

# HP Cloud Service Automation

Version 4.00

## Integration Pack

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# Sequential Component types

## Infrastructure Service

Contains a collection of infrastructure components that are needed in a service design.

Table 1. Input properties for Infrastructure Service

Property name	Property display name	Property type
templateReference	Template Reference	String

## Load Balancing Pool

Describes the membership of servers in a pool that serves a load-balanced software application service.

Table 2. Input properties for Load Balancing Pool

Property name	Property display name	Property type
poolName	Pool Name	String
protocol	Protocol	String
virtualIPAddress	Virtual IP Address	String
virtualPort	Virtual Port	Integer

## Network Connection

Describes the relationship of a server interface to a virtual network.

Table 3. Input properties for Network Connection

Property name	Property display name	Property type
interfaceName	Interface Name	String
network	Network	String

## Policy Enforcement Point

Describes the implementation of access control policies for a virtual network.

Table 4. Input properties for Policy Enforcement Point

Property name	Property display name	Property type
ruleName	Policy Rule Name	String
Order	Policy Order	Integer
Source	Policy Source	String
destination	Policy Destination	String
filterExpression	Filter Expression	String

## Server

A virtual or physical server that is provisioned by HP CSA. Provides specific provisioning attributes for individual servers (can optionally be marked as a pattern when this service component is used in a service design).

Table 5. Input properties for Server

Property name	Property display name	Property type	Measurable	Units
Memory	Memory	Integer	Yes	MB
nCPU	Number of CPU Cores	Integer	Yes	CPU
osType	Type of OS image	String		
templateReference	Template Reference	String		
ipAddress	Management IP Address	String		
macAddress	Management MAC Address	String		
hostname	Host Name	String		
domainName	Domain Name	String		
powerState	Power State	String		
Disk	Disk	Integer	Yes	GB
serverName	Server Name	String		

## Server Group

A container of identically configured servers. Contains a single server (marked as a pattern in the service design) that describes the shared characteristics of all servers in the server group.

Table 6. Input properties for Server Group

Property name	Property display name	Property type
serverCount	Number of Servers	Integer
maxServerCount	Maximum Number of Servers	Integer
minServerCount	Minimum Number of Servers	Integer

## Software Application Service

Represents a complex application architecture. Contains one or more software application tier service components.

Table 7. Input properties for Software Application Service

Property name	Property display name	Property type
templateReference	Template Reference	String
applicationName	Application Name	String
applicationRelease	Application Release	String
applicationVersion	Application Version	String

## Software Application Tier

Describes a type of software, or a collection of software, that is applied to all servers within a server group.

Table 8. Input properties for Software Application Tier

Property name	Property display name	Property type
templateReference	Template Reference	String
applicationTierName	Application Tier Name	String

## Software Component

Describes software deployed on an individual server.

Table 9. Input properties for Software Component

Property name	Property display name	Property type
productName	Product Name	String
productVendor	Product Vendor	String
productVersion	Product Version	String

## Storage Volume

Describes a single accessible storage area with a single file system.

Table 10. Input properties for Storage Volume

Property name	Property display name	Property type	Measurable	Units
volumeName	Storage Volume Name	String		
volumeSize	Storage Volume Size	Integer	Yes	GB
raidType	RAID Type	String		
volumeType	Storage Volume Type	String		

## Virtual Network

Models a network infrastructure to which a network connection can be associated.

Table 11. Input properties for Virtual Network

Property name	Property display name	Property type
vlanTag	VLAN Tag	String
vlanId	VLAN ID	Integer
vlanIPSubnet	VLAN IP Subnet	String
vlanSubnetMask	VLAN Subnet Mask	String
dhcpRange	DHCP Range	String
dhcpEnabled	DHCP Enabled or not	Boolean

# Topology Component types

## Server Group

Represents a Server Group component.

Table 12. Input properties for Server Group

Property name	Description
<b>Name</b>	Name of the Server Group
<b>Instance Name Prefix</b>	Prefix for the Server name
<b>Minimum Instances</b>	Minimum number of servers to create
<b>Maximum Instances</b>	Maximum number of servers
<b>Image</b>	Image of the Server
<b>Machine Flavor</b>	Configuration of the Server like CPU, Memory and Disk
<b>Key Name</b>	Name of the SSH Server
<b>Pre-create Callout</b>	Flow ID of a OO workflow executed before creation of Component
<b>Post-create Callout</b>	Flow ID of a OO workflow executed after creation of Component

## Network Segment

Represents a Network component on the Provider.

Table 13. Input properties for Network Segment

Property name	Description
<b>Name</b>	Name of the Network component
<b>Type</b>	Type of the Network Segment
<b>Network</b>	Network configured on the provider
<b>Subnet</b>	Network subnet
<b>Subnet Name</b>	Subnet Name
<b>IP Version</b>	IP4 or IP6
<b>Mask Size</b>	Mask Size
<b>Enable DHCP</b>	Option to enable/disable DHCP
<b>DNS Server</b>	Space separated DNS server IPs or names
<b>Disable Gateway</b>	Option to disable / enable gateway

## Volume Group

Represents a Volume Group component on the Provider.

Table 14. Input properties for Volume Group

Property name	Description
<b>Name</b>	Name of the Volume Group
<b>Volume</b>	Select the Choice to create/use existing Volume
<b>Instance Name</b>	Prefix Name for Volume Group
<b>Size</b>	Volume size in GB's
<b>Volume Reference</b>	

## Resource offerings

The following resource offerings ship with HP CSA 3.20. For descriptions of the actions, see Subscriber actions.

For descriptions of the property values, see Property values.

### MOE\_COMPUTE\_3.20

Table 15. Resource offering details

<b>Provider</b>	HP Matrix Operating Environment
<b>Description</b>	Provisions simple compute server using MOE
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>• Power Off Service</li> <li>• Power On Service</li> </ul>
<b>Properties</b>	None

### MOE\_COMPUTE\_ADM\_3.20

Table 16. Resource offering details

<b>Provider</b>	HP Matrix Operating Environment
<b>Description</b>	Provisions simple compute server using MOE from a Software application service component.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>• Power Off Service</li> <li>• Power On Service</li> </ul>
<b>Properties</b>	None

### MOE\_COMPUTE\_MT\_3.20

Table 17. Resource offering details

<b>Provider</b>	HP Matrix Operating Environment
<b>Description</b>	Provisions a simple compute server using MOE 7.0 or higher with multi-tenancy support.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

## MOE\_COMPUTE\_SOAPV4\_3.20

Table 18. Resource offering details

<b>Provider</b>	HP Matrix Operating Environment
<b>Description</b>	Provisions a simple compute server using MOE with SOAP V4.
<b>Subscriber actions</b>	<ul style="list-style-type: none"><li>• Power Off Service</li><li>• Power On Service</li><li>• PowerCycle Service</li></ul>
<b>Properties</b>	None

## NA\_VIRTUAL\_NETWORK\_3.20

Table 19. Resource offering details

<b>Provider</b>	HP Network Automation
<b>Description</b>	Provisions a VLAN from a network switch using HP Network Automation 9.20 or higher.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

## OPENSTACK\_HPCS\_COMPUTE\_3.20

Table 20. Resource offering details

<b>Provider</b>	HP Cloud Services OpenStack
<b>Description</b>	Creates server instances on HP Cloud Services environment.
<b>Subscriber actions</b>	<ul style="list-style-type: none"><li>• Reboot Server</li></ul>
<b>Properties</b>	None

## SA\_ADM\_3.20

Table 21. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Deploys an application using HP ADM.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

## SA\_ADM\_FLEX\_3.20

Table 22. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Adds and removes servers from the HP ADM application tier.
<b>Subscriber actions</b>	<ul style="list-style-type: none"><li>• Add Server to Tier</li><li>• Remove Server from Tier</li></ul>
<b>Properties</b>	None

## SA\_DMA\_JBOSS\_3.20

Table 23. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Deploys JBOSS using an HP DMA workflow. Resource offering properties are populated with JBOSS workflow parameters.
<b>Subscriber actions</b>	None
<b>Properties</b>	<ul style="list-style-type: none"><li>• dmaParam1</li><li>• dmaParam2</li><li>• dmaParam3</li><li>• dmaParam4</li><li>• dmaParam5</li><li>• dmaParam6</li><li>• dmaParam7</li><li>• dmaParam8</li><li>• dmaParam9</li><li>• dmaParam10</li><li>• dmaWorkflowName</li></ul>

## SA\_MANAGE\_SERVERS\_3.20

Table 24. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Deactivates and deletes managed servers from HP SA.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

## SA\_MOE\_ADM\_FLEX\_3.20

Table 25. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Adds a server using HP MOE and deploys applications on the added server using HP ADM.
<b>Subscriber actions</b>	<ul style="list-style-type: none"><li>• Add Server</li></ul>
<b>Properties</b>	None

## SA\_NOOP\_3.20

Table 26. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Selects a resource provider from a parent component and passes it on to the child component.
<b>Subscriber actions</b>	None

<b>Properties</b>	None
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### SA\_SOFTWARE\_POLICIES\_3.20

Table 27. Resource offering details

<b>Provider</b>	HP Server Automation
<b>Description</b>	Deploys applications on servers using HP SA software policies.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

### SITSCOPE\_MODIFY\_3.20

Table 28. Resource offering details

<b>Provider</b>	HP SiteScope
<b>Description</b>	Switches the server monitors to the new HP SiteScope template.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

### SITSCOPE\_SERVER\_MONITORING\_3.20

Table 29. Resource offering details

<b>Provider</b>	HP SiteScope
<b>Description</b>	Monitors servers using HP SiteScope.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

### UCMDB\_CONFIG\_MANAGEMENT\_3.20

Table 30. Resource offering details

<b>Provider</b>	HP Universal CMDB
<b>Description</b>	Creates and manages component configuration details on HP Universal CMDB.
<b>Subscriber actions</b>	None
<b>Properties</b>	None

### VCENTER\_COMPUTE\_3.20

Table 31. Resource offering details

<b>Provider</b>	VMware vCenter
<b>Description</b>	Provisions a simple compute server using VMware vCenter.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>• Stop Server</li> </ul>

	<ul style="list-style-type: none"> <li>Start Server</li> <li>Restart Server</li> <li>Suspend Server</li> </ul>
<b>Properties</b>	None

### **VCENTER\_COMPUTE\_DYNAMIC\_OPTIONS\_3.20**

Table 32. Resource offering details

<b>Provider</b>	VMware vCenter
<b>Description</b>	Provisions a simple compute server using VMware vCenter. The resource offering property should be populated with the VM template names, which are later used to dynamically populate the subscriber options.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>Stop Server</li> <li>Start Server</li> <li>Restart Server</li> <li>Suspend Server</li> </ul>
<b>Properties</b>	TEMPLATEREFERENCE

### **VCENTER\_COMPUTE\_FAILURE\_HANDLING\_3.20**

Table 33. Resource offering details

<b>Provider</b>	VMware vCenter
<b>Description</b>	Provisions a simple compute server using VMware vCenter. If the deployment fails, it cleans up the provisioned vCenter resource.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>Stop Server</li> <li>Start Server</li> <li>Suspend Server</li> <li>Restart Server</li> </ul>
<b>Properties</b>	None

### **VCENTER\_COMPUTE\_FLEX\_SERVER\_RESOURCES\_3.20**

Table 34. Resource offering details

<b>Provider</b>	VMware vCenter
<b>Description</b>	Adds and removes CPU or memory from all servers in the server group.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>Flex CPU</li> <li>Flex Memory</li> </ul>
<b>Properties</b>	None

### **VCENTER\_COMPUTE\_MODIFY\_SERVER\_RESOURCES\_3.20**

Table 35. Resource offering details

<b>Provider</b>	VMware vCenter
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<b>Description</b>	Adds and removes CPU or memory from all servers in the server group.
<b>Subscriber actions</b>	<ul style="list-style-type: none"> <li>• Flex CPU</li> <li>• Flex Memory</li> </ul>
<b>Properties</b>	None

## Provider templates

These templates can be found in the location <CSA Install Path>\CSAKit-3.1\Lib on the HP CSA instance.

Table 36. Provider templates required for content that ships with HP CSA

Provider	Template	Description
VMware vCenter	VM template	The template used for cloning the VM in the vCenter server from HP CSA. For blueprints using HP ADM and HP DMA, the template creation must have gone through the HP SA agent installation and agent sanitation. See the HP CSA Configuration Guide for more information.
HP Matrix Operating Environment	MOE_SCL_TEMPLATE	The MOE template used to create the MOE service. The name of the template is configured in the <TEMPLATENAME> property of the service design.
HP Matrix Operating Environment	ADM_WEB_DB_TIER_TEMPLATE	The MOE template used to create a two-tier MOE service. The name of the template is configured in the <TEMPLATENAME> property of the service design.
HP Matrix Operating Environment	MOE_71_SCL_TEMPLATE	The MOE template used to create service on MOE 7.1. The name of the template is configured in the <TEMPLATENAME> property of the service design.
HP SiteScope	CSA templates	The template used by the default HP SiteScope Deploy Monitor workflow. This template must be imported into the HP SiteScope server and the credential preferences should be set. The name of the template is configured in
HP SiteScope	CSA templates Silver	The template used by the default SiteScope Modify Monitor workflow for the silver option. This template must be imported into the HP SiteScope server and the credential preferences should be set. The name of the
HP SiteScope	CSA templates Gold	This is the template used by the default SiteScope Modify Monitor workflow for the gold option. This template must be imported into the HP SiteScope server and the credential preferences should be set. The name
HP Network Automation	HPN Virtual Network	This is the command script used by HP Network Automation 9.20 or higher. This internally imports two command scripts, HPN Create VLAN and HPN Delete VLAN, which are used by Virtual Network - Deploy and Virtual Network - Undeploy workflows respectively to
HP Service Manager	HPSM_CSA_Integration_file	This is the HP Service Manager configuration file (unload file) which needs to be imported into HP Service Manager. After successfully import of unload file, it creates Script Library called OO_CSA3 in HP Service Manager. This script is used to internally invoke the HP

## Internal actions

### Build Resource Provider List

Applies to resource bindings. Builds a candidate list of resource providers that meets the following requirements:

- Support the resource offering referenced in a resource binding. Have an Availability of Enabled.
- If the service offering that references the service design with this action is in a service catalog with resource environments selected, the candidate list is further restricted to only include resource providers in one or more of the selected resource environments.

Table 37. Build Resource Provider List action

<b>Properties</b>	<ul style="list-style-type: none"><li>• <b>resourceBindingId</b> - UUID of the resource binding. Default:[TOKEN:RESC_BINDING_ID]</li><li>• <b>catalogId</b> - UUID of the catalog. Default: [TOKEN:SVC_CATALOG_ID]</li></ul>
<b>Service component</b>	Defined directly on resource binding
<b>Lifecycle or artifact state</b>	PRE-RESERVING (fixed)

### Cancel Service Subscription

Table 38. Cancel Service Subscription action

<b>Properties</b>	None
<b>Service component</b>	Defined on subscription
<b>Lifecycle or artifact state</b>	Associated service instance in ACTIVE, FAILED, or MODIFY_FAILED state

### Clone Pattern

Applies to service components. Clones a server pattern (a Server service component that is marked as pattern) into one or more non-pattern servers. The number of servers created is determined by the value of the property specified in name of the property for server count on the service component identified by Server Group Component ID.

Table 39. Clone Pattern action

<b>Properties</b>	<ul style="list-style-type: none"><li>• <b>serviceComponentId</b> - UUID of the service component (parent) who has a child service component marked as template. Default: [TOKEN:SVC_COMPONENT_ID]</li><li>• <b>numberOfClonesPropertyName</b> - Name of the property defined on the parent service component which contains the value of total number of clones to be created.</li></ul>
<b>Service component</b>	The service component which has one (and only one) template/pattern component
<b>Lifecycle or artifact state</b>	Flexible. Can be any of INITIALIZING, RESERVING, or DEPLOYING state. It mainly depends on the availability of dependant components

## Log Messages

Applies to resource bindings, resource offerings, and service components. Writes the user-specified Boolean input, integer input, and string input property values to the `csa.log` file. You can include this as an action on a service component, resource binding, or resource offering for use in troubleshooting.

Table 40. Log Messages action

<b>Properties</b>	<ul style="list-style-type: none"><li>• <b>stringInput</b> - An input string value</li><li>• <b>integerInput</b> - An input integer value</li><li>• <b>booleanInput</b> - An input Boolean value</li></ul>
<b>Service component</b>	Any artifact
<b>Lifecycle or artifact state</b>	Any state

## Modify Service Subscription

Table 41. Modify Service Subscription action

<b>Properties</b>	None
<b>Service component</b>	Defined on subscription
<b>Lifecycle or artifact state</b>	Associated service instance in ACTIVE or MODIFY_FAILED state

## Order Service Offering

Table 42. Order Service Offering action

<b>Properties</b>	None
<b>Service component</b>	Defined on service offering
<b>Lifecycle or artifact state</b>	Service offering in PUBLISHED state

## Select Resource Pool from Provider

Applies to resource bindings. Selects a resource pool from the set of resource pools associated with the selected resource provider. A resource pool must have an availability of Enabled to be selected. The selected resource pool will be available to resource offering actions in the token `RSC_POOL_ID`.

Table 43. Select Resource Pool from Provider action

<b>Properties</b>	<ul style="list-style-type: none"><li>• <b>resourceBindingId</b> - UUID of the resource binding. Default:[TOKEN:RSC_BINDING_ID]</li></ul>
<b>Service component</b>	Defined directly on the resource binding
<b>Lifecycle or artifact state</b>	PRE-RESERVING (fixed)

## Select Resource Provider

Applies to resource bindings. Selects a resource provider from the candidate list that was built by the Build Resource Provider List action. The selected resource provider will be available to resource offering

actions in the token RSC\_PROVIDER\_ID. The selected provider will, optionally, be written to a property on the associated service component if the Provider Property Name input to the action is provided.

Table 44. Select Resource Provider action

<b>Properties</b>	<ul style="list-style-type: none"> <li>resourceBindingId - UUID of the resource binding. Default: [TOKEN:RSC_BINDING_ID]</li> <li>serviceComponentId - UUID of the service component, which is normally the parent of the resource binding. Default: [TOKEN:SVC_COMPONENT_ID]</li> <li>providerPropertyName - Name of the property on the service component, which will be holding the UUID of the selected resource provider.</li> </ul>
<b>Service component</b>	Defined directly on the resource binding
<b>Lifecycle or artifact state</b>	PRE-RESERVING (fixed)

## Select Resource Provider from Parent

Applies to resource bindings. Selects the resource provider already chosen by a service component's parent service component, as identified by the Parent Component ID and Provider Property Name properties. The selected resource provider will be available to resource offering actions in the token RSC\_PROVIDER\_ID.

Table 45. Select Resource Provider from Parent action

<b>Properties</b>	<ul style="list-style-type: none"> <li>parentComponentId - UUID of the service component which is the parent of the service component holding the resource binding. Default: [TOKEN:PRN_COMPONENT_ID]</li> <li>resourceBindingId - UUID of the resource binding. Default: [TOKEN:RSC_BINDING_ID]</li> <li>providerPropertyName - Name of the property on parent component (specified by parentComponentId) which holds the selected resource provider ID. It will also be used to create a property which this name on the direct parent of the resource binding to hold the selected resource provider ID.</li> </ul>
<b>Service component</b>	Defined directly on the resource binding
<b>Lifecycle or artifact state</b>	PRE-RESERVING (fixed)

## Subscriber actions

### HP Matrix Operating Environment provider

Table 46. Subscriber actions for the HP Matrix Operating Environment provider

Name	Service component	Description	Inputs
Add Server <sup>1</sup>	Server Group	Invokes Add Server on the MOE service. This action is dynamically added on the component during initial subscription creation.	
Add Disk <sup>2</sup>	Server	Invokes Add Disk on the MOE service. This action is	

<sup>1</sup> Add Server action will be supported only when the MOE service template is configured to support it.

<sup>2</sup> Add Disk action will be supported only when the MOE service template is configured to support it.

	Group	dynamically added on the component during initial subscription creation.	
Add Disk	Server Group	Invokes addNewDisk on the MOE service. This action is dynamically added on the component during initial subscription creation and available on MOE SOAP V4 API.	DISK_SIZE - Disk size on all serves in the server group.
Power On Server	Server	Invokes MOE Power on Server on the MOE server. This action is dynamically added on the component during initial subscription creation.	
Power Off Server	Server	Invokes MOE Power off Server on the MOE server. This action is dynamically added on the component during initial subscription creation.	
PowerCycle Server	Server	Invokes MOE Power Cycle Server on the MOE server. This action is dynamically added on the component during initial subscription creation and available on MOE SOAP V4 API.	
Flex CPU	Server	Invokes MOE editLogical Servers on the MOE server. This action is dynamically added on the component during initial subscription creation and available on MOE SOAP V4 API. This action is enabled for Virtual Servers and disabled for Physical Servers.	
Flex Memory	Server	Invokes MOE editLogical Server on the MOE server. This action is dynamically added on the component during initial subscription creation and available on MOE SOAP V4 API. This action is enabled for Virtual Servers and disabled for Physical Servers.	
Remove Server	Server	Invokes MOE removeLogical Server on the MOE server. This action is dynamically added on the component during initial subscription creation and available on MOE SOAP V4 API.	
Power On Service	Infrastructure service	Invokes MOE Power on Service on the MOE service.	
Power Off Service	Infrastructure service	Invokes MOE Power off Service on the MOE service.	
PowerCycle Service	Infrastructure service	Invokes MOE Power Cycle Service on the MOE Service. This actions is available on MOE SOAP V4 API.	

## HP Server Automation provider

Table 47. Subscriber actions for the HP Server Automation provider

Name	Service component	Description	Inputs
Add Server to Tier	Software Application Tier	Invokes the Add Server action on the server group and adds the server to the application tier	
Remove Server from Tier	Software Application Tier	Invokes the Remove Server action on the server group and removes the server from the application tier.	

## VMware vCenter provider

Table 48. Subscriber actions for the VMware vCenter provider

Name	Service	Description	Inputs
------	---------	-------------	--------

	component		
Stop Server	Server	Invokes the Stop Server action on the server.	
Start Server	Server	Invokes the Start Server action on the server.	
Suspend Server	Server	Invokes the Suspend Server action on the server.	
Restart Server	Server	Invokes the Restart Server action on the server.	
Flex CPU	Server Group	Sets the CPU count on the target VM based on the CPU_COUNT input value.	CPU_COUNT - The target count of CPUs on all servers in the server group.
Flex Memory	Server Group	Sets the memory configurations on the target VM based on the MEMORY_IN_MB input value.	MEMORY_IN_MB - The target memory configuration on all the servers in the server group.
Add Server	Server Group	This action adds a single server to the server group.	
Remove Server	Server Group	This action removes a random server from the server group.	

## HPCS OpenStack provider

Table 49. Subscriber actions for the HPCS OpenStack provider

Name	Service component	Description	Inputs
Reboot Server	Server	This action restarts the server instance	
Remove	Server	This action deletes the server instance	
Add Server	Server Group	This action adds a single server to the server group.	

## HP CloudOS provider

Table 507. Subscriber actions for the HP CloudOS provider

Name	Service component	Description	Inputs
Add Server to Server Group	Server Group	This action adds a Server to Server Group	Number of Instances
Add Volume Group to Server Group	Server Group	Add Volume Group to a Server Group	<ul style="list-style-type: none"> <li>attached_device</li> <li>volume_group_name</li> <li>volume_ids</li> </ul>
Remove Attached Volume Group	Server Group	Removes a Volume group from Server Group	<ul style="list-style-type: none"> <li>Volume_group_name</li> </ul>

Remove Security Group	Server	Removes a security group from a Server	<ul style="list-style-type: none"> <li>• ip_addresses</li> <li>• security_group_id</li> </ul>
Unassign Floating IP	Server	Unassign Floating IP	<ul style="list-style-type: none"> <li>• floating_ip_id</li> </ul>
Pause	Server	Pause a Server	
Assign Floating IP	Server	Assign a floating IP	<ul style="list-style-type: none"> <li>• Assign_to_ip_address</li> <li>• external_network_ref</li> <li>• floating_ip_id</li> </ul>
Reboot	Server	Restart the Server	<ul style="list-style-type: none"> <li>• rebootType</li> </ul>
Add Security Group	Server	Add a Security Group to a Server	<ul style="list-style-type: none"> <li>• Ip_addresses</li> <li>• Security_group_id</li> </ul>
Resume	Server	Resume a Server	
Suspend	Server	Suspend a Server	
Unpause	Server	Unpause a Server	
Remove Server	Server	Remove a Server from the Server Group	

## Property values

Table 51. Property values that must be configured for content that ships with HP CSA.

Property	Description
applicationName	Application name configured in HP ADM
datacenterName	Name of the datacenter in the vCenter on which to deploy the VM
applicationTierName	Application tier name that will be deployed in HP ADM
dmaWorkflowName	HP DMA workflow to be deployed on the target VM
dmaParam[1..n]	Parameters for the HP DMA workflow are added as properties of the form DMAPARAM[1..n]. For example, DMAPARAM1 , DMAPARAM2. The value for the properties is of the form <workflow step name for the input>.<input name>=<value> For example, if DMAPARAM1 is the property name, JBoss Validate Stand Alone Parameters is the workflow step name, Install Dir is the step input name and /opt/jboss is the input value, then the property will look like this: DMAPARAM1 -> JBoss Validate Stand Alone Parameters.Install Dir=/opt/jboss
memory	Memory size required for the deployed VM
moeGroupName	The server group name defined on the MOE template
nCPU	Number of CPUs required for the deployed VM
serverCount	Total number of servers required in the server group
osType	OS Type of the VM Template (LINUX or WINDOWS)
customSpec	The customization specification that is required by the VM template
ORGANIZATIONS	MOE provider organizations; this property should be configured on the MOE resource provider to be used with custom provider selection service design.
applicationRelease	HP ADM application release
sitescopeTemplate	Name of the HP SiteScope template on the HP SiteScope server
switchIPAddress	The switch management IP address. The switch should already be discovered on HP Network Automation 9.20 or higher using this management IP address .
templateReference	The name of the VM template available in vCenter to use for VM deployment. The value of this property is of type list when used with a vCenter-based dynamic options resource offering. In Case of MOE based Services, Name of the HP MOE service template to use for service creation
applicationVersion	HP ADM application version
vlanId	ID used for the newly created VLAN. For example, 222.
vlanIPSubnet	The VLAN subnet IP address configured on the provisioned VLAN. For example 192.168.10.1.
vlanSubnetMask	The VLAN subnet mask configured on the provisioned VLAN. For example, 255.255.255.0.
Image	Select the OS image available on the provider
Flavor	Select the size of the server
Type	Select the network type configured on Provider
Network	Select the network configured on Provider

## Environmental prerequisites and configuration

### HP Operations Orchestration

Table 52. Environmental prerequisites and configuration for HP Operations Orchestration

Configuration property	Description
/Configuration/System Accounts/CSA_REST_CREDENTIALS	Update the system account with the CSA REST user credentials. The user name must match the CSA_OO_USER system variable. The password is cloud.
/Configuration/System Properties/CSA_OO_USER	The default value for this variable is oolnboundUser, and its property value must match the user name of CSA_REST_CREDENTIALS.
/Configuration/System Properties/CSA_REST_URI	Update the property value with CSA REST URI. The URI is of the form https://<CSA IP>:<CSA port>/csa/rest Default value is https://localhost:8444/csa/rest  NOTE: HP OO and HP CSA should have the same SSL configuration. SSL must be enabled for the CSA REST URI, so it is required for both.
Central system configurations - Set save history based on flags to true	In OO Central, modify the following setting to true: Save history based on flags - When set to true, save history based on each step flags during headless run. Default is false, empty value interpreted as false. This setting is found on OO Central > Administration tab > System Configuration > General tab.

### HP Universal CMDB

Table 53. Environmental prerequisites and configuration for HP Universal CMDB

Configuration property	Description
CSAIntegration.zip	Deploy the package on the HP Universal CMDB server. See the README.txt file on the HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\ucmdb folder.

### HP SiteScope

Table 54. Environmental prerequisites and configuration for HP SiteScope

Configuration property	Description
CSA template.tmpl <sup>3</sup>	Import this file to the HP SiteScope server. See the README.txt file on the HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\sitescope folder for import details.
CSA templates Silver.tmpl	Import this file to the HP SiteScope server. See the README.txt file on the HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\sitescope folder for import details.
CSA templates Gold.tmpl	Import this file to the HP SiteScope server. See the README.txt file on the

<sup>3</sup> This file should be imported manually only when the CSA templates autoimport.tmpl fails to import on HP SiteScope server.

	HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\sitescope folder for import details.
CSA templates autoimport.tmpl	Import this file to the HP SiteScope server. See the README.txt file on the HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\sitescope folder for import details.

## HP Server Automation – ADM

Table 55. Environmental prerequisites and configuration for HP Server Automation – ADM

Configuration property	Description
	See Configuring HP Application Deployment Manager

## HP Server Automation – DMA

Table 56. Environmental prerequisites and configuration for HP Server Automation – DMA

Configuration property	Description
	See Configuring HP Database and Middleware Automation.

## HP Server Automation – Software policies

Table 57. Environmental prerequisites and configuration for HP Server Automation – Software policies

Configuration property	Description
	See Configuring HP Server Automation Software Policies.

## HPCS OpenStack

Table 58. Environmental prerequisites and configuration for HPCS OpenStack

Configuration property	Description
	See Configuring HP Cloud Services and OpenStack.

## VMware vCenter

Table 59. Environmental prerequisites and configuration for VMware vCenter

Configuration property	Description
VM Template	Clone the target from this template.

## HP Matrix Operating Environment

Table 60. Environmental prerequisites and configuration for HP Matrix Operating Environment

Configuration property	Description
MOE_SCL_TEMPLATE	Import this MOE service template on MOE Designer Portal. See README.txt file on the HP CSA instance in the folder <CSA Install Path>\CSAKit-3.1\Lib\matrix operating environment for more details.
ADM_WEB_DB_TIER_TEMPLATE	Import this MOE service template on MOE Designer Portal for use with ADM based service designs. See README.txt file on the HP CSA instance

	in the folder <CSA Install Path>\CSAKit-3.1\Lib\matrix operating environment for more details.
MOE_71_SCL_TEMPLATE	Import this MOE service template on MOE Designer Portal for MOE 7.1 SOAP v4 based service designs. See README.txt file on the HP CSA instance in the folder <CSA Install Path>\CSAKit-3.1\Lib\matrix operating environment for more details..

## HP Network Automation

Table 61. Environmental prerequisites and configuration for HP Network Automation

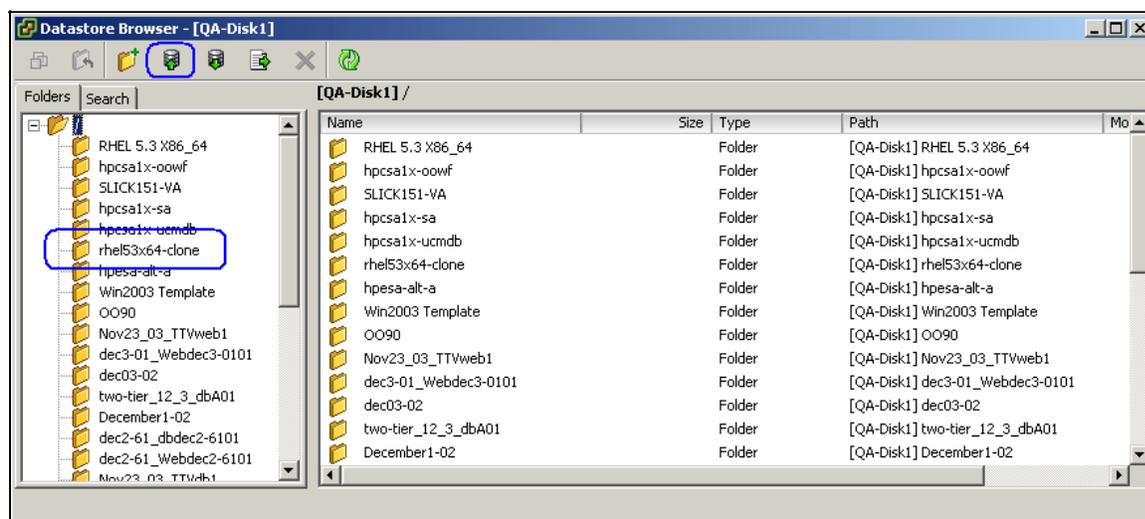
Configuration property	Description
HPN Virtual Network.exp	Import this file to the HP Network Automation portal. See the README.txt file on the HP CSA instance in the <CSA Install Path>\CSAKit-3.1\Lib\network automation folder for command script import details. See Configuring HP Network Automation.

## Configuring HP Application Deployment Manager

HP Server Automation must be installed and configured before you configure HP ADM. The HP Server Automation Simple/Advanced Installation Guide can be found at <http://support.openview.hp.com/selfsolve/manuals>. Information about setting permissions is found in a separate chapter. You can also find documentation in this location for HP Application Deployment Manager.

You can find the steps required to prepare a clone template in vCenter in the HP Cloud Service Automation Configuration Guide at <http://support.openview.hp.com/selfsolve/manuals>. The clone template should be prepared for a Red Hat Enterprise Linux 5.3 x 64 OS image.

TEMPLATEREFERENCE : rhel53x64-clone



## CSA service design setup

The service design and the resource offering that are needed to provision the application can be obtained from the Content archives section.

## Properties

Table 62. Properties required on the service design to deploy HP Application Deployment Management.

Property Name	Value	Description
ADMAPPLICATION	Multitier	Application configured on HP ADM
Release	Initial Release	Release of the application
Version	1	Version for the application in HP ADM
DEPLOYAPPLICATION	MySQL 5.1 or Apache 2.2	Tier name configured for an application, name is case-sensitive
NOOFSERVERS	1	Number of servers per tier
DATACENTERNAME		Datacenter name in vCenter
TEMPLATEREFERENCE		Clone template reference configured in vCenter

## Configuring HP Cloud Services and OpenStack

### Install HP Cloud Services

No installation is required for HP Cloud Services as it is accessible through the Web. However, you will need to configure HP Cloud Services to integrate with HP Cloud Service Automation. See Configure HP Cloud Services in this document for more information.

### Configure HP Cloud Services

The following steps are required to configure HP Cloud Services to integrate successfully with HP Cloud Service Automation

#### Step 1: Sign Up as an HP Cloud Services User

You must be a registered user to access HP Cloud Services. Sign up for HP Cloud Services at <https://console.hpcloud.com/signup>.

#### Step 2: Configure a Security Group and KeyPair

You must have a Security Group and KeyPair configured in the HP Cloud Services environment before you can create an instance.

1. Go to <https://console.hpcloud.com/login>.
2. Under Managed Security Groups, add a group named frontend for each availability zone and region.
3. Under Manage KeyPair, create a KeyPair named nova for each availability zone and region.

You can configure the Security Group and Keypair values as default values in the Server Group component properties of a HP CSA service design.

#### Step 3: Open a Port to Access HP Cloud Services

1. Open port 35357 on the HP CSA system so it has access to the HP Cloud Services environment.

2. Access the HP Cloud Services environment at <https://region.geo.identity.hpcloudsvc.com:35357/v2.0>.

## Configuring HP CloudOS

In order to create/import topology service design one needs to create CloudOS profile and Resource Pool on CloudOS provider.

**Refer to CloudOS document to create the profile and resource pool.**

### Importing Topology out-of-the-box content

After importing the CloudOS out-of-the-box content, follow the steps to validate the service design

1. Open the HP CSA Management Console.
2. Select the Design tab.
3. Select the topology design.
4. Click on the imported out-of-the-box design, such as SingleTier or TwoTier design.
5. Select the Editor tab.
6. Check the Error(s) tab for errors on the design.  
If there are no errors then the design is valid.
7. Select the respective components like Server Group or Network or Volume Group on the canvas.
8. In the panel on the right, initialize the required properties for each component.
9. Click **Save**.

## Configuring HP Database and Middleware Automation

### DMA Organization

Create the consumer organization on HP Database and Middleware Automation (HP DMA). The organization name on HP DMA should match the HP CSA consumer organization identifier, which is the identifier created for the consumer organization name by HP CSA.

Refer to the section Roles and Permissions, Role-Based Database and Middleware Automation Permissions in the HP Server Automation User Guide: Database and Middleware Automation, which can be found at <http://support.openview.hp.com/selfsolve/manuals>.

### User Permissions

You should also refer to HP Server Automation User Guide: Database and Middleware Automation for the HP Server Automation user permissions required to deploy applications using DMA. See the Roles and Permissions, Types of Permissions section.

## Solution Pack

Import the required solution pack to the HP DMA server. The solution packs can be downloaded from the HP Live Network Portal at <https://hpln.hp.com/group/database-and-middleware-automation>. For JBoss, download the AS Provisioning solution pack under Middleware Solution Packs.

The steps required to import the solution pack can be found in HP Server Automation User Guide: Database and Middleware Automation. See the section Solutions, Working With Solution Packs.

## Workflow Dependencies

The HP DMA workflows may require some dependent software packages to be imported into the HP Server Automation core. After installing the solution pack, refer to the workflow documentation to find the dependencies. In the HP DMA console, look for Workflows on the Automation tab. Select the workflow to be run. On its documentation page, it is listed in the Dependencies section.

The Provision JBoss StandAlone workflow requires JDK 1.6 update 24 and RedHat JBoss 5.1.1 zip installs. Download the required packages to a temp directory on the machine containing the HP Server Automation client. The dependent software should be imported into the HP Server Automation core.

To import the software, complete the following steps:

1. Open the HP Server Automation client.
2. Click Library from the left panel, then navigate to Packages > Required OS Version.
3. Right-click an empty area in the left panel and select Import Software.
4. Select all files (downloaded dependencies) and then click Import.

## Configuring HP Network Automation

HP Network Automation (HP NA) must be installed and configured before you use it to provision a VLAN from a networking switch. The HP Network Automation Software Installation and Upgrade Guide helps to set up HP NA which can be found at <http://support.openview.hp.com/selfsolve/manuals>.

To configure HP Network Automation, complete the following steps:

1. Install HP Network Automation ( For example, v 9.20).
2. By default Network Automation supplies NA driver pack with base installation. It is recommended to install the latest HP NA driver pack (For example : HP NA July 2012 driver pack) after installing NA. HP NA July 2012 driver pack is available at [https://hpln.hp.com/system/files/NA76-9x\\_driver\\_setup\\_windows\\_july2012\\_7215-071812.zip](https://hpln.hp.com/system/files/NA76-9x_driver_setup_windows_july2012_7215-071812.zip) )  
The driver pack can also be downloaded from HP Live network available at <https://hpln.hp.com/node/19/contentfiles> (this site requires that you register with HP Passport).
3. Set up the HP Networking switch with the management IP address.
  - a. Enable SSH, TFTP, SCP, etc. in the switch according to your requirements.
  - b. The configured networking switch should be accessible from the HP NA server.
4. Discover and take a snapshot of the configured networking switch in HP NA portal. The user guide helps you to set up this step. For example, in NA v9.20 the user guide is available in NA server at <HP NA Install Path>\docs\en\user\_guide.pdf .This path might vary depending on installed HP NA version. We assume that the networking switch has been discovered and managed by HP NA.
5. Import the command script to the HP NA portal. See the README file on the HP CSA instance in the <CSA Install

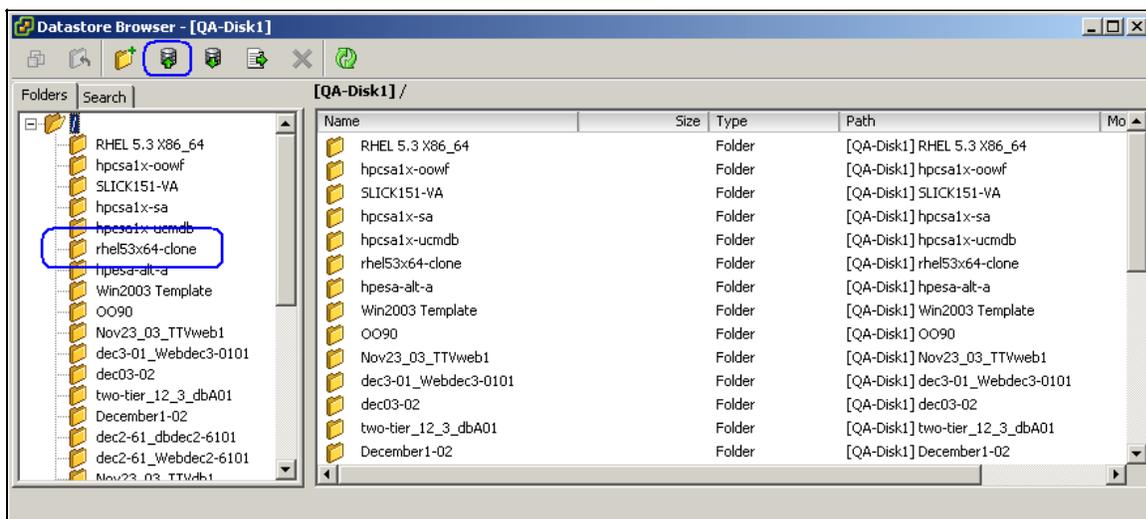
Path>\CSAKit-3.1\Lib\network automation folder for more details. We assume that the command script has been tested manually and executes successfully from the HP NA console.

## Configuring HP Server Automation Software Policies

HP Server Automation must be installed and configured before you can use it to deploy applications. The HP Server Automation Simple/Advanced Installation Guide can be found at <http://support.openview.hp.com/selfsolve/manuals>. Information about setting permissions is found in a separate chapter.

You can find the steps required to prepare a clone template in vCenter in the HP Cloud Service Automation Configuration Guide at <http://support.openview.hp.com/selfsolve/manuals>.

TEMPLATEREFERENCE : rhel53x64-clone



### Prerequisites

A VM template must be prepared as explained in the HP Cloud Service Automation Configuration Guide.

OO-SA v9.00.06 content must be installed in Operations Orchestration v9.03.0001 or higher.

The SA software policies must have the same name as the software components in the service design. In the CSA\_BP\_VCENTER\_COMPUTE\_SA\_SOFTWARE\_POLICIES\_v3.10.00 service design, software policies with the names Apache, MySQL, PHP must be available in SA.

### CSA service design setup

The service design and the resource offerings that are needed can be obtained from the section HP CSA 3.10 Content Archives in this document.

### Properties

Table 63. Properties required on the service design

Property Name	Value	Description
OSTYPE	WINDOWS, LINUX	The type of the operating system

TEMPLATEREFERENCE		The name of the template reference configured in vCenter that should be used for VM cloning
NCPU	1	Number of CPUs in the server
MEMORYINMB	512	The memory of the server in megabytes
NOOFSERVERS	1	Number of servers per tier
DATACENTERNAME		Datacenter name in vCenter

## Content archives

### CSA\_BP\_MOE\_COMPUTE\_ADM\_SITESCOPE\_UCMDB\_v3.20.00

This content archive provisions a compute infrastructure using HP MOE, deploys application using HP ADM, monitors servers using HP SiteScope, and creates/manages service topology on HP Universal CMDB.

Resource offerings:

- UCMDB\_CONFIG\_MANAGEMENT\_3.20
- SA\_NOOP\_3.20
- MOE\_COMPUTE\_ADM\_3.20
- SA\_MANAGE\_SERVERS\_3.20
- SA\_ADM\_3.20
- SA\_MOE\_ADM\_FLEX\_3.20
- SITESCOPE\_SERVER\_MONITORING\_3.20

Table 64. Service design

<b>Name</b>	MOE_COMPUTE_ADM_SITESCOPE_UCMDB_3.20
<b>Subscriber options</b>	None

Table 65. Service components

Component type	Input properties	Consumer visible properties	Subscriber actions
Service Composite	None	None	None
Software Application Service	templateReference applicationName applicationRelease applicationVersion sitescopeTemplate	applicationName applicationRelease applicationVersion moeServiceName	None
Software Application Tier	applicationTierName	applicationTierName	None
Server Group	moeGroupName	serverGroupName	None
Server	None	hostname	Power On Server

		ipAddress disk (When data disks are used. Display names are the same as those defined for the MOE service template.)	Power Off Server
--	--	---	------------------

Table 66. Dependencies

Required information	Specific values
External or provider dependency	HP Matrix Operating Environment HP Universal CMDB HP SiteScope HP Server Automation
Required provider and template	HP Matrix Operating Environment - ADM_WEB_DB_TIER_TEMPLATE HP SiteScope – CSA templates
Required resource offering	UCMDB_CONFIG_MANAGEMENT_3.20 SA_NOOP_3.20 MOE_COMPUTE_ADM_3.20 SA_MANAGE_SERVERS_3.20 SA_ADM_3.20 SA_MOE_ADM_FLEX_3.20 SITESCOPE_SERVER_MONITORING_3.20

## HP Service Manager as an external approval system

This section helps in the integration of HP Service Manager with HP CSA, where HP Service Manager is used as an external approval system.

### HP Service Manager account prerequisites

- HP Service Manager integration account should have enough privilege for creating change tickets in HPSM change module (Example account: falcon or System.Admin).
- An operator in HP SM should have the privilege to approve or deny the created change request ticket (Example account: Change.Approver)
- The HP CSA workload will be approved or denied after operator making decision on HP SM change tickets.
- HP SM has been configured integration with LDAP (Active Directory). Refer HP CSA 3.20 installation guide for more details.

Complete the HP SM integration by referring to the Configure HP Service Manager section of HP CSA 3.20 installation guide and then configure the external approval system in HP CSA as explained below.

### Running the process definition tool

To run the process definition tool, complete the following steps:

1. On the system where you installed HP CSA, open the following file in a text editor:  
`\Program Files\Hewlett-Packard\CSA\Tools\ProcessDefinitionTool HPOOInputSample.xml`
2. Add the following line at the end of the file:  

```
<ooengine accessPointType="EXTERNAL_APPROVAL" name="<give identifier OO engine for CSA>" password="<OO central admin password>" truststore="<CSA
```

```
installation folder>/jre/lib/security/cacerts" truststorePassword="<CSA
keystore password>" uri=" https://<OO central IP
address>:8443/PAS/services/WSCentralService" username="<OO central admin
username>" >

<folder flow="true" path="/Library/CSA/3.0/Providers/Service
Manager/External Approval/Actions/SM Initiate Request Approval"
recursive="false" update="true" />

</ooengine>
```

3. Run the following command from the process definition folder:

```
java -jar process-defn-tool.jar -d db.properties -i HPOOInputSample.xml
```

## Configuring external approval

To configure external approval, complete the following steps:

1. Log on to the HP CSA Management Console using an account with administrator privileges.
2. Select the Service Catalogs tab.
3. Select the catalog you want to use or create new one.
4. Click **Approval Policies**.
5. Click **Add Approval Policy** near the bottom of the screen. The Add Approval Policy dialog will open.
6. Enter a name for the policy and select **Delegated template** for the approval template. The Add Approval Policy dialog will change to include new fields.
7. Select SM Initiate Request Approval for the process definition.
8. Click **Save Changes**.

**Edit Approval Policy**  
Revise your approval to adjust to your changing business needs

**Approval Policy Name**  
SM Approval Policy

**Approval Policy Template**  
Delegated Template

Use this template to set up third-party approvals, which are configured by designating a process definition that will be used to communicate with HP Operations Orchestration about the approval process requirements.

**Process Definition**  
SM Initiate Request Approval

Automatic Approval

**Save Changes** **Cancel**

9. Back in the Service Catalog, and click **Published Offerings**.
10. Add a new offering or edit an exist offering.
11. Make sure the approval process is set to **Active**, and select **SM Initiate Request Approval** for the approval policy again.
12. Save the offering.

### **Configuring HP SM LDAP (Active Directory) integration**

To configure LDAP for HP SM, complete the following steps:

1. Create a new HP CSA Consumer user in the Active Directory server to request a change ticket (for example: consumer).
2. Log on to the HP SM client using as an administrative user such as falcon or System.Admin.
3. In HP SM, create a new power user with same name created for the HP CSA Consumer user in Active Directory (consumer) by cloning an administrator account such as falcon.  
See the HP Service Manager documentation for instructions on how to create new contact and its corresponding operator to achieve this step.
4. Click **Connection > System Administration > Ongoing Maintenance > System > LDAP mapping**.
5. Enter values for the following:
  - **LDAP Server:** IP Address of LDAP server
  - **LDAP Port:** 389
  - **LDAP Base Directory:** CN=Users,DC=CSA,DC=COM (This is sample data)

6. Click **Save**.
7. Click **Set File/Field Level Mapping** and type "operator" for the Name.
8. Click **Search**.
9. Check the fields mentioned in step 5 to make sure they are filled in correctly on the <HP Service Manager LDAP Mapping - File/Field Level Specifications> page.
10. In the Field Name/LDAP Attribute Name table, make sure that you have value CN for the NAME field in the Field Name column.
11. Edit sm.ini, which is located in <HPSM install directory>\Server\RUN\ and include the following properties:
  - ldapauthenticateonly:1 ldapnostrictlogin:1
  - ldapbinddn:CN=Administrator,CN=Users,DC=CSA,DC=COM ldapbindpass:password
  - ldapdisable:0 ldapstats:1
12. Restart the HP SM server.

Now you should be able to log in to HP Service Manager using an LDAP user and password.

## **HP SM execution order**

To approve or deny the HP SM Change request ticket, complete the following steps:

1. Log on to the HP CSA Consumer Portal as the user who has privileges to create a service request.
2. Request the service offering you modified in the previous steps.
3. Log on HP Service Manager using a account which has privilege to approve or deny the created change request ticket (Example account: Change. Approver)
4. Click Approval inbox from the menu navigator, check the request related change tickets that have been created and are waiting for approval.
5. Click Approval inbox from the menu navigator and click Approve or Deny to make a decision on this request. The subscription won't be created until the approval has been made.

HP CSA deploys the approved subscription requests.

## **Limitation**

To request the HP CSA subscription, HP CSA Consumer user should be created both in HP Service Manager and HP CSA. For example, the user consumer should be present both in HP CSA and HP Service manager.

# **Resource synchronization**

## **Resource sync action**

This section describes about the action demonstrated to synchronize CPU and memory resource capacity of the vCenter provider with HP CSA resource pool. For more details on how pools synchronize action works, see Create a Resource Pool section in the HP CSA Management Console Help.

## Prerequisite

CSA OO content must be installed. Refer to the install guide for details.

Import process definitions

Run the Process Definition Tool with the following lines in the HPOOinput.xml file:

```
</ooengine>
  <ooengine    accessPointType="RESOURCE_POOL_SYNC"    name="OO-RESOURCE-POOL-
SYNC" password="ENC(LHNJx6hk0gDV12gAIa6MNQ==)" truststore="C:/Program
Files/Java/jre7/lib/security/cacerts"
truststorePassword="ENC(q6ctyVrBrqWIpl07R00q58CrZh8tzPkP)"
uri="https://localhost:8443/PAS/services/WSCentralService" username="admin">
  <folder path="/Library/CSA/3.2/Resource Pool Sync/Actions" recursive="true"
update="true"/>
</ooengine>
```

## Executing the sync action

1. Create a new Resource Pool for the vCenter Provider by supplying datacenter name for the known by Provider As value.
2. Select **vCenter Resource Synchronization** as **vCenter Sync resource Capacity**.
3. When the resource pool has been created, add a resource type, CPU, and memory for the resource pool created under the resources tab with the resource availability set as available.
4. Under summary tab, click **Synchronize Now**.
5. After synchronization is complete, the resource pool Last Synchronized should display the latest updated timestamp. The CPU and memory resource capacities should have updated its Available value from the provider.