Hewlett Packard Enterprise

Data Center Automation Suite

Installation and Administration Guide

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Contents

Overview

DCA is a Suite used to provision and manage servers. DCA bundles Operations Orchestration (OO), Server Automation (SA), and IT Operations Compliance (ITOC) to enable you to automate Data Center management activities such as:

- Day 1 server provisioning
- Day 2 audit and compliance, software management, virtualization management, and more

You can leverage out-of-the-box user interface flows for day 1 and day 2 management activities and can tap into the rich capabilities of OO, SA, ITOC, and the DCA IT Operations portal for more complex management use-cases.

Installation Procedure Using the DCA Installer

This is the overall procedure for downloading, preparing, deploying, and starting the Data Center Automation Suite (DCA).

To install the Data Center Automation Suite (DCA), you will perform the following steps:

1. Install the VMware vSphere client
2. Download the installation package including the split OVA files, the MD5 checksum files and the DCA-Express installer.
3. Reassemble the appliance OVA file using the Installer.
4. Deploy the template
5. Start the appliance so that it completes its first time setup and is ready to use

IMPORTANT: HPE recommends that you take a virtual machine snapshot before starting the appliance for the first time. In addition, before taking a snapshot, then powering on DCA, verify the date and time are set properly on your VM host system. Be sure to maintain an accurate time on the host system, such as with NTP, because the VM guest will synchronize with that time.

Best Practices

HPE recommends following industry-standard high availability and disaster recovery methods and practices, especially when working with mission-critical IT systems. For detailed information, please see the section titled DCA high-availability (HA) and disaster recovery (DR) in this guide.

Downloading and Installing DCA

This is the systematic procedure for downloading, preparing, and deploying the Data Center Automation Suite (DCA).

1. Download all files that make up the DCA. This set includes the split OVA files, MD5 checksum files, documentation, and the DCA Installer.
2. Create a folder that will hold the reassembled OVA file.
3. Launch the DCA Installer by opening the “DCA_VA_1601_Setup.exe” file.
4. Select English, Japanese or Simplified Chinese language for the installer user interface. Click **OK**.
5. The Installer will open; Click **Next**.
6. Select the target folder that you created in Step 2 for the complete OVA file, i.e. the target folder.
7. Click **OK** to select.
8. Click **Install** to finish installing the OVA file.
9. The installer verifies all prerequisites for application reassembly of the split OVA file are installed. (Note: the ‘Perform Integrity Check’ box is pre-selected by default.
10. Click Reassemble.
11. The Setup reassembles all files for the appliance and will output a ‘Reassembly completed’ message once finished.
12. The OVA file is now complete. Click **Next**.
13. Please note down the location of the virtual machine files in the target folder.
14. Click **Finish**.
15. Now, navigate to the target folder that contains the OVA file. Note that it now contains a single OVA file. You are ready to deploy the OVF template.

Deploy OVF Template

When the template file is successfully created, it can be deployed using VMware vCenter 5.x or 6.x. If you want to deploy the appliance in multiple networks, see “Deploying in a multiple network environment”.

Before you begin, ensure that you have the following information available, needed for the appliance:

REQUIRED	
Hostname	A fully qualified hostname for the appliance.
Deployment IP address	A static IPv4 address for the deployment network that will be assigned to the appliance. A DHCP-assigned address for the appliance is not supported.
Subnet Mask	Network mask
Gateway	Network gateway
DNS	One or more DNS servers. Multiple entries can be separated using a comma.
root password	Password for the appliance root account.
Admin account password	Password for all the admin accounts for the embedded products SA, OO, ITOC, and IT Operator UI.
OPTIONAL	
Management IP address	A static IPv4 address for the optional management network that will be assigned to the appliance. A DHCP-assigned address for the appliance is not supported.
Subnet Mask	Network mask
vCenter IP	One or more IPv4 address of (a) Windows vCenter to be managed by the appliance. **Note:** The vCenter(s) can also be added later through the Server Automation interface. It enables the creation of VMs using this vCenter directly from the appliance interface in your VMware ESXi environment.
vCenter user	Username and password for the vCenter admin user.
SMTP host	SMTP host for job email notification.

The next steps are to start the VMware vSphere client and then deploy the OVF template within your environment.

Note: You must connect to your vCenter, not directly to your ESXi host; otherwise, the OVF Parameters screen might not be displayed. This is a VMware limitation.

1. Start the VMware vSphere client.
2. On the menu bar, select **File**, then **Deploy OVF Template**.
3. Click **Next**.

   The vSphere Client Deploy OVF Template installer will now take you sequentially through the following installation steps, which are visible on the left sidebar of the installer:

   - OVF Template Details
   - End User License Agreement
   - Name and Location
   - Host / Cluster
   - Resource Pool
   - Disk Format
   - Properties
   - Ready to Complete.
4. **OVF Template Details:** This screen shows details of the template such as Product, Version, Vendor, Publisher, Download Size, Size on Disk available (based on how the application is provisioned), and the template Description.
5. Read the End User License Agreement. Click **Accept**, and then click **Next**.
6. On the Name and Location screen, specify the Name and Location for the deployed template.
7. Select an Inventory location.
8. Select the text in the Name window, which defaults to Data Center Automation Suite (DCA), and re-name the appliance.
9. Click **Next**.
10. On the Host/Cluster screen, select a cluster in which you want to run the deployed template.
11. Click **Next**.
12. On the Resource Pool screen, select a Resource Pool within which you want to deploy the template.
13. Click **Next**.
14. On the Storage screen, select a storage location where you want to store the virtual machine files.
15. Click **Next**.

16. On the Disk Format screen, there are three options: Thick Provision, Lazy Zeroed; Thick Provision, Eager Zeroed; and Thin Provision. It is recommended that you select **Thin Provision**, and then click **Next**.

    NOTE: For maximum performance, you may choose a Thick Provisioning option, however this will require more system resources.

17. On the Network Mapping screen, select the Network for the deployed template, and then click **Next**. You must always enable the Deployment network. Optionally you can select to attach the application to a management network.

    Note on networks: Deployment networks are typically considered insecure as they may have DHCP and PXE enabled. Provisioning and management of target servers happens in this network. Generally, these do not have intranet/Internet access. Management networks are typically considered secure. Generally, these have access to the intranet/Internet.

18. The Properties screen has several selections to complete (refer to the table above for more details).

    NOTE: Regarding the two optional properties:

    The 'vCenter' is used to register one or more vCenter servers to enable the use of the SA V12N feature to deploy and manage virtual machines using the OOTB DCA virtual server provisioning offering.

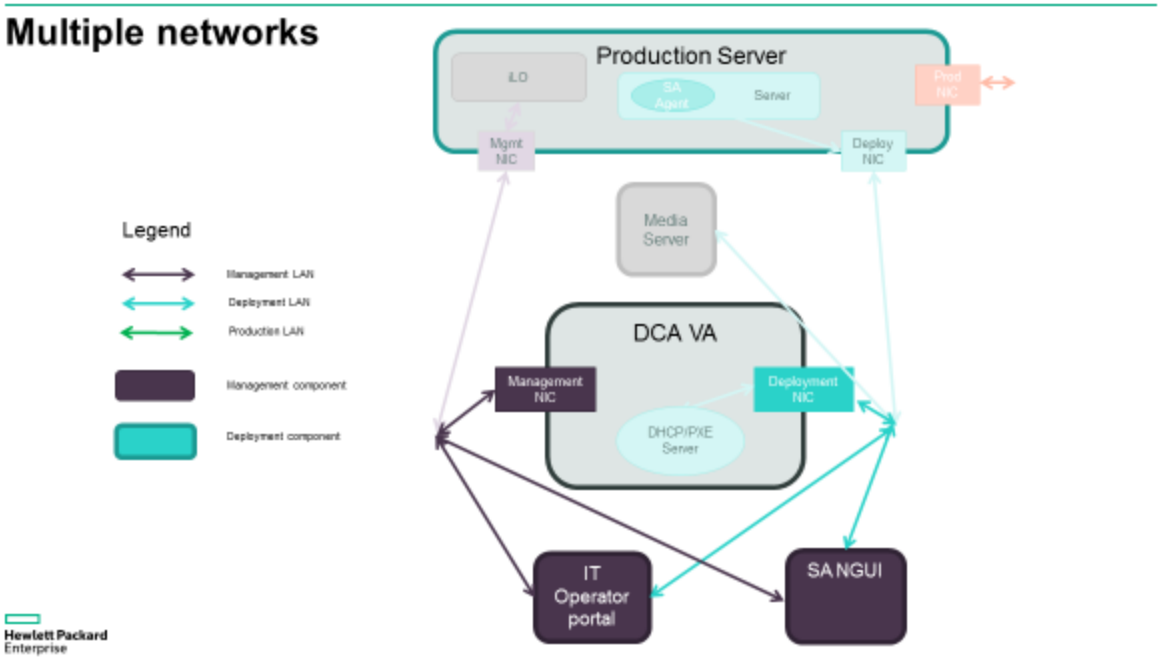
    SMTP server is the IP or hostname of a specific SMTP server to be used in case default 'smtp' does not work through SA. See the Server Automation Administration Guide, section "Configuring the Mail Server for a Facility". You can find a link to this document in the SA Documentation section of this guide.

19. On the **Ready to Complete** tab, review your configuration, then click **Finish** to start the deployment.
    NOTE: the selection box 'Power on after deployment' is un-checked. Do not check this box, as you should take a snapshot first BEFORE you power on the virtual machine.
    A status window will appear during deployment showing progress. Please be patient; this process can take several minutes to an hour.
20. You will get a status message, 'Deployment Completed Successfully' once the deployment is successful.
21. Click **Close**.
22. Locate the deployed appliance; (**NOTE:** vSphere will show it under Home > Inventory > VMs and Templates.)
    This concludes the deployment phase. You are now ready to run the DCA.

Deploying in a multiple network environment

DCA supports deployment in environments that have multiple networks that handle different types of traffic and which might be isolated from one another. More specifically, there are two such networks defined in DCA context:

- Deployment network – the network that is used to provision and manage servers
  - Considered the 'insecure' network with PXE, DHCP, media servers, build servers
  - Typically no access to intranet / Internet
- Management network – the network used for configuration and administration tasks

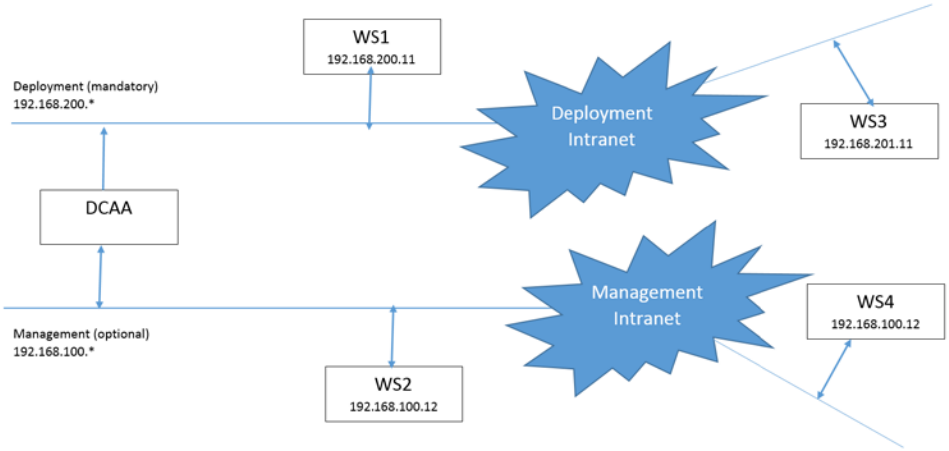


Therefore, the appliance has two network interfaces that can be connected to the corresponding network. The required configuration parameters will have to be provided during the OVF deployment for each of the two networks.

If there is no such use-case based separation in the environment and only one network is used, then only the options for the Deployment network need to be provided during OVF deployment and the management network will be ignored.

By default, the embedded products are configured to listen on both interfaces, therefore the portals and the SA client will be available in both networks. Note that in case the two networks are **isolated** (traffic from one network is not routed to the other) there are a few notes you should consider:

- The Operations portal performs redirects that use the hostname provided during OVF deploy. Therefore, the hostname should be resolvable to a valid IP on the host from which the connection is made; i.e. for a browser connecting from the management network the hostname needs to resolve to the appliance management IP and for one connecting from the deployment network, to the IP of the deployment interface.
- There is only one default gateway defined for the appliance (usually set in the management network). If the appliance is connected to isolated intranets (management and deployment), connections to and from hosts that are not on the same subnet as the appliance will only be possible if the default gateway is set in that intranet. For example, in the diagram below, connections from WS3 workstation will not be possible because the default route uses the management interface.



Virtual Snapshot

After you have deployed the appliance, and before turning the appliance on for the first time, it is important to capture a system snapshot. This allows you to go back to an earlier state in the appliance if you encounter any issues.

1. Right click on deployed DCA appliance to open the context menu.
2. Navigate to Snapshot, and then click on **Take Virtual Snapshot** before starting the appliance for the first time.
3. In the Take Virtual Machine Snapshot window, enter a snapshot name, and then click **OK**. You can also enter a short description of the snapshot.
4. Once you click **OK**, vSphere will create a snapshot. In the vSphere Recent Tasks window, click on Create VM Snapshot to check that the snapshot has been created successfully.

Starting DCA

Important: Before powering on DCA for the first time, verify that the date and time are properly set on the VM host system. Maintain an accurate time on the host system, such as Network Time Protocol (NTP), as the VM will synchronize with that time.

1. Right click again on the deployed DCA appliance to open the Context menu.
2. Select **Open Console** to open the console window.
3. Click on the green **Play** button to start the appliance. The appliance starts, configures the networking and starts its first time setup configuration.
4. The appliance will now run through a series of checks and self-tests during initialization. This will take between 15 and 40 minutes.
   Once initialized, the appliance is ready to be used. Please check the `/var/log/sava/first_time_setup.out` log file to make sure that the initialization phase completed successfully. The log should end with a “BUILD SUCCESSFUL” message.
5. You will see a login screen appear at the console prompt.

   Default DCA login information
   - The Management Console is available at: *https://<appliance>:8444/csa*
     (username: **admin** / password: **<configured admin account password>**)
   - The IT Operations portal is available at *https://<appliance>:8079*
     (username: **consumer** / password: **<configured admin account password>**)
   - The Operations Orchestration portal is available at *https://<appliance>:8443/oo*
     (username: **admin** / password: **<configured admin account password>**)
   - The Server Automation client can be downloaded from *https://<appliance>*
     Click on the “Download HPE Launcher” link and install the SA client.
     (username: **admin** / password: **<configured admin account password>**)
   - The IT Operations Compliance portal is available at *https://<appliance>:9100*

   The password for the above accounts is set to the “Master admin password” provided during the OVF deployment.

Note: For better performance, once the initialization phase competed successfully, the snapshot taken in the previous steps can be removed.

Post installation Tasks

After the First Time Setup completes, the following steps must be performed:

- Configure and Publish the offerings

In order to provision servers the following steps must be performed:

- Configure DHCP on the Appliance
- Configure the Media Server
- Update/Create Build Plans for the Desired Operating Systems
- Create a New Build Plan

Once these steps are completed and your servers are provisioned, the appliance is fully ready to be used.

Other Post-Installation tasks that may need to be done initially:

- Setting up and defining Server Automation (SA) Software Policies and Patch Policies

- Configuring IT Operations Compliance business services, policies, and maintenance windows
- You may be a current SAVA 10.x customer looking to migrate to DCA
- You may need to add one or more vCenter manually
- Learn how to redeploy DCA using the initial appliance snapshot

SA Software Policies

For more information on how to create software policies and manage packages, see:

Document	Reference
SA User Guide: Software Management	Chapter 2 - Creating and Managing Software Policies Chapter 3 - Managing Software Packages

You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required).

SA Patch Policies

In order to patch the managed servers, the patch metadata database and patches need to be imported and patch policies defined. For more information, consult the *SA User Guide: Server Patching*. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required).

IT Operations Compliance business services, policies and maintenance windows

In order to enable ITOC integration from the IT Operator Portal offerings, business services, policies and maintenance windows will need to be setup in ITOC so they can be selected from the IT Operator Portal offerings. For more information, consult the IT Operations Compliance User Guide. You can use the ITOC Documentation Library to find the latest version of the guides for your version of ITOC on the HPE Software Support Online (HPE Passport required).

Migrating from SAVA 10.x

Current SAVA 10.x customers looking to migrate will want to see the topic: Migrations - Upgrading from SAVA 10.x to DCA 1.0 in this guide for more information.

Re-deploy DCA using OVF Properties

After DCA is setup and deployed, you may want to run the re-deploy of appliance from a snapshot using a new configuration. See the topic: Manipulate OVF Properties in this guide for more information.

Configure and Publish the Offerings

To make the offerings available on the Operations Portal, they first need to be configured and published. In order to use the Provision Servers offering to create new virtual machines, it must be configured with your vCenter details.

The following steps should be performed to publish an offering:

- Connect to the Management Console (https://<appliance>:8444/csa)
- Click on Offerings
- Click on the desired offering
- Review the offering configuration, by accessing the Options tab. For the Provision Servers offering it is mandatory to configure the New Virtual Servers section with appropriate values for the vCenter (For example: Datastore, inventory folder, network name). Save your changes before you continue.
  NOTE: The VMware virtual server provisioning will work only if virtualization is pre-configured.
- Access the Publishing tab and click on the Publish button to make the offering available on the Operations Portal. Select the category “Server Management” and then click **Publish**.

See the “Offerings” section for more information on each available offering.

Configure DHCP on the Appliance

The DHCP Network Configuration Tool for IPv4 is installed on the appliance.

Perform the following steps to configure networks for Provisioning:

Log in as root on the appliance.

(Optional) Make a backup copy of the configuration file with the following commands:

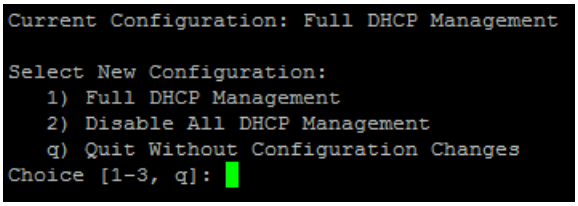
```
cd /etc/opt/opsware/dhcpd
```

```
cp dhcpd.conf dhcpd.conf.orig
```

Run the DHCP Network Configuration Tool with the following command:

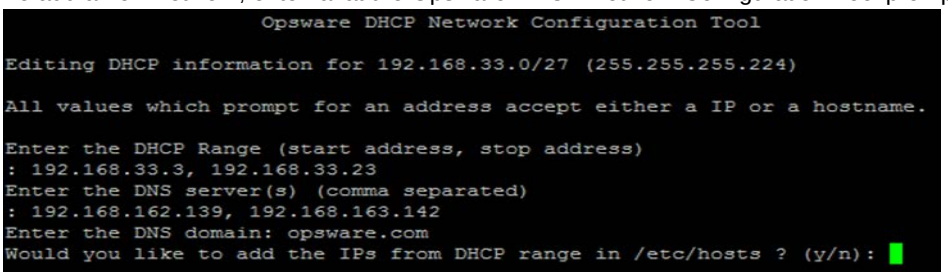
```
/opt/opsware/dhcpd/sbin/dhcpdtool
```

The following DHCP Network Configuration Tool main menu appears:



1. To perform full DHCP Management, enter '1' at the selection prompt;
2. To disable All DHCP Management, enter '2' at the prompt;
3. To quit without configuration changes, enter 'q' at the prompt.

To add a new network, enter 'a' at the Opsware DHCP Network Configuration Tool prompt:



- To configure the DHCP service on the local network, enter '1' at the prompt. Local networks are detected automatically and displayed.
- If you are adding a local network, you need to enter the IP addresses or host names of the DHCP range and the DNS servers. Note that a comma and a space separate the IP addresses.
- If the displayed information is correct, enter 'k' to keep the network and return to the main menu.
- At the main menu, to save the information you have entered, enter 's' ; Or
- To edit a configured network, enter the corresponding integer and return to step three.
- To exit the DHCP Network Configuration Tool, enter 'e'. You are prompted to start (or restart) the DHCP server process.
- To start (or restart) the DHCP server process, enter 'y'. The DHCP Network Configuration Tool displays diagnostic output as part of its start-up.

Configure Media Server

To perform OS provisioning tasks, a media server that hosts the installation media for the desired Operating Systems is required.

For more information on setting up the media server, please consult the Provisioning User Guide, Chapter 2: Performing SA Provisioning. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required).

Update/Create Build Plans

Before server provisioning can be performed, Build Plans for the desired operating system need to be created. In order to have Build Plans that will be filtered correctly in the Operations Portal, it is recommended to copy the templates available from the SA Library located in `/Opsware/Tools/Build Plans/SAVA`.

NOTE: The supplied build plans have the required custom attributes for filtering in the Operations Portal. User created Build Plans should be placed in `/Home/CommonCustomerBuildPlans` under the corresponding folder (in the ProLiant folder place Build Plans customized for provisioning ProLiant systems, Non-ProLiant/<OS family> folder for others).

Create a New Build Plan

To create a Build Plan, follow the steps below:

1. Start the SA client and access the **Library**.
2. Select the "By Folder" tab and navigate to the corresponding subfolder in: `/Home/CommonCustomerBuildPlans`
3. Right click and select **New > OS Build Plan**.
4. Provide a name for the Build Plan; this name will appear in the Operations Portal.
5. Click on **Build Plan Items** and click **Copy Plan**.
6. Select a Build Plan for the desired Operating system from one of the subfolders of: `/Opsware/Tools/Build Plans/SAVA`
7. Configure the "Set Media Source" step in the build plan; then, click on the "Set Media Source" step.
8. Set the **Parameters** field to a working network share that contains the media for the Operating System.
9. For Windows Operating Systems, a **Product Key** needs to be provided.
10. Click on the **Custom Attributes View**, in the left side of the window. The Custom Attributes should be defined as per the previous comment.
11. Input a valid key for the desired Windows version in the **Product Key** attribute row. (Optional, for Windows build plan only)
12. Save changes from **File > Save** or typing **CTRL+S.**

OS Build plans Custom Attributes

Your build plan must configure custom attributes so they can be picked up by the offerings.

• for HPE ProLiant-specific build plans (any platform):

Build plans can be put into the following locations:

- Home/CommonCustomerBuildPlans/ProLiant

These build plans must carry the following custom attributes:

- ApplicableServerType with the following value: `physicalproliant`

• for non-HPE ProLiant-specific build plans
Build plans should be placed in the following locations according to their target platforms
- Home/CommonCustomerBuildPlans/Non-ProLiant/Linux (for Linux platforms)
- Home/CommonCustomerBuildPlans/Non-ProLiant/Windows (for Windows)
- Home/CommonCustomerBuildPlans/Non-ProLiant/Solaris (for Solaris)

These build plans must carry the following custom attributes:

- ApplicableServerType with a value of "`physicalnonhp,virtual`" or "physicalnonhp,physicalproliant" (ESXi only):
- VMwareGuestOsName with a value of one of the following: `centos64Guest`, `oracleLinux64Guest`, `rhel5_64Guest`, `rhel6_64Guest`, `rhel7_64Guest`, `sles11_64Guest`, `sles12_64Guest`, `ubuntu64Guest`, `solaris10_64Guest`, `solaris11_64Guest`, `windows7Server64Guest`, `winLonghorn64Guest`, `windows7Server64Guest`.

Manipulate OVF Properties

How to manipulate OVF properties in conjunction with snapshots

This process shows you how to bring up the appliance in various mode/configuration(s).

If the user has taken a snapshot BEFORE starting the appliance for the first time, then it is possible to re-deploy the appliance from a first time startup again. It is also possible to bring up the appliance multiple times with different settings. This is why the snapshot is so important, as you can use the snapshot as a fresh starting point for the appliance and change the mode and configurations of the appliance.

The procedure for deployment is:

1. Import the appliance using Deploy OVF template.
2. Follow the wizard and configure the appliance.
3. Take a snapshot.

4. Run the appliance
5. Try it out

Then, to run a redeployment of the appliance from the snapshot:

1. Revert to the snapshot that was taken before the first appliance start.
2. Open the appliance settings; click on the appliance.
3. Click on **Getting Started**; click on **Edit virtual machine settings**.
4. Navigate to the **Options** tab, select **vApp options / Properties** on the left pane.
5. Edit the properties.
6. Save the new settings.
7. Take a ***new snapshot*** before your first start.
8. Run the appliance.
9. Try it out with your new configuration.
10. If you want to change the configuration again, start the same process over from the beginning to re-deploy again. You can repeat this procedure as many times as necessary.

Migrations - Upgrading from SAVA 10.0x

In order to migrate from SAVA to DCA 2016.01, you need to:

1. Migrate from SAVA to DCAA 1.0
2. Upgrade from DCAA 1.0 to DCA 2016.01

For more information on how to migrate from SAVA 10.0x to DCA 2016.01, please consult the DCA Migration Guide. You can use the DCA Documentation Library to find the latest version of the guides for your version of DCA on the HPE Software Support Online (HPE Passport required).

Adding vCenter manually

NOTE: The virtualization framework only supports managing vCenter(s) running on Windows operating system.

NOTE: This is the process for bringing vCenter(s) under DCA management, and is the only way to add vCenter(s) into appliances that have been migrated.

- Install the SA agent on the Windows server where the vCenter runs.
  NOTE: Please make sure you install the agent with full software and hardware registration. Check the “Immediately do full hardware registration” and “Immediately do software registration” options in the Advanced section.
- Add the Virtualization service: go to Virtualization > VMware vCenter > right click on the right pane and select “Add Virtualization Service”.
- Select the server and provide the credentials needed to authenticate with the vCenter.
- After the vCenter is added, in order for operators to use it in the portal, permissions must be granted on the vCenter for the SuperUsers group.

For more information on managing permissions and other virtualization tasks, see the Server Automation Virtualization Management Guide: Chapter 2 - Managing Permissions and Chapter 5 - Virtualization Service Tasks. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required).

Certificate import for V12N

In order to enable secure communication between the vCenter and the appliance, the secure mode has to be enabled and the vCenter certificate imported onto the appliance. For more details, please consult the SA User Guide: Virtualization Management, Appendix B: Virtualization Security - Editing Secure Mode and Importing the CA Certificate.

Offerings

This solution offers the following offerings for server management:

- Provision Servers
- Server Policy Remediation
- Manage Servers
- Install Server Automation Agent

Functionalities supported in this solution

Policy remediation and deployment on the managed server involves the following steps:

- Remediate a patch and/or software policy on a server or server group.
- Install software packages on a server
- Attach a patch policy to a managed server hence associating that policy with the server.
- Attach a software policy to a managed server hence associating that policy with the server
- Execute server scripts on a managed server.

Important Note: HPE recommends that you make a copy or version of the OOTB base offering or service design (1.0.0) before making any modifications. During HPE maintenance updates, the 1.0.0 version of any service design or service offering can be updated and overwritten.

Provision Servers

This service offering provisions operating system baselines onto a physical server or multiple virtual servers, allowing you to select from pre-defined options. This is intended to be used by the IT operator to provision servers. The IT operator has the option of choosing to either provision one network booted un-provisioned server at a time or multiple virtual servers on VMware virtualized environments.

In addition to provisioning options, the IT operator can optionally select to link the new server into a new or existing ITOC business server and optionally link the business service to ITOC policies and maintenance windows.

Provisioning a Network booted un-provisioned server

This part of provisioning the offering assumes that there is an un-provisioned server in Server Automation (SA) and it can be either a physical server or a virtual server, which can then be provisioned by an IT operator by choosing from available options.

HPE ProLiant servers offer an advantage in functionality over a third party server. For example, HPE ProLiant servers have the flexibility of network booting from any service OS in SA and are will still be able to perform any OS provisioning due to SA's enhanced iLO integration.

Third party or virtualized servers have the limitation of supporting provisioning of only those OSes that are supported by the booted service OS. For example, if a third party or virtual server is booted with a Linux Service OS, then only Linux based OS Build plans are shown on the IT operator portal.

There are seven server options to be chosen by the IT operator: four of them are dynamic, with two among these being optional, and the remaining three are non-dynamic and optional.

The table below details these options:

Dynamic Server Options

Option	Description

OS Build Plan	A Dynamic List of SA's OS build plans applicable for the selected booted server are shown.
	For an HPE ProLiant server, the OS build plans are listed from 2 folders, "`/Opsware/Tools/Build Plans/SAVA/ProLiant`" and "`/Home/CommonCustomerBuildPlans/ProLiant`". The first folder has HPE supplied build plans and the second one is for customer updated build plans.
	
	For a Non-ProLiant or Virtual Server, depending on the service OS, build plans from "Linux" or "Solaris" or "Windows" folder in "`/Opsware/Tools/Build Plans/SAVA/Non-ProLiant`" and "`/Home/CommonCustomerBuildPlans/Non-ProLiant`" folders are shown. The first folder also has HPE supplied build plans and the second one is for customer updated build plans.
	
	Non-ProLiant subdirectories:
	This configuration of entries can be found in the file: `$CSA_HOME/jboss-as/modules/sun/jdk/main/service-loader-resources/sa-provider.properties`
	
	`hp.sa.osbp.nonproliant.internal.sub.dir.linux=Linux`
	`hp.sa.osbp.nonproliant.internal.sub.dir.windows=Windows`
	`hp.sa.osbp.nonproliant.internal.sub.dir.solaris=Solaris`
	
	`hp.sa.osbp.nonproliant.customer.sub.dir.linux=linux`
	`hp.sa.osbp.nonproliant.customer.sub.dir.windows=windows`
	`hp.sa.osbp.nonproliant.customer.sub.dir.solaris=solaris`

Un-Provisioned Server	A dynamic list of Un-Provisioned Servers network booted with one of SA's Service OS are shown here. The IT operator has to choose which server to provision.
Hostname Prefix	This is *Optional*; can be up to nine characters in length and will appear prefixed to hostname. A hostname is automatically generated if nothing is specified.
Attach to a Customer	This is *Optional*. A Dynamic List of customers defined in SA are shown if chosen and IT operator would then have to choose one.
Attach to a Device Group	This is *Optional*. A Dynamic List of public and static Device Groups defined in SA are shown if chosen and IT would then have to choose one.
IT Operations Compliance	This is *Optional*. A Dynamic List of ITOC business services, compliance policies and maintenance windows. You can also select to create a new business service from the drop-down list and then provide a name for the business service in the edit field below the drop-down.
Send Email Notification	This is *Optional*. An IT operator can specify an email address to be notified about the status of the provisioning job in SA. Note: This requires that SMTP configuration is setup on the SA side.
Attach Ticket ID	This is *Optional* and when chosen, IT operator can specify a ticket ID of ITIL process for the provisioning job in SA.

HPE-SA Provider properties is optional. You can provide the name of the SA Provider under: `$CSA_HOME/jboss-as/modules/sun/jdk/main/service-loader-resources/sa-provider.properties`

Provisioning VMware Virtual Servers

This part of the Provisioning Servers offering will allow an IT operator to provision up to 16 servers with the chosen options in one pass, provided at least one VMware vCenter be registered with SA's virtualization service.

This VMware virtual server provisioning part of the service offering has both dynamic and non-dynamic options. The dynamic options for provisioning are listed in the table below:

Dynamic Provisioning Options

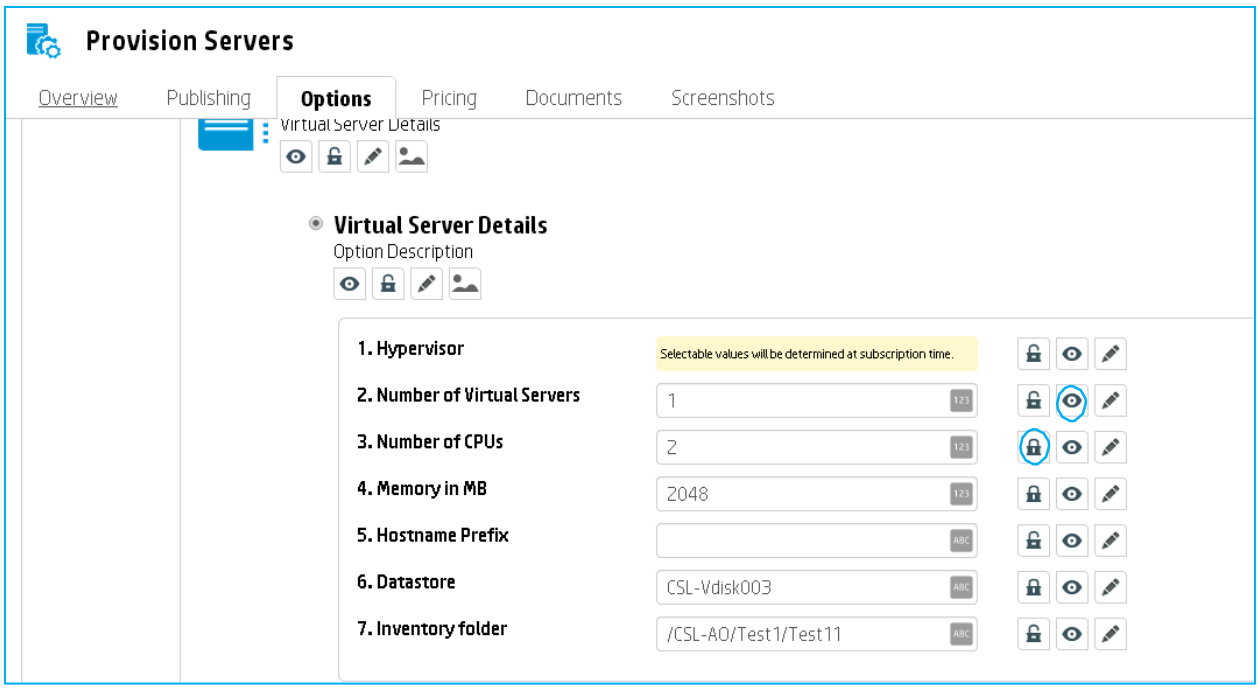
Option	Description
Hypervisor	A dynamic list of VMware hypervisors is shown here, from which the IT operator has to choose one where the virtual server(s) would be provisioned.
Attach to a Customer	This is Optional. A Dynamic List of customers defined in SA are shown if chosen and IT operator would then have to choose one.
Attach to a Device Group	This is Optional. A Dynamic List of public and static Device Groups defined in SA are shown if chosen and IT would then have to choose one.
OS Build Plan	A Dynamic List of SA's OS build plans from "Linux", "Solaris" and "Windows" folder resides in the `"/Opsware/Tools/Build Plans/SAVA/Non- ProLiant"` and `"/Home/CommonCustomerBuildPlans/Non- ProLiant"` folders. The two folders are for HPE provided and customer updated build plans.
Number of Virtual Servers	The number of virtual servers to be provisioned with the selected options. This can be from 1-16. **Note:** This number can vary based on a parameter set by the Administrator in vCenter.
Number of CPUs	The number of CPUs in the virtual server(s) to be provisioned with the selected options. This can be from 1-32 CPUs. **Note:** This number may also have restrictions in the hypervisor.
Memory in MB	The amount of Memory in MB on the virtual server(s) to be provisioned with the selected options. This can be from 512-1000000. **Note:** This number may also have restrictions in the hypervisor.
Hostname Prefix	This is an optional field, which can be up to 9 characters in length and will prefixed to hostname. A hostname is generated if nothing is specified.
Datastore	Datastore is where the Virtual Server(s) configuration is stored. This datastore should be accessible by all the hypervisors listed by the hypervisor dynamic option.
Inventory Folder	Inventory folder on vCenter where the virtual server(s) will be created. Folder name should be in `"/Datacenter/<full path to folder>"` format. Example: `/<DC1>/Folder1/Folder11` where DC1 is the datacenter name in vCenter.
Attach Custom Server Attributes	If chosen, the IT operator can specify a comma separated list of keys and values. **Note:** The number of values and keys have to be same.
Storage Device Type	The type of storage devices on the virtual server(s) to be created. This is preset to "`SCSI, IDE`", which can be changed by the Administrator or an IT operator while subscribing. This can be a single value or a comma separated list, but the number of options selected should match the storage options available; see options listed below.
Storage Device Usage Type	The type of storage devices on the virtual server(s) to be created. This is preset to "`disk, cdrom`", which can be changed by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.
Device Capacity	The capacity in GB of storage devices on the virtual server(s) to be created. This is preset to "`20, 0`", which can be changed by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.

Apart from the dynamic options listed above, some non-dynamic options can either be preset by the Administrator or selected by the IT operator. The Administrator can control how these non-dynamic options are used, and whether they are available to the IT operator. The table below lists these options:

Non-Dynamic Provisioning Options

Option	Description
Storage Device Datastore	The Datastore where the disk(s) of the virtual server(s) to be created will be stored. This can be preset/changed by the Administrator or by IT operator while subscribing. This can be a single value or a comma separated list. This datastore should be accessible by all the hypervisors listed by the hypervisor dynamic option.
Storage Device Filepath	This option is needed only when CDROMs are created and is preset to "`,/mnt`", specifying that the mount point for the CDROM created. This can be preset/changed by the Administrator or by the IT operator while subscribing. This can be a single value or a comma separated list.
Storage Device Connect at Startup	Boolean values to specify whether the storage devices are connected to the Virtual Server(s) to be created. This is preset to "`True, True`", to connect both disk and CDROM at startup and can be changed either by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.
Storage Device Lazy Allocation	Boolean values to specify whether lazy allocation should be used for the storage devices of the Virtual Server(s) to be created. This is preset to "`True, True`" and can be changed either by Administrator or by IT operator while subscribing. This can be a single value or a comma separated list.
NIC Name	Network Interface Card(s) name(s). This is preset to "`eth0`", to add a single NIC on the virtual server(s) to be created and can be changed either by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list, but the number of options should match with the network options, listed below.
NIC Key	Network Interface Card(s) key name(s). This is preset to "`eth0k`", to add a key for the single NIC on the virtual server(s) to be created and can be changed either by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.
NIC Network Name	The network name in vCenter to which the NIC(s) on the virtual server(s) to be created, will be attached to and can be changed either by Administrator or by IT operator while subscribing. This can be a single value or a comma separated list.
NIC Adapter Type	The type of NIC(s) attached to the virtual server(s) to be created and can be changed either by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.
NIC Connect at Startup	Boolean values to specify whether the NIC(s) are connected to the Virtual Server(s) to be created. This is preset to "`True`", to connect the NIC at startup and can be changed either by the Administrator or by an IT operator while subscribing. This can be a single value or a comma separated list.
OS Provisioning Network	The network to be used for provisioning virtual server(s) from SA. This will be one of the key(s) specified in NIC Key Option.
IT Operations Compliance	This is *Optional*. A Dynamic List of ITOC business services, compliance policies and maintenance windows. You can also select to create a new business service from the drop-down list and then provide a name for the business service in the edit field below the drop-down.
Send Email Notification	This is *Optional*; when chosen, the IT operator can specify an email address to be notified about the status of the provisioning job in SA. **Note:** This needs SMTP configuration to be setup on SA side.
Attach Ticket ID	This is *Optional*; when chosen, the IT operator can specify a ticket ID of ITIL process for the provisioning job in SA.

Some of the above non-dynamic options are marked locked and/or invisible by default and can be changed by the Administrator by logging into the **Administrator Portal**, located in the Options Tab under the Provision Servers Offering by clicking the highlighted icons below. This can be used in scenarios where the Administrator wants to limit certain options for the IT operator.



Server provisioning options for IT Operations Compliance

Note: These options are supported only in the Premium version of the product.

The following options are available for configuring the use of the Server Provisioning offering with IT Operations Compliance. Newly provisioned servers can be attached to policies and business services defined in ITOC. The options are available for both Provisioning network-booted servers and Virtual Servers.

Option	Description
Attach Policies	The following set of options allow attaching the newly provisioned server to existing ITOC policies. After the server is provisioned, it will be added to the specified Business Service and new Statement of Applicability (SOA) will be created using the selected policies, maintenance windows and the business service.
Select Policies	A dynamic list of production policies defined in ITOC.
Select Maintenance Windows	A dynamic list of maintenance windows defined in ITOC.
Select Business Service Name	The name of a new Business Service that will be created. If “--NONE--” is specified, a name will be automatically generated.
Attach Business Services	The following set of options allow attaching the newly provisioned server to existing Business services.
Select Business Service	A dynamic list of Business Services defined in ITOC.
Default Business Service	The name of a Business Service. The DCA administrator may use this option to specify a Business Service to which the newly provisioned servers are added by default.

For more information about the Provision Servers Offering in DCA, please refer the “Provision Servers” section in the *DCA Users Guide*. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required)

Server Policy Remediation

This offering remediates already attached patch and/or software policies on a device group or on an individual server.

Note: The time taken to remediate a Device Group can vary greatly depending on how many servers the Device Group has and how much time each of the server remediation will need. Hence, the timeout value for waiting for a Device Group remediation to complete is made configurable using a system property called “DCAA_Remediate_DG_Timeout” on OO central.

This property is set to 4 hours (expressed as a value in milliseconds) and can be changed if needed as per the instructions below. Remember to update the timeout value in milliseconds.

1. Login to OO central @ https://<DCA-Appliance-IP>:8443/oo
2. Click on ‘Content Management’, go to “Configuration Items” tab and expand “System Properties”
3. Choose “DCAA_Remediate_DG_Timeout” system property and edit to update the “Override value” to a desired timeout value in milliseconds

For more information about the Server Policy Remediation Offering in DCA, please reference the “Server Policy Remediation” section in the *DCA Users Guide*. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required)

Manage Servers

This solution is part of the Data Center Automation Suite that demonstrates how to manage life span of various servers using HPE Server Automation. HPE Server Automation (SA) provides the ability to manage servers individually or in a device group by implementing a well-defined process of remediating and deploying software policies and software packages.

The DCA Manage Servers offering provides support to remediate additional software policies and/or software packages on an individual server. This offering also supports running server scripts on the selected server, and can send email notifications detailing the results of jobs run on the server.

In addition to the manage server options, the IT operator can optionally select to link the server into a new or existing ITOC business server and optionally link the business service to ITOC policies and maintenance windows.

Manage Servers Options

The Manage Servers offering has the following options:

Option	Description
Server Name	A dynamic list of servers managed by the SA instance embedded in the appliance
Install Software Packages	A dynamic list of software packages imported in SA
Run Additional Patch Policies	A dynamic list of patch policies defined in SA
Run Additional Software Policies	A dynamic list of software policies defined in SA
Run Server Scripts	A dynamic list of servers scripts defined in SA

Additionally, the following options are available for managing servers with ITOC.

Note: These options are supported only in the Premium version of the product.

Option	Description
Select Business Service	A dynamic list of business services defined in the ITOC instance embedded in the appliance
New Business Service name	The name of a new Business Service that will be created if the Operator selects to Create a new Business Service in the list above
Select Policies	A dynamic list of policies defined in ITOC. Only policies in production state are loaded.
Select Maintenance windows	A dynamic list of maintenance windows defined in ITOC

Requesting Manage Servers

Before Operators can use the Manage Servers offering, the Administrator using the SA client should define the content required by it.

- Import software packages
- Define software policies
- Define patch policies
- Create scripts

See the Server Automation documentation for detailed steps.

For more information about the Manage Servers Offering in DCA, please reference the “Manage Servers” section in the *DCA Users Guide*. You can use the *SA Documentation Library* to find the latest version of the guides for your version of SA on the HPE Software Support Online (HPE Passport required)

Install Server Automation Agent

Installs the Server Automation Agent. This service offering installs the management agent on target servers to be discovered and managed by Server Automation for application provisioning and ongoing lifecycle management.

For more information about the Install Server Automation Agent in DCA, please reference the “Install Server Automation (SA) Agent” section in the DCA Users Guide.

Integrations

DCA Integration with Cloud Service Automation

This integration allows administrators to use the Server Automation (SA) that is part of the DCA appliance to be configured as the SA provider for a CSA installation. Once configured, the CSA administrator will have access to the provisioning, patching and policy management capability that is already delivered as part of the DCA bundle.

When configuring the SA provider in the CSA 4.2 instance the hostname of the DCA appliance must be specified:

- Display Name: HPSA
- User ID: <SA user account> (must be member of SAVA SuperUsers)
- Password: <account password>
- Service Access Point: https://<DCA Hostname>:443

Please see the following guide for information on how to integrate CSA with SA:

HPE Cloud Service Automation Integration Pack 4.20 available here: https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM01439648

DCA Integration with Operations Orchestration

This integration allows administrators to use the Server Automation (SA) that is part of the DCA appliance to be integrated with flows from an Operations Orchestration (OO) 10.20 installation. Integrating SA and OO makes it possible to use many features available in SA within custom OO flows in order to solve specific customer use cases. The integration would rely on accessing the SA instance using the DCA hostname and account credentials.

Please see the following guides for information on this Integration:

- Server Automation 10.20 Integration Guide available here: https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM01253511
- Operations Orchestration-HPE Server Automation Integration Guide available here: https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM01253511

DCA Integration with Network Automation

The Premium version of the appliance supports integration with Network Automation (NA). NA is not embedded in the appliance and is only supported as an external product.

Note: Additionally, the following port must be opened on the appliance to allow communication with NA:

- **Port 1099** JNDI
- **Port 1098** RMI Method
- **Port 4446** RMI Object

For more details and information on configuring the integration, see the *SA Integration* guide, *Chapter 2 – SA-NA integration*.

DCA Integration with IT Operations Compliance

This integration allows administrators to use the IT Operations Compliance (ITOC) 1.1 that is part of the DCA appliance to be used from the IT Operator Portal offerings to provide compliance/remediation integration. Once configured, the ITOC administrator will have access to the compliance and remediation capability that is already delivered as part of the DCA bundle.

Operations Orchestration

Setting up DCA to use an external OO instance

Before you begin: Make sure the path is set to: `/usr/local/hp/csa/openjre/bin/java`

The following steps needs to be followed for using the HPE-SA provider internal to DCA with an OO environment:

Note: All the curl command listed below can be invoked from the appliance, if the OO Central hosts permits connections on port 8443. The examples use “admin” user with password “admin”. In order to connect to your OO Central, you need to change the "`Authorization:Basic YWRtaW46YWRtaW4=`" header, to use the password that you set for the OO “admin” user. In order to do that, replace the `YWRtaW46YWRtaW4=` string with the base64 encoding of the “`admin:<your_admin_password>`” string (without the quotes).

1. In the command prompt of the appliance, you can type command: “which java” to discover the path set. If it is not set, then we may need to add the above path to the system variable.
2. The following content packs (CP) need to be available in the external OO central (the listed versions are the minimal requirements):
    a. oo10-base-cp-1.6.2.jar
    b. oo10-hp-solutions-cp-1.6.0.jar
    c. oo10-cloud-cp-1.6.0.jar
    d. oo10-sa-cp-1.2.0.jar
    e. oo10-csa-integrations-cp-4.50.0000.jar

    All the content packs are available in the `DCA_VA_1601_OOTB.zip` that is part of the appliance installation package.
3. The appliance requires OO user ‘admin’ to exist on the OO central instance and to have the “PROMOTER”, “ADMINISTRATOR” and “SYSTEM_ADMIN” roles. For example, for a freshly installed OO instance you can invoke the following command:

    ```
    curl -X POST -d
    '{"password":"admin","roles":[{"name":"PROMOTER"},{"name":"ADMINISTRATOR"},{"name":"SYSTEM_ADMIN"}],"usern
    ame":"admin","permissions":"ADMINISTRATOR"}' --header "Content-Type: application/json" -k
    https://<ooCentral>:8443/oo/rest/users
    ```
4. Configure the CSA_OO internal user on the OO Central. In order to achieve this you can **either**:
    - Log into OO central and configure the user from Content Management –> Configuration Items. In Configuration Items, expand System Properties and edit CSA_OO_USER. Its default value is ooInboundUser. Input the value “admin” in the field “Override value” and click save.
    - Invoke the following command:

        ```
        curl -k -X PUT -d 'admin' --header "Content-Type:application/json" --header "Authorization:Basic
        YWRtaW46YWRtaW4=" https://<ooCentral>:8443/oo/rest/content-config/CSA_OO_USER?type=SYSTEM_PROPERTY
        ```
5. Configure CSA_REST_CREDENTIALS: In order for CSA to make REST calls to OO, we need to configure CSA REST credentials on the external OO Central. In order to achieve this, we can **either**:
    - Log into OO Central and configure the credential from Content Management –> Configuration Items. In configuration items, expand System Account and edit CSA_REST_CREDENTIALS, Input the credentials of the “admin” user that you use to connect to the appliance Administration Console and then click Save.
    - Invoke the following command:

```
curl -k -X PUT -d '{"username":"admin","password":"<applianceAdminUserPassword>"}' --header
"Content-Type:application/json" --header "Authorization:Basic YWRtaW46YWRtaW4="
https://<ooCentral>:8443/oo/rest/content-config/CSA_REST_CREDENTIALS?type=SYSTEM_ACCOUNT
```

6. Update CSA_REST_URI: OO Central needs to communicate with the appliance to receive the job details and to submit the results. This is specified through the CSA_REST_URI parameter. You can set it by either:
   - Log into OO Central and configure the credential from Content Management –> Configuration Items. In configuration items, expand System Properties and edit CSA_REST_URI. Input the URI (https://<applianceIP>:8444/csa/rest) in the "Override value" field and then click Save.
   - Invoke the following command:

     ```
     curl -k -X PUT -d 'https://<appliance>:8444/csa/rest' --header "Content-Type:application/json" --
     header "Authorization:Basic YWRtaW46YWRtaW4=" https://<ooCentralIP>:8443/oo/rest/content-
     config/CSA_REST_URI?type=SYSTEM_PROPERTY
     ```

Note: the following two steps are required only on the premium version of the appliance, for running operations on the embedded ITOC.

7. Configure ITOC_REST_CREDENTIALS: In order for OO to make calls to ITOC, we need to configure ITOC credentials on the external OO Central. In order to achieve this, we can either:
   - Log into OO Central and configure the credential from Content Management –> Configuration Items. In configuration items, expand System Account and edit ITOC_REST_CREDENTIALS, Input the credentials of the ITOC "csauser" user and then click **Save**.
   - Invoke the following command:

     ```
     curl -k -X PUT -d '{"username":"csauser","password":"<ITOC_csauser_pass>"}' --header "Content-
     Type:application/json" --header "Authorization:Basic YWRtaW46YWRtaW4="
     https://<ooCentral>:8443/oo/rest/content-config/ITOC_REST_CREDENTIALS?type=SYSTEM_ACCOUNT
     ```

8. Update ITOC_REST_URI: OO Central needs to communicate with the appliance to run actions on ITOC. You can configure this by either:
   - Log into OO Central and configure the credential from Content Management –> Configuration Items. In configuration items, expand System Properties and edit ITOC_REST_URI. Input the URI (https://<appliance>:7771) in the "Override Value" field and then click Save.
   - Invoke the following command:

     ```
     curl -k -X PUT -d 'https://<appliance>:7771' --header "Content-Type:application/json" --header
     "Authorization:Basic YWRtaW46YWRtaW4=" https://<ooCentral>:8443/oo/rest/content-
     config/ITOC_REST_URI?type=SYSTEM_PROPERTY
     ```

9. Next, you need to export and import the OO certificate into CSA the certificate store so that SSL Handshake happens between CSA and OO:
   - Export the OO certificate on the OO Central host:

   For example, if OO Central is on a Linux machine, you can run:

   ```
   keytool -export -alias tomcat -file <path>/oo-certificate.crt -keystore
     /usr/local/hp/oo/central/var/security/key.store
   ```

   On Windows machines:

   ```
   <OO_Intall_Dir>\java\bin\keytool.exe -exportcert -alias tomcat -file C:\oocentral.crt -keystore
     <OO_Install_Dir>\central\var\security\key.store
   ```

   - Copy the certificate to the appliance
   - Import the OO certificate into the CSA certificate store on the appliance:

   ```
   keytool -importcert -alias externalOO -file <path>/oo-certificate.crt -keystore
     $CSA_HOME/openjre/lib/security/cacerts -storepass changeit –noprompt
   ```

10. Run PDT on the appliance to update the OO engine it uses. Go to: `/usr/local/hp/csa/Tools/ProcessDefinitionTool`
11. Make a copy of the "HPOOInputInfo.xml" file and update it with the values valid for the external OO. You need to update the password field with the password of the OO "admin" user we created before (you can input the password in clear text and it will be encrypted automatically when PDT runs) and the Uri to point to the external OO instance.

    ```
    <ooengine
    ```

```
name="OO-MACHINE-NAME"

password="<externalOO_admin_password>"

truststore="/usr/local/hp/csa/openjre/lib/security/cacerts"

truststorePassword="ENC(q6ctyVrBrqWIp1O7R00q58CrZh8tzPkP)"

uri="https://<ooCentral>:8443/PAS/services/WSCentralService"

username="admin">

<!-- SAVA Provisioning-->

<folder path="/Library/Data Center Automation Suite/Provision Servers/Actions" recursive="true"
   update="true"/>

<folder path="/Library/Data Center Automation Suite/Server Management/Actions" recursive="true"
   update="true"/>

<folder path="/Library/Integrations/Hewlett-Packard/Server Automation" recursive="true"
   update="true"/>

</ooengine>
```

12. Run the PDT tool on the appliance and restart services:

```
java -jar process-defn-tool.jar -d db.properties -i <updatedXML_file>

service csa restart

service mpp restart
```

13. Update the HPSA provider: Connect to the Administration console (http://<appliance>:8444/csa), access Providers > HPSA and click Edit. Update the Service Access Point field to use the appliance hostname or IP instead of localhost.

OO Purge Flows

Refer to the Operations Orchestration Reference Table. See the topic Purge execution data using Purging Flows. In the table, click ‘go’ to download a PDF regarding running OO Purge Flows.

Appliance Support and Maintenance

DCA releases regularly scheduled updates, documentation releases and maintenance releases. You can find out more information about new Documentation content, Add-Ins, upcoming DCA software releases, and product announcements via the HP Live Network. If you need information about your Support and Maintenance contract, please contact your HPE Support Representative.

Appliance Updates and Patches

Please note that patches or updates to the Data Center Automation Suite (DCA) must only be applied at the DCA appliance level. Applying any product specific patches or updates directly to the sub- component products (Server Automation, Operations Orchestration) and not at the Data Center Automation Suite level is not supported and could render the appliance inoperable.

Update mechanism

Product fixes, OS updates/patches/fixes, or any other update will be packaged as a single GZIP TAR file. To install the appliance update, copy the update file to a temporary location such as `/tmp`.

Then run the `appliance update` script, putting in the location and name of the update:

```
cd /var/opt/sava_update

sh updateAppliance.sh /tmp/<name of update file>
```

Support

Log collection for support

- Run `/opt/opsware/oi_util/support_tools/sa_scenesnap.sh` to collect is a good starting set of logs for support.
- The logs are gathered in the following location: `/var/opt/opsware/tmp/`
- The file will be named: `sa_scenesnap.<hostname>.<date>.<time>.zip`
- Log collection for support for CSA and OO

Importing licenses

This section describes the steps that have to be performed in order to import licenses into each of the products embedded in DCA. DCA ships with a 90-day trial license, during which time the full functionality is available. Once this license expires, new licenses need to be imported to continue using the appliance.

Based on the version of DCA that you acquired, several license files will be generated:

DCA Express

- DCA Suite
- DCA IT Operations Portal

DCA Premium

- DCA Suite
- DCA IT Operations Portal
- ITOC Premium
- NA Premium
- DMA Premium - no license key management

Import DCA Suite license

By default, the license filename for the DCA Suite will begin with DCA-VAPP.

Copy the license file on the appliance (Example: in the /root folder) and run the following command:

/opt/opsware/license/license_import.sh <path_to_license_file>

Note: The license will be imported and some services (oo-central and twist) will be restarted.

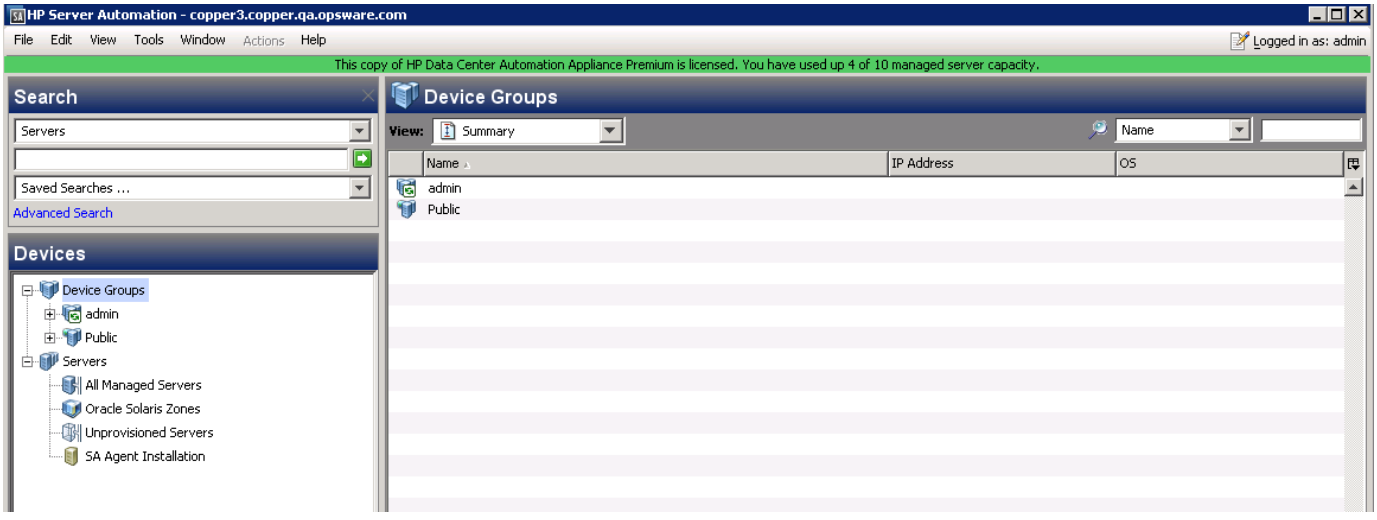
Example:

```
/opt/opsware/license/license_import.sh ./DCA-VAPP-PREM^1.10_5240275.dat
License file path: ./DCA-VAPP-PREM^1.10_5240275.dat
Successfully installed license.
Stopping HP Operations Orchestration Central...
Waiting for HP Operations Orchestration Central to exit...
Stopped HP Operations Orchestration Central.
Starting HP Operations Orchestration Central...
wrapper  | Base configuration file is /usr/local/hp/oo/central/conf/central-
wrapper.conf
wrapper  | Found #include file in /usr/local/hp/oo/central/conf/central-wrapper.conf:
%CENTRAL_HOME%/conf/wrapper-central-license.conf
```

```
wrapper  |   After environment variable replacements:
/usr/local/hp/oo/central/conf/wrapper-central-license.conf
wrapper  |   Reading included configuration file,
/usr/local/hp/oo/central/conf/wrapper-central-license.conf
Waiting for HP Operations Orchestration Central......
running: PID:21047
>>> Stopping twist ...
Shutting down twist:
Stopping twist watchdog.
Stopping Web Services Data Access Engine.
uid=501(twist) gid=100(users) groups=100(users)
failed to shutdown via t3, sending SIGKILL...

>>> Verify twist dependencies...
Verify hostname "spin" is resolvable: SUCCESS
Verify hostname "twist" is resolvable: SUCCESS
Verify hostname "spin" is listening on port 1004: SUCCESS
Verify communication with "spin":
SUCCESS
Verify hostname "localhost" is listening on port 1007: SUCCESS
Verify communication with "spin":
SUCCESS
Verifying en_US.UTF-8 locale is available: SUCCESS
Verify hostname "way" is listening on port 1018: SUCCESS
Verify communication with "vault": SUCCESS
>>> Starting twist ...
Starting twist:
Starting Web Services Data Access Engine, synchronously.
nohup: redirecting stderr to stdout
...........Verifying. Started.
Successfully performed "restart" operation on Opsware SAS components.
```

The status of the license is reported in the SA NGUI.

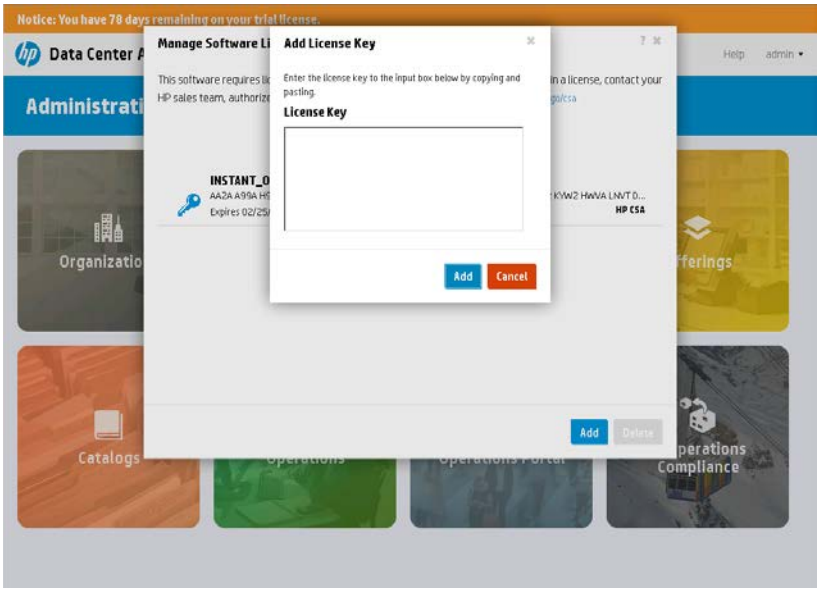


Import IT Operations Portal license

The license filename for IT Operations Portal will begin with DCA-ITOP.

Open the file with a text editor and copy its content.

Connect to the Administration console (http://<appliance>:8444/csa) with the *admin* user. In the top right corner, click on admin, access Licensing and click **Add**.



Paste the content of the license file in the textbox and click Add.

Import ITOC license

Note: ITOC licenses are generated only for the Premium edition.

The license filename for IT Operations Compliance will begin with DCA-ITOC.

Copy the file on the appliance in the following location /opt/hp/itoc/license/ and rename the file so that it begins with ITOC. The filename must be in the format ITOC*.xml. Restart the ITOC service in order to import the license.

Example:

```
cp DCA-ITOCPREM^1.10_5240283.xml /opt/hp/itoc/license/ITOCPREM^1.10_5240283.xml
```

```
/etc/init.d/itoc restart
```

Import NA license

Note: NA licenses are generated only for the Premium edition.

Note: NA is not embedded into DCA; therefore, the license has to be activated for the host where NA is running.

The license filename for Network Automation will begin with DCAS.

Copy the license file on host running NA in the following location: /opt/NA/license.dat

Restart the truecontrol service.

Example:

```
cp DCAS_5240277.dat /opt/NA/license.dat
```

```
/etc/init.d/truecontrol restart
```

Change the passwords for the DCA user accounts

On a freshly deployed appliance, the passwords for the built-in user accounts are set to the value specified in the OVF properties. These users are:

- Administration Console – “admin” user

- IT Operations Compliance – all built-in users (itocadmin, compliancearchitect, etc)
- IT Operations Portal – “consumer” user
- Operations Orchestration – “admin” user
- Server Automation – “admin” user

To change the passwords for these accounts, you can use the following tool:

```
/opt/opsware/bin/python2 /var/opt/hp/dcaa/utils/changeDCAAadminPassword.pyc --help
```

The tool will set the new password and will make the necessary configurations to keep the appliance working. The tool can be used to set a new password for all accounts at the same time, or one account at a time.

For example, to change the password of Administration Console “admin” user:

```
/opt/opsware/bin/python2 /var/opt/hp/dcaa/utils/changeDCAAadminPassword.pyc -p 'newpassword' -c --
OO_admin_old_password 'ooadminpassword'
```

Note: The password of the OO *admin* user needs to be supplied, if it was changed after the appliance deployment. It is required for making necessary configurations on the appliance OO engine, in order to keep the appliance functional.

DCA high-availability (HA) and disaster recovery (DR)

Overview

You may not want to spend time in a High-Availability setup, but in any case, you should spend time in creating and following rigorous disaster recovery procedures for their environment.

Disaster recovery

Disaster recovery on appliance upgrade can be done by taking a snapshot before running the upgrade and reverting to this snapshot if the upgrade fails. Either way, the snapshot should be deleted when it is established that everything runs fine, to prevent any performance degradation from the use of snapshots. (Check the VMware documentation on snapshots, referenced at the end of this section.)

Regular backups of the DCA virtual machine can achieve disaster recovery on catastrophic failure. Check the VMware backup guide and/or backup best practices documents.

Disaster recovery procedures will protect the customer’s investment in case of catastrophic failure.

Recovering from such a disaster will depend on the type of failure: network, hypervisor, underlying bare metal, disk array, etc.

Good, rigorously followed disaster recovery procedures are key to any customer DCA setup.

High-availability

High availability is maximizing the uptime in case of failure of the hypervisor and/or the underlying server that can be recovered nearly instantaneous and in an automated way.

This is a lot more difficult to achieve and is typically only implemented for mission-critical applications. It can be implemented inside the application (in the) VMs, outside or both. If DCA is to be used as part of a mission-critical application, customer may elect to invest in high-availability setups that cover the DCA appliance.

The DCA appliance itself does not have any internal pre-enablement for an in-product high-availability setup. With this, we mean the ability to run DCA appliances in a two- or three-node cluster whereby the appliance file system is clustered, the system is being monitored by heartbeat software and failover from one node to any other node is handled automatically. This is NOT possible in any way, or form today in DCA.

Hypervisor vendors like VMware or Microsoft have their own HA implementation, which after reading is largely independent from the actual application that is provided by the virtual machines being protected.

Since DCA right now only supports VMware ESXi, we will limit to that hypervisor, we will look at VMware vSphere HA.

High-availability in SA

In SA Ultimate, high-availability is typically achieved by adding whole cores, slices and satellites with the SA gateways on the satellites configured with crossed fail-over routes.

DCA however, is a single core setup with satellite support so the options are more limited here, because a satellite does not run (besides Word repo and possibly OS provisioning boot server components) any actual core functionality. If the DCA appliance goes down or becomes unresponsive, service is interrupted.

High-availability with VMware vSphere HA

VMware vSphere HA protects virtual machines from three types of failures. It will protect if the ESX host the VMs running on fails, if the guest OS inside the VM fails, or if an application inside the VM fails. The Basic requirement is for the DCA appliance to run in a vSphere cluster with more than one ESXi host in that cluster.

Case 1 ESXi host failure

Heartbeats are being sent between the ESXi hosts in the cluster, and VMs can be restarted on other hosts within the cluster if one (or more) hosts go down. Crash and restart of a virtual machine containing CSA, OO, ITOC, and SA is not without risk, so it is entirely possible that one or more of these products fail to recover from a crash. For SA, at the time of the first ICsp release tests have been performed where the VM was hard-stopped at various moments in the lifecycle and then restarted and any side effects observed. No tickets were raised at this time and no showstopper unrecoverable behavior was identified at that time. Of course, any running jobs will be marked as failed and will have to be restarted.

Case 2 Guest OS failure in the virtual machine

Heartbeats are being sent between VMware Tools inside the DCA appliance and the vCenter server.

If the heartbeats are no longer received from the virtual machine (guest OS hang and subsequent VMware Tools hang) then the vCenter server will restart that virtual machine.

Case 3 Application failure in the virtual machine

Heartbeat support has to be implemented in the application to be monitored. VMware has an application monitoring SDK for this. Since this support has not been added into CSA, OO or SA inside DCA, this feature cannot be used. Heartbeats are being sent between VMware Tools inside the DCA appliance and the vCenter server (as before). Heartbeats are also being sent between an application inside the virtual machine and the vCenter server. If the heartbeats are no longer received from the virtual machine (the application inside the VM is no longer working), then the vCenter server will restart that virtual machine.

Links

VMware video content from VMware training department: https://youtu.be/EPm8Fmhxasc

Service design and resource offering

HPE Data Center Automation Suite (DCA) is a complete & heterogeneous IT operations solution running in a Suite, allowing you to standardize, consolidate and automate IT operations in your Hybrid datacenter by providing a single solution for Provisioning, Security Patch Management, Audit & Compliance, Software management, as well as automating daily tasks using standard operating procedures (SOP).

HPE DCA Supports servers running on Windows, Linux and Solaris platforms, whether running on physical hardware, both HPE and Non-HPE, on a virtualized platform or in the cloud, therefore providing significant improvements in day-to-day IT Operations.

DCA Administration Console

The DCA Administration Console is the starting navigation access point to manage and use the DCA system. The Administration Console allows you to access the DCA components including Organizations, Providers, Designs, Offerings, Catalogs, Operations, and the Operations Portal. You can always click the **HPE Data Center Automation Suite** banner at the top of the screen to return to the DCA dashboard.

Organizations

Providers

Designs

Offerings

Catalogs

Operations

Operations Portal

Organizations

Using the Organizations Interface

Item	Description
	Reload the data in this view.
Create Organization button	Create an organization.
	Delete a group DN from a role.
	Display a tooltip for the associated field by placing the cursor over this icon.

Informational Icons

Icon	Description
	When this icon is adjacent to an organization, it denotes the provider organization. There can be only one provider organization and it is automatically configured. You may modify the provider organization, as needed. However, you cannot delete it. When this icon is adjacent to a catalog, it denotes the global catalog. There can be only one global catalog and it is visible to all organizations. You may modify the global catalog, as needed. However, you cannot delete it.
	Indicates the field is required, and you must enter information in order to successfully complete the organization's configuration.

An organization determines a member's entry point into the cloud system and associates its members with services and resources. An organization may be a company, business unit, department, or group. Membership in an organization is determined by the organization's LDAP (Lightweight Directory Access Protocol) directory. When a user logs in, LDAP authenticates the login credentials by verifying that the user name and password match an existing user in the LDAP directory.

At installation, a single consumer organization is set up. You can use the **Organizations** Administration User Interface (UI) to modify this default consumer organization, as needed.

Authorization or abilities of a member of an organization (such as creating a service design or managing cloud resources) are determined by predefined roles in DCA and membership to group DNs in the LDAP directory. In DCA, you assign a group DN to a predefined role that has predefined abilities. See Access Control for more information.

There are two types of organizations in DCA:

- **Provider Organization** - The provider organization hosts Data Center Automation, manages consumer organizations, and manages resources and services, including those offered by third- party or public clouds.

Using the DCA Administration Console, members of the provider organization can create one or more consumer organizations, manage configured organizations, and manage resources and services (such as designing, offering, and publishing resources and services for consumption).

The organizations, resources, and services that can be managed are determined by the role(s) assigned to the members of the provider organization. For example, the DCA Administrator manages all organizations, resources, and services, while the Consumer Service Administrator manages only consumer organizations. Additional roles include the Resource Supply Manager who manages resource providers and resource offerings, the Service Designer who manages service components and service designs, the Service Business Manager who manages service offerings and service catalogs, and the Service Operations Manager who manages subscriptions and service instances.

There is only one provider organization for each instance of DCA and it is automatically set up during installation. You may modify the provider organization, as needed. However, you cannot delete it.

- **Consumer Organization** - The consumer organization, using the Operations Portal, subscribes to or consumes the resources and services provided by the provider organization. There may be multiple consumer organizations configured by the provider organization. However, each consumer or subscriber sees only the information of the consumer organization of which he is a member (membership to a consumer organization is determined by the LDAP configuration of the consumer organization).

At installation, a single consumer organization is set up. You can use the **Organizations** area of the DCA Administration Console to modify this default consumer organization, as needed.

See "Authentication - LDAP" for more information about configuring LDAP for the provider and consumer organizations.

You can perform the following tasks in this UI:

- **Create an organization** - Click **Create Organization**, and provide a name for the organization.
- **Navigate to an organization** - Click the name of the organization to which you want to navigate. You can edit attributes after an Organization is created.

Summary

The **Summary** page shows only your current setup: a typical summary view will display Name, Description, Portal Customization, LDAP, Access Control, and Email Notifications. This page is a viewable summary only; you cannot make any changes in this screen. Go to the appropriate section in the Organization to make changes – see the tabs following summary – they are listed in order below.

General Information

Use this area to provide profile information about the organization so that it is easily recognizable to you and your team.

Before you create a new organization, or edit your existing organization, you need to provide the following general information about your Organization:

Item	Description
Organization Details	Shows the description of your organization detailed in Organization Description.
Organization Identifier	A unique name that is assigned to the organization. For a consumer organization, this name is based on the name entered when the Administrator created the organization. The organization identifier is needed when launching the portal, and may be needed when customizing the portal.
Organization URL	The internal URL that hosts the organization.
Organization Display Name	A unique name that identifies the organization.
Organization Description	A brief description of the organization. Once a description is updated, it will appear in **Organization Details**.
Organization Logo	Shows the location of the logo file.

Then, you can do the following:

- You can **Save** your changes
- Reset your Organization to a default
- **Delete** the Organization

Once you have this information, you can begin creating or editing an organization. For more information, see the topic Create Organization in this document.

Best Practices

The Organizations Administrator can edit **Display Name**, **Description**, and **Picture URL** fields once an Organization is created. The **Edit Organization ID** check box below the **Organization ID** field allows the Administrator to change the Organization ID of an organization, which is the DN (distinguished name). This change will affect external applications, and it is not recommended.

To create an organization

Note: Only consumer organizations can be created.

1. In the left navigation frame, click the **Create Organization** button.
2. Enter the **Organization Name**: A unique name that identifies the organization.
3. Click **Create**.
4. Configure the organization. For more information, see the following topics.

Portal Customization

Portal customization allows you to customize an organization's Operations Portal.

Note: This section is not available to the provider organization.

To customize the Operations Portal

1. In the organization's navigation frame, select **Portal Customization**.
2. Provide or update the following information for portal customization:

Application Labeling

Item	Description
Application Name	Type a name that displays on the login screen and header of your organization's Operations Portal.
Portal Welcome Message	Type a welcome message that displays below the Application Name when a user logs into your organization's Operations Portal.
Copyright Statement	Type a copyright statement that displays on the login page below the Log In button of your organization's Operations Portal.

External Organization Links

Item	Description
Privacy Statement Link	Type the link to your organization's privacy statement that appears on the login page below the copyright statement.
Show Privacy Statement on Operations Portal	Check the box to display the privacy statement link on the login page of your organization's Operations Portal.
Terms and Conditions Link	Type the link to your organization's terms and conditions statement that appears when a subscriber is ordering a service.
Show Terms and Conditions on Operations Portal	Check the box to display the terms and conditions link when a subscriber is ordering a service.
Featured Category	Type a featured category to use when displaying service offerings in the Operations Portal. Service offerings in this category will display in the Featured Services tile of the Operations Portal.
Subscription End Date Options	• Allow Recurring Subscriptions - Check the box to allow recurring subscriptions, rather than requiring all subscriptions to be term subscriptions. • Max Term Subscription Period (months) - Select the maximum number of months (between 1 and 12) allowed for term subscriptions. When subscribers request a term subscription, they will not be able to specify an end date that is more than this number of months past the start date. For example, if the subscriber selects a requested start date of June 15 2014, and **Max Term Subscription Period (months)** is set at its default value of 12, the requested end date cannot be later than June 14, 2015. This setting has no impact on recurring subscriptions.
History Details	Select the **Show Verbose Errors** box to display the status of the actions executed during the lifecycle of a service.

Application Enhancements

Item	Description
Theme	Select a theme or type the name of a customized theme for your organization's Operations Portal. Themes define colors, fonts and the general look-and-feel of the Operations Portal. The following themes are shipped out-of-the-box: HPE Simplified HPE Enterprise HPE Playful Custom – Select **Custom** and type a customer theme name in the text box.

Security Settings

Item	Description
Security Classification	Select from the following security banner options: **No Banner** - no banner displays in the Operations Portal. **Unclassified** - The banner is light green and contains no content. **Unclassified FOUO** - For official use only. The banner is light green and displays the text "FOUO." **Unclassified NOFORN** - Not releasable to foreign nationals. The banner is light green and displays the text "NOFORN." **Confidential** - The banner is light blue and displays the text "CONFIDENTIAL." **Confidential FOUO** - The banner is light blue and displays the text "CONFIDENTIAL-FOUO." **Confidential NOFORN** - The banner is light blue and displays the text "CONFIDENTIAL-NOFORN." **Secret** - The banner is red and displays the text "SECRET." **Top Secret** - The banner is orange and displays the text "TOP SECRET."
Disclaimer	Type text for the disclaimer for your organization's Operations Portal. The disclaimer appears on the login page of the Operations Portal.

3. Click **Save**.

Dashboard Widgets

HPE DCA provides a set of out-of-the-box dashboard widgets that you can add to your Organization dashboard. These dashboard widgets include:

- Link
- Recent Subscriptions
- Clock

For more information on customizing dashboard widgets, see **Customize Dashboard Widgets**.

Customize Dashboard Widgets

Out-of-the-box Dashboard widgets can be configured for an Organization's dashboard. Custom Widgets are created by changing the KeyPair values, and allow you to add functionality that appears as a tile on the Organization's dashboard.

KeyPair value	Description
widget:DCALink	This widget connects your Organization online to the main HPE DCA site.
widget:RecentSubscriptions	This widget tracks and displays the most recent subscriptions that are available for the Organization's users.
widget:Clock	This widget shows Date information on the dashboard, including Month, Day, and Year.
Custom Widgets	Custom Widgets can be configured by clicking the blue Add KeyPair button at the bottom of the Customization screen. Provide an easily readable display name for the KeyPair, and input the properties for the widget in the value box. Note that only 10,000 characters are allowed in the KeyPair value box. For the Operations Portal to recognize a custom widget it must be named with the prefix 'widget:' See the format of default widgets for an example of this convention.

Best Practices

If you want to delete a widget, click on the trashcan icon to the right of the widget in the Customization screen. Please note that this operation is **permanent** and cannot be undone.

Authentication - LDAP

You can configure and manage multiple LDAP identity servers for your organization. You can connect multiple LDAP servers by adding configurations and adjusting their relative priority within an organization.

LDAP is used to:

- Authenticate a user's login.
- Authenticate a user's access to information.
- Authorize a user's access to information.

To completely configure access to HPE DCA, you must configure LDAP to authenticate a user's login, configure LDAP for an organization to authenticate a user's access to information, and configure access control for an organization to authorize a user's access to information.

From this area, you can:

- Configure LDAP for authentication to log in to HPE DCA.
- Configure LDAP to access information in HPE DCA.

To configure LDAP for an organization, provide or update the following information:

LDAP Server Information

Configure one or more LDAP servers and a user with access to the server.

Item	Description
Display Name	The display name for the LDAP server.
Hostname	The fully-qualified LDAP server domain name (server.domain.com) or IP address. Example: ldap.xyz.com
Port	The port used to connect to the LDAP server (by default, 389). Example: 389
SSL Connection	If the LDAP server is configured to require ldaps (LDAP over SSL), select the SSL Connection checkbox.
Base DN	Base distinguished name. The Base DN is the top level of the LDAP directory that is used as the basis of a search. Example: o=xyz.com
User ID (**Full DN**)	The fully distinguished name of any user with authentication rights to the LDAP server. If the LDAP server does not require a User ID or password for authentication, this value can be omitted. Example: uid=admin@xyz.com,ou=People,o=xyz.com
Password	Password of the User ID. If the LDAP server does not require a User ID or password for authentication, this value can be omitted.
Retype Password	Retype the password of the User ID.

LDAP Attributes

Enter the names of the attributes whose values are used for email notifications, authentication, and approvals in HPE DCA.

Item	Description
User Email	The name of the attribute of a user object that designates the email address of the user. The email address is used for notifications. If a value for this attribute does not exist for a user, the user does not receive email notifications. Default: mail
Group Membership	The name of the attribute(s) of a group object that identifies a user as belonging to the group. If multiple attributes convey group membership, a comma should separate the attribute names. Default: member, uniqueMember
Manager Identifier	The name of the attribute of a user object that identifies the manager of the user. Default: manager
Manager Identifier value	The name of the attribute of a user object that describes the value of the Manager Identifier's attribute. For example, if the value of the Manager Identifier attribute is a distinguished name (such as cn=John Smith, ou=People, o=xyz.com) then the value of this field could be dn (distinguished name). Alternatively, if the Manager Identifier is an email address (such as admin@xyz.com) then the value of this field could be email. Default: dn
User Avatar	LDAP attribute whose value is the URL to a user avatar image that will display for the logged in user portal. If no avatar is specified, a default avatar will be used.

User Login Settings

A user search-based login method is used to authenticate access to information.

Item	Description
User Name Attributes	The name of the attribute of a user object that contains the username that will be used to log in. The value for this field can be determined by looking at one or more user objects in the LDAP directory to determine which attribute consistently contains a unique user name. Often, you will want a **User Name Attribute** whose value in a user object is an email address. Examples: userPrincipalName or sAMAccountName or uid
User Searchbase	The location in the LDAP directory where users' records are located. This location should be specified relative to the Base DN. If users are not located in a common directory under the Base DN, leave this field blank. Examples: cn=Users or ou=People
User Search Filter	Specifies the general form of the LDAP query used to identify users during login. It must include the pattern {0}, which represents the user name entered by the user when logging in. The filter is generally of the form <attribute>= 0}, with <attribute> typically corresponding to the value entered for **User Name Attribute**. Examples: userPrincipalName={0} or sAMAccountName={0} or uid={0}
Search Option (Search Subtree)	When a user logs in, the LDAP directory is queried to find the user's account. The **Search Subtree** setting controls the depth of the search under User Search Base. If you want to search for a matching user in the User Search Base and all subtrees under the User Search Base, make sure the **Search Subtree** checkbox is selected. If you want to restrict the search for a matching user to only the User Search Base, excluding any subtrees, unselect the **Search Subtree** checkbox.

Access Control

Business Roles currently available in Organizations are out-of-the-box in DCA. They are as follows:

The **Consumer Organization Administrator role** can be thought of as a group administrator or manager. This role performs functions on behalf of other users that belong to the Service Consumer role, such as ordering a laptop for a new employee or approving a services order. A typical job role might be that of a Manager or Administrative Assistant, someone who is approving requests or processing orders within the Operations Portal as part of their daily tasks.

The **Service Consumer role** has basic level access privileges within organizations. This role can be thought of as a typical end user with full membership within the organization and full access to the Operations Portal.

1. There are currently two roles available: **Consumer Organization Administrator** and **Service Consumer**.
    a. The **Consumer Organization Administrator** role can be thought of as a group administrator or manager. This role can perform functions on behalf of other users that belong to the Service Consumer role.
    b. The **Service Consumer** role has basic level access privileges within organizations.
2. Click Add DN button below x or y to select or add a domain name (DN) for a group or organization.

Email Notifications

You can configure the SMTP server used for email notifications in this tab.

1) Enter Hostname,
2) Enter Port number.
3) Select a Connection Security method. There are two checkboxes available:
    a. SSL
    b. **Requires Authentication,** which forces the user to use the appropriate authentication method.
4) Next, Select a **User ID** and **Password**; make sure to **Retype Password** to confirm your selection.
5) In the **Email Source Settings** section, you can input a **Sender Email Address** and Su**bject Prefix** for notification emails.
6) **Subscription Expiration Notification**: with this menu item, you can configure how long before a user is notified by email of their expired subscription. The available notification options are:
    a. **A Day**
    b. **Two Days**
    c. **Three Days**
    d. **A Week**
    e. **Two Weeks**
    f. **Three Weeks**
7) Once you have made your changes, click **Save**, or click **Reset** to discard changes.

Operations

This tab allows you to configure operations settings for a consumer organization. You can choose between **Fail Subscriptions on Provisioning Errors** or **Pause Subscriptions on Provisioning Errors**, and indicate whether **Subscribers** or **Operators** will be notified by email.

1. Click the radio button for **Fail Subscriptions on Provisioning Errors**. If there are errors during provisioning, subscriptions will fail without notification.
2. Click the radio button for **Pause Subscriptions on Provisioning Errors**.
3. **Paused Subscription Notifications** will open below, and allow you to select **Subscribers** or **Operators** to notify when a provisioned server is paused.
4. The **Add Operator Users** button allows you to select and add Operator Users already on the network.

5. You can select one or more existing Service Operations Managers users
6. You can manually select a user on the network by user name
7. Once you have made your changes, click **Save**, or click **Reset** to discard changes.

Catalogs

This tab displays the available catalogs for an Organization, including the default catalog for an organization. You cannot edit or change the catalogs in this tab.

Providers

Providers are internal and third party service components that supply HPE DCA with added functionality and Out of the Box components that DCA user can subscribe to and use to manage cloud infrastructure and resources. For example, a Database and Middleware Automation provider allows for integration between disparate platforms while an HPE Helion Public Cloud provider connects a public cloud network into the DCA environment.

A provider corresponds to the specific instance of an application that DCA can integrate with to help instantiate service designs. For example, to enable service designs that target Network Automation Environment infrastructure orchestration, you must first create a provider (with a provider type of Network Automation Environment) in the DCA Administration Console.

Note: Items that show the lock icon () cannot be deleted.

Provider Types

A provider type allows you to classify providers for improved filtering and identification. DCA includes some pre-defined, out-of-the-box provider types, including the HPE Server Automation Provider. Each instance of a provider can have a single provider type, and each instance of a resource offering can have a single provider type. In addition, resource offerings can be associated only with providers that share the same provider type.

This is what you will see in the initial DCA Providers screen:

- **Provider information** – click on an individual Provider to see more information about the provider, including related Resource Providers and Components.
- View **Providers**: **By Type** allows you to sort Providers by type or by environment.
- **All Providers tab** – third party and HPE built providers can be found here. You can also create a provider using the **Create** button. For more information, see Create Provider.
- **Components tab** – third party and HPE built components can be found here. You can also click on the **Manage** button to manage these components.
- For all Provider information tabs, the **Refresh** button will redisplay your selections if they have recently changed.

Resource Environments is a grouping mechanism for providers and have to be defined initially. When configured, they can be used as a way to influence the selection of resource providers during the provisioning process.

Available ways to group providers are by:

- Geographic location
- Org Structure
- Production readiness.

For more information, see Provision Servers.

You can do the following tasks in the Provider component:

- Provider Information – you can view and edit attributes.
- Create Provider
- Manage Components

Provider Information

Click on the Provider link. You will see the following attribute tabs:

- **Overview**: Shows the **Provider Type.** On the **Overview tab,** you can click **Edit** and change the **Display Name, Provider Description, UserID, Password, and ServiceAccessPoint**. **ServiceAccessPoint** is the URL that hosts the provider and allows DCA to perform management activities. You can also change the provider **Image** and enable **Default Settings**.
- **Properties**: you can Create Provider properties here**.** Click **Create** or the **Create Property** button to create properties. The four property **Types** are: **Boolean, Integer, List, and String**. You can change or edit the **Name**, **Display Name**, **Description** and the appropriate **Property value** of the Provider.
- **Environments**: allows you to define and select resource environments. Click the **Select** or **Select Environments** button. Click on the **Available Resource Environments**, click the **Add** / **Remove** buttons to edit the resource list, and then click **Save.**
- **Offerings**: This tab shows all the selected **Offerings** available to this Provider. To make any changes, click the **Select** button to open the **Select Resource Offerings** window. Click on the **Resource Offering,** then Click the **Add** / **Remove** buttons to edit the resource list, and then click **Save**.
- **Resource Pools**: allows you to define and select resource pools. Click the **Create** or the **Create Resources** button. You can enter or edit the **Display Name, Description, Known By Provider As**, and **Resource Synchronization Action** attributes. You can also enable or disable **Default Settings**; when **Enabled**, this resource pool will participate in resource allocation for processing new subscriptions.
- **Components**: allows you to define and manage Components. Click the **Manage** or the **Manage Components** button.
- The Manage Provider Types icon,  next to the Manage button. This allows you to **Create a Provider Type** or **Edit a Provider Type**.
- Click on the **Provider** Type, then click on the **Create Provider Type** icon (**+**) to **Create a Provider Type**, or click on the **Edit Provider Types** icon () to edit the Display, Description, and Image of the Provider Type.
- You can create or edit the **Display Name**, **Description**, and **Image** of the Provider Type.

Note: For all Provider information tabs, the Refresh button will redisplay your selections if they have recently changed.

Create Provider

To create a new Resource Provider, click the Create button. You can create a new **Display Name, Provider Description, UserID, Password,** and **ServiceAccessPoint** for the **Resource Provider,** which is the URL that hosts the provider and allows DCA to perform management activities. You can also change the provider **Image** and enable **Default Settings**; when **Enabled**, this resource pool will participate in resource allocation for processing new subscriptions.

Manage Components

This feature allows you to define and manage Topology Components. Click the **Manage** or the **Manage Components** button.

Designs

Note: DCA 2016.01 utilizes and supports only Sequenced Designs.

Sequenced Designs

A sequenced service design is a blueprint for an orderable service. Each design includes service components created from component types or component templates that define what is provisioned automatically. You can use service designs to create a complex set of automated elements to support consistency and repeatability of common manual tasks. These service designs then become the basis for service offerings, which support ITIL and ITSM best practices. A sequenced service design includes the following:

- A hierarchy of service components (see "Service Components"). The hierarchy of service components defines the execution process. In DCA, the hierarchy defines the connection rules, but the **Component Order** configured for each service component defines the order of execution that occurs when this design is provisioned.

- Resource bindings (see "Resource Bindings", which allow resource offerings to be assigned to service components.
- Lifecycle actions, which are needed to provision and de-provision service components.
- Properties (see "Custom Service Component Properties"), which allow you to configure user-defined properties for service components.
- Subscriber options (see "Subscriber Options", which allow you to expose service design options in the **Offerings** area of the DCA Administration Console and the Operations Portal.

To navigate to the sequenced design area

1) In the DCA Administration Console initial dashboard view, click the **Designs** tile.
2) Click the **Sequenced** tile, which takes you to the **All Designs** area for sequenced designs.
3) You will see three tiles: **Designer**, **Components**, and **Resource Offerings**.

To design a sequenced service

Follow these high-level steps to design a sequenced service:

- Based on the needs of your organization, create a plan for resource providers, components, lifecycle actions, and other design elements before you begin implementing your design.
- Make sure that the resource providers and resource offerings (with lifecycle actions, as required) needed to deploy the service are set up.
- Create component types, as needed (see the topic "Create a Component Type"), or use out-of-the-box component types.
- Create the service design (see "Add a Service Design").
- Use the Designer (see "Sequenced Designer") to create a hierarchy of service components (see "Create a Service Component").
- Add resource bindings, as needed (see "Create a Resource Binding").
- Create lifecycle actions for service components, as needed ("Create a Lifecycle Action for a Resource Offering".
- Create custom properties for service components, as needed (see "Create Custom Service Component Properties"
- Create subscriber options for a service design, as needed (see "Subscriber Options").
- Complete the service design (blueprint) and ensure the Disabled box is not selected (see "Add a Service Design"). This makes the service design available for eligible for selection as the basis of a service offering in the Offerings area.

To view Service Designs

In the left pane of All Designs area, view the list of service design tags. Click a tag to view the list of service designs associated with the selected tag.

Use the following icons and features to navigate and perform tasks in the Designs area:

Item	Description
	Indicates locked items, which cannot be edited or deleted.
	Type search text to filter the results based on a keyword search of display name and description.
	Click to display a tile view of the content.
	Click to display a list view of the content.
Refresh button	Click to refresh the data in this view.
	Click to manage tags.
Create button	Click to add a new item.
Import button	Click to import a service design

Item	Description
	Hover your cursor over this icon to see more information.
	Hover your cursor over this icon to see more information about the error condition.

Design overview

To see the design overview

1. In the left pane of the All Designs area, select the tag associated with the design whose details you want to view.
2. Select the design whose details you want to view.
3. View design details in the **Overview** tab.
4. For descriptions of the specific properties listed in this view, see the topic "Add a Service Design" on the next page.

In this tab, you can also do the following:

- Click Export to export the service design. For more information, see "Import and Export a Service Design".
- Click Save As to save the service design with a different name. For more information, see "Copy a Copy a Service Design"
- Click Edit to edit the name and description of a service design. For more information, see "Edit Service Design Properties".
- Click Delete to delete the service design. For more information, see "Delete a Service Design".

You can also see design information in the following tabs:

- Designer tab - for more information see the topic "Sequenced Designer".
- Subscriber Options tab - for more information see the topic "Subscriber Options".
- This tab is available only for sequenced designs.

To add a Service Design

1. In left pane of the All Designs area, click Create.
2. Provide the information in the following table, and click Create.
3. When you access the Designer tab to begin structuring the service design, click Create Root Component. For more information, see "Create a Service Component".

Item	Description
Display Name	The name you provide for the service design.
Description	The description you provide for the service design.
URL	A Uniform Resource Locator (URL), which, if configured, provides a link in the Overview tab that, opens a new browser window to the target location. You can use the URL target location to provide additional information about a service design.
Image	An image that displays for the service design. Click Change Image. Choose the image you want, and click Select. Click Upload to add your own image. Supported file extensions include .jpg, .jpeg, .gif, and .png. The recommended image size is 256 by 256 pixels, and the image will be scaled to the appropriate size. The images are stored in the %CSA_HOME%\jboss- as\standalone\deployments\csa.war\images\library folder of the DCA server.

Item	Description
Additional Settings	Disabled - Check the box to indicate that the availability of the service design is Disabled. When the box is not checked, the availability is Enabled. Service Designs configured as Enabled appear in the service offering section as blueprints. When Disabled, no new service offerings can be created from the service design. If a service design is disabled after service offerings have been created, no new subscriptions can be created from those service offerings.
Tags	Click Select Tags to choose from a list of tags that you can define to provide a structure for organizing and grouping the service designs. For more information, see "Manage Tags". To remove a tag, hover the cursor over the tag you want to remove, and click the delete () icon.

Service Design validation

The validation-warning banner indicates that your service design has the following problem:

The service design has at least one resource binding to a resource offering that has no enabled, associated provider. For more details, click **View Warnings**. You can then click an Associated Service Component display name, which takes you to that component in the service design hierarchy. If this service design problem is not corrected, the design cannot be successfully provisioned.

To edit properties of a Service Design

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to edit.
2. Select the design you want to edit.
3. In the **Overview** tab, click **Edit**.
4. Edit the properties of the service design, as desired. For descriptions of the specific properties, see the topic "Add a Service Design".
5. Click **Save**.

To copy a service design

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to copy.
2. Select the design you want to copy.
3. In the Overview tab, click the **Save As** button. Type a new name and description, as desired.
4. Click **Save**. After you click Save, the new service design is displayed.

All parts of a service design (such as the service component hierarchy, resource bindings, properties, and subscriber options) are copied. The copied service design appears in the All Designs area. After you copy a service design, any changes you make to the original or to the copy will not affect the other.

To delete a service design

A service design cannot be deleted if any service offerings are created from it.

1. In the left pane of the All Designs area, select the tag associated with the design you want to delete.
2. Select the design you want to delete.
3. In the Overview tab, click Delete.
4. Click Yes to confirm the deletion.

Import and Export a Service Design

For information about importing resource offerings, see the topic "Import and Export a Resource Offering".

Before you import a service design archive, complete the following prerequisites:

Import all process definitions that are referenced by the service design, including any referenced by resource offerings that are part of the service design. The process definitions must be imported to the DCA installation in which the service design will be imported. During import, process definitions are resolved by **name**. For process definitions that are associated with the HPE Operations Orchestration process engine, the **name** corresponds to the full path to the HPE Operations Orchestration flow (for example, /Library/CSA/3.2/Providers/vCenter/vCenter Clone Server/Actions/vCenter Simple Compute - Deploy). Make sure that these flows have identical signatures and identical paths as the flows on the system from which the service design was exported. For instructions about how to import OO flows, see the section "Import HPE Operations Orchestration Flows" in this Guide.

If the service design you want to import has a dependency on any custom component types, these custom component types must be imported before the service design can be imported.

The archive (.zip) file can only reference files or content contained within the .zip file itself, or that are already contained in the csa.war file. By default, all images in the archive files must end in one of the following suffix values.

jpg|jpeg|jpe|jfif|svg|tif|tiff|ras|cmx|ico|pnm|pbm|pgm|ppm|rgb|xbm|xpm|xwd|png|gif|bmp|cod|ief

For information about importing resource offerings, see the topic "Import and Export a Resource Offering".

Import process for service designs

The import process imports archives of service designs and their supported artifacts. Supported artifacts for service designs include associated resource offerings. Service designs with the same internal name are considered functionally equivalent and are not imported.

Update process for service designs

During the update process, identical artifacts that exist on the target system are updated (overwritten) with the changes from the archive. Artifacts are created if they do not exist on the target system.

Update preserving original process for service designs

This process imports all the artifacts present in an archive, whether they exist on the target system or not. During this operation, if there is an artifact with the same internal name in the system, the name, the display name, and the description of the artifact are modified internally; the display name and the description are appended with "Superseded on" and the date. The internal name, display name, and description of the artifact being imported remain intact.

Content archive for service designs

Exporting a service design creates a content archive (.zip) file. The content archive contains XML documents for the service design you are exporting, as well as associated artifacts, icons for customizing the artifacts, and the Manifest XML document, which contains meta-information about the archive files.

To import a service design archive

If a service design has active service offerings associated with it, the subscriber options for the service design being imported must match that of the service design on the target system; otherwise, the import of the service offerings does not succeed.

Note: When you import a design, any tags you have selected in the designs area do not affect the imported design. The imported design will contain the tags that were included when the design was exported, and new tags will be created on the system, as necessary, to match what was exported.

1. In the lower, right pane of the **All Designs** area, click **Import**.
2. Select or specify the Archive File (.zip file) that contains the service design you want to import. Archive filenames for service designs begin with SERVICE_DESIGN_.
3. Select an Option:
    a. **Import** - imports new service designs (and associated resource offerings); does not update existing service designs. Note that you cannot import a service design with the same internal name as an existing service design.

b. **Update** - imports new service designs (and associated resource offerings) and updates (overwrites) existing service designs. Check Preserve Originals to create backup copies of the original items, appending "Superseded on" and the date to the artifact display names and descriptions.

4. Click **Preview** to see a report of prospective results for the import process, including information about the artifacts and their status.
5. Click **Import**.
6. Click **View Detailed Report** to see a summary and details of the import process, including information about the artifacts and their status.
7. Click **Close**.

To export a service design archive

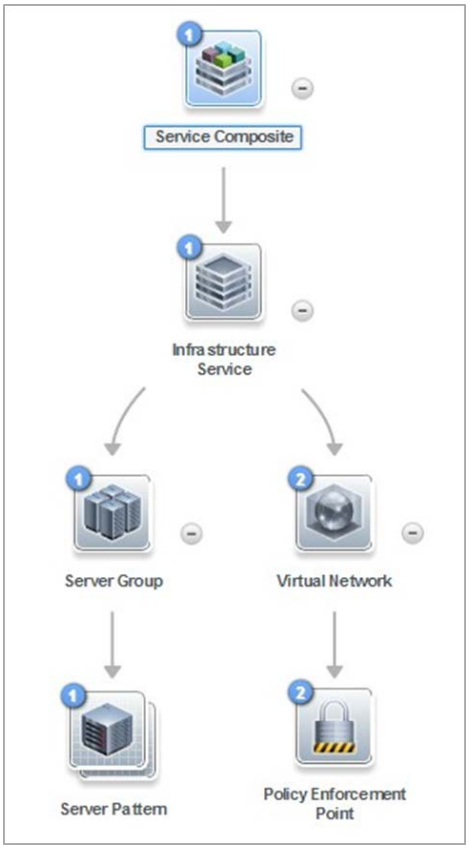
1. In the left pane of the All Designs area, select the tag associated with the design you want to export.
2. Select the design you want to export.
3. In the Overview tab, click Export.
4. Save the exported service design, if required by your browser.

When you export a service design archive, the service design and all referenced resource offerings are packaged in an archive file whose name is: SERVICE_DESIGN_<service_design_display_name>_<service_design_id>.zip

Sequenced Designer

The Designer allows you to design your sequenced services by creating a hierarchy of service components. A service component is an element of a service design. A service component has a component type that constrains its allowed children and assignable resource offerings. A service design starts with a root service component (Service Composite, in the image below).

An example hierarchy of service components, as shown below, has a Service Composite that contains an Infrastructure Service, which contains a Server Group and a Virtual Network. In addition, the Server Group contains a Server (marked as a Pattern), while the Virtual Network contains a Policy Enforcement Point.



To see the component type of a service design element, hover your mouse over the icon for that element. In addition, the icon for the element corresponds to the image specified for the component type.

To navigate to the sequenced designer

1. In the DCA Administration Console dashboard, click Designs, and then click Sequenced.
2. Select a tag or select All Designs.
3. In the right pane, select a service design.
4. Click the Designer tab.

To use the designer controls

The Designer provides the following controls to help you properly display your service design.

Icon	Description
	Zoom the display out or in: To zoom out, click the left controller box. To zoom in, click the right controller box. Move the slider control from left to right to zoom out and zoom in. You can also use your mouse scroll wheel to zoom out and in.
	Click to reload the service design and reset the service components to their default positions.
	Click to automatically fit the service design within the display area.
	Hover over or select a service component to see a toolbar that allows you to create a new child service component or to edit and delete the selected service component.
	Click to collapse the service components in the service design.
	Click to expand the service components in the service design.

Service Components

A Service Component is an element of a service design. A Service Component has a component type that constrains its allowed children and category of resource offerings (for more information, see the topic "Create a Component Type".

See the following related topics:

- "Create a Service Component"
- "Delete a Service Component"
- "Edit Properties of a Service Component"
- "Custom Service Component Properties"

Create a Service Component

You can add children to the root service component or to any component that has one or more supported children configured for it.

To create a service component

1. In the left pane of the **All Designs** area, select the tag associated with the design to which you want to add a child service component.
2. Select the service design.

3. In the **Designer** tab, select the service component to which you want to add a child.
4. Click the **Create New Child Service Component** () icon.
5. Provide the following information:

Item	Description
Component Palette	Select the component palette that contains the component type you want to select for this service component, and then click **Next**. The list of component palettes displays only those palettes that are applicable to the service component for which you are creating a child. A component palette contains a group of component types from which you can choose when creating service components in a service design.
Component Type	Select a component type for the service component you are creating, and then click **Next**. The list of component types displays only those types that are applicable to the service component for which you are creating a child. Component type properties provide a base set of attributes for the service component. For more information, see the topic "Components".
Component Template	Select a component template for the service component you are creating, and then click **Next**. A component template is a specialized version of a component type and is used to simplify service design creation. Component templates include customized settings for the properties and lifecycle actions that provide initial settings for the service design. When a template is added to a design, any default properties and lifecycle actions are automatically populated in that service component within the design. This list always includes a **Default Template**, which uses the settings as configured for the selected component type.
Identification Details:	
Display Name	The name you provide for the service component.
Description	The description you provide for the service component.
Component Order	Select a number to specify the deployment processing order for this service component relative to its sibling service components (that is, service components who share the same parent). Service components are processed in ascending order during service deployment and in descending order during undeployment.
Operations Portal Options	Select **Visible** to specify that this service component is visible in the Operations Portal. De-select it to specify that the service component will not be visible. Custom service component properties and lifecycle actions that have been configured to be visible in the Operations Portal will only be displayed in the Operations Portal if the associated service component is itself configured to be visible. The visibility of a service component does not affect visibility of its child service components, and it is not necessary for a parent of a service component to be visible for the child component to be visible in the Operations Portal.
Pattern	Select this box to mark the service component as a pattern. This indicates that the DCA lifecycle engine will not automatically process the service component. When you create a pattern service component, you must also create a Clone Pattern action in the parent service component. For example, the out-of-the-box component type, Server, is typically marked as a pattern, and its parent service component, Server Group, includes the Clone Pattern action. At subscription time, the Clone Pattern action creates one or more service component instances from this service component pattern. The root service component in a service design cannot be marked as a pattern. As a result, if you select a pattern as the root node, it will no longer function as a pattern. You can identify a service component that is marked as a pattern because its icon appears as a stacked, double image with a grid-like background, as shown below. 

Delete a Service Component

For more information about sequenced designs, see "Sequenced Designs". When you delete a service component, all of its child service components are also deleted.

To delete a service component:

1. Select the service component you want to delete.
2. Click the **Delete** ( ) icon.
3. Click **Yes** to confirm the deletion.

Edit Properties of a Service Component

For more information about sequenced designs, see "Sequenced Designs".

To edit properties of a service component

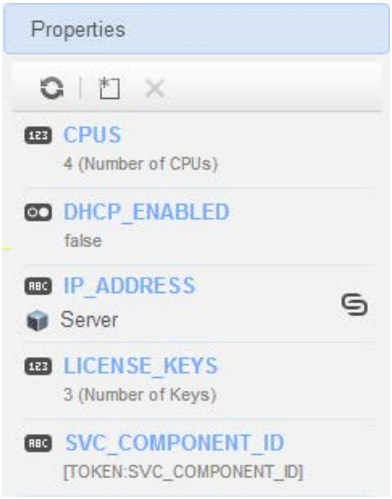
1. Select the service component whose properties you want to edit.
2. Click the **Edit** ( ) icon, or double click the service component display name or icon.
3. Edit the properties of the service design, as desired.

For descriptions of the specific properties, see the topic "Create a Service Component".

Custom Service Component Properties

For more information about service components, see "Service Components".

Custom service component properties are managed using the Properties pane (shown below) in the Designer tab.



Custom properties for service components are user-defined properties that you may want to create in the following situations:

- When a service component receives its value from a subscriber option. For example, you may want to get the number of CPUs for a server after its value has been specified in the Operations Portal. To do this, create a custom property (for example, NCPU) on the Server service component, and create a subscriber option property (for example, NCPU). Finally, use a target binding, as described in "Subscriber Options", to push the value from the subscriber option to the Server NCPU property.
- When an action that runs on a service component or its associated resource offering expects a property value with a given name/value to exist on the service component. For example, an action may need to retrieve an IP address that is stored a Server service component.
- When a service design needs to receive the value of a property that is stored on another service component. For example, a Software Application Tier service component may need to know the service component ID of a Server Group. You can create a property on the Server Group service component called SVC_COMPONENT_ID, which has a token value of [TOKEN: SVC_COMPONENT_ID]. You would also create a property on the Software Application Tier service component whose value contains a source binding to the Server Group property (SVC_COMPONENT_ID). The Software Application Tier pulls the property value from that SVC_COMPONENT_ID property on the Server Group. This use of custom service component

properties to pull a value from another service component property is called a source binding. Another type of value binding is called target binding. For more information about target bindings, see "Subscriber Options".

- When you want to expose a property value in the Operations Portal. The property value can be explicitly defined on the service component, or may be set as the result of an action execution (for example, a HOSTNAME property might be set on a Server service component as part of deploying the Server).

View Custom Service Component Properties

For more information about custom service components, see "Custom Service Component Properties".

To view custom properties of a service component:

1. In the left pane of the **All Designs** area, select the tag associated with the design that contains the service component.
2. Select the service design.
3. In the Designer tab, select the service component whose custom properties you want to view.
4. In the right pane, select Properties.
5. The Properties pane displays the custom properties of the selected component.

Create Custom Service Component Properties

For more information about custom service components, see "Custom Service Component Properties".

To create custom service component properties

1. In the left pane of the All Designs area, select the tag associated with the design that contains the service component.
2. Select the service design.
3. In the Designer tab, select the service component to which you want to add a custom property.
4. In the right pane, select Properties.
5. In the Properties pane tool bar, click the Create () icon.
6. Provide the following information:

Item	Description
Property Type	Select one of the following: • **Boolean** - A property whose value is true or false. • **List** - A property where you can define a list of values for the Subscriber to select. • **Integer** - A property whose value is a positive or negative whole number or zero. • **String** - A property whose value is a sequence of characters.
Property Details	**For Boolean properties:** **Name** - A unique name for the property. **Display Name** - The display name for the property. **Description** - A description of the property. **Operations Portal & Service Offering Options**: • **Editable** - Indicates that this property can be made editable in the Offerings area and in the Operations Portal. • **Required** - Boolean properties are always required, which means that when a subscription is ordered, a value must be provided for this field. This option cannot be changed for Boolean properties. • **Value** - Select true or false. **For List properties:**

Item	Description
	Name - A unique name for the property. **Display Name** - The display name for the property. **Description** - A description of the property. **Operations Portal & Service Offering Options:** • **Editable** - Indicates that this property can be made editable in the Offerings area and in the Operations Portal. • **Required** – Select to indicate that when a subscription is ordered, a value must be provided for this field. Note that this field is available only when the Enable Multi-Select option is selected. Single-select list properties are always required; this field cannot be changed for single-select properties. **Remove Selected value(s)** icon ( ) to remove a Selected value. After adding a List property, you can choose a default value (or values, for multi-select lists) by selecting one or more values from the drop down list for the **Value Entry Method:** • **Manual Entry** - Click the **Add value** ( ) icon to add a new value, or click the property in the Subscriber Options tab. Click Save to save the default value selection. • **Select Dynamic Query** - Click the **Script Selection** ( ) icon to select a Script Name. To add new scripts, place them in the folder: %CSA_HOME%\jboss-as\standalone\deployments\csa.war\propertysources **Note**: The script is invoked at subscription ordering or modification time by the out-of-the-box DCA user csaReportingUser, who has read-only access to DCA. • Specify an HTTP Request Body to be passed to the script. The contents of the HTTP Request Body need to include the information required by the selected script to return the appropriate set of dynamic values. To include a token in the HTTP Request Body, click the **Token Request** ( ) icon and select from the available tokens. The token is a DCA system value that is automatically resolved internally when the property is read. Click **Test Query** to test the dynamic query results (note that tokens are resolved only at subscription time, and this test will pass literal values). **Note**: The script is invoked at subscription ordering or modification time by the out-of-the-box DCA user csaReportingUser, who has read-only access to DCA. You can select from the following server-side tokens: • **Action Name** - Resolves to the value of ORDER when initially ordering a subscription and to the value of MODIFY_SUBSCRIPTION when modifying an existing subscription. • **Service Blueprint ID** - Resolves to the Service Blueprint ID. • **Service Instance ID** - Resolves to the Service Instance ID. • **Service Offering ID** - Resolves to the Service Offering ID. • **Service Request Organization ID** - Resolves to the Organization ID associated with the Service Request. • **Service Request User ID** - Resolves to the User ID associated with the Service Request. • **Subscription ID** - Resolves to the Subscription ID created at subscription time. You can also select the following client-side token: [CLIENT:<property_name>] - Allows you to have a dependency on a value from another list property, which means that if a value is selected in "Property A", for example, the list of values in

Item	Description
	"Property B" will change based on that selection. "Property A" and "Property B" must exist within the same Subscriber Option. Note that <property_name> refers to the property **Name**, and not its **Display Name**. For the **Test Query** functionality to work for the above example, you must first create and save "Property A" in the DCA Administration Console before you create its dependent property, "Property B." **Enable Multi-Select** - Select to present options as check boxes in the Operations Portal. **For Integer properties:** **Name** - A unique name for the property. **Display Name** - The display name for the property. **Description** - A description of the property. **Operations Portal & Service Offering Options:** • **Editable** - Select to make this field editable in the Offerings area and in the Operations Portal. • **Required** – Integer properties are always required, which means that when a subscription is ordered, a value must be provided for this field. This option cannot be changed for Integer properties. • **Value** - Select or type a positive or negative whole number or zero. If you enter a decimal number, the value will be truncated to the nearest integer. The maximum allowed integer value is 2147483647 and the minimum is -2147483648; if you enter a value outside these bounds, the value will be automatically converted to the closest maximum or minimum value. **Input validation** - Select Enable Input validation to validate the value that the user enters for this property. When selected, the following fields are available: • **Minimum value** - Enter a number for the minimum value allowed, which means the value for the property must be greater than or equal to the number you enter. • **Maximum value** - Enter a number for the maximum value allowed, which means the value for the property must be less than or equal to the number you enter. **For String properties:** **Name** - A unique name for the property. **Display Name** - The display name for the property. **Description** - A description of the property. **Operations Portal & Service Offering Options:** • **Editable** - Select to make this field editable in the Offerings area and in the Operations Portal. • **Required** – Select to indicate that when a subscription is ordered, a value must be provided for this field. Note that this field is available only when the Editable option is selected. • **Value** - Type a string of characters. • **Confidential data** - Select this box to mask the values so that they cannot be read in the user interface; no encryption of the value is performed. • **Input validation** - Select Enable Input validation to validate the value that the user enters for this property. Choose an **Input Restriction** from the following list:

Item	Description
	• **Custom Regular Expression** - Validates the value based on a regular expression, as specified in the Regular Expression text box. • **Email Address** - Checks that a valid email format is entered. **IPv4 Address** - Checks that a valid IPv4 address is entered. **IPv6 Address** - Checks that a valid IPv6 address is entered. • **Non-Numeric Characters** - Checks that no numeric characters are entered. • **URL Address** - Checks that a valid URL format is entered. • **Minimum Length** - Enter a number for the minimum length allowed for the value, which means the length of the value must be greater than or equal to the number you enter. • **Maximum Length** - Enter a number for the maximum length allowed for the value, which means the length of the value must be less than or equal to the number you enter.
Property Bindings	Select the service component to which you want to push the value of this property. Then select the appropriate property from the list of compatible properties. This is called a target binding. For more information about target bindings, see "Subscriber Options".

The following tokens are available for custom service component properties:

Token	Description
Parent Service Component ID ([TOKEN:PRN_COMPONENT_ID])	Resolves to the Service Component ID of the parent service component.
Service Blueprint ID ([TOKEN:SVC_ BLUEPRINT_ID])	Resolves to the Service Blueprint ID.
Service Catalog ID ([TOKEN:SVC_ CATALOG_ID])	Resolves to the Service Catalog ID used at subscription time.
Service Component ID ([TOKEN:SVC_COMPONENT_ID])	Resolves to the Service Component ID of the component associated with this action.
Service Component Type ([TOKEN:SVC_COMPONENT_ TYPE])	Resolves to the Service Component Type (for example, Server) of the component associated with this action.
Service Instance ID ([TOKEN:SVC_ INSTANCE_ID])	Resolves to the Service Instance ID created at subscription time.
Service Offering ID ([TOKEN:SVC_ OFFERING_ID])	Resolves to the Service Offering ID.
Service Request Organization ID ([TOKEN:REQ_ORG_ID])	Resolves to the Organization ID associated with the service request.
Service Request User ID ([TOKEN:REQ_USER_ID])	Resolves the User ID associated with the service request.
Subscriber's Email Address ([TOKEN:SVC_SUBSCRIPTION_ EMAIL])	Resolves to email address of the subscriber.
Subscriber's Organization ID ([TOKEN:USR_ORG_ID])	Resolves to the Organization ID associated with the subscriber.
Subscription ID ([TOKEN:SVC_ SUBSCRIPTION_ID])	Resolves to the Subscription ID created at subscription time.

Edit Custom Service Component Properties

For more information about custom service components, see "Custom Service Component Properties"

To edit the custom properties of a service component:

1. In the left pane of the **All Designs** area, select the tag associated with the design that contains the service component.

2. Select the service design.
3. In the **Designer** tab, select the service component whose custom properties you want to edit.
4. In the right pane, select **Properties**.
5. Click the name of the custom property you want to edit.

For descriptions of the specific properties, see the topic "Create Custom Service Component Properties".

Delete Custom Service Component Properties

For more information about custom service components, see "Custom Service Component Properties"

A custom service component property cannot be deleted if other properties are bound to it. For more information about source bindings, see "Custom Service Component Properties" For more information about target bindings, see "Subscriber Options".

To delete custom properties from a service component:

1. In the left pane of the **All Designs** area, select the tag associated with the design that contains the service component.
2. Select the service design.
3. In the **Designer** tab, select the service component from which you want to delete a custom property.
4. In the right pane, select **Properties**.
5. In the **Properties** pane, select the custom properties you want to delete.
6. Click the **Delete** (✕) icon.
7. Click Yes to confirm the deletion.

Resource Bindings

- For more information about sequenced designs, see "Sequenced Designer".
- For more information about resource offerings, see the topic "Resource Offerings".

A resource binding is a link in a service design between a resource offering and a service component. For example, a resource offering for a VMware vCenter VM template can be linked to a Server service component. The resource binding ensures that the resource offering will be provisioned when the Server service component is deployed.

You can also create resource bindings on component templates.

See the following related topics:

- "Create a Resource Binding" below
- "Delete a Resource Binding"
- "Create Provider Selection Actions for Resource Bindings"
- "Edit Properties of a Provider Selection Action for Resource Bindings"
- "View Properties of a Resource Binding"
- "Edit Properties of a Resource Binding"

Create a Resource Binding

This topic describes how to create a resource binding in the following ways:

- On a component template
- On a service component

To create a resource binding on a component template:

1. In the left pane of the Components area, select the component palette that contains the component type whose template resource binding you want to create.

2. Click the component type whose template resource binding you want to create.
3. Select the **Templates** tab.
4. In the component templates list, click the component template whose resource binding you want to create.
5. At the bottom of the **Resource Bindings** tab, click **Create**.
6. In the **Create New Resource Binding** wizard, provide the information described in the table below.

To create a resource binding on a service component:

1. In the left pane of the **All Designs** area, select the tag associated with the design that contains the service component.
2. Select the service design.
3. In the **Designer** tab, select the service component to which you want to add a resource binding.
4. In the right pane, select **Resource Bindings**.
5. In the toolbar, click the **Create** () icon.
6. In the **Create New Resource Binding** wizard, provide the following information:

Item	Description
Resource Category	Select the category of the resource offering you want to bind to the service component.
Resource Offering	Select the resource offering you want to bind to the service component. You cannot edit this selection after a resource binding has been created. For more information about Resource Offerings, see the topic "Resource Offerings".
Provider Type	You see this field when you view the properties of a resource binding. The provider type is determined by the selected resource offering; you cannot edit the provider type.
Binding Order	When a resource binding is created, it is automatically assigned a binding order number. The binding order specifies the order in which the associated resource offering will be provisioned relative to other resource bindings configured for the service component. Resource bindings are processed in ascending order during service deployment and in descending order during undeployment. The number automatically assigned is the next available number, starting with 1, 2, 3, etc. After a resource binding has been created, you can edit it to reset the binding order by selecting a number from 1 to 99. You are allowed to create duplicate binding orders, which will be processed in an indeterminate order.

Delete a Resource Binding

For more information about resource bindings, see "Resource Bindings".

To delete a resource binding:

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to modify.
2. Select the service design.
3. In the **Designer** tab, select the service component whose resource binding you want to delete.
4. In the right pane, select **Resource Bindings**.
5. Highlight the resource binding you want to delete.
6. In the toolbar, click the **Delete** () icon.
7. Click **Yes** to confirm the deletion.

View Properties of a Resource Binding

For more information about resource bindings, see "Resource Bindings".

To view the properties of a resource binding

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to view.
2. Select the service design.
3. In the **Designer** tab, select the service component whose resource binding you want to view.
4. In the right pane, select **Resource Bindings**.
5. Click the name of the resource binding you want to view.

Select one of the following tabs for more information:

- Summary tab - View the properties of the resource binding. For descriptions of the specific properties, see the topic "Create a Resource Binding".
- Provider Selection tab - View and create resource provider selection actions, which execute as part of the Pre-Transition substate of the Reserving lifecycle state. For more information, see "Create Provider Selection Actions for Resource Bindings".
- Resource Accounting tab - View and create accounting actions that execute during the Reserving and Un-reserving states when the resource binding is provisioned.
- Measurable Properties tab - View and create measurable properties on a resource binding.
- Offering Lifecycle tab - See a read-only view of the lifecycle actions associated with the resource offering used for this resource binding.
- Offering Properties tab - View a read-only list of properties for the resource offering used for this resource binding.

For more information about Resource Offerings, see the topic “Resource Offerings”.

Edit Properties of a Resource Binding

For more information about resource bindings, see "Resource Bindings".

This topic describes how to edit properties of a resource binding in the following ways:

On a component template.

On a service component.

To edit properties of a resource binding on a component template

In the left pane of the Components area, select the component palette that contains the component type whose template resource binding you want to edit.

Click the component type whose template resource binding properties you want to edit.

Select the Templates tab.

In the component templates list, click the component template whose resource binding properties you want to edit.

Click the Resource Bindings tab.

Select the display name of the resource binding you want to edit.

In the Summary tab, click the Edit ( ) icon.

Edit the properties of the resource binding, as desired. For descriptions of the specific properties, see the topic "Create a Resource Binding".

To edit properties of a resource binding on a service component

In the left pane of the All Designs area, select the tag associated with the design you want to modify.

Select the service design.

In the Designer tab, select the service component whose resource binding you want to edit.

In the right pane, select Resource Bindings.

Click the name of the resource binding you want to edit.

In the Summary tab, click the Edit () icon.

Edit the properties of the resource binding, as desired. For descriptions of the specific properties, see the topic "Create a Resource Binding".

You can also see read-only information regarding resource bindings by clicking the Lifecycle and

Properties tabs.

View Properties of a Provider Selection Action for Resource Bindings

For more information about resource bindings, see "Resource Bindings".

To view properties of a provider selection action for resource bindings

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to view.
2. Select the service design.
3. In the **Designer** tab, select the service component whose provider selection action properties you want to view.
4. In the right pane, select **Resource Bindings**.
5. Click the name of the resource binding.
6. Select the **Provider Selection** tab.
7. Click the name of the action whose properties you want to view.
8. For descriptions of the specific properties in the **Summary** tab, see the topic "Create Provider Create Provider Selection Actions for Resource Bindings" on the next page.
9. Select the **Properties** tab to view the action inputs that will be passed to the process definition. For more information about the specific properties, see the topic "Edit Properties of a Lifecycle Action for a Resource Offering". Note that provider selection actions for resource bindings always execute during the Pre-Reserving lifecycle state.

Edit Properties of a Provider Selection Action for Resource Bindings

For more information about resource bindings, see "Resource Bindings".

To edit properties of a provider selection action for resource bindings

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to modify.
2. Select the service design.
3. In the **Designer** tab, select the service component whose provider selection action properties you want to edit.
4. In the right pane, select **Resource Bindings**.
5. Click the name of the resource binding.
6. Select the **Provider Selection** tab.
7. Click the name of the action whose properties you want to edit.
8. For descriptions of the specific properties in the **Summary** tab, see the topic "Create Provider Selection Actions for Resource Bindings" below.
9. Select the **Properties** tab to edit the action inputs that will be passed to the process definition.

Create Provider Selection Actions for Resource Bindings

For more information about resource bindings, see "Resource Bindings".

You must create one or more provider selection actions for a resource binding. The provider selection actions execute during the Pre-Transition substate of the Reserving lifecycle state; the lifecycle state cannot be changed.

DCA ships with internal actions to help with provider selection.

- If you have ***not*** configured resource pools on a provider, then the two provider selection actions most likely to be configured on a resource binding are the **Build Resource Provider List** action and the **Select Resource Provider** action, which should run in that order. To select the provider already selected by the parent service component, use the **Select Resource Provider from Parent** action instead of the two previously mentioned actions.
- If you have configured resource pools on a provider, then the two provider selection actions most likely to be configured on a resource binding are the **Build Resource Provider and Pool List** action and the **Select Resource Provider and Pool** action, which should run in that order. To select the provider and pool already selected by the parent service component, use the **Select Resource Provider and Pool from Parent** action instead of the two previously mentioned actions.

See the following table for descriptions of the out-of-the-box internal actions that ship with DCA:

Table - DCA 2016.01 Internal Actions

Internal Action	Description	Applies To
Build Resource Provider and Pool List	Builds a candidate list of resource providers and associated resource pools that meet 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. • The provider's resource pool has sufficient resource capacity. To determine this, you must consider all measurable properties as configured in the **Measurable Properties** tab for the resource bindings, as well as the optional **Multiplier Property Name** field. The resource pool must have enough resource capacity to support all the properties, which requires that each necessary resource type (for example, CPU, Memory, and Storage), based on the measurable properties, be configured on the pool either with a **Resource Availability** of **Unlimited** or **Available**. If **Available**, the difference between **Total Available To DCA** and **Current DCA Utilization** must be sufficient to support the measurable property requirements.	Resource Binding

Internal Action	Description	Applies To
Build Resource Provider List	Builds a candidate list of resource providers that meet 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.	Resource Binding
Clone Pattern	Clones a service component that is marked as a Pattern into one or more non-pattern service components. The number of service components created is determined by the value of the property specified in Name of the Property for Service Component Count.	Service Component

Internal Action	Description	Applies To
Deploy Topology Based Service Component	Initiates the deployment of a delegated topology service component. For more information, see the Application Deployment on Realized Topology Instance using Sequenced Design white paper.	Service Component
Decrease Resource Utilization	Decreases the utilization of one or more resources in a resource pool by the values of the measurable properties configured on a resource binding. This action should be configured in the Un-reserve section of the Resource Accounting tab on a resource binding.	Resource Binding
Increase Resource Utilization	Increases the utilization of one or more resources in a resource pool by the values of the measurable properties configured on a resource binding. This action should be configured in the Reserve section of the Resource Accounting tab on a resource binding.	Resource Binding

Internal Action	**Description**	**Applies To**
Log Messages	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.	Resource Binding Resource Offering Service Component
Select Resource Pool from Provider	This internal action is deprecated and may be removed in a future DCA release. Use the Select Resource Provider and Pool action in conjunction with the Build Resource Provider and Pool List action in place of this action. 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.	Resource Binding
Select Resource Provider	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.	Resource Binding
Select Resource Provider and Pool	Selects a resource pool and provider from the candidate list that was built by the Build Resource Provider and Pool List action. The selected resource provider and pool will be available to resource offering actions in the token RSC_PROVIDER_ID and RSC_POOL_ID, respectively. The selected pool will optionally be written to a property on the associated service component if the Pool Property Name input to the action is provided.	Resource Binding

Internal Action	**Description**	**Applies To**
Select Resource Provider and Pool from Parent	Selects the resource pool and provider already chosen by a service component's parent service component, as identified by the Parent Component ID and Pool Property Name properties. The selected resource provider and pool will be available to resource offering actions in the token RSC_PROVIDER_ID and RSC_POOL_ID respectively. The selected pool will also be written to a Pool Property Name property on the associated service component.	Resource Binding
Select Resource Provider from Parent	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. The selected	Resource Binding

Internal Action	Description	Applies To
	resource provider will also be written to a Provider Property Name property on the associated service component.	
Undeploy Topology Based Service Component	Initiates the undeployment of a delegated topology service component. The service component must have a property named topologyId, with a value that is the id of the topology design to be undeployed. For more information, see the Application Deployment on Realized Topology Instance using Sequenced Design white paper.	Service Component

To create a provider selection action for resource bindings

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to modify.
2. Select the service design.
3. In the **Designer** tab, select the service component to which you want to add a provider selection action.
4. In the right pane, select **Resource Bindings**.
5. Click the name of the resource binding.
6. Select the **Provider Selection** tab.
7. Select the **Create** icon ( ).
8. Provide the following information:

Item	Description
Process Engine	Select a process engine, which is a container for process definitions. You can select either the DCA Internal process engine or an HPE Operations Orchestration (OO) engine.
Process Definition	Select a process definition, which is configured to run a specified internal action (see the table above for the list of internal actions) or external action.
Display Name	The name you provide for the lifecycle action.
Description	The description you provide for the lifecycle action.
Execution Order	The execution order for the lifecycle action, which is relative to other provider selection actions on this resource binding, if applicable. Lifecycle actions are executed in ascending order.
Execution Properties	Specify the following: **Fail on Error** - If selected, this indicates that provisioning or de-provisioning will stop if the lifecycle action fails. **Error on Timeout** - If selected, this indicates that provisioning or de-provisioning will stop if the lifecycle action times out.
Timeout (seconds)	The time to wait until a timeout occurs for the lifecycle action. Set this field to zero (0) if you do not want the action to timeout.

Designer Tile

Create a sequenced Design:

1) Click the **Create** button.
2) Fill in the **Display Name** and **Description** fields.
3) Enter the **URL** that contains information about this design.
4) Change the **Image**.

5) Disable **Additional Settings** by selecting the checkbox; when this box is checked, no new service offerings can be created from this design.

6) Select **Tags** if any are required.

7) Click **Create**.

Edit an existing Sequenced Design:

1) In the left pane of the **All Designs** area, select the tag associated with the design whose details you want to view.

2) Select the design of an offering whose details you want to view or edit.

3) You will see three tabs: **Overview, Designer, and Subscriber Options.**

4) View design details in the Overview tab.

5) The Designer Tab allows you to design your sequenced services by creating a hierarchy of service components

6) The Subscriber Options Tab allows you to create sets of options for a service design.

Overview Tab

In the **Overview** tab, you can do the following:

- Click **Export** to export the service design. For more information, see "Export a Service Design".
- Click **Save As** to save the service design with a different name. For more information, see "Copy a Service Design".
- Click **Edit** to edit the name and description of a service design. For more information, see "Edit Service Design Properties".
- Click **Delete** to delete the service design. For more information, see "Delete a Service Design".

Export a Service Design

To export a service design archive

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to export.
2. Select the design you want to export.
3. In the **Overview** tab, click **Export**.
4. Save the exported service design, if required by your browser.
5. When you export a service design archive, the service design and all referenced resource offerings are packaged in an archive file whose name is:
   `SERVICE_DESIGN_<service_design_display_name>_<service_design_id>.zip`

Copy a Service Design

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to copy.
2. Select the design you want to copy.
3. In the **Overview** tab, click the **Save As** button. Type a new name and description, as desired.
4. Click **Save**. After you click **Save**, the new service design is displayed.

All parts of a service design (such as the service component hierarchy, resource bindings, properties, and subscriber options) are copied. The copied service design appears in the **All Designs** area. After you copy a service design, any changes you make to the original or to the copy will not affect the other.

Edit Service Design Properties

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to edit.
2. Select the design you want to edit.
3. In the **Overview** tab, click **Edit**.

4. Edit the properties of the service design, as desired. For descriptions of the specific properties, see the topic "Add a Service Design".
5. Click **Save**.

Item	Description
Display Name	The name you provide for the service design.
Description	The description you provide for the service design.
URL	A Uniform Resource Locator (URL), which, if configured, provides a link in the **Overview** tab that opens a new browser window to the target location. You can use the URL target location to provide additional information about a service design.
Image	An image that displays for the service design. Click **Change Image**. Choose the image you want, and click **Select**. Click **Upload** to add your own image. Supported file extensions include .jpg, .jpeg, .gif, and .png. The recommended image size is 256 by 256 pixels, and the image will be scaled to the appropriate size. The images are stored in the: %CSA_HOME%\jboss- as\standalone\deployments\csa.war\images\library folder of the DCA server.

Item	Description
Additional Settings	**Disabled** - Check the box to indicate that the availability of the service design is **Disabled**. When the box is not checked, the availability is **Enabled**. Service Designs configured as **Enabled** appear in the service offering section as blueprints. When **Disabled**, no new service offerings can be created from the service design. If a service design is disabled after service offerings have been created, no new subscriptions can be created from those service offerings.
Tags	**Tags** - Click **Select Tags** to choose from a list of tags that you can define to provide a structure for organizing and grouping the service designs. For more information, see "Manage Tags". To remove a tag, hover the cursor over the tag you want to remove, and click the delete () icon.

Delete a Service Design

NOTE: A service design cannot be deleted if any service offerings are created from it.

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to delete.
2. Select the design you want to delete.
3. In the **Overview** tab, click **Delete**.
4. Click **Yes** to confirm the deletion.

Designer Tab

Design Overview

1. In the left pane of the **All Designs** area, select the tag associated with the design whose details you want to view.
2. Select the design whose details you want to view.
3. View design details in the **Overview** tab.
4. For descriptions of the specific properties listed in this view, see the topic "Add a Service Design".

In this tab, you can also do the following:

- Click Export to export the service design. For more information, see “Import and Export a Service Design”.
- Click Save As to save the service design with a different name. For more information, see "Copy a Service Design".
- Click **Edit** to edit the name and description of a service design. For more information, see “Edit Service Design Properties”.
- Click **Delete** to delete the service design. For more information, see “Delete a Service Design”.

You can also see design information in the following tabs:

- **Designer** tab - for more information see the topic "Sequenced Designer".
- **Subscriber Options** tab - for more information see the topic "Subscriber Options".
- **Note**: This tab is available only for sequenced designs.

Service Design validation

The validation-warning banner indicates that your service design has the following problem:

- The service design has at least one resource binding to a resource offering that has no enabled, associated provider. For more details, click **View Warnings**. You can then click an **Associated Service Component** display name, which takes you to that component in the service design hierarchy. If this service design problem is not corrected, the design cannot be successfully provisioned.

Edit Service Design Properties

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to edit.
2. Select the design you want to edit.
3. In the **Overview** tab, click **Edit**.
4. Edit the properties of the service design, as desired. For descriptions of the specific properties, see the topic "Add a Service Design".
5. Click **Save**.

Import and Export a Service Design

For information about importing resource offerings, see the topic "Import and Export a Resource Offering".

Prerequisites

Before you import a service design archive, complete the following prerequisites:

1. Import all process definitions that are referenced by the service design, including any referenced by resource offerings that are part of the service design. The process definitions must be imported to the DCA installation in which the service design will be imported. During import, process definitions are resolved by **name**. For process definitions that are associated with the HPE Operations Orchestration process engine, the **name** corresponds to the full path to the HPE Operations Orchestration flow (for example, /Library/CSA/3.2/Providers/vCenter/vCenter Clone Server/Actions/vCenter Simple Compute - Deploy). Make sure that these flows have identical signatures and identical paths as the flows on the system from which the service design was exported. For instructions about how to import OO flows, see the section "Import HPE Operations Orchestration Flows" in this Guide.
2. If the service design you want to import has a dependency on any custom component types, these custom component types must be imported before the service design can be imported.

The archive (.zip) file can only reference files or content contained within the .zip file itself, or that are already contained in the csa.war file. By default, all images in the archive files must end in one of the following suffix values. For information on adding additional suffix values, see the *HPE Data Center Automation Suite Installation and Administration Configuration Guide.*

`jpg|jpeg|jpe|jfif|svg|tif|tiff|ras|cmx|ico|pnm|pbm|pgm|ppm|rgb|xbm|xpm|xwd|png|gif|bmp|cod|ief`

Importing and Exporting

Import process for service designs

The import process imports archives of service designs and their supported artifacts. Supported artifacts for service designs include associated resource offerings. Service designs with the same internal name are considered to be functionally equivalent and are not imported.

Update process for service designs

During the update process, identical artifacts that exist on the target system are updated (overwritten) with the changes from the archive. Artifacts are created if they do not exist on the target system.

Update preserving original process for service designs

This process imports all the artifacts present in an archive, whether they exist on the target system or not. During this operation, if there is an artifact with the same internal name in the system, the name, the display name, and the description of the artifact are modified internally; the display name and the description are appended with "Superseded on" and the date. The internal name, display name, and description of the artifact being imported remain intact.

Content archive for service designs

Exporting a service design creates a content archive (.zip) file. The content archive contains XML documents for the service design you are exporting, as well as associated artifacts, icons for customizing the artifacts, and the Manifest XML document, which contains meta-information about the archive files.

To import a service design archive

If a service design has active service offerings associated with it, the subscriber options for the service design being imported must match that of the service design on the target system; otherwise, the import of the service offerings does not succeed.

Note: When you import a design, any tags you have selected in the designs area do not affect the imported design. The imported design will contain the tags that were included when the design was exported, and new tags will be created on the system, as necessary, to match what was exported.

1. In the lower, right pane of the **All Designs** area, click **Import**.
2. Select or specify the **Archive File** (.zip file) that contains the service design you want to import. Archive filenames for service designs begin with SERVICE_DESIGN_.
3. Select an **Option**:
    a. **Import** - imports new service designs (and associated resource offerings); does not update existing service designs. Note that you cannot import a service design with the same internal name as an existing service design.
    b. **Update** - imports new service designs (and associated resource offerings) and updates (overwrites) existing service designs. Check **Preserve Originals** to create backup copies of the original items, appending "Superseded on" and the date to the artifact display names and descriptions.
4. Click **Preview** to see a report of prospective results for the import process, including information about the artifacts and their status.
5. Click **Import**.
6. Click **View Detailed Report** to see a summary and details of the import process, including information about the artifacts and their status.
7. Click **Close**.

To export a service design archive

1. In the left pane of the **All Designs** area, select the tag associated with the design you want to export.
2. Select the design you want to export.
3. In the **Overview** tab, click **Export**.
4. Save the exported service design, if required by your browser.

When you export a service design archive, the service design and all referenced resource offerings are packaged in an archive file whose name is:

`SERVICE_DESIGN_<service_design_display_name>_<service_design_id>.zip`

Subscriber Options

The **Subscriber Options** tab allows you to create sets of options for a service design. The option sets are made available in the **Offerings** area of the DCA Administration Console, where they can be further refined by setting pricing for options, hiding options and setting values for option properties.

The subscriber options are then exposed to Subscribers in the Operations Portal. These options allow the user to select values that customize the service offering for their personal needs.

The option sets are made available in the Offerings area of the DCA Administration Console, where they can be further refined by setting pricing for options, hiding options and setting values for option properties. The subscriber options are then exposed to Subscribers in the Operations Portal.

For example, you can create an option set called *Number of Servers*, which is configured as follows:

- The option set has three options, *Small*, *Medium*, and *Large*.
- Each option has a property called NSERVERS.
- Each option has a unique, specified value for NSERVERS, either *Small* (two servers), *Medium* (four servers), or *Large* (eight servers).
- A binding is created from the NSERVERS property to a corresponding NSERVERS property on a Server Group service component. This use of a subscriber option to push a value to a custom service component property is called a *target binding*, described below.
- In the Operations Portal, subscribers can select the option that provides the desired number of servers.

Target Bindings

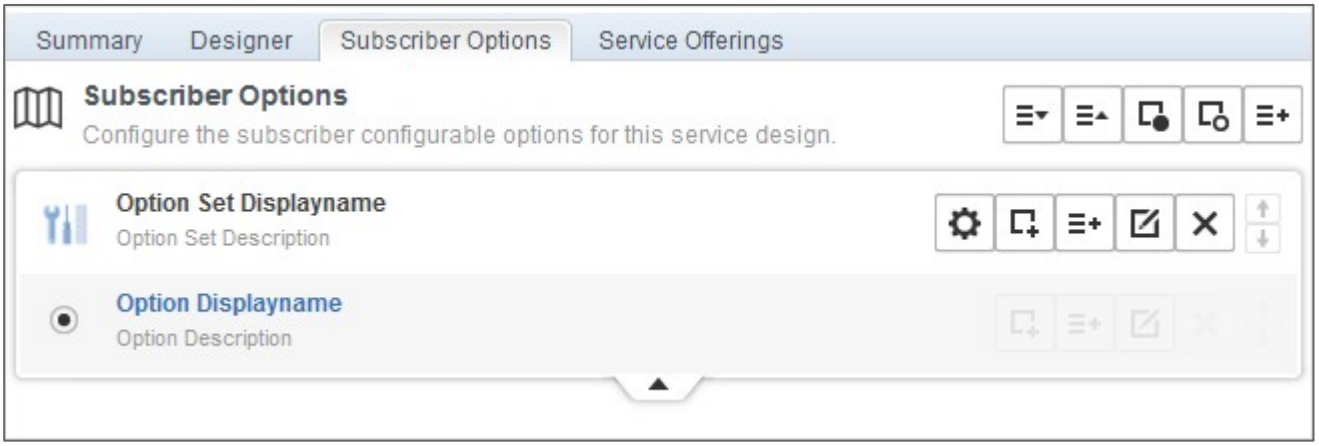
You may have a service component that is configured to expect a property value with a given name and specified value to be provided by a subscriber option. You can configure a binding on a subscriber option so that it sends the value to the appropriate service component property. This use of a subscriber option to push a value to a custom service component property is called a *target binding*.

For example, you may want to let the Subscriber select the number of CPUs for a server. You can create a custom service component property (for example, NCPU) on the Server component and specify a target binding that pushes the Subscriber-entered value to the corresponding NCPU Server property.

Another type of value binding is called *source binding*.

To use the subscriber options controls

The controls for working with subscriber options are shown and described below.



Subscriber Options Controls

Item	Description
	Click to expand all option sets.
	Click to collapse all option sets.
	Click to show all properties.

Item	Description
	Click to hide all properties.
	Click to add a new option or option set.
	Click to add a new option set for delegated topology components. This icon is available only for sequenced service designs that delegate execution to a DCA topology-based design.
	Click to configure advanced settings.
	Click to create properties.

Subscriber Options Controls, continued

Item	Description
	Click to edit one of the following: • Option set • Option • Property
	Click to delete one of the following: • Option set • Option • Property
	Click to move the option set or option up or down in the list.
	Click to expand or collapse the option set.

NOTE: In the current release of DCA, Subscriber Options are set to Read Only.

Components Tile

In Components, you can create service component types for use in DCA.

Create a Component Type

A component type is a hierarchical classification of service components and is used in creating a service design. A component type contains rules that constrain how service designs can be constructed, helping a Service Designer to properly construct a service design. Component type constraints limit the types of service components that can be connected to components of this type within a service design. Resource category constraints limit the categories of resource offerings that can be bound to service components of this type.

1. In the left pane of the **Components** area, select the component palette in which you want to create a component type.
2. At the bottom of the right pane, click **Create**.
3. Provide the following information, and click **Create.**

Item	Description
Base Component Type	Select the component palette from which you want to select a base component type, and then select a base component type from which the new component type will inherit properties and constraints. Component types are not required to have a **Base Component Type**. The lists display only component palettes and component types that

	are compatible with (that is, they do not create circular dependencies with) the palette in which you are creating the component type. This field cannot be modified after a base component type has been selected.
Name	A name for the component type. The component type name must be unique within a component palette. No white space is permitted; all letters are changed to upper case for this value. This field cannot be modified after a component type has been created.
Display Name	The name that displays for the component type.
Description	The description you provide for the component type.
Image	An image that displays for the component type. Click **Change Image**. Choose the image you want, and click **Select**. Click **Upload** to add your own image. Supported file extensions include .jpg, .jpeg, .gif, and .png. The recommended image size is 256 by 256 pixels, and the image will be scaled to the appropriate size. The images are stored in the %CSA_HOME%\jboss- as\standalone\deployments\csa.war\images\library folder of the DCA server.

Item	Description
Default Settings	Select the following items as needed. These items specify the initial default values for service components: • **Consumer Visible** - Select this box to specify that, by default, the service component is visible in the Operations Portal. Deselect it to specify that the service component will not be visible. • Properties and lifecycle actions that have been configured as consumer visible will only display in the Operations Portal if the associated service component itself is configured to be visible. The visibility of a service component does not affect visibility of its child service components, and it is not necessary for a parent of a service component to be visible for the child component to be visible in the Operations Portal. • **Pattern** - Select this box to mark the service component as a pattern by default. This indicates that the DCA lifecycle engine will not automatically process the service component. When you create a pattern service component, you must also create a Clone Pattern action in the parent service component. For example, the out-of-the-box component type, Server, is typically marked as a pattern, and its parent service component, Server Group, includes the Clone Pattern action. At subscription time, the Clone Pattern action creates one or more service component instances from this service component pattern. • You can identify a service component that is marked as a pattern because its icon appears as a stacked, double image with a grid-like background, as shown here: 

Resource Offerings (Sequenced Designs)

Concepts

Note: Resource Offerings are used only with sequenced designs. They are not applicable to topology designs.

A resource offering links the capabilities of providers to the provisioning requirements of a service design. For example, you can create a resource offering that corresponds to a specific VMware vCenter VM template that can be cloned by DCA to create a VM.

A resource offering includes a user-specified set of lifecycle actions that is executed during the provisioning of the resource offering. A resource offering can also include actions that will be exposed to a subscriber in the Operations Portal.

Resource offerings are associated with service designs through resource bindings. When a service design is provisioned, each resource binding (and associated resource offering) is processed through the DCA lifecycle. A provider that supports the resource offering is selected during the resource binding provisioning.

A resource offering may include one or more user-created properties that can be used to pass or exchange information with HPE Operations Orchestration during the provisioning of the resource offering.

Scenarios

The following scenarios describe a few of the ways you can use resource offerings:

- A resource offering can be used to configure a *specific* capability offered by a provider (or a group of providers). For example, you can create a resource offering named Red Hat 5.3 64-bit that corresponds to a specific VMware vCenter VM template

named rhel53x64, which when provisioned results in a Red Hat 5.3 64-bit VM being created. Such a resource offering would likely contain a user-created property, such as VM_TEMPLATE_NAME, that specifies the precise VM template name associated with the resource offering (in this Case, rhel53x64). In this use of resource offerings, you need to create a resource offering for every VM template you wish to use in a service design.

- A resource offering can be used to configure a *general* capability offered by a provider (or a group of providers). For example, you can create a resource offering named vCenter VM Template that can be used to provision any VMware vCenter VM template. Such a resource offering requires that you create service component properties in the associated service designs that specify the precise VM template to be created. In this use of resource offerings, only a single resource offering is needed to expose VM template functionality to service designs.
- A resource offering can be used for the primary purpose of selecting a provider. Most resource offerings include lifecycle actions that are used to provision the resource offering, but some resource offerings have no such lifecycle actions and exist primarily to force provider selection in a resource binding. Typically, you would use this style of resource offering to select a provider at a group level in a service design (for example, for a Server Group) that is shared by all child components (for example, by all Server child components).

In this approach, you create one resource offering for the Server Group, (for example vCenter Server Group) and a separate resource offering for the Servers (for example, vCenter VM Template). When associating vCenter Server Group to a Server Group, specify the provider selection actions to execute in the Resource Binding. When associating vCenter VM Template to a Server, specify the **Select Resource Provider from Parent** or the **Select Resource Provider and Pool from Parent** action in the Resource Binding. In such an approach, the vCenter Server Group probably will not have lifecycle actions that are invoked automatically during provisioning; however, this resource offering may include actions to be exposed to a subscriber (for example, an action such as Restart All VMs).

- A resource offering has a single provider type and a single category. For example, each of the resource offerings discussed above would have a provider type of VMware vCenter and a category of Compute.
- A resource offering can be exported to a .zip file and imported to the same or different DCA installation. An exported resource offering includes all of its lifecycle actions and properties.
- A resource offering can also be copied, which allows you to share a set of lifecycle actions and properties across a number of resource offerings.

Best Practices

From the DCA Administration Console dashboard, navigate to **Resource Offerings** by clicking

Designs-->**Designs**-->**Resource Offerings**.

Note: Be sure you do not confuse a resource offering with a service offering. A service offering is a DCA service design that is made available to a service catalog after additional information (such as pricing) has been added.

View Resource Offerings

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

To view resource offerings

1. In the **By Provider Type** or **By Category** tab, select a **Provider Type** or **Category** whose list of offerings you want to see. For example, select **HPE SiteScope** to see all offerings associated with that provider type, or select **Application** to see all offerings associated with that category.
2. For descriptions of the specific properties, see the topic "Create a Resource Offering" below.

Create a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

To create a resource offering

1. In the **By Provider Type** or **By Category** tab, select the provider type or category for the resource offering you want to create.

2. In the toolbar, click the **Create** ( ) icon.
3. Provide the following information:

Item	Description
Display Name	The name you provide for the offering.
Description	The description you provide for the offering.
Type	The provider type for this offering. This field cannot be changed after an offering is created.
Category	The category for this offering. This field cannot be changed after an offering is created. For more information, see "Categories".

Import and Export a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

DCA allows for the exporting and importing of many of the artifacts that provide the basis for cloud automation. The export operation provides the ability to preserve the selected artifacts so they can be used to replicate the services on another system or to restore the artifacts. These exported archive files are preserved in an industry-standard zip archive file format.

Installing or replacing artifacts on the system is supported by import and update operations. The import behavior only adds artifacts, whereas the update operation replaces matching artifacts. See the Importing **and Exporting** section below for more information.

Before you import a resource offering

Best Practices

1. Create a backup of your system or data. Before proceeding, be sure to create a backup of any artifacts you may be affecting by using the export operation to save an archive zip file.
2. Since some of the import and update options are destructive to existing data, you need to make sure you understand the differences between the options available to ensure you choose the option that matches your expectations.

The archive (.zip) file can only reference files or content contained within the .zip file itself, or that are already contained in the csa.war file. By default, all images in the archive files must end in one of the following suffix values. For information on adding additional suffix values, see the *HPE Cloud Service Automation Configuration Guide*.

jpg|jpeg|jpe|jfif|svg|tif|tiff|ras|cmx|ico|pnm|pbm|pgm|ppm|rgb|xbm|xpm|xwd|png

Import requirements and prerequisites

Resource categories and provider types

Resource categories (such as Compute) and provider types (such as VMware vCenter) are resolved first by **name** and second by **display name** during import of a resource offering. Out-of-the box resource categories and provider types have identical **name value**s on all installations of DCA, and automatically resolve correctly during import. User-created resource categories and provider types do not have a **name** match on different installations of DCA, and instead are resolved by **display name**. For example, if a user created resource category with a display name of Auditing is used for a resource offering, when that resource offering is imported on another DCA installation, an attempt will be made to match a resource category with a **display name** of Auditing. This match is successful only if the user has already created this corresponding resource category on the system in which the import occurs. If a resource category or provider type cannot be resolved by either **name** or **display name**, a new resource category or provider type is automatically created during import of the resource offering. There is no need to add user-created resource categories and provider types ahead of time on the import system; however, if you have done so, ensure the **display name value**s used match those on the export system.

Process Definitions

During an import operation, required dependencies may not exist on the system, which produces an import error that identifies the missing dependencies. For resource offerings, this can include missing process definitions. These process definitions must be imported to the DCA installation in which the resource offering will be imported. During import, process definitions are resolved by **name**. For process definitions that are associated with the HPE Operations Orchestration process engine, the **name** corresponds to the full path to the HPE Operations Orchestration flow, for example:

/Library/CSA/3.2/Providers/vCenter/vCenter Clone Server/Actions/vCenter Simple

Compute - Deploy).

Make sure that all these flows have been imported prior to importing resource offerings. Make sure that these flows have identical signatures and identical paths as the flows on the system from which the resource offering was exported. For instructions about how to import HPE Operations Orchestration flows, see the section "Import HPE Operations Orchestration Flows" in the Operations Orchestration section of this Guide.

Importing and Exporting

Import process for resource offerings

Resource offerings that have the same resource category, provider type, properties, and actions are considered functionally equivalent and are not imported.

Update process for resource offerings

During the update process, identical resource offerings that exist on the target system are updated (overwritten) with changes from the archive. New resource offerings are created if they do not exist on the target system. Note that resource offerings are identified by name instead of functional equivalence for the update operation.

Update preserving original process for resource offerings

This process imports the resource offering, whether it exists on the target system or not. During this operation, if there is a resource offering with the same name in the system, the name, the display name, and the description of the resource offering are modified internally; the display name and the description are appended with "Superseded on" and the date. The name, display name, and description of the artifact being imported remain intact.

Content archive for resource offerings

Exporting a resource offering creates a content archive (.zip) file. The content archive contains XML documents for the resource offering you are exporting, as well as icons for customizing the artifacts, and the Manifest XML document, which contains meta-information about the archive files.

To import a resource offering

1. In the **Offerings** tab, click the **Import** () icon.
2. Select or specify the **Archive File** (.zip file) that contains the resource offering you want to import. Archive filenames for resource offerings begin with RESOURCE_OFFERING_.
3. Select an **Option**:
   a. **Import** - imports new resource offerings; does not update existing resource offerings.
   b. **Update** - imports new resource offerings and updates (overwrites) existing resource offerings. The **Update** process uses the resource offering name to determine if the resource offering already exists on the target system. Check **Preserve Originals** to create a backup copy of the original items, appending "Superseded on" and the date to the artifact display names and descriptions.
4. Click **Preview** to see a report of prospective results for the import process, including information about the artifacts and their status.
5. Click **Import**.
6. Click **View Detailed Report** to see a summary and details of the import process, including information about the artifacts and their status.
7. Click **Yes**.

To export a resource offering

1. In the **By Provider Type** or **By Category** tab, select a **Provider Type** or **Category**.
2. In the **Offerings** tab, highlight the resource offering you want to export, and click the **Export** () icon.
3. Save the exported resource offering, if required by your browser. The resource offerings are packaged in an archive file whose name is:

RESOURCE_OFFERING_<resource_offering_display_name>_<resource_offering_id>.zip

How DCA identifies matching artifacts

When you import a resource offering, DCA determines if a functionally equivalent resource offering already exists on the system. If a functionally equivalent resource offering exists, then the import may be skipped depending on the options selected. Functional equivalence is determined by comparing the imported resource offering with other resource offerings that exist on the system, as follows:

- At a high level, two resource offerings are functionally equivalent if they share the same Provider Type and Resource Category, the same set of user defined custom properties, and the same set of lifecycle actions.
- Properties are considered equivalent if they share the same Type, Name, and value (or values for List properties).
- Lifecycle actions are considered equivalent if they share the same process definition, lifecycle state and substate, execution order, and action input properties and values.
- Some additional attributes on properties and lifecycle actions must be identical for equivalence.

For more specifics on the precise requirements for resource offering equivalence as it relates to entries in the .zip file produced during resource offering export, see the following table:

Element	Necessary for Equivalence
property	• name • valueType • values • confidential – only for String property types
action	• processDefinition name • lifecycleState name • lifecycleSubstate name • lifecycleExecOrder • errorOnTimeout • failOnError • timeout • all properties must be identical, including the consumerVisible and • consumerReadOnly elements for each property • consumerVisible
resourceCategory	• The isCriticalSystemObject determines if this is an out -of-box resourceCategory. If true, name determines equivalence, otherwise displayName determines equivalence.

Element	Necessary for Equivalence
providerType	• The isCriticalSystemObject determines if this is an out -of-box providerType. If true, name determines equivalence, otherwise displayName determines equivalence.

Delete a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

An offering cannot be deleted if it is used in a service design. When an offering is deleted, its associations to providers are automatically removed.

To delete a resource offering

1. In the **By Provider Type** or **By Category** tab, select a **Provider Type** or **Category**.
2. In the **Offerings** tab, select the offering you want to delete.
3. Select the **Delete** (✕) icon.
4. Click **Yes** to confirm the deletion.

View Properties of a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

To view the properties of a resource offering

Click one of the following the tabs for a resource offering to see more information about it.

- Summary
- Providers
- Lifecycles
- Properties
- Service Designs

Edit Properties of a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

To edit a resource offering

1. In the **Summary** tab, click the **Edit** () icon.
2. For descriptions of the specific properties, see the topic "Create a Resource Offering".

Copy a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

To copy a resource offering

1. In the **Offerings** tab, highlight the resource offering you want to copy.

2. Click the **Copy** () icon.

After you copy a resource offering, any changes you make to the original or to the copy will not affect the other.

Associate or Dissociate Providers with a Resource Offering

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

For a resource offering to be successfully provisioned at subscription ordering time, at least one resource provider must be associated with the resource offering. Additional restrictions exist if resource environments are associated to service catalogs.

When you associate an offering with a provider, the following must be true for successful provisioning:

- The associated providers support the offering and can deploy it when a service instance is provisioned.
- If an offering is associated with multiple providers, the offering must be the same on each of the associated providers. For example, the VMware vCenter template must be the same on all the associated providers.

To associate providers with a resource offering

For an offering to be used in service designs, it must be associated with at least one provider.

1. In the **Offerings** tab, select the **Display Name** of the offering.
2. In the **Providers** tab, click the **Associate** (+) icon.
3. From the list of providers, select one or more you want to associate with the offering.
4. Click **Associate**.

To dissociate providers from a resource offering

1. In the **Offerings** tab, select the **Display Name** of the offering.
2. In the **Providers** tab, highlight the row of one or more providers to be dissociated.
3. Click the **Dissociate (** —) icon.
4. Click **Yes** to confirm.

Lifecycle Actions for Resource Offerings

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

What is a resource offering lifecycle?

The **Lifecycle** tab allows you to specify the lifecycle actions that are needed to provision and de- provision resource offerings. A lifecycle action provides a link from a resource offering to an internal or external process definition, which runs to perform a specified action. The collection of actions defined for a resource offering is known as its lifecycle. In the following diagram, you can see the resource offering lifecycle states, which are discussed in more detail below

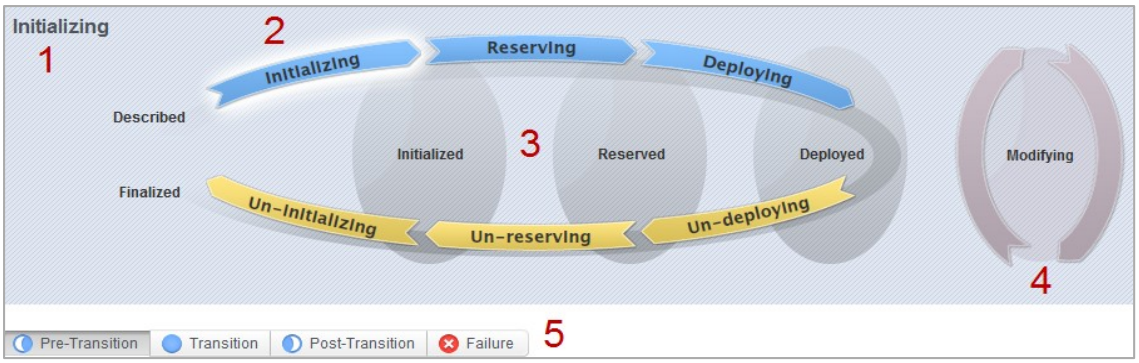


Image legend:

- 1 - Currently selected state
- 2 - Transition states
- 3 - Stable states
- 4 - Modifying state
- 5 - Substates

What is a lifecycle action?

A lifecycle action is a function that is run automatically either at a specified lifecycle state or substate, or that is exposed to the subscriber. Lifecycle actions contain the following information:

- A reference to a process definition, which contains the logic for executing the function.
- The property values that are inputs to the process definition.

What are lifecycle states?

A lifecycle state represents a step within the DCA service provisioning and de-provisioning lifecycles. States are either transition states or stable states.

The following *transition states* are represented in the diagram as curved, arrow icons:

- Initializing
- Reserving
- Deploying
- Undeploying
- Un-reserving
- Un- initializing

The following *stable states* (except for Described and Finalized) are represented in the diagram as shaded, oval icons:

- Described - lifecycle actions cannot be specified at this state
- Initialized
- Reserved
- Deployed
- Finalized - lifecycle actions cannot be specified at this state

What is a modifying state?

The modifying state is a special transition state that indicates a subscriber has chosen to modify a subscription, and the changes are being processed by the lifecycle engine. The modifying state is shown in the diagram to the right of the other lifecycle states.

The only service components that are processed during the modifying state are those service components that have a Subscriber Option property that gets its value directly from a target binding, or those service components that have a source binding that gets its value indirectly from such a target binding.

The only resource offerings that are processed during the modifying state are those associated with service components that are processed during the modifying state.

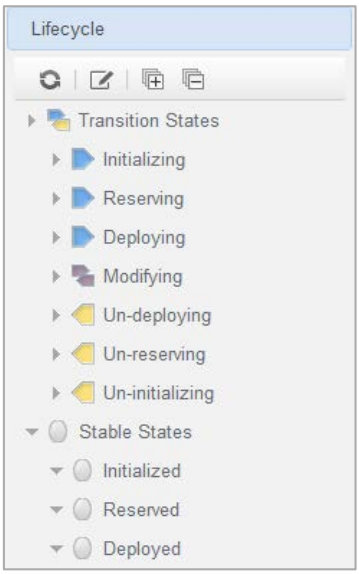
What are lifecycle substates?

A lifecycle substate is a further refinement of a lifecycle transition state. Stable states do not have substates. When defining a lifecycle action at a transition state, you must also specify the substate for the action. Substates are represented in the diagram as tabs just beneath the lifecycle diagram. The *substates* are:

- Pre-Transition
- Transition
- Post-Transition
- Failure

To see the list of all lifecycle actions for a resource offering:

1. In the **Offerings** tab, select the **Display Name** of the offering for which you want to see a list of lifecycle actions.
2. In the **Lifecycle** tab, in the right pane (shown below) click the **Expand All** ( ) icon. In the list, you can see all lifecycle actions configured for each state and substate.



View Properties of a Lifecycle Action for a Resource Offering

For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".

To view the properties of a lifecycle action for a resource offering

1. In the **Offerings** tab, select the **Display Name** of the resource offering whose lifecycle action properties you want to view.
2. In the **Lifecycle** tab, select the lifecycle state that contains the lifecycle action whose properties you want to view. For more information about states and substates, see "Lifecycle Actions for Resource Offerings".

3. Select the lifecycle substate (located directly beneath the lifecycle state diagram), if applicable, that contains the lifecycle action whose properties you want to view.
4. From the list of actions, select the **Display Name** of the lifecycle action whose properties you want to view.
5. For descriptions of the properties in the **Summary** tab, see the topic "Create a Lifecycle Action for a Resource Offering".
6. For descriptions of the properties in the **Properties** tab, see the topic "Edit Properties of a Lifecycle Action for a Resource Offering".

Create a Lifecycle Action for a Resource Offering

For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".

Before you create lifecycle actions, be sure you have the latest process definitions from HPE Operations Orchestration. For instructions about how to do this, see the section "Import HPE Operations Orchestration Flows" in this *Guide*.

To create a lifecycle action for a resource offering

1. In the **Offerings** tab, select the **Display Name** of the offering for which you want to create a lifecycle action.
2. In the **Lifecycle** tab, on the lifecycle state diagram, select the lifecycle state in which you want to create an action. For more information about states and substates, see "Lifecycle Actions for Resource Offerings".
3. Select the lifecycle substate (located directly beneath the lifecycle state diagram), if applicable, in which you want to create an action.
4. In the toolbar, select the Create ( ) icon.
5. Provide the information described in the table below.
6. After creating a new lifecycle action, specify values for the action input properties as described in "Edit Properties of a Lifecycle Action for a Resource Offering".

Item	Description
Process Engine	Select a process engine, which is a container for process definitions. You can select either the Internal process engine or one of the HPE Operations Orchestration (OO) engines.
Process Definition	Select a process definition, which is configured to run a specified internal action (see the table below for the list of internal actions) or external action.
Complete the following Identification fields:	
Display Name	The name you provide for the lifecycle action.
Description	The description you provide for the lifecycle action.
Operations Portal Options	These options are available only for actions created in stable lifecycle states (Initialized, Reserved, and Deployed). • Visible - When checked, this indicates that the lifecycle action will be available to run in the Operations Portal. The box is checked by default for actions created in stable lifecycle states.
Execution Order	The execution order for the lifecycle action, which is relative to other lifecycle actions for this lifecycle state or substate, if applicable. Lifecycle actions are executed in ascending order.
Execution Properties	Specify the following: • Fail on Error - If selected, this indicates that provisioning or de-provisioning will stop if the lifecycle action fails. The default selection is **false** for actions created in the Un-deploying, Un-reserving, and Un-initializing states. • Error on Timeout - If selected, this indicates that provisioning or de-provisioning will stop if the lifecycle action times out.

Item	Description
Timeout (seconds)	The time to wait until a timeout occurs for the lifecycle action. Set this field to zero (0) if you do not want the action to timeout.

Note: See the table “DCA 2016.01 Internal Actions” for descriptions of the out-of-the-box internal actions that ship with DCA.

Delete a Lifecycle Action from a Resource Offering

For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".

To delete a lifecycle action from a resource offering

1. In the **Offerings** tab, select the Display Name of the offering from which you want to delete a lifecycle action.
2. In the **Lifecycle** tab, on the lifecycle state diagram, select the lifecycle state from which you want to delete an action. For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".
3. Select the lifecycle substate (located directly beneath the lifecycle state diagram), if applicable, from which you want to delete an action.
4. From the list of actions, highlight the action you want to delete.
5. In the toolbar, select the Delete ( ) icon.
6. Click **Yes** to confirm the deletion.

Edit Properties of a Lifecycle Action for a Resource Offering

For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".

To edit a lifecycle action for a resource offering

1. In the **Offerings** tab, select the Display Name of the offering whose lifecycle action you want to edit.
2. In the **Lifecycle** tab, select the lifecycle state that contains the action you want to edit. For more information about states and substates, see "Lifecycle Actions for Resource Offerings".
3. Select the lifecycle substate (located directly beneath the lifecycle state diagram), if applicable, that contains the action you want to edit.
4. From the list of actions, select the **Display Name** of the action whose properties you want to edit.
5. In the **Summary** tab, you can edit properties as described in the "Create a Lifecycle Action for a Resource Offering".
6. In the **Properties** tab, you can specify action input properties whose values are passed to the process definition prior to invoking the action. Either type an input value or click the **Token Icon** () to select a token, which is a DCA system value that is automatically resolved internally when the property is read. Token values are available only for string properties and are not available for Boolean or integer properties. See the table below for a description of the tokens available for resource offering lifecycle actions.
7. Input properties for actions defined on stable states can also be marked as **Visible** or **Editable**:

a. Visible - indicates that this input property can be made visible in the Operations Portal.

b. Editable - indicates that this input property can be edited in the Operations Portal. The following tokens are available for resource offering lifecycle actions:

Token	Description
Parent Service Component ID ([TOKEN:PRN_ COMPONENT_ID])	Resolves to the Service Component ID of the parent service component. The Service Component ID refers to the service component that the resource offering is associated with in a service design.
Resource Binding ID ([TOKEN:RSC_ BINDING_ID])	Resolves to the Resource Binding ID that was created at subscription time.
Resource Subscription ID ([TOKEN:RSC_ SUBSCRIPTION_ID])	Resolves to the Resource Subscription ID that was created from the Resource Offering at subscription time.
Selected Provider ID ([TOKEN:RSC_ PROVIDER_ID])	Resolves to the Provider ID that was selected at subscription time.
Selected Resource Pool ID ([TOKEN:RSC_ POOL_ID])	Resolves to the Resource Pool ID that was selected at subscription time.
Service Blueprint ID ([TOKEN:SVC_ BLUEPRINT_ID])	Resolves to the Service Blueprint ID.

Service Catalog ID ([TOKEN:SVC_ CATALOG_ID])	Resolves to the Service Catalog ID that was used at subscription time.
Service Component ID ([TOKEN:SVC_ COMPONENT_ID])	Resolves to the Service Component ID. The Service Component ID refers to the service component that the resource offering is associated with in a service design.

Token	Description
Service Component Type ([TOKEN:SVC_ COMPONENT_TYPE])	Resolves to the Service Component Type (for example, Server). The Service Component Type refers to the service component that the resource offering is associated with in a service design.
Service Instance ID ([TOKEN:SVC_ INSTANCE_ID])	Resolves to the Service Instance ID created at subscription time.
Service Offering ID ([TOKEN:SVC_ OFFERING_ID])	Resolves to the Service Offering ID.
Service Request Organization ID ([TOKEN:REQ_ORG_ ID])	Resolves to the Organization ID associated with the service request.
Service Request User ID ([TOKEN:REQ_USER_ ID])	Resolves to the User ID associated with the service request.
Subscriber's Email Address ([TOKEN:SVC_ SUBSCRIPTION_ EMAIL])	Resolves to the subscriber's email address.
Subscriber's Organization ID ([TOKEN:USR_ORG_ID])	Resolves to the Organization ID associated with the subscriber.
Subscription ID ([TOKEN:SVC_ SUBSCRIPTION_ID])	Resolves to the Subscription ID created at subscription time.

Move a Lifecycle Action for a Resource Offering

For more information about lifecycles, see "Lifecycle Actions for Resource Offerings".

To move a lifecycle action for a resource offering

1. In the **Offerings** tab select the **Display Name** of the offering whose you lifecycle action you want to move.
2. In the **Lifecycle** tab, select the lifecycle state that contains the action you want to move. For more information about states and substates, see "Lifecycle Actions for Resource Offerings".
3. Select the lifecycle substate (located directly beneath the lifecycle state diagram), if applicable, that contains the action you want to move.
4. From the list of actions, highlight the action you want to move.
5. In the toolbar, select the **Move** () icon.
6. Provide the following information:

Item	Description
Target Lifecycle State	The new state for the lifecycle action.

Item	Description
Target Lifecycle Substate	The new substate, if applicable, for the lifecycle action. For more information about states and substates, see "Lifecycle Actions for Resource Offerings".
Target Lifecycle Execution Order	The execution order for the lifecycle action relative to other lifecycle actions for this lifecycle state. Lifecycle actions are executed in ascending order.

Custom Resource Offering Properties

For more information about resource offerings, see "Resource Offerings (Sequenced Designs)".

Custom properties for resource offerings are user-defined properties that are used for communicating properties and values to providers to customize the functional service they provide. The custom properties can be used to provide any information that is expected by an HPE Operations Orchestration flow. For example, you can use custom properties for a resource offering to provide a specific VM_TEMPLATE_Name value to an instance of VMware vCenter.

See the following related topics:

- "View Custom Resource Offering Properties"
- "Create Custom Resource Offering Properties"
- "Delete Custom Resource Offering Properties"
- "Edit Custom Resource Offering Properties"

View Custom Resource Offering Properties

For more information about custom offering properties, see "Custom Resource Offering Properties" on the previous page.

To view custom properties for a resource offering

1. In the **Offerings** tab, click the **Display Name** of the offering whose custom properties you want to view.
2. In the **Properties** tab, you can see the custom properties created for the offering.

Create Custom Resource Offering Properties

For more information about custom offering properties, see "Custom Resource Offering Properties" on the previous page.

To create a custom property for a resource offering

1. In the **Offerings** tab, click the **Display Name** of the offering whose custom properties you want to create.
2. In the **Properties** tab, click the **Create (**) icon.
3. Provide the following information:

Item	Description
Type	Select one of the following: • **Boolean** - A property whose value is true or false. • **List** - A property whose value is a list of String values. • **Integer** - A property whose value is a positive or negative whole number or zero. • **String** - A property whose value is a sequence of characters. You cannot edit this value after the property has been created.
Item	**Description**
Property Details	***For Boolean properties:***

	• **Name** - A unique name for the property. • **Display Name** - The display name for the property. • **Description** - A description of the property. • **Property value** - Select **true** or **false**. ***For List properties:*** • **Name** - A unique name for the property. • **Display Name** - The display name for the property. • **Description** - A description of the property. • **Value Entry Method**: - Select **Manual Entry** to provide **Specified values** for this field, as described below. • **Specified values** - Click the **Add value (**) icon to add a new value, or click the **Remove Selected value(s)** icon ( ) to remove a Selected value. ***For Integer properties***: • **Name** - A unique name for the property. • **Display Name** - The display name for the property. • **Description** - A description of the property. • **Property value** - Select or type a positive or negative whole number or zero. If you enter a decimal number, the value will be truncated to the nearest integer. • The maximum allowed integer value is “2147483647”; the minimum integer value is “-2147483648”. If you enter a value outside these bounds, the value will be automatically converted to the closest maximum or minimum value.

Item	Description
	For String properties: • **Name** - A unique name for the property. • **Display Name** - The display name for the property. • **Description** - A description of the property. • **Property value** - Type a string of characters. • **Confidential Data** - Select this box to mask the values so that they cannot be read in the user interface; no encryption of the value is performed.

Delete Custom Resource Offering Properties

For more information about custom properties for offerings, see "Custom Resource Offering Properties".

To delete custom properties from a resource offering

1. In the **Offerings** tab, click the **Display Name** of the offering whose custom properties you want to delete.
2. In the **Properties** tab, select the custom properties you want to delete.
3. Click the **Delete (**) icon.

4. Click **Yes** to confirm the deletion.

Edit Custom Resource Offering Properties

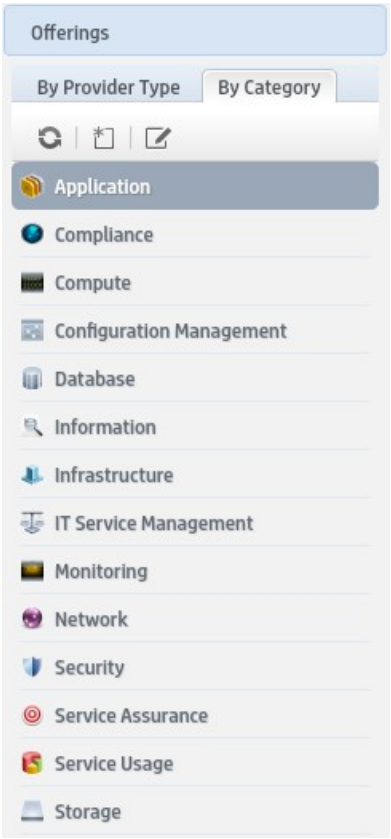
For more information about custom offering properties, see "Create Custom Resource Offering Properties".

To edit custom properties for a resource offering

1. In the **Offerings** tab, click the **Display Name** of the offering whose custom properties you want to edit.
2. In the **Properties** tab, click the **Name** of the property you want to edit.
3. Edit, as desired. For descriptions of the specific attributes, see "Create Custom Resource Offering Properties".

Categories

Categories allow you to classify resource offerings for improved filtering and identification. DCA includes some pre-defined categories out-of-the-box (shown below), or you can create your own. A category is associated with a resource offering and can be used when assigning resource offerings to service designs.



Service components within a service design can accept offering assignments only for those offerings with a category that is supported by the service component type. For example, a **Server** service component can be associated with offerings from a category of *Compute* (among others), while a **Software Application Service** component can be associated with offerings with a category of *Application* Categories are available by selecting the **By Category** tab in the left navigation pane.

View Categories

For more information about categories, see "Categories" on the previous page.

1. Select the **By Category** tab.
2. The categories list is displayed.

Create a Category

For more information about categories, see "Categories".

To create a category

1. In the left navigation pane, select the **By Category** tab.
2. In the left navigation pane toolbar, click the **Create (**) icon.
3. Provide the following information:

Item	Description
Display Name	The display name you provide for the category.
Description	The description you provide for the category.
Image	An image that displays for the category. Click **Change Image**. Choose the image you want, and click **Select**. Click **Upload Image** to add your own image. Supported file extensions include .jpg, .jpeg, .gif, and .png. The recommended image size is 256 by 256 pixels, and the image will be scaled to the appropriate size. The images are stored in the %CSA_HOME%\jboss- as\standalone\deployments\csa.war\images\library folder of the DCA server.

Delete a Category

For more information about categories, see "Categories".

A category cannot be deleted if any offerings are using it. Out-of-the-box categories also cannot be deleted.

To delete a category

1. In the **By Category** toolbar, click the **Edit (**) icon.
2. In the **Edit Categories** properties sheet, select the category you want to delete.
3. Click the **Delete (**) icon.
4. Click **Yes** to confirm the deletion.

Edit Properties of a Category

For more information about categories, see "Categories".

To edit a category

1. In the **By Category** toolbar, click the **Edit** ( ) icon.
2. In the **Edit Categories** properties sheet, click the **Display Name** of a category.
3. For descriptions of the specific properties, see the topic "Create a Category".

Offerings

Concepts

You can configure default property values, attach documents to a service offering (For example, service level agreements, terms and conditions) and add screenshots, which are images and captions that provide the user with a visual representation of the offering.

Offerings are published into a catalog before becoming available to subscribers in the HPE Operations Portal. Any changes made to the DCA offering are visible in the HPE Operations Portal once it is published.

You can also create new offerings for any fulfillment system that is compatible with DCA. For compatibility information, see the *DCA Support Matrix*.

Best Practice

Important Note: HPE recommends that you make a copy or version of the OOTB base offering or service design (1.0.0) *before* making any modifications. During routine HPE maintenance updates, the 1.0.0 version of *all* service designs and service offerings will be updated and overwritten.

Tasks

Within **Offerings,** you can create new offerings or modify existing offerings. You can also browse and search offerings and manage offering tags within **Offerings**.

You can do the following tasks in Offerings:

- Create Offerings
- Modify Offerings
- Manage Tags

Create Offerings

You can create Offerings from the All Offerings page.

Tasks

1. From the DCA Administration Console, click the **Offerings** tile. The **All Offerings** page opens.
2. Click the **Create** button at the bottom of the **All Offerings** page.
3. Fill in the **Create Offerings** dialog fields:
    a. Click **Service Design**. The **Select Design** window opens, allowing you to select a design from the drop-down list (For example, **Manage Servers Sequenced Design**).
    b. Once selected, click **Close**.
    c. Type the **Display Name** of the new offering.
    d. Type the offering **Description**.
4. Select **Base Offering On** if you want to base your new offering off an existing offering, which will inherit attributes of that offering. If you skip this step, the new offering will be based on the initial basic service design you selected.
5. Click **Done** when finished.
6. Select an image to use as the offering icon. HPE provides several icons to choose from, or you can import your own custom icon. To select an icon from the image library:
    a. Click the **Change Image** button.
    b. Scroll through the icons in the image library. When you find an icon you like, select it. The selected icon will display a highlighted background.
    c. Click the blue **Select** button. Your icon will appear under **Image**.
7. To create a custom icon:
    a. Click the **Change Image** button.
    b. Click the green **Upload** button.
    c. Select an appropriately sized icon from your system, and then click **Open**. Note the following recommendations:
        - File type: PNG
        - Image size: 256x256
        - File size: Maximum 1 MB
    d. Click the **Select** button. The new icon appears in the image library for you to select.
    e. Select the new image from the image library, and then click **Select** to finish.

8. Select **Tags** from the **Select Tags** link below image if there are tags associated with the Offering.
9. When you finish, click **Create**. The new offering appears in the All Offerings page list.

Modify Offerings

To modify offerings, use the configuration settings available on the following tabs:

- Overview
- Publishing
- Options
- Pricing
- Documents
- Screenshots
- Versions

Overview

Concepts

The **Overview** tab allows you to view details, edit, and delete the selected service offering.

You can view the **Display Name, Version Name, Description, Access Control, Default Approval Policy Selected Service Design**, **Image**, **Tags**, and the content of the offering on this tab.

Tasks

The following options are available from the **Overview** details page:

- **Save As** – allows you to make a copy of an offering using the existing service design and version.
- **Create New Version**– allows you to create a new version of an offering using your existing service design. NOTE: you can only change the version, display name, image, tags, and description of the new version offering; you cannot change the service design.
- **Export**– this option will automatically create a zip file containing the entire offering, which can then be emailed to another user.

Publishing

Concepts

Service offerings are published into one or more catalogs so that they are available in the Operations Portal. Offerings can be published into the Global Shared Catalog, which is shared among all organizations, or into an organization-specific catalog. Within a catalog, **Categories** reflect logical groupings of related services. You can publish an offering only *once* to a catalog.

Tasks

To publish an Offering, click on the **Publish** button, then complete the following fields:

- **To Catalog** - Select from the list of available catalogs or click **Search** to filter the list.
- **In Category** - Categories are filtered according to your catalog selection.
- **Approval Policy** - Within DCA, there are three types of approval policies:
    - The *default* approval policy is **No Approval**. It is a very common practice to not associate a policy with an offering.

- **Catalog Level Policy** (front-end): This approval policy is evaluated first. If the request is approved, the back-end approval is then evaluated. Changing the approval policy here does not change the default catalog approval policy. Note that you cannot configure an approval policy for offerings published in the Global Shared Catalog.
- **Delegated Policy** (back-end): These policies are defined for services/offerings from an aggregation source before being aggregated into a catalog. If you order this service, DCA recognizes an approval is necessary and allows you to set it in the Operations Portal.

Once you have selected a catalog, category, and approval policy for your offering, click **Publish**.

Once your offering is published, you can change the approval policy or unpublish the offering within the **Publishing** tab.

- **Unpublish -** If you want to change the attributes of a published service offering, For example, add documents, change options, add screenshots, you can unpublish the service offering by clicking **Unpublish** button. Click **Unpublish**, make the necessary changes, then click **Publish** to re-publish the offering.
- **Change Approval –** click on this button if you want to change the approval policy for an offering already published in the catalog.

Best Practice

Using the **Unpublish** feature retains the properties and attributes of an offering you have created but need to change. Use this option rather than rebuilding a very new offering with slightly different properties from your original offering.

You can click to sort your catalogs by clicking on the **Catalog Organization**, **Category**, or **Approval Policy** links. Click once to sort by ascending order; click again to sort in descending order.

Options

Concepts

On the **Options** tab, you can view properties chosen for an entire offering.

Typically, properties and attributes are chosen at the time of offering is created. Once an Offering is published, they are viewable in the **Options** tab, but are not editable.

Properties include:

- **Device Management** (includes Remediate Patch and Software Policies for a Device Group or Individual Server)
- **Email Notifications**
- **Server Information** (includes Provision a network-booted Server and New Virtual Server, Provision Server, New Virtual Server Details, Virtual Server – Attributes, Storage Options, and Network Options)
- **Server Attributes** (includes Attach Server to a Customer or Device Group)
- **Ticket ID**

Tasks

The following tasks are available:

Hide/Show Properties	Click this link to show or hide properties within an option set.
	Collapse the option set and options.
	Expand the option set and options.
	Show or hide an option set, option, or property; determines visibility in the Operations Portal.

	Lock or unlock an option set to disallow or allow the subscriber to modify the default option selections within an option set. When an option set or property is locked, all options within the option set are also locked.
	Edit the option set name or option name.
	Add or update the image associated with the option set or option.
	Move the option down within an option set.
	Move the option up within an option set.
	Drag and drop the option within an option set.
	Collapse the entire option set, including options and properties

For the main four types of service designs available in DCA, the following is a table of which options will display in the Options tab:

Options for Service Designs

DCA Offering	Properties
Manage Servers	Email Notifications, Ticket ID
Install Server Automation (SA) Agent	Server Details
Provision Servers	Server Information, Server Attributes, Email Notifications, Ticket ID
Server Policy Remediation	Device Management, Email Notifications, Ticket ID

Pricing

Concepts

Pricing is setup within an offering when it is created. Once an offering is published, you will not be able to change pricing within Offerings.

Tasks

You can view the following information:

Service Offering Pricing

Item	Description
Base Initial Price	The base price for the service offering, excluding the price of all selected options.
Base Recurring Price	The price charged for each recurring period.
Currency	The desired currency for the service offering.
Recurring Period	The desired recurring period for the service offering pricing, which indicates how often the recurring price is charged.

Option Name:

Option name includes the following options:

- **Device Management**

- **Email Notification and Ticket ID (Optional)**
- **Server Details**
- **Server Information**

Selected Totals:

- **Initial with Options**
- **Recurring with Options**

Documents

Concepts

You can attach documents of any type, such as service level agreements or terms and conditions, to service offerings. You have the option of making documents visible in the Operations Portal. File size per document should not exceed 15 MB; total size of all documents attached cannot exceed 100 MB.

Tasks

Once a document is added, you have the following options:

- **Visibility** - Click the eye icon if you want this document visible to users in the Operations Portal.
- **Delete**

The Administrator can choose to disable the Visibility and Delete options on the offering. You can attach a document into an offering at the time of its creation; however, you cannot edit the document once it has been published.

Best Practices

- You can add multiple documents to an offering at one time.
- You can rearrange the order of multiple documents by dragging and dropping.
- Use **Reset** to revert to any unsaved edits (such as a file name change) or to completely reset the form and clear out all unsaved documents.

Screenshots

Concepts

Screenshots are images and captions associated with a service offering that provide visual representations of the offering's views exposed in the Operations Portal. File size per image should not exceed 15 MB; total size of all images attached cannot exceed 100 MB. Images must be in JPG or 24-bit PNG format with a maximum size of 5000 x 5000 pixels.

Tasks

Once a screenshot is added, you have the following options:

- **Visibility** - Click the eye icon () if you want this image visible to users in the Operations Portal.
- **Delete**
- **Edit Screenshot Name** - The caption defaults to the associated screenshot name, but can be edited (including removing the file extension).

Best Practices

- You can add multiple screenshots to an offering at the time of creating your offering.
- You can rearrange the order of multiple screenshots by dragging and dropping during creation. You cannot edit the screenshot later.
- Use **Reset** to revert to any unsaved edits (such as a file name change) or to completely reset the form and clear out all unsaved images.
- You can attach a screenshot into an offering at the time of its creation; however, you cannot edit the screenshot once the offering has been published. You must unpublish your offering, and then re-publish it. See the Publishing topic in this document.

Versions

The Versions tab lists the multiple offering versions based on the same offering or sequenced design. It also allows you to create a new version from a listed offering.

Click **Create New Version** to create an offering. See the topic Create Offering in this document for more information.

Clicking on the **Admin** button in the top right corner of the screen allows you to access DCA Product Licensing information, and **Logout** of the appliance.

Clicking on the **Help** will take you to other DCA content and resources available at http://www.hpe.com/go/dcaa.

Manage Tags

Tags are user-defined, color-coded labels and images used to provide a structure for organizing and grouping service offerings. Once associated to an offering, tags display with the offering name in **Browse Designs**. The only pre-created category is labeled **All**, which is where all offerings are stored if you do not create any tags. You cannot edit, delete, or assign the **All** category. An offering can be assigned to multiple tag categories.

Catalogs

Concepts

Use the **Catalogs** area of the **DCA Administration Console** to create and manage service catalogs. These service catalogs allow you to publish service offerings to the Operations Portal.

You can start using the **Catalogs** area by configuring the automatically created default catalog (Global Shared Catalog) or you can manually create a new catalog and associate it with an organization.

Multiple catalogs can be associated with the same organization. Any changes made to the Global Shared Catalog will be visible in every organization's Operations Portal. The Global Shared Catalog does not contain **Access Control** or **Approval Policies**, and cannot be deleted or imported.

Tasks

- **Create** a catalog - Choose the organization the service catalog will be associated with, along with the name, description, and image. Then configure the catalog by providing information in the following pages, organized by these tabs:
    - **Overview**
    - Access Control
    - Approval Policies
    - **Categories**
    - **Offerings**
    - **Environments**

- **Import** a catalog – you can import an existing catalog from another organization. The **Import Catalog** feature allows you to select **Archive File**, **Choose Organization** that hosts the catalog, and then select an Option to either **Import** or **Update** the catalog. Once you have made your selections, click **Import** to process the request.
- Click on the **Card View** or **Table View** to change how the catalogs are displayed.

Overview

Concepts

The **Overview** tab provides a detailed summary of the selected catalog, including information about default approval policy, access control, and published offerings. This tab allows you to view the **Display Name, Description, Organization, Access Control, Default Approval Policy,** and **Image** of the catalog. You can also see how many Published Offerings and Categories are associated with this catalog. You can also Export the Catalog of available offerings into a WinZip file for use with external systems.

Tasks

Tasks available:

- **Edit** - Allows you to edit the name, description, and image associated to the catalog.
- **Export**

Access Control

Concepts

Access Control is used to assign LDAP groups to a catalog. You can choose whether a service catalog is visible to all authenticated users of a consumer organization or just a subset of users.

To make a catalog visible to all authenticated users of a consumer organization, determine the LDAP groups that have been added to the **Organizations** area of the Propel Management Console and ensure all the same LDAP groups appear in the **Access Control** area for the service catalog.

Otherwise, you will get an error message. For a manually created service catalog, this action happens automatically when the catalog is created. For an organization's automatically created catalog, you must manually add these LDAP groups.

Tasks

Tasks available:

- **Add Group** - Before you add a group, LDAP groups need to be configured in the Propel Management Console Organizations area. **Add Group** is used to manage access control by adding LDAP groups to the catalog. You can select from existing named DNs or enter your own name for the group or organization unit DN, and then enter a group or organization unit DN.
- **Edit** - Used to change a group name or a group DN.
- **Delete**

Best Practices

You can sort the groups shown in ascending/descending order by clicking on the **Organization/Group** link.

Approval Policies

Concepts

The **Approval Policies** area is used to manage approval policies for the selected catalog. This tab is only available when configuring a user-defined catalog (not the Global Shared Catalog).

Approval Policies are based on one of three template types (see table below). None of these templates are pre-configured, as they are LDAP dependent. When a catalog is first created, an approval policy is automatically created from the **User Context Template**.

Template Types:

Named Approver Template	Use this template to assign one or more users from the organization as approvers for all subscription requests. You can also set the number of approvals required for a subscription request to be fulfilled. If selected, provide the following information: • **Add Approver** - Provide the LDAP user name of the approver you want to add, and click **Add Approver**. Repeat to add more approvers. • **Minimum Approvals** - Select the minimum number of approvals required for a subscription request to be fulfilled. • Check **Automatic Approval**, if desired, and provide the following information: o **Automatic Approve/Deny** - Select one of the following replies: ▪ **Approved** - Automatically approve the request when the specified **Wait Time for Automatic Approval (in days)** period has elapsed. ▪ **Denied** - Automatically deny the request when the specified Wait Time for Automatic Approval (in days) period has elapsed. o **Wait Time for Automatic Approval (in days)** - Select the number of days after which, if no response is made, the automatic approval or rejection will occur.

Named Group Template	Use this template to base approvals on an LDAP group. If selected, provide the following information: **Add Group** - Select or type the DN for the LDAP group or organizational until you want to use for approvals. The members of the selected group (at the time of the request) will be set as approvers of the request. **Minimum Approvals** - Select the minimum number of approvals required for a subscription request to be fulfilled. Check **Automatic Approval**, if desired, and provide the following information: • **Automatic Approve/Deny** - Select one of the following replies: o **Approved** - Automatically approve the request when the specified o **Wait Time for Automatic Approval (in days)** period has elapsed. o **Denied** - Automatically deny the request when the specified **Wait Time for Automatic Approval (in days)** period has elapsed. • **Wait Time for Automatic Approval (in days)** - Select the number of days after which, if no response is made, the automatic approval or rejection will occur.

User Context Template	Use this template to base approvals on LDAP membership settings and structure, as configured in the **Organizations** area of the .Propel Management Console If selected, provide the following information: • **Approval Levels** - Select the number of managers in the organization chain who will be asked to approve the request. For example, if you select two, the subscriber's first- and second-level manager will be required to approve the request. • Check **Automatic Approval**, if desired, and provide the following information:

	• **Automatic Approve/Deny** - Select one of the following replies:
	  o **Approved** - Automatically approve the request when the specified
	  o **Wait Time for Automatic Approval (in days)** period has elapsed.
	  o **Denied** - Automatically deny the request when the specified **Wait Time for Automatic Approval (in days)** period has elapsed.
	• **Wait Time for Automatic Approval (in days)** - Select the number of days after which, if no response is made, the automatic approval or rejection will occur.

Tasks

Tasks available:

- **Edit** an existing approval policy - All fields are editable except for the **Approval Policy Template**.
- **Delete** a policy - Deletes the policy that you created (not the template itself).
- **Add** a policy - Enter a name, select one of the four template types, and use the check box if the policy should be automatically approved.
- **Set Default Policy** - The default policy used when publishing service offerings.

Best Practices

- When you create an approval policy, make sure that all approvers are granted access to the catalogs for which they will be approving subscription requests.
- You can sort policies in ascending/descending order by clicking on the **Approval Policy Name** link.

Categories

Concepts

Categories are used to group service offerings within a service catalog. The **Categories** tab provides a way to manage the categories within the selected catalog. The list of categories can be organized alphabetically in ascending or descending order by clicking the up / down arrow. This view includes the number of offerings assigned to each category.

Tasks

Available tasks:

- **Add Category** - Provide a name for the new category.
- **Edit** - Allows you to change the **Display Name**.
- **Delete** - You cannot delete a category that has any service offerings assigned.

Offerings

Concepts

The **Offerings** tab shows service offerings that have been published into the selected catalog including the date and category. A published service offering displays in the Operations Portal in the category to which to which is was assigned. By default, a service offering inherits its approval process and approval policy from the default set in the service catalog.

Tasks

Available tasks:

- **Change Approval** - You can change the approval policy for an offering in a catalog if another policy is available.
- **Unpublish -** Unpublishing removes the service offering from the category.
- **Add Offering –** allows you to add an existing offering and publish it into the catalog within a new category.
- **Link** to the offering - The name of the published offering within **Catalogs** is a link that opens the offering in the Overview tab of the **Offerings** component in the DCA Management Console. Click on the offering link to view and edit the contents of the offering. You can return to Catalogs by clicking on the **Catalogs** tab on the DCA dashboard, which will open a new tab where you can login to Catalogs.
- The **All Categories** drop-down list allows you to sort the available offerings in the catalog by individual category, such as Accessory, Application Servers, and Backup Services. You will then be able to view and select offerings from that category.

Best Practices

The **Add Offering** button allows you to add and publish an offering directly into the catalog you are currently using. You can publish the offering into a new category so it is viewable by a different set of customers.

Environments

Concepts

This option allows you to select Resource Environments for DCA. You can sort the various available resource environments in ascending or descending order.

Tasks

Available tasks:

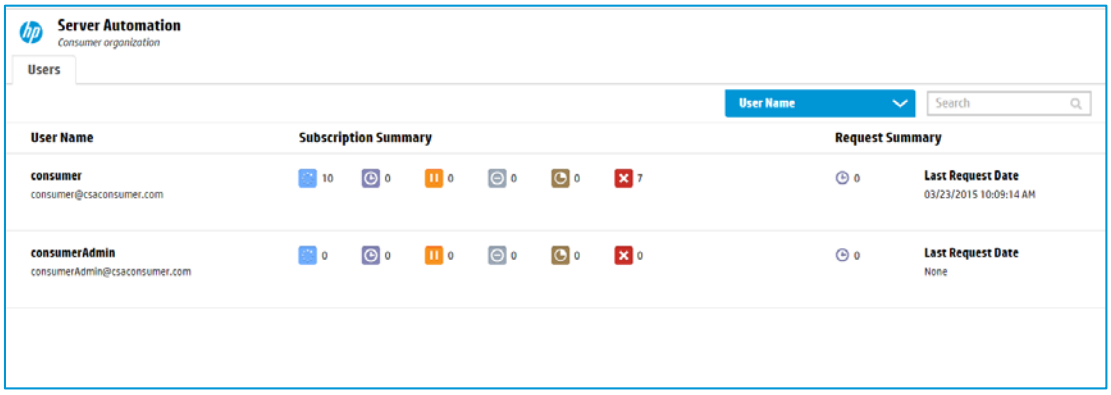
Select Environments – allows you to choose from various (OS) environments.

- Click the **Select Environments** button**.**
- Use the **Add / Remove** buttons to add or remove environments.
- Click **Save** when finished.

Operations

The Operations component allows you to view how the users of a given organization are handling subscription requests over time. Perhaps more training or exposure is needed for a certain group of users – this component gives a complete snapshot, allowing you to see who is successful or needs more guidance in using DCA offerings and services.

When you login to Operations, you will see the name of the catalog and all User types that subscribe to services in that particular catalog.



For example. ***Operations*** - **Server Automation Consumer Organization**

On the **Users** page**,** you can view and sort services by clicking on **User Name**. This page includes these categories for sorting: **Email Address, Most Active Subscriptions, Most Pending Subscriptions, Most Paused Subscriptions, Most Canceled Subscriptions, Most Expired, Most Failed Subscriptions, Most Pending Requests, and Most Recent Request Date**. Click on the most relevant attribute, then click **Refresh** or click on the User type you want more detail on (Example. **consumerAdmin**).

The Operations status window is organized into these three categories:

User Name | Subscription Summary | Request Summary

This screen displays the User types and the status of all services each User is subscribed to, giving a useful service usage snapshot.

View Subscriptions window below 'Subscription Summary' has 6 features: **Active, Pending, Paused, Canceled, Expired, and Failed.** If you hover over each status icon (see example below), the name of the icon appears. Click on the user link to get more details about the activity level of this group of Users.

To view subscriber information for an organization

1. In the left pane of the **Operations** area, select the name of the organization whose subscriber information you want to view; the subscriber information displays in the **Users** tab. Note that the list of subscribers shown is the list of users who have logged into the Operations Portal at least once.
2. Use the drop-down box to select an option for sorting.
3. You see the following information for each user:

Note: Only subscriptions submitted by the subscriber are included in the list of subscriptions; any subscriptions submitted for a group the subscriber belongs to (that were not submitted by the subscriber) are not included in the list. Subscriptions submitted for a group are identified by the Group ( ) icon.

Item	Description
User Name	The user name (and associated email address) that the Subscriber uses to log into the Operations Portal.
Subscription Summary	The number of subscriptions with the status: Active Pending Paused Canceled Expired Failed For a more detailed description of each status, see "View Subscriptions for a User" below.
Request Summary	The number of requests in the following state: Pending Approval **Last Request Date** -The date of the most recent subscription request made by this subscriber.

R**equest Summary** shows subs pending approval and the **Last Request Date** of a subscription.

Refresh button updates all of the above services in the Operations summary screen.

Clicking on the catalog link (Server Automation in the example below) will also redisplay all Users.

Operations Portal

Overview

The Operations Portal is the initial entry point your users will have to the rest of the DCA system.

Sidebar menu:

You will find the following features on the Sidebar Menu, located in the upper left hand portion of your screen:

- Dashboard
- Browse Catalog
- Notifications
- Review Requests
- Requests
- Subscriptions
- My Services

Dashboard

You will find the following navigation features on the Dashboard:

- The **Services** Banner lists the **New Releases** and **Most Requested Offerings**.
- **Services** lists the following Offerings: **All Services, New Releases, Featured Services, and Popular Services.**
- **Manage Subscriptions**: Here you will find **All Subscriptions** and **Expiring Soon**, and **Most Requested** offerings**.** These offerings vary based on the most requested or used offerings in your DCA environment.
- **More Actions**: Here you will find **Notifications** / **My Services** / **My Orders** / **Review Requests**
- **Discover More**: this section includes the functional Widgets OOTB: Recent Subscriptions, Date/Time, link to DCA

Browse Catalog

The following fields in **Browse Catalog** gives you the ability to find and sort offerings using a variety of methods:

- Search Window – allows the user to search for an offering by name, version, or service design.
- All Categories:
    - Accessory
    - Server Management
- All Service Types
    - Approval Required
    - No Approval Required
- Sort
    - Newest First
    - Oldest First
    - Most Expensive
    - Least Expensive
    - Reverse Alphabetical
- Display – Click on the **Card View** (Tile View) or **Table View** to change how the catalogs are displayed.

Within **Browse Catalog**, you can click on any **Offering** to view its details and make changes to it.

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