

Hardware Requirements - KB 2106572

Resources	PSC	Tiny Environment	Small Environment	Medium Environment	Large Environment
Number of CPUs	2	2	4	8	16
Memory	2 GB	8 GB	16 GB	24 GB	32 GB

Storage Requirements - KB 2106572

Environment Type	VCSA with an Embedded PSC	VCSA with an External PSC	External PSC Appliance
Tiny Environment (up to 10 Hosts / 100 VMs)	120 GB	86 GB	86 GB
Small Environment (up to 100 Hosts / 1,000 VMs)	150 GB	108 GB	108 GB
Medium Environment (up to 400 Hosts / 4,000 VMs)	300 GB	220 GB	220 GB
Large Environment (up to 1,000 Hosts / 10,000 VMs)	450 GB	280 GB	280 GB

Firewall Requirements - KB 2106283

Port	Protocol	Description
22	TCP / UDP	System port for SSH. This port is used only by the vCenter Server Appliance.
80	TCP	vCenter Server requires port 80 for direct HTTP connections. Port 80 redirects requests to HTTPS port 443.
88	TCP	VMware key distribution center port
389	TCP / UDP	This port must be open on the local and all remote instances of vCenter Server. This is the LDAP port number for the Directory Services for the vCenter Server group.
443	TCP	The default port that the vCenter Server system uses to listen for connections from the vSphere Web Client.
514	UDP	vSphere Syslog Collector port for vCenter Server on Windows and vSphere Syslog Service port for vCenter Server Appliance.
636	TCP	For vCenter Server Enhanced Linked Mode, this is the SSL port of the local instance. If another service is running on this port, it may be preferable to remove it or change its port to a different port.
902	TCP / UDP	The default port that the vCenter Server system uses to send data to managed hosts. Managed hosts also send a regular heartbeat over UDP port 902 to the vCenter Server system.
1514	TCP / UDP	vSphere Syslog Collector TLS port for vCenter Server on Windows and vSphere Syslog Service TLS port for vCenter Server Appliance.
2012	TCP	Control interface RPC for vCenter Single Sign-On (SSO)
2014	TCP	RPC port for all VMCA (VMware Certificate Authority) APIs
2020	TCP / UDP	Authentication framework management
6500	TCP / UDP	ESXi Dump Collector port
6501	TCP	Auto Deploy Service
6502	TCP	Auto Deploy Management
7444	TCP	Secure Token Service
8088	TCP	Workflow Management Service
9443	TCP	vSphere Web Client HTTPS
1171	TCP	VMware Directory service (vmdir) LDAP
1172	TCP	VMware Directory service (vmdir) LDAPS

Requirement	Ports
PSC to PSC	389, 636, 1171, 1172, 2012 (1171 and 1172 legacy)
PSC to vCenter	443, 389, 636, 2012, 2014, 2020, 7444
vCenter to vCenter	443

<http://www.vmware.com/go/vcports>

vSphere SSO Domain 6.0 Configuration Maximums

Maximum PSCs per vSphere SSO Domain	8
Maximum PSCs per site, behind a load balancer	4
Maximum objects within a vSphere SSO Domain (Users and Groups)	1,000,000
Maximum tolerance for time skew between PSC nodes	5 minutes
Maximum Active Directory or Open LDAP Groups per User for best performance	1015
Maximum number of vCenter Servers connected to a single PSC	4
Maximum number of vCenter Servers in a vSphere SSO Domain	10
Maximum number of subordinate Certificate Authority servers in the chain within VMware Certificate Authority	6
Maximum cryptographic hash used for PSC Node certificate	1
Maximum RSA Public Key length used for PSC Node certificate	16,384

<https://www.vmware.com/pdf/vsphere6/60/vsphere-60-configuration-maximums.pdf>

General Information

Deployment Models

Supports both GUI and CLI installs

Prerequisites

- DNS - Resolution of fully qualified domain name (FQDN), short name (host name), and IP address (reverse lookup)
- Time - Validate time is synchronized across the environment. Use of a NTP source is recommended.
- Passwords - Should be at least 8 characters, but no more than 20 characters. Using ASCII characters containing at least one lowercase letter, one uppercase letter, one number and one special character.

<http://www.vmware.com/go/vcprerequisites>

Backup

Image level backup and restore is the only method supported for the VCSA. There are two ways of taking an image level backup. vSphere Data Protection (VDP) is a product that comes free starting with vSphere Essentials. Any third party backup solution that supports VMware vSphere Storage APIs - Data Protection (VADP).

<http://www.vmware.com/go/vcbackuprestore>

Terminology

PSC	Platform Services Controller
VC	vCenter Server
Deprecated	Topology supported in vSphere 6.0 but not in the next release of vSphere
Site	A logical grouping of PSCs within a vSphere SSO Domain. Refer to the Recommended Topologies section for some examples.
vSphere SSO Domain	vSphere common authentication mechanism (Single Sign-On)
Embedded Deployment	PSC and VC components installed on the same virtual machine
External Deployment	PSC and VC components installed on separate virtual machines
Enhanced Linked Mode (ELM)	Link mode is the capability of managing multiple vCenter Servers (maximum of 10) from one UI. Requires external PSC deployment

Command Line Interface (CLI)

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service-control 'Appliance Shell' --list Lists vCenter and / or PSC services --start Starts services can be used with all or individual services
--status View the status of the vCenter and / or PSC services --stop Stops services can be used with all or individual services
--all Can be used in conjunction with list, start, stop --dry-run Displays the actions that the command runs without executing the actions

/usr/lib/vmware-vmdir/bin
showservers
vdcrcpadmin -f showservers -h <PSC FQDN or IP address> -u administrator -w Administrator Password
Example: vdcrcpadmin -f showservers -h psc1.vmware.local -u administrator -w VMware!

showpartners
vdcrcpadmin -f showpartners -h <PSC FQDN or IP address> -u administrator -w Administrator Password
Example: vdcrcpadmin -f showpartners -h psc1.vmware.local -u administrator -w VMware!

showpartnerstatus
vdcrcpadmin -f showpartnerstatus -h <PSC FQDN or IP address> -u administrator -w Administrator Password
Example: vdcrcpadmin -f showpartnerstatus -h psc1.vmware.local -u administrator -w VMware!

createagreement
vdcrcpadmin -f createagreement -2 -h <Source PSC FQDN or IP address> -H <New Partner PSC FQDN or IP address> -u administrator
Example: vdcrcpadmin -f createagreement -2 -h psc1.vmware.local -H psc3.vmware.local -u Administrator -w VMware!

removeagreement
vdcrcpadmin -f removeagreement -2 -h <Source PSC FQDN or IP address> -H <Remove PSC FQDN or IP address> -u administrator -w Administrator_Password
Example: vdcrcpadmin -f removeagreement -2 -h psc1.vmware.local -H psc3.vmware.local -u Administrator -w VMware!

/bin
Reconfigure vCenter server instance with an embedded Platform Services Controller and Rejoin them to the joined External Platform Services Controller instances
csmso-util reconfigure --report-psc <PSC FQDN or IP address> --username <username> --password <password>
Example: csmso-util reconfigure --report-psc psc1.vmware.local --username administrator --domain-name vsphere.local --password VMware!

Repoint the connections between vCenter Server and Platform Services Controller
csmso-util repoint --repoint-psc <PSC FQDN or IP address>
Example: csmso-util repoint --repoint-psc psc1.vmware.local

Moving vCenter Server between Sites
csmso-util move-services --psc-node <PSC FQDN or IP address> --domain-name <vSphere Domain Name> --username Administrator --password Administrator Password --oldsite-name <vCenter Server's Original Site> --newsite-name <vCenter Server's New Site>
Example: csmso-util move-services --psc-node psc1.vmware.local --domain-name vsphere.local --username Administrator --password VMware! --oldsite-name Palo Alto --newsite-name Austin

vimtop 'Appliance Shell'
-h: Prints help for vim top command line options
-v: Prints the vim top version number
-c: Loads a user defined vim top configuration file (if the -c option is not used, the default configuration file is /root/vimtop/vimtop.xml)
-n: Sets the number of performed iterations before the vim top exits interactive mode, the default value is 10000
-g / -d seconds: Sets the update period in seconds
-r: Enables record batch mode
-R: Enables reply mode

pgtop 'Appliance Shell'
-h: --help: prints help for pgtop
--version: Prints the pgtop version number
-l: --idle: Does not display idle processes
-b: --batch: All input from the terminal is ignored. Interrupt characters, such as ^C and ^A, still have an effect
    
```

<http://www.vmware.com/go/vcshell>

Other Resources

- Platform Services Controller Decision Tree: <http://www.vmware.com/go/psctree>
- Generating vCenter Server & Platform Services Controller deployment topology diagrams: <http://www.vmware.com/go/topologydiagrams>
- Reconfiguring and Repeating Deployment Models in vCenter Server 6.0 Update 1: <http://www.vmware.com/go/ReconfigureandRepoint>
- The future of vCenter Server: <http://www.vmware.com/go/vcsmicrosite>
- Getting Comfortable with vPostgres and the vCenter Server Appliance Part 1: <http://www.vmware.com/go/vpostgres-part-1>
- Getting Comfortable with vPostgres and the vCenter Server Appliance Part 2: <http://www.vmware.com/go/vpostgres-part-2>
- VMware Product Walkthroughs: <https://featurewalkthrough.vmware.com/#/vsphere-6-0>

Logs - /var/log/vmware/ - KB 2110014

Name	Description
vpdx/vpdx.log	The main vCenter Server log
vpdx/vpdx-profile.log	Profile metrics for operations performed in vCenter Server
vpdx/vpdx-alert.log	Non-fatal information logged about the vpdx process
perfcharts/stats.log	VMware Performance Charts
eam/eam.log	VMware ESX Agent Manager
invsvc	VMware Inventory Service
netdumper	VMware vSphere ESXi Dump Collector
vapi	VMware vAPI Endpoint
vmdir	VMware Directory Service Daemon
syslog	vSphere Syslog Collector
vpostgres	VMware vSphere Profile-Driven Storage Service
vsphere-client	VMware vSphere Web Client
workflow	VMware vCenter Workflow Manager
vws	VMware System and Hardware Health Manager
sso	VMware Single Sign-On

Services

VMware Certificate Service	PSC
VMware Directory Service	PSC
VMware ESX Agent Manager	PSC
VMware Identity Management Service	PSC
VMware License Service	PSC
VMware Security Token Service	PSC
VMware Content Library Service	vCenter Server
VMware vCenter Inventory Service	vCenter Server
VMware Message Bus Configuration Service	vCenter Server
VMware Performance Charts	vCenter Server
VMware Postgres	vCenter Server
VMware Syslog Collector	vCenter Server
VMware System and Hardware Health Manager	vCenter Server
VMware vAPI Endpoint	vCenter Server
VMware vCenter Configuration Service	vCenter Server
VMware vCenter Workflow Manager	vCenter Server
VMware Virtual Center 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
VMware AFD Server	vCenter Server and PSC
VMware Component Manager	vCenter Server and PSC
VMware HTTP Reverse Proxy	vCenter Server and PSC
VMware Service Control Agent	vCenter Server and PSC
VMware vCenter Configuration Service	vCenter Server and PSC

Migration from Deprecated to Recommended Topology

* A deprecated topology is one that is currently supported in vSphere 6.0, but will not be in the next release of vSphere. Migrating to a recommended topology will be required prior to upgrading.*

1. Deploy an external PSC
2. Join PSC to embedded deployment vSphere SSO domain
3. Run csmso-util to Reconfigure / Rejoin embedded deployment
4. Run csmso-util to Reconfigure / Rejoin external vCenter Server
5. Run csmso-util to Reconfigure / Rejoin external vCenter Server

Recommended Topologies

Recommended Latency

Enhanced Linked Mode (ELM)	PSC ↔ PSC	vCenter ↔ PSC
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All features that utilize ELM are facilitated via the PSC, for the best user experience within a vSphere environment, low latency is highly recommended.

- 1 Single Sign-On Domain
- 1 Single Sign-On Site
- 1 vCenter Server with embedded Platform Services Controller
- No requirement of Enhanced Linked Mode
- Small deployments, Lab / POC

- 5 ms (i.e. it is recommended to have a PSC local at each location a vCenter Server is deployed)
- Less than 100ms RTT between PSCs
- Less than 10ms between nodes within a site
- PSCs are multi-master
- Replication interval: 30 sec

- 1 Single Sign-On Domain
- 2 or more external Platform Services Controllers
- 2 or more vCenter Servers with external Platform Services Controller
- Manual failover over across PSCs

Knowledge Base Articles (KB) - https://kb.vmware.com/

Repointing the VMware vCenter Server 6.0 between sites in a vSphere Domain	213191	Backing up VMware vSphere 5.x and 6.0 products	2119754
VMware Platform Services Controller 6.0 FAQs	211315	Services bundled with vCenter Server and vCenter Server Appliance 6.0	2108159
Increasing the disk space for the VMware vCenter Server Appliance 6.0	2126276	Back up and restore vCenter Server Appliance/vCenter Server 6.0 Postgres database	2091961
Update sequence for vSphere 6.0 and its compatible VMware products	2109760	Unlocking and resetting the VMware vCenter Single Sign-On administrator password	2034608
Determining replication agreements and status with the Platform Services Controller 6.0	2127057	Replacing the Lookup Service SSL certificate on a Platform Services Controller 6.0	2118939
Configuring F5 BIG-IP Load Balancer for use with vSphere Platform Services Controller (PSC) 6.0	2098006	VMware vCenter Server Appliance 5.5 and 6.0 root account locked out after password expiration	2069041
Replacing default certificates with CA signed SSL certificates in vSphere 6.0	2111219	Removing or Disabling unwanted plug-ins from vCenter Server and vCenter Server Appliance	1025360
vCenter Server 6.0 installation Best Practices	2107948	List of recommended topologies for VMware vSphere 6.0.x	2108548
Checking the status of vCenter Server performance rollout jobs	2012226	toggling the vCenter Server Appliance 6.x default shell	2100508
vCenter Single Sign-On and Platform Services Controller High Availability Compatibility Matrix	2112736	Using the csmso command to unregister vCenter Server from Single Sign-On	2106736
		Supported vCenter Server high availability options	1024051

- 1 Single Sign-On Domain
- 2 Single Sign-On Site
- 2 or more external Platform Services Controllers
- 1 or more vCenter Server with external Platform Services Controller
- 2 third-party load balancer

* Supported Load Balancers: VMware NSX, F5, Netscaler *

A Load Balancer can be used to achieve a higher degree of availability, RTO of less than a minute or hard availability requirement of 99.999% (five nines). Load Balancing can be used as an automated failover mechanism, but is not actually load balancing incoming requests and spreading the load across PSCs. Unless otherwise required, manually reporting with csmso-util is recommended.

- 1 Single Sign-On Domain
- 2 or more external Platform Services Controllers
- 1 or more vCenter Server with external Platform Services Controller