was created successfully
2015-01-13 18:08:22,424 WAR convergences in which client. http://www.client.http://w
or, or,
2015-01-13 18:00:22,424 INFO _com.vmvare.vim.sso.admin.client.vmomi.impl.AbstractClient - Client was disposed successfully
2015-01-13 18:00:22,991 INFO com.vmvare.identity.token.impl.Util - Reading resources from zip file path=[/usr/lib/vmidentity/tools/lib/vstClient.iar]
2013-01-13 18:00:22,000 INFO com.ymware.identity.token.impl.Util - Reading resources from decoded zip file path=[/usr/lib//widentity/tools/lib/wstClient.jar]
2015-01-13 18:00:23,574 IND com, wavere identity, token impl.Util - Reading resources from zip file path=/usr/lib/vaidentity/tools/ib/sailoken.iarl
2015-01-13 18:00:23,575 INFO com, ymware identity, token, impl. Util - Reading resources from decoded zip file path=//usr/lib/ymidentity/tools/lib/smmltoken.imrl
2015-01-13 18:00:22,691 IND com.vmware.identity.token.impl.SamlTokenimpl - SAML token for SubjectNameId [value=Administrator#VSPHERE.LUCAL, format=http://schema
s.xilsoo.org/clains/UPN successfully parsed from Element
2015-01-13 18:00:123,749 INFO com.yware.yum.sso.client.impl.SecurityTokenServiceImpl - Successfully acquired token for user: administrator@vsphere.local
2015-01-13 10:00:24,101 WARN com.vmware.vim.vmomi.client.http.impl.HttpConfigurationCompilerBaseSConnectionMonitorThreadBase - Shutting down the connection monit
or.
psc81://sso-ha ≇

30. Follow the steps to install a new external vCenter Server. When asked for the Platform Services Controller, enter the FQDN of the load balancer VIP.

# Upgrade of vCenter Single Sign-On High Availability

- 1. Back up all vCenter Single Sign-On machines.
- 2. Log in to one of the vCenter Single Sign-On machines in your high availability configuration.
- 3. Add a host file entry that contains the local machine's IP address and the FQDN of the load balancer's VIP.
- 4. Mount the vCenter Server 6.0 ISO image.
- 5. If autorun does not start, execute autorun.exe.
- 6. Select vCenter Server for Windows and click Install.

	VMware® vCenter™ Installer
<b>vm</b> ware vSphere®	
Vilware vCenter Server VCenter Server for Windows Vilware vCenter Desktop Client vSphere Client VSphere Update Manager Server Download Service Vilware vCenter Support Tools vSphere Authentication Proxy	Worker Server for Windows         Support of the Server is a windows application that manages datacenter access control, performance monitoring and configuration, and unifies resources from individual servers to be shared among virtual machines in the entire datacenter.         Tor a list of information you need to install this component, see the installation checklist top/www.wwware.com/         Precupisites:         None
	Explore Media Exit

- 7. Click Next.
- 8. Accept the license agreements.
- 9. Enter the password for the administrator@vsphere.local account and click Next.

<b>₽</b>	VMware vCenter Server 6.0.0	X
vCenter Single Sign-On Crede	entials	
Enter your vCenter Single Sign-On 5.5 a		
vCenter Single Sign-On <u>u</u> ser name:	administrator@vsphere.local	
vCenter Single Sign-On password:	••••••	
	<u>.</u>	
	< Back Next >	Cancel

10. Wait for the **pre-upgrade checks** to complete.

뤊	VMware vCenter Server 6.0.0	x
	Running pre-upgrade checks. This could take a few minutes	

11. Review the ports and click **Next**.

岁 VI	Mware vCenter Server 6.0.0	x
Configure Ports Configure network settings and ports for this deploy	rment.	
Common Ports		
HTTP Port:	80	
HTTP <u>S</u> Port:	443	
Syslog Service Port:	514	
Syslog Service TLS Port:	1514	
Platform Services Controller Ports		
Secure <u>T</u> oken Service Port:	7444	
<ol> <li>Some ports are not configurable. To proceed, r</li> </ol>	nake the following ports available:	
88, 389, 636, 2012, 2014, 2020, 7080, 11711,	and 11712	
	< Back Next > Cancel	

12. Choose your installation path or take the defaults. Click Next.

B VMware vCenter Server 6.0.0	x
Destination Directory Select the storage location for this deployment.	
Install Platform Services Controller to: C:\Program Files\VMware\ Change	
Store data for Platform Services Controller in: C:\ProgramData\VMware\ Change	
Export your 5.X data to: C:\ProgramData\VMware\vCenterServer\export\ Note: During the upgrade, 5.x data will be stored in this directory, and then migrated to the 6.0.0 deployment. Data exported to this directory will not be cleaned up by the installer. Remove this directory and its contents after the upgrade completes.	
< Back Next > Cancel	]

13. Check I verify that I have backed up this Single Sign-On machine. Click Upgrade.

븮	VMware vCenter Server 6.0.0	X
Ready to upgrade Confirm the settings below and click Upgrade.		
Deployment type:	Platform Services Controller	
vCenter Single Sign-On replication host:	sso02.vmware.local	
vCenter Single Sign-On user name:	administrator	
vCenter Single Sign-On domain:	vsphere.local	
vCenter Single Sign-On site name:	Palo Alto	
Installation directory:	C:\Program Files\VMware\	
Data directory:	C:\ProgramData\VMware\	
Upgrade export directory:	C:\ProgramData\VMware\vCenterServer\export\	
$\mathbf{V}_{\mathbf{X}}^{\mathbf{I}}$ verify that I have backed up this vCenter Sin	gle Sign-On machine.	
	< Back Upgrade Ca	ncel

- 14. Click Finish.
- 15. Remove the host file entry that was added in step 3.
- 16. Repeat steps 2–15 on the remainder of the vCenter Single Sign-On machines.
- 17. Download the vCenter Single Sign-On high availability configuration scripts from the vCenter Server product download page.
- 18. Extract the vCenter Single Sign-On high availability scripts to c:\sso-ha.
- 19. Create a folder named HA in the root of c:\.
- 20. Copy rui.crt, rui.p12 from c:\certs\sso to c:\ha and Root64.cer from c:\certs to c:\ha.

- 21. Rename rui.crt to lb.crt, rui.p12 to lb.p12, and Root64.cer to root.cer.
- 22. Open a command prompt.
- 23. Add Python to your path by typing:

PATH=%PATH%;%VMWARE\_PYTHON\_HOME%



24. Change directories to c:\sso-ha.

25. Run:

python gen-lb-cert.py --upgrade --lb-fqdn=loadbalancerFQDN --root-cert=c:\ha\root.cer

where *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing vCenter Single Sign-On.

<b>61</b>	Administrator: C:\Windows\system32\cmd.exe		x
Microsoft Windows [Version 6.3.9600] (c) 2013 Microsoft Corporation. All right	reserved.		^
C:\Users\administrator.UMWARE> C:\Users\administrator.UMWARE>PATH=%PATH;	;"c:\Program Files\UMware\vCenter Server\python"		=
C:\Users\administrator.UMWARE>cd \sso-ha			
C:\sss-ha>python gen-lb-cert.pyupgrad Initialization complete Initialization complete modifying hostname.txt modifying server.xnl Execting dir-cli command Enter Passuond: Executing StopServiceall INFO:root:Service: UnwareService.faction INFO:root:Service: UnwareService.fation INFO:root:Service: UnwareService.fation INFO:root:Service: UnwareService.fit INFO:root:Service: UnwareSit, Action: at INFO:root:Service: UnwareService, Action: at INFO:root:Service: UnwareService: Action: Action: at INFO:root:Service: UnwareService: Action: at INFO:root:Service: UnwareService: Action: at INFO:root:Service: UnwareService: Action: at INFO:root:Service: UnwareService: Action: at INFO	<pre>pent, Action: stop , Action: stop pop beco, Action: stop ideo, Action: stop , Action: stop ion: stop ion: stop ion: start ion: start ice, Action: start ice, Action: start ice, Action: start ice, Action: start is start</pre>		
C:\sso-ha}_			

26. When prompted, enter the **password** for the administrator@vsphere.local account.

27. Repeat steps 17-26 on the remaining Platform Services Controllers.

28. On one Platform Services Controller in the site, run:

python lstoolHA.py --hostname=FQDNofLocalMachine --lb-fqdn=loadbalancerFQDN --lb-certfolder=C:\ha --user=Administrator@vsphere.local --password="password"

where *FQDNofLocalMachine* is the FQDN of the Platform Services Controller the command is being run on, *loadbalancerFQDN* is the FQDN of the load balancer's VIP used for load-balancing vCenter Single Sign-On, and *password* is the password for the administrator@vsphere.local account. The password parameter is optional; if not specified, you will be prompted for it.

<b>65.</b>	Administrator: C:\Wind	dows\system32\cmd.exe	_ <b>_</b> X
2015-01-09 14:15:20, here to a structure to the structu	34 INFO org.springframmuok.bcomsfacts suurse foorwonnerovin-bindinggrund Loos 12 INFO con unware.vin.unoni.core.type 28 INFO con unware.vin.unoni.core.type 28 INFO con unware.vin.unoni.core.type 20 INFO con unware.vin.unoni.core.type 20 INFO con unware.vin.unoni.core.type 24 INFO org.springframework.bcamsfact source (con-unware.vin.unoni.core.type 27 INFO con unware.vin.unoni.core.type 24 INFO org.springframework.bcamsfact 24 INFO org.springframework.bcamsfact 25 INFO con unware.vin.unoni.core.type 27 INFO con unware.vin.unoni.core.type 28 INFO con unware.vin.unoni.core.type 29 INFO con unware.vin.unoni.core.type 29 INFO con unware.vin.unoni.core.type 20 INFO con unware.vin.sso.admin.clien 27 UNFO con unware.vin.sso.admin.clien 28 INFO con unware.vin.sso.admin.clien 28 INFO con unware.vin.sso.admin.clien 28 INFO con unware.identity.tyben.impl 20 INFO con unware.identity.tyben.impl 20 INFO con unware.identity.tyben.impl 20 INFO con unware.identity.tyben.impl 20 INFO con unware.identity.tyben.impl 21 INFO con unware.identity.tyben.impl	pry and MalBeanDefinitionReader - Loading XM list, v. and MalBeanDefinitionReader - Loading XM list, v. and MalBeanDefinitionReader - Loading XM antext hierarchy	thXnlApplication tionContextE42bf thXnlApplication icationContextE42bf thXnlApplication tionContextE5512 thXnlApplication tionContextE5512 thXnlApplication tionContextE562 L bean definitio thXnlApplication tionContextE53e9 eated successful tionMonitorThrea posed successful tionMonitorThrea tionMonitorThrea posed successful tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tionMonitorThrea tion
			~

- 29. Log in to the load balancer. In this example, we are using an F5 BIG-IP.
- 30. Create a pool for ports 443, 2012, 2014, 2020, 389, and 636. Set health monitors to use **TCP** and **Load Balancing Method** to **Round Robin**.

When complete, the **Pool List** should look like this:

Local	Traffic »	Pools : Pool List				
<del>.</del> -	Pool List	Statistics				
			_			
1			Search			Create
	Status	▲ Name		Application	Members	Partition / Path
	0	SSO			2	Common
	0	sso.vmware.local-2012			2	Common
	0	sso.vmware.local-2014			2	Common
	0	sso.vmware.local-2020			2	Common
	0	sso.vmware.local-389			2	Common
	0	sso.vmware.local-443			2	Common
	0	sso.vmware.local-636			2	Common
Delete	»					
31. Create a virtual server using the same IP address as the original vCenter Single Sign-On high availability virtual server for each of the new pools. Use TCP for each virtual server. Set Source Address Translation to Auto Map and Default Persistence Profile to Source Address. Assign the client and server SSL profiles created when setting up vCenter Single Sign-On high availability for vCenter Server 5.5 to port 443 only. No other port requires a client or server SSL profile.

When complete, the Virtual Server List should look like this:

Loca	al Traffic »	Virtual Servers : Virtual Ser	ver List						
÷.	, Virtual S	erver List Virtual Address Lis	st Statistics	-					
*			Search						Create
	▼ Status	▲ Name		Application	Destination	Service Port	Type	Resources	Partition / Path
	0	sso.vmware.local			10.155.168.100	7444	Standard	Edit	Common
	0	sso.vmware.local-2012			10.155.168.100	2012	Standard	Edit	Common
	0	sso.vmware.local-2014			10.155.168.100	2014	Standard	Edit	Common
	0	sso.vmware.local-2020			10.155.168.100	2020	Standard	Edit	Common
	0	sso.vmware.local-389			10.155.168.100	389	Standard	Edit	Common
	0	sso.vmware.local-443			10.155.168.100	443 (HTTPS)	Standard	Edit	Common
	0	sso.vmware.local-636			10.155.168.100	636	Standard	Edit	Common
Enal	ble Disab	Delete							

32. Edit the source\_addr Persistence Policy and check the Match Across Services box.

BIG-IP® - bigip1.vmware.	×	
← → C 🔒 https://10.155.170.1	50/xui/	☆ E
	an 9, 2015 User: admin 29 PM (PST) Role: Administrato	r Partition: Common 0
ONLINE (ACTIVE) Standalone		
Main Help About	Local Traffic » Profiles : Pers	sistence » source_addr
Ma Statistics	🔅 🗸 Properties	
IApps	General Properties	
S DNS	Name	source_addr
Local Traffic	Partition / Path	Common
Local Traffic	Persistence Type	Source Address Affinity
Network Map	Configuration	
Virtual Servers >>	Match Across Services	C Enabled
Policies >	Match Across Virtual Servers	ੈ
Profiles >	Match Across Pools	0
iRules >	Hash Algorithm	(Default ¢)
Pools >	Timeout	Specify ¢ 180 seconds
Nodes >	Mask	None ¢
Monitors (+)	Map Proxies	
Traffic Class 📀	Override Connection Limit	
Address Translation		0
Acceleration	Update	
Device Management		

33. View the Network Map and verify that all services are up (green).

For full configuration instructions of the F5 BIG-IP load balancer, see the appendix.



- 34. Log in to the vCenter Server you want to upgrade.
- 35. Mount the vCenter Server 6.0 ISO image.
- 36. If autorun does not start, execute autorun.exe.
- 37. Select vCenter Server for Windows and click Install.

Ø	VMware® vCenter™ Installer
<b>vm</b> ware vSphere	
VMware vCenter Server vCenter Server for Windows VMware vCenter Desktop Client vSphere Update Manager Server Download Service VMware vCenter Support Tools vSphere Authentication Proxy	Venter Server for Windows         Mware vCenter Server is a windows application that manages datacenter access control, performance monitoring and configuration, and unifies resources from individual servers to be shared among virtual machines in the entire datacenter.         Tor a list of information you need to install this component, see the installation checklist.         th/www.ymware.com/         Prerequisites:         None
	Explore Media Exit

- 38. Click Next.
- 39. Accept the license agreements.
- 40. Enter the **password** for the administrator@vsphere.local account and the **password** for the service account (if applicable). Click **Next**.

<b>過</b>	VMware vCenter Server 6.0.0	x
vCenter Server Credentials Enter your vCenter Server 5.5 administrato	or credentials.	
vCenter Server <u>u</u> ser name: vCenter Server <u>p</u> assword: The installer has detected that the vCenter	administrator@vsphere.local  ••••••• Server service is running under the following service account. Enter the	
credentials for this service account.: Account user n <u>a</u> me:	VMWARE\svcvcenter	
Account pass <u>w</u> ord:	••••••	
	< Back Next > Cancel	

41. Wait for the **pre-upgrade checks** to complete.

谩	VMware vCenter Server 6.0.0	x
Runnin	g pre-upgrade checks. This could take a few minutes	

42. Enter the **password** for the administrator@vsphere.local account. Click **Next**.

岁 VMware vCer	ter Server 6.0.0
vCenter Single Sign-On registration Connect vCenter Server to a vCenter Single Sign-On domain in a	an existing Platform Services Controller.
Platform Services Controller <u>FQDN</u> or IP address: Note: This is the external Platform Services Controller with the v	sso.vmware.local Center Single Sign-On you want to register with.
vCenter Single Sign-On HTTPS port: vCenter Single Sign-On user name:	443
vCenter Single Sign-On password:	administrator
	< Back Next > Cancel

43. Click **OK** to accept the certificate.

	Windows Security X							
Certificate Validation Please confirm that the certificate provided by the remote server matches the expected certificate. Select OK if you approve it, otherwise select Cancel.								
<u></u>	VMWareDirectoryService,d Issuer: CA, CN=sso02, dc=vsphere,dc=local Valid From: 12/18/2014 to 12/15/2024 <u>Click here to view certificate</u> properties							
	OK Cancel							

44. Accept the default ports and click  $\ensuremath{\textit{Next}}.$ 

豈	VMware vCenter Server 6.0.0	x
Configure Ports		
Configure network settings and ports for this	deployment.	
Common Ports		
HTTP Port:	80	
HTTP <u>S</u> Port:	443	
Syslog Service Port:	514	
Syslog Service TLS Port:	1514	
vCenter Server Ports		
Auto Deploy Management Port:	6502	
Auto Deploy Service Port:	6501	
ESXi Dump Collector Port:	6500	
ESXi Heart <u>b</u> eat Port:	902	
vSphere Web Client Port:	9443	
G Some ports are not configurable. To proc	read make the following parts available:	
•	ceeu, maxe uie ronowing ports available.	
2020		
	< Back Next > Cance	1

45. Accept or change the installation paths as necessary. Click  $\ensuremath{\textit{Next}}.$ 

岁 VMware vCenter Server 6.0	).0	x
Destination Directory		
Select the storage location for this deployment.		
Install vCenter Server with an external Platform Services Controller to:		
C:\Program Files\VMware\ Chang	je	
Store data for vCenter Server with an external Platform Services Controller in:		
C:\ProgramData\VMware\ Chang	Ie	
	,	
Export your 5.X data to:		
C:\ProgramData\VMware\vCenterServer\export\ Chang	Je	
Note: During the upgrade, 5.x data will be stored in this directory, and then mig this directory will not be cleaned up by the installer. Remove this directory and i		
	< Back Next > Cancel	]

46. Check the box to verify that you have backed up the vCenter Server and its database. Click Upgrade.

뷩 VM	/ware vCenter Server 6.0.0
Ready to upgrade Confirm the settings below and click Upgrade.	
Deployment type: vCenter Single Sign-On user name: vCenter Single Sign-On domain: Installation directory: Data directory: Upgrade export directory:	vCenter Server with an external Platform Services Controller administrator vsphere.local C:\Program Files\VMware\ C:\ProgramData\VMware\ C:\ProgramData\VMware\vCenterServer\export\
vCenter Server expires, all hosts will be disconn	eb Client within 60 days after the upgrade. When the evaluation period of the

47. When completed, click **Finish**.

븅	VMware vCenter Server 6.0.0					
<b>vm</b> ware <sup>.</sup>	Setup Completed					
	Your vCenter Server 5.5 is upgraded to version 6.0.0.					
and the second	<ol> <li>Post upgrade step(s):</li> </ol>					
	<ol> <li>vCenter Server is upgraded and is now in evaluation mode. Activate vCenter Server by using the vSphere Web Client within 60 days. When the evaluation period of this vCenter Server expires, all hosts will be disconnected from this vCenter Server.</li> <li>Data exported to C:\ProgramData\VMware\vCenterServer\export\ directory is</li> </ol>					
	not cleaned up by the installer. Verify that the upgraded vCenter Server works correctly and remove the directory and its contents.					
	<ol> <li>Use the vSphere Web Client to manage vCenter Server. Log in with the vCenter Single Sign-On administrator account administrator@vsphere.local.</li> </ol>					
VMware°						
vCenter Server <sup>®</sup> 6.0	Launch vSphere Web Client					
	< Back Finish Cancel					

# **Postdeployment Steps**

### **Configure Identity Sources**

- 1. Open your Web browser and navigate to https://vcenter:9443, where *vcenter* is the FQDN of the vCenter Server.
- 2. Log in with **User name** administrator@vsphere.local and the **Password** used during installation.



- • VSphere Web Client × . ☆ = vmware<sup>®</sup> vSphere Web Client \_\_\_\_\_\_\_\_\_ € U | Administrator@VSPHERE.LOCAL - | Help - | Q Sea Navigator I 🕅 Home 🔯 Alarms 🛛 🐺 🗙 All (1) New (1) Acknowledg... Home ሰ Home A vAPI Endpoint (vcenter05.vmw... VMware vAPI Endpoint Service... Inventories by vCenter Inventory Lists 6 Q 6 Hosts and Clusters > 🕑 VMs and Templates > vCenter Inventory Lists Hosts and Clusters VMs and Templates Storage Networking Storage > Q Networking Policies and Profiles 📝 Work In Progress > O' Ŧ VCloud Air Services VRealize Orchestrator Content Libraries vCloud Air Services vRealize Orchestrate > Administration > Meitering h How-to Videos 💼 Tasks 🗊 Recent Tasks Į× Start Time Targe Status My Tasks + Tasks Filter + More Tas
- 3. Click Administration in the left-hand Navigator pane.

4. Click Configuration under vCenter Single Sign-On.

nware <sup>,</sup> vSphere Wel	b Cli	ent <del>n</del> ≣			ر	)   Administrat	tor@VSPH	ERE.LOCAL -	Help ·	I Q Sea	rch
Navigator	Ŧ	Roles								🖸 Alarms	Ŧ
Home 🕨 🕅	)	Roles provider: All 6.0 v	Center Servers	•	0					All (1) New	(1) Acknowledg
dministration Access Control	•	Roles								vAPI Endpoint (vcenter05.vm     VMware vAPI Endpoint Service	
Roles		+ 🕮 / 🗙			Usage Pr	ivileges					
Global Permissions		Administrator		•	Defined in	User/Group	Propagal	le			
Single Sign-On		Read-only									
Users and Groups		No access									
Configuration	_	Resource pool adminis								📝 Work In F	rogress
Licensing		Virtual machine user (s	ample)							WORK III P	Togress
Licenses		Tagging Admin									
Reports		VMware Consolidated									
Solutions		Datastore consumer (s									
Client Plug-Ins	- 11	Network administrator									
vCenter Server Extensi	•	Content library adminis	trator (sample)	*					_		
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sk Name		Target	Status			Initiator		Queued For	Start	Time	Completion Time

5. Click Identity Sources.

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vmware <sup>®</sup> vSphere Web Cli	ent <del>n</del> t≘		0	Administrator@VSPH	ERE.LOCAL -	Help ·	Q Search	۱ ۱	-
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Home E	Policies Identity Scur	ces Certi	ficates SAML Service P	roviders			All (1) New (1		- 1
Administration	Password Policy Lock	out Policy	Token Policy			*		nt (vcenter05.vmw. I Endpoint Service.	
Roles							VMware VAP	Endpoint Service.	
Global Permissions	A set of rules and res	trictions on	the format and expiration	of vCenter Single Sign-O	n user passwords	HL			
→ Single Sign-On	Password Policy				Edit				
Users and Groups	Description								
Configuration	Maximum lifetime	Pa	ssword must be changed	every 90 days					
✓ Licensing	Restrict reuse	Us	ers cannot reuse any prev	ious 5 passwords			🧭 Work In Pro	gress	Ŧ
Licenses	Maximum length	20	characters						
Reports	Minimum length	8 c	haracters						
✓ Solutions	Character requirem		least 2 alphabetic characte	ers					
Client Plug-Ins vCenter Server Extensi			least 1 special characters least 1 uppercase charact	ers		Ŧ			н
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6. Click the green plus icon to Add Identity Source.

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Navigator	SSO Configuratio	n for vcenter05.vmv	vare.local			🖸 Alarms	¥
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dministration	<b>+</b>			Q Fil	ter 🗸	🛆 vAPI Endpoin	t (vcenter05.vmw.
Access Control	Name	CURL	Туре	Domain	Alias		Endpoint Service
Roles	Add Identity S	ource	-	vsphere.local	-		
Global Permissions	-	-	Local OS	VCENTER05 (def	-		
Single Sign-On							
Users and Groups							
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vCenter Server Extensi							
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sk Name	Target	Status		Initiator	Queued For !	Start Time	Completion Time

7. If using Microsoft Active Directory, select **Active Directory (Integrated Windows Authentication)**. It will autopopulate the root domain in the forest. If using Open LDAP, select and configure it.

1 Add identity source		?
Identity source type:	<ul> <li>Active Directory (Integrated Windows Authentication)</li> <li>Active Directory as an LDAP Server</li> <li>Open LDAP</li> <li>Local OS</li> </ul>	
Identity source settings		
Domain name:	vmware.local	0
<ul> <li>Use machine account</li> <li>Use Service Principal Name (SPN)</li> </ul>		
Service Principal Name (SPN):		0
User Principal Name (UPN):		0
Password:		

8. Highlight the newly added identity source. Click the **Set as Default Domain** icon.

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villware vsphere web Cil	ent <del>n</del> =	V	017	vorninistrator@v	SPREK	E.LOGAL *	пер			_
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Administration	+ / × @				Q Filte	r	•	\Lambda vAPI End	oint (vcenter05.vmw	
✓ Access Control	C.D	Server LIRI	Type	Domain		Alias		VMware v	API Endpoint Service	
Roles		Set as Default Do		vsphere.local		-				
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✓ Single Sign-On	vmware.local	-	Active Directory (I	vmware.local		VMWARE				
Users and Groups										
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9. Click **Yes** in the pop-up.

### License Management

1. Click Licenses in the left-hand Navigator pane.

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← → C	mware.local:9443/vs	sphere-client/?csp#	extensionId%3Dss	o.admin.manage.i	ds		53	=
vmware <sup>®</sup> vSphere Web Cli	ient <b>n</b> ≘		O LA	dministrator@VSPHE	RE.LOCAL -   Hel	p - I Q Search		•
Navigator I	SSO Configurati	on for vcenter05.vmw	are.local			🖸 Alarms	Ψ×	•
( Home ) 🔞	Policies Identity S	Sources Certificates	SAML Service Prov	iders		All (1) New (1)	Acknowledg	
Administration	+ +			Q Fil	ter 🗸	A vAPI Endpoint	(vcenter05.vmw	
→ Access Control         →	Name	Server URL	Туре	Domain	Alias	VMware vAPI	Endpoint Service	
Roles	-	-	-	vsphere.local	-			
Global Permissions	-	-	Local OS	VCENTER05	-			
<ul> <li>Single Sign-On</li> </ul>	vmware.local	-	Active Directory (I	vmware.local (def	VMWARE			
Users and Groups								
Configuration						Work In Prog	-	
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2. Click Licenses.

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vmware <sup>®</sup> vSphere Web Cli	ient तै≡ U   Administrator@VSPHERELOCAL +   Help +   Q Search	
Navigator Hone Administration Access Control Roles Global Permissions Single Sign-On Users and Groups Configuration Licentee Reports Solutions Ciert Plug-Ins vCenter Server Extensions Deployment System Configuration	Licenses         License provide:       All 6.0 vCenter Server instances       Image: Control Server instances       Image: Contro Server instances       Image: Conto	

3. Click the green plus icon to add your licenses.

🗧 😑 🧧 🖉 vSphere Web Client	x
← → C	mware.local:9443/vsphere-client/?csp#extensionId%3Dvsphere.license.cis.license.licensingTab%3Bcontext%3Dcom.vmwa 🖒
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Home     Main Instration     Access Control	License provider: All 6.0 vCenter Server instances  Go to My VMware Getting Started Licenses Products Assets
Roles	📩 🛍 Show: All 🔻 Q Filter 👻 🔮
Cichal Permissions Single Sign-On Users and Groups Configuration Licensing Licensing Configuration Solutions Cient Plug-Ins vCenter Server Extensions Deployment System Configuration	Create New Licenses Kay Product Usage ( Create New Licenses This list is empty.
(0) Recent Tasks	

- 4. Enter your license keys, one per line, and click Next.
- 5. Give each license a descriptive name and click **Next**.
- 6. Click Finish.
- 7. Click Assets.

<b>n</b> ware <sup>®</sup> vSphere Web Cl	ient <b>≜</b> ≣	017	Administrator@VSPHERE.LOCAL +   Help +	Q, Search
Navigator I	Licenses			
Home Solution	License provider: All 6.0 vC Getting Started License			Go to My VMware
Roles	+		Show: All 🔹 🔍	Filter •
Global Permissions	License	License Key	Product	Usage (
Single Sign-On	vSphere 6 Enterpr	the second second second	VMware vSphere 6 Enterprise Plus (CPUs)	0 CPUs
Users and Groups	Center Server 6	the set of the set	VMware vCenter Server 6 Standard (Instances)	0 Instances
Configuration				
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Licenses				
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Client Plug-Ins				
vCenter Server Extensions				
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8. Highlight vCenter Server systems in evaluation mode and click the Assign License icon.

					-
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vmware <sup>®</sup> vSphere Web Client ते≡		U   Administrator@VSPHERE.LOCA	L - I Help - I Q Search		•
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Administration - Access Control Getting Started Licenses F	roducts Assets	-			Work In Progress
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Configuration	1 Instances	Evaluation Mode	Evaluation License	<u>A</u> 3/	(1) Alarms
✓ Licensing					Varn
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Reports					
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- Deployment					
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9. Select the vCenter Server license entered earlier and click **OK**.

#### **Global Permissions**

1. Click **Global Permissions** in the left-hand **Navigator** pane.

nware <sup>®</sup> vSphere Web Clie	ent <b>A</b> ≣		U   Administrator@VSPHERE.LOCAL -   Help	- I Q Search	
Navigator I	Licenses				
Home 🕨 🔊	License provider: All 6.0 vCenter S	erver instances	0	Go t	o My VMware
Administration - Access Control	Getting Started Licenses Pro	ducts Assets			
Roles	vCenter Server systems Hosts	Clusters Solutions			
Global Permissions	🛐 🔝 🔯 All Actions 🗸			Q Filter	•
Users and Groups	Asset	Usage	Product	License	License
Configuration	vcenter05.vmware.local	1 Instances	VMware vCenter Server 6 Standard (Instances)	vCenter Server 6	1/1/17
Licensing					
Licenses					
Reports					
Solutions					
Client Plug-Ins					
vCenter Server Extensions					
Deployment					
System Configuration >					
	4				•
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- 2. Click Manage.
- 3. Click the green plus icon to add a permission.

● ● ● Ø ØvSphere Web Client	×			
← → C	mware.local:9443/vsphere-client/?csp#extension	nld%3Dvsphere.core.inventory.glob	calPermissions.views.manage.permission	≡
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Navigator I	Global Permissions			0
Administration       Administration       Access Control Roles       Global Permissions       Configuration       Licensing Licenses Reports       Solutions Center Plug-Ins vCenter Server Extensions       Verter Server Extensions       System Configuration	Getting Started Manage	Role Administrator Administrator Administrator Administrator Administrator	Q. Filter   Defred In  This object and its children  This object and its children  This object and its children  This object and its children	(0) Work In Progress 😰 (1) Alarms
	M		5 items 🔒 🗸	
2 (2) Recent Tasks				

#### 4. Click Add.

nware <sup>®</sup> vSphere Web (	Client <b>f</b> i≡		U   Administrator@VSPHERE.LOCAL →	нөр •	Q Search	
Navigator	Global Permi Global Permis	ssions sion Root - Add Permission	1	(? ₩		•
dministration	Select the user	rs or groups on the left and th	e role to assign to them on the right.		Q Filter	•
Access Control	Users and 0	Groups	Assigned Role		(Q I MOI	
Roles		roups listed below are	The users or groups obtain the permissions on the selected		ts children	
Global Permissions Single Sign-On	'Global Permis	ole selected on the right on sion Root'.	objects as defined by their assigned role.		ts children	
	User/Group	Role Propag	Administrator		ts children	
Users and Groups Configuration	Color Croop	ropag	<ul> <li>All Privileges</li> </ul>	-	ts children	
Licensing			<ul> <li>Alarms</li> </ul>		ts children	
Licenses			<ul> <li>AutoDeploy</li> </ul>			
Reports			<ul> <li>Certificates</li> </ul>			
Solutions			<ul> <li>Content Library</li> </ul>			
Client Plug-Ins			<ul> <li>Datacenter</li> </ul>			
vCenter Server Extensions			<ul> <li>Datastore</li> </ul>			
Deployment	_		<ul> <li>Datastore cluster</li> </ul>			
System Configuration	>		<ul> <li>Distributed switch</li> </ul>	•		
			Description: All Privileges			
			Propagate to children			
		Add Remove	View Children			

5. Select your Active Directory domain or other identity source you added earlier.

Operation of the second sec		
← → C & https://vcenter05.vmw	re.local:9443/vsphere-client/?csp#extensionId%3Dvsphere.core.inventory.globalPermissions.views.manage.permission 🏠	=
← → C	re.local:9443/vsphere-client/?csp#extensionId%3Dvsphere.core.inventory.globalPermissions.views.manage.permission 🏠	
	Separate multiple names with semicotons Chack names	
	OK Cancel	
2 (2) Recent Tasks		

6. Add your vSphere Administrators group or users. Click **OK**.

Select Users/	Groups		? X
validate your	from the list or type names in the entries against the directory.	Users text box. Click Check names to	
Users and	Groups		
Show Users	First -	Q vsphere	
User/Group	2 🛦	Description/Full name	
👸 vSphere	Admins		
		Ad	ld
Users:			
Groups: VI	mware.local\vSphereAdmins		
	Separate mult	iple names with semicolons Check na	mes
		ОКС	ancel

7. Ensure that the Administrator role is selected and Propagate to children is checked. Click OK.

● ● ØvSphere Web Client ← → C <u>kttps://vcenter05.vr</u>	× mware.local:9443	/vsphere-clie	ent/?csp#	textensionId%3Dvsphere.core.inventory.globalPermi	ssions.	views.manage.permission	⊒ ک
	mware.local:9443 ent n≡ Global Permissio	ons on Root - Add I or groups on the oups ps listed below selected on the n Root'. Role	Permission left and th are	Ŭ   Administrator@VSPHERE.LOCAL -	Help	I Q Search	
System Configuration >	[	Add	Remove	Description: All Privileges ☑ Propegate to children View Children	• Incel	5 itoms 🍙	

8. You can now log out and back in to vSphere Web Client as an **Administrator** you just added.

• • • VSphere Web Client	×						<u>•</u>
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vmware <sup>®</sup> vSphere Web Cl	ient <b>n</b> ≣			신 i mike(	@vmware.local 🕶   H	leip - I Q Search	
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History	Home Inventories					All (0) New	(0) Acknowl
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Image: Second	Content v	rCloud Air Services	vRealize Orchestrator			:: Work In Progra	rss I
Administration     ✓     Tasks     Cog Browser     Ing Events	Monitoring		<b>1</b>	ī,	<b>IR</b>		
	Watch How-to Vi	ent Console deos	vCenter Operations Manager		M Storage Policies	•	
😨 Recent Tasks							Т×
Task Name	Target	Status		Initiator	Queued For	Start Time	Completion Time

## **Certificate Management**

In most cases, certificate replacement in vSphere 6.0 is not necessary. This is because the Platform Services Controller contains the VMware Certificate Authority (VMCA), which issues certificate authority (CA) signed certificates with a validity period of 10 years.

These certificates are issued to solution users—the users created when a solution such as vCenter Server, vCenter Inventory Service, and so on, is registered with vCenter Single Sign-On—and are utilized as certificate endpoints. These users are issued certificates instead of individual services. This enables the services associated with a solution user to utilize the same certificate, substantially reducing the number of certificates required to manage in the environment.

ESXi hosts are also issued certificates from the VMCA when the hosts are added to the vCenter Server inventory or when vCenter Server is upgraded.

When certificates must be changed—such as when making the VMCA a subordinate of an existing enterprise CA or when generating new solution user certificates after the VMCA mode has changed—the certificate manager utility can be used.

	Administrator: C:\Windows\system32\cmd.exe - certificate-manager
C:\Program Files\UMware\vC	enter Server\bin>certificate-manager
	Welcome to the vSphere 6.0 Certificate Manager ***
	Select Operation
1.1	Replace Machine SSL certificate with Custom Certificate
	Replace UMCA Root certificate with Custon Signing Certificate and replace all Certificates
3. 1	Replace Machine SSL certificate with VMCA Certificate
	Regenerate a new UMCA Root Certificate and replace all certificates
	Replace Solution user certificates with Custom Certificate
6. 1	Replace Solution user certificates with VMCA certificates
	Revert last performed operation by re-publishing old certificates
8.1	Reset all Certificates
Note : Use Ctrl-Z and hit ) Option[1 to 8]: _	Enter to exit.

#### Make the VMCA a Subordinate Certificate Authority

- 1. Log in to the Platform Services Controller.
- 2. Using openssl, generate a certificate request.

```
openssl genrsa -out c:\certs\psc001.key 2048
openssl req -new -key c:\certs\psc001.key -out c:\certs\psc001.csr
```

- a. Answer questions to build the request.
- b. Submit the request to a CA. Use the subordinate CA template for the request.

Microsoft Active	Directory Certificate Services vmware-DC01-CA	
Submit a Certi	ficate Request or Renewal Request	
To submit a sav Request box.	ved request to the CA, paste a base-64-encode	d CMC or PKCS #10 certificate request or PKCS #7
Saved Request:		
Base-64-encoded certificate request	djMr3idyBQqMRbk8g7GrDOhF7rwR6/2VAXtSrYjl 9yRM9jmsOX90wbgOrBU6Aa8Sm2+rwVXrR2wGTduxi bTEK200ELR9iz9j6Oin4gLen49xX4v0x/Yc50jXCi 1M9RkBQaN3XM29dRbk2HESuwzb+RZw318/JaC+ms END CERTIFICATE REQUEST	
Certificate Templa	ate:	
	Subordinate Certification Authority 🗸	
Additional Attribu	ites:	
Attributes:	<	
	Submit >	

- c. Download the certificate in Base 64 format; save it to c:\certs.
- 3. Wait at least 24 hours before continuing. The VMCA requires that the certificate have a valid date of at least 24 hours prior.
- 4. Run certificate-manager from c:\program files\vmware\vCenter Server\bin for Windows installs or /usr/lib/ vmware-vmca/bin/certificate-manager for vCenter Server Appliance.
- 5. Choose option 2: Replace VMCA Root certificate with Custom Signing Certificate and replace all Certificates.
- 6. Enter the administrator@vsphere.local password.
- 7. Answer all questions as you did earlier when creating the certificate request.
- 8. When asked to provide a valid custom certificate for root, enter the path to the certificate obtained earlier.
- 9. When asked to provide a valid custom key for root, enter the path to the .key file generated with openssl earlier.
- 10. Enter **Y** to continue to replace the certificate.
- 11. Add the certificate to a Windows Group policy as an intermediate CA. This will enable client machines —such as those using vSphere Web Client—to trust the certificates issued by the VMCA.

I Group Policy	/ M	anagement Editor	_ <b>D</b> X
File Action View Help			
🗢 🄿 📶 📋 🗟 🔂 🖬			
File System	^	Issued To	Issued By
Wired Network (IEEE 802.3) Policies		psc10.vmware.local	vmware-DC01-CA
Windows Firewall with Advanced Security		psc11.vmware.local	vmware-DC01-CA
Network List Manager Policies			
Wireless Network (IEEE 802.11) Policies			
🔺 🚞 Public Key Policies	$\square$		
🚞 Encrypting File System			
Data Protection			
BitLocker Drive Encryption	≡		
BitLocker Drive Encryption Network Unlock			
🚆 Automatic Certificate Request Settings			
Trusted Root Certification Authorities			
🚞 Enterprise Trust			
Intermediate Certification Authorities			
Trusted Publishers			
Untrusted Certificates			
< Trusted Deeple >	Ľ	<	>
Intermediate Certification Authorities store contains 2 certificates.	-		

# Appendix

#### Configure the F5 BIG-IP Load Balancer

- 1. Download the lb.p12 file from the ha folder of one of the Platform Services Controllers.
- 2. Log in to the F5 BIG-IP configuration Web page.
- 3. Click System.
- 4. Open File Management, SSL Certificate List.
- 5. Click Import.
- 6. For **Import Type**, select **PKCS 12**. Provide a descriptive **Certificate Name**. Browse for the **Certificate** downloaded earlier. Enter **changeme** for the **Password**. Click **Import**.

NOTE: If you want to use a custom password when running the gen-lb-cert.py --primary-node command on the first Platform Services Controller to generate the certificates, add the following: --password=yourPassword.

SSL Certificate/Key Source         Import Type       PKCS 12 (IIS)         Certificate Name       pscQ11         Certificate Source       Choose File         Certificate Source       Choose File         Password       •••••••         Key Security       Normal         Free Space on Disk       146 MB
Import Type     PKCS 12 (IIS)       Certificate Name     Dsc011       Certificate Source     Choose File     Ib.p12       Password     Image: Construction of the second
Certificate Name <pre>             psc011</pre>
Certificate Source     Choose File b.p12       Password        Key Security     Normal C
Password Mormal  Normal
Key Security Normal O
Free Space on Disk 146 MB
Cancel Import

- 7. Click Local Traffic.
- 8. Open Profiles, SSL, Client.
- 9. Click Create.
- 10. Provide a descriptive Name.
  - a. Click Custom.
  - b. Choose the Certificate and Key installed earlier.
  - c. Enter the **Passphrase** for the certificate.
  - d. Click Add.
  - e. Scroll to the bottom and click Finished.

Local Traffic » Profiles : SSL :	Client » New Client SSL Pr	ofile
General Properties		
Name	psc011	
Parent Profile	clientssl	•
Configuration: Basic 🗘		
	Certificate	psc011 \$
	Key	psc011 \$
	Chain	None 🗘
	Passphrase	
	OCSP Stapling Parameters	None 🗘
Certificate Key Chain	Add Replace	
	/Common/psc011.crt /Comm	non/psc011.key _********
	Delete	

- 11. Open Profiles, SSL, Server.
- 12. Click Create.
- 13. Provide a descriptive Name.
  - a. Click Custom.
  - b. Choose the Certificate and Key installed earlier.
  - c. Click Add.
  - d. Scroll to the bottom and click **Finished**.

Local Traffic » Profiles : SSL : Server » New Server SSL Profile			
General Properties			
Name	psc011-server		
Parent Profile	serverssl		
Configuration: Basic ᅌ			
Certificate	psc011 0		
Кеу	psc011 🗘		
SSL Forward Proxy	Disabled		
SSL Forward Proxy Bypass	Disabled		
	Enabled Options Don't insert empty fragments		
Options List	Disable		

- 14. Open Nodes, Node List.
- 15. Click Create.
- 16. Add all Platform Services Controllers as a node. Use **Repeat** to speed up the process.

Local Traffic » Nodes : Node List » New Node		
General Properties		
Name	psc01	
Description		
Address	Address O FQDN	
Address	10.155.168.101	
Configuration		
Health Monitors	Node Default	
Ratio	1	
Connection Limit	0	
Connection Rate Limit	0	
Cancel Repeat Finished		

- 17. Open Pools, Pool List.
- 18. Click Create.
- 19. Create six pools, one each for port 443, 2012, 2014, 2020, 389, and 636.
  - a. All pools have the same **Configuration**, **tcp** for monitoring, and **Round Robin** for **Load Balancing Method**.
  - b. Use **Repeat** to save time: Remove the existing members from the list.

Local Traffic » Pools : Pool Lis	t » New Pool
Configuration: Basic	
Name	psc011-443
Description	
Health Monitors	Active     Available       /Common     https       tcp     <
Resources	
Load Balancing Method	Round Robin
Priority Group Activation	Disabled
New Members	New Node         New FQDN Node         Node List           Address:         psc002.vmware.local (10.155.168.83)         ©           Service Port:         443         HTTPS         ©           Add
Cancel Repeat Finished	

- 20. Open Virtual Servers, Virtual Server List.
- 21. Click Create.
- 22. All virtual servers-except the one for port 443-have the same configuration.
  - a. Provide a descriptive Name.
  - b. Enter the **Destination Address**.
  - c. For Service Port, enter 443.
  - d. For SSL Profile (Client), select the client profile created earlier.
  - e. For SSL Profile (Server), select the client profile created earlier.
  - f. For Source Address Translation, select Auto Map.
  - g. For the **Default Pool**, select the pool created for port 443.
  - h. For the **Default Persistence Profile**, select source\_addr.
  - i. Click Finished.

Local Traffic » Virtual Servers	: Virtual Server List » New Virtual Server							
General Properties								
Name	psc011-443							
Description								
Туре	Standard							
Source Address								
Destination Address	10.155.168.87							
Service Port	443 HTTPS C							
Notify Status to Virtual Address								
State	Enabled							
Configuration: Basic ᅌ								
Protocol	ТСР							
Protocol Profile (Client)	tcp							
Protocol Profile (Server)	(Use Client Profile)							
HTTP Profile	None							
FTP Profile	None ᅌ							
RTSP Profile	None \$							
SSL Profile (Client)	Selected         Available           /Common         clientssl-insecure-compatible           psc011-client         <           >>         psc010-client           >>         sso-client           wom-default-clientssl							
SSL Profile (Server)	Selected     Available       /Common     apm-default-serverssl       psc011-server     <							

SMTP Profile	None			
VLAN and Tunnel Traffic	All VLANs and Tunnels			
Source Address Translation	Auto Map ᅌ			
Content Rewrite				
Rewrite Profile	None			
HTML Profile	None			
Acceleration: Basic ᅌ				
Rate Class	None			
OneConnect Profile	None			
NTLM Conn Pool	None ¢			
HTTP Compression Profile	None			
Web Acceleration Profile	None \$			
SPDY Profile	None			
Resources				
	Enabled /			
iRules	<pre>/Commonsys_APM_Excharsys_APM_Excharsys_APM_Excharsys_APM_Excharsys_APM_Exchar</pre>			
	Up Down			
	Enabled Available //Common			
Policies	<<			
Default Pool +	psc011-443			
Default Persistence Profile	source_addr			
Fallback Persistence Profile	None			
Cancel Repeat Finished				

23. Repeat step 22 for all other ports: 2012, 2014, 2020, 389, and 636. All settings are the same, except there is no **SSL Profile (Client)** or **SSL Profile (Server)** and the **Service Port** and **Default Pool** should match. For example, if the **Service Port** is 2012, the **Default Pool** should be the pool set up for port 2012.

Local Traffic » Virtual Servers	: Virtual Server List » New Virtual Server					
General Properties						
Name	psc011-20142					
Description						
Туре	Standard					
Source Address						
Destination Address	10.155.168.87					
Service Port	2012 Other: 0					
Notify Status to Virtual Address						
State	Enabled					
Configuration: Basic ᅌ						
Protocol	ТСР					
Protocol Profile (Client)	tcp					
Protocol Profile (Server)	(Use Client Profile)					
HTTP Profile	None					
FTP Profile	None 📀					
RTSP Profile	None					
	Selected Available					
SSL Profile (Client)	<					
	Selected Available					
SSL Profile (Server)	apm-default-serverssl crypto-client-default-serverssl pcoip-default-serverssl psc010-server serverssl					

- 24. Open Profiles, Persistence.
- 25. Click source\_addr.
- 26. Check Match Across Services and click Update.

Local Traffic » Profiles : Persis	stence » source_addr
🚓 👻 Properties	
General Properties	
Name	source_addr
Partition / Path	Common
Persistence Type	Source Address Affinity
Configuration	
Match Across Services	REnabled
Match Across Virtual Servers	
Match Across Pools	
Hash Algorithm	Default
Timeout	Specify 3 180 seconds
Mask	None
Map Proxies	C Enabled
Override Connection Limit	
Update	

27. After both Platform Services Controller nodes have been installed and configured, click **Network Map** and verify that all services are up (green).

	» Network Map						
🔅 👻 Netwo	ork Map						
Status	Any Status	Туре	All Types		Search	•	Search iRule Definition
Show Summa	ary Update Map						
ocal Traffic N	Network Map						
psc010-20	012		psc010-	536			psc011-389
psc010	0-2012		psci	10-636			psc011-389
O 10.	155.168.82:2012		01	0.155.168.82:636			10.155.168.73:389
🥥 10. <sup>-</sup>	155.168.83:2012		Q 1	0.155.168.83:636		10.155.168.74:389	
psc010-20	014		psc011-	2012			<b>psc011-443</b>
o psc010	0-2014		O pscl	11-2012			psc011-443
O 10.	155.168.82:2014		0 1	0.155.168.73:2012			10.155.168.73:443
10.	155.168.83:2014		01	0.155.168.74:2012			10.155.168.74:443
o psc010-20	020		psc011-	2014			<b>psc011-636</b>
psc010	0-2020		O psc	11-2014			psc011-636
O 10.º	155.168.82:2020		01	0.155.168.73:2014			10.155.168.73:636
10.155.168.83:2020			01	10.155.168.74:2014			10.155.168.74:636
psc010-38	39		psc011-	2020			sso.vmware.local
psc010	0-389		psci	11-2020			SSO
O 10.	155.168.82:389		Q 1	0.155.168.73:2020			10.155.168.101:7444
<b>O</b> 10.	155.168.83:389		01	0.155.168.74:2020			10.155.168.102:7444
psc010-44	13						
psc010	0-443						
O 10.	155.168.82:443						
O 10.	155.168.83:443						

#### Scripted vCenter Server Installations

vCenter Server Appliance can be deployed via custom JSON files from a command line. The ISO ships with examples for deploying an embedded (vCenter Server and Platform Services Controller), management (vCenter Server), and Platform Services Controller appliance.

There are command-line utilities for 64-bit Linux, Mac OS X, and Windows.

The following is a sample embedded JSON file:

```
{
    "___comments":
    [
    "Will deploy an embedded VCSA to host 10 in the MGMT Cluster"
],
```

"deployment":

```
{
```

"esx.hostname":"w3-tm-hp380-010.vmware.local",

"esx.datastore":"NFSMGMT01",

"esx.username":"root",

"esx.password":"VMware1!",

"deployment.option":"tiny",

"deployment.network":"VM Network",

"appliance.name":"embedded-node",

"appliance.thin.disk.mode":true

#### },

"vcsa":

#### {

"system":

{

"root.password":"VMware1!", "ssh.enable":true

5511.EHar

},

```
"sso":
```

{

}

```
"password":"VMware1!",
"domain-name":"vsphere.local",
"site-name":"PaloAlto"
}
```

To deploy vCenter Server Appliance from this file, save it on your local system. From a command line, navigate to the utilities folder for your OS. For example, on Mac OS X, this is /Volumes/VMware VCSA/vcsa-cli-installer/ mac. Now run vcsa-deploy followed by the full path to the custom JSON file. For example:

./vcsa-deploy /Users/mike/Downloads/embedded node.json



# References

vSphere 6.0 Documentation Center http://pubs.vmware.com/vsphere-60

# **Additional Resources**

VMware vSphere 6.0 Feature Walkthroughs http://featurewalkthrough.vmware.com/#!/vsphere-6-0

VMware Mobile Knowledge Portal http://www.vmwaremkp.com

### About the Author

Mike Brown is a senior technical marketing manager in the Integrated Systems Technical Marketing group. Mike has worked in the IT industry for more than 17 years. His focus is on reference architectures for VMware vCloud Suite® and the software-defined data center (SDDC) as well as VMware vCenter Server, VMware vCenter Single Sign-On, and VMware vSphere Web Client. Mike has multiple industry certifications, including VMware Certified Design Expert (VCDX).

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