Hitachi Ops Center Automator

10.8.3

User Guide

Ops Center Automator is a software solution that provides the necessary tools to automate and simplify the end-to-end processes, such as storage provisioning, for storage and data center administrators. This manual describes how to use Hitachi Ops Center Automator.

Contents

Chapter 2: Viewing service and task summaries.................................. 35

Chapter 3: Managing services... 40

Chapter 4: Managing scheduled tasks 55

Contents

Contents

Contents

Contents

Contents

Contents

Preface

This manual describes how to use Hitachi Ops Center Automator.

Intended audience

This document provides instructions for storage administrators, who are responsible for storage, services, and applications within the storage environment.

Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document. Release notes are available on the Hitachi Vantara Support Website: https://knowledge.hitachivantara.com/Documents.

Referenced documents

Hitachi Ops Center Automator documents:

- *Hitachi Ops Center Automator Installation and Configuration Guide*, MK-99AUT000
- *Hitachi Ops Center Automator Service Builder User Guide*, MK-99AUT002

Hitachi Vantara Portal, https://knowledge.hitachivantara.com/Documents

Product version

This document revision applies to Hitachi Ops Center Automator v10.8.3-00 or later.

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	• Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click **OK**. • Indicates emphasized words in list items.
Italic	• Indicates a document title or emphasized words in text. • Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: `pairdisplay -g group` (For exceptions to this convention for variables, see the entry for angle brackets.)
Monospace	Indicates text that is displayed on screen or entered by the user. Example: `pairdisplay -g oradb`
< > angle brackets	Indicates variables in the following scenarios: • Variables are not clearly separated from the surrounding text or from other variables. Example: `Status-<report-name><file-version>.csv` • Variables in headings.
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a | b] indicates that you can choose a, b, or nothing. { a | b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to additional information.

Icon	Label	Description
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Important	Highlights information that is essential to the completion of a task.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	CAUTION	Warns the user of a hazardous situation that, if not avoided, could result in major or minor injury.
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB

Logical capacity unit	Value
	Open-systems: ▪ OPEN-V: 960 KB ▪ Others: 720 KB
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

Accessing product documentation

Product user documentation is available on the Hitachi Vantara Support Website: https://knowledge.hitachivantara.com/Documents. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

The Hitachi Vantara Support Website is the destination for technical support of products and solutions sold by Hitachi Vantara. To contact technical support, log on to the Hitachi Vantara Support Website for contact information: https://support.hitachivantara.com/en_us/contact-us.html.

Hitachi Vantara Community is a global online community for Hitachi Vantara customers, partners, independent software vendors, employees, and prospects. It is the destination to get answers, discover insights, and make connections. **Join the conversation today!** Go to community.hitachivantara.com, register, and complete your profile.

Comments

Please send comments to doc.comments@hitachivantara.com. Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Vantara LLC.

Thank you!

About Configuration Manager

In this manual, Hitachi Ops Center API Configuration Manager and Hitachi Command Suite Configuration Manager are in some cases collectively referred to as "Configuration Manager".

Chapter 1: Getting started with Ops Center Automator

Before you get started, familiarize yourself with the basic features and functionality.

About Ops Center Automator

As a storage administrator, you spend a lot of time performing repetitive manual tasks. These tasks are not only time-consuming, but they also can be error-prone. Considering the changing landscape of data center function, you must spend your time on mission-critical tasks that assure the smooth functioning of the data center. To fulfill the demand of data center tasks, you need software that can automate the common infrastructure needs and processes. With Ops Center Automator, you can easily automate time-consuming manual tasks and streamline workflows, such as provisioning, that otherwise take hours to complete.

Ops Center Automator is a software solution that has the necessary tools to automate and simplify the end-to-end processes, such as storage provisioning, for storage and data center administrators. The building blocks of the product are prepackaged automation templates known as service templates.

Ops Center Automator integrates with existing other management software applications to automate common infrastructure management tasks by utilizing your existing infrastructure services.

Some of the supported features of Ops Center Automator are:

- Preconfigured service templates that help you customize automation services.

- Automation services for provisioning of volumes.

- Role-based access to defined services.

- Performance-based pool selection that chooses the best performance pools from infrastructure groups and gives pool information to each task for specifying the Volume Usage details.

- Common service management attributes that can be assigned and shared across all automation services.

- A customizable service catalog that users can create to address specific data needs.

- A RESTful API.

Before getting started with Ops Center Automator, understand the following key concepts:

Service templates

A service template is a deployment blueprint for the application-based storage capacity provisioning process. It is designed to encapsulate configuration settings, instructions, and tasks needed to automate requests such as provisioning. The default configuration settings and tasks that are used in designing service templates are based on best practices and real-world data center scenarios including resource allocation, optimization, and configuration. When you install Ops Center Automator, service templates are automatically installed and are preconfigured for use.

Services

A service is an instance of a service template that is configured to work with your needs. When you create a new service, you are creating a copy of the selected template and reusing the configuration settings, tasks, and processes defined in the template. A service template is used as the starting point for creating a new service and a service is the starting point for automating storage provisioning requests. You can create as many instances of a service template as required. You can classify services by usage and type categories and display them in a hierarchical structure. Because Ops Center Automator enables you to tag a service with multiple categories, you can filter services according to purpose, such as for displaying services by workload or business unit.

Tasks

A task is an instance of a service. When you submit a service, Ops Center Automator creates a corresponding task that can be scheduled to run immediately or based on a schedule. A task can also be suspended, resumed, stopped, and archived based on your needs.

The following figure shows the relationship between templates, services, and tasks.
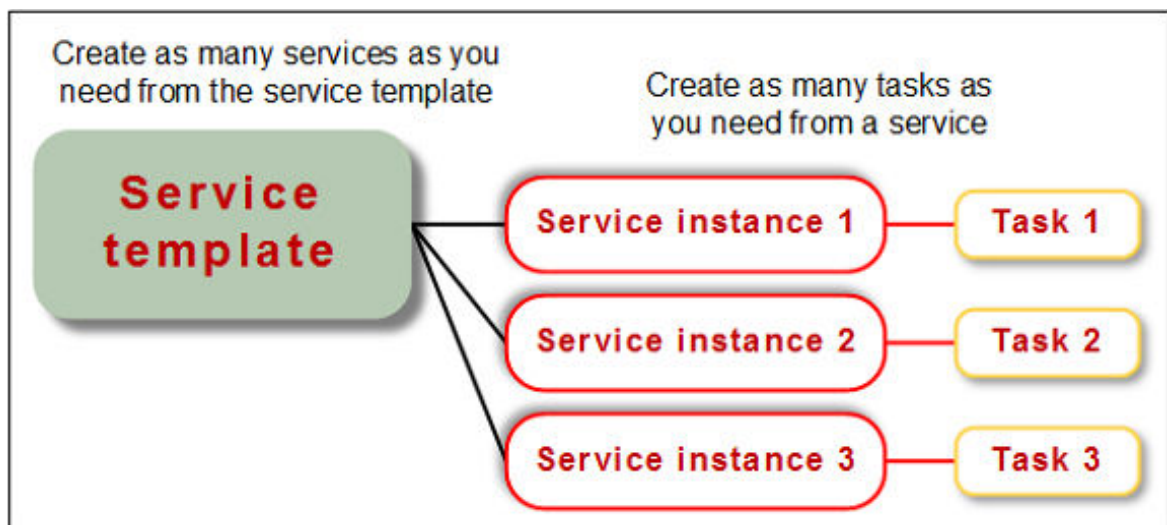
Infrastructure groups

An infrastructure group organizes storage resources and enables you to associate them with services and grant access to users. Resource groups that contain pools for storage are assigned to infrastructure groups. The infrastructure groups are associated with service groups. The services in a service group can access the resources in the associated infrastructure group.
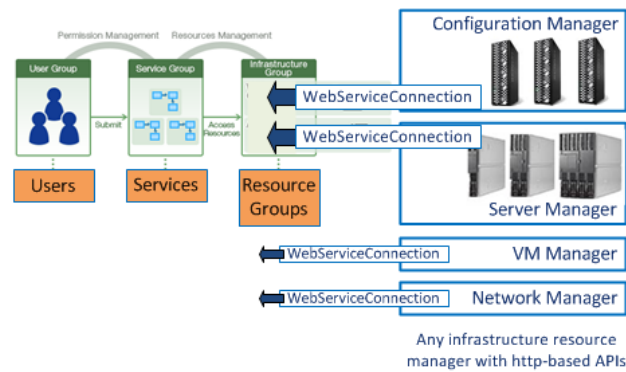
Service groups

A service group is a collection of services. A service group is associated with a user group and a role is assigned to give the users permission to use the services in the service group. In addition, the service group is associated with an infrastructure group, to enable the services in the service group to use resources in the Infrastructure groups.

User groups

A user group is a set of users with a defined level of access. User groups are associated with service groups to enable users to access the services in the service group.

User responsibilities

In addition to the system administrator and security administrator, Ops Center Automator gives two global user roles for storage administrators: service administrator and service user.

Security administrator

If you log on with Hitachi Ops Center, the security administrator is responsible for user management such as creating, editing, deleting users and user groups.

System administrator

After installing Ops Center Automator, the system administrator completes the initial setup tasks of creating pools, discovering storage systems, registering hosts, creating users and defining user permissions. When the initial setup is complete, the service administrator and service user take over management of the system.

Service administrator

The service administrator is an administrator who has advanced knowledge of data center functions and is responsible for managing end-to-end IT infrastructure including prioritizing and routing service requests to service users, attending to all critical service requests, and meeting Service Level Objectives (SLO). In Ops Center Automator, this type of storage administrator is responsible for creating and managing all automation services and delegating the responsibility of running services to service users as needed.

Service user

The service user is an administrator who is responsible for the management of automation requests, which consists of submitting and verifying the completion of automation services and monitoring all pending and scheduled tasks.

User Actions

The actions that users can complete after the initial setup depend on the Ops Center Automator user role as follows.

Users	Available Actions	Ops Center Automator User Roles
System administrators	Modify shared property settings. Create users and user groups. Create service groups and associate services with the groups. Create infrastructure groups and add storage resources with the groups. Associate infrastructure groups with service groups to enable the services in the service groups to use resources in the infrastructure groups.	Admin
Service administrators Service users	Create requests. Stop tasks. Suspend schedules. Cancel schedules. Resume schedules. Resubmit tasks.	Admin, Develop, Modify, or Submit
Service administrators	Archive tasks. Create services. Edit services.	Admin, Develop, or Modify
Service administrators	Service Builder actions: Create, modify, build, and release templates and plug-ins.	Admin or Develop

Chapter 1: Getting started with Ops Center Automator

Automation scenarios

The following common scenarios might apply to your automation needs.

Scenario 1: Provisioning of storage resources

Angela is an expert administrator who usually spends much time processing storage provisioning requests from different departments in the company. Last month, her company purchased Hitachi Ops Center Automator to automate some of the manual tasks her team has been doing to process such requests. Currently, she uses homegrown management tools to configure storage resources for provisioning. After installing and configuring Ops Center Automator, she began reviewing the prepacked service templates provided with the application. Angela quickly discovered that the templates are preconfigured, greatly reducing the number of time-consuming tasks she previously had to do manually before starting the provisioning.

Angela just received a high priority request to provision storage for an Exchange 2010 server in 48 hours. Because she used a service template, she was able to reuse most of the configuration settings that she would otherwise have to do manually.

She created a new service named "Exchange 2010 provisioning" for the Legal department and added some volume-specific settings, for example, pool information, required virtual capacity, and host information, as parameters to the service and submitted the service. She scheduled it to run at 2:30 am the following day.

The next day, she found that the service was registered and submitted on time. The task generated from the service completed successfully and the required provisioning request was processed before 48 hours.

The following figure depicts the scenario.
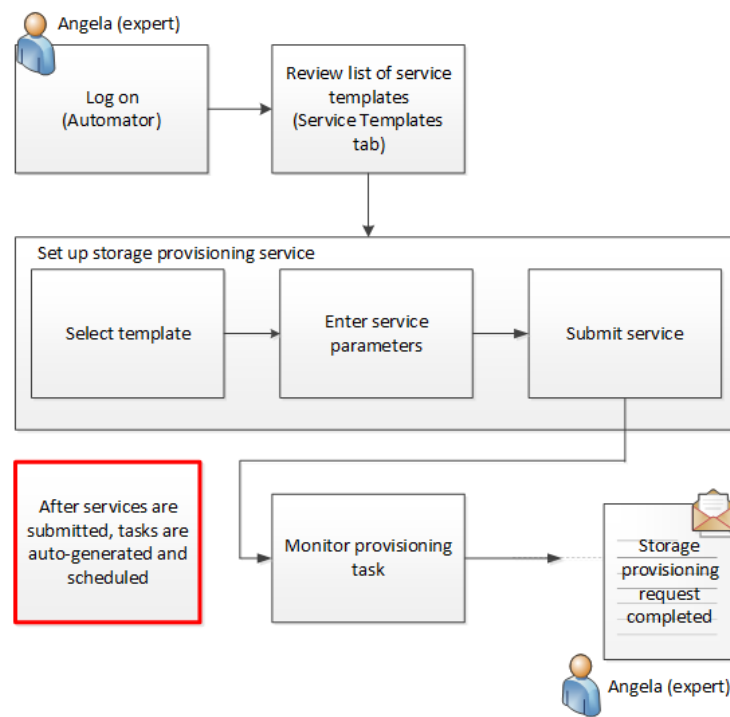
Scenario 2: Monitoring disk allocation service

Because of the high volume of service requests for storage allocation, John who is an expert administrator has been spending at least 60% of his time closing level 1 tickets, which primarily involve preparing resources for provisioning and then monitoring the status of all submitted requests.

He is beta-testing the Ops Center Automator software, which his company is considering for purchase to help expert administrators like John to delegate level 1 duties to service users in the company.

Earlier in the day, he received a storage provisioning request for an Oracle database used by the accounting department. For this request, he decides to use an Oracle service template that will help save him the manual effort. Using the service template, he creates a service and names it "Oracle ASM for accounting." He then edits the service settings to specify the mandatory parameters, such as number of volumes required and volume capacity and saves it.

For submitting this service request, John decides to use the task management and monitoring features of the product. He asks Bill, a novice administrator (service user) to submit the "Oracle ASM for accounting" service and schedule it to run immediately. He leaves for the day after giving clear instructions on how to submit the service and then monitor the task generated from it. Following John's instruction, Bill submits the service and uses the Tasks tab in the application to monitor the task. When the task ends with an error, he gives John the error details. John recommends that Bill resubmit the task and continue to monitor it.

The following figure depicts the scenario.
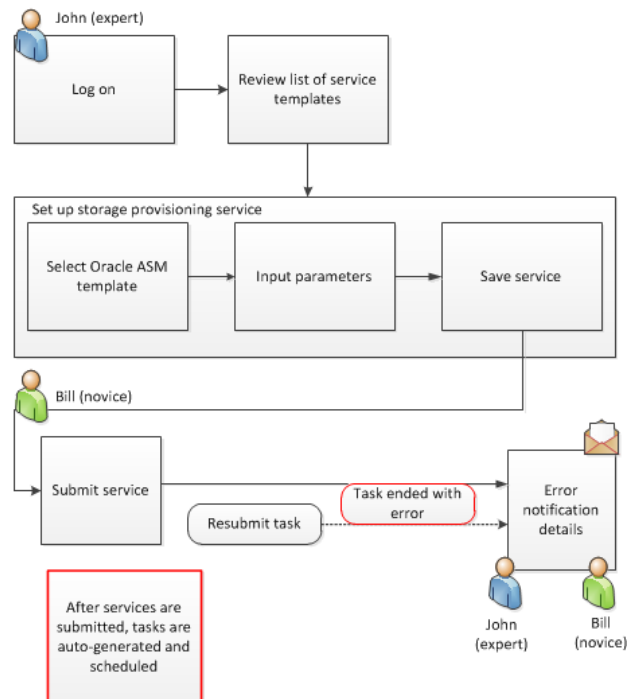
Operational workflow for service administrators and service users

The following figure shows the basic prerequisite tasks and high-level flow of operations for a service administrator.
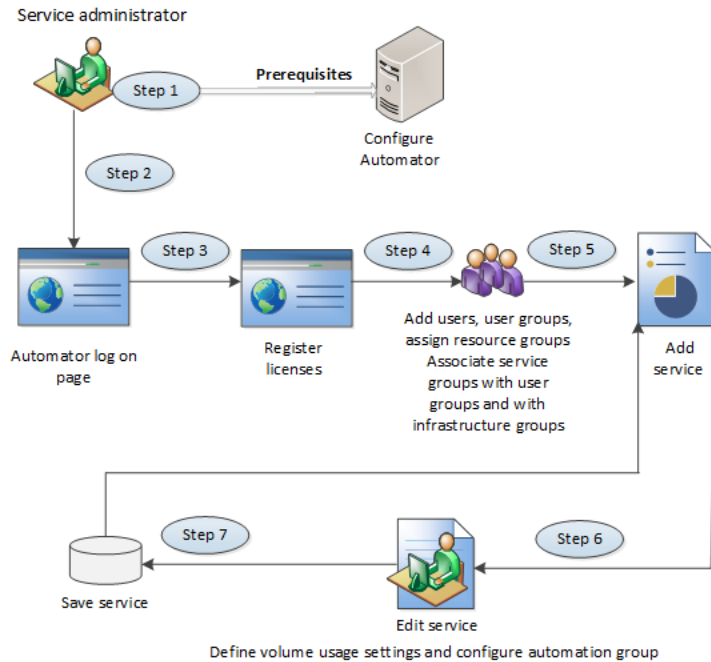
The following figure shows the high-level flow of operations for a service user.
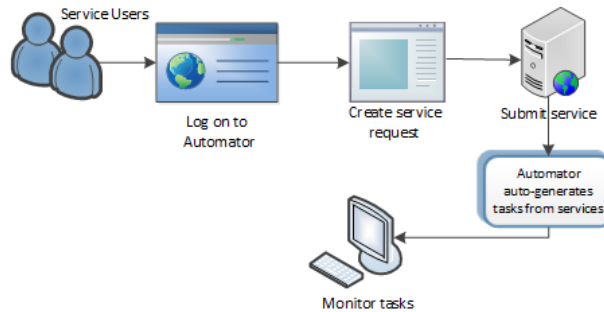
For more information on these workflows, including examples, see the video tutorial for Setting Up and Submitting a Hitachi Automation Director Smart Provisioning Service.

Built-in user accounts

When Ops Center Automator is installed, a built-in System account is provided.

> 📄 **Note:** This topic is about the local built-in system account. For information about the Hitachi Ops Center system account, see the *Hitachi Ops Center Installation and Configuration Guide*.

The System account (default password: manager) is for administering user management tasks, such as registering users, enabling access, and managing roles and permissions. It is also used to manage Ops Center Automator tasks and gives access to the Ops Center Automator UI. By logging on using the System account, you can access the user management window in Ops Center Automator and manage user access to storage systems registered in Ops Center Automator. The System account does not belong to any user group.

> **Note:** For information on how to change the local built-in system account password, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Logging on

Before you begin

To log on to Ops Center Automator, have the following information available:

- Ops Center Automator web URL

- User ID

- Password

> **Note:** When multiple users are using the Ops Center Automator window in the web browser simultaneously, the response from Ops Center Automator might be slow. We recommend that the number of users using the Ops Center Automator window simultaneously be 6 or less.

Procedure

1. In a web browser, enter the Ops Center Automator URL:

   ```
   http://automation-software-server-address:port-number/Automation/login.htm
   ```

   where

   - *automation-software-server-address* is the IP address or host name of the Ops Center Automator server.

   - *port-number* is the port number of the Ops Center Automator server. The default port number is 22015.

   To access Ops Center Automator in secure mode, enter:

   ```
   https://automation-software-server-address:port-number/Automation/login.htm
   ```

   where:

   - *automation-software-server-address* is the IP address or host name of the Ops Center Automator server.

   - *port-number* is the SSL port number of the Ops Center Automator server. The default port number is 22016.

Chapter 1: Getting started with Ops Center Automator

2. Enter a user ID and password to log on.

3. Click **Login** to log in to Ops Center Automator, or click **Log in with Ops Center credentials** to log in and authenticate through Hitachi Ops Center.

Accessing user profiles

You can edit your user profile, change your password, and view permissions assigned to your profile.

> **Note:** You can access your user profile when you log-on with local (Common Component) user authentication. To access your Hitachi Ops Center user profile, see the *Hitachi Ops Center Online Help*.

Procedure

1. Access your User Profile in one of the following ways:

   ▪ In the global menu area, click the User icon ( ) and select **User Profile**.

   ▪ If you are an Admin user, you can click **User Profile** in the **Administration** tab.

   ▪ An Admin user can also access user profiles in the Administration tab by navigating to **Resources and Permissions > Users and Permissions** > **Users**. Click a **User ID** link to open the profile.

2. Perform one or both of the following:

   ▪ Click **Edit Profile** to open the **Edit Profile** dialog box and change the name, email address, and description. Click **OK**.

   ▪ Click **Change Password** to open the **Change Password** dialog box and enter the old and new passwords. Click **OK**.

3. Click **Close** to close the **User Profile** window.

Editing a user profile

You can edit a user profile when user information changes.

Procedure

1. From the **User Profile** window, click **Edit Profile**.
2. Edit the profile information, then click **OK**.
3. Confirm that the updated user profile information appears in the Users area.

Changing the password for a user account

As user passwords expire or are compromised, they can be changed.

Procedure

1. From the **User Profile** window, click **Change Password**.

2. Enter the old and new passwords and verify the new password.

3. Click **OK**.

Changing the system account password

The System account is a default account that has user management and execute permission for Ops Center Automator. When you install Ops Center Automator for the first time, you must change the System account password.

> 📄 **Note:** This procedure only changes the local system account password. To change the Hitachi Ops Center system password, see the *Hitachi Ops Center Online Help*.

Procedure

1. From a management client, log on using the following credentials:

User ID: system

Password (default): manager

2. On the **Administration** tab, click **User Profile**.

3. Click **Change Password**, type the required passwords, then click **OK**.

Registering a license

Register a license when accessing Ops Center Automator for the first time after installation or when a license expires.

If you are using Common Services you can use the Ops Center portal to register the license. For details, see the *Ops Center Help*.

> 📄 **Note:** You must obtain the Ops Center Automator server license from your Hitachi Vantara representative.

Procedure

1. From the Ops Center Automator login window, click **License Information**.

2. In the **License** dialog box, enter the license key using one of the following methods:

- Click **Key** and enter the license key.

- Click **Choose File** to navigate to the license file and select it.

3. Click **Save.**

Logging off

For security reasons, log off when you have finished using Ops Center Automator.

On the Ops Center Automator global menu area, click the User (🧍) icon and select Log out.

Navigating the interface

The Hitachi Ops Center Automator user interface (UI) is organized into six primary areas: global menu area, global tabs area, navigation pane, application pane, global monitoring bar, and search.
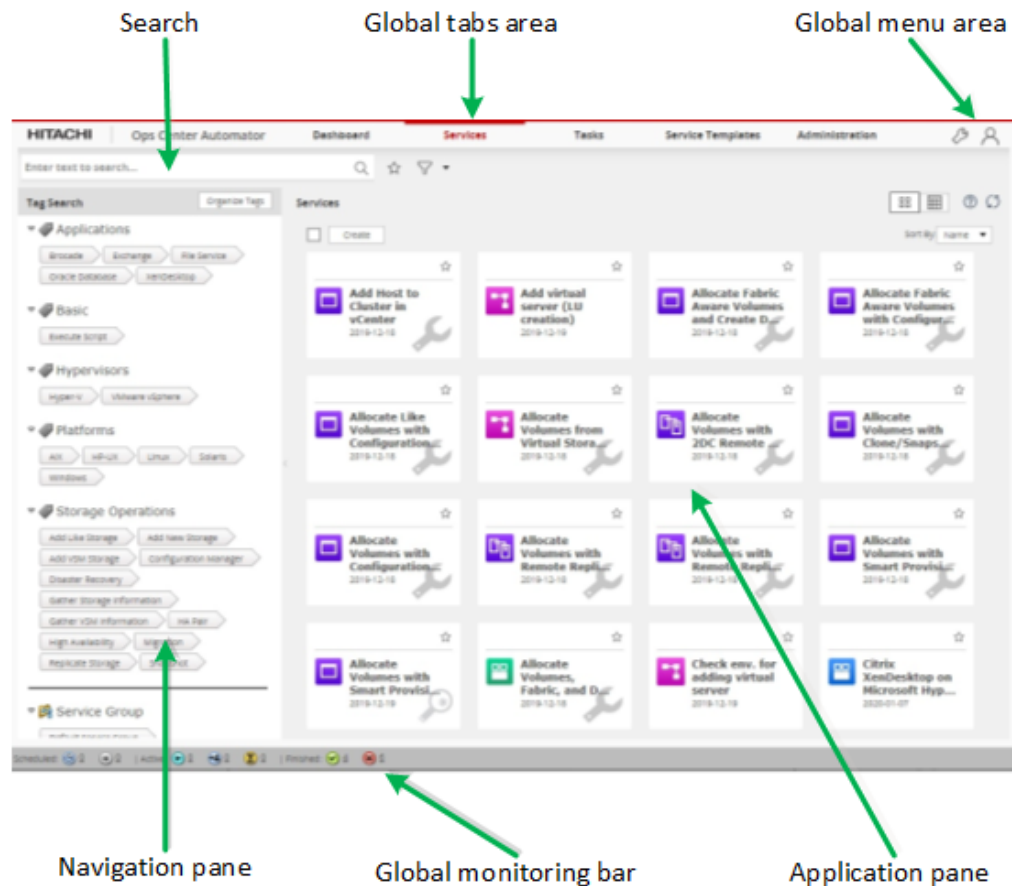
Global menu area

The global menu area has menus for accessing various features provided by Hitachi Ops Center Automator.

The global menu area is always visible, regardless of which window is active. Its two icons provide access to high-level actions and online help. The menus are:

- Tools ( ): Click and choose from the following options:

    - Service Builder: Open Service Builder. This option is available to Admin and Develop users.

    - Reset Preferences: If you have changed some display settings such as customized dashboard layout to display your preferred reports or modified the column settings in the Services tab, and you want to undo your changes, you can restore the display setting to the original (default) settings. If you select Reset Preferences, you will be logged off of the current session. You must log on again to view the default settings.

- User ( ): Click and choose from the following options:

    - User Profile: Open the user profile.

    - Online Help: Open Help with the navigation pane visible.

    - About: Open the About window to view license information.

    - Log out: Log out of the application.

Global tabs

The Dashboard and Tasks tabs are always visible, regardless of which window is active. Access to Services, Service Templates, and Administration tabs is dependent on the user role assigned. The tabs provide access to services, tasks, and administrative functions.

Navigation pane

This pane varies with the active tab. From the navigation pane, you can access resources and frequently used tasks.

Application pane

This pane varies with the active tab. The application pane shows summary information, resource objects, and details about the current task.

Global monitoring bar

This bar is always visible, regardless of which window is active. It has links to information about submitted tasks.

Search

This box is available on the Service, Tasks, and Service Templates tab and gives keyword and criteria-based search functions.

Navigating help

When you access Online Help from the User icon ( ) in the global menu area, or select the help icon [?] from the application pane or a dialog box, you can see the Ops Center Automator help and access the Contents and Search.

Chapter 1: Getting started with Ops Center Automator

Navigating

- To navigate between topics, select the desired topic in Contents, or click the backward [<] or forward icons [>] on the button bar.

- Use the breadcrumb trail at the top of each topic to see your location, or to return to a higher-level topic.

- To find information for a specific topic, click the Related topics links.

Using navigation buttons

- Contents

  Click the topic of interest to reveal topic entries and subsections. As you move through Help, the current topic is highlighted.

- Search

  Gives a list of topics based on the search criteria entered in the search text box. Click topics returned by the search for details.

Printing topics

To print topics, click the printer icon on the button bar.

Using search features

Ops Center Automator gives various search methods to navigate through its content and to help find the information you want. Each tab offers different search functionality. A text search box is found on the Services, Tasks, and Service Templates tabs. In addition, you can set column filters, and apply instant filters to customize the views. You can use tags to organize and manage services, tasks, and service templates by custom categories.

Using column filters in tables

The column filter feature is provided to help search for services, tasks, or service templates by applying keywords or phrases and conditions to the table view. Column settings allow you to choose the attributes you want to display in the view. The column filters and settings are found on the table views on the Services, Tasks, or Service Templates tabs.

Column filters

You can turn on the column filters to customize the table view. Select one or more column attributes and apply filter conditions, if needed. The view continues to display its contents, using the column filters, until the feature is turned off. When the column filters are turned off, the view is visible using the default settings.

Column settings

Column settings allow you to customize the view by choosing the attributes you want to display in the view columns. Click Column Settings on the table view to see the available column attributes and their descriptions and make selections.

Chapter 1: Getting started with Ops Center Automator

Using instant filters

Instant filters are available to quickly view the services that are marked as Favorite, or tasks that are marked with To Do.

Mark as Favorite

You can mark services that you frequently use as a Favorite. You can mark a service as a Favorite using any of the following methods:

- In the Card View of the Services tab, do one of the following:
  - Click the Favorite (star) icon for the service.
  - Click the service to open the service preview, then click the Favorite (star) icon.
  - Click the service to open the service preview. Click More Actions and select Mark as Favorite.
- In the Table View of the Services tab, do one of the following:
  - Click the Favorite (star) icon for the service.
  - Click the service and select More Actions > Mark as Favorite.

The services marked as Favorite appear on the dashboard. You can quickly access the services that you marked as Favorite by using the instant filter located next to the text search box on the Services tab, or sorting by the Favorite column in the view.

Mark as To Do

If you must pay attention to a task or respond to a task, you can mark it as To Do. You can mark a task as To Do using any of the following methods:

- In the Table View in the Tasks tab:
  - Select More Actions > Mark as To Do for the task, or:
  - Click the Mark as To Do flag for the task in the To Do column.
- In the **Task Details** window, click Mark as To Do.

You can quickly access the tasks that you marked as To Do by using the instant filter (red flag) located next to the text search box on the Tasks tab, or sorting tasks by the To Do column in the view. Tasks marked as To Do are seen by all users.

About tags

Tags are keywords or phrases that help classify and organize content by function, ownership, status, or other category. You can create custom tags, and assign tags to groups to manage service templates, services, and tasks. You can use tags to quickly sort and search for a service template, service, or task.

Tags are available on the navigation pane of the Services, Tasks, and Service Templates tabs. Only tags used in the tab are visible. You can click one or more tags to filter and quickly view the content by the associated tag. Click Clear to reset the view to the default settings.

Creating and assigning tags to services

You can add, modify, or remove tags when creating or modifying a service. Users with Develop or Admin roles can create or update a tag for a service.

You can assign tags to a service in the **Edit Service** window of a service. When a service is submitted, the associated tasks inherit the tags from its service and cannot be modified.

When a service is created from a service template, the service inherits the tags from the service template. The Admin or Develop role is required to create and update a tag for a service template. You cannot change the tags that are assigned by a predefined service template.

When creating a custom tag, assign a unique tag name. Duplicate tag names are not allowed. You can assign multiple tags to services templates and services.

Procedure

1. On the **Services** tab, click the service whose tags you want to modify to open the service preview window for that service.
2. Click **Edit** to open **Edit Service** window.
3. In the **Settings** pane, modify tags for the service in the **Tags** box. You can perform any of the following:

    - To add tags, expand the list and select the tags.

    - To remove a tag, click the "X" next to the tag.

    - To create a tag, scroll to the end of the tag list, select **Create Tag**, enter a name and tag group for the new tag, then click **OK**.

    - To create a tag group, first create a tag. Then scroll to the bottom of the **Tag Group** list, then click **Create Tag Group** to enter a tag group name. Click **OK**.

4. Click **Save**.

Creating tag groups

Tag groups help sort and categorize the service templates, services, and tasks. The Admin or Develop role is required to create or modify tag groups.

You can organize tags in tag groups by dragging and dropping the tags to the correct group. Each tag can belong to only one tag group. A tag group cannot belong to another tag group. Tags without a tag group are listed as Uncategorized.

Procedure

1. Create a custom tag group by using one of the following methods:

   ▪ On the **Tag Search** navigation pane:

     a. Click **Organize Tags**.

     b. In the **Organize Tags** dialog box, go to the tag group section and enter the new tag group.

   ▪ When creating or modifying a service:

     a. In the **Edit Service** window, go to the **General Information** section **Settings** pane, then click inside the **Tags** area to open the list of tag groups and tags.

     b. Scroll to the bottom of the list, then click **Create Tag** .

     c. In the **Create Tag** dialog box, enter a tag name, then click the **Tag Group** list to open it. At the end of the list, click **Create Tag Group** and enter a tag group name.

     d. Click **OK** to save the tag group and the tag.

2. Click **OK** to save the tag group.

Result

You can search for tags and tag groups from the **Tag Search** navigation pane located on the Services, Tasks, or Service Templates tab.

User workflows by role

Ops Center Automator supports four user roles and each has its own workflow.

Admin user workflow

The Admin user configures Ops Center Automator.

The Admin user role is the only one that confers access to the Administration tab and the Admin user is responsible for configuring Ops Center Automator. The Admin user also has access to all parts of Ops Center Automator and Service Builder.

The Admin user workflow in the Administration tab is as follows:

1. Log on to Ops Center Automator.
2. Click the Administration tab.
3. Connect to one or more instances of Configuration Manager.
4. Configure remote connections as needed.
5. Create users. This step is not necessary if you have integrated users from Common Services.
6. Configure user groups, if needed. Ops Center Automator includes four built-in user groups.
7. Create infrastructure groups and assign resources to them. If necessary, you can also assign Web Service Connections and remote connections to infrastructure groups.

Chapter 1: Getting started with Ops Center Automator

8. Create service groups and associate user groups with service groups. This step also assigns the user role (Admin, Develop, Modify, Submit) associated with the user group.

9. Associate infrastructure groups with the service groups to enable the services in the service group to use the resources in the infrastructure groups.

Develop user workflow

The Develop user creates service templates in Service Builder and tests them in Ops Center Automator before releasing them for use.

Much of the Develop user's workflow takes place in Service Builder. The Develop user has access to all parts of Ops Center Automator except the Administration tab.

The Develop user workflow is as follows:

1. Log on to Ops Center Automator and start Service Builder.
2. Create or modify a service template in Service Builder.
3. Build the service template in Service Builder.
4. Test the service template in Ops Center Automator.

   At this point the template in not available for use.

5. Release the template from Service Builder.

   After the template is released, you can access it in Ops Center Automator and use it to create services.

Modify user workflow

The Modify user creates and tests services and is typically a service administrator.

The Modify user role is designed to enable expert users to create services from within their service groups. This means that the Modify user can only create services that are in the service group that is associated with the Modify user's user group.

The Modify user can access the Dashboard, the Services tab, the Tasks tab and the Service Templates tab.

The Modify user workflow is as follows:

1. Log on to Ops Center Automator and access the Service Templates tab to find a service template.

   The Modify user can only view service templates that are released.

2. Locate a service template that matches the service requirements.
3. Use the service template to create a service.
4. Test the service.
5. Release the service for use.

Submit user workflow

The Submit user role is a user of services created by the Modify user.

Chapter 1: Getting started with Ops Center Automator

The Submit user can only access services that have already been released and does not have access to the Debug tab in the Tasks tab. The Submit user can access the Dashboard, the Services tab and the Tasks tab.

The workflow for the Submit user is as follows:

1. Log on to Ops Center Automator and access the Services tab.
2. Select the service that you want to submit and create a request. Submit the service.
3. Click the Tasks tab to verify that tasks associated with the service are in the Tasks tab.
4. (Optional) Monitor the tasks and their status.

Starting Service Builder

Users with the Admin role or the Develop role can start Service Builder to create and edit templates.

Service Builder can be started from three different points.

Open Service Builder in one of these three ways:

- Click the Dashboard tab, then click one of the options under Manage Template in the Guidance Menu:

  - Create New Template

  - Edit Template

  - Copy Template

- In the global menu area, click the Tools icon ( ) and select Service Builder.

- Click the Templates menu and in the Templates pane, click one of the following: Create, Copy and Edit, View Flow, or More Actions > Update Service Template.

  > **Note:** Update the Service Template if there is a more recent revision of the template available.

Service Builder opens in a separate browser window.

Service Builder workflow

Creating a service template with Service Builder involves the following processes:

Phase 1: Preparing

- Decide on the need and purpose of the service template. Consider the steps involved to automate the process and determine if the steps require creating a new template or modifying an existing template.

- Prepare to create the service template. This involves identifying existing plug-ins, or creating new plug-ins (preparing icon files, and setting definition, resource files and script files).

Phase 2: Creating

- Create new plug-ins, or copy and modify existing plug-ins, in the Service Builder Edit view of the service template.

- Create the service template as new, or copy and modify an existing service template, in the Service Builder Edit view. The service template is in Under Development status.

- Set the process flow of the service template.

- Create and map the data flow of the service template.

- Set the service definitions of the service template.

Phase 3: Testing

- Build the service template for testing.

- Perform testing. Create services based on the debug configuration of the service template.

- Make corrections as the result of testing.

- Rebuild and retest the service template until it performs properly.

Phase 4: Releasing

- Release the service template. A service template must be in Released status to submit the service template to the operating environment.

Chapter 2: Viewing service and task summaries

The Ops Center Automator dashboard gives immediate insight on the status of services and tasks and enables easy access to user workflows.

Viewing the dashboard

When you log on to Ops Center Automator, the dashboard appears by default. The dashboard comprises the Guidance menu, reports on the performance of services and tasks, and links to favorite services.

Guidance Menu

The Guidance menu serves as a navigation pane and gives links to information on how to perform common functions in Ops Center Automator. The current user role determines which categories are visible. This menu pane can be turned on or off using the Dashboard Settings.
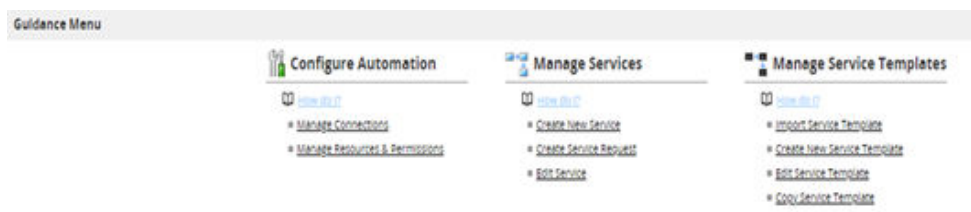
Dashboard reports

The dashboard reports show information based on status and performance. You can quickly access services and tasks by clicking the links in these reports.

The dashboard reports update every 10 minutes.

The following reports appear on the dashboard:

- Most Frequently Failed Services
- Most Frequently Used Services
- Tasks Waiting for Action
- My Tasks
- My Favorite Services

Customizing the dashboard display

You can customize what is visible on the dashboard. Either select or clear the check boxes for the items that must appear on the dashboard. You can also click the Settings icon to open the **Settings** dialog box and select the reports you must see.

Dashboard tips

Helpful tips are provided when following links from the dashboard. These tips can be turned off as you become more familiar with Ops Center Automator.
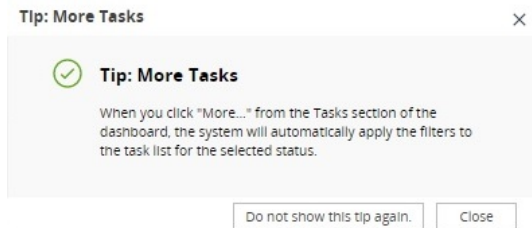
Viewing dashboard reports

The dashboard reports provide you with quick access to the status and performance of services and tasks and update every 10 minutes.

The following sections provide information about each dashboard report.

Most Frequently Failed Services report

The Most Frequently Failed Services report has a ranked list (highest to lowest) of services with the largest number of failed tasks.

The Most Frequently Failed Service report can be viewed by Admin, Develop, and Modify users.

You can click a link to open the Service Preview, where you can access further actions to take.

Most Frequently Used Services report

The Most Frequently Used Services report summarizes the most frequently used services from the last seven or 30 days.

This report helps users to analyze the success/failure rate of their most frequently used services and take any necessary action.

The first row at the top of the window shows the number of times the service has been run and the number of days since Ops Center Automator was installed. The second row shows the number of times the service was run in either 7 or 30 days. You can use the Time Range list to choose one or the other.
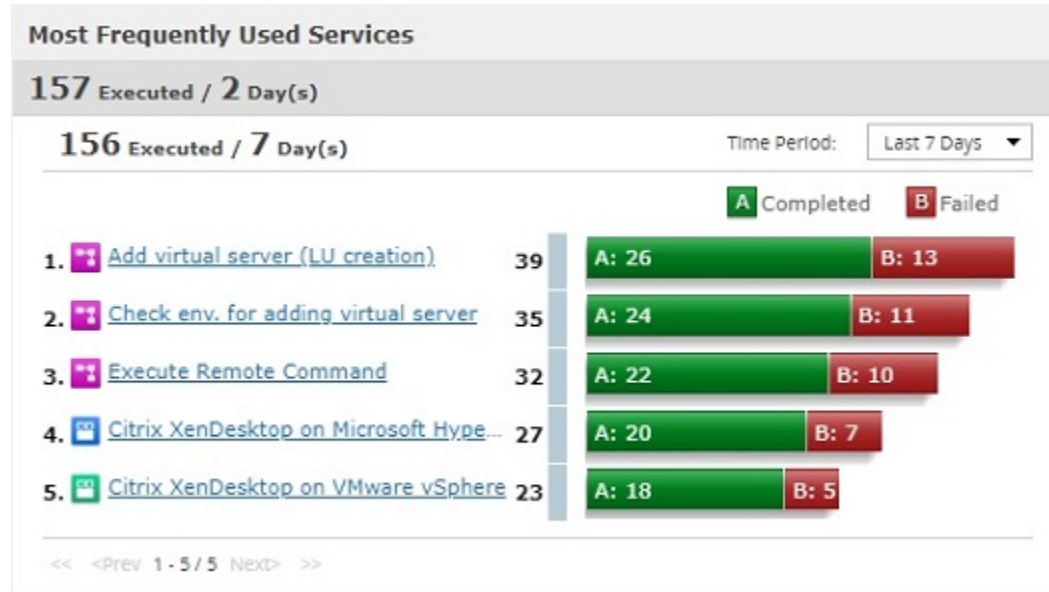
You can click a link to open the Service Preview, where you can access further actions.

Tasks Waiting for Action report

The Tasks Waiting for Action report is a summary of failed and long-running tasks and tasks that need user input.

The report lists tasks that need your attention, which includes the following:

- Tasks that need your input to proceed.
- Recently failed tasks, so you can fix the problem that caused the task to fail and run the task again.
- Long running tasks that can affect system performance.

If any tasks exist, the link gives a list of the specific tasks. Otherwise, the link opens the Tasks tab, filtered by the status.

My Tasks report

The My Tasks report gives a summary and links to the active, completed, and scheduled tasks of the current user.

The task states and corresponding statuses are as follows.

Task state	Task status
Active	▪ In Progress ▪ In Progress (with Error) ▪ In Progress (Terminating) ▪ Waiting for Input ▪ Long Running
Scheduled	▪ Waiting ▪ Suspended

Task state	Task status
Finished	▪ Completed ▪ Failed

If any tasks exist, the link gives a list of the specific tasks. Otherwise, the link opens the Tasks tab, filtered by the status.

My Favorite Services report

The My Favorite Services report is the list of services that are designated as favorites by the current user.

The My Favorite Services report is available on the dashboard. You can add to this list by marking services as favorites on the Services tab.
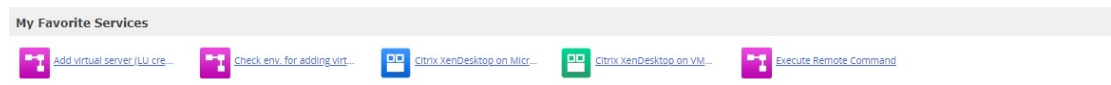
You can click a link to open the **Submit Service Request** window for that service.

Chapter 3: Managing services

This module describes how to manage Ops Center Automator services.

Overview of Ops Center Automator services

A service is a customized set of instructions that follow a process flow to automate data center tasks such as provisioning. Services are integrated with infrastructure groups so they help manage resources. A storage administrator can create a service and then allow users to run it. Access to services is managed by user groups and service groups.

Services are classified by tags to indicate the purpose or type and to display them in a hierarchical structure. Because Ops Center Automator lets you register the same service in multiple tags, you can display a list of services according to usage, such as by workload or business unit.

Services tab

The Services tab includes the views and tools to search for, create, submit, organize, and manage automated services.

The Services tab enables users to do the following:

- View services and filter them using tags.
- Create custom tags or tag groups using Organize Tags.
- Using the Card view or Table view, see service details, status, and actions.
- Create and submit service requests.
- Copy a service to make a new service.

Tag Search pane

The Tag Search pane enables users to filter services that have been tagged.

Tags are organized into groups, such as Applications, Hypervisors, and Storage Operations. Each group has one or more tags.

To use tags, click a tag name to see only services tagged with that name in the Services pane. Click the tag again to expose all tags in that group and all services that were filtered out.

You can only use one Service Group tag at a time.

You can click Organize Tags to create your own tag groups and then add tags to the groups. You can also add tags to the provided groups.
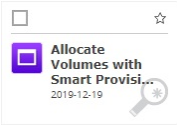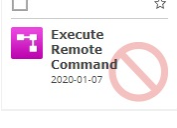
Services pane

The Services pane displays all the services that a user can use, based on the user's permissions.

The Services pane has two views; Card View and Table View. You can toggle between these views in the Services window.

The Card View includes graphical representations of services that can include badges and watermarks.

The following table contains the watermarks that are visible in the services Card View.

Watermark	Description
Allocate Volumes with Smart Provisi... 2019-12-19	Service is in Debug status.
Smart Allocation for Oracle Datab... 2019-12-18	Service is in Test status or Maintenance status.
Execute Remote Command 2020-01-07	Service is in Disable status.

The following badges are visible in the services Card View:

- OUTDATED: The service is using an outdated version of a service template. You can use Apply Latest Version to update the service.

- NEW: The service is fewer than 14 days old.

You can click a service card to open the service preview and view information about the service and access additional controls as shown in the following figure.

Chapter 3: Managing services
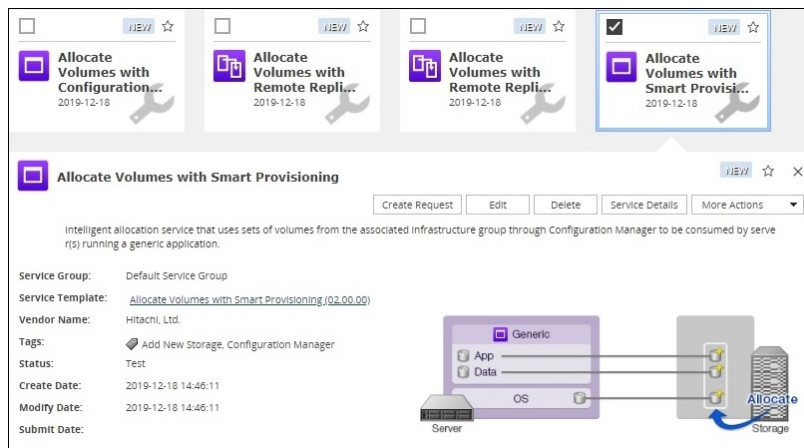
The following actions are available to manage services in the Services tab or in the service preview:

- Create: Opens the **Select Service Template** window, where Admin, Develop and Modify users can select a template and use it to create new services.

- Create Request: Runs the service by creating the tasks required to perform the service.

- Edit: Modifies a service.

- Delete: Deletes a service.

- Copy: Copies a service to create a new service.

- Release: Changes the status of the service to Released.

- Enable: Allows the service to be submitted.

- Disable: Prevents the service from being submitted and changes its status to Disable.

- Maintenance: Allows only the Admin, Develop, or Modify roles to submit the service for maintenance purposes.

- Edit tags: Allows modification of the tags associated with the service.

- Mark as Favorite: Adds the service to the My Favorite Services list of reports on the Dashboard for quick access.

- Unmark as Favorite: Removes the service as a favorite.

- Related Tasks: Displays the tasks related to the service under the Tasks tab.

- Reset Counter:

- Apply Latest Version: Applies the latest version of the template on which the service is based.

- Apply Specified Version: Enables user to choose among version of the template on which the service is based.

Workflow for creating a service

The following workflow describes the process to create, test, and release a service.

1. Choose at template or an existing service as a starting point.
2. In the **Create Service** window, fill out the required and optional fields. Preview the service and then save it.
3. Test the service.
4. Release the service. After the service and its tasks successfully complete the testing, the service can move to Release status. In Release status, users with the Submit role (or higher) can submit the service.
5. Submit the service.

Creating or editing a service

Users with the Admin, Develop, or Modify roles can create services. You can create a new service, copy an existing service, or edit a service.

Procedure

1. Determine whether you want to create a new service or copy or edit an existing service:

   - To create a new service, go to step 2.

   - To copy a service, go to step 8.

   - To edit a service, go to step 9.

2. Create a new service by accessing the service template preview using one of the following paths:

   - On the **Dashboard**, in the **Guidance Menu**, click **Create New Service**. In the **Select Service Template** window, click a template to open the service template preview.

   - On the **Service Templates** tab, click the service template you want to use to open the service template preview.

   - On the **Services** tab, in the **Services** pane, click the **Create** to open the **Select Service Template** window and the click a template to open the service template preview.

   - On the **Administration** tab, under **Resources and Permissions**, click **Service Groups**. In the **Services** pane, click **Create** to open the **Select Service Template** window. Click a template to open the service template preview.

3. Click **Create Service**.

4. In the **Create Service** window, in the **Settings** pane, enter the following information, which is summarized in the **General Settings** area of the Navigation pane:

   > **Note:** If you copy an existing service, the default parameter values are different than if you are creating a new service.

   - Name of the service.

   - Description of the service.

   - **Status**: Select **Test** for new services to allow only users in the Admin, Develop, or Modify role to submit the service.

   - **Tags**: Specify one or more tags for the service (to a maximum of 256 characters.) The tags you select for the service also apply to the tasks the service generates.

- **Service Group**: Select the service group of users who can access the service.

  > 📄 **Note:** If you are editing an existing service, you cannot change the service group. Use the **Copy** action instead to copy the service and change the Service Group.

- **Service Template**: The template on which the service is based. Click the template name to open the **Template Preview**, which includes detailed information about the template.

  In the **Template Preview**, you can click **View Flow** to open the flow window for the template.

5. Expand **Advanced Options** and select the options you want:

   Scheduling Options:

   Immediate: Run the service when it is submitted.

   Scheduled: Run the service one time.

   Recurrence: Run the service multiple times.

6. In the **Navigation** pane, click each settings group and configure the required and optional parameters. You can also navigate through the settings groups using the links at the bottom of the Settings pane.

   You can choose to retain default settings from the service or template you started with. For Volume settings, you can choose whether to allow users to change specific settings or to hide them completely.

7. After configuring the settings, do one of the following:

   - Click **Preview** to open a view of the service as it would appear to users. Then click **Save and Close** to save the service.

   - In some cases, you might want to use **Import** or **Export** to save the property values associated with the current service for later access or to access property values that have previously been saved to a properties files.

   - Click **Cancel** to close the window without saving any changes.

8. To copy an existing service, do the following:
   a. Go to the **Services** tab to access the service list.
   b. Click the service that you want to copy.
   c. In the service preview pane, click **More Actions** > **Copy**.
   d. Modify the service name and settings as needed.

9. To edit a service, do the following:
   a. Go the **Services** tab, select the service to edit, then click **Edit**.
   b. From the **Edit Services** window, modify the setting as needed.

Create Service window

The **Create Service** window enables you to select the parameters of your service and preview the result before saving. Admin, Develop, and Modify users can create services.

The **Create Service** window includes the following areas:

Overview pane

The Overview pane includes a written description of the template and a graphical representation of the hardware and data structure.

Navigation pane

The Navigation pane has settings groups that include General Settings and any other settings that are required or optional for the service. You can click a settings group to display and edit the settings in the Settings pane. You can also navigate through the settings groups using the links at the bottom of the Settings pane.

The settings groups vary according to the template or service upon which the service is based. If settings are required, a graphic warning will display in the settings group.

Settings pane

Use the Settings pane to edit or create the parameters for your service.

📄 **Note:** If you are copying an existing service, the default values for the parameters will be different than if you are creating a service.

Settings/Parameters	Description
Name	Name to display in the Services tab.
Description	Description of the service.
Status	The status of the service. Two options are available for creating a service. Select Test for new services to allow only users in the Admin, Develop, or Modify role to submit the service.
Tags	Tags act as filters in the Tag Search pane of the **Services** window. A service has one or more tags for the service (to a maximum of 256 characters). The tags you select for the service also apply to the tasks generated by the service.
Service Group	The service group of users who can access the service. **Note:** If you are editing a service instead of creating a new service, you cannot change the Service Group. To change the Service Group, use the Copy action to copy the service.
Service Template	The service template used by the service. You can click the template name to open the Template Preview, which includes detailed information about the template. In the Template Preview, you can click View Flow to open the flow window for the template.

Settings/Parameters	Description
Advanced Options	Scheduling options for the service. ▪ Scheduling Options: 　• Immediate: Run the service when it is submitted. 　• Scheduled: Run the service one time. 　• Recurrence: Run the service multiple times. ▪ Display Flow Detail for Submit User: Select to display.
Import	Imports property values from a specified file.
Export	Exports property values to a specified file.
Preview	Opens a view of the service as it will appear to a user.
Save and Close	Saves the service to the system and closes the window.
Cancel	Cancels any changes and closes the window.

Testing a new service

New services are created in Test status, so that only users with the Admin, Develop, or Modify role can submit them. When a service in the Test status is submitted, tasks are created in the Test status to allow testing. Tasks in the Test status are located on the Debug view under the Tasks tab. During testing, you can change the service parameters as needed and continue testing until the tasks run successfully.

Procedure

1. To begin testing, submit the service.
   a. On the **Services** tab, select the service to test and in the service preview pane, click **Create Request**.
   b. In the **Submit Task** window, keep or modify the volume, host, and task settings, then click **Submit** to submit the service or **Submit & View Task** to view the tasks.
2. On the **Tasks** tab, click the **Debug** tab and review the status of the tasks related to the service.
3. If the task status is anything other than Completed, repeat steps 1 and 2 until all of the tasks are successful.

Next steps

Release the service.

Releasing a service

You place a service in Release status to submit it. Users in the Submit role or higher can submit a service in Release status. You can move a service to Release status from the Test status after testing is complete, or from the Maintenance status after a blackout period.

Procedure

1. On the **Services** tab, select the service to release.
2. From the table view or from the service preview pane of the card view, click **More Actions** > **Release**.

Submitting a service

Submitting a service creates and runs the tasks associated with the service, either immediately or on the schedule you defined. Some services require that you provide some of the parameter values when the service is submitted. All services need for you to configure task settings (for example, the task name and schedule) when the service is submitted.

Before you begin

- If the service is in Release status, you must have the Submit (or higher) role.
- If the service is in Maintenance status, you must have the Admin, Develop, or Modify role.

Procedure

1. On the **Services** tab, select the service that you want to submit, and in the service preview pane, click **Create Request**.
2. In the **Submit Service Request** window, in the **Settings** pane, configure the volume, host, and task settings required by the service.

   📄 **Note:** In Task Settings, a schedule is interpreted as a server time. Be aware if the server is in a different time zone from the client.

3. Click **Submit** to submit the service immediately, or **Submit & View Task** to submit the service and go to the **Tasks** tab.
4. Verify that the tasks that are associated with the submitted service are listed on the **Tasks** tab.
5. (Optional) Monitor the task status.

   📄 **Note:** You can run only 10 plug-ins concurrently by default. After you reach that limit, the next plug-in waits until another one finishes. To change the maximum number of concurrent runs, see "Changing the system configuration" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Effect on scheduling when switching between standard and daylight savings time (U.S and Canada only)

When a server is in a region of the world that has adopted daylight savings time, you must understand how the scheduling time is affected when the system switches between standard and daylight savings time. Daylight savings time begins at 2:00 AM (Central Time) on the 2nd Sunday of March and ends at 2:00 AM on the 1st Sunday of November.

To accommodate switching between standard time to daylight savings time, the time between 2:00 AM to 2:59 AM is omitted and any services that are scheduled during standard time will instead start at 2:00 to 2:59 AM daylight savings time.

Conversely, when switching back from daylight savings to standard time, the time between 1:00 AM and 1:59 is increased so any services scheduled to run during daylight savings time are ignored (not processed twice) according to the original schedule, but are run when the time is switched back from daylight savings to standard time.

Services that are scheduled outside of these switching time are not affected and are run according to the time plan that is currently in effect for the server.

Disabling a service

When a service is no longer needed, you can change its status to Disabled. You cannot submit a service that is disabled. The Admin, Develop, or Modify role is required to disable a service.

Procedure

1. On the **Services** tab, select the service to disable.
2. From the table view or from the service preview pane of the card view, click **More Actions** > **Disable**.

Deleting a service

Before you begin

You can delete services that are obsolete and no longer needed. Deleted services cannot be recovered. The Admin, Develop, or Modify role is required to delete a service.

On the Tasks tab, in the task view, verify that no tasks exist from the service you are deleting. You can, however, delete a service for which corresponding task entries are in the history list.

Procedure

1. On the **Services** tab, from the card view, select the service that you want to delete.
2. In the service preview pane, click **Delete**.

   💡 **Tip:** You can delete multiple services simultaneously. On the **Services** tab, from the table view, select the services you want to delete, click **Delete**.

3. In the **Delete Services** confirmation dialog box, click **OK**.

Updating the service template version applied to the service

You can update the service template version applied to the service when you have imported a new service template. The Admin, Develop, or Modify role is required to update a service template version.

Before you begin

Archive all the tasks generated from the service before you update. To keep those tasks as they are, copy the corresponding service and update the applied service template version of the copied service.

On the Tasks tab, in the task view, verify that no tasks exist that were generated by the service with which you are updating the applied service template version. You can update a service template version applied to the service with corresponding task entries in the history list.

Procedure

1. On the **Services** tab, from the card view, select the service for which you want to update the applied service template version.
2. In the service preview pane, click **More Actions** > **Apply Latest Version**.
3. In the **Apply Latest Version** dialog box, confirm that the latest service template you imported is displayed and click **Apply**.
4. In the **Apply** confirmation dialog box, click **OK**.

Applying a specific service template version to the service

You can apply the specific service template version to the service. The Admin, Develop, or Modify role is required to apply the specific service template version to the service.

Before you begin

On the Tasks tab, in the task view, verify that no tasks exist that were generated from the service to which you are going to apply the specific service template version.

You can apply the specific service template version to the service with corresponding task entries in the history list.

Archive all of the tasks generated from the service before you apply the service template version. To keep those tasks as they are, copy the corresponding service and apply the specific service template version to the copied service.

Procedure

1. On the **Services** tab, from the card view, select the service to which you want to apply the specific service template version.
2. In the service preview pane, click **More Actions** > **Apply Specified Version**.
3. In the **Apply Specific Service Template Version** dialog box, select the preferred service template version from the **Service Template Version** menu, then click **Apply**.

4. In the **Apply** confirmation dialog box, click **OK**.

Example of provisioning

This section describes the steps to provision volumes using the predefined Allocate Volumes with Smart Provisioning template and service creation wizard. The service administrator creates a new service called "Allocate Volumes Example" and sets the parameters using default values. The service is tested and released to the service user, who then configures and submits the service, and monitors the tasks.

📄 **Note:** The example assumes that the service administrator has considered the system's architecture and performed the calculations necessary to create a service based on the needed storage size, configuration, and I/O profile. Although the values in the template are based on the best practices, the values you set might differ depending on your specific needs.

Create the service

The following steps are performed by a service administrator with the Admin role.

1. On the Service Templates tab, select the Allocate Volumes with Smart Provisioning template, then click Create Service.
2. In the **Create Service** window, in the Settings pane, enter the following information.

   Enter the following general information.

Parameters	Description	Value
Name	The name of the service	Allocate Volumes Example
Description	A brief description of the service	A test service to allocate volumes
Status	The status of the service	Test
Tags	The categories for the service	Allocate New Storage, Configuration Manager
Service Group	The service group of users who can access the service	Default Service Group
Advanced Options		
Scheduling Options	The time when the service runs	Immediate
Action Options	The actions that can be performed for the task.	-

   Enter the following Volume information.

Chapter 3: Managing services

Parameter	Description	Value
Configuration Manager Connection	The Configuration Manager connection	Select the Configuration Manager Connection from the table.
Storage System Selection	Specifies whether to select the storage system at volume allocation	Automatic
Capacity Format	The volume capacity format as Block or Byte	Byte
Volume Settings		
Volume Usage	The volume usage to be assigned	OS
Number of Volumes	The number of volumes to allocate for the OS	1
Volume Capacity	The volume capacity in bytes	150
Volume Label	The volume label	-
Disk Type	The disk type to be used to configure the pool	-
LDEV ID Starts From	The startup LDEV ID as a hexadecimal number for the volume to allocate	0
Virtual LDEV ID Starts From	The startup Virtual LDEV ID for the volume to allocate	0
LUN Starts From	The starting logical unit number assigned to the volume for a host	0
Volume Settings		
Volume Usage	The volume usage to be assigned	App
Number of Volumes	The number of volumes to allocate for the App	1
Volume Capacity	The volume capacity in bytes	200
Volume Label	The volume label	-

Chapter 3: Managing services

Parameter	Description	Value
Disk Type	The disk type to be used to configure the pool	-
LDEV ID Starts From	The startup LDEV ID as a hexadecimal number for the volume to allocate	0
Virtual LDEV ID Starts From	The startup Virtual LDEV ID for the volume to allocate	0
LUN Starts From	The starting logical unit number assigned to the volume for a host	0
Volume Settings		
Volume Usage	The volume usage to be assigned	Data
Number of Volumes	The number of volumes to allocate for the Data	1
Volume Capacity	The volume capacity in bytes	450
Volume Label	The volume label	-
Disk Type	The disk type to be used to configure the pool	-
LDEV ID Starts From	The startup LDEV ID as a hexadecimal number for the volume to allocate	0
Virtual LDEV ID Starts From	The startup Virtual LDEV ID for the volume to allocate	0
LUN Starts From	The starting logical unit number assigned to the volume for a host	0

3. Click Save and Close.

   The new service called Allocate Volumes Example is created in Test status and can be found on the Services tab.

Test and release the service

Only users with the Admin, Develop, or Modify role can submit a service in Test status.

Chapter 3: Managing services

1. On the Services tab, select the Allocate Volumes Example service in Test status, then click Create Request.

2. In the **Submit Service Request** window, in the Settings pane, retain the values for the Volume Settings and enter the following information.

Parameters	Description	Value
Host Settings		
Number of Hosts	The number of hosts for which to allocate volumes	Single
Host Name	The host name	TestHostName
WWN Settings	WWN settings	Click the + icon and enter the information.
Task Settings		
Task Name	The name of the task	Allocation Task Example
Description	A brief description of the task	A test task to allocate volumes
Schedule Type	The time when the task runs	Immediate

3. Click Submit.

4. In the **Submit Service** confirmation dialog box, click OK.

5. On the Tasks tab, in the Debug view, select the Allocation Task Example task, then click Show Details to view the task summary, details, result, log, and notes.

6. When the task status is Completed, release the service. On the Services tab, in the service preview pane, select the Allocate Volumes Example service, then click More Actions > Release.

Submit the service

The following steps are completed by a service user with the Submit or Modify role.

1. On the Services tab, select the Allocate Volumes Example service in Release status, then click Create Request.

2. In the **Submit Service Request** window, in the Settings pane, retain the values and enter the following information.

Parameters	Description	Value
Host Settings		
Number of Hosts	The number of hosts for which to allocate volumes	Single

Parameters	Description	Value
Host Name	The host name	TestHostName
WWN Settings	WWN settings	Click the + icon and enter the information.
Task Settings		
Task Name	The name of the task	Allocation Task Example
Description	A brief description of the task	A test task to allocate volumes
Schedule Type	The time when the task runs	Immediate

3. Click Submit.

4. In the **Submit Service** confirmation dialog box, click OK.

5. On the Tasks tab, in the Tasks view, select the Allocation Task Example task, then click Show Details to view the task summary, details, result, log, and notes.

Chapter 4: Managing scheduled tasks

On the Tasks tab, you can monitor tasks, view task details, and perform task management functions, such as suspend, resume, stop, resubmit, or cancel tasks.

About tasks

Tasks perform the functions of the service such as allocate or create volumes, or commence replication. Tasks are generated automatically when a service is submitted. You can monitor the progress of a task as it runs its function through completion.

The dashboard gives a quick way to monitor the tasks. From the dashboard, you can view the tasks that were generated by the services you submitted, or see the tasks that need a response. The Global Monitoring Bar Area found at the bottom of every tab in Ops Center Automator shows a collective summary of the task status.

You can manage tasks from the Tasks tab. Active tasks are categorized by the tags that were assigned to its service and by task status. Tasks that were generated by testing services are found on the Debug tab. Archived tasks are found under the History tab. Various actions are available to manage tasks such as stopping, canceling, or resubmitting tasks.

Each task has task details to provide more in-depth information about the task and its relationship to the service. The details contain information such as the task name, description, type of schedule, start time, and the status of each functional step of the task. This is useful information when monitoring or troubleshooting a task.

A task monitoring area is shown beneath the main tasks that gives details for each step associated with a task. From here, you can see the status of the steps and, if necessary, determine at which step a failure has occurred.

Tasks tab

The Tasks tab includes the views and tools to search for, monitor, and manage the tasks associated with the automated services. The Tasks tab includes the Task, History, and Debug tabs.

From the Header control area at the top, you can enter a search string to look for a specific task. You also have the option of toggling To Do Filter or My Task to show only tasks that have been specified as TO DO or tasks that have been started by the current user. The default for these options is off. The following property information and descriptions are provided for tasks:

- Task Name: The name of the task.

- To Do: Displays tasks marked as "To Do."

- Status: The status of the task.

- Scheduled Time: Scheduled start time for the task.

- Start Time: Actual start time of the task.

- Completion Time: Completion time of the task.

- Schedule Type: Shows a task beginning immediately or on a defined schedule.

- Task ID: Unique ID assigned to the task.

- Description: User-specified description of the task.

- Service: Service that began the task.

- Service Group: Service group to which the service belongs.

- Tags: Tags associated with the task.

- Submitted By: Name of the user who submitted the task.

- Submit Time: Time when the service was submitted.

- Schedule Interval: Interval between recurring tasks.

- Recurrence Time: Time when a recurring task is to start.

- Schedule Start Date: Date and time when the recurrent schedule becomes effective.

- Notes: User-specified text/message.

- Step Start Time: Start time of the long-running step or the time the task started waiting for input.

> 📄 **Note:** A subset of the most common details are shown by default depending on which tab (Tasks, History, or Debug) is currently selected. You can click the Column Settings tab to see all available detail options and to select the ones most useful for your environment.

Tag Search pane

The Tag Search pane enables users to filter tasks that have been tagged.

Tags are organized into groups, such as Applications, Service Groups, and Task Statuses. Each group has one or more tags.

To use tags, click a tag name to see only tasks tagged with that name in the Tasks pane. Click the tag again to expose all tags in that group and all tasks that were filtered out.

In the Service Group and Task Status tag groups, you can only use one tag at a time.

You can click Organize Tags to create your own tag groups and then add tags to the groups. You can also add tags to the provided groups.

The Information area under the task window shows icons for all the steps associated with a task and the current status.

Tasks

The Tasks tab enables users to do the following:

- View tasks and use tags to filter them.

- View tasks associated with released services on the Tasks tab, archived tasks on the History tab, and tasks generated from a service in debug, test, or maintenance status on the Debug tab.

- Click Input Response to enter information required by a task in Waiting for Input status.

- Select a task, then click Show Details to see the details of the task.

- Click More Actions to see other actions available to manage tasks.

- Suspend Schedules: Prevents a scheduled task from starting at the scheduled time.

- Resume Schedules: Allows a suspended task to start at the scheduled time.

- Cancel Schedules: Clears all schedules from the task.

- Stop: Stops a task in the In Progress, Waiting for Input, or Long Running status.

- Forcibly Stop: Stops a task in the In Progress, Waiting for Input, or Long Running, In Progress (with Error), or In Progress (Terminating).

- Retry the Task from the Failed Step: Tries to run the selected task from the point of failure.

- Retry the Task from the Step After the Failed Step: Tries to rerun the selected task after previous try has also failed.

- Create Similar Request: Runs a task that was previously in the Failed, Canceled, or Completed status.

- Archive: Moves one or more tasks to the History view.

- Mark as "To Do": Adds a flag to the To Do column as a reminder that action is needed.

- Unmark "To Do": Removes a flag from the To Do column.

History

The History tab includes tasks that have been archived from the Tasks tab. You can select tasks, then click Remove to permanently delete tasks.

Debug

The Debug tab displays tasks that are tasks generated from a service in debug, test, or maintenance status. This tab is available to users with the Modify (or higher) role. The Debug tab has the same actions as available for the Tasks tab, but also includes an option "Remove" for removing a task from the list.

About task status

After a task is generated from a service, the status changes as it runs. From the Tasks tab, you can view tasks by using tags and monitor the progress of the tasks based on their status.

The following table lists the most often used task categories, status, and the available actions.

Task category	Task status	Description	Available actions
Active	In Progress	Task is running.	Stop the task. Forcibly stop the task.
	Waiting for Input	Task is pending user input.	Stop the task. Forcibly stop the task.
	Long Running	Task is running longer than expected.	Stop the task. Forcibly stop the task.
	In Progress (with Error)	Task detected an error.	Stop the task. Forcibly stop the task.
	In Progress (Terminating)	Task is terminating.	Forcibly stop the task.
Scheduled	Waiting	Task is scheduled and waiting to run at the scheduled time.	Suspend the task. Cancel the task.
	Suspended	Task is scheduled, but will not run at the scheduled time.	Cancel the task. Resume the task.
	Canceled	Task is canceled.	Resubmit the task. Archive the task.
Finished	Completed	Task completed.	Resubmit the task. Archive the task.
	Failed	Tasks failed.	Try the task again from the failed step. Try the task again from the step after the failed step. Resubmit the task. Archive the task.

Other task tags are also available from the Task Status area to narrow down searches based on the status of a task.

Ops Center Automator can send email notifications to users when a task fails to run, or when a task requires input from a user to continue. The Admin role is required to set up email notifications.

Viewing task details

The detailed task information includes a summary, submit information, results from output properties, log, and notes. Detailed task information is available for active and test tasks. Detailed task information is not available for archived tasks.

On the Tasks tab, select a task from the Tasks or Debug view, then click Show Details.

The following controls are available:

- Input Response: Click to respond if a task is in Waiting for Input status.

- Archive: Click to archive the task.

- Mark as "To Do": Click to mark as To Do (red flag) to the task row in the Debug pane. This can be used if the task needs attention from an administrator.

- Unmark "To Do": Click to remove the flag.

- More Actions: Click to access additional options that affect the selected task.

The following table describes the task information that is provided in the **Task Details** window.

Property	Description
Summary tab	
Task ID	The auto-generated 16-digit identification number of a task.
Task Name	The name of the task.
Status	The current status of the task.
Description	The description of the task.
Service	Click the link to open the service preview, where you can view information about the service. Admin and Develop users can also access the Template Preview and the template flow in the Service Builder Edit view in Automator Service Builder.
Submitted By	Name of the user who submitted the service.
Schedule Type	The schedule type of a task, for example, Immediate indicates that the task is scheduled for immediate execution. Scheduled means that the task is scheduled for future execution.
Details	Details pertaining to the task.
Submit Time	Time when the service was submitted.
Start Time	The start time of the task.
Completion Time	Completion time of the task.
Submitted Data tab	Displays the parameters set for the task when submitted and can vary depending on the service.
Results tab	Displays the results of any output properties that were set.
Flow tab	Shows the flow of steps
Log tab	The log information might be useful in debugging. You can copy a section or save the entire log by clicking Download and then specifying the location of the log file.
Notes tab	An HTML text editor is provided to enter additional information regarding the task. For example, a user might need to add information that can be viewed by an administrator when assistance is needed with a task.

Responding to tasks

Some tasks might require input from a user to continue running (for example, a manager's approval) and might send an email notification indicating that a response is required. A task that is pending a response is in the Waiting for Input status.

Procedure

1. On the **Tasks** tab, select the task that needs a response, then click **Input Response**.
2. In the **Input Response** dialog box, input the response.
3. Click **OK**.

Suspending scheduled tasks

You can temporarily suspend tasks that are scheduled to run regularly or at specific times, provided that the task has not yet begun processing. Suspending tasks is useful during blackout periods for system maintenance. You can suspend tasks in the Waiting status.

Procedure

1. On the **Tasks** tab, select the task that you want to suspend.
2. Click **More Actions** > **Suspend Schedules**.
3. In the **Suspend** dialog box, click **OK**.

   The task status changes to Suspended.

Resuming scheduled tasks

You can resume a task in the Suspended status. You can resume a suspended task to run based on the original schedule.

If you resume a schedule after the scheduled start time, the task is run immediately. If the original schedule of the task is in the past, then the task must first be canceled, then resubmitted.

Procedure

1. On the **Tasks** tab, select the task that you want to resume.
2. Click **More Actions** > **Resume Schedules**.
3. In the **Resume Schedules** dialog box, click **OK**.
   If the scheduled start time is in the future, the status changes to Waiting.

Canceling scheduled tasks

You can cancel scheduled tasks that are in the Waiting status and the Suspended status. A canceled task cannot be resumed.

Chapter 4: Managing scheduled tasks

Procedure

1. On the **Tasks** tab, select the task that you want to cancel.

2. Click **More Actions** > **Cancel Schedules**.

3. In the **Cancel Schedules** window, click **OK**.
   The task status changes to Canceled.

   To resume a canceled task, you must resubmit the task.

Stopping tasks

To stop a service that is already running, you must stop the tasks generated from the service.

You can stop tasks that are in the In Progress status. A task that is stopped cannot be resumed. To restart a stopped task, you must resubmit the service that is associated with the task.

Procedure

1. On the **Tasks** tab, select the tasks that you want to stop.

2. Click **More Actions** > **Stop**.

3. In the **Stop Task** window, click **OK**.
   The tasks stops and the status changes to **In Progress (Terminating)**.

4. (Optional) You can verify the point at which the task was stopped by selecting the task and viewing the task details.

Forcibly stopping tasks

To forcibly stop a service that has been executed, you must stop the tasks generated from the service.

You can forcibly stop tasks that are in the In Progress, Long Running, Waiting for Input, In Progress (with Error), and In Progress (Terminating) status. You enable the Forcibly Stop action in the Available Actions section of the **Create/Edit Service** window. A task that is stopped cannot be resumed. To restart the execution of a stopped task, you must resubmit the service that is associated with the task.

Procedure

1. On the **Tasks** tab, select the tasks that you want to stop.

2. Click **More Actions** > **Forcibly Stop**.

3. In the **Forcibly Stop Task** window, click **OK**.
   The tasks stops and the status changes to **In Progress (Terminating)**.

4. (Optional) You can verify the point at which the task was stopped by selecting the task and viewing the task details.

Trying the task again from the failed step

You can try tasks again from the step that failed for tasks that are in the Failed status. You enable actions to try again in the Available Actions section of the **Create/Edit Service** window.

Procedure

1. On the **Tasks** tab, select the task that you want to try again from the step that failed.
2. Click **More Actions** > **Retry the Task From the Failed Step** .
3. In the **Retry the Task From the Failed Step** window, click **OK**.
   The task runs from the failed step and the status tells you whether the task failed or succeeded.
4. If the task fails again, check the cause of the failure, take the required action, and then retry the task.

Retrying a task from the step after the failed step

When a task fails, you can debug and then try a task again from the step after a step that is in the Failed status. Retry actions are enabled in the Available Actions section of the **Create/Edit Service** window. When you select a single task to try again, ensure that the task is in Failed status.

Procedure

1. On the **Tasks** tab, select the task that you want to try again from the step after the failed step.
2. Click **More Actions** > **Retry the Task From the Step After the Failed Step**.
3. In the **Retry the Task From the Step After the Failed Step** window, click **OK**.
   The task runs from the step after the failed step and the status tells you whether the task failed or succeeded.
4. If the task fails again, check the cause of the failure, take the required action, and then retry the task.

Creating a similar task request

You can resubmit tasks that are in the Completed, Failed, or Canceled status.

If a task failed because of a problem that is now resolved, or if the task was canceled, you can create a similar request without re-creating the settings. The new task has a new Task ID.

Procedure

1. On the **Tasks** tab, select the task you must resubmit. You can also begin this procedure from the **Task Details** window.
2. Click **More Actions** > **Create Similar Request**.

3. In the **Submit Similar Request** window, modify the settings, if required.

> 📄 **Note:** In Task Settings, a specified schedule is interpreted as a server time. Be aware if the server is in a different time zone from the client.

4. Click **Submit** to submit the service, or **Submit & View Task** to view the tasks.

Archiving tasks

Ops Center Automator automatically archives tasks every 7 days, starting with the oldest run task. You can also manually archive tasks that are no longer active. The Admin, Develop, or Modify role is required to archive tasks.

You can archive a task in Completed, Failed, or Canceled status from the Tasks or Debug tabs. When you archive a task, it appears in the History tab. The task details are not visible for archived tasks, but the submission date and submit user information is retained. An archived task cannot return to the Task or Debug tabs.

> 📄 **Note:** No new tasks are created when the total number of tasks exceeds 5,000.

Procedure

1. On the **Tasks** tab, from the **Task** or **Debug** tabs, select the tasks that you must archive.
2. Click **More Actions** > **Archive**.
3. In the **Archive** dialog box, click **OK**.
   The task is moved to the **History** tab.

Deleting tasks from history

When you no longer must retain tasks for reference purposes, or if tasks created while testing a service template are no longer needed, you can delete tasks. You must archive a task before deleting it.

You can delete archived tasks from the History view. Archived tasks are also automatically deleted when the number of tasks exceeds 30,000 starting from the oldest task. A deleted task cannot be recovered.

Procedure

1. On the **History** tab, select the tasks that you must delete.
2. Click **Remove**.
3. In the **Remove** dialog box, click **OK**.

Chapter 5: Working with service templates

A service template is the starting point for creating a new service. Ops Center Automator has preconfigured service templates to assist in creating automation services. Configure these templates to meet your service needs.

Viewing service template information

The Admin, Develop, or Modify role is required to work with templates. The Service Templates tab displays only templates that have been released.

The Service Templates tab enables users to do the following:

- View and filter service templates with tags.
- Create custom tags or tag groups using Organize Tags.
- Using the Card View or Table View, see service template details, status, and actions.
- Create and edit templates.
- Manage service templates by toggling between views of all versions or the latest version.

Procedure

1. Click the **Service Templates** tab to view all released templates.
2. Choose a view:

   - Click **Card View** to open a graphical representation of templates. In this view, you can click a template to open the template preview, which includes detailed information and access to controls. **Card View** enables you to visualize your templates as discrete objects, and allows you to see the description in each template.
   - Click **Table View** to open a table with a list of templates. This view includes some fields that are not available in the **Card View**. You can add and delete fields from this view with the **Column Settings**.

Service Templates tab

Services are based on service templates. The Service Templates tab includes the views and tools to create, copy, import, organize, and manage automated service templates.

Tag Search pane

The Tag Search pane enables users to filter service templates that have been tagged.

Tags are organized into groups, such as Applications, Hypervisors, and Storage Operations. Each group has one or more tags.

To use tags, click a tag name to see only service templates tagged with that name in the service templates pane. Click the tag again to expose all tags in that group and all service templates that were filtered out. You can only use one Version tag at a time.

You can click Organize Tags to create your own tag groups and then add tags to the groups. You can also add tags to the provided groups.

Controls

The following actions are available in the Service Templates tab to manage service templates.

Control	Use
Show Latest Version Show All Versions	Choose to show only the latest versions or all versions of templates.
Card View	You can click a template to open the template preview, which includes detailed information and access to controls. Card View enables you to visualize your templates as discrete objects, and allows you to see the description in each template.
Table View	Table View lets you see more information at the same time, and makes it easy to compare information in your list. You can choose which columns to display and reset the defaults at any time. You can also rearrange columns in the table.
Import	Import a template to Ops Center Automator. This can be used to import a template from another environment.
Create	Start Service Builder to create a new service template. For more information, see the *Hitachi Ops Center Automator Service Builder User Guide.*
Create Service	Create a new service from the specified service template.
Copy and Edit	Start Service Builder to create a new service template based on the specified template. For more information, see the *Hitachi Ops Center Automator Service Builder User Guide.*
View Flow	Start Service Builder to view the flow of the template in the Service Builder Edit view. For more information, see the *Hitachi Ops Center Automator Service Builder User Guide.*
Export	Export a file and save it outside Ops Center Automator.

Chapter 5: Working with service templates

Control	Use
Delete	Delete an existing template.
Apply Latest Version	Apply the latest version of the template to the associated service.
Update Service Template	If this control is available, the template is using an outdated version of another template or components. Use this control to update the template using Service Builder. For more information, see the *Hitachi Ops Center Automator Service Builder User Guide.*

Properties

The following properties are available in the Service Templates tab for each template:

- Name: Name entered by the vendor or user.

- Template icon: Icons represent different types of templates.

- Vendor ID: Vendor identifier.

- Version: Version number of the template.

- Description: Description of the template.

- Service Template Key Name: Identifier name of the template.

- Vendor: Template vendor.

- Tags: Tags applied to the template.

- Registered (in Table View): Date the template was created.

- Released (in Card View): Date the template was released.

- Updated (Last Update in Card View): Date and time the template was last updated.

- Latest Version (in Table View): Whether the template is the latest version. In Card View, an outdated template has an OUTDATED badge.

- Used Services: Number of services using the template. Click to open the Table View of the Services tab with services using the template.

- Used Service Templates (in Table View): Number of templates using the template. Click to open the Templates using the template dialog box where you can select a template, then click View Flow to open the flow window for the template.

- Services Outdated: Whether any services are using an outdated version of the template. In Card View, the template has a NEED VUP badge.

- Component Outdated (in Table View): Template includes outdated components.

Graphic properties in the Card View

The Card View includes the following graphic signals.

Graphic	Description
NEED VUP	A service is using an outdated template. You can use Apply Latest Version to apply the latest template.
OUTDATED	The template is using an outdated version of another template or components. You can use Update Template to update the template version.
NEW	The template is fewer than 14 days old.
[blue dot]	The template is being used by services.

Importing a released service template

Admin and Develop users can import service templates to Ops Center Automator.

You must export and import templates if you are using two different Ops Center Automator environments. Service templates that are built and released in the test environment must be exported and then imported to the production environment.

All templates that are provided with Ops Center Automator are ready to use in the Services Templates tab. In addition, all templates that are released from Service Builder appear in the Service Templates tab.

Procedure

1. In the **Dashboard Guidance Menu** select **Import Service Template** or from the **Service Templates** tab click **Import** to open the **Import Service Template** window. You can also import a service template from the **Card View** by clicking **Import**.

2. Browse to the template file with the file extension `.st`, or the template set `.zip` file, then click **OK**.
   The template is added to the Service Templates tab with a "NEW" badge in the **Card View**. You can use it to create services.

   If the selected file does not satisfy the following conditions, an error dialog box is visible and the import is canceled:

   - The file name must be 127 characters or less in length.

   - The file name must not contain multibyte characters.

   - The service template set (.zip format) to be imported must contain templates (with the extension *.st).

   > 📄 **Note:** The files in the service template set are not verified. If the service template contains a service plug-in, the import result of the service plug-in is not visible.

Creating a service from the Service Templates tab

Admin, Develop, and Modify users can create services from either predefined service templates or custom service templates, or modify information in an existing service to satisfy specific needs.

Procedure

1. On the **Service Templates** tab, click the service template you want to use to open the service template preview.
2. In the service template preview pane, click **Create Service** to open the **Create Service** window.
3. In the **Create Service** window, in the **Settings** pane, enter the following information, which is summarized in the **General Settings** area of the **Navigation** pane:

   - Name of the service.
   - Description of the service.
   - **State**: Select **Test** for new services to allow only users in the Admin, Develop, or Modify role to submit the service.
   - **Tags**: Specify one or more tags for the service (to a maximum of 256 characters). The tags you select for the service also apply to the tasks generated by the service.
   - **Service Group**: Select the service group of users who can access the service.
   - **Template**: The template on which the service is based. Click the template name to open the **Template Preview**, which includes detailed information about the template.

     In the **Template Preview**, you can click **View Flow** to open the flow window for the template.

4. Expand **Advanced Options** and select the options you want:

   - Scheduling Options:

     Immediate: Run the service when it is submitted.

     Scheduled: Run the service one time.

     Recurrence: Run the service multiple times.

5. In the **Navigation** pane, click each settings group and configure the required and optional parameters. You can also navigate through the settings groups using the links at the bottom of the Settings pane.
6. After configuring the settings, do one of the following:

   - Click **Preview** to open a view of the service as it appears to a user. Then click **Save and Close** to save the service.
   - Click **Cancel** to close the window without saving any changes.

Next steps

Test the service if you created it in Test state.

Exporting a service template

Admin and Develop users can export templates from Ops Center Automator.

You might need to export templates in the case where there are two separate Ops Center Automator environments. Templates from one environment can be exported and then imported to the other environment.

Procedure

1. On the **Service Templates** tab, select a template and in the **More Actions** menu, click **Export**.
2. Click **OK**.
3. Choose a location and enter a name for the file.
   The service template is exported to the location you specified.

Deleting a service template

Admin and Develop users can delete a service template. You can only delete templates that are not used by services or other templates.

Procedure

1. On the **Service Templates** tab, select a service template.
2. Click **More Actions** > **Delete**.
3. Confirm your choice.
   The template is no longer in the **Service Templates** tab and you cannot create a service from the template.

Updating a service template version

Admin, Develop, and Modify users can update the version of a template.

If a template has changed, you might need to update the version in the Service Templates tab.

Templates that are outdated have an "OUTDATED" label in the Card View.
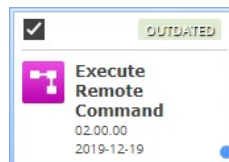
In the Templates tab, click Card View, then click the template you must update to open the **Copy Service Template** dialog box in Service Builder.

For more information, see the *Hitachi Ops Center Automator Service Builder User Guide.*

About provisioning service templates

Ops Center Automator provisioning templates automate the provisioning of newly added volumes and existing volumes. The provisioning templates provide the intelligence based on industry best practices to target resources and select volumes to improve storage load balancing. Pools are selected based on the storage profiles and infrastructure groups assigned to the service.

The provisioning templates are designed to provide the following features:

- Automate the provisioning tasks across multiple storage systems to reduce the amount of time to configure each provisioning request manually.

- Run provisioning services immediately or at a scheduled date and time.

- Assign provisioning services to specific users and service groups so users can run services independently of an administrator.

- Customization to meet specific functional needs and storage needs.

Ops Center Automator has the following provisioning service templates that creates volumes and allocates them to the specified hosts. You can locate the templates and services that are created by these templates by using the Add New Storage tag and the tag of the host type.

Allocate Volumes with Configuration Manager
> Allocates sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use with servers running a generic application.

Allocate Fabric Aware Volumes with Configuration Manager
> Allocates sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use with servers running a generic application. This service can optionally configure zoning of the allocated paths and you can view new and modified zoning information such as the following:
>
> - General zone information
>
> - Zone alias information
>
> - Zone configuration information

Allocate Volumes with Smart Provisioning
> Intelligently allocates sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use with servers running a generic application. This service can optionally configure zoning of the allocated paths and you can view new and modified zoning information such as the following:
>
> - General zone information
>
> - Zone alias information
>
> - Zone configuration information

Allocate Volumes with 2DC Remote Replication
> Intelligently allocates sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use with servers running a generic application and creates a new topology for remote replication. This service can

optionally configure zoning of the allocated paths and you can view new and modified zoning information such as the following:

- General zone information

- Zone alias information

- Zone configuration information

Allocate Volumes with Remote Replication (Global-Active Device)

Allocates sets of volumes with in-system replication (global-active device) from the associated infrastructure group through Ops Center API Configuration Manager for use with servers running a generic application. This service can optionally configure zoning of the allocated paths and you can view new and modified zoning information such as the following:

- General zone information

- Zone alias information

- Zone configuration information

About Oracle Database provisioning and expansion template

The predefined service template to allocate volumes and add to an Oracle database automates the process to provision and expand data storage on the disk group of Oracle Automatic Storage Management (ASM). The template provides the ability to search for and create new volumes across multiple storage systems, then allocate and configure the volumes to the ASM disk group. The template is customized to operate based on the type of environment.

The Oracle Database provisioning and expansion template is designed to provide the following features:

- Automate the integration tasks to reduce the amount of time to configure each request manually.

- Expand the size of the Oracle database storage as required by its users or services within the associated infrastructure group.

- Run services immediately, or at a scheduled date and time.

- Assign services to specific users and service groups so users can run services independently of an administrator.

- Customize settings to meet specific functioanl needs and storage needs.

An Oracle Database provisioning and expansion template conducts a preliminary verification that determines whether the Single Server configuration exists or the Oracle RAC configuration exists. Then the template verifies and acquires the specified Oracle ASM information. The path to all the specified database servers is verified to ensure availability.

Next, the provisioning tasks are performed to search for and allocate volumes within a storage device. Search for and create new volumes on a storage device according to specified volume needs (for example, capacity or number) and allocate the new volumes to the Oracle database.

Services that are created by this template are tagged under Add New Storage and Oracle Database.

Before setting up the Oracle integration services, make sure the Oracle RAC configuration settings exist on the Oracle database server.

📄 **Note:** Before using these template, you must configure agentless remote connections.

Smart Allocation for Oracle Databases
> An intelligent provisioning service that allocates volumes for a specified Oracle server of Linux OS platform from the associated infrastructure group and adds them to a specified Oracle disk group, and this service can optionally configure zoning of the allocated paths and you can modified zoning information such as the following:
>
> ▪ General zone information
>
> ▪ Zone alias information
>
> ▪ Zone configuration information

About allocating like volumes service template

The Allocate Like Volumes with Configuration Manager service allocates volumes from the same storage system and the same resource group as the source volume. When searching for similar volumes, pools with the same physical properties such as drive type, drive speed, RAID level, chip type as the existing volume are considered.

Ops Center Automator has provisioning template that search for and create virtual volumes with similar physical characteristics as existing volumes. Existing volumes can be configured as a global-active device pair. You can select such pairs as existing volumes for the allocate like volumes service. The result of this service will be the same if you select primary or secondary volume. However, if the global-active device pair is selected as existing volumes, the pool that the existing volumes belongs to is selected by default. In this case, the copy group, the instance ID, and the UDP port will also be the same as the existing volume.

The new volumes are allocated using the same host and path as the existing volumes. If you have allocated at least one volume to a host, you can allocate new volumes for the same host by using the attributes of an existing volume as the default for new volumes. Use this template to create services when it is important to maintain the performance levels of the existing volumes.

When the target volumes are found, they are created and allocated using the same path of the source volume provided the LUN security settings throughout the path. If volumes are not found with the attributes of the existing volumes, then the template will suggest similar volumes located within the same resource group as the source volumes.

Ops Center Automator has the following service template to allocate like volumes:

Allocate Like Volumes with Configuration Manager

An intelligent allocation service that allocates new volumes to the host to which a specified source volume is allocated with same LUN path.

About the expand volume capacity service template

The expand volume capacity service template expands the volume capacity of a user-specified storage device.

Expand Volume Capacity

The Expand Volume Capacity service expands the capacity of a specified volume.

This service only supports the expansion of the capacity of a single volume. It does not support the expansion of the capacity of multiple volumes.

About file share service templates

The file share service template enables you to provide services that include adding file sharing capabilities and creating an Enterprise Virtual Server (EVS), a file system, a CIFS share, and an NFS export for Hitachi.

Configure CIFS/NFS for Hitachi

You can create an EVS, a file system, and a share (CIFS share, NFS export, or both) for Hitachi. It can create a new EVS with an individual security context, or use an existing EVS with either a global or an individual security context.

About data mobility service templates

Ops Center Automator data mobility service templates provide data mobility services that include provisioning and reserving LDEV IDs from a Virtual Storage Machine (VSM), creating remote copy pairs for migration, implementing online data migration, and reporting the virtualized configuration across multiple sites.

Ops Center Automator has the following data mobility service templates:

- Allocate Volumes from Virtual Storage Machine

  This service template creates and allocates new volumes from a VSM while reserving the same LDEV IDs on other storage systems.

- Export Virtual Storage Machine Configuration Across Sites

  This service template generates a report showing the VSM configuration details for multiple sites. The report can be edited and then exported to a specified file in .csv file format.

- Create High Availability Pair for Migration

  This service template creates a high availability pair from a VSM between two storage systems.

- Migrate Data Using High Availability Pair

  This service template gives online data migration between two storage systems.

> 📄 **Note:** The performance of Data Mobility services are affected by the storage access mode setting of Configuration Manager. You should set "fcConnectionMode" to obtain higher performance. For details, see "Appendix A. Changing the communication mode of the REST API server" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Data mobility service prerequisites

To use the Data Mobility services, an administrator must complete the following prerequisites:

- Ops Center API Configuration Manager

  Install the Ops Center API Configuration Manager on each site and register the storage systems by using the Add Web Service Connections option on the Administration tab.

- VSM recognition across all storage systems

  Assign a common resource group name to all VSMs used in the data mobility services and then modify the associated shared service property.

  To ensure VSMs are recognized across storage systems for Data Mobility services, complete the following steps:

  1. Specify the same resource group name for all VSMs across sites. When creating a resource group name, you must adhere to the following rules:

     Storage System Model(*Virtual Serial Number*)

     For example:

     VSP G800(400000)

  2. Using the Set Service Shared Property option, update the Virtual Storage Machine Name shared property and enter the common VSM resource group names for that value.

About ESX cluster service templates

The Ops Center Automator ESX cluster service templates enable you to allocate volumes to VMware ESX cluster hosts, configure zoning, and create a VMware Datastore under a Datastore cluster. You can also remove a host from a vCenter cluster.

Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster
　Enables you to allocate volumes to VMware ESX cluster hosts, configure zoning, and create a VMware datastore under a datastore cluster.

Add Host to Cluster in vCenter
　Enables you to allocate existing volumes used as datastores by ESX cluster hosts to a new ESX host.

Remove Host from Cluster in vCenter
　Enables you to unmount VMFS datastores, unallocate volumes from the specified ESX host, and delete zoning.

About ESXi host service templates

The Ops Center Automator ESXi Host service template enables you to allocate volumes to the VMware vSphere server (ESXi host), configure zoning, and create VMware datastores under a datastore cluster.

Allocate Volumes, Fabric, and Datastore for ESXi Host
Enables you to allocate volumes to the ESXi host, configure zoning, and create VMware datastores under a datastore cluster.

About ServiceNow ticketing service templates

Ops Center Automator ServiceNow ticketing service template components enable you to combine different ticketing functionality to create different types of services for processing ServiceNow workflows that include running an Ops Center Automator automation service.

The following Ops Center Automator ServiceNow ticketing service templates are part of the software and are preconfigured:

- Call ServiceNow Table API

  This service template makes a call to the ServiceNow Table API.

- Create ServiceNow Incident Ticket

  This service template creates a new ServiceNow incident ticket.

- Update ServiceNow Incident Ticket

  This service template updates a ServiceNow incident ticket.

- Retrieve ServiceNow Incident Tickets

  This service template retrieves a single ServiceNow incident ticket or a group of incident tickets.

📄 **Note:** For information about the ServiceNow Workflow Integration package that has an XML file containing the update set required to integrate an Ops Center Automator service into a ServiceNow workflow, see <u>ServiceNow workflow integration (on page 123)</u>.

About global-active device

Global-active device (GAD) enables you to create and maintain synchronous, remote copies of data volumes. A virtual storage machine is configured in the primary and secondary storage systems using the actual information of the primary storage system, and the global-active device primary and secondary volumes are assigned the same virtual LDEV number in the virtual storage machine. This enables the host to see the pair volumes as a single volume on a single storage system, and both volumes receive the same data from the host. A quorum disk, which can be located in a third and external storage system or in an iSCSI-attached host server, is accessed by both storage systems and is used to monitor the pair volumes for any communication failure.

Ops Center Automator includes a Global-Active Device Setup service template that enables you to automation a portion of the GAD setup process. In addition, a number of other service templates support global-active device (GAD) configurations. GAD enables read/write copies of the same data in two places at the same time for continuous mirroring. Ops Center Automator supports three GAD configurations:

- Single-server configuration

- Server-cluster configuration

- Cross-path configuration

Cross-path suppression

If the distance between the primary site and the secondary site is long, I/O using the cross-path causes overhead. Suppress I/O of the cross-path by setting ALUA (Asymmetric Logical Unit Access) or HMO (Host Mode Option).

Additional cross-path suppression problems

- If the Alternate path software supports ALUA (Asymmetric Logical Unit Access), suppress the cross-path by setting ALUA to the preferred path.

- If the Alternate path software does not support ALUA, you cannot suppress cross-path.

- If you are using Dynamic Link Manager (HDLM), suppress the cross-path by setting a nonpreferred path to the HMO.

About the Global-Active Device Setup service template

The Global-Active Device Setup service template enables you to automate portions of the GAD setup process. Using this template, you can set up some of the basic requirements the first time you use the template and then skip those steps whenever you use template again. You can then use the GAD configuration for any purpose and a prerequisite for using the Online Migration service template.

> 📄 **Note:** For additional information on GAD, see the *Global-Active Device User Guide*.

Setting up GAD consists of several steps. However, many of the steps are now automated when you use the Ops Center Automator Global-Active Device Setup service template. For step-by-step instructions for setting up GAD before using the Online Migration service template or for any other purpose, go to .

About IO control service templates

Ops Center Automator IO control service templates enable you to control IO performance.

The following Ops Center Automator IO control service templates are provided with the software and are preconfigured:

- Get IO Control

  This service template gets IO control setting information.

- Set IO Control

  This service template sets the IO control of a WWN or iSCSI name and the volume that has LUN paths. If the IO control is already set for the specified resources, then the setting is overwritten.

- Remove IO Control

  This service template removes the IO control setting from the WWN or iSCSI name and volume.

About online migration service templates

You can now use Hitachi Ops Center Automator for Nondisruptive Data Migration (NDM).

The following online migration service templates are available:

Online Migration
Enables you to migrate a host in an online state through Ops Center Protector, access the switch management server to obtain existing fabric configuration and zoning information when allocating new volumes to the host, and then update the zoning information.

Create Online Migration Pair
Enables you to run a service from the creation of zones to the creation of copy pairs for online host migration through Configuration Manager. After this service is complete, you must submit the Migrate Data for Online Migration Pair service to complete the migration.

Migrate Data for Online Migration Pair
Enables you to run a service from the swap of copy pairs to the deletion of source volumes for online host migration through Configuration Manager. Before submitting this service, the Create Online Migration Pair service must be completed.

Clean up Online Migration Pair

Enables you to clean up the resources created by the Create Online Migration Pair task.

Create Online Migration Pairs for Multiple Hosts

Enables you to submit a Create Online Migration Pair service task for each specified host. After the auto-submitted tasks are complete, you must submit the Migrate Data for Online Migration Pair service for each task to complete the migration.

The Ops Center Automator online migration services use Global-active device (GAD) (as part of, or to complete) the migration process.

- For step-by-step instructions for setting up GAD before using the Online Migration service template or for any other purpose, go to .

- If you already set up GAD, and want to use the online migration templates, go to or , and .

> 📄 **Note:** You cannot use the Create Online Migration Pair service template's Capacity Saving function with the following features:
>
> - Page reservation for virtual volumes
> - Active flash
> - Direct Data Mapping (DDM) attribute
> - ShadowImage quick restore

Chapter 6: Administering Ops Center Automator

This module describes Ops Center Automator administrative tasks.

Viewing the Administration tab

The Administration tab includes the views and tools to set up and configure Ops Center Automator. It includes the necessary connection settings to other hosts and third-party products, and the tools to set up users, groups, permissions, and relationships, as follows:

- Create agentless remote connections to register hosts and, if necessary, set up the Web Services Connections.

- Manage properties shared among the services under Shared Properties Settings.

- View and configure groups:

    - Based on roles (Submit, Modify, Develop, and Admin) and permissions (user management).

    - By service groups.

    - By infrastructure groups.

- View and manage users.

- Set up external resource providers that can supply data for evaluating and executing input and output properties.

Set up workflow with Common Services authentication

The first time you log on to Ops Center Automator through Hitachi Ops Center, you must do the following setup steps.

Procedure

1. Log on to Common Services.

    Use the built-in system account to log on to Common Services for the first time and change the system account password.

2. Register a license.

    After logging on to Common Services, you must register a valid license.

3. Set up users and user groups.

   You must have Ops Center Security Administrator permissions to add and assign users to user groups in Ops Center. See the *Hitachi Ops Center Online Help* for more information.

4. Configure Web Service Connections.

   Register and manage connection information to Configuration Manager instances, vCenter connections, Brocade Network Advisor connections, and so on.

5. Configure remote connections.

   Register other hosts using agentless remote connections.

6. Set up infrastructure groups.

   Create infrastructure groups and assign resource and service groups.

7. Set up service groups.

Setup workflow with local user authentication

After installing Ops Center Automator, you must perform some initial setup tasks to configure the system.

To set up the product, make sure you have the Admin role in Ops Center Automator.

The following steps summarize the initial setup workflow:

1. Register a license.

   Before you can log on to Ops Center Automator, you must register a valid license.

2. Log on to Ops Center Automator.

   Use the built-in system account to log on to Ops Center Automator for the first time. Change the system account password.

3. Configure Web Service Connections.

   Register and manage connection information to vCenter connections, Brocade Network Advisor connections, and so on.

4. Configure remote connections.

   Register other hosts using agentless remote connections.

5. Set up users and user groups.

   Ops Center Automator users are automatically registered through the Common Services. The Admin role in Hitachi Ops Center with the user management permission is required to add and assign users to user groups in Ops Center Automator. A user must belong to at least one user group.

6. Set up infrastructure groups.

   Create infrastructure groups and assign resource and service groups.

7. Set up service groups.

Managing groups in Ops Center Automator

Ops Center Automator has several types of groups to organize and manage access to services and resources. You must build relationships between user groups, service groups, and infrastructure groups to run the automated services.

- Resource groups: Resources can be grouped by system resource types that include storage system, parity groups, pools, LDEV IDs, and storage ports.

- User groups: A user group is a set of users in Ops Center Automator who share the same level of access.

- Service groups: A service group is one or more services in Ops Center Automator. A service group can be assigned to a user group to control access to services in the service group.

- Infrastructure groups: An infrastructure group is a set of resource groups, web service connections, and remote connections in Ops Center Automator. Infrastructure groups are assigned to service groups to manage the resources available to the service.

About user groups

A user group is a set of users in Ops Center Automator who share the same level of access. User groups are used in combination with service groups to manage a user's level of access. A user must belong to at least one user group and can belong to multiple groups. You can use the predefined user groups, or create a new user group. User groups can be created by an administrator in the Admin role with the user management privilege.

The built-in user groups that are automatically created when Ops Center Automator is installed cannot be modified. Although other built-in user groups that correspond to the roles of the other Common Component products are created with them, a user can use only the following user groups.

These predefined user groups are only provided with Automator. To use them for Hitachi Ops Center, you must create them. See the *Hitachi Ops Center Online Help* for more information.

- AdminGroup: has administrative privileges over all of Ops Center Automator.

- ModifyGroup: intended for expert users to modify existing services in service groups where permission is assigned.

- SubmitGroup: intended for service users who perform the submit service procedure.

- DevelopGroup: intended for users who create or modify templates.

Creating a user group

The Admin role with the user management privilege is required to create user groups.

This topic describes how to create a user group using Automator. To create them for Ops Center, see the *Hitachi Ops Center Online Help*.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **User Groups**.

Chapter 6: Administering Ops Center Automator

2. Click **Create** and enter the name and description of the user group.

3. Click **OK**.

About service groups

Service groups manage the access and permissions to a service and the storage needs of the service. A user gains access to a service through a service group. Infrastructure groups are assigned to service groups to manage the resources available to the service. A service group must contain at least one user group and one infrastructure group.

Three types of service groups are available:

- All Service Group: A group that is automatically created during installation. Pre-defined user groups (AdminGroup, DevelopGroup, ModifyGroup, and SubmitGroup) are automatically registered in the All Service Group. This group cannot be associated with a specific service, agentless connection, or infrastructure group. The All Service Group cannot be modified or deleted. User groups associated with All Service Group also have privileges in other service groups. These user groups are indicated with an asterisk (*) after the user group name.

- Default Service Group: A group that is automatically created during installation. All built-in services belong to this group and cannot be deleted.

- General Service Group: Custom service groups that can be created by users and associated with services. Only users with the Admin role can create service groups. The Modify role (or higher) is required to assign a service to a service group.

Creating a service group

Admin users can create service groups.

Procedure

1. On the **Administration** tab, navigate to **Resources and Permissions** > **Service Groups**.

2. Click **Create** and enter the name and description of the service group.

3. Click **OK**.

Next steps

Edit the service group to associate it with services, infrastructure groups, and user groups.

Viewing service groups

The service group view lists all the service groups and their associated services, infrastructure and user groups. The service groups can be viewed from the Administration tab under Resources and Permissions > Service Groups. From the views, you can establish the relationship of a service group to services, infrastructure groups, and user groups.

For each service group, the view displays the following information:

- No. of Services: The number of services in the service group.
- No. of Infrastructure Groups: The number of associated infrastructure groups.
- No. of User Groups: The number of user groups with access to the service group.

Click a service group to view the details under each tab:

- Services tab: The associated services.
- Permissions tab: The associated user groups and their roles.

  Click Assign to assign or remove user groups.

  Click a user group name to open the User Groups page.

Assigning services to a service group

You can give access to a service by assigning a service to a service group. Admin users can assign a service to a service group.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **Service Groups**.
2. Select a service group to display the **Services**, **Resources**, and **Permissions** tabs. Use **Create** or **Copy** to add a new service.
3. In the **Create Service** window, click **Save and Close** and update the Service Groups pane to view the service.

Assigning a user group to a service group

Manage the access to a service by assigning user groups to a service group. The UserMgmt permission is required.

You must have Ops Center Security Administrator permissions if you assign a user group to service group through Hitachi Ops Center.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **Service Groups**.
2. Select a service group and on the **Permissions** tab, click **Assign**.
3. From the **Assign User Groups** view, select a user group from the available user groups, then click **Add.** Select a **Role** from the available options.
   The selected user group is moved to the assigned user groups.
4. Click **OK**.

About infrastructure groups

Infrastructure groups manage the relationship between service groups and resources. Infrastructure groups are assigned to service groups to manage the resources available to the service. A service group must contain at least one infrastructure group.

Creating an infrastructure group

Admin users can create infrastructure groups.

Before creating an infrastructure group, you must be aware of the access boundaries for storage resources. Resources within an infrastructure group will be accessible by associated service groups.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **Infrastructure Groups**.
2. Click **Create** and enter the name and description of the infrastructure group.
3. Click **OK**.

Next steps

Assign the Web Service Connections, Agentless Remote Connections, and Service Groups.

Viewing infrastructure groups

The infrastructure group view lists existing infrastructure groups and enables you to create new infrastructure groups that you can assign to Web Service Connections, Agentless Remote Connections, and Service Groups. The infrastructure groups can be viewed from the Administration tab under Resources and Permissions > Infrastructure Groups. From the views, you can establish the relationship to service groups.

Infrastructure Groups

For each infrastructure group, the view displays the following information:

- Name: Name of the infrastructure group.

- Description: Description of the infrastructure group.

- No. of Web Service Connections: The number of associated web service connections.

- No. of Agentless Remote Connections: The number of associated agentless remote connections.

- No. of Service Groups: The number of associated service groups.

Click an infrastructure group to view the details under each tab:

- Web Service Connections tab: a list of associated web service connections for Ops Center API Configuration Manager. The following web service connection properties are provided.

  - Name: Name of the web service connection.

  - No. of Connections: The number of the web service connections.

  By clicking ConfigurationManager, you can get specific details, and if necessary, assign an infrastructure group:

  - Category: ConfigurationManager connections.

  - Name: Name of the connection.

  - IP Address/Host Name: IP address or Host Name of for the connection.

  - Port: Port associated with the connection.

  - Protocol: Protocol used by the connection.

  - User ID: User ID for the connecting user.

  - Connection Status: Indicates whether the connection is active or not.

  - Connected Time: Shows when the current connection became active.

  - Proxy: Shows any proxy associated with the connection.

- Agentless Remote Connections tab: a list of associated agentless remote connections. The following agentless remote connection properties are provided.

  - Method: Method to specify the connection destination.

  - IP Address/Host Name: IP range or host name of the connection destination.

  - Protocol: Protocol used by the connection.

  - User ID: User ID for the connection destination.

  - Connection Status: Status of the connection.

  - Connected Time: Time of last connection try.

- Services Group tab: a list of associated services.

  The following service group properties are provided:

  - Name: Service group display name.

  - Description: Description for the service group.

Assigning resources to an infrastructure group

Select the resources associated with the infrastructure group.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **Infrastructure Groups**.

2. From the **Infrastructure Groups** view, click the infrastructure group for which the resource is to be assigned. If necessary, you can create a new infrastructure group or edit an existing one.

3. From the **Web Service Connection**, **Agentless Remote Connections**, or **Service Groups** tab, choose the resource and then click **Assign** to assign to the infrastructure group.

   ▪ Do not assign the following resource groups:

     • Resource groups that include storage devices that are selected for nondisruptive migration

     • Resource groups for VMWare VVols (VASA VVols). If you use Ops Center Automator with resource groups that are used for VMware VVols, Allocate Volumes services might consume the volume capacity of the resource groups.

     • Resource Groups that include DP/DT Pools and storage ports that have the T10-PI attribute enabled.

Assigning service groups to an infrastructure group

You can add service groups associated with the infrastructure group.

Procedure

1. On the **Administration** tab, click **Resources and Permissions** > **Infrastructure Groups**.

2. On the **Service Groups** tab, click **Assign**.

3. From the **Assign Service Groups** dialog box, select a service group from the available service groups, then click **Add**.
   The selected service group is moved to the assigned service groups.

4. Click **OK**.

Managing your user profile

You can view and modify your own user profile.

This topic describes how to manage your own user profile using Automator. To do this with Ops Center, see the *Hitachi Ops Center Online Help*.

Viewing your user profile

Admin users can view and edit their profiles from the Administration tab.

The **User Profile** window shows your User ID, Full Name, E-mail, Description, and the permissions assigned for each application.

Procedure

1. On the **Administration** tab click **User Profile** to access your user profile.

2. From the **User Profile** window, you can:

   - Edit your profile by clicking **Edit Profile**.

   - Change your password by clicking **Change Password**.

Changing your own password

As your password expires or is compromised, it must be changed.

📄 **Note:** This task is for changing your local Automator password. To change your Hitachi Ops Center password, see the *Hitachi Ops Center Online Help*.

Procedure

1. On the **Administration** tab, click **User Profile**.
   Your information is visible.
2. Click **Change Password**.
3. Type the new password and verify it.
4. Click **OK**.
5. Log on with your new password.

Editing your own user profile

As your role changes in Ops Center Automator, you can edit your user profile.

Procedure

1. On the **Administration** tab, click **User Profile**.
2. Click **Edit Profile**.
3. Edit the profile information as required and then click **OK**.
4. Confirm that the updated user profile information appears in the **User Profile** area in the **User Profile** window.

Managing users and permissions

Admin users can view and modify user profiles and permissions. Other users can modify the user profile and password by clicking the User icon (🧑) and selecting User Profile.

This topic describes how to manage users and permissions using Automator. To do these things with Ops Center, see the *Hitachi Ops Center Online Help*.

About user roles

The user role determines what a user can see, access, and perform in Ops Center Automator. User roles are assigned when assigning a user group to a service group. The following table describes the four roles in Ops Center Automator.

Role	Access level description	Included privileges
Admin	This level of access is intended for administrators to: ▪ Manage users and user groups ▪ Manage storage including resource groups ▪ Customize services ▪ Import service templates	▪ **Edit Service** dialog box ▪ **Submit Service** dialog box ▪ **Task Details** dialog box ▪ All features on the Administration tab ▪ All features on the Service Templates tab.
Develop	This level of access is intended for expert level users to: ▪ Create and edit service templates using Service Builder ▪ Test service templates and services created from templates	▪ Access to Service Builder
Modify	This level of access is intended for expert level users to: ▪ Edit services ▪ Submit services ▪ Create services from templates	▪ **Edit Service** dialog box ▪ **Submit Service** dialog box ▪ **Task Details** dialog box ▪ **Service Templates** tab
Submit	This level of access is intended for service users to: ▪ Submit services ▪ Schedule services ▪ Monitor and resubmit tasks	▪ **Submit Service** dialog box ▪ **Task Details** dialog box

Viewing users

Admin users can add users, edit user profiles, and change passwords.

Access a list of users from the Administration tab. Navigate to Resources and Permissions > Users and Permission, then click Users in the **Users and Permissions** window.

Click a User ID in the list to view user profile details.

Creating a user account

All users not allowed to log on with the System account need a user account to access Ops Center Automator.

A user account consists of general user profile information (User ID, Password, Full Name, E-mail, and Description).

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
   A user management window opens.
2. Display the current user list by clicking **Users**.
3. To add a user, click **Add User** and specify user profile information.
4. Click **OK**.

Result

The user list opens again and includes the new user.

Editing the profile for a user account

You can modify the name, email address, and description for a user account.

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
   A user management window opens.
2. Click **Users**, select the target user by clicking the **User-ID** link, and click **Edit Profile**.
3. Edit the profile information for the user, and then click **OK**.
4. Confirm the updated user profile information.

Viewing permissions

Admin users can view and change permissions for other users.

Access a list of users from the Administration tab. Navigate to Resources and Permissions > Users and Permission, then click Permissions in the **Users and Permissions** window to view the number of registered applications, registered users, and the names of the applications along with their hosts or IP addresses and the number of authorized users for each application.

You can click an application name to view a list of users authorized for the application.

You can click a user name in the Authorized User List to view the user profile and all permissions.

Changing permissions for a user account

This section shows how to grant a user new permissions or remove existing permissions, change permission settings in the user account.

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
   A user management window opens.

2. Click **Users**, select the target user by clicking the **User-ID** link, then clicking **Change Permission**.

3. Edit the permissions, then click **OK**.

4. Verify the correct user permissions are selected.

Changing the lock status of user accounts

An Administrator can lock and unlock a user account.

Procedure

1. On the **Administration** tab, select **Users and Permissions**.
   A separate user management window appears.

2. Click **Users**, and select the check box for the user whose lock status you must change.

3. Click **Lock Users** or **Unlock Users**.

4. Click **OK** to verify the lock status change, or click **Cancel**.

5. Verify the user account lock status.

   ▪ If you locked the account, a lock icon appears next to the user account.

   ▪ If you unlocked the account, ask the previously locked user to verify that they can log on.

User ID and password policies

User IDs and passwords must adhere to specific needs.

Ops Center Automator User IDs and passwords have the same needs:

▪ Number of characters: 1-256.

▪ Characters allowed: A-Z, a-z, 0-9 ! # $ % & ' ( ) * + - . = @ \ ^ _ | .

If you are using external authentication servers such as LDAP, note that User IDs and passwords must be valid for the external authentication server and Common Component products.

> 📄 **Note:** If you are using external authentication servers with Common Services, see "About linking to an external authentication server" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Configuring external authentication for users

External authentication systems can be used to authenticate user logons.

External authentication systems, such as LDAP (for example, Active Directory), RADIUS, or Kerberos can be used to authenticate Ops Center Automator users as they log on. You can reconfigure existing accounts, or create new accounts to use external authentication.

Before you begin

- The Ops Center Automator server must be linked to an external authentication server. See the *Hitachi Ops Center Automator Installation and Configuration Guide.*

- The Ops Center Automator server must be configured to support user authentication, which activates Change Auth in the UI, and gives authentication options such as Internal for a local account or LDAP for external authentication.

- The Ops Center Automator user ID must exist on the external authentication server. User ID information should be acquired from the external authentication server administrator before creating accounts.

> 💡 **Tip:**
>
> Set permissions or roles so that the registered user can complete necessary tasks by using Ops Center Automator products. Also consider adding user accounts to user groups with assigned roles for controlled access to resource groups.

Procedure

1. From the **Administration** tab, select **Users and Permissions**.
2. Select the **Users** folder, then select one or more users for which you want to change the authentication method, or click **Add User** to create a new account.

> 📄 **Note:**
>
> When creating a new account, only the **User ID** is required for external authentication, and must match a user ID on the external authentication server. For a local (internal) account, both a **User ID** and **Password** are required. When external authentication is available, new user accounts created without a password value are automatically configured to use external authentication (for example, LDAP is selected for you). Fill in the fields as needed, then click **OK** to create the user account.
>
> If you are completing an external authentication in a multiple-domain configuration or by using realms, specify a user ID that includes the domain name or realm name for the **User ID**. Example: *user-name@domain-name* or *realm-name*.
>
> When you log on, also specify your user ID in this format.

3. If you are selecting existing users, click **Change Auth**. A dialog box appears. From the list, select the required authentication method (for example, LDAP), then click **OK**.
4. Review the **Authentication** column to verify the authentication method.

Result

On the next logon try by each user, the user's logon credentials (user ID and password) are validated by using the external authentication server.

Configuring external authentication for groups

You can use external authentication systems to authenticate user groups.

You can use external authentication systems, such as LDAP (for example, Active Directory), RADIUS, or Kerberos to authenticate Hitachi Ops Center user group members as they log on. You can configure one or more user groups, from one or more external authentication servers.

When linking with an external authentication server, if using together with Active Directory as an external authorization server, you can manage user permissions by using the Active Directory groups (authorization groups) registered on the external authorization server. In this case, user permissions are specified for each group.

Before you begin

- The Ops Center Automator server must be linked to an external authentication server. See the *Hitachi Ops Center Automator Installation and Configuration Guide*.

- The Ops Center Automator server must be configured to support group authentication, which activates the Groups folder in the UI.

- The Ops Center Automator user group must exist on the external authentication server.The required domain and group information should be acquired from the external authentication server administrator.

Procedure

1. From the **Administration** tab, select **Users and Permissions**.
2. Click the **Groups** folder to display the **Domain List**. This is a list of external authentication servers listed by domain name, and host name or IP address. If the **Groups** folder is not visible, see the previous prerequisites.
3. Select the required **Domain Name** to show the **Group List**, which might be empty ("No Groups" appears). Click **Add Groups**.
4. Enter the **Distinguished Name** for the group. Use **Check DN** to verify a correct DN entry. Click **OK** to save your group and view the **Group List** again. The **Group Name** is derived from the entered DN. To specify multiple groups, note that:

    - You can add multiple DNs at the same time using the "**+**" button

    - If multiple DNs are listed, you can remove an entry with the "**-**" button

    - **Reset** clears all DN entries

5. From the **Group List**, click the **Group Name** link, then click **Change Permission** and set the Ops Center Automator permissions for the group (repeat this for each new group).
    Your groups are now visible in the **Administration** tab **User Groups** folder.
6. (Optional) You can associate the groups with resource groups and roles, just as you can do with Ops Center Automator user groups. If you delete external authentication groups from **Users and Permissions** later, the groups are also removed from the **User Groups** list.
7. (Optional) To delete registered authorization groups, select the check boxes of the groups to delete, and then click **Delete Groups**.

Result

On the next logon try by each group member, the user's logon credentials (User ID and Password) are verified using the external authentication server.

Deleting users

If a user is no longer using Ops Center Automator, you can delete the user account. Admin users with User Management permission can delete users.

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
2. In the **Users and Permissions** pane, click **Users**.
3. Select the user you want to delete.
4. Click **Delete Users**.
5. In the **Delete Users** window, click **OK**.

Configuring connection settings

Configuring Ops Center Automator needs setting the connection information to the Ops Center API Configuration Manager, other hosts, and third-party tools.

Configuring Web Service Connections

You can add or edit a web service connection.

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.
2. Click **Add** or **Edit** and enter the following:

   - **Category**

     📄 **Note:** When using a service that links with the FC switch management service, select **BNA**, **DCNM**, or **FOS_PrimarySwitch** as the category.

   - **Name**

     📄 **Note:** When using a service that links with the FC switch management service, enter the same name as the input value of "Connection Names" or "Connections" for the service.

   - **IP Address/Host Name**

   - **Protocol**

   - **Port**

   - **User ID**

   - **Password**

3. Enter **Proxy Settings**:

   - IP Address/Host Name

   - Port

- Authentication

- Authentication Type

- User ID

- Password

> 📄 **Note:** You can change the password in the menu.

4. Enter assigned infrastructure groups.

5. (Optional) After specifying the details for setting up a Web Service connection, you can test the connection with the values you specified by clicking **Test**. After starting the test, a notification balloon appears above the **Test** button indicating whether the connections completed successfully. To stop the testing process, click **Stop Test**.

> 📄 **Note:** If the URL of the web service used for the test connection requires authorization, the test connection fails with a KNAE02137-E message:
>
> ```
> Connection test failed. (detail information:Information indicating an
> authorization error)
> ```
>
> You can disregard this message because the connection to the web service is established.

6. Click **OK**.

Configuring Ops Center API Configuration Manager connections

You must create a connection setting for the server running the Ops Center API Configuration Manager.

This connection enables Ops Center Automator to run services on storage systems registered with the Ops Center API Configuration Manager. Setting up connections requires the Admin role.

Before you begin

Before you can use Data Mobility services, you must set up your environment so that the Ops Center API Configuration Manager manages all of your storage systems. You must also register remote storage system information across all your storage systems. This means that you must register information about remote storage systems with the Ops Center API Configuration Manager server of the local storage system and information about the local storage system with the Ops Center API Configuration Manager server of the remote storage systems. For detailed information on these needs and registering your storage systems with a Ops Center API Configuration Manager, see the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

When creating Ops Center API Configuration Manager server connections, you must set up credentials as follows:

- For Data Mobility services, create one connection that uses the same credentials for each storage system managed by the Ops Center API Configuration Manager. In addition to using the same credentials to access all storage systems, ensure that these credentials are assigned the following roles:

  - Security Administrator (View and Modify)

  - Storage Administrator (Provisioning)

  - Storage Administrator (Remote Copy)

- For the JavaScript Plug-in for Configuration Manager REST API and built-in Configuration Manager REST methods:

  - When all storage systems managed by a Ops Center API Configuration Manager use the same credentials, create one connection. For example, when your environment uses a central repository, such as Active Directory, to manage credentials.

  - When each storage system managed by an Ops Center API Configuration Manager uses different credentials, create a connection for each set of storage system credentials.

Procedure

1. On the **Administration** tab, click **Connection Settings** > **Web Service Connections**.
2. Click **Add** or **Edit** and enter the following information:

   - **Category**: Select **ConfigurationManager**.

   - **Name**: Enter a name for the Ops Center API Configuration Manager instance.

   - **IP Address/Host Name**: Enter the host name or IP Address of the Ops Center API Configuration Manager server.

   - **Protocol**: Select **http** (default) or **https**.

   - **Port**

   - **User ID** An account with operation privileges on the storage system.

   - **Password** An account with operation privileges on the storage system.

3. To use a proxy server, select the check box and enter the following information:

   - IP Address/Host Name

   - Port

   - Authentication

   - Authentication Type

   - User ID

   - Password

4. Enter assigned infrastructure groups.
5. Click **OK**.

Next steps

If you are using Data Mobility services, you must first ensure that all Virtual Storage Machines (VSMs) across sites use the same resource group name so that the services can recognize them. When creating a resource group name, you must adhere to the following rules:

Storage System Model(*Virtual Serial Number*),*Storage System Model*@*Virtual Serial Number*

For example, if the resource group consists of VSP G800 storage systems with a virtual serial number of 400000, create a resource group with the following name:

VSP G800(400000), VSP G800@400000

Then you must update the Virtual Storage Machine Names shared property setting for recognizing VSMs when using Data Mobility services. For detailed information, see Modifying shared service properties for data mobility services (on page 109).

Configuring a Web Service Connection for Ops Center Administrator

When using Ops Center Administrator services, you must register a Web Service Connection for Ops Center Administrator.

You can add or edit a Web Service Connection for Ops Center Administrator by using the following procedure:

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.

2. Click **Add** or **Edit** and enter the following information:

   - **Category**: OpsCenterAdministrator

   - **Name**: Enter a name for the Ops Center Administrator connection.

   - **IP Address/Host Name**: The Ops Center Administrator server name

   - **Protocol**: https (Cannot be changed)

     > 📄 **Note:** When you use https with Web Service connections, you must first import certificates for the Web Service Connection and import certificates into the Java truststore. For detailed information, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

   - **Port**: 443

   - **User ID**: An account with operation privileges on Ops Center Administrator

     > 📄 **Note:** You can specify only an Ops Center Administrator local user, and cannot specify a Common Services user even if you have integrated users with Ops Center Common Services.

   - **Password**: The password of the account on Ops Center Administrator

3. Enter **Proxy Settings**: Set as required.

   - IP Address/Host Name

   - Port

- Authentication
- Authentication Type
- User ID
- Password

> 📄 **Note:** You can change the password in the **Edit** menu.

4. Enter assigned infrastructure groups.
5. Click **OK**.

Configuring a Web Service Connection for Ops Center Protector

When using Ops Center Protector services, you must register a Web Service Connection for it.

You can add or edit a Web Service Connection for Protector by using the following procedure:

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.
2. Click **Add** or **Edit** and enter the following information:

   - **Category**: OpsCenterProtector
   - **Name**: Enter a name for the Protector connection.
   - **IP Address/Host Name**: The Protector server name
   - **Protocol**: https (Cannot be changed)

   > 📄 **Note:** When you use https with Web Service connections, you must first import certificates for the Web Service Connection and import certificates into the Java truststore. For detailed information, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

   - **Port**: 443 (default)
   - **User ID**: An account with operation privileges on Protector
   - **Password**: The password of the account with operation privileges on Protector

3. Enter **Proxy Settings**: Set as needed.

   - IP Address/Host Name
   - Port
   - Authentication
   - Authentication Type
   - User ID
   - Password

   > 📄 **Note:** You can change the password in the **Edit** menu.

4. Enter assigned infrastructure groups.

5. Click **OK**.

Configuring a Web Service connection for Ops Center Analyzer

When using Ops Center Analyzer services, you must register a Web Service Connection for Ops Center Analyzer.

You can add or edit a web service connection for Ops Center Analyzer by using the following procedure:

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.

2. Click **Add** or **Edit** and enter the following information:

   ▪ **Category**: OpsCenterAnalyzer

   ▪ **Name**: Enter a name for the Ops Center Analyzer connection.

   ▪ **IP Address/Host Name**: The host name or IP address of the Ops Center Analyzer server

   ▪ **Protocol**: Select http (default) or https.

   > 📄 **Note:** When you use https with Web Service connections, you must first import certificates for the Web Service Connection and import certificates into the Java truststore. For detailed information, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

   ▪ **Port**: 22015 (default)

   ▪ **User ID**: An account with operation privileges on Ops Center Analyzer

   ▪ **Password**: The password of the account with operation privileges on Ops Center Analyzer

3. Enter **Proxy Settings**: Set as needed.

   ▪ IP Address/Host Name

   ▪ Port

   ▪ Authentication

   ▪ Authentication Type

   ▪ User ID

   ▪ Password

   > 📄 **Note:** You can change the password in the menu.

4. Enter assigned infrastructure groups.

5. Click **OK**.

Configuring VMware vCenter connections

Ops Center Automator services can perform remote functions on VMware vCenter servers. A connection setting is required for the VMware vCenter server. This type of connection enables Ops Center Automator Services to create data stores in a VMware environment. The Admin role is generally required to set up the connection. For exceptions, see each service catalog topic.

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.

2. Click **Add** and enter the following information:

   - **Category**: Select vCenter.

   - **Name**

   - **IP Address/Host Name**

   - **Protocol**: https (Cannot be changed)

   - **Port**: 443 (Cannot be changed)

   - **User ID**

   - **Password**

3. Enter assigned infrastructure groups.

4. Click **OK**.

5. (Optional) After specifying the details for setting up a Web Service connection, you can test the connection with the values you specified by clicking **Test**. After starting the test, a notification balloon appears above the **Test** button indicating whether the connections completed successfully. To stop the testing process, click **Stop Test**.

6. (Optional) Verify the status of the current connections from the **Web Service Connections** window, which shows the status (Successful, Error, and Unknown) and the time when the connection was last established. To update the display of current connection, click **Refresh**.

Configuring a Web Service Connection for ServiceNow

When using ServiceNow ticketing services, you must register a Web Service Connection for ServiceNow.

You can add or edit a Web Service Connection for ServiceNow by using the following procedure:

Procedure

1. From the **Administration** tab, click **Connection Settings** > **Web Service Connections**.

2. Click **Add** or **Edit** and enter the following information:

   - **Category**: ServiceNow

   - **Name**: Enter a name for the ServiceNow connection.

- **IP Address/Host Name**: The ServiceNow instance name

- **Protocol**: https (Cannot be changed)

> 📄 **Note:** When you use https with Web Service connections, you must first import certificates for the Web Service Connection and import certificates into the Java truststore. For detailed information, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

- **Port**: 443

- **User ID**: An account with operation privileges on ServiceNow

- **Password**: The password of the account with operation privileges on ServiceNow

3. Enter **Proxy Settings**: Set as required.

   - IP Address/Host Name

   - Port

   - Authentication

   - Authentication Type

   - User ID

   - Password

   > 📄 **Note:** You can change the password in the menu.

4. Enter assigned infrastructure groups.

5. Click **OK**.

Configuring remote connections

Before you begin

Ops Center Automator services can perform remote functions on other servers. Register and manage connection settings to hosts through agentless remote connections. The Admin role is required to set up the agentless remote connections.

Consult "Windows prerequisites for agentless connections" or " SSH prerequisites for agentless connections" in the *Hitachi Ops Center Automator Installation and Configuration Guide* for details on setting up a remote connection.

When specifying a range of addresses (for example, X.X.X.A to X.X.X.B) for IPv4, use a hyphen (-) as shown in the following format:

Format: X.X.X.A-B

Correct examples:

192.168.1.1-255 (from 192.168.1.1 to 192.168.1.255) 192.168.1.5-15 (from 192.168.1.5 to 192.168.1.15)

Incorrect example:

192.168.1-2.4

When specifying a range of addresses for IPv6, use a network preface that conforms to RFC 2373.

Procedure

1. On the **Administration** tab, click **Connection Settings > Agentless Remote Connection**.

2. Click **Add** to add a connection. To edit a connection, select the check box next to the connection, then click **Edit**. Enter or edit the following information:

   - **Method**: Select Host Name, IPv4, or IPv6

   - **IP Address/Host Name**: Enter an IP address if you are using IPv4 or IPv6, or a enter a host name.

   - **Service Group**: Select a Service Group for access purposes.

   - **Authentication**: Enabled by default. When disabled, access to the host is anonymous.

   - **Protocol**: If authentication is used, select Windows, SSH, or Telnet. Depending on the protocol you have selected, a dialog box is provided for specifying the authentication method along with any necessary passwords.

     - **User ID**: Required if authentication is used.

     - **Password**: Required if authentication is used.

     - **Super User's Password**: Required if Protocol is SSH or Telnet.

     When choosing SSH as your authentication protocol, you have the option of specifying Password Authentication, Public Key Authentication, or Keyboard Interactive Authentication.

     > 📄 **Note:** Even when you want to perform remote functions on the local host, registering the local host setting is required. In this case, the setting for Authentication is not required.

3. Enter assigned infrastructure groups.

4. Click **OK**.

5. (Optional) After specifying the details for setting up a remote connection (Authentication option enabled), you can test the connection.

   a. Click **Test**.

   b. If multiple IP addresses or hosts are specified, select a specific address or host.

   c. To stop the testing process, click **Stop Test**.

   A notification balloon appears above the **Test** button indicating whether the connections completed successfully.

6. (Optional) To verify the connection status later, go to the **Agentless Remote Connections** window to view the status(Successful, Error, Unknown, and Unavailable) and the time when the connection was last established. To update the information, click **Refresh**.

Registering storage systems to an Ops Center API Configuration Manager connection

You must register storage systems in advance before you can use them with the Ops Center API Configuration Manager and the Ops Center Automator storage automation services.

From the Configuration Manager Settings window on the Administration tab, you can:

- Register and delete local storage systems.

- Refresh and update local storage system status and information.

- Register and delete remote storage system information.

> 📄 **Note:** Ops Center API Configuration Manager uses various ports for communication between REST API clients, management servers, and storage systems. In addition, Ops Center API Configuration Manager uses additional ports for communications between the primary and secondary sites when a remote copy is performed.
>
> Make sure that these ports are open before registering a storage system or submitting a service. If the proper ports are not open, registering a storage system might fail or the task might fail. For affected service templates, see Service template prerequisites (on page 189).
>
> For details, see "Ports used by the REST API" and "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Registering a local storage system to an Ops Center API Configuration Manager connection

Before you begin

Verify the following:

- A Web Service connection exists for the Ops Center API Configuration Manager server on which you plan to register the storage system in Connection Settings > Web Service Connections on the Administration tab.

  See Configuring Ops Center API Configuration Manager connections (on page 95) for more information.

- You have an account with Administrator user group (built-in group) permissions on the storage system.

Procedure

1. On the **Administration** tab, select **Storage Service Settings** > **Configuration Manager Settings**.

2. From the **Configuration Manager Connections** section at the top of the window, select the Ops Center API Configuration Manager connection to which you want to add a storage system.

3. At the top of the Local Storage System section, click **Register**.

4. In the **Register Local Storage System** dialog box, enter the following information for the storage system:

   The dialog content changes depending on the storage system model you select.

   - **Model**: Select the storage system model from the Model list.

   - **Serial Number**: Enter the storage system serial number.

   - **Target Controller**: Select the controller operated by Configuration Manager from the Controller list.

   - **Controller1 IP Address**: Specify the IPv4 or IPv6 IP address of storage system controller 1.

   - **Controller2 IP Address**: Specify the IPv4 or IPv6 IP address of the storage system controller 2.

   - **Link with SVP**: Select this check box to enable SVP integration.

   - **SVP IP Address**: Enter the storage system SVP IP address.

   - **RMI Port**: Specify the storage system RMI port number. The default port number is 1099.

   - **Enable SSL communication with SVP**: Optionally, select the check box to enable SSL.

     If this option is selected, the following item is shown:

     - **SVP HTTPS Port**: Specify the port number that SVP uses for HTTPS communication. The default port number is 443.

   - **Receive configuration-change notifications from the storage system**: Select the check box to receive configuration change notifications from the storage system.

     > **Note:** If the database of the Ops Center API Configuration Manager used for the search function does not match the resource information of the storage system, service templates might not work properly.
     >
     > Therefore, you should enable **Receive configuration-change notifications from the storage system**.

5. Click **OK**.

   > **Note:** If storage system information such as the IP address or port number changes, you must delete the storage system and register it again.

Registering a remote storage system to an Ops Center API Configuration Manager connection

Before you begin

Verify the following:

- A Web service connection exists for both the Ops Center API Configuration Manager server managing the local storage systems and for the Ops Center API Configuration Manager server managing the remote storage systems.

  See [Configuring Configuration Manager REST API connections (on page 95)](#) for more information.

- You have an account with Administrator user group (built-in group) permissions on the storage system.

- The local storage system is registered to the Ops Center API Configuration Manager server at the local site.

- The remote storage system is registered to the Ops Center API Configuration Manager server at the remote site.

Procedure

1. On the **Administration** tab, select **Storage Service Settings** > **Configuration Manager Settings**.
2. From the Configuration Manager Connection section at the top of the window, select the Ops Center API Configuration Manager connection to which the local storage system is registered.
3. In the Local Storage System section, select the local storage system for which you want to add a remote storage system.
4. At the top of the Remote Storage System section, click **Register**.
5. In the **Register Remote Storage System** dialog box, select the remote site Ops Center API Configuration Manager server to which the remote storage system is registered.
6. Select the remote storage system to register in the Ops Center API Configuration Manager server that manages the local storage system.
7. For VSP E series, VSP 5000 series, VSP G350, G370, G700, G900, and VSP F350, F370, F700, F900 storage systems, specify the IP address or host name of the Platform REST API server of the remote storage system. For other storage systems, specify the IP address or host name of the Ops Center API Configuration Manager server of the remote storage system.
8. For VSP E series, VSP 5000 series, VSP G350, G370, G700, G900, and VSP F350, F370, F700, F900 storage systems, specify the https listening port number (default 443) of the Platform REST API server of the remote storage system. For other storage systems, specify the https listening port number (default 23451) of the Ops Center API Configuration Manager server of the remote storage system.
9. Select the **Enable Configuration Manager Mutual Registration** check box to automatically register the local storage system information to the Ops Center API Configuration Manager server managing the remote storage systems.
10. Click **OK**.

Chapter 6: Administering Ops Center Automator

> 📄 **Note:** To change the remote storage system information registered in the Ops Center API Configuration Manager server, delete the remote storage system information and register again.

Deleting local storage system information from an Ops Center API Configuration Manager connection

Procedure

1. On the **Administration** tab, select **Storage Service Settings** > **Configuration Manager Settings**.
2. From the Ops Center API Configuration Manager Connection section at the top, select the Ops Center API Configuration Manager connection to which the local storage system is registered.
3. From the **Local Storage System** list, select the local storage system to delete.
4. Click **Delete**.
5. From the **Delete Local Storage System** dialog box, confirm that you want to delete the storage system, then click **OK**.

Deleting remote storage system information from an Ops Center API Configuration Manager connection

Procedure

1. On the **Administration** tab, select **Storage Service Settings** > **Configuration Manager Settings**.
2. From the Ops Center API Configuration Manager Connection section at the top, select the Ops Center API Configuration Manager connection to which the local storage system is registered.
3. From the **Local Storage System** list, select the local storage system.
4. In the **Remote Storage** section, click **Delete**.
5. From the **Delete Remote Storage System** dialog box, select the Ops Center API Configuration Manager connection to which the remote storage system you want to delete is registered.
6. In the **Remote Storage System** section, select the remote storage system you want to delete.
7. Select the **Enable Configuration Manager Mutual Deletion** check box to automatically delete the local storage system information registered in the Ops Center API Configuration Manager server on the remote storage system side.
8. Confirm that you want to delete the storage system, then click **OK**.

Refreshing local storage system information in Configuration Manager

You can refresh local storage system information for storage systems registered in Configuration Manager.

Procedure

1. In the **Configuration Manager Connections** list, select the Configuration Manager in which the storage systems to be refreshed are registered.

2. Select the storage systems to be refreshed in the **Local Storage Systems** list. Multiple selections are allowed.

3. Click **Refresh Storage System**.

4. Confirm the storage systems to be refreshed and click **OK**.

Updating local storage system status in Configuration Manager

You can update the status of local storage systems registered in Configuration Manager.

Procedure

1. In the **Configuration Manager Connections** list, select the Configuration Manager in which the storage systems to be updated are registered.

2. Select the storage systems to be refreshed in the **Local Storage Systems** list. Multiple selections are allowed.

3. Click **Update Refresh Status**.

Result

Ops Center Automator reloads the Local Storage System list and displays one of the following icons for each selected storage system:

Icon	Status	Description
	Queued	The configuration information refresh task has been queued.
	Started	The configuration information refresh has started.
	Succeeded	The configuration information refreshed successfully.
	Failed	The configuration information refresh failed.
	PartiallyNotUpdated	Part of the task to refresh the configuration information failed.

Using shared properties

Ops Center Automator enables you to share the values specified for a service among multiple services. Settings that are shared are called the shared properties. For example, if you use a service template to manage a common server and you define the host name, user ID, and password for that server at the connection destination as shared properties, you save the time needed to enter this server information each time a service is run. In some instances, all storage services might share the same address.

When you assign a value to a service, it takes effect when the target service is submitted for execution. Changes that are made to a property value do not affect services that are already submitted. Property values set after submitting a service are applied to tasks that are generated from the target service. To apply a shared property value to services that are submitted, you must stop the service and then submit it again.

The following figure shows how the value of a shared property is shared over multiple services.
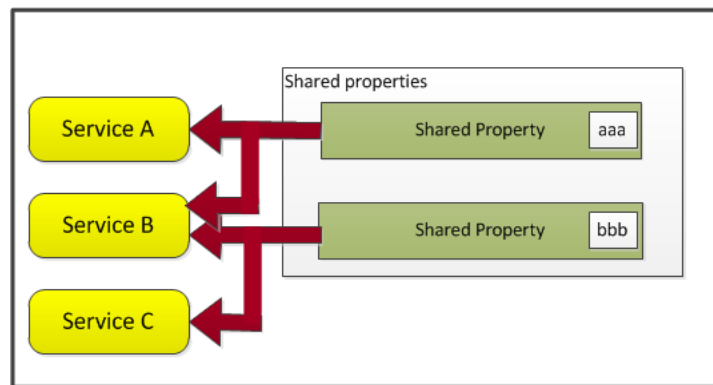
Ops Center Automator has a set of built-in shared properties that are based on common provisioning tasks. Additionally, shared properties can be customized when creating a service template using Service Builder.

Built-in shared properties

Shared properties are found in the settings of each service to which they apply. The built-in shared properties with their default values are also located on the Administration tab under Shared Properties Settings.

> 📄 **Note:** When a task runs, the values in the built-in shared properties are applied to the task. If you change a value of a built-in shared property, the change will apply to the task the next time it runs.

The following table lists the shared service properties that are provided with Ops Center Automator.

Shared service properties	Description	Values
Pass phrase of the private key (for SSH public key authentication)	Specifies the passphrase for the private key used for SSH public key authentication (shared built-in service property).	The default is empty.
Python Interpreter Path	Specifies the Python Interpreter Path.	The default is "python".
Virtual Storage Machine Names	Specifies resource group names commonly used for virtual storage machines across sites in Data Mobility services.	The default is empty.

Modifying the shared service properties

The Admin role is required to modify the values of the shared properties.

Procedure

1. On the **Administration** tab, click **Shared Properties Settings**.
2. Select a shared property, then click **Edit**.
3. Enter the value of the property, then click **OK**.

Modifying shared service properties for Data Mobility services

The shared service properties enable you to configure a shared service property so that VSMs are recognized across sites when using data mobility services. The Admin role is required to modify the values of the shared properties.

Before you begin

Before updating the shared service properties for data mobility services, you must ensure that all VSMs across sites share the same resource group names so that the services can recognize them. When creating a resource group name, you must use the following format:

Storage System Model(*Virtual Serial Number*),*Storage System Model*@*Virtual Serial Number*

For example, if the resource group consists of VSP G800 storage systems with a virtual serial number of 400000, create a resource group with the following name:

VSP G800(400000), VSP G800@400000

After you add common resource groups to all VSMs across sites, you must modify the shared service properties as follows:

Procedure

1. On the **Administration** tab, click **Shared Properties Settings**.

2. Select the **Virtual Storage Machine Names** shared property, then click **Edit**. The **Set Service Shared Property** window opens.

3. In the **Value** field, specify one or more resource group names used for your VSMs across sites. Use a comma to separate multiple resource group names.

   For example, if there are two resource groups that contain all the VSMs across your storage sites, specify the following:

   VSP G800(400000), VSP G600(300000)

4. Click **OK** to save the shared property.

Configuring email and log settings

The system settings are used to configure the email notifications and log parameters in Ops Center Automator. The Admin role is required to configure the system settings.

Email notifications are sent to users when a task fails ("Failed" status) or a task detects an error ("In Progress (with Error)" status). Also, Ops Center Automator needs for the SMTP Server settings to send an email.

Procedure

1. On the **Administration** tab, click **System Settings**.

2. Click **Edit**.

3. In the **Email** section, enter the following information. For email addresses, you can specify multiple email addresses separated with commas:

   - **Server Address**: SMTP server name or IP address. Ops Center Automator supports SMTP Servers on which SMTP-AUTH (Only PLAIN, LOGIN, and DIGEST-MD5 are supported as the authentication method) is set. (Required)

   - **Server Port**: SMTP server port number. (Required)

   - **User ID**: for the email account. (Required)

   - **Password**: for the email account. (Required)

   - **From**: sender's email address.

   - **To**: recipient's email address.

   - **Cc**: copy to email address.

   - **Bcc**: blind copy to email address.

4. Click **System Parameters** to expand the section and update the following settings:

   - **E-mail notification**: ON or OFF.

   - **Task Threshold Settings**

     - **Severe**: output for only severe logs.

     - **Information**: Output for severe and informational logs. (Default)

     - **Fine**: Output for detailed logs for tracing purposes.

     - **Finer**: Output for highly detailed logs for tracing purposes.

     - **Debug**: Output for all log levels including debug logs.

5. Click **Save**.

Setting up an external resource provider

You can set up an external resource provider to supply code, commands, or executables from a file for the settings and parameters associated with an input or output property. You can also import or export an existing resource provider after it is defined so that it can reused and shared by other service templates.

After you set up an external resource provider, it can be accessed from an input property associated with a service template from Automator Service Builder.

You set up an external resource provider from the Administration tab.

Procedure

1. On the **Administration** tab, click **External Resource Provider**.
   The **Edit External Resource Provider** interface appears.

2. Click **Create** to enter the details for the new external resource provider.
   The **Edit External Resource Provider Information** dialog box appears.

3. Enter the following information.

   - **Name**: Name assigned to the new resource provider.

   - **Version**: A version number is assigned.

   - **Content Type**: Select **application/json** or **text/csv** for the content type.

   - **Schema ID**: If there is a domain type corresponding to the returned value of the external resource provider, enter the Schema ID. The Schema ID helps select an external resource provider in the property for service/plug-in settings dialog boxes in Automator Service Builder.

   - **Description**: Provide a description for the resource provider.

   - **Type**: Select either **JavaScript**, **Script**, **Command Line**, or **File**. Depending on your selection, enter the information in the provided field.

4. Click **OK**.
   The name of the new external resource provider is shown in the list along with its assigned UUID number and any other descriptive information.

5. (Optional) After creating a resource provider, you can choose one of the options from the **More Actions** menu to export or delete an existing external resource provider entry. Additionally, you can click **Import** to import a previously exported external resource provider.

   For more information on how to implement an external resource provider, see the *Hitachi Ops Center Automator Service Builder User Guide*.

About Ansible integration

With Ops Center Automator Ansible modules, you can provision and manage the storage in your infrastructure. Ops Center Automator users can extend their automation workflow using core modules from the Ansible playbook with Ops Center Automator service templates.

For example, an Ansible user can:

- Run Automator service tasks sequentially before and after starting the Ansible core module from the playbooks.
- Run multiple Automator service tasks sequentially from the playbooks.

For detailed information on Ansible, see the Ansible documentation.

Idempotency

One of the benefits of integrating Ops Center Automator with Ansible modules is that Ansible playbook gives task-level *idempotency*. As it relates to running Automator services, idempotency means that the playbook ensures that the same task is not run multiple times. If Ansible identifies that the same task (identified by task name) is running more than one time, it sends the initial result instead of running the task again.

For more information, see the Ansible documentation.

Ansible module installation and prerequisites

The Ansible module is distributed as part of the Ops Center Automator installation media in the following location:

In Windows:

```
Automation-software-installation-folder\public\ansible\Ansible_Module_version.tar.gz
```

In Linux:

```
Automation-software-installation-directory/public/ansible/
Ansible_Module_version.tar.gz
```

To use the Ansible Module, copy the `modules` and the `module_utils` folders from `Ansible_Module_Version.tar.gz` to the following directory on the Ansible control node:

- `/usr/share/ansible/plugins/modules`
- `/usr/share/ansible/plugins/module_utils`

Chapter 6: Administering Ops Center Automator

The following software is requred to use Ansible with Ops Center Automator:

- Ansible v2.9.x

- Red Hat Enterprise Linux v7.7, 8.1, 8.2, 8.4

- Oracle Linux v7.7, 8.1, 8.2, 8.4

- CentOS v7.7

- Python v3.7, 3.8, 3.9, 3.10

Ansible modules for Ops Center Automator

Two modules in the Ansible playbook are needed to use Ops Center Automator.

Submit Automator Service
automation_submit_service
> Invoke the Automator service from the Ansible playbook

Get Automator Task
automation_task_detail_info
> Get details of the task result of the submitted Automator service

> 📑 **Note:**
>
> - If Common Services is linked with an identity provider, the identity provider user cannot access Ops Center Automator from the Ansible playbook.
>
> - When the Ansible playbook is run with the `--check` option, it will not make any changes. Instead it will preverify the parameters and report whether a new task will be created. The `automation_submit_service` module supports check mode (`--check` option), but the `automation_task_info` module does not.
>
> - By default, the Automator Ansible modules use the *http_proxy* or *no_proxy* environment variables on the managed node. If there was an error caused by using an unintended proxy, you can specify *no_proxy* to avoid using a proxy.
>
> - Only UTF-8 has been verified as the encoding type of the Ansible playbook.

For more information on how to use the Ansible playbook, see the Ansible documentation.

The parameters of the Automator modules for the Ansible playbook are shown in the following tables.

Table 1 Input parameters for automation_submit_service module

Name	Type	Description	Range	Default value
host*	string	The hostname or IP address of the Automator server.	-	-

Name	Type	Description	Range	Default value
port	integer	The TCP port number of the Automator server to access the REST API endpoint.	-	22015 or 22016
ssl	boolean	Specify whether to enable SSL communication for connecting to the server. SSL communication for connecting to the Common Services server is enabled regardless of the setting of this parameter.	yes or no	yes
validate_certs	boolean	Specify whether to enable validation for server SSL certificate. This parameter is ignored if the `ssl` parameter is set to no.	yes or no	yes
user*	string	The user name to access the Automator server.	-	-
password*	string	The password to access the Automator server. The `no_log` option is enabled by default to ensure that password data is not recorded in the log.	-	-
service_name*	string	The name of target service to run, which is configured within the Automator server.	-	-
service_group	string	The name of the service group to which the target service belongs. If this option is not specified, the service group that is associated with the user is applied.	-	-

Name	Type	Description	Range	Default value
service_parameters	dictionary	Dictionary parameter that contains a "keyName" and "value" pair to be passed when running the service. The specified parameters are prioritized over the default parameters specified in the service. The key-value pairs to pass as input required to run the service. Format each key and value as a string type. This parameter only supports the "true" or "false" boolean notation. Use the `no_ log` option to ensure that sensitive data is not recorded in the log.	-	empty dictionary
task_name	string	The name of the task. If this option is not specified, a default unique name is assigned. If a task with the same task_name exists and has already finished, this module returns the information from the finished task, and skips to submit a new task.	-	-
task_description	string	The task description.	-	-
task_wait	boolean	Specify `yes` for the module to wait for the task to finish before sending a result. Specify `no` for the module to send a result immediately after the service request is accepted by the Automator server.	yes or no	yes

Chapter 6: Administering Ops Center Automator

Name	Type	Description	Range	Default value
task_timeout	integer	The timeout value for the wait completion of the task (in seconds). If `no` is specified for the `task_wait` parameter, this parameter is ignored. If you specify a value greater than 31536000 (1 year), the Automator module internally assign 31536000 to `task_timeout`.	5 - 31536000	3600
wait_interval	integer	The interval (in seconds) for verifying the Automator server for task completion. If `no` is specified for the `task_wait` parameter, this parameter is ignored.	5 - 300	30
cs_host	string	The host name or IP address of Common Services where the Ops Center Automator specified for the "host" parameter is registered. If you specify this parameter, you must set up SSL communication between the Ops Center Automator server and the Common Services server. If this is not specified, Common Component user authentication is used to access Ops Center Automator.	-	-
cs_port	integer	The port number of Common Services where the Ops Center Automator specified for the "host" parameter is registered. If this is not specified, the default value of 443 is set.	-	443
*: Required				

Table 2 Output parameters

Parameter	Type	Comments
outputs	json	The task output properties.

The json object contains the following elements:

properties

> Key-value pairs of input and output parameters.

task

> The Automator task object.

id

> Instance ID of the Automator task object.

The following is an example output parameter structure:

```
{
   "outputs": {
     "id": 600943,
     "properties": {
       "propertyKey1": "10",
       "propertyKey2": "20"
     },
     "task": {
       "instanceID" : 600943,
       "name" : "add_number_service_20200115144709",
       "status" : "completed",
       "startTime" : "2020-01-15T14:47:12.000+09:00",
       "completionTime" : "2020-01-15T14:47:12.000+09:00",
       "submitter" : "System",
       "submitTime" : "2020-01-15T14:47:12.000+09:00",
       "modifyTime" : "2020-01-15T14:47:12.000+09:00",
       "serviceState" : "release",
       "scheduleType" : "immediate",
       "description" : "",
       "serviceName" : "add_number_service",
       "tags" : "",
       "serviceGroupName" : "Default Service Group",
       "toDo" : false,
       "notes" : "",
       "supportedActionType" : "forciblyStop,retry",
       "serviceTemplateID" : 596812,
       "scheduleID" : 600962,
       "serviceGroupID" : 595910,
       "serviceID" : 600882
     }
```

Chapter 6: Administering Ops Center Automator

```
    }
}
```

Table 3 Input parameters for automation_task_detail_info module

Name	Type	Description	Range	Default value
host*	string	The hostname or IP address of the Automator server.	-	-
port	integer	The TCP port number of the Automator server to access the REST API endpoint.	-	22015 or 22016
ssl	boolean	Specify whether to enable SSL communication for connecting to the server. SSL communication for connecting to the Common Services server is enabled regardless of the setting of this parameter.	yes or no	yes
validate_certs	boolean	Specify whether to enable validation for server SSL certificate. This parameter is ignored if the ssl parameter is set to no.	yes or no	yes
user*	string	The user name to access the Automator server.	-	-
password*	string	The password to access the Automator server. The no_log option is enabled by default to ensure that password data is not recorded in the log.	-	-
task_id*	integer	The task id of the Ops Center Automator service to be invoked by Ansible module.	-	-
task_wait	boolean	Specify yes for the module to wait for the task to finish before sending a result. Specify no for the module to send a result immediately after the service request is accepted by the Automator server.	yes or no	yes

Name	Type	Description	Range	Default value
task_timeout	integer	The timeout value for the wait completion of the task (in seconds). If `no` is specified for the `task_wait` parameter, this parameter is ignored. If you specify a value greater than 31536000 (1 year), the Automator module internally assign 31536000 to `task_timeout`.	5 - 31536000	3600
wait_interval	integer	The interval (in seconds) for verifying the Automator server for task completion. If `no` is specified for the `task_wait` parameter, this parameter is ignored.	5 - 300	30
cs_host	string	The host name or IP address of Common Services where the Ops Center Automator specified for the "host" parameter is registered. If you specify this parameter, you must set up SSL communication between the Ops Center Automator server and the Common Services server. If this is not specified, Common Component user authentication is used to access Ops Center Automator.	-	-
cs_port	integer	The port number of Common Services where the Ops Center Automator specified for the "host" parameter is registered. If this is not specified, the default value of 443 is set.	-	443
*: Required				

Table 4 Output parameters

Parameter	Type	Comments
outputs	json	The task output properties.

The json object contains the following elements:

properties

> Key-value pairs of input and output parameters.

task

> The Automator task object.

id

> Instance ID of the Automator task object.

About logging

By default Ansible sends output about plays, tasks, and module arguments to your screen (STDOUT) on the control node. To capture Ansible output in a log, see the Ansible documentation.

If you deal any sensitive data while running the Ansible playbook, such as passwords or user names, you should use the `no_log` option on the task. If the playbook fails and no details are output, then you should disable the `no_log` option and re-run the playbook.

For more information about the `no_log` option, see the Ansible documentation.

Using the sample playbook

This section explains how to run a Sample Playbook.

The sample playbook is distributed as part of the Ops Center Automator installation media in the following location:

In Windows:

```
Automation-software-installation-folder\public\ansible\sample
\Sample_Playbook_Role_version.tar.gz
```

In Linux:

```
Automation-software-installation-directory/public/ansible/sample/
Sample_Playbook_Role_version.tar.gz
```

Using the AllocateVolumesAndSetIOControl playbook

This sample playbook will submit the following services.

- Allocate Volumes with Smart Provisioning (02.82.00)
- Set IO Control (02.20.00)

Procedure

1. Configure `ansible.cfg` and environment variables.
2. Confirm whether the service to run exists in advance. If it does not exist, create it.
3. Deploy the linkage module.

4. Encrypt `auth_info.yml` with the **ansible-vault** command.

5. Enable SSL settings between Ops Center Automator and Ansible and between Common Services and Ansible

6. Edit the values to match the running environment. The files where the variables are set are as follows.

File path	To set
`roles/allocateVolumes/vars/` `main.yml`	Service settings Task settings Service parameters
`roles/setIOControl/vars/` `main.yml`	Service settings Task settings Service parameters
`connection_info_var/` `automation_software_server1`	Ops Center Automator server and Common Services server information
`connection_info_var_/` `auth_info.yml`	Authenication information (for Vault)

7. Run the following command:

```
$ansible-playbook AllocateVolumesAndSetIOControl_Playbook.yml --extra-vars
"@connection_info_var/automation_software_server1.yml" --extra-vars
"@connection_info_var/auth_info.yml" --ask-vault-pass
```

Using the ExpandVolumeCapacity playbook

This sample playbook will submit the Expand Volume Capacity (02.10.00) service.

Procedure

1. Configure `ansible.cfg` and environment variables.

2. Confirm whether the service to run exists in advance. If it does not exist, create it.

3. Deploy the linkage module.

4. Encrypt `auth_info.yml` with the **ansible-vault** command.

5. Enable SSL settings between Ops Center Automator and Ansible and between Common Services and Ansible

6. Edit the values to match the running environment. The files where the variables are set are as follows.

File path	To set
`roles/expandVolumeCapacity/` `vars/main.yml`	Service settings Task settings Service parameters
`connection_info_var/` `automation_software_server1`	Ops Center Automator server and Common Services server information
`connection_info_var_/` `auth_info.yml`	Authenication information (for Vault)

7. Run the following command:

```
ansible-playbook ExpandVolumeCapacity_Playbook.yml --extra-vars
"@connection_info_var/automation_software_server1.yml" --extra-vars
"@connection_info_var/auth_info.yml" --ask-vault-pass
```

Setting up secure communication with the Ansible control node

Before you begin

You must do the following before setting up secure communications with Ansible:

- Enable secure client communication in Ops Center Automator.

- Create the Ops Center Automator SSL certificate with the required host name in CN (Common Name) or SAN(Subject Alternative Name).

- In the Ansible Control Node, make sure the certificate file extension is `.crt` or `.pem`.

- Import the CA certificate or the Ops Center Automator self-signed certificate to the Linux certificate trust store.

> 📄 **Note:** SSL is enabled by default after a new Ops Center Automator installation. In an upgrade installation, Ops Center Automator retains the current SSL settings.
>
> If you want to use a new certificate, see "Setting up SSL on the server for secure client communication (Linux OS)" or "Setting up SSL on the server for secure client communication (Windows OS)" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

- Complete the SSL settings between Common Services and the Ansible control node. For details, see "Configuring SSL communications" in the *Hitachi Ops Center Automator Installation and Configuration Guide*

Prepare the playbook (Ansible control node):

Procedure

1. Set the following parameters for Ops Center Automator Ansible modules:

host: *Automator_host_name*
> The specified host name must match the CN or SAN attribute of the certificate.

port: *SSL_port_number*
> When the `ssl` parameter is set to `yes`, the default value is 22016.

ssl: yes
> The default value is `yes`.

validate_certs: yes
> The default value is `yes`.

2. Set the following parameters if you use a Common Services user to access the Ops Center Automator server:

   - cs_host: *Common_Services_host_name*

     The specified host name must match the CN or SAN attribute of the certificate.

   - cs_port: *Common_Services_SSL_port_number*

     When the ssl parameter is set to yes, the default value is 443.

3. Run the playbook with an Ansible command, for example:

```
$ ansible-playbook
```

ServiceNow workflow integration

You can integrate an Ops Center Automator service into a ServiceNow workflow. Integrating an Ops Center Automator service into a ServiceNow workflow consists of the following high-level steps:

Integrating an Ops Center Automator service into a ServiceNow workflow consists of the following high-level steps:

- Importing the update set

- Installing a MID Server

- Creating a REST message

- Creating a workflow

- Creating a service catalog item

- Running the workflow

Information about each of these steps is provided in this document, but you must see the ServiceNow product documentation for detailed information.

> 📄 **Note:** For information about using Ops Center Automator ServiceNow templates to manage an entire workflow, see <u>ServiceNow ticketing service templates (on page 488)</u>.

Prerequisite products for workflow integration

The ServiceNow workflow integration with Ops Center Automator needs the following:

- ServiceNow version Quebec, Rome

- MID Server version Quebec, Rome

For MID server requirements, see MID Server system requirements in the ServiceNow product documentation.

Importing an update set

In ServiceNow, you can export and import database information for a specific version of an application or set of configuration changes by using an XML file. A specific version or set of configuration changes is called an *update set*. When integrating Ops Center Automator with ServiceNow, the required configuration information is consolidated into an update sets that you must import.

The location of the update sets is shown below.

For Windows:

```
Ops-Center-Automator-installation-folder\public\ServiceNow
```

For Linux:

```
Ops-Center-Automator-installation-directory/public/ServiceNow
```

Update Sets must be imported in the following order:

1. Automation_Adapter_for_ServiceNow_01.61.00.xml
2. Automation_Adapter_for_ServiceNow_batch_02.82.00.xml

For information on how to import information by loading an update set, see the following in the ServiceNow product documentation.

- Save an update set as a local XML file and load customizations from a single XML file

- Preview a remote update set

- Commit an update set

> 📄 **Note:** Verify that there are no existing Script Includes with the name "AutomationClientLibrary" so that no conflicts occur. If the name already exists, change the Script Include name and then edit the subworkflow (Invoke Automation Service) so that the class or function name match the new Script Include name.

Installing a MID server

Before you can integrate Ops Center Automator with ServiceNow, you must install the ServiceNow MID server that facilitates integration with external applications. In the ServiceNow integration of Ops Center Automator, the REST API commands are passed through the MID server.

You can install the MID server on the same server as Ops Center Automator or on a different server.

See <u>Installing the MID Server</u> in the ServiceNow product documentation for instructions.

Post installation tasks

After installing the MID server, set up secure communications between the MID server and Ops Center Automator, and between the MID server and Common Services.

Before setting up secure communications, do the following:

- Set up SSL on the Ops Center Automator server. For more information, see the *Hitachi Ops Center Automator Installation and Configuration Guide*.

- Create an Ops Center Automator SSL certificate by specifying an appropriate hostname to CN (Common Name) or SAN (Subject Alternative Name).

Complete the following steps:

1. Import the Ops Center Automator SSL certificate into the MID server keystore. If you use a Common Services user to access the Ops Center Automator server, also import the Common Services SSL certificate into the MID server keystore. For more information, see <u>Add SSL certificates for the MID Server</u> in the ServiceNow product documentation.
2. Restart the MID server.

Creating a REST message

To send a REST API request to a web service endpoint from ServiceNow, you must create a REST Message record. If you use a Common Services user to access the Ops Center Automator server, you must also create a REST Message record for Common Services. See <u>Create a REST message</u> in the ServiceNow product documentation for detailed instructions.

Creating a REST Message for Ops Center Automator

To send a REST API request to a web service endpoint from ServiceNow, you must create a REST Message record.

Procedure

1. From **Filter Navigator**, open **System Web Services** > **Outbound** > **REST Message**, then click **New**.
2. Set the following REST Message fields:

   - Name: Enter a descriptive name for the REST message.

   - Description: Enter a description of the REST message.

   - Endpoint: Enter the endpoint to which this REST message is sent. The endpoint value might include variables using the format ${variable}. To create a REST Message for Ops Center Automator integration, enter the following:

     ```
     http(s)://automation-software-server-address:port_number/
     Automation/${path}
     ```

📄 **Note:** The specified IP address or host name must match the CN or SAN attribute of the certificate.

3. Set the following on the Authentication tab:

   ▪ Authentication type: Select Basic.

   ▪ Basic auth profile: Click the magnifier and select an existing Basic Auth Configuration profile or create a new one.

4. Click **Submit**.

5. Open the new REST Message and set the HTTP Methods:

   a. Click **New** in the HTTP Methods area.

   b. Set the following items:

      - Name: Enter the same name as the HTTP method.

      - HTTP method: GET, POST, PUT, or DELETE (GET and POST are required)

      - Endpoint: `http(s)://`*`automation-software-server-`*
      `address``:`*`port_number`*`/Automation/${path}`

   c. Click the HTTP Request tab and in the **Use MID Server** field, select the MID Server to which the request is sent.

   d. (Optional) To test the HTTP method you created, click **Test** under **Related Links**. Repeat steps a. through d. for each HTTP method to be used.

Creating a REST message for Common Services

Procedure

1. From **Filter Navigator**, open **System Web Services** > **Outbound** > **REST Message**, then click **New**

2. Set the following REST Message fields:

   ▪ • Name: Enter a descriptive name for the REST Message.

      • Description: Enter a description of the REST Message.

      • Endpoint: Enter the endpoint to which the REST Message is sent. The endpoint value might include variables using the format ${variable}. To create a REST Message for Common Services integration, enter the following:

      ```
      https://Common-Services-server-address:Common-Services-port-number/portal/$
      {path}
      ```

   📄 **Note:** The specified IP address or host name must match the CN or SAN attribute of the certificate.

3. Set the following items on the Authentication tab:

   Authentication type: Select **No authentication**.

4. Click **Submit**.

5. Open the new REST Message and set the HTTP Methods:

a. Click **New** in the HTTP Methods area.

b. Set the following items:

- Name: Enter the same name as the HTTP method.

- HTTP method: GET, POST, PUT, or DELETE (GET and POST are required)

- Endpoint: `http(s)://`*`Common-Services-server-address:Common-`*
`Services-port-number``/portal/${path}`

> 📄 **Note:** The specified IP address or host name must match the CN or SAN attribute of the certificate.

c. Click the HTTP Request tab and in the **Use MID Server** field, select the MID Server to which the request is sent.

d. (Optional) To test the HTTP method you created, click **Test** under **Related Links**. Repeat steps a. through d. for each HTTP method to be used.

Creating a workflow

Creating a workflow enables you to connect processes that you want to automate by using ServiceNow. To run the Ops Center Automator service in a workflow, extend or include the sub-workflow (Invoke Automation Service) into an upper layer workflow and insert the parameter mapping step. In this sub-workflow, you define the common process sequences of running a service and reporting task status. Also, you can use the AutomationClientLibrary to include additional functions.

The following table shows the input service parameters to be specified when using the workflow integration.

Name	Type	Description	Maximum length	Default value	Required/ Optional
Service Instance ID	String	Specify the instance ID of the service to submit.	256	${workflow.scratc hpad.serviceInst anceID}	Required
Request Parameters	String	Specifies the input properties of the service to submit.	102400	${workflow.scratc hpad.requestPara meters}	Optional
Task Settings	String	Specify the task run schedule. If not specified, the task is run immediately.	102400	${workflow.scrc hpad.taskSetting s}	Optional

Name	Type	Description	Maximum length	Default value	Required/ Optional
REST Message Name	String	Specify the name of the REST Message for which the Ops Center Automator endpoint is set.	256	${workflow.scratchpad.restMessageName}	Required
Use Common Services	String	Speccify whether Common Services is used for user authentication.	256	${workflow.scratchpad.useCommonServices}	Optional
Common Services REST Message Name	String	Specify the name of the REST Message for which the Common Services endpoint is set.	256	${workflow.scratchpad.commonServicesRestMessageName}	Optional

See Create a workflow in the ServiceNow product documentation for instructions.

Sample workflow

The following is an example of a workflow that calls an Ops Center Automator service that incorporates the Invoke Automation Service sub-workflow.

.

In this workflow, the following actions are run as a series of flows:

▪ approval processing

▪ mapping user input to Ops Center Automator service request parameters

▪ running an Ops Center Automator service and receiving a result confirmation

▪ subsequent processing according to the result
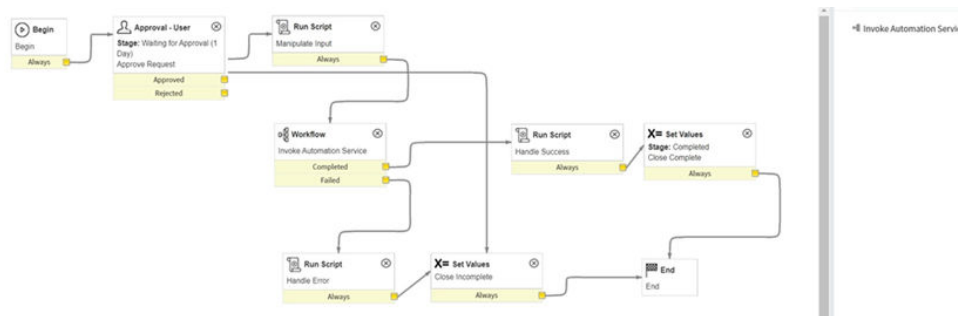
Input for Invoke Automation Service sub-workflow

In the Invoke Automation Service sub-workflow, set the input service parameters.

- REST Message Name

- Request Parameters

- Service Instance ID

- Task Settings

In the sample workflow *Manipulate Input* step, user input values are mapped to variables of the Invoke Automation Service flow. The sample code is as follows:

```
workflow.scratchpad.serviceInstanceID = current.variables.had_service_instance_id; //
Service Instance ID
workflow.scratchpad.restMessageName = current.variables.had_rest_message_name; //REST
Message Name
workflow.scratchpad.useCommonServices = true; //Use Common Services
workflow.scratchpad.commonServicesRestMessageName =
current.variables.common_services_rest_message_name; //Common Services REST Message
Name

function RecordAccessor(ticket) {
    this.setRecord(ticket);
}

RecordAccessor.prototype = {
    setRecord: function(ticket) {
        this._ticket = ticket;
    },
    getSysId: function() {
        return this._ticket.sys_id;
    },
    getVariable: function(key) {
        return this._ticket.variables[key].toString();
    },
    getVariables: function() {
        return this._ticket.variables;
    }
};
workflow.info("Manipulating input from service request");

var recordAccessor = new RecordAccessor(current);

/* Settings of Automator service input parameters(*) */
var requestParams = {};
requestParams["VolumeLabel"] = recordAccessor.getVariable("VolumeLabel"); //String
type parameter setting example
requestParams["StorageSystem"] = JSON.stringify({"storageDeviceId":
recordAccessor.getVariable("StorageDeviceId")}); //File type parameter setting example
/*~~~~~~~~~~~~~~~~~~*/
/* (Set as much as required) */
```

```
/*~~~~~~~~~~~~~~~~~*/
workflow.info(JSON.stringify(requestParams, null, 2));
workflow.scratchpad.requestParameters = JSON.stringify(requestParams);
```

In `requestParams`, the required Ops Center Automator parameter Key and Value are set. You can also specify the service run schedule as a task setting. For details on the built-in service parameters and task settings, see "Submitting a service" in the *Hitachi Ops Center Automator REST API User and Reference Guide*.

After running the Ops Center Automator service and obtaining the result, you can implement post-processing according to the use case, such as updating the ticket as is shown in the sample workflow.

Output from Invoke Automation Service sub-workflow

The output of the Invoke Automation Service sub-workflow includes the following:

- `status`: Completed, Failed, or Canceled.

- `data`: JSON format data of the Ops Center Automator service output property values obtained by using the Ops Center Automator "Getting a list of property values" REST API.

- `message`: Error message (only when an error occurs).

You can easily obtain the Ops Center Automator service output property values provided in JSON format to use with a method defined in the AutomationClientLibrary. The sample code is as follows:

```
var result = workflow.scratchpad.hadresult;

var allocatedVolume = AutomationClientLibrary.findPropertyByValue (result.data,
'keyName', 'LUNPathConfigurationInformation').value;  // Pick up value from JSON data
by specifying property keyName

workflow.info("Details of added volumes: " + JSON.stringify(allocatedVolume,null,2));

current["work_notes"] = JSON.stringify(allocatedVolume, null, 2);
```

Creating a service catalog item

A service catalog item is a request form for running a workflow. You must create a service catalog item for running a workflow that includes a process for running the Ops Center Automator service.

See Create or edit a catalog item in the ServiceNow product documentation for more information.

If you use a Common Services user to access the Ops Center Automator server, you must create a user name variable and a password variable for the service catalog item.

Specify the following values for the [Name] field in the [Variable] window:

- Common Services user name: commonServicesUserName

- Common Services password: commonServicesPassword

We recommend that you specify "Masked" for the [Type] field in the password variable.

> **Note:** If Common Services is linked with an identity provider, the identity provider user cannot access Ops Center Automator from the ServiceNow workflow.

Running the workflow

When running the ServiceNow workflow, enter the required items in the service catalog item request form and send the request.

The workflow might fail with the KNAE07646-E or KNAE07648-E error message. If the error occurs, check the load status of the MID Server, Ops Center Automator server, and Common Services server, and network load status, and then rerun the workflow. If the error recurs after rerunning, you can reduce the frequency of timeouts by adding the following property to the ServiceNow instance.

- Name: glide.http.outbound.max_timeout.enabled

- Type: true|false

- Value: false

See Request creation in the ServiceNow product documentation for more information.

Appendix A: Importing and exporting properties

While creating and submitting a service, you can import and export property values to a specified file.

Buttons at the bottom of the **Create/Edit Service** and **Submit Service Request** windows allow you to import and export property values.

Importing property values

While debugging a service template, you can import property values to a specified properties file.

Follow these steps to import property values to a specified file.

Procedure

1. From the debugger interface, click **Import**.

2. In the **Import** dialog box, enter the name of the properties file to use for storing the property values, or use the browser to search for the specified file, then click **OK**.

   When the import finishes, notifications about the property values that have and have not been imported are temporarily visible as follows:

   ▪ Properties to which the values are applied.

   ▪ Properties for which the values are not applied. These are properties for which the attribute values cannot be changed and for which the values are not applied due to the property value definitions.

   ▪ Non-existent properties. These are properties that are defined in the file but do not exist in the target service.

   When importing a properties file from the debugger, (or the **Create/Edit Service** and **Submit Service Request** windows), the JSON or key=value format is supported.

   When accessing the import capability from the CLI, the additional format key@FILE=file-path is also supported.

   The conditions that must be met to apply property values during an import are shown in following table.

Property Group Attribute	Property Attribute				
hidden	paramMode	visibility	reference	hidden	readOnly
False	in	config	false	false	false
False	in	exec	false	--	--

If the properties do not meet these conditions, or there are no corresponding properties defined in the service, the values contained in the definition file are not applied. The values are also not applied if the "value field" is not defined or is set to null.

> **Note:** If the length of keyName exceeds the limit, the property is classified as a property that does not exist in the service.

If an error occurs during an import, the error dialog box appears, and the import is canceled, leaving all property values unchanged. An error occurs when the specified file does not exist or the properties file definitions are not valid.

Exporting property values

While debugging, you can export property values to a properties file. This allows you to save multiple property values in a file for subsequent reference.

Exporting property values

Follow these steps to export property values to a specified file.

1. From the debugger interface, click Export.
2. Access the browser to locate the properties file or specifically enter its name, then click OK.

The property values are exported to the specified file. The property values are exported in the Json format and, by default, are saved to the `service_properties.json` file.

Format

In the properties file specified as a command argument, the property key and value used by the executed services can be defined in JSON, key=value, and key@FILE=file-path formats.

JSON format

```
{
"properties": [
    {
      "keyName": "property-key",
    "displayName" : "property-display-name"
    "description" : "description-of-property"
```

Appendix A: Importing and exporting properties

```
    "type" : "property-type"
      "value": "property-value"
    },
    {
      "keyName": "property-key",
    "displayName" : "property-display-name"
    "description" : "description-of-property"
    "type" : "property-type"
      "value": "property-value"
    },
...
]
}
```

Following are definition details for the JSON format:

- The displayName, description, and type fields are optional.

- When you specify the value field, set an empty value for the property value.

- The value for the password type property can be in plain text or encrypted. The "value" field of the password type property is not exported for security reasons. The defined value is imported as is, and the REST API determines whether it is in plain text or encrypted.

- In the definition file, define only properties for which you want to set values. The values of properties that are not defined in the imported file remain unchanged. When exporting step properties, the type field is only output for the service component.

key=value format:

To specify property values for a key=value properties file, use the following format:

```
property-key=property-value [line break]
```

Following are definition details of the key=value format:

- Specify a property name and a property value on each line.

- Lines starting with a hash mark (#) are handled as comment lines.

- Lines that do not contain an equal mark "=" are handled as comment lines.

- A line break needs to be added at the end of each property setting line.

- Do not add line breaks in the middle of the property name and property value lines.

- Characters are case-sensitive.

- Even when a "\" is contained in strings like service and plug-in resource files, you do not must type "\\".

- "\" is handled as a "\".

- The characters at the beginning of a line up to the first equal sign (=) are treated as a property name. Do not trim lines before and after the property setting line.

- The characters after the equal sign (=) after the property name, until the end of the line are treated as the property value. Do not trim lines before and after the property setting line.

- The end-of-line character at the end of the properties file (EOF) is optional.

- Empty lines (lines containing line breaks only) are ignored.

- Both CR+LF and LF can be used as line breaks.

- When using the `property-key = [line break]` format, set an empty value for the property value.

key@FILE=file-path format

In this format, the property key is stored in the properties file, and the property value is stored in the property value file and referenced separately. Note that this format can be used together with the key=value format in the properties file:

```
property-key@FILE=absolute-path-of-the-property-value-file or relative-path-from-the-
property-file [line break]
```

The definitions in the key@FILE=file-path format are the same as the key=value format. The differences from the key=value format are as follows:

- The absolute path of the property value file or the relative path from the properties file must always be specified or an error occurs.

- If the specified file does not contain a property value, an error occurs.

- The property value file can contain end-of-line characters. However, if a property value file that contains an end-of-line character is specified for a property for which end-of-line characters must not be set, an error occurs.

Appendix B: CLI commands

A set of Ops Center Automator and Common Component commands are available to run on the command line interface (CLI).

To run CLI commands, the Admin, Modify, or Submit role is required for Ops Center Automator and Administrator permission is required for the OS.

Common Component CLI commands

A set of Common Component commands are available on the CLI.

For Windows-based OS servers, navigate to `<system-drive>\Program Files \hitachi\Base64\bin`. For Linux OS servers, navigate to: `/opt/hitachi/Base64/ bin`. Open the command prompt to run Common Component commands.

> 📄 **Note:** Regarding the `hcmds64clustersrvupdate` command and the `hcmds64clustersrvstate` command, the location of the file is different. For Windows-based OS servers, navigate to `<system-drive>\Program Files \hitachi\Base64\ClusterSetup`. For Linux OS servers, navigate to: `/opt/ hitachi/Base64/ClusterSetup`.

> 📄 **Note:** When the Ops Center Automator server is using the Linux OS, read "/" to "-" is used for each argument.

hcmds64banner command

The `hcmds64banner` command registers and deletes a message displayed on a warning banner for Ops Center Automator.

Before executing this command, use a text editor to create a message.

Sample messages in English (`bannermsg.txt`) and Japanese (`bannermsg_ja.txt`) are provided in the following locations:

- In Windows:

  ```
  Common-Component-installation-folder\sample\resource
  ```

- In Linux:

  ```
  Common-Component-installation-directory/sample/resource
  ```

These sample files are overwritten at installation, so to use a sample file, copy it and then edit it.

The following shows the default message:

```
<center><b>Warning Notice!</b></center>
This is a {Company Name Here} computer system, which may be accessed and used only
for authorized {Company Name Here} business by authorized personnel. Unauthorized
access or use of this computer system may subject violators to criminal, civil,
and/or administrative action.
<br>
All information on this computer system may be intercepted, recorded, read, copied,
and disclosed by and to authorized personnel for official purposes, including
criminal investigations. Such information includes sensitive data encrypted to comply
with confidentiality and privacy requirements. Access or use of this computer system
by any person, whether authorized or unauthorized, constitutes consent to these
terms. There is no right of privacy in this system.
```

The syntax is:

```
hcmds64banner {/add /file file-name [/locale locale-name]}
 | {/delete [/locale locale-name]}
```

where:

- `/add` registers a message. If it is already registered, it is overwritten.

- `/delete` deletes a message.

- `/file` Using an absolute path, specify the file that stores the message. In Linux, do not specify a path that includes a space.

- `/locale` specifies the locale of the language used for the message (for example, `en` for English, or `ja` for Japanese). If this setting is omitted, the registered message will always be displayed in the warning banner regardless of the locale (the message is registered as a message of the default locale).

  When the GUI is used in multiple locales, if you register a message with the same contents in a different language for each locale, the message can be automatically switched to match the locale of the web browser.

  When multiple languages are specified on one web browser, the locale of the warning banner is determined by the language priority settings of the web browser.

hcmds64checkauth command

The `hcmds64checkauth` command verifies the settings in the configuration file for external authentication server linkage and the connection with an external authentication server when Ops Center Automator links with the external authentication server.

If you run this command, the command will perform verifications in the following four phases, and then the results will be displayed:

1. The command verifies whether the property used when connecting to the external authentication server is correctly set in the `exauth.properties` file.

Appendix B: CLI commands

2. The command verifies whether the properties for the external authentication server and the external authorization server are correctly set in the `exauth.properties` file.

3. The command verifies whether a connection to the external authentication server can be established.

4. If the settings are specifiedsothat an external authorization server is also connected, the command verifies whether a connection to the external authorization server can be established, and whether the authorization group can be searched.

The following message is displayed if the verification in each phase finishes normally.

```
KAPM15004-I The result of the configuration check of Phase phase-number
was normal.
```

The syntax is:

```
hcmds64checkauth [/user user-name] [/summary]
```

📄 **Note:** You are prompted to enter the password in interactive mode.

where:

- `/user` specifies the username which has already been registered in the external authentication server.

- `/summary` simplifies the confirmation message that appears when the command is run. If this option is specified, the messages to be displayed are limited to messages indicating whether each processing phase is successful or failed, error messages, and messages indicating the results. However, if an error message similar to the message indicating the results is to appear, the former error message is omitted and only the latter resulting message is displayed.

hcmds64chgurl command

The **hcmds64chgurl** command changes the URLs of the products using Common Component that are registered on the GUI. After starting a Common Component process, if a product URL is changed due to any of the following configuration changes, you must use the **hcmds64chgurl** command to change the URL registered in the GUI for each product.

- Changing a port used by HBase 64 Storage Mgmt Web Service

- Changing the host name or IP address of the management server

- Changing the settings for enabling or disabling SSL communication

- Migrating to a cluster environment

The syntax is:

```
hcmds64chgurl {/print | /list | /change old-URL new-URL | /change new-URL /type
Common-Component-product-name}
```

where:

- `/print` displays a list of URLs and programs that are currently registered.

- `/list` displays the same information as the /print option in a different format.

- `/change` changes a currently registered URL.

- `/type` To change the URL for a specific product using Common Component, use this option to specify the name of that product. To change only the Ops Center Automator URL, specify `Automation`.

> ⚠️ **Caution:** The specified URL must be a complete URL that contains protocols and a port number. You cannot use an IPv6 address. You must use a host name to specify the URL in an IPv6 environment, as shown in the following example:
>
> ```
> http://hostname:22015
> ```
>
> When changing the URL during migration to a cluster environment, use the following format to specify *new-URL*:
>
> ```
> http://logical-host-name:port-number
> ```

hcmds64clustersrvstate command

The `hcmds64clustersrvstate` command brings online and enables failover for the group in which the Common Component services including Ops Center Automator are registered. This command also takes offline and disables failover for the group in which Common Component services including Ops Center Automator are registered.

To bring online and enable failover for the group in which the Common Component services including Ops Center Automator are registered, the syntax is:

```
hcmds64clustersrvstate /son /r  cluster-group-name
```

To take offline and disable failover for the group in which the Common Component services including Ops Center Automator are registered, the syntax is:

```
hcmds64clustersrvstate /soff /r cluster-group-name
```

where `/r` specifies the name of the group in which the Common Component services including Ops Center Automator are registered. If the group name contains spaces, you must enclose the group name in quotation marks ("). For example, if the group name is Automator cluster, specify "Automator cluster".

hcmds64clustersrvupdate command

The `hcmds64clustersrvupdate` command registers the Common Component services inluding Ops Center Automator in the cluster management software group. This command also deletes the Common Component services including Ops Center Automator from the cluster management software group.

Appendix B: CLI commands

To register the Common Component services including Ops Center Automator the syntax is:

```
hcmds64clustersrvupdate /sreg /r cluster-group-name /sd
shared-disk-drive-letter /ap client-access-point-resource-name
```

To delete the Common Component services including Ops Center Automator the syntax is:

```
hcmds64clustersrvupdate /sdel /r cluster-group-name
```

where :

- `/r` specifies the name of the group in which the Common Component services including Ops Center Automator are registered. If the group name contains spaces, you must enclose the group name in quotation marks ("). For example, if the group name is Automation cluster, specify "Automation cluster".

- `/sd` specifies the drive letter of the shared disk that is registered to the cluster management software. You cannot specify multiple drive letters for this option. If the database of the products using Common Component is divided into multiple shared disks, run the **hcmds64clustersrvupdate** command for each shared disk.

- `/ap` specifies the name of the resource for the client access point that is registered to the cluster management software.

hcmds64dbinit command

The **hcmds64dbinit** command can recover to the status immediately after installation without reinstalling the product. It can be used only when the product itself is correctly installed and set up, and a DB failure occurs due to DB corruption or disk failure, and so forth, and the environment is in an unrecoverable status. This command is not supported in the Linux environment of Ops Center Automator.

The syntax is:

```
hcmds64dbinit /databasepath database-path
```

where `/databasepath` specifies the location to recreate the databases with the absolute path.

hcmds64dbrepair command

The **hcmds64dbrepair** command forces all the databases to be deleted, re-creates them, and then recovers them using the backup data obtained by the **hcmds64dbtrans** command. Use this command if any of the databases is corrupted and using the **restoresystem** command and the **hcmds64dbtrans** command with the **/import** option specified cannot restore the database.

The syntax is:

```
hcmds64dbrepair /trans backup-data
```

Appendix B: CLI commands

where `/trans` specifies the backup data obtained using the **hcmds64dbtrans** command. Make sure you specify the path in the `/workpath` or `/file` options of the **hcmds64dbtrans** command.

Remarks

- Stop Ops Center Automator services before running this command.

- Start Ops Center Automator services after running this command.

- This command uses the *Common-Component-installation-folder*\tmp folder to extract the backup data. Secure enough space to extract the backup data according to the size of the data.

- After running the command, the password of the built-in account (System account) is initialized. Change the password.

- In a cluster system, run this command on the execution host. This command cannot be run on the standby host.

hcmds64dbsrv command

The **hcmds64dbsrv** command starts and stops the databases of Ops Center Automator. Use this command when maintaining the databases.

The syntax is:

```
hcmds64dbsrv {/start | /stop}
```

where:

- `/start` starts the databases.

- `/stop` stops the databases.

Remarks

This command is restricted for database maintenance procedures.

hcmds64dbtrans command

The **hcmds64dbtrans** command backs up (exports) or restores (imports) the databases of Ops Center Automator. Use this command when reorganizing the databases of Ops Center Automator.

To back up (export) the Ops Center Automator databases, the syntax is:

```
hcmds64dbtrans /export /workpath working-folder-path /file archive-file-path [/auto]
```

To restore (import) the Ops Center Automator databases, the syntax is:

```
hcmds64dbtrans /import /type Automation /workpath working-folder-path
[/file archive-file-path] [/auto]
```

where:

- `/export` exports the databases.

- `/workpath` specifies the absolute path to a working folder that is temporarily used for exporting or importing. A folder on the local disk drive can only be specified. Use an empty folder for the working folder when you specify the /file option for exporting or importing.

- `/file` specifies the absolute path to the archive file to which the data is exported or from which the data is imported. This option is required if the /export option is specified.

  The archive file is not created if the output file size exceeds 2 GB, or if the amount of disk space for a location in which the archive file is created is insufficient.

- `/auto` causes the command to automatically start and stop the services and databases of Ops Center Automator and the products using Common Component. If this option is omitted, the services and databases of Ops Center Automator and the products using Common Component are not automatically started and stopped.

- `/import` causes the command to import the databases. All the exiting authentication data is deleted before the data is imported.

- `/type Automation` specifies `Automation` as the name of the product whose database is to be imported.

Remarks

- If the return code 3 is output by an export procedure, the database information remains in the folder specified for the /workpath option. To import this information, set the folder that you specified for the /workpath option at the time of the export procedure for the /workpath option for the import procedure. At this time, do not change the folder structure in the folder you specified for the /workpath option at the time of the export procedure. In addition, do not specify any value for the /file option when performing the import procedure.

- In the following cases, the folder specified for the /workpath option becomes empty, and the command is completed.

  - When the return code 1, 2, 233, 234, 235, 237, 238, 239, 240, or 255 is output by an export procedure

  - When the return code 3 is output by an import procedure

hcmds64fwcancel command

The **hcmds64fwcancel** command adds an exception so that Windows Firewall does not block communication between the Ops Center Automator server and a Web browser. Use this command when you change the port number on the Ops Center Automator server to which the Web browser connects from the default value.

The syntax is:

```
hcmds64fwcancel
```

hcmds64getlogs command

The `hcmds64getlogs` command acquires maintenance information on the management server.

The syntax is:

```
hcmds64getlogs /dir folder-name [/types Automation] [/arc archive-file-name] [/
logtypes log-file-type[ log-file-type ...]]
```

where:

- `/dir` specifies the absolute path to the folder on a local disk that contains collected maintenance information. If the folder has already been created, empty the folder.

  The maximum length of a path name that can be specified is 41 bytes. You can specify any printable ASCII character excluding certain special characters. You cannot specify the following characters:

  \ / : , ; * ? " < > | $ % & ' `

  However, you can specify backslashes (\), colons (:), and forward slashes (/) in Windows, or forward slashes (/) in Linux as a path delimiter. Do not specify a path delimiter at the end of a path name.

  In Windows, to specify a space character in a path name, enclose the path name in double quotation marks ("). In Linux, you cannot specify a space character in a path name.

- `/types Automation` specify `Automation` if the maintenance information for only Ops Center Automator can be collected. When specifying this option, also specify the log file type `log` for the /logtypes option. If this option is not specified, the Ops Center Automator server and all products using Common Component installed on the same management server is collected.

- `/arc` specifies the name of the archive files to be created. If you do not specify this option, the default file name is `HiCommand_log_64`.

  For the file name, you can specify any printable ASCII character excluding certain special characters. You cannot specify the following characters:

  \ / : , ; * ? " < > | $ % & ' `

  In Linux, you cannot specify a space character in a file name.

- `/logtypes` specifies the types of log files to acquire when log files of a particular type cannot be collected due to a failure.

  - `log`: Specify this to acquire `.jar` files and `.hdb.jar` files only.

  - `db`: Specify this to acquire `.db.jar` files only.

  - `csv`: Specify this to acquire `.csv.jar` files only.

  To specify multiple types, separate them by a space.

  If you omit this option, all log files will be acquired.

Appendix B: CLI commands

> 💡 **Tip:** When this command is run, the KAPM05318-I or KAPM05319-E message is output. In addition, maintenance information (log file and database file) is acquired and four archive files (`.jar`, `.hdb.jar`, `.db.jar`, and `.csv.jar`) are output in the folder specified in the /dir option.

Remarks

- Do not interrupt this command while it is running.

- If the `hcmds64getlogs` command is interrupted, this command has ended before this command completed due to insufficient free space in the folder specified in the /dir option. In this case, make sure that the folder has enough free space, and then execute this command again.

- Do not run more than one `hcmds64getlogs` command at the same time.

- When Ops Center Automator is running in a cluster configuration, execute this command on both the active host and standby host. You can run this command even if the Ops Center Automator server is not running. Therefore, even if an error occurs in a cluster configuration, you can collect log information without switching nodes. However, if the database is not running, you cannot obtain the database information.

- If the same option is specified more than one time, only the first option is effective.

hcmds64intg command

The `hcmds64intg` command deletes authentication data stored in the repository on the server that manages user accounts. This command can also display the address of the server that stores authentication data. Use this command to deltete authentication data if you failed to delete those data during the removal of Ops Center Automator.

The syntax is:

```
hcmds64intg {/delete /type Automation | /print | /primary} [/user user-ID]
```

> 📄 **Note:** You are prompted to enter the password in interactive mode.

where:

- `/delete` deletes authentication data.

- `/type Automation` specifies `Automation` as the product name of the server that stores authentication data.

- `/print` displays the name of the program with which authentication data is registered.

- `/primary` displays the host name or IP address of the server that stores authentication data.

- `/user` specifies the user ID for connecting the server that stores authentication data. Specify the user ID of the account with User Management permission.

hcmds64keytool command

The `hcmds64keytool` command can do the following:

- Register the certificate in the JDK truststore by using the JDK `keytool` utility.

- Verify the certificate registered in the keystore or truststore by using the JDK `keytool` utility.

- Deletes the certificate from the JDK truststore by using the JDK `keytool` utility.

- Exports the certificate from the JDK truststore by using the JDK `keytool` utility.

To register the certificate in the JDK truststore, the syntax is:

```
hcmds64keytool -import -alias alias-name -file file-name
 -keystore file-name -storepass password -storetype JKS
```

To verify the certificate registered in the keystore/truststore, the syntax is:

```
hcmds64keytool -list -v -keystore file-name -storepass password
```

To delete the certificate registered in the JDK truststore, the syntax is:

```
hcmds64keytool -delete -alias alias-name -keystore file-name -storepass password
```

To export the certificate from the JDK truststore, the syntax is:

```
hcmds64keytool -export -keystore file-name -alias alias-name -file file-name -
storepass password
```

where:

- `-alias` specifies the name (Alias name) for identifying the certificate in the truststore. Alias name that already exists cannot be specified, so either change it to another name or delete it in advance.

- `-file` specifies the input certificate (PEM or DER format). In the case of export, specify the output path of the certificate.

- `-keystore` specifies the truststore file to be registered, verified, deleted, or exported.

- `-storepass` specifies the password to access the registered certificate.

- `-storetype JKS` specifies JKS as the store type of the truststore.

hcmds64ldapuser command

The `hcmds64ldapuser` command registers the user information required for Active Directory registration information search when Ops Center Automator links with Active Directory. This command can also be used to delete registered user information.

After you use this command to register the user information, run the `hcmds64checkauth` command to verify that the information can be properly authenticated.

Appendix B: CLI commands

The syntax is:

```
hcmds64ldapuser {/set /dn user-identifier | /delete} /name {server-identifier |
domain-name} | /list
```

> 📄 **Note:** You are prompted to enter the password in interactive mode.

where:

- `/set` registers the user information.

- `/dn` specifies the user identifier of the user to be registered. Follow RFC 4514 for the possible characters. The characters &, |, ^, (,), <, and > must be enclosed by double quotation marks (") or escaped with a caret (^). To specify a value that ends with \, escape it with \.

- `/delete` deletes the registered user information. The information of the user which includes the server identifier or domain name specified by the /name option is deleted.

- `/name` specifies the server identifier or domain name to which the user is registered. When deleting the user information, specify the server identifier or domain name of the server in which the user to be deleted is registered. However, you cannot specify the domain name if group linkage with Active Directory is disabled and a user for LDAP search is registered. In that case, specify the server identifier.

- `/list` displays the list of server identifiers and domain names contained in the registered user information.

hcmds64prmset command

The **hcmds64prmset** command registers, changes, and cancels the registration of the host that manages the user accounts used to connect with Ops Center Automator. If you run this command, the information about the user accounts in the Common Component will be managed by the Common Component of the primary server. The host whose user accounts are managed by the primary server is called the secondary server. Run this command on the server that is set as the secondary server.

When registering the primary server or changing information about the registered primary server, the syntax is:

```
hcmds64prmset [/host host-name-or-IP-address] [/port port-number-(non-SSL-
communication) | /sslport port-number-(SSL-communication)] [/check]
```

When canceling the primary server, the syntax is:

```
hcmds64prmset /setprimary
```

When displaying the registration information, the syntax is:

```
hcmds64prmset /print
```

where:

- `/host` specifies the host name or IP address of the primary server. If SSL communication is enabled on the primary server, specify the same value as that of Common Name (CN) in the server certificate. If you change the host name of only the registered primary server, you can omit the /port or /sslport option.

- `/port` specifies the port number of HBase 64 Storage Mgmt Web Service of the primary server. Specify this option if SSL communication is disabled on the primary server. The default port number is 22015. If you change the port number of only the registered primary server, you can omit the /host option.

- `/sslport` specifies the port number of HBase 64 Storage Mgmt Web Service of the primary server. Specify this option if SSL communication is enabled on the primary server. The default port number is 22016. If you change the port number of only the registered primary server, you can omit the /host option.

- `/check` checks the connection to the primary server.

- `/setprimary` cancels the registered primary server. The host on which the command was run changes from the secondary server to the primary server.

- `/print` displays the following:

  - The role of the host on which the command was run (primary or secondary)

  - The host name (IP address) and port number of the primary server, if the role of the host is the secondary server.

hcmds64radiussecret command

The **hcmds64radiussecret** command registers a shared secret for the RADIUS server in the Ops Center Automator server when connecting with an external authentication server.

If you register a shared secret by using this command, run the **hcmds64checkauth** command to verify whether the shared secret can be correctly authenticated.

To register a shared secret, the syntax is:

```
hcmds64radiussecret [/set shared-Secret] /name RADIUS-server-indication-name
```

To delete a shared secret, the syntax is:

```
hcmds64radiussecret /delete /name RADIUS-server-indication-name
```

To display a list of server indication names of the RADIUS servers for which shared secrets are registered, the syntax is:

```
hcmds64radiussecret /list
```

where:

- `/set` registers a shared secret for the RADIUS server in the Ops Center Automator server. For a `shared-Secret`, you can specify printable ASCII characters (0x21 to 0x7E) of 128 bytes or less. If you execute the command without specifying the /set option, you will be promoted to enter a shared secret.

- `/delete` deletes a shared secret registered in the Ops Center Automator server.

- `/name` specifies a RADIUS server indication name. The specified name must match a server indication name specified for the `auth.server.name` property in the `exauth.properties` file.

- `/list` displays a list of server indication names of the RADIUS servers for which shared secrets are registered.

hcmds64srv command

The **`hcmds64srv`** command starts and stops the services and databases of Ops Center Automator. This command can also display the status of the Ops Center Automator services or change how to start the services. Note that if you run this command by specifying `AutomationWebService` for the `/server` option, you can start, stop, or display the status of the following services:

- HAutomation Engine Web Service
- HBase 64 Storage Mgmt SSO Service[1]
- HBase 64 Storage Mgmt Web Service[1]
- HBase 64 Storage Mgmt Web SSO Service[1]
- Database process[1, 2]

    1. The service does not stop while a service from the products using Common Component is running.
    2. These are the internal processes of Ops Center Automator. The **`hcmds64srv`** command does not start and stop `HiRDB/EmbeddedEdition _HD1` that represents the database service.

The syntax is:

To start, stop, or display only the status of a specific service:

```
hcmds64srv {/start /stop /check | /status} [/server service-name]
```

To see the status of services of Ops Center Automator and the products using Common Component:

```
hcmds64srv /statusall
```

To change how to start a service or services:

```
hcmds64srv /starttype {auto | manual} {/server service-name | /all}
```

where:

- `/start` starts the service and database specified in the /server option.

- `/stop` stops the service and database specified in the /server option.

- `/check` displays the status of the service and database specified in the /server option.

- `/status` displays the status of the service and database specified in the /server option.

- `/server` stops and starts the service and displays status.

  To start and stop only the service, or display its status, of Ops Center Automator, specify `AutomationWebService` for `service-name`. If this option is omitted, the command has an effect on the services of Ops Center Automator and all products using Common Component.

- `/statusall` displays the status of the services and databases, and of the services of the products using Common Component.

- `/starttype` specifies the start type of the service specified in the /server option. To start the service automatically, use `auto`. To start the service manually, use `manual`.

- `/all` If this option is specified, the command has an effect on the services of Ops Center Automator and all products using Common Component.

Remarks

- When you start and stop the services for Ops Center Automator in day-to-day functions, start and stop all the services without specifying the /server option. To start only the services from Ops Center Automator with /server option, use `HBase` for the /server option to start the services of Common Component because these services must be started beforehand.

- Running the command with the /stop option while a task is being processed ends any processing running on the connection destination. For this reason, if any task is In Progress, Waiting for Input, In Progress (with Error), or In Progress (Terminating), you need to wait the status transition of the task to one of the ended status (Completed, Failed, or Canceled) or stop all the tasks, and then use the command with the /stop option.

- If the service does not stop within three minutes after the command with the /stop option, the command ends abnormally with a message indicating a timeout. In this case, wait a little while and then run the command with the /stop option again.

hcmds64ssltool command

The `hcmds64ssltool` command creates a private key, CSR, self-signed certificate, and the self-signed certificate content file that are required for an SSL connection.

The created files are used for the following purposes:

- The CSR is submitted to CA to obtain the SSL server certificate. You can build an SSL connection environment by combining the obtained SSL server certificate with the private key.

- You can build an SSL connection environment by combining the self-signed certificate and the private key. However, you should use this environment for test purposes because the security level is low.

- You can verify the information registered in the self-signed certificate by viewing the self-signed certificate content file.

The syntax is:

```
hcmds64ssltool [/key private-key-file] [/csr certificate-signed-request-file] [/cert
self-signed-certificate-file] [/certtext self-signed-certificate-content-file] [/
validity expiration-date] [/dname distinguished-name(DN)] [/sigalg RSA-server-
certificate-signature-algorithm] [/eccsigalg ECC-server-certificate-signature-
algorithm] [/ecckeysize ECC-private-key-size] [/ext extension-information-for-the-
X.509-certificate]
```

where:

- `/key` specifies the absolute path of the private key file that is created. If you omit this option, the files are output to the default output destination path with the file name `httpsdkey.pem` (for RSA) and `ecc-httpsdkey.pem` (for ECC). The default output destination when you omit this option is as follows:

```
Common-Component-installation-folder\uCPSB11\httpsd\conf\ssl\server
```

- `/csr` specifies the absolute path of the certificate signing request file that is created. If you omit this option, the files are output to the default output destination path with the file name `httpsd.csr` (for RSA) and `ecc-httpsd.csr` (for ECC). The default output destination when you omit this option is as follows:

```
Common-Component-installation-folder\uCPSB11\httpsd\conf\ssl\server
```

- `/cert` specifies the absolute path of the self-signed certificate file that is created. If you omit this option, the files are output to the default output destination path with the file name `httpsd.pem` (for RSA) and `ecc-httpsd.pem` (for ECC). The default output destination when you omit this option is as follows:

```
Common-Component-installation-folder\uCPSB11\httpsd\conf\ssl\server
```

- `/certtext` specifies the absolute path of the self-signed certificate content file that is created. If you omit this option, the files are output to the default output destination path with the file name `httpsd.txt` (for RSA) and `ecc-httpsd.txt` (for ECC). The default output destination when you omit this option is as follows:

```
Common-Component-installation-folder\uCPSB11\httpsd\conf\ssl\server
```

- `/validity` specifies the expiry date of the self-signed certificate in the number of days. If this option is omitted, the expiry date becomes 3,650 days. A specifiable value is a number of days until December 31, 9999.

- `/sigalg` specifies the signature algorithm of the RSA certificate as SHA256withRSA, or SHA1withRSA. If you omit this option, the default of SHA256withRSA is used.

- `/eccsigalg` specifies the signature algorithm of the ECC certificate as SHA512withECDSA, SHA384withECDSA, SHA256withECDSA, or SHA1withECDSA. If you omit this option, the default of SHA384withECDSA is used.

- `/ecckeysize` specifies the key size of the private key for the ECC server certificates in bits as 256 or 384. If you omit this option, the default of 384 is used.

- ▪ `/ext` specifies the extension information for the X.509 certificate. To set the SAN (Subject Alternative Name) on the self-signed certificate and certificate signing request, specify this option. The specification method is based on the `/ext` option of the keytool command in Java. Note, however, that the only extension that can be specified in Ops Center Automator is SAN. If you specify the `/ext` option multiple times, the first specification takes effect.

  The following is an example of specifying the extension information.

  - To specify www.example.com as the host name:

    ```
    hccmds64ssltool /ext san=dns:www.example.com
    ```

  - To specify www.example.com and www.example.net as multiple host names:

    ```
    hccmds64ssltool /ext san=dns:www.example.com, dns:www.example.net
    ```

- /dname specifies the identification name (DN) written in the SSL server certificate in the attribute-type=attribute-value format. You can specify a value with multiple attribute types by separating with a comma (,). The attribute-type is case insensitive. The attribute-value cannot include a double quotation mark (") or backslash (\).

  Follow RFC 2253 for character escapes.

  Escape the following characters with a backslash (\).

  - + , ; < =>

  - A space at the beginning of the character string

  - A space at the end of the character string

  - A hash mark (#) at the beginning of the character string

  If you omit this option, you will input the attribute values by response input according to the prompt displayed when you run the command.

  The following table describes attribute types that can be specified in this option.

Table 5 List of attribute types that can be specified in the identification name (DN)

Attribute type	Description	Prompt displayed	Value
CN	Common Name	Server Name	Identification name of the Ops Center Automator server such as a host name, IP address, and domain name[#]
OU	Organizational Unit Name	Organizational Unit	Organization name of a small unit such as a department or division name
O	Organization Name	Organization Name	Organization name of the company or organization[#]
L	Locality Name	City or Locality	Name of the city or locality.
ST	State or Province Name	State or Province	Name of the state or province
C	Country Name	Two-character country code	Country code
#: Required when you use a response input.			

The following shows an example of a response input:

```
Enter  Server  Name  [default=MyHostname]:example.com
Enter Organizational Unit:Automation Administration
Enter Organization Name [default=MyHostname]:HITACHI
```

Appendix B: CLI commands

```
Enter your City or Locality:Sanfrancisco
Enter your State or Province:California
Enter your two-character country-code:US
Is CN=example.com,OU=Automation Administration,O=HITACHI,L=Sanfrancisco,
ST=California,C=US correct? (y/n) [default=n]:y
```

if you made a mistake when inputting a value, enter `n` at the confirmation to do the response input again.

Remarks

If the attribute type CN of the SSL server certificate does not match the host name, IP address or domain name specified as the connection target from the Web browser to the Ops Center Automator server, a server name mismatch warning or error occurs.

hcmds64unlockaccount command

The **hcmds64unlockaccount** command unlocks a user account. Use this command when all the user accounts are locked and the users cannot log in to Ops Center Automator.

The syntax is:

```
hcmds64unlockaccount [/user user-ID]
```

📄 **Note:** You are prompted to enter the password in interactive mode.

where:

- `/user` specifies the user ID of the user account that you want to unlock. You must specify the user ID with User Management permission.

Remarks

- Only a user account with User Management permission can unlock user accounts by using the **hcmds64unlockaccount** command.

- If the user name specified in the options includes characters, &, |, or ^, enclose the character with double quotation marks (") or escape the character with a caret (^). For example, in Windows, if the user ID is ^a^b^c^, the command can be written as:

```
hcmds64unlockaccount /user "^"a"^"b"^"c"^"
```

or

```
hcmds64unlockaccount /user ^^a^^b^^c^^
```

Ops Center Automator CLI commands

Ops Center Automator gives a set of CLI commands.

Appendix B: CLI commands

> 📄 **Note:** When the Ops Center Automator server is using the Linux OS, read "/" to "-" is used for each argument.

When running Ops Center Automator in a Windows-based OS, navigate to `<system-drive>\Program Files\hitachi\Automation\bin,` (when running Linux OS, navigate to `/opt/hitachi/Automation/bin`) then open the command prompt to run the following Ops Center Automator CLI commands.

backupsystem

The **`backupsystem`** command backs up the system configuration and database information in the specified folder.

The syntax is:

```
backupsystem {/dir directoryname [/auto] | /help}
```

where:

- `/dir` is an absolute or relative folder path that contains backup data.

- `/auto` directs the Ops Center Automator, Common Component services and database to start and stop automatically.

> 📄 **Note:** Before running the **`backupsystem`** command in a cluster environment, you must run the following command to take the group where the Automator service is registered offline and disable failover.
>
> ```
> Common-component-Installation-folder\ClusterSetup
> \hcmds64clustersrvstate.bat /soff /r group-name
> ```

deleteremoteconnection

The **`deleteremoteconnection`** deletes the agentless connection-destination definitions registered through Ops Center Automator based on the definition ID derived with the **`listremoteconnections`** command.

The syntax is:

```
deleteremoteconnection {/id definition-ID [/user username | /user username /
passwordfile passwordfile]
[/authmode local | external] | /help}
```

> 📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/id` is the single-byte numerical ID (between 1 - 64 characters in length) of the agentless connection-destination definition information to delete; if the specified ID does not exist, an error is generated.

- `/user` is a user ID.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

deleteservicetemplate

The **deleteservicetemplate** command deletes a service template.

The syntax is:

```
deleteservicetemplate {/name service-template-key-name /vendor
vendor-ID /version XX.YY.ZZ [/user username | /user username  /passwordfile
passwordfile]
[/authmode local | external] | /help}
```

> **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/name` is the key name of a service template.

- `/vendor` is the vendor ID of a service template.

- `/version` is a version of a service template.

- `/user` is a user ID.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

encryptpassword

The **encryptpassword** command creates a file that includes an encrypted user name and password. You can specify the password file instead of the password for any Ops Center Automator command that allows the `/passwordfile` option.

The syntax is:

```
encryptpassword {[/user username] /passwordfile passwordfile [/authmode local |
external ] | /help }
```

📄 **Note:** You are prompted to enter the password in interactive mode.

where:

- `/user` is the ID of the user who is added to the password file.

- `/passwordfile` is the name of the password file (with absolute or relative path) that includes the encrypted user credentials.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

importservicetemplate

The **importservicetemplate** command imports a service template.

The syntax is:

```
importservicetemplate
{/file service-template [/user username | /user username  /passwordfile passwordfile]
[/authmode local | external ] | /help}
```

📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/file` is the service template file to import.

- `/user` is a user ID.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

listremoteconnections

The **listremoteconnections** command outputs a listing of the agentless connection-destination definitions registered in Ops Center Automator to a CSV formatted file.

The syntax is:

```
listremoteconnections {/file output-file [/user username | /user username /
passwordfile passwordfile] [/authmode local | external ]
 | /help}
```

> 📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/file` is the path of the file to which the list is output; if the specified file already exists, an error is generated.

- `/user` is the name of the user executing the command. The user name can consist of any single-byte alphanumeric characters including (! # $ % & ' ( ) * + - . = @ \ ^ _ |) from 1 - 256 characters in length. The user name is case sensitive.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

listservices

The **listservices** command exports a list of services or a list of service templates to a CSV file.

The syntax is:

```
listservices {/output {services | servicetemplates} /file output-file
[/encoding encoding] [/user username | /user username /passwordfile passwordfile] [/
authmode local | external ] | /help}
```

> 📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the passwordfile option.

where:

- `/output` is either `services` (export services) or `servicetemplates` (export service templates).

- `/file` is the output file path.

- `/encoding` is the encoding of the output file, either `UTF-8` or `Shift_JIS`.

- `/user` is a user ID.

  The Submit role is required to output services list. The Modify role is required to output service templates list.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

listtasks

The **`listtasks`** command exports a list of services or a list of tasks to a CSV file.

The syntax is:

```
listtasks {[/startrange {yyyy-mm-dd | ,yyyy-mm-dd
| yyyy-mm-dd, yyyy-mm-dd}] /output {tasks |
 histories | taskdetails} {/file outputfile
| /taskdetaildir directoryname} [/encoding encoding]
 [/user username | /user username  /passwordfile passwordfile] [/authmode local |
external] | /help}
```

> **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/startrange` is the date range of the task start date. Use this to limit the contents of the list to tasks run within a specific period of time.

- `/output` is either of the following output data types: `tasks` (export tasks), `histories` (export histories), `taskdetails` (export task with properties)

- `/file` is an output file with an absolute or relative path.

- `/taskdetaildir` is an output file with an absolute or relative path. `/taskdetaildir` is required instead of `/file` when `/output taskdetails` is specified.

- `/encoding` is the encoding of the output file, either `UTF-8` or `Shift_JIS`

- `/user` is a user ID. The Admin role is required to output `taskdetails`.

- `/passwordfile` is the absolute or relative path of the password file.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

restoresystem

The **`restoresystem`** command restores the system configuration and database information from the specified folder where the data was backed up.

The syntax is:

```
restoresystem {/dir directoryname [/auto] | /help}
```

where:

- `/dir` is an absolute or relative folder path that contains data that is backed up by the **backupsystem** command

- `/auto` directs the Ops Center Automator, Common Component services and database to start and stop automatically.

> 📄 **Note:** Before running the **restoresystem** command in a cluster environment, you must run the following command to take the group where the Automator service is registered offline and disable failover.
>
> ```
> Common-component-Installation-folder\ClusterSetup
> \hcmds64clustersrvstate.bat /soff /r group-name
> ```

setremoteconnection

The **setremoteconnection** command adds or updates agentless connection-destination definitions in Ops Center Automator through a CSV file.

The syntax is:

```
setremoteconnection {/file input-file
[/user username | /user username  /passwordfile passwordfile]
[/authmode local | external] | /help}
```

> 📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

where:

- `/file` is the path of the file that contains the agentless connection-destination definitions to be added or updated; if the specified file does not exist, an error is generated. Absolute paths and relative paths are both acceptable.

- `/user` is the name of the user executing the command. The user name can consist of any single-byte alphanumeric characters including (! # $ % & ' ( ) * + - . = @ \ ^ _ |) from 1 - 256 characters in length. The user name is case sensitive.

- `/passwordfile` is a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

setupcluster

The **setupcluster** command sets up an Ops Center Automator cluster environment.

The syntax is:

```
setupcluster {/exportpath exportpath | /help}
```

where :

- `/exportpath` is the absolute or relative path of the folder on a shared disk used to store the database and server information.

stoptask

The **stoptask** command stops a running task.

The syntax is:

```
stoptask {/taskid task-ID [/user username | /user username  /passwordfile
passwordfile] [/authmode local | external] | /help}
```

> **Note:** You are prompted to enter the password in interactive mode if you do not specify the passwordfile option.

where:

- `/taskid` is a task ID. You can confirm the task ID from the **Task Details** window, output of `submittask` command, output of `listtasks` command.

- `/user` is a user ID.

- `/passwordfile` is the absolute or relative path of the password file.

- `/authmode local | external` specifies the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

submittask

The **submittask** submits a task for a service.

For more information, see the **submittask** command section.

setupcommonservice command

The **setupcommonservice** command is a setting command for linking with Common Services. The **setupcommonservice** command registers Ops Center Automator as an application in Common Services and sets Ops Center Automator as an authentication server that uses Common Services.

> 📄 **Note:** You must use the Ops Center portal to remove an Ops Center Automator registered in Common Services.

Functions

The `setupcommonservice` command registers the Ops Center Automator URL in Common Services. The URL to be registered uses the URL registered in the `hcmds64chgurl` command. Confirm in advance that the URL registered in `hcmds64chgurl` can be resolved by the browser, then run the `setupcommonservice` command.

This command needs a secure connection between Ops Center Common Services and Ops Center Automator. See the *Hitachi Ops Center Installation and Configuration Guide* for more information.

Syntax

Windows syntax:

```
setupcommonservice {[/csUri CommonServiceUri | /csUri CommonServiceUri /csUsername
CommonServiceUsername] [/appName ApplicationName]
[/appDescription ApplicationDescription] [ /auto ] | /help }
```

Linux syntax:

```
setupcommonservice {[-csUri CommonServiceUri | -csUri CommonServiceUri -csUsername
CommonServiceUsername] [-appName ApplicationName]
[-appDescription ApplicationDescription] [ -auto ] | -help }
```

> 📄 **Note:** You are prompted to enter the password in interactive mode.

Options

Option	Description
csUri	Specify the URL of Common Services. (For example: https://common.service/portal)
csUsername	Specify a user with opscenter-security-administrator privileges to be managed by Common Services. The username can be 1-byte alphanumeric characters. This includes (! # $% & '() * +-. = @ ^ _ |). The length is from 1 to 255 characters. Usernames are case-sensitive. You are prompted to enter the password when you run the command with this option.

Appendix B: CLI commands

Option	Description
appName	Specify the name of the Ops Center Automator to be displayed by Common Services. The name is specified with 1 to 128 characters. If appName is omitted at the time of new registration, the host name or IP address of Ops Center Automator is set as the name. If appName is omitted when updating, the name is not changed.
appDescription	Specify a description of the Ops Center Automator displayed by Common Services. The description can be from 0 to 512 characters.
auto	Automatically start and stop the services and databases of Ops Center Automator.

changemode command

The **changemode** command allows you to change the performance mode for Ops Center Automator. There are two performance modes, standard and high performance.

Standard mode

This is the default mode which supports running a single Online Migration with Configuration Manager task.

High performance mode

Use high performance mode if you need to run multiple Online Migration with Configuration Manager tasks concurrently. If you select this mode, you will need to change the logger.TA.MaxFileSize and plugin.threadPoolSize parameters in config_user.properties. For more information, see "Changing the system configuration" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Syntax

```
changemode {/mode {standard| highPerformance} [/auto] |  /print |  /help}
```

Options

Option	Description
/mode	Specify a performance mode, either standard (standard mode) or highPerformance* (high performance mode).

Option	Description
/auto	Optionally stop and start services that use Common Component and HiRDB automatically. To specify this option in a cluster environment, the services registered in the cluster software must be offline.
/print	Output the current mode.
/help	Display command help.
*: If you change the mode to highPerformance, you need to change the logger.TA.MaxFileSize and plugin.threadPoolSize parameters in config_user.properties. For more information, see "Changing the system configuration" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.	

Permissions

Ops Center Automator users must have Administrator permissions in Window or root permissions in Linux.

Return codes

The following table lists the **changemode** command return codes and descriptions.

Return code	Description
0	The command succeeded.
1	The argument is not valid.
2	The command stopped.
3	The service status is not valid.
4	An exclusion error has occurred.
101	Cannot change the mode because it failed due to a cause other than those listed above.
90	Cannot start or stop the service.
255	The command stopped because of an error not in this table.

Usage example: To change to high performance mode

```
changemode /mode highPerformance
```

Usage example: To change to standard mode and specify the auto option

```
changemode /mode standard /auto
```

Usage example: To output the current mode

```
changemode /print
```

Output example: Changing to high performance mode

```
# changemode /mode highPerformance


KNAE03000-I The changemode command will now start.
KNAE03542-I
Changed to high performance mode. Set the following values in config_user.properties:
logger.TA.MaxFileSize=100240
plugin.threadPoolSize=100
After updating config_user.properties, restart the service.
KNAE03001-I The changemode command ended normally.
```

submittask command

The **submittask** command submits a service for execution using the specified service name, service group name, and property options, and returns the task ID as the execution output of the command.

Functions

The submittask command has four functions:

- Immediate execution of a service.

- Scheduled execution of a service.

- Recurrent execution of a service.

- Reregistration of tasks.

  If this option is specified, you can reregister tasks that were output by the **listtasks** command with the taskdetails option.

Syntax: Immediate execution of a service

```
submittask {/servicename ServiceName [/servicegroup ServiceGroup]
    [/taskname  TaskName]
    [/taskdescription TaskDescription]
    [{[/property Key "Value"]... | /propertyfile PropertyFile}]
    [/user UserName | /user UserName /passwordfile PasswordFile]
    [/wait]
    [/authmode local | external] | /help}
```

Syntax: Scheduled execution of a service

```
submittask {/servicename ServiceName
    [/servicegroup ServiceGroup]
    [/taskname TaskName]
    [/taskdescription TaskDescription]
    [{[/property Key "Value"]... | /propertyfile PropertyFile}]
    [/user UserName | /user UserName /passwordfile PasswordFile]
    /scheduledate yyyy-mm-dd
    /scheduletime hh:mm
    [/authmode local | external] | /help}
```

Syntax: Recurrent execution of a service

```
submittask {/servicename ServiceName
    [/servicegroup ServiceGroup]
    [/taskname TaskName]
    [/taskdescription TaskDescription]
    [{[/property Key "Value"]... | /propertyfile PropertyFile}]
    [/user UserName | /user UserName /passwordfile PasswordFile]
    /recurrencepattern {daily[:{1h|2h|3h|4h|6h|8h|12h|24h}] |
    weekly:sun,mon,...,sat | monthly:{dd,dd,...,dd
    [,endofmonth] | endofmonth}}
    /recurrencetime hh:mm /recurrencestart yyyy-mm-dd
    [/authmode local | external] | /help}
```

Syntax: Reregistration of tasks

```
submittask {/reregister
    /taskdetaildir DirectoryName
    [/setoriginalsubmitter]
    [/user UserName | /user UserName /passwordfile PasswordFile]
    [/authmode local | external] | /help}
```

> **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

Permission

- To run this command, you must have the Admin, Modify, or Submit role in Ops Center Automator and Administrator permission for the OS.

- You cannot run services that are in a service group whose role is not set.

- The service you want to run must belong to the service group with a role that is assigned by the user group. The user must belong to the user group.

Options

Option	Description
/servicename	Specify a service name. The name of a service you want to submit. The service name can be 1 to 128 characters long.
/servicegroup	Specifies a service group to which the service belongs. The name of the service group that the service belongs to. This is an optional parameter. If you omit this option, the service group that is associated with the user who is specified in the /user option is used. However, if more than one service group is associated with that user, an error occurs. The service group name can be 1 to 80 characters long and consists of half-width alphanumeric characters and _ (underscore).
/taskname	Specify a task name. The name of the task. If you omit this option, the system defaults to *service-name_YYYYMMDDhhmmss*, where *service-name* is the value of the /servicename option and *YYYYMMDDhhmmss* is the time when the service runs. The task name can be 1 to 128 characters long and can consists of any characters except control characters ('\u0000'~'\u001F' or \u007F'~'\u009F'). This is an optional parameter.
/taskdescription	Specify a task description. The description of the task. The description can be 1 to 256 characters long and can consists of any characters except control characters ('\u0000'~'\u001F' or \u007F'~'\u009F'). This is an optional parameter.
/property	Specify a property key and value. One or more property key-value combinations that are used by the service to be performed. If a property value is not set for a key, the default value used. If the value of a required property key is not set, then an error occurs. You cannot specify both the /property and the /propertyfile options. If you do, then an error occurs.

Option	Description
	You can specify this option more than one time, for example, `/property property-key-1 property-value-1 /property property-key-2 property-value-2`. The maximum number of combinations of property keys and values available is 1000 pairs. This value can be changed by using the `server.editor.publicProperty.perTemplate.maxnum` key in the `config_user.properties` file.
	▪ *key* is the property key for the service. It can be 1 to 1024 characters long. The key consists of half-width alphanumeric characters and the following characters: / (slash), . (period), (hyphen), and _ (underscore). Specifying the same property key more than one time causes an error.
	▪ *value* is the value for the *key* property. If the value includes a space or special character, the value must be enclosed in double quotation marks (").
`/propertyfile`	Specify a properties file. Use an absolute or relative path.
	The name of a properties file, including an absolute or relative path, that defines the property settings that the service you want to perform uses.
	Property keys and values that are not specified in the properties file are set to default values. If you do not specify a required property key and that key has no default value, then an error occurs.
	This option and the `/property` option cannot be specified at the same time. If both options are specified, then an error occurs.
	Additional requirements:
	▪ Location: The properties file can be in any folder. However, the user who runs the command must be able to access it.
	▪ File name: Any file name.
	▪ Key-value combination format:
	property-key=property-value(linefeed code)
	property-key=property-value(linefeed code)
	If you add a suffix @FILE to the key, it is possible to specify a text file to value. For example, key@FILE=C:\properties\valuefile.txt.
`/user`	Specify a user ID.

Option	Description
	The ID for the Ops Center Automator user who has access permission to run the service.
	The ID can be 1 to 256 half-width alphanumeric characters. It can consist of any characters, except the following: ! # $ % & ( ) * + - . = @ \ ^ _ |. The ID is not case-sensitive.
`/passwordfile`	Specify a password file. Use an absolute or relative path.
	The absolute or relative path to the password file for the user who is specified in the `/user` option.
	You can create a password file by using the **encryptpassword** command.
`/wait`	Wait for a task to finish.
	Shows the task execution result (normal termination or failure). If the `/wait` option is not specified, the command ends without waiting for the task to end. In this case, a message reporting the task ID is provided only when the task execution has started normally.
`/scheduledate`	Specify a date for executing a service.
	When this option is specified, any of the following conditions will result in an error:
	▪ A combination of arguments that is not valid.
	▪ The form of the specified date is incorrect.
	▪ The time indicated by `/scheduledate` and `/scheduletime` is in the past. The relevant time is server time.
	▪ The specified date is outside the range of January 1, 1994 to December 31, 2036
	Format:
	Specify the date in the form of "yyyy-mm-dd." Specify the year as yyyy in four digits. Specify the month as mm in the range 1 (or 01) to 12. Specify a day as dd in the range 1 (or 01) to 31.
`/scheduletime`	Specify a time for executing a service.

Option	Description
	When this option is specified, any of the following conditions will result in an error:
	▪ A combination of arguments that is not valid.
	▪ The form of the specified time is incorrect.
	▪ The time indicated by `/scheduledate` and `/scheduletime` is in the past. The relevant time is server time.
	Specify the time in the form of "hh:mm." Specify hours as hh in the range 0 (or 00)-23. Specify minutes as mm in the range 0 (or 00)-59.
`/recurrencepattern`	Specify a pattern for a recurring service.
	Use this option with the `/recurrencetime` option, and the `/recurrencestart` option.
	When this option is specified, the following conditions will result in an error:
	▪ A combination of arguments that is not valid.
	▪ The format of the specified fixed execution cycle is incorrect.
	Recurrence options and formats:
	▪ Daily: specify "daily:1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h". The default recurrence is every 24 hours.
	▪ Weekly: specify "weekly:sun, mon, ..." using three letter English abbreviations for days of the week and comma-separated values following a colon. The days can be in any order.
	• Sunday: sun
	• Monday: mon
	• Tuesday: tue
	• Wednesday: wed
	• Thursday: thu
	• Friday: fri
	• Saturday: sat
	▪ Monthly: specify two-digit comma-separated values following a colon. For the last day of the month, specify "endofmonth."
`/recurrencetime`	Specify the execution time for a recurring service.

Option	Description
	Use this option with the `/recurrencepattern` option, and the `/recurrencestart` option.
	When this option is specified, the following conditions will result in an error:
	▪ A combination of arguments that is not valid.
	▪ The form of the specified time is inaccurate.
	Format:
	Specify the time in the form of "hh:mm." Specify hours as hh in the range 0 (or 00) to 23. Specify minutes as mm in the range 0 (or 00) to 59.
`/recurrencestart`	Specify a date for a recurring service to start.
	Use this option with the `/recurrencepattern` option, and the `/recurrencetime` option.
	When this option is specified, the following conditions will result in an error:
	▪ A combination of arguments that is not valid.
	▪ The form of the specified date is inaccurate.
	▪ The specified date is outside the range on January 1, 1994 to December 31, 2036.
	Format:
	Specify the date in the form of "yyyy-mm-dd." Specify the year as yyyy in four digits. Specify the month as mm in the range 1 (or 01) to 12. Specify a day as dd in the range 1 (or 01) to 31.
`/reregister`	Specify to reregister scheduled tasks.
	This option has no value.
`/taskdetaildir`	Specify a folder that was output by the **listtasks** command with the `/taskdetails` option. Use an absolute or relative path.
	The folder must be located on a local disk.
	The maximum path length is 180 characters.
`/setoriginalsubmitter`	Specify whether you want to reregister tasks as the user at the point in time in which task details were output.
	This option has no value.

Option	Description
	When this option is not specified, the user ID specified as the `/user` of the `submittask` command serves as the assigned user of the task after reregistration.
`/authmode local | external`	Specify the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.
`/help`	Show command syntax and usage.

Command location

installation-folder\bin

Return codes

The following table lists the **submittask** command return codes and descriptions.

Return code	Description
0	The command succeeded.
1	The argument is not valid.
2	The command stopped.
3	The service status is not valid.
4	The number of commands that can be run simultaneously is exceeded.
5	Communication failed.
6	Authentication failed.
7	A path is specified that is not valid.
9	Path not found.
10	Path cannot be accessed.
14	You do not have permission to run the command.
17	The interactive input value is not valid.
130	The service did not start.
131	The properties file does not exist.

Appendix B: CLI commands

Return code	Description
132	The properties file has a format that is not valid.
133	The command with `/wait` option failed to get the current command status.
134	The task failed.
135	The task was canceled.
136	The contents of the folder specified by the `/taskdetails` option are not valid.
137	Some part of the tasks failed to be registered by the command with the `/reregister` option.
138	All tasks failed to be registered by the command with the `/reregister` option.
139	The content of task detail folder is different from the current version or revision.
255	The command stopped due to an error other than the ones listed in this table.

Example: Immediate execution of a service

```
submittask /servicename "Execute Remote Command"
        /servicegroup "Default Service Group"
        /taskname "Submittask sample"
        /taskdescription "This is a sample."
        /property common.targetHost host01 /property common.remoteCommand ipconfig
        /user Bob
```

Example: Scheduled execution of a service

```
submittask /servicename "Execute Remote Command"
        /propertyfile "C:\temp\properties.txt"
        /scheduledate 2020-01-23 /scheduletime 12:34
        /user Bob
```

Example: Recurrent execution of a service

```
submittask /servicename "Execute Remote Command"
        /propertyfile "C:\temp\properties.txt"
        /recurrencepattern weekly:sun,mon,sat
```

Appendix B: CLI commands

```
        /recurrencetime 12:34 /recurrencestart 2020-01-23
        /user Bob
```

Example: Reregistration of tasks

```
submittask /reregister /taskdetaildir "C:\temp\taskdetails"
        /user Bob
```

listremoteconnections command

The **listremoteconnections** command outputs a listing of the agentless connection-destination definitions registered through Ops Center Automator to a CSV formatted file.

Functions

The **listremoteconnections** command performs the following functions:

- output a list of agentless connection-destination definitions that include names of connection destinations and credential information.

- The CSV file that you have output can be used as an input file for the **setremoteconnection** command as-is.

Syntax:

```
listremoteconnections {/file OutputFile
[/user UserName | /user UserName /passwordfile PasswordFile]
[/authmode local | external] | /help}
```

> 📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the passwordfile option.

Permission

- Ops Center Automator users must have Admin permissions.

- Only users who have OS administrator permissions (members of the Administrators group) are allowed to run the **listremoteconnections** command.

- If a user who does not have the necessary permissions runs the command, the following message appears, asking for the promotion of the user's permissions:

Message: KNAE03226-E The user does not have permission to execute the command.

Options

Option	Description
/file	Specifies the path of the file to which the list is output; if the specified file already exists, an error is generated. .

Option	Description
/user	Specifies the name of the user executing the command. The user name can consist of any single-byte alphanumeric characters including (! # $ % & ' ( ) * + - . = @ \ ^ _ |) from 1 - 256 characters. The user name is case-sensitive.
/passwordfile	Specifies a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.
/authmode local | external	Specify the authentication type, either local or external. Specify local to authenticate locally with Automator. Specify external to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the command.auth.mode of command_user.properties.

Storage Destination

installation-folder\bin

Return codes

The following table lists the **listremoteconnections** command return codes and descriptions.

Return code	Description
0	The command succeeded.
1	The argument is not valid.
2	The command stopped.
3	The service status is not valid.
4	An exclusion error has occurred.
5	Communication failed.
6	Authentication failed.
7	A path is specified is not valid.
8	A file with the specified name already exists.
9	Path not found.
10	Path cannot be accessed.
13	Failed to output the specified file.

Return code	Description
14	User does not have permission to run the command.
17	The interactive input value is not valid.
220	Failed to acquire a list of agentless connection-destination definitions.
255	The command stopped because of an error not in this table.

Data Format

Agentless connection destinations are output in CSV format with one host in one line and with the following data items in the order in which they are shown in the following table.

Property	Header Section (first line)	Data Section (second and subsequent lines)
Definition ID	Id	Agentless connection-destination definition ID
Connection destination type	Method	Connection destination can be specified as follows: ▪ IPv4: The connection destination is an IP address in the IPv4 format. ▪ IPv6: The connection destination is an IP address in the IPv6 format. ▪ HostName: The connection destination is a host name.
Connection destination	IP Address/Host Name	IP address or host name of the connection-destination host.
Service resource group	Service Group	Service group name allocated to the agentless connection-destination definition.
Authentication information	Authentication	Can be either of the following: ▪ Enable: Authentication information is set ▪ Disable: Authentication information is not set

Appendix B: CLI commands

Property	Header Section (first line)	Data Section (second and subsequent lines)
Protocol	Protocol	Can be any of the following: ▪ Windows: Connect using Windows-based OS ▪ SSH: Connect using SSH ▪ Telnet: Connect using Telnet
SSH authentication method	SSH authentication method	When the protocol is not SSH, null character ("") When the protocol is SSH, any one of the following: ▪ Password Authentication ▪ Public Key Authentication ▪ Keyboard Interactive Authentication
User ID	User ID	User ID of the user who logs on to the connection-destination host.
Password	Password	Fixed to "*******"
Super user's password	Super user's password	Fixed to "*******"
Status	Connection Status	Connection Successful, Error, Unknown, or -.
Last connection time	Connected Time	The last connection time.

Usage example: To output a list of registered agentless connection-destination definitions to a file

```
listremoteconnections /file bbbbb /user xxxxx
```

Example: Output message for successful list

```
KNAE03000-I The listremoteconnections command will now start.
KNAE03001-I The listremoteconnections command ended normally.
```

Example: Output message for unsuccessful list

```
KNAE03000-I The listremoteconnections command will now start.
KNAE03002-E The listremoteconnections command ended abnormally (12345).
```

Example: Typical output file

```
"Id","Method","IP Address/Host Name","Service Group","Authentication ","Protocol",
"SSH Authentication Method","User ID","Password","Super User's Password"
"1","IPv4","10.197.158.107","All Service Groups","Enable","Windows","",
"Administrator@DOM1","********",""
"10","HostName","vmc006","All Service Groups","Enable","SSH","Password
Authentication","ao","********","********"
"100","IPv6","fd00::6172:839:2e15:f6f3:da7e"," All Service Groups ","Enable","Telnet",
"","","",""
"1000","HostName","vmc007"," All Service Groups ","Disable","","","","",""
```

setremoteconnection command

The `setremoteconnection` command adds or updates agentless connection-destination definitions in Ops Center Automator through a CSV file.

Function

The `setremoteconnection` command adds or updates agentless connection-destination definitions in Ops Center Automator. To add or update agentless connection-destination definitions, you define the information in a CSV file and then specify the file name as a command argument.

> **Note:** The CSV file must have the same format as the output file of the `listremoteconnections` command.

Syntax:

```
setremoteconnection {/file Input File
[/user UserName | /user UserName /passwordfile PasswordFile]
 [/authmode local | external]| /help}
```

> **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

Permission

- Ops Center Automator users must have Administrator permissions (members of the OS Administrators group) to run the `setremoteconnection` command.

- If a user without the necessary permissions runs the command, the system generates the following message:

Message: KNAE03226-W The user does not have permission to execute the command.

Appendix B: CLI commands

Options

Option	Description
`/file`	Specifies the path of the file that contains the agentless connection-destination definitions to add or update. If the specified file does not exist, the system generates an error. Both absolute and relative paths are allowed.
`/user`	Specifies the name of the user running the command. The user name must be between 1 and 256 characters in length and consist of single-byte alphanumeric characters including (! # $ % & ' ( ) * + - . = @ \ ^ _ |). The user name is case sensitive.
`/passwordfile`	Specifies a password file (with an absolute or relative path) that includes the encrypted user credentials for the specified user.
`/authmode local | external`	Specify the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

Storage destination

installation-folder\bin

Return codes

The following table lists the **setremoteconnection** command return codes and descriptions:

Return code	Description
0	The command succeeded.
1	The argument is not valid.
2	The command stopped.
3	The service status is not valid.
4	An exclusion error occurred.
5	Communication failed.
6	Authentication failed.
7	A path is specified that is not valid.
9	Path not found.

Return code	Description
10	Path cannot be accessed.
14	User does not have permission to run the command.
17	The interactive input value is not valid.
230	Format of the agentless connection-destination definition is not valid.
231	Registration of some of the agentless connection-destination definitions failed.
232	Registration of all of the agentless connection-destination definitions failed.
255	The command stopped because of an error not in this table.

File format

The agentless connection-destination definition file that you specify for the `/file` option uses the same basic format that is used in the output generated by the `listremoteconnections` command.

The agentless connection-destination definition file differs depending on the environment as follows:

- In a Windows-based OS environment: Uses character encoding MS932 and line feed code CR+LF.

- In a Linux OS environment: Uses the character encoding that is specified for the user's LANG environment variable and uses the line feed code LF.

Data item	Description
Definition ID (Id)	Specifies the ID of the agentless connection-destination definition to update. If a null character is specified, the agentless connection-destination definitions are registered as an addition. If the agentless connection-destination definition of the specified ID does not exist, the system generates an error.
Connection destination type (Method)	Specifies any of the following connection destination types: - IPv4: The connection destination is an IP address in IPv4 format. - IPv6: The connection destination is an IP address in IPv6 format. - HostName: The connection destination is a host name.

Appendix B: CLI commands

Data item	Description
Connection destination (IP Address/Host Name)	Specifies the IP address or host name of the connection-destination host.
Service resource group (Service Group)	Specifies the service group to allocate to the agentless connection-destination definition. **Note:** This parameter is ignored from v8.5.1 onward because agentless connection settings are allocated to infrastructure groups.
Authentication information (Authentication)	Specifies whether to set authentication information: ▪ Enable: Authentication information is set. ▪ Disable: Authentication information is not set. When the system displays the message "Authentication information is not set," any additional data is ignored. However, the data item is still required.
Protocol (Protocol)	Specifies one of the following protocols: ▪ Windows: Connect using a Windows-based OS. ▪ SSH: Connect using SSH. ▪ Telnet: Connect using Telnet.

SSH authentication method
 	
(SSH Authentication Method)
	Specifies the SSH authentication method:
	
	▪ When the protocol is not SSH, specify a null character ("").
	
	▪ When the protocol is SSH, one of the following:
	
	  • Password Authentication (PW)
	
	  • Public Key Authentication (PK)
	
	  • Keyboard Interactive Authentication (KI)

User ID (User ID)	Specifies the User ID used to log on to the connection-destination host when the protocol is Windows or SSH. This parameter is required.
Password (Password)	Specifies the password of the user ID used to log on to the connection-destination host. This parameter is required in some cases and not in others as follows:

Data item	Description
	Case 1: When no definition ID is specified (when adding a definition).
	▪ In a Windows-based OS, the parameter is required.
	▪ When the protocol is SSH the SSH authentication method is not "public key authentication", this parameter is required.
	Note: You cannot specify "********" as a password. The system generates an error if you specify this password.
	Case 2: A definition ID is specified (when updating a definition).
	▪ In a Windows-based OS, the parameter is required.
	▪ When the protocol is SSH the SSH authentication method is not "public key authentication", this parameter is required.
	Note: If you specify "********" for the password, the password is not changed. If you specify a null character ("") for the password, the password is deleted.
Super user's password (Super User's Password)	Specifies the password of a super user of the connection-destination host. When the protocol is SSH or Telnet, this parameter is optional. ▪ If you specify a string that is not "********" for the password, the specified string is set as the password. ▪ If you specify "********" for the password, the password is not changed. ▪ If you specify a null character ("") for the password, the password is deleted.
Status (Connection Status)	Specifies either Connection Successful, Error, Unknown, or "-" depending on the status.
Last connection time (Connected Time)	Specifies the last connection time.

Behavior of the setremoteconnections command

The following lists includes details about the behavior of the **setremoteconnections** command when specifying an agentless connection-destination definition file for the /file option:

- The first line of the file is the header section output by the **setremoteconnections** command and is ignored unconditionally. The second and subsequent lines are treated as agentless connection-destination definitions.

- When you specify two or more agentless connection-destination definitions in the file, a single syntax error in either definition causes the command to end with an error, and no agentless connection-destination definitions are registered.

- The values of the data items output by the **listremoteconnections** command in CSV format are enclosed in double quotation marks ("). However, if the values are not enclosed by double quotation marks, they are not treated as errors. (This is because when you edit a CSV file in Excel, double quotation marks are removed).

- If the value of the first data item (ID) of an agentless connection-destination definition is a null character, the specified content is added as an agentless connection-destination definition.

- If a value is specified for the first data item (ID) of an agentless connection-destination definition, the agentless connection-destination definition corresponding to the specified ID is updated with the content specified in the line. If the agentless connection destination definition corresponding to the specified ID does not exist, the system generates an error.

- When two or more agentless connection-destination definitions are specified in a file and the addition or update portion of the definitions fails, the command results are as follows:

  - A return value (warning, not error) is used to report a definition that was not successfully registered.

  - Information is output as a standard error, which enables you to identify the definition that was not successfully registered.

  - The registration processing continues for all remaining definitions, even if an error occurs.

Usage example: Register or update the agentless connection-destination definitions in Ops Center Automator with the content of a specified file

```
setremoteconnection /file bbbbb /user xxxxx
```

Example: Successful registration of agentless connection-destination definition

```
KNAE03000-I The setremoteconnection command will now start.
KNAE03002-E The remote connection definition was registered (ID:12345, line number:
12345).
```

Example: Unsuccessful registration or update

```
KNAE03000-I The setremoteconnection command will now start.
KNAE03002-E The setremoteconnection command ended abnormally (12345).
```

Example: Error encountered in parameters

```
KNAE03000-I The setremoteconnection command will now start.
KNAE03333-E A required parameter was not found (parameter name: XXXXX, line number:
12345). Specify the required parameter, and then try again.
KNAE03334-E Unnecessary parameter has been specified (parameter name: XXXXX, line
number: 12345). Delete the specified parameters, and then try again.
KNAE03002-E The setremoteconnection command ended abnormally (12345).
```

deleteremoteconnection command

The **deleteremoteconnection** command deletes the agentless connection-destination definitions registered through Ops Center Automator based on the definition ID derived with the **listremoteconnections** command.

Functions

The **deleteremoteconnection** command performs the following function:

- Deletes a succession of agentless connection-destination definitions based on their definition IDs. To determine the definition ID of the agentless connection-destination definition, use the **listremoteconnections** command.

Syntax:

```
deleteremoteconnection {/id Definition ID
[/user UserName | /user UserName /passwordfile PasswordFile]
[/authmode local | external]
| /help}
```

📄 **Note:** You are prompted to enter the password in interactive mode if you do not specify the `passwordfile` option.

Permission

- Ops Center Automator users must have Admin permissions.

- Only users who have OS administrator permissions (members of the Administrators group) are allowed to run the **deleteremoteconnection** command.

- If a user who does not have the necessary permissions runs the command, the following message is visible requesting promotion of the user's permissions:

Message: KNAE03226-W The user does not have permission to execute the command.

Appendix B: CLI commands

Options

Option	Description
`/id`	Specifies the single-byte numerical definition ID (between 1 - 64 characters) of the agentless connection-destination definition information to be deleted. If the specified ID does not exist, an error is generated.
`/user`	Specifies the name of the user (must have Admin permission) executing the command. The user name can consist of any single-byte alphanumeric characters including (! # $ % & ' ( ) * + - . = @ \ ^ _ |) from 1 - 256 characters in length. The user name is case sensitive.
`/passwordfile`	Specifies a password file (with absolute or relative path) that includes the encrypted user credentials for the selected user.
`/authmode local` `| external`	Specify the authentication type, either `local` or `external`. Specify `local` to authenticate locally with Automator. Specify `external` to authenticate with Common Services. If this option is not specified, Ops Center Automator operates in the authentication mode specified by the `command.auth.mode` of `command_user.properties`.

Storage destination

`installation-folder\bin`

Return codes

The following table lists the **deleteremoteconnection** command return codes and descriptions.

Return code	Description
0	The command succeeded.
1	The argument is not valid.
2	The command stopped.
3	The service status is not valid.
4	An exclusion error has occurred.
5	Communication failed.
6	Authentication failed.
14	The user does not have permission to run the command.

Appendix B: CLI commands

Return code	Description
17	The interactive input value is not valid.
240	Failed to delete an agentless connection-destination definition
255	The command stopped due to an error other than the ones listed in this table.

Usage example: - To delete the agentless connection-destination definition of the ID specified for the parameter

```
deleteremoteconnection /id 12345 /user xxxxx
```

Example: Output of normal deletion

```
KNAE03000-I The deleteremoteconnection command will now start.
KNAE03001-I The deleteremoteconnection command ended normally.
```

Example: Output of abnormal deletion

```
KNAE03000-I The deleteremoteconnection command will now start.
KNAE03002-E The deleteremoteconnection command ended abnormally (12345).
```

Appendix C: Services catalog

This appendix gives service details for the settings associated with the service templates that come with Ops Center Automator.

Server version required for each service template

The following table describes the Ops Center Automator server version required to use for each service template.

Service template		Ops Center Automator server version
Allocate volumes service templates		
	Allocate Volumes with Configuration Manager	10.7.0 or later
	Allocate Fabric Aware Volumes with Configuration Manager	10.8.3 or later
	Allocate Volumes with Smart Provisioning	10.8.2 or later
	Allocate Volumes with Clone/Snapshot	10.7.0 or later
	Allocate Volumes with 2DC Remote Replication	10.8.0 or later
	Allocate Volumes with Remote Replication (Global-Active Device)	10.8.0 or later
Allocate Like Volumes service templates		
	Allocate Like Volumes with Configuration Manager	10.7.0 or later
Data mobility service templates		
	Allocate Volumes from Virtual Storage Machine	10.8.0 or later
	Export Virtual Storage Machine Configuration Across Sites	10.8.0 or later
	Create High Availability Pair for Migration	10.8.0 or later

Appendix C: Services catalog

Service template		Ops Center Automator server version
	Migrate Data Using High Availability Pair	10.8.0 or later
ESX cluster service templates		
	Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster	10.8.0 or later
	Add Host to Cluster in vCenter	10.8.0 or later
	Remove Host from Cluster in vCenter	10.8.0 or later
ESXi host service templates		
	Allocate Volumes, Fabric, and Datastore for ESXi Host	10.8.0 or later
Expand Volume Capacity service template		
	Expand Volume Capacity	-
File share service templates		
	Configure CIFS/NFS for Hitachi	-
Global-Active Device service template		
	Global-Active Device Setup	10.8.0 or later
IO control service templates		
	Get IO Control	-
	Set IO Control	-
	Remove IO Control	-
Online migration service templates		
	Online Migration	10.8.0 or later
Online migration with Configuration Manager service templates		
	Create Online Migration Pair	10.8.2 or later
	Create Online Migration Pairs for Multiple Hosts	10.8.2 or later
	Migrate Data for Online Migration Pair	10.8.2 or later
	Clean up Online Migration Pair	10.8.2 or later
ServiceNow ticketing service templates		

Appendix C: Services catalog

Service template	Ops Center Automator server version
Call ServiceNow Table API	-
Create ServiceNow Incident Ticket	-
Update ServiceNow Incident Ticket	-
Retrieve ServiceNow Incident Tickets	-
Smart Allocation for Oracle Databases template	-
Smart Allocation for Oracle Databases	10.8.0 or later

Service template prerequisites

The following table shows the software and setup prerequisites for each of the service templates.

Service Template name	Software prerequisites	Setup prerequisites

Allocate Volumes with Configuration Manager	Ops Center API Configuration Manager v10.7.0-00 or later	▪ Register the LDEV ID and Host Group ID used by this service to the same resource group or virtual storage machine.
		
		▪ Create one web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by the Ops Center API Configuration Manager.
		
		▪ Use the same credentials for each storage system managed by Configuration Manager for which the Web service connection was created. Also, in addition to having the same credentials connected to all the storage systems, ensure that these credentials are assigned the following roles:
		
		  • Security Administrator (View and Modify)
		
		  • Storage Administrator (Provisioning)

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites

Allocate Fabric Aware Volumes with Configuration Manager	▪ Ops Center API Configuration Manager v10.7.0-00 or later
	
	▪ When integrating with Cisco FC switches: Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required)
	
	▪ When integrating with Brocade FC switches: Fabric OS (FOS) 8.2.1b or later, 9.0.1b or later
	
	 • For the default Fabric OS roles, Admin, FabricAdmin, or ZoneAdmin role is required.
	
	 • For user-defined roles, a role with both of the following permissions is required:
	
	  ▪ Fabric=O(Observe) or OM(Observe and Modify)
	
	  ▪ Zoning=OM(Observe and Modify)
	
	 • For switches with VirtualFabric feature enabled, the Virtual Fabric ID of the fabric to be operated is included in the Role-LF List for the user ID.
		▪ Register the LDEV ID and Host Group ID used by this service to the same resource group or virtual storage machine.
		
		▪ Create a web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by Ops Center API Configuration Manager.
		
		▪ Verify that the common credentials used to access all storage systems are assigned the following roles:
		
		 • Security Administrator (View and Modify)
		
		 • Storage Administrator (Provisioning)
		
		▪ Create a web service connection for DCNM or FOS.

Service Template name	Software prerequisites	Setup prerequisites
		- For FOS, the user ID cannot be a user using RADIUS/LDAP access authentication. - For FOS, verify the following: - FOS REST API is enabled. - Fabric name is set. - Ops Center Automator and FC switches are in the same LAN. - Ops Center Automator and FC switches are not connected via a proxy.

Service Template name	Software prerequisites	Setup prerequisites

Allocate Like Volumes with Configuration Manager	Ops Center API Configuration Manager v10.7.0-00 or later	▪ Create a Web service connection for the Ops Center API Configuration Manager.
		
		▪ Use the same credentials for each storage system managed by Ops Center API Configuration Manager for which the Web service connection was created. Also, in addition to having the same credentials connected to all the storage systems, ensure that these credentials are assigned the following roles:
		
		  • Security administrator (View, Edit)
		
		  • Storage administrator (Provisioning)

Service Template name	Software prerequisites	Setup prerequisites
Allocate Volumes with Clone/Snapshot	- Ops Center API Configuration Manager v10.7.0-00 or later - Network Management software: - Brocade Network Advisor (BNA) 12.4, 14.0, 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required) or - Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required)	- Register the LDEV ID and the Host Group ID used by this service to the same resource group. - Create at least one web service connection for the Ops Center API Configuration Manager server. - Use the same credentials for each of the storage systems managed by the Ops Center API Configuration Manager server registered to the web service connections. - Assign users the following account permissions: - Storage administrator (Provisioning) - Storage administrator (Local Copy) - Security administrator (View and Modify) - Create a web service connection for the BNA or DCNM server. - Verify that there are different DP Pools for the Primary and Secondary volumes for Clone.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
Allocate Volumes with Smart Provisioning	▪ Ops Center API Configuration Manager v10.7.0-00 or later ▪ When integrating with Cisco FC switches: Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required) ▪ When integrating with Brocade FC switches: Fabric OS (FOS) 8.2.1b or later, 9.0.1b or later 　• For the default Fabric OS roles, Admin, FabricAdmin, or ZoneAdmin role is required. 　• For user-defined roles, a role with both of the following permissions is required: 　　- Fabric=O(Observe) or OM(Observe and Modify) 　　- Zoning=OM(Observe and Modify) 　• For switches with VirtualFabric feature enabled, the Virtual Fabric ID of the fabric to be operated is included in the Role-LF List for the user ID. ▪ Ops Center Administrator v10.0.0-00 or later ▪ Ops Center Analyzer v10.0.0-00 or later	▪ Create a web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by Configuration Manager. ▪ Verify that the common credentials used to access all storage systems are assigned the following roles: 　• Security Administrator (View and Modify) 　• Storage Administrator (Provisioning) ▪ Create a web service connection for DCNM or FOS. ▪ For FOS, the user ID cannot be a user using RADIUS/LDAP access authentication. ▪ For FOS, verify the following: 　• FOS REST API is enabled. 　• Fabric name is set. 　• Ops Center Automator and FC switches are in the same LAN. 　• Ops Center Automator and FC switches are not connected via a proxy.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		• When specifying hosts in Host Settings, create a web service connection for Ops Center Administrator that uses credentials with System Administrator permissions. • When using performance data for provisioning, create a web service connection for Ops Center Analyzer that uses credentials with any one of the following roles 　　▪ Admin 　　▪ Modify • Only one Ops Center Analyzer server can be selected when using provisioning, and the required amount of performance information is stored in the Ops Center Analyzer. • When allocating volumes in VSM, add the LDEV ID, host group ID, and port to the VSM resource group.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		Notes: ▪ If the automatic selection of a storage system is specified (default), a storage system that has a pool whose usage rate is low and which satisfied the following conditions is automatically selected. 　• When Disk Type is specified: A Pool configured with the specified Disk Type (if multiple items are selected, they will be selected within that range) 　• When using Performance data for provisioning is specified: the pool must have a BusyRate that is less than the specified Pool BusyRate. If there is no pool that satisfies the specified Pool BusyRate, the pool candidate is not excluded by BusyRate. ▪ If the automatic selection of a storage system is specified (default), an LDEV and a Host Group are automatically created in meta_resource.

Service Template name	Software prerequisites	Setup prerequisites
		▪ If an LDEV is to be created on a VSM, the user must select the VSM (resource group) on which the LDEV is to be created.
Allocate Volumes with 2DC Remote Replication	▪ Ops Center API Configuration Manager v10.7.0-00 or later ▪ Network management software • Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required) or • Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required)	▪ Set up remote paths between the primary and secondary storage systems using the Fibre Channel or iSCSI. ▪ When using Universal Replicator, create a journal and add a journal volume to it. ▪ Register the LDEV ID, the port, and the Host Group ID used by this service to the same resource group. ▪ Create at least one Web Service connection for the Ops Center API Configuration Manager server. ▪ Use the same credentials for each storage system managed by the Ops Center API Configuration Manager server registered in Web Service Connections.

Service Template name	Software prerequisites	Setup prerequisites

		▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.
		
		▪ Assign users the following account privileges:
		
		  • Storage administrator (Provisioning)
		
		  • Storage administrator (Remote Copy)
		
		  • Security administrator (View and Modify)
		
		▪ Create a web service connection for the BNA or DCNM server.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites

Allocate Volumes, Fabric, and Datastore for ESXi Host	■ Ops Center API Configuration Manager v10.7.0-00 or later
	
	■ Network management software
	
	  • Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required)
	
	  or
	
	  • Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required)
		■ Properly connect the storage system and hosts in SAN and verify that they belong to the correct fabric.
		
		■ If Fabric Settings is enabled, configure a single Brocade Network Advisor or Cisco Data Center Network Manager to manage the fabric.
		
		■ Verify that the storage ports and HBA ports that are used by this service template belong to the fabric.
		
		■ The Web Service Connection is created for the VMware vCenter Server.
		
		■ At least one Web Service Connection is created for the Ops Center API Configuration Manager server.

Service Template name	Software prerequisites	Setup prerequisites
	▪ Virtualization software Either of the following combinations are supported: • VMware vSphere Hypervisor (ESXi) v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • VMware vCenter Server v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • Python 3.5 The following libraries are required for Python 3.5: - pyvmomi 6.5.0.2017.5.post1 - six 1.11.0 - urllib3 1.24.3 - certifi 2017.11.5 - idna 2.6 - chardet 3.0.4 - requests 2.21.0 or • VMware vSphere Hypervisor (ESXi) v7.0 U1, v7.0 U2, v7.0 U3 • VMware vCenter Server v7.0 U1, v7.0 U2, v7.0 U3 • Python 3.8 The following libraries are required for Python 3.8: - pyvmomi -- When using vSphere 7.0 U1: 7.0.1/7.0.2/7.0.3	▪ Create one web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by the Configuration Manager. Ensure that the credentials for accessing all storage systems are assigned the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning) ▪ Create a web service connection for the BNA or DCNM server. ▪ When allocating volumes in VSM, add LDEV ID, host group ID, and Port to the VSM resource group. ▪ Specify the python execution path in the shared properties of the Python Interpreter Path in the Administration tab. ▪ If LIP reset is enabled, register all ESXi server information with login credentials as Agentless Remote Connections in the Administration tab.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	-- When using vSphere 7.0 U2: 7.0.2/7.0.3 -- When using vSphere 7.0 U3: 7.0.3 - six 1.16.0 - urllib3 1.26.7 - certifi 2021.10.8 - idna 3.3 - charset-normalizer 2.0.8 - requests 2.26.0	▪ When specifying email addresses in Notification Settings, configure SMTP settings in the Administration Tab and verify that the SMTP server is accessible from the Ops Center Automator server. ▪ When specifying the datastore cluster to which to add the datastores you are creating, you must first create the datastore cluster. ▪ Disable storage DRS before using this service template. Adding a Datastore into a Datastore cluster can fail when Storage DRS is enabled. **Notes:** ▪ You must import the VMware vCenter Server root certificates into the OS truststore and the Ops Center Automator truststore. Detailed information is provided in the *Hitachi Ops Center Automator Installation and Configuration Guide*. ▪ If the automatic selection of a storage system is specified (default), a storage system that has a pool whose usage rate is low is automatically selected.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		▪ If the automatic selection of a storage system is specified (default), an LDEV and a Host Group are automatically created in meta_resource. ▪ If an LDEV is to be created on a VSM, the user must select the VSM (resource group) on which the LDEV is to be created. ▪ When you use LIP reset, if the ESXi host has an existing datastore, I/O to the existing datastore might be stopped.

Allocate Volumes with Remote Replication (Global-Active Device)	▪ Ops Center API Configuration Manager v10.7.0-00 or later
	
	▪ Network Management Software
	
	  • Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required)
	
	  or
	
	  • Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required)
		▪ Set up remote paths between the primary and secondary storage systems using the Fibre Channel or iSCSI.
		
		▪ Create a virtual storage machine (VSM) on the secondary storage system. Add resources such as host group IDs and LDEV IDs to the resource group that is created for the virtual storage machine.
		
		▪ Map the Quorum disk on the external storage system to the primary and secondary storage systems. Quorum disks without LDEV are not supported.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		▪ Register the LDEV ID, the Port, and the Host Group ID used by this service to the same resource group.
		▪ Create at least one Web Service connection for the Ops Center API Configuration Manager server.
		▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Service Template name	Software prerequisites	Setup prerequisites
		▪ Create one web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by the Ops Center API Configuration Manager. In addition to using the same credentials to access all storage systems, ensure that these credentials are assigned the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning) • Storage Administrator (Remote Copy) ▪ Create a web service connection for the BNA or DCNM server.
Configure CIFS/NFS for Hitachi	▪ OpenLDAP v2.x (LDAP v3 required ▪ SMU version 13.3 or 13.4	Use OpenLDAP v2.x (using LDAP v3) for access control configuration.

Service Template name	Software prerequisites	Setup prerequisites
Data Mobility ▪ Allocate Volumes from Virtual Storage Machine ▪ Export Virtual Storage Machine Configuration Across Sites ▪ Create High Availability Pair for Migration ▪ Migrate Data Using High Availability Pair	Ops Center API Configuration Manager v10.7.0-00 or later **Note:** To use the Data Mobility services, an administrator must install the Ops Center API Configuration Manager on each site and register the storage systems by using the Add Web Service Connections option on the Administration tab. In addition, the administrator must assign a common resource group name to all of the VSMs used in the data mobility services and then update the associated shared property using the Set Service Shared Property option. Detailed information for Admin users is provided in Configuring Ops Center API Configuration Manager connections (on page 95) and Modifying shared service properties for data mobility services (on page 109). **Note:** Data Mobility service performance is affected by the Configuration Manager storage access mode setting. You should use the "fcConnectionMode" setting to obtain higher performance. For details, see "Appendix A. Changing the communication mode of the REST API server" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.	▪ Create a VSM and assign resources before running this service. ▪ Register the LDEV ID and Host Group ID used by the service to the same resource group or virtual storage machine whose name follows the naming convention on virtual storage machine. ▪ Assign common resource group names to all VSMs across Storage Systems used in this service and modify the associated shared service property from the Shared Properties Settings pane. ▪ Install Configuration Manager and register all remote storage system information across all storage systems use by this service.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites

		▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.
		
		▪ Create a web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by the Ops Center API Configuration Manager. In addition to using the same credentials to access all storage systems, ensure that these credentials are assigned the following roles:
		
		  • Security Administrator (View and Modify)
		
		  • Storage Administrator(Provisioning)
		
		  • Storage Administrator (Remote Copy)

Service Template name	Software prerequisites	Setup prerequisites
Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster	▪ Ops Center API Configuration Manager v10.7.0-00 or later. ▪ Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required)	▪ Create a datastore cluster. ▪ Connect the storage system and hosts to the SAN and verify that they belong to the correct fabric. ▪ Create a storage pool. ▪ Disable storage DRS before using this service template. Adding a Datastore into a Datastore cluster can fail when Storage DRS is enabled. ▪ When specifying email addresses in Notification Settings, configure the SMTP settings in the Administration Tab and verify that the SMTP server is accessible from the Ops Center Automator server. ▪ If LIP reset is enabled, register all ESX server information with login credentials as Agentless Remote Connections in the Administration Tab. ▪ Create an ESX cluster. ▪ Add hosts to the ESX cluster. ▪ Configure a single Brocade Network Advisor to manage the fabric.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites

	▪ Virtualization software
	
	Either of the following combinations are supported:
	
	  • VMware vSphere Hypervisor (ESXi) v6.5, v6.5 U1/U2, v6.7, v6.7 U1
	
	  • VMware vCenter Server v6.5, v6.5 U1/U2, v6.7, v6.7 U1
	
	  • Python 3.5
	
	  The following libraries are required for Python 3.5:
	
	  - pyvmomi 6.5.0.2017.5.post1
	
	  - six 1.11.0
	
	  - urllib3 1.24.3
	
	  - certifi 2017.11.5
	
	  - idna 2.6
	
	  - chardet 3.0.4
	
	  - requests 2.21.0
	
	  or
	
	  • VMware vSphere Hypervisor (ESXi) v7.0 U1, v7.0 U2, v7.0 U3
	
	  • VMware vCenter Server v7.0 U1, v7.0 U2, v7.0 U3
	
	  • Python 3.8
	
	  The following libraries are required for Python 3.8:
	
	  - pyvmomi
	
	  -- When using vSphere 7.0 U1: 7.0.1/7.0.2/7.0.3
		▪ Verify that all storage ports and HBA ports, which are used by this service template, belong to the fabric.
		
		▪ When allocating volumes in VSM, add all required resources such as LDEV ID and host group ID to the VSM resource group.
		
		▪ Register Ops Center API Configuration Manager in Ops Center Automator.
		
		▪ Register VMware vCenter Server in Ops Center Automator.
		
		▪ Register Brocade Network Advisor in Ops Center Automator.
		
		▪ Register the storage system in Ops Center API Configuration Manager.
		
		▪ Specify the python execution path in the shared properties of the Python Interpreter Path in the Administration Tab.
		
		Note: You must import the VMware vCenter Server root certificates into the OS truststore and the Ops Center Automatortruststore. Detailed information is provided in the *Hitachi Ops Center Automator Installation and Configuration Guide.*

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	-- When using vSphere 7.0 U2: 7.0.2/7.0.3 -- When using vSphere 7.0 U3: 7.0.3 - six 1.16.0 - urllib3 1.26.7 - certifi 2021.10.8 - idna 3.3 - charset-normalizer 2.0.8 - requests 2.26.0	**Note:** This service does not support VMware Hyperconverged infrastructure (HCI) clusters. **Note:** Users are required to have the following privileges. Users registered in Web Service Connections (vCenter Category): ▪ Datastore • Allocate space • Browse datastore • Configure datastore • Low level file operations • Move datastore ▪ Folder • Create folder ▪ Host • Configuration • Change settings • Storage partition configuration ▪ Tasks • Create task Users registered in Agentless Remote Connections are required to have the Admin role.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
Add Host to Cluster in vCenter	- Ops Center API Configuration Manager v10.7.0-00 or later. - Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required)	- Create an ESX cluster. - Add hosts to the ESX cluster. - Configure a single Brocade Network Advisor to manage the fabric. - Verify that all storage ports and HBA ports, which are used by this service template, belong to the fabric. - When allocating volumes in VSM, add all required resources such as LDEV ID and host group ID to the VSM resource group. - Register Ops Center API Configuration Manager in Ops Center Automator. - Register VMware vCenter Server in Ops Center Automator. - Register Brocade Network Advisor in Ops Center Automator. - Register all storage systems in Ops Center API Configuration Manager.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	▪ Virtualization software Either of the following combinations are supported: • VMware vSphere Hypervisor (ESXi) v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • VMware vCenter Server v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • Python 3.5 The following libraries are required for Python 3.5: - pyvmomi 6.5.0.2017.5.post1 - six 1.11.0 - urllib3 1.24.3 - certifi 2017.11.5 - idna 2.6 - chardet 3.0.4 - requests 2.21.0 or • VMware vSphere Hypervisor (ESXi) v7.0 U1, v7.0 U2, v7.0 U3 • VMware vCenter Server v7.0 U1, v7.0 U2, v7.0 U3 • Python 3.8 The following libraries are required for Python 3.8: - pyvmomi -- When using vSphere 7.0 U1: 7.0.1/7.0.2/7.0.3	▪ Properly connect the storage system and hosts in SAN and verify that they belong to the correct fabric. ▪ Verify that the common credentials used to access all storage systems are assigned the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning) **Note:** You must import the VMware vCenter Server root certificates into the OS truststore and the Ops Center Automator truststore. Detailed information is provided in the *Hitachi Ops Center Automator Installation and Configuration Guide.* **Note:** This service does not support VMware Hyperconverged infrastructure (HCI) clusters.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	-- When using vSphere 7.0 U2: 7.0.2/7.0.3 -- When using vSphere 7.0 U3: 7.0.3 - six 1.16.0 - urllib3 1.26.7 - certifi 2021.10.8 - idna 3.3 - charset-normalizer 2.0.8 - requests 2.26.0	

Service Template name	Software prerequisites	Setup prerequisites
Remove Host from Cluster in vCenter	▪ Ops Center API Configuration Manager v10.7.0-00 or later. ▪ Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required)	▪ Create an ESX cluster. ▪ Add hosts to the ESX cluster. ▪ Configure a single Brocade Network Advisor to manage the fabric. ▪ Verify that all storage ports and HBA ports, which are used by this service template, belong to the fabric. ▪ When allocating volumes in VSM, add all required resources such as LDEV ID and host group ID to the VSM resource group. ▪ Register Ops Center API Configuration Manager in Ops Center Automator. ▪ Register VMware vCenter Server in Ops Center Automator. ▪ Register Brocade Network Advisor in Ops Center Automator. ▪ Register all storage systems in Ops Center API Configuration Manager.

Service Template name	Software prerequisites	Setup prerequisites
	▪ Virtualization software Either of the following combinations are supported: • VMware vSphere Hypervisor (ESXi) v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • VMware vCenter Server v6.5, v6.5 U1/U2, v6.7, v6.7 U1 • Python 3.5 The following libraries are required for Python 3.5: - pyvmomi 6.5.0.2017.5.post1 - six 1.11.0 - urllib3 1.24.3 - certifi 2017.11.5 - idna 2.6 - chardet 3.0.4 - requests 2.21.0 or • VMware vSphere Hypervisor (ESXi) v7.0 U1, v7.0 U2, v7.0 U3 • VMware vCenter Server v7.0 U1, v7.0 U2, v7.0 U3 • Python 3.8 The following libraries are required for Python 3.8: - pyvmomi -- When using vSphere 7.0 U1: 7.0.1/7.0.2/7.0.3	▪ Verify that the common credentials used to access all storage systems are assigned the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning) ▪ When you select the maintenance mode check box, verify the DRS setting. If DRS is disabled, the task of entering maintenance mode is not completed until all virtual machines that are running on a host are shut down or moved to other hosts manually. If DRS is enabled, virtual machines are moving automatically by DRS.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	-- When using vSphere 7.0 U2: 7.0.2/7.0.3 -- When using vSphere 7.0 U3: 7.0.3 - six 1.16.0 - urllib3 1.26.7 - certifi 2021.10.8 - idna 3.3 - charset-normalizer 2.0.8 - requests 2.26.0	▪ Make sure that no virtual machines are running on a host that resides on the datastore: • Make sure that the Storage DRS does not manage the datastore. • Make sure that Storage I/O Control is disabled for the datastore. • Make sure that the datastore is not used by vSphere HA Heartbeating. ▪ Properly connect the storage system and hosts in SAN and verify that they belong to the correct fabric. **Note:** You must import the VMware vCenter Server root certificates into the OS truststore and the Ops Center Automator truststore. Detailed information is provided in the *Hitachi Ops Center Automator Installation and Configuration Guide.* **Note:** This service does not support VMware Hyperconverged infrastructure (HCI) clusters.

Service Template name	Software prerequisites	Setup prerequisites
Expand Volume Capacity	Ops Center API Configuration Manager v10.7.0-00 or later	▪ One or more Web Service Connection instances must have been created for the Configuration Manager server. ▪ Use the same credentials for each storage system managed by Configuration Manager for which the Web Service connection was created. Additionally, the following privileges must be assigned: • Storage administrator (provisioning) • Security administrator ▪ The status of the volume to be expanded must be acceptable to the storage systems.
Get IO Control Set IO Control Remove IO Control	▪ Ops Center Administrator v10.0.1-00 or later ▪ Ops Center API Configuration Manager v10.0.1-00 or later	▪ Create a volume and LUN path for setting IO control in the storage system. ▪ Install the Server Priority Manager license in the storage system. ▪ Make sure that the Server Priority Manager is not being used by Storage Navigator.

Service Template name	Software prerequisites	Setup prerequisites

		▪ If configuration-change notifications from the storage system are disabled, update the Configuration Manager storage system information.
		
		▪ Register the server and storage system where the LUN path is configured in Ops Center Administrator.
		
		▪ Use the same credentials for each storage system managed by Configuration Manager for which the Web Service connection was created. Additionally, the following privileges must be assigned:
		
		  • Storage administrator (System Resource Management, Provisioning)
		
		  • Security administrator
		
		▪ When specifying hosts in Select from Host, create a web service connection for Ops Center Administrator that uses credentials with System Administrator permissions.
		
		▪ Host attached volumes can only be from a single storage system.

Service Template name	Software prerequisites	Setup prerequisites
Global-Active Device Setup	▪ Ops Center API Configuration Manager v10.7.0-00 or later • When using VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800, VSP G1000, VSP G1500, VSP F1500, or VSP E990, enable SSL between the Ops Center API Configuration Manager server and the storage system when registering the storage by using the Ops Center API Configuration Manager. If you register the storage from the Ops Center Automator Administration tab, choose the Enable SSL communication with SVP option. • Stop all CCI instances between 1020-1039 on the Ops Center API Configuration Manager server. • Add the Ops Center API Configuration Manager server to the Ops Center Automator Agentless Remote Connections. When adding the connection, match the IP Address/Host Name setting of Web Service Connection with the IP Address/Host Name setting of the Agentless Remote Connection setting.	▪ Create an external volume to use as a Quorum Disk, and register it in Primary and Secondary Storage. ▪ Prepare ports for the remote path. Prepare a minimum of two ports for the remote path for Primary Storage and Secondary Storage. • For VSP G1000, VSP G1500, and VSP F1500, prepare one MCU port and one RCU port. • For VSP 5000 series models, VSP Gx00 models, VSP Fx00 models, VSP N series models, and VSP E series models, you can share an MCU/RCU/Target/Initiator port by setting the port attribute to bidirectional mode, but you should prepare a dedicated port to avoid migration performance degradation. • Set the zone between the ports. **Note:** You cannot create remote paths using the iSCSI port.

Service Template name	Software prerequisites	Setup prerequisites
		▪ Host Group (optional) Create a Host Group to use for Command Device allocation, and register the pair management server WWN. When creating a path with this service, the host and storage port are created individually, but to control how to create a path (for example, to create it with Full Mesh), create a Host Group beforehand and when you are in the Existing Host Group/ iSCSI Target in the Edit/Config window, select the Host Group you created.

Service Template name	Software prerequisites	Setup prerequisites
		- Create a web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by Ops Center API Configuration Manager. - Verify that the common credentials used to access all storage systems are assigned the following roles: - Security Administrator (View and Modify) - Storage Administrator (Provisioning)
Online Migration	- Ops Center Protector v7.0 or Data Instance Director v6.9.4 or later - Ops Center API Configuration Manager v10.7.0-00 or later	Resource prerequisites

Service Template name	Software prerequisites	Setup prerequisites
	▪ To enable the Use Diskless Quorum option, the following conditions must be satisfied: • When using VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800, VSP G1000, VSP G1500, or VSP F1500, enable SSL between the Ops Center API Configuration Manager server and the storage system when registering the storage by using the Ops Center API Configuration Manager. If you register the storage from the Ops Center Automator Administration tab, choose the Enable SSL communication with SVP option. • Stop all CCI instances between 1020-1039 on the Ops Center API Configuration Manager server. • Add the Ops Center API Configuration Manager server to the Ops Center Automator Agentless Remote Connections. When adding the connection, match the IP Address/Host Name setting of the Web Service Connection with the IP Address/Host Name setting of the Agentless Remote Connection setting.	You must create the following resources before you run this service: ▪ Ops Center Protector-Data Flow Source: Specify the Ops Center Protector-Source Node Target: Specify the Ops Center Protector-Target Node Type: Active-Active Remote Clone (Global-active device) Transfer Type: Continuous ▪ When using the host selection feature, create a web service connection for Ops Center Administrator that uses System Administrator credentials.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
	▪ Brocade Network Advisor version 12.4, 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required) Required for acquiring or updating Brocade FC switch Zone information. ▪ Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required) Required for acquiring or updating Cisco FC switch Zone information. ▪ Ops Center Administrator v10.0.0-00 or later	▪ Import the Ops Center Protector and Ops Center Administrator server certificates. Secure communication (HTTPS) is required for communication between Ops Center Automator and Ops Center Protector/Ops Center Administrator. Therefore, you must import the Ops Center Protector and Ops Center Administrator server certificate into the Ops Center Automator truststore. For details, see "Setting up secure communication with a Ops Center Protector server" and "Setting up secure communication with an Ops Center Administrator" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Service Template name	Software prerequisites	Setup prerequisites
		▪ Resolve the Ops Center Protector and Ops Center Administrator host name. After you import the Ops Center Protector and Ops Center Administrator server into the Ops Center Automator truststore, ensure that the system can resolve the Ops Center Protector and Ops Center Administrator server name. ▪ Create a web service connection for the BNA or DCNM server. ▪ Create a web service connection for the Ops Center API Configuration Manager that uses the same credentials for each storage system managed by Ops Center API Configuration Manager. ▪ Verify that the common credentials used to access all storage systems are assigned the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning)

Service Template name	Software prerequisites	Setup prerequisites
		- If the source volumes have asynchronous remote clone pairs: - The Hitachi Block Device node indicating the storage system of the asynchronous remote clone destination of the migration target volume must be registered in Ops Center Protector. - The journal volume that can be used in the asynchronous remote clone pair must be created in the storage system of the migration target volume and the storage system of the asynchronous remote clone destination. - The zoned remote path group must be defined between the storage system of the migration target volume and the storage system of the asynchronous remote clone destination. - If you enable the Use Diskless Quorum option, an unused common Quorum ID must exist for both the source and target storage systems.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
Create Online Migration Pair	▪ Ops Center API Configuration Manager v10.7.0-00 or later ▪ When integrating with Cisco FC switches: Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required) ▪ When integrating with Brocade FC switches: Fabric OS (FOS) 8.2.1b or later, 9.0.1b or later • For the default Fabric OS roles, Admin, FabricAdmin, or ZoneAdmin role is required. • For user-defined roles, a role with both of the following permissions is required: - Fabric=O(Observe) or OM(Observe and Modify) - Zoning=OM(Observe and Modify) • For switches with VirtualFabric feature enabled, the Virtual Fabric ID of the fabric to be operated is included in the Role-LF List for the user ID. ▪ Ops Center Administrator v10.1.0-00 or later	▪ At least one remote path using FC or iSCSI has been defined for the storage systems of the migration source and the migration target used in this service. ▪ The path group, including the previous remote path, has been set up. ▪ A pool has been created in the migration target storage system. ▪ A VSM in the migration target storage system has been duplicated from the VSM (resource group) in the migration source volume. ▪ At least one Configuration Manager server has been added to Web Service Connection. ▪ The storage systems registered in Configuration Manager have the same credentials. ▪ Each source/target storage system must not be registered in more than one Configuration Manager.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Service Template name	Software prerequisites	Setup prerequisites

		▪ The Configuration Manager user has the following roles:
		
		  • Security Administrator (View and Modify)
		
		  • Storage Administrator (Provisioning, Remote Copy, and Initial Configuration)
		
		▪ The migration source volumes must not have any remote copy pairs configured.
		
		▪ Create a web service connection for DCNM or FOS.
		
		▪ For FOS, the user ID cannot be a user using RADIUS/LDAP access authentication.
		
		▪ For FOS, verify the following:
		
		  • FOS REST API is enabled.
		
		  • Fabric name is set.
		
		  • Ops Center Automator and FC switches are in the same LAN.
		
		  • Ops Center Automator and FC switches are not connected via a proxy.
		
		If you want to run multiple tasks concurrently, see <u>Additional prerequisites for multiple runs (on page 451)</u>.

Service Template name	Software prerequisites	Setup prerequisites
Create Online Migration Pair for Multiple Hosts	▪ Ops Center API Configuration Manager v10.7.0-00 or later ▪ When integrating with Cisco FC switches: Data Center Network Manager (DCNM) 7.1, 11.5 (network-admin role is required) ▪ When integrating with Brocade FC switches: Fabric OS (FOS) 8.2.1b or later, 9.0.1b or later • For the default Fabric OS roles, Admin, FabricAdmin, or ZoneAdmin role is required. • For user-defined roles, a role with both of the following permissions is required: - Fabric=O(Observe) or OM(Observe and Modify) - Zoning=OM(Observe and Modify) • For switches with VirtualFabric feature enabled, the Virtual Fabric ID of the fabric to be operated is included in the Role-LF List for the user ID. ▪ Ops Center Administrator v10.7.0-00 or later	▪ The Create Online Migration Pairs for Multiple Hosts must be the same version (*VV.RR*) as the Create Online Migration Pair service. ▪ When multiple hosts are selected, they must not have the same volume allocated to them. ▪ At least one remote path using FC or iSCSI has been defined for the storage systems of the migration source and the migration target used in this service. ▪ The path group, including the previous remote path, has been set up. ▪ A pool has been created in the migration target storage system. ▪ A VSM in the migration target storage system has been duplicated from the VSM (resource group) in the migration source volume. ▪ At least one Configuration Manager server has been added to Web Service Connection.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		▪ The storage systems registered in Configuration Manager have the same credentials. ▪ The Configuration Manager user has the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning, Remote Copy, and Initial Configuration) ▪ The migration source volumes must not have any remote copy pairs configured. ▪ Each source/target storage system must not be registered in more than one Configuration Manager. ▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
		▪ The Configuration Manager user has the following roles: • Security Administrator (View and Modify) • Storage Administrator (Provisioning, Remote Copy, and Initial Configuration) ▪ The migration source volumes must not have any remote copy pairs configured. ▪ Create a web service connection for DCNM or FOS. ▪ For FOS, the user ID cannot be a user using RADIUS/LDAP access authentication. ▪ For FOS, verify the following: • FOS REST API is enabled. • Fabric name is set. • Ops Center Automator and FC switches are in the same LAN. • Ops Center Automator and FC switches are not connected via a proxy.

Service Template name	Software prerequisites	Setup prerequisites
		- If you already have Ops Center Administrator installed, you must import the Ops Center Administrator server certificate in the Ops Center Automator truststore, to use the host selection feature. - If you enable the Use Diskless Quorum option, an unused common Quorum ID must exist for both the source and target. - If you do not enable the Use Diskless Quorum option, you must create a Quorum disk to be used with global-active device. If you want to run multiple tasks concurrently, see <u>Additional prerequisites for multiple runs (on page 451)</u>.

Service Template name	Software prerequisites	Setup prerequisites
Migrate Data for Online Migration Pair	Ops Center API Configuration Manager v10.7.0-00 or later	▪ Submit the service as a user with the same permissions as the user who submitted the Create Online Migration Pair service. ▪ The target storage systems scheduled for migration must be registered in the same API Configuration Manager that was used when running the Create Online Migration Pair service and the API Configuration Manager must be registered in Web Service Connections. ▪ Each source/target storage system must not be registered in more than one Configuration Manager. ▪ The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

Service Template name	Software prerequisites	Setup prerequisites
		▪ After the Create Online Migration Pair task that you select in the Edit/ Submit Service window completes, you cannot make any changes to the configuration of the target resources before running the task. ▪ The migration source volumes must not have any remote copy pairs configured. If you want to run multiple tasks concurrently, see Additional prerequisites for multiple runs (on page 451).
Clean up Online Migration Pair	Ops Center API Configuration Manager v10.7.0-00 or later	▪ Submit the service as a user with the same permissions as the user who submitted the Create Online Migration Pair service. ▪ The target storage systems scheduled for cleanup must be registered in the same API Configuration Manager that was used when running the Create Online Migration Pair service and the API Configuration Manager must be registered in Web Service Connections. ▪ Each source/target storage system must not be registered in more than one Configuration Manager.

Service Template name	Software prerequisites	Setup prerequisites
		- The ports used by Configuration Manager for communications between the primary and secondary sites must be open when a remote copy is performed. For details, see "Ports used during remote copy operations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*. - If you want to clean up a failed task due to an error instead of the task that was completed, remove the cause of the error and then submit the service. - After the Create Online Migration Pair task that you select in the Edit/Submit Service window completes or fails, you cannot make any changes to the configuration of the target resources before running the task. If you want to run multiple tasks concurrently, see <u>Additional prerequisites for multiple runs (on page 451)</u>.

Service Template name	Software prerequisites	Setup prerequisites
Smart Allocation for Oracle Databases	▪ Ops Center API Configuration Manager v10.7.0-00 or later ▪ Brocade Network Advisor (BNA) 14.2, 14.4 (SAN System Administrator or Zone Administrator role is required) ▪ Oracle Database 11g Enterprise Edition (v11.0.2) **Note:** One of the following database systems must already be set up on the Oracle database servers: • Single instance (ASM) • RAC 2 nodes (ASM)	▪ Create a Web service connection for the Ops Center API Configuration Manager. ▪ Use the same credentials for each storage system managed by Ops Center API Configuration Manager for which the Web service connection was created. Also, in addition to having the same credentials connected to all the storage systems, ensure that these credentials are assigned the following roles: • Security administrator (View, Edit) • Storage administrator (Provisioning) ▪ Create a web service connection for the BNA server. ▪ Create an Agentless Connections for the Oracle servers. It is not necessary to specify authentication information when registering.
ServiceNow ▪ Create ServiceNow Incident Ticket ▪ Retrieve ServiceNow Incident Tickets	ServiceNow version: Quebec, Rome	Register the ServiceNow Web Service Connection in Ops Center Automator

Appendix C: Services catalog

Service Template name	Software prerequisites	Setup prerequisites
▪ Call ServiceNow Table API ▪ Update ServiceNow Incident Ticket		

Service template supported platforms

The following is a list of Ops Center Automator templates with the platforms each supports.

📄 **Note:** NVMe mode for Fibre Channel ports is not supported. When you submit a service against a storage systems with these ports, only the Fibre Channel ports with SCSI mode are handled.

📄 **Note:** You must use a Configuration Manager version that supports the storage systems and the target features you are using.

📄 **Note:** Be aware of the following when performing a Data In Place upgrade on storage systems.

- After a Data In Place upgrade, the storage model displayed in the Administration > Configuration Manager Settings window will show the model before the Data In Place upgrade until the storage system is re-registered in Ops Center API Configuration Manager. To display the model name after the Data In Place upgrade is complete, delete the relevant storage system from Ops Center API Configuration Manager in Local Storage Systems and Remote Storage Systems, and then re-register it.

- Do not run any task against the storage system during a Data In Place upgrade. If a task is run during a Data In Place upgrade, then the task fails. To recover, delete the resources created by the task after the Data In Place upgrade is complete, and then resubmit the task.

Allocate Volumes with Configuration Manager

This template supports the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

▪ Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

▪ Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

▪ Virtual Storage Platform N400, N600, N800

▪ Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

▪ Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Appendix C: Services catalog

Allocate Fabric Aware Volumes with Configuration Manager

This template supports the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Allocate Like Volumes with Configuration Manager

This template supports the following platforms:

Models with Fibre Channel as the supported interface between host and storage system:

- Virtual Storage Platform

- Unified Storage VM

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Allocate Volumes with Clone/Snapshot

This template supports the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Allocate Volumes with Smart Provisioning

This template supports the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Allocate Volumes with 2DC Remote Replication

This template supports the following platforms:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Virtual models:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Allocate Volumes with Remote Replication (Global-Active Device)

This template supports the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between the host and the storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Configure CIFS/NFS for Hitachi service template

This service template supports the following platforms:

Models with Fibre Channel as the supported interface between NAS Platform and storage system:

- Virtual Storage Platform G400, G600, G800 (Build-in NAS Modules)

- Virtual Storage Platform N400, N600, N800

Data mobility service templates

This group of service templates include the following:

- Allocate Volumes from Virtual Storage Machine

- Export Virtual Storage Machine Configuration Across Sites

- Create High Availability Pair for Migration

- Migrate Data Using High Availability Pair

These templates support the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

ESX Cluster service templates

This group of service templates include the following:

- Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster

- Add Host to Cluster in vCenter

- Remove Host from Cluster in vCenter

These templates support the following platforms:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Virtual models:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H
- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

ESXi Host service templates

This includes the following template:

- Allocate Volumes, Fabric, and Datastore for ESXi Host

This template supports the following platforms:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500
- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500
- Virtual Storage Platform N400, N600, N800
- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H
- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Virtual models:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500
- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500
- Virtual Storage Platform N400, N600, N800
- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H
- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Expand Volume Capacity service template

The template supports the following platforms:

- VSP G1000, VSP G1500, and VSP F1500 version 80-06-2X-XX/XX or later
- VSP G200, G400, G600, G800, VSP F400, F600, F800 version 83-05-2X-XX/XX or later
- VSP G350, G370, G700, G900, VSP F350, F370, F700, F900 version 88-01-0X-XX/XX or later
- Virtual Storage Platform N400, N600, N800
- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H
- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Get IO Control, Set IO Control, Remove IO Control

These templates support the following platforms:

Models with Fibre Channel and iSCSI as the supported interface between host and,storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500
- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

Appendix C: Services catalog

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Global-Active Device Setup service template

The template supports the following platforms:

- VSP G1000, VSP G1500, and VSP F1500 version 80-06-2X-XX/XX or later

- VSP G200, G400, G600, G800, VSP F400, F600, F800 version 83-05-2X-XX/XX or later

- Virtual Storage Platform G/F350, G/F370, G/F700, G/F900 version 88-01-0X-XX/XX or later

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Online Migration service template

The template supports the following platforms:

Models with Fibre Channel as the supported interface between the host and the storage system:

- VSP G1000, VSP G1500, and VSP F1500 version 80-06-2X-XX/XX or later

- VSP G200, G400, G600, G800, VSP F400, F600, F800 version 83-05-2X-XX/XX or later

- Virtual Storage Platform G/F350, G/F370, G/F700, G/F900 version 88-01-0X-XX/XX or later

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Models with iSCSI as the interface between the host and storage systems are not supported by the Online Migration service template.

Appendix C: Services catalog

Online Migration service template - Storage systems support matrix

Target / Source	VSP 5200, 5600, 5200H, 5600H	VSP E1090, E1090H	VSP 5100, 5500, 5100H, 5500H	VSP G1000, G1500, F1500	VSP E990	VSP E790, E590, E790H, E590H	VSP F350, F370, F700, F900, G350, G370, G700, G900	VSP G200, G400, G600, G800, F400, F600, F800, N400, N600, N800
VSP 5200, 5600, 5200H, 5600H	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP E1090, E1090H	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP 5100, 5500, 5100H, 5500H	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP G1000, G1500, F1500	Unsupported	Unsupported	Supported	Supported	Unsupported	Unsupported	Unsupported	Supported
VSP E990	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP E790, E590, E790H, E590H	Unsupported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP F350, F370, F700, F900, G350, G370, G700, G900	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Unsupported	Supported	Unsupported
VSP G200, G400, G600, G800, F400, F600, F800, N400, N600, N800	Unsupported	Unsupported	Unsupported	Supported	Unsupported	Unsupported	Unsupported	Supported

Online Migration with Configuration Manager service templates

This group of service templates include the following:

- Create Online Migration Pair service template

- Create Online Migration Pairs for Multiple Hosts service template

- Clean up Online Migration Pair service template

- Migrate Data for Online Migration Pair service template

The template supports the following platforms:

- VSP G1000, VSP G1500, and VSP F1500 version 80-06-80-00/02 or later

- VSP G200, G400, G600, G800, VSP F400, F600, F800 version 83-05-37-X0/00 or later, or 83-06-09-X0/00 or later

- Virtual Storage Platform G/F350, G/F370, G/F700, G/F900, version 88-06-02-X0/00 or later

- Virtual Storage Platform E990, version 93-02-03-X0/00 or later

- Virtual Storage Platform E590, E790, E590H, E790H, version 93-03-01-X0/00 or later

- Virtual Storage Platform E1090, E1090H version 93-06-01-01/00 or later

- Virtual Storage Platform N400, N600, N800 version 83-06-09-X0/00 or later

- Virtual Storage Platform 5100, 5500, 5100H, 5500H version 90-04-04-00/01 or later

- Virtual Storage Platform 5200, 5600, 5200H, 5600H version 90-08-01-00/00 or later

  Note: When you enable the Use Diskless Quorum option on the Create Online Migration Pair service or the Create Online Migration Pairs for Multiple Hosts service, the following platforms are required:

  - VSP G1000, VSP G1500, and VSP F1500 version 80-06-86-00/00 or later

  - VSP G200, G400, G600, G800, VSP F400, F600, F800 version 83-05-41-X0/00 or later

  - Virtual Storage Platform G/F350, G/F370, G/F700, G/F900 version 88-08-02-X0/00 or later

  - Virtual Storage Platform E990 version 93-04-02-X0/00 or later

  - Virtual Storage Platform E590, E790, E590H, E790H, version 93-04-02-X0/00 or later

  - Virtual Storage Platform E1090, E1090H version 93-06-01-01/00 or later

  - Virtual Storage Platform N400, N600, N800 version 83-06-13-X0/00 or later

  - Virtual Storage Platform 5100, 5500, 5100H, 5500H version 90-06-21-00/00 or later

  - Virtual Storage Platform 5200, 5600, 5200H, 5600H version 90-08-01-00/00 or later

Online Migration with Configuration Manager service templates - Storage systems support matrix

Target / Source	VSP 5200, 5600, 5200H, 5600H	VSP E1090, E1090H	VSP 5100, 5500, 5100H, 5500H	VSP G1000, G1500, F1500	VSP E990	VSP E790, E590, E790H, E590H	VSP F350, F370, F700, F900, G350, G370, G700, G900	VSP G200, G400, G600, G800, F400, F600, F800, N400, N600, N800
VSP 5200, 5600, 5200H, 5600H	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP E1090, E1090H	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP 5100, 5500, 5100H, 5500H	Supported	Unsupported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP G1000, G1500, F1500	Supported	Unsupported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported
VSP E990	Unsupported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP E790, E590, E790H, E590H	Unsupported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
VSP F350, F370, F700, F900, G350, G370, G700, G900	Unsupported	Supported (*1)	Unsupported	Unsupported	Supported	Supported	Supported	Unsupported
VSP G200, G400, G600, G800, F400, F600, F800,	Unsupported	Supported (*1)	Supported	Unsupported	Unsupported	Supported	Supported	Supported

Note:

*1: The following versions are required when used in combination with VSP E1090 and E1090H.

- For VSP G350, G370, G700, G900, VSP F350, F370, F700, F900: Version 88-08-04-X0/00 or later

- For VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800: Version 83-05-43-X0/00 or later, or 83-06-15-X0/00 or later

ServiceNow Ticketing service templates

This group of templates include the following:

- Call ServiceNow Table API

- Create ServiceNow Incident Ticket

- Update ServiceNow Incident Ticket

- Retrieve ServiceNow Incident Tickets

No storage systems are required to use these service templates.

Appendix C: Services catalog

Smart Allocation for Oracle Databases

This template supports the following platforms:

Models with Fibre Channel as the supported interface between the host and the storage system:

- Virtual Storage Platform G200, G350, G370, G400, G600, G700, G800, G900, G1000, G1500

- Virtual Storage Platform F350, F370, F400, F600, F700, F800, F900, F1500

- Virtual Storage Platform N400, N600, N800

- Virtual Storage Platform E590, E790, E990, E1090, E590H, E790H, E1090H

- Virtual Storage Platform 5100, 5200, 5500, 5600, 5100H, 5200H, 5500H, 5600H

Models with iSCSI as the interface between the host and storage systems are not supported by the Smart Allocation for Oracle Databases services.

Using Brocade Fabric OS

The following are the operational requirements for using Brocade Fabric OS (FOS) with Ops Center Automator.

Changing Ops Center Automator server settings

You must change the following values in the `config_user.properties` file:

```
logger.TA.MaxFileSize: 100240
```

See "Changing the system configuration" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Using in a mixed environment of Peer Zoning and Target Driven Zoning

How to avoid Peer Zoning

To ensure that the zone to be modified by Ops Center Automator does not become a Peer Zone, check the Zone name used in the existing Peer Zone and make sure it is different from the Zone name modified by Ops Center Automator.

Check the Script for Zone Naming setting in "Zone Settings" of the service.

If the existing Peer Zone might match the Zone name modified by Ops Center Automator, set the "Script for Zone Naming" in "Zone Settings" to a different name.

How to avoid Target Driven Zoning

Storage ports connected to Target Driven enabled switch ports must be excluded due to conflicting Zone creation feature.

Specify the storage ports connected to the switch port with Target Driven enabled to be excluded at "Storage Port" in "Resource Criteria" so that they are not used.

Service settings and upper limit in large-scale configurations

In large-scale configurations, the task might take a long time to run.

The following table shows the guideline for which the settings in this section are recommended and the upper limit for each item.

Item	Guideline	Upper limit
Number of Fabrics	-	48
Number of Member switches	100	200
Number of host and storage ports connected to Brocade FC switches	15,000	40,000

For a large-scale configuration that exceed the above guideline or if you feel the task takes a long time to run, setting the service in the following table narrows the search range to only the switches to be used, which can reduce the run time.

Navigation pane	Settings pane	To set
Volume Settings	Storage System Selection[1]	Manual
Volume Settings	Storage System[2]	Storage system to be operated
Source Settings	Source Storage System[2]	Storage system to be operated
Target Settings	Target Storage System[2]	Storage system to be operated
Fabric Settings	Connections	Port search range Web Service Connection name of FOS_PrimarySwitch [3]
Fabric Settings	Target Fabrics	Fabric names configured for the switch in the port search range[3] It is not required to be set in the environment that does not use Virtual Fabric.

1. Specify only for the Allocate Volumes with Smart Provisioning service template.
2. Specify "Storage System" or "Source Storage System" and "Target Storage System" depending on the settings of the target service template.
3. If there is more than one fabric name, specify them separated by commas.

Upgrading existing service templates

If you used to use BNA for zoning configurations, you must configure Web Service Connections and edit the service after upgrading the service template to change the fabric management from BNA to FOS.

1. Configure a web service connection.

   For more information, see <u>Configuring Web Service Connections (on page 94)</u>.

2. Edit the service if the "Use Fabric Settings" option on "Fabric Settings" is enabled:

   - If "Target Fabrics" is specified, specify the fabric name set for the FC switch. If "Target Fabrics" is not specified, no editing is required.

   - Specify "FOS_PrimarySwitch" for Fabric Connection Type.

   - In Connections, specify the same name as the web service connection registered by selecting "FOS_PrimarySwitch" as the category. If Connections is not specified, no editing is required.

General settings for services

All preconfigured services include the following general settings.

- Name: User-defined name for the service. Preconfigured services have default names.

- Description: User-defined description for the service. Preconfigured services have default descriptions.

- Status: Test or Release. Use Test if the service has not been tested.

- Tags: Use tags to classify services and to help organize them.

- Service Group: If you are copying or creating a service, you can select a Service Group.

- Service Template: Click to view a preview of the Service Template on which the service is based.

- Advanced Options: Click to choose scheduling options.

Allocate volumes service templates

The following Ops Center Automator Allocate Volumes service templates for allocating volumes are provided with the software and are preconfigured.

Allocate Volumes with Configuration Manager
 Allocates sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use by servers running a generic application.

Allocate Fabric Aware Volumes with Configuration Manager
 Allocates by using sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use by servers running a generic application. This service accesses the FC switch management service and acquires

existing fabric configuration and zoning information when allocating new volumes to the host.

Allocate Volumes with Smart Provisioning

Intelligently allocates by using sets of volumes from the associated infrastructure group through Ops Center API Configuration Manager for use by servers running a generic application.

Allocate Volumes with Clone/Snapshot

Allocates sets of volumes with in-system replication (Thin Image, ShadowImage) from the associated infrastructure group through Ops Center API Configuration Manager to be consumed by servers running a generic application.

Allocate Volumes with 2DC Remote Replication

Intelligently allocates by using sets of volumes from the associated infrastructure group for use by servers running a generic application and creates a new copy topology for remote replication.

Allocate Volumes with Remote Replication (Global-Active Device)

Allocates sets of volumes with in-system replication (global-active device) from the associated infrastructure group through Ops Center API Configuration Manager to be consumed by servers running a generic application.

Supported platforms

For information on supported platforms, see .

Default ports

Port number	Use
443*	Secure communication from Ops Center Automator to Ops Center Administrator.
22015	Communication from Ops Center Automator client to Ops Center Automator server. Communication from Ops Center Automator to Ops Center Analyzer.*
22016	Secure communication from Ops Center Automator client to Ops Center Automator server. Secure communication from Ops Center Automator to Ops Center Analyzer.*
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Port number	Use
* Allocate Volumes with Smart Provisioning	

Allocate Volumes with Configuration Manager: Service details

This service enables the allocation of sets of volumes from the associated infrastructure group through Configuration Manager for use by servers running a generic application.

The following service template details apply to the Allocate Volumes with Configuration Manager service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Allocate Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Volume Settings [1]	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System	Shows a table from which you can choose the storage system.
	Resource Group	Specify a resource group.
	Pool	Shows a table from which you can choose the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters to create new volumes.
Resource Criteria [2]	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Host Settings	Port Type	Specify either Fibre or iSCSI as the port type.

Navigation pane	Settings pane	Description
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify to use an existing Host Group/iSCSI Target.
1. The property settings in v8.6.3 or earlier (Number of Volumes, LDEV ID Starts From, Volume Capacity, Volume Label, LUN Starts from, Virtual LDEV ID Starts From) are not carried forward. 2. The property settings in v8.6.3 or earlier are not carried forward.		

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Volume Settings [1]	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System	Shows a table from which you can choose the storage system.
	Resource Group	Specify a resource group.
	Pool	Shows a table from which you can choose the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters to create new volumes.
Resource Criteria [2]	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Host Settings	Port Type	Specify either Fibre or iSCSI as the port type.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify to use an existing Host Group/iSCSI Target.
1. The property settings in v8.6.3 or earlier (Number of Volumes, LDEV ID Starts From, Volume Capacity, Volume Label, LUN Starts from, Virtual LDEV ID Starts From) are not carried forward. 2. The property settings in v8.6.3 or earlier are not carried forward.		

Allocate Fabric Aware Volumes with Configuration Manager: Service details

This server enables allocation of sets of volumes from the associated infrastructure group through Configuration Manager for use by servers running a generic application. This service accesses the FC switch management service and acquires existing fabric configuration and zoning information when allocating new volumes to the host.

The following service template details apply to the Allocate Fabric Aware Volumes with Configuration Manager service template.

Software and setup prerequisites

For software and setup prerequisites, see Service template prerequisites (on page 189).

Edit Service settings

The following table lists the Edit Service settings for the Allocate Fabric Aware Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Volume Settings [1]	Configuration Manager Connection	Gives a table from which you can choose the Configuration Manager connection.
	Storage System	Gives a table from which you can choose the storage system.
	Resource Group	Specify a resource group.
	Pool	Gives a table from which you can choose the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.

Navigation pane	Settings pane	Description
	Volume Settings	Specify the parameters to create new volumes.
Resource Criteria [2]	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Host Settings	Port Type	Specify Fibre as the port type.
	Host Group Settings	Specify the parameters required to create a new Host Group or specify to use an existing Host Group.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Determines whether to add to an existing zone or create a new zone. If Use Existing Zone is true, this setting is ignored even if entered.
	Use Existing Zone Aliases	Determines whether to use existing zone aliases. Specify True to use predefined zone aliases regardless of the specified naming conventions. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new ones that follow the naming conventions. When selecting the existing Zone Alias, Zone naming is fixed as *HostZoneAliasName_StorageZoneAliasName*.
		Note: If the service finds more than one alias candidate which have the same WWN, the alias is chosen based on the following priorities:
		1. Search existing aliases which only have that WWN. If more than one alias is found, the system selects the first alias in the list of existing aliases.

Navigation pane	Settings pane	Description
		2. If no alias is found using the first priority, search existing aliases which have multiple WWNs including that WWN. If more than one alias is found, the system selects the first alias in the list of existing aliases.
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.
	Zone Configurations to Update	Lists the zone configuration names to add (separated by commas). If Update Zone Configuration is false, this setting is ignored. **Note:** An error is generated if this setting is not specified and Update Current Active Zone Configuration is false.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
1. The property settings in v8.6.3 or earlier (Number of Volumes, LDEV ID Starts From, Volume Capacity, Volume Label, LUN Starts from, Virtual LDEV ID Starts From) are not carried forward.		
2. The property settings in v8.6.3 or earlier are not carried forward.		

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Fabric Aware Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Volume Settings [1]	Configuration Manager Connection	Gives a table from which you can choose the Configuration Manager connection.
	Storage System	Gives a table from which you can choose the storage system.
	Resource Group	Specify a resource group.
	Pool	Gives a table from which you can choose the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters to create new volumes.
Resource Criteria [2]	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Host Settings	Port Type	Specify Fibre as the port type.
	Host Group Settings	Specify the parameters required to create a new Host Group or specify to use an existing Host Group.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Determines whether to add to an existing zone or create a new zone. If Use Existing Zone is true, this setting is ignored even if entered.
	Use Existing Zone Aliases	Determines whether to use existing zone aliases. Specify True to use predefined zone aliases regardless of the specified naming conventions. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new ones that follow the naming conventions. When selecting the existing Zone

Navigation pane	Settings pane	Description
		Alias, Zone naming is fixed as *HostZoneAliasName_StorageZone AliasName*. **Note:** If the service finds more than one alias candidate which have the same WWN, the alias is chosen based on the following priorities: 1. Search existing aliases which only have that WWN. If more than one alias is found, the system selects the first alias in the list of existing aliases. 2. If no alias is found using the first priority, search existing aliases which have multiple WWNs including that WWN. If more than one alias is found, the system selects the first alias in the list of existing aliases.
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.
	Zone Configurations to Update	Lists the zone configuration names to add (separated by commas). If Update Zone Configuration is false, this setting is ignored. **Note:** An error is generated if this setting is not specified and Update Current Active Zone Configuration is false.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
1. The property settings in v8.6.3 or earlier (Number of Volumes, LDEV ID Starts From, Volume Capacity, Volume Label, LUN Starts from, Virtual LDEV ID Starts From) are not carried forward. 2. The property settings in v8.6.3 or earlier are not carried forward.		

Zone naming conventions

The following table lists the zone naming conventions for use with the Allocate Fabric Aware Volumes with Configuration Manager service template.

Type	Zone name	Zone alias name (Host side/Storage side)
Input	One object has the following properties: • hostName: Host name • hostPortWorldWideName: WWN of HBA. Separator notation is based on FC switch manager services. • storagePortWorldWideName: WWN of CHA. Separator notation is based on FC switch manager services. • storageSystemSerialNumber: Serial number of physical storage system • storagePortName: Display port name of the storage system • serviceProperties: List of the service properties passed to the plug-in	
Output	Zone name to add to the specified Zone Configuration.	Zone alias name to add to the zone specified in the Zone name convention.
Handling when the output is the same name	Same zone name of the same fabric refers to the same zone. In the case of an existing zone: Add an alias in the zone and add to the Zone Configuration. null: Do not create a zone.	Same zone alias name of the same fabric refers to the same alias. In the case of an existing alias: Add WWN in the alias and add to the Zone. null: Do not create an alias.
Handling when unavailable characters are used for output	Characters other than alphanumeric characters and "_" are converted to "_" and become part of the name.	

Type	Zone name	Zone alias name (Host side/Storage side)
If the output string is too long	When the output string is over 60 characters, the 61st and subsequent characters are truncated.	When the output string is over 64 characters or more, the 65th and subsequent characters are truncated.
Validation	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters. ▪ When having a non-standard prefix for the zone. ("LSAN_","TI_", "QOS[HML][0-9]+_")(case ignored)	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters.

Allocate Volumes with Smart Provisioning: Service details

The following service template details apply to the Allocate Volumes with Smart Provisioning service template.

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service settings

The following table lists the Edit Service settings for the Allocate Volumes with Smart Provisioning service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.
	Storage System	Specify the storage system.

Navigation pane	Settings pane	Description
	Resource Group Selection	Specify whether to select resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the resource group.
	Pool Selection *	Specify whether to select pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Settings	
	Volume Usage	Specify the volume usage to be assigned.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	When Byte is selected for Capacity Format, specify the volume capacity in bytes. When Block is selected for Capacity Format, the volume capacity is specified by the number of blocks.
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	

Navigation pane	Settings pane	Description
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
	Choose pool/port based on	Select the pool or port based on its capacity, or its capacity and performance history. The performance history consists of BusyRate in the case of pools, and Port Transfer rate in the case of ports.
	Monitoring Connection	Select a performance monitor.
	Pool BusyRate lower than	Choose a pool with BusyRate percentage lower than the specified value.
	Port Transfer Rate lower than	Choose a port with TransferRate in MBps lower than the specified value.
	Performance evaluation window	Evaluate Pool BusyRate and Port TransferRate based on the specified performance history window in days.
Host Settings	Input Type	Specify the host input type as Input Host information to add a new host or specify Select Host to use an existing host.
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.

Navigation pane	Settings pane	Description
	Number of Hosts	Select the number of hosts to allocate volume.
	Host Settings	Specify information about the hosts where the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify WWN settings.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts where the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify WWN settings.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
	Storage Management Connection	Specify the host input type as Input Host information to add a new host or specify Select Host to use an existing host.
	Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Rows Per Page	Use the filter to display only the specified number of source hosts.
	Current Page	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Hosts	Select the hosts which allocate volumes.
	Join Host Filters By	Use the "and" or the "or" operator to join multiple filters.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Notes:		

Navigation pane	Settings pane	Description
* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria:		

1. Select the pool with the largest free pool capacity after volume allocation.
2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table.
3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.

Priority	Storage model
1	VSP 5200, 5600, 5200H, 5600H
2	VSP 5100, 5500, 5100H, 5500H
3	VSP F1500, VSP G1500, VSP G1000
4	VSP E1090, VSP E1090H
5	VSP E990
6	VSP E790, VSP E790H
7	VSP E590, VSP E590H
8	VSP F900, VSP G900
9	VSP F700, VSP G700
10	VSP F370, VSP G370
11	VSP F350, VSP G350
12	VSP F800, VSP G800, VSP N800
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600
14	VSP G200

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Volumes with Smart Provisioning service template.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.
	Storage System	Specify the storage system.
	Resource Group Selection	Specify whether to select resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the resource group.
	Pool Selection *	Specify whether to select pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Settings	
	Volume Usage	Specify the volume usage to be assigned.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	When Byte is selected for Capacity Format, specify the volume capacity in bytes. When Block is selected for Capacity Format, the volume capacity is specified by the number of blocks.
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.

Navigation pane	Settings pane	Description
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
	Choose pool/port based on	Select the pool or port based on its capacity, or its capacity and performance history. The performance history consists of BusyRate in the case of pools, and Port Transfer rate in the case of ports.
	Monitoring Connection	Select a performance monitor.
	Pool BusyRate lower than	Choose a pool with BusyRate percentage lower than the specified value.
	Port Transfer Rate lower than	Choose a port with TransferRate in MBps lower than the specified value.
	Performance evaluation window	Evaluate Pool BusyRate and Port TransferRate based on the specified performance history window in days.
Host Settings	Input Type	Specify the host input type as Input Host information to add a new host or specify Select Host to use an existing host.

Navigation pane	Settings pane	Description
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Number of Hosts	Select the number of hosts to allocate volume.
	Host Settings	Specify information about the hosts where the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify WWN settings.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts where the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify WWN settings.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.

Navigation pane	Settings pane	Description
	Storage Management Connection	Specify the host input type as Input Host information to add a new host or specify Select Host to use an existing host.
	Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Rows Per Page	Use the filter to display only the specified number of source hosts.
	Current Page	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Hosts	Select the hosts which allocate volumes.
	Join Host Filters By	Use the "and" or the "or" operator to join multiple filters.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.

Navigation pane	Settings pane	Description
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.

Navigation pane	Settings pane	Description
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.

Notes:

* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria:

1. Select the pool with the largest free pool capacity after volume allocation.
2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table.
3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.

Navigation pane	Settings pane	Description

Priority	Storage model
1	VSP 5200, 5600, 5200H, 5600H
2	VSP 5100, 5500, 5100H, 5500H
3	VSP F1500, VSP G1500, VSP G1000
4	VSP E1090, VSP E1090H
5	VSP E990
6	VSP E790, VSP E790H
7	VSP E590, VSP E590H
8	VSP F900, VSP G900
9	VSP F700, VSP G700
10	VSP F370, VSP G370
11	VSP F350, VSP G350
12	VSP F800, VSP G800, VSP N800
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600
14	VSP G200

Zone naming conventions

The following table lists the zone naming conventions for use with the Allocate Volumes with Smart Provisioning service template.

Type	Zone name	Zone alias name (Host side/Storage side)
Input	One object has the following properties: ▪ hostName: Host name ▪ hostPortWorldWideName: WWN of HBA. Separator notation is based on FC switch manager services. ▪ storagePortWorldWideName: WWN of CHA. Separator notation is based on FC switch manager services.	

Appendix C: Services catalog

Type	Zone name	Zone alias name (Host side/Storage side)
	▪ storageSystemSerialNumber: Serial number of physical storage system ▪ storagePortName: Display port name of the storage system ▪ serviceProperties: List of the service properties passed to the plug-in	
Output	Zone name to add to the specified Zone Configuration.	Zone alias name to add to the zone specified in the Zone name convention.
Handling when the output is the same name	Same zone name of the same fabric refers to the same zone. In the case of an existing zone: Add an alias in the zone and add to the Zone Configuration. null: Do not create a zone.	Same zone alias name of the same fabric refers to the same alias. In the case of an existing alias: Add WWN in the alias and add to the Zone. null: Do not create an alias.
Handling when unavailable characters are used for output	Characters other than alphanumeric characters and "_" are converted to "_" and become part of the name.	
If the output string is too long	When the output string is over 60 characters, the 61st and subsequent characters are truncated.	When the output string is over 64 characters or more, the 65th and subsequent characters are truncated.
Validation	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters. ▪ When having a non-standard prefix for the zone. ("LSAN_","TI_", "QOS[HML][0-9]+_")(case ignored)	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters.

Allocate Volumes with Clone/Snapshot: Service details

The following service template details apply to the Allocate Volumes with Clone/Snapshot service template:

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Allocate Volumes with Clone/Snapshot service templates.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Resource Group	Specify the Resource Group.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Byte or Block.
	Volume Settings	Specify the parameters required to create new volumes.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.
	LDEV ID Starts from	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Capacity	Specify the volume capacity.
	Volume Label	Specify the volume label.
	LUN Starts from	Specify the starting logical unit number assigned to the volume for a host.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	Target Volumes	Specify whether to use existing volumes or create new ones.

Navigation pane	Settings pane	Description
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify an existing Host Group/iSCSI Target.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings	Copy Type	Specify the copy type as Clone or Snapshot.
	Number of Generations	Specify the number of secondary volumes to be created for the primary volume. The number of secondary volumes becomes the number of generations. A copy group is created for each generation as well.
	Prefix of Group Name	Specify the prefix of the copy group name to be assigned when creating the copy group. The copy group name is created by adding the prefix to the serial number of the generation.

Navigation pane	Settings pane	Description
	CTG Option	Specify whether to set the consistency group (CTG) option at pair creation. If you specify 'Enabled', a copy pair is created by using the CTG option.
Secondary Volume Settings Note: When you selected the existing volumes as target volumes, a maximum of 20 Secondary Volume Settings can be specified.	Pool	Specify the pool for S-VOL.
	Secondary Volume Settings	Specify the parameters for the Secondary Volume Settings (S-VOL).
	Volume Usage	Specify the volume usage.
	LDEV ID Starts from	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Label	Specify the volume label.
	LUN Starts from	Specify the starting logical unit number assigned to the volume for a host.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	Create Copy Pair	Specify whether to create Secondary Volumes.
	Average Differential Data Size Per Collection	Specify the average differential data size per collection (%).
	Secondary Volume Type	Specify the volume type as DP-VOL or V-VOL.
	Primary Volume LDEV ID	Specify the Primary Volume LDEV ID.
Secondary Volume Resource Criteria	Resource Criteria	Specify resource criteria for S-Vols.
Backup Host Settings	Port Type	Specify the port type for S-Vols as Fibre or iSCSI.

Navigation pane	Settings pane	Description
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify an existing Host Group/iSCSI Target for S-Vols.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Volumes with Clone/Snapshot service templates.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Resource Group	Specify the Resource Group.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Byte or Block.
	Volume Settings	Specify the parameters required to create new volumes.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.
	LDEV ID Starts from	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Capacity	Specify the volume capacity.
	Volume Label	Specify the volume label.
	LUN Starts from	Specify the starting logical unit number assigned to the volume for a host.

Navigation pane	Settings pane	Description
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	Target Volumes	Specify whether to use existing volumes or create new ones.
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify an existing Host Group/iSCSI Target.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.

Navigation pane	Settings pane	Description
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.

Navigation pane	Settings pane	Description
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings	Copy Type	Specify the copy type as Clone or Snapshot.

Navigation pane	Settings pane	Description
	Number of Generations	Specify the number of secondary volumes to be created for the primary volume. The number of secondary volumes becomes the number of generations. A copy group is created for each generation as well.
	Prefix of Group Name	Specify the prefix of the copy group name to be assigned when creating the copy group. The copy group name is created by adding the prefix to the serial number of the generation.
	CTG Option	Specify whether to set the consistency group (CTG) option at pair creation. If you specify 'Enabled', a copy pair is created by using the CTG option.
Secondary Volume Settings Note: When you selected the existing volumes as target volumes, a maximum of 20 Secondary Volume Settings can be specified.	Pool	Specify the pool for S-VOL.
	Secondary Volume Settings	Specify the parameters for the Secondary Volume Settings (S-VOL).
	Volume Usage	Specify the volume usage.
	LDEV ID Starts from	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Label	Specify the volume label.
	LUN Starts from	Specify the starting logical unit number assigned to the volume for a host.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	Create Copy Pair	Specify whether to create Secondary Volumes.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Average Differential Data Size Per Collection	Specify the average differential data size per collection (%).
	Secondary Volume Type	Specify the volume type as DP-VOL or V-VOL.
	Primary Volume LDEV ID	Specify the Primary Volume LDEV ID.
Secondary Volume Resource Criteria	Resource Criteria	Specify the resource criteria for S-Vols.
Backup Host Settings	Port Type	Specify the port type for S-Vols as Fibre or iSCSI.
	Host Group Settings	Specify the parameters required to create a new Host Group/iSCSI Target or specify an existing Host Group/iSCSI Target for S-Vols.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.

Allocate Volumes with 2DC Remote Replication: Service details

The following service template details apply to the Allocate Volumes with 2DC Remote Replication service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit service settings

The following table lists the Edit service settings for the Allocate Volumes with 2DC Remote Replication service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for P-Vols.
	Storage System	Specify the storage system for P-Vols.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Target Volumes	Specify whether to use existing volumes or create new ones.
	Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select "Meta resource", then the meta resource group will be selected.
	Resource Group	Specify the resource group for P-Vols.
	Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for P-Vols.
	Capacity Format	Specify the volume capacity format as Byte or Block.
	Volume Settings	Specify the parameters required to create new volumes for P-Vols.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	Depending on the chosen capacity format, specify the volume capacity in bytes or blocks (1 block = 512 bytes).
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.

Navigation pane	Settings pane	Description
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Rows Per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Number of Hosts	Select the number of hosts to allocate per volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.

Navigation pane	Settings pane	Description
	Host Settings	Specify information about the hosts to which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Setting	
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.

Navigation pane	Settings pane	Description
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.

Navigation pane	Settings pane	Description
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Secondary Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for S-Vols.
	Storage System	Specify the storage system for S-Vols.
	Secondary Target Volumes	Specify whether to use existing volumes or create new ones.
	Secondary Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select 'Meta resource', then the meta resource group will be selected.
	Resource Group	Specify the resource group for S-Vols.
	Secondary Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for S-Vols.

Navigation pane	Settings pane	Description
	Secondary Volume Settings	Specify the parameters for the Secondary Volume Settings (S-Vol).
	Primary Volume LDEV ID	Specify the primary volume LDEV ID.
	Volume Usage	Specify the volume usage.
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup virtual LDEV ID as a hexadecimal number for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Secondary Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Secondary Volume Filter Join Type	Specify the secondary volume filter join type.
	Rows Per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Secondary Volumes	Specify the volume to be used as the secondary volume.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Secondary Volume Resource Criteria	Resource Criteria	Specify the resource criteria.
Backup Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Secondary Host Mode/ Secondary Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Secondary Number of Hosts	Select the number of hosts to allocate per volume.
	Secondary Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Secondary Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Secondary Host Settings	Specify information about the hosts for which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify the WWN settings when using the Fibre port setting.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.

Navigation pane	Settings pane	Description
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.

Navigation pane	Settings pane	Description
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings Note: The maximum number of copy pairs you can create is 99.	Replication Type	Specify the pair type.
	Target Copy Group	Specify whether to use an existing copy group or create a new one.

Navigation pane	Settings pane	Description
	Copy Group Name	Specify the name of the new copy group to create.
	Copy Pace	Specify the copy speed. The larger the value specified, the faster the copy speed will be.
	Fence Level	Specify the fence level.
	Use the nocopy option	Specify whether to perform an initial copy when creating a pair.
	Assign CTG	Specify whether to register the new pairs in a consistency group.
	Reduction Force Copy	Specify whether to forcibly create a pair for the volume for which the capacity saving function (deduplication and compression) is enabled.
	Primary JNLG	Specify the journal group of the primary volume.
	Secondary JNLG	Specify the journal group of the secondary volume.
	CTG ID	Specify whether to select the consistency group ID automatically or manually.
	CTG ID - Manual Selection	Specify the consistency group ID.
	MU Number	Specify whether to select the mirror unit (MU) automatically or manually.
	MU Number - Manual Selection	Specify the mirror unit (MU) mirror unit number by using a number from 0 to 3.
	Path Group ID	Specify whether to select the path group ID automatically or manually.

Navigation pane	Settings pane	Description
	Path Group ID - Manual Selection	Specify the path group ID by using a hexadecimal (base 16) number in the range from 00 to FF.
	Delta Resync Suspend	Specify whether to use delta resync between the storage systems of the secondary sites.
	Copy Group	Specify the existing copy group.
Note:		
1. If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/ Submit Service window, the largest free pool capacity will be selected after volume allocation.		

Submit service settings

The following table lists the Submit service settings for the Allocate Volumes with 2DC Remote Replication service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for P-Vols.
	Storage System	Specify the storage system for P-Vols.
	Target Volumes	Specify whether to use existing volumes or create new ones.
	Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select "Meta resource", then the meta resource group will be selected.
	Resource Group	Specify the resource group for P-Vols.

Navigation pane	Settings pane	Description
	Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for P-Vols.
	Capacity Format	Specify the volume capacity format as Byte or Block.
	Volume Settings	Specify the parameters required to create new volumes for P-Vols.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	Depending on the chosen capacity format, specify the volume capacity in bytes or blocks (1 block = 512 bytes).
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Rows Per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Number of Hosts	Select the number of hosts to allocate per volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts to which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Setting	
	WWN	Specify the World Wide Name (WWN).

Navigation pane	Settings pane	Description
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.

Navigation pane	Settings pane	Description
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Secondary Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for S-Vols.
	Storage System	Specify the storage system for S-Vols.
	Secondary Target Volumes	Specify whether to use existing volumes or create new ones.
	Secondary Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select 'Meta resource', then the meta resource group will be selected.
	Resource Group	Specify the resource group for S-Vols.
	Secondary Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for S-Vols.
	Secondary Volume Settings	Specify the parameters for the Secondary Volume Settings (S-Vol).
	Primary Volume LDEV ID	Specify the primary volume LDEV ID.
	Volume Usage	Specify the volume usage.
	Volume Label	Specify the volume label.
	LDEV Setting	

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup virtual LDEV ID as a hexadecimal number for the volume to allocate.
	Disk Type	Specify the disk type to be used to configure the pool.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Secondary Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Secondary Volume Filter Join Type	Specify the secondary volume filter join type.
	Rows Per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Secondary Volumes	Specify the volume to be used as the secondary volume.
Secondary Volume Resource Criteria	Resource Criteria	Specify the resource criteria.
Backup Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Secondary Host Mode/ Secondary Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.

Navigation pane	Settings pane	Description
	Host Mode Options	Specify the host mode options.
	Secondary Number of Hosts	Select the number of hosts to allocate per volume.
	Secondary Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Secondary Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Secondary Host Settings	Specify information about the hosts for which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify the WWN settings when using the Fibre port setting.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.

Navigation pane	Settings pane	Description
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings Note: The maximum number of copy pairs you can create is 99.	Replication Type	Specify the pair type.
	Target Copy Group	Specify whether to use an existing copy group or create a new one.
	Copy Group Name	Specify the name of the new copy group to create.

Navigation pane	Settings pane	Description
	Copy Pace	Specify the copy speed. The larger the value specified, the faster the copy speed will be.
	Fence Level	Specify the fence level.
	Use the nocopy option	Specify whether to perform an initial copy when creating a pair.
	Assign CTG	Specify whether to register the new pairs in a consistency group.
	Reduction Force Copy	Specify whether to forcibly create a pair for the volume for which the capacity saving function (deduplication and compression) is enabled.
	Primary JNLG	Specify the journal group of the primary volume.
	Secondary JNLG	Specify the journal group of the secondary volume.
	CTG ID	Specify whether to select the consistency group ID automatically or manually.
	CTG ID - Manual Selection	Specify the consistency group ID.
	MU Number	Specify whether to select the mirror unit (MU) automatically or manually.
	MU Number - Manual Selection	Specify the mirror unit (MU) mirror unit number by using a number from 0 to 3.
	Path Group ID	Specify whether to select the path group ID automatically or manually.
	Path Group ID - Manual Selection	Specify the path group ID by using a hexadecimal (base 16) number in the range from 00 to FF.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Delta Resync Suspend	Specify whether to use delta resync between the storage systems of the secondary sites.
	Copy Group	Specify the existing copy group.
Note:		
1. If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the largest free pool capacity will be selected after volume allocation.		

Allocate Volumes with Remote Replication (Global-Active Device)

This service allocates sets of volumes with in-system replication (global-active device) from the associated infrastructure group through Ops Center API Configuration Manager to be consumed by servers running a generic application.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit service settings

The following table lists the Edit service settings for the Allocate Volumes with Remote Replication (Global-Active Device) service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for P-Vols.
	Storage System	Specify the storage system for P-Vols.
	Target Volumes	Specify whether to use existing volumes or create new ones.
	Resource Group	Specify the resource group for P-Vols.
	Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for P-Vols.
	Capacity Format	Specify the volume capacity format as Byte or Block.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Volume Settings	Specify the parameters required to create new volumes for P-Vols.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	Depending on the chosen capacity format, specify the volume capacity in bytes or blocks (1 block = 512 bytes).
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Rows per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.

Navigation pane	Settings pane	Description
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Number of Hosts	Select the number of hosts to allocate per volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts to which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Enable ALUA on Preferred Path	Enable ALUA on the preferred path.
	Enable Host Mode Option on Non-preferred Path	Enable the Host Mode option on the non-preferred path.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.

Navigation pane	Settings pane	Description
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Secondary Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for S-Vols.
	Storage System	Specify the storage system for S-Vols.
	Resource Group	Specify the resource group for S-Vols.
	Secondary Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select 'Automatic', then a pool will be selected automatically.
	Pool	Specify the pool for S-Vols.
	Secondary Volume Settings	Specify the parameters required to create new volumes for S-Vols.
	Primary Volume LDEV ID	Specify the primary volume LDEV ID.
	Volume Usage	Specify the volume usage.
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Secondary Volume Resource Criteria	Resource Criteria	Specify the resource criteria.
Backup Host Settings	Port Type	Specify the port type as Fibre or iSCSI.

Navigation pane	Settings pane	Description
	Secondary Host Mode/Secondary Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
	Secondary Number of Hosts	Select the number of hosts to allocate per volume.
	Secondary Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Secondary Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Secondary Host Settings	Specify information about the hosts for which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify the WWN settings when using the Fibre port setting.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Enable ALUA on Preferred Path	Enable ALUA on the preferred path.
	Enable Host Mode Option on Non-preferred Path	Enable the Host Mode option on the non-preferred path.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.

Navigation pane	Settings pane	Description
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings Note: The maximum number of copy pairs you can create is 99.	Target Copy Group	Specify whether to use an existing copy group or create a new one.
	Copy Group Name	Specify the name of the new copy group to create.
	Copy Pace	Specify the copy speed. The larger the value specified, the faster the copy speed will be.
	Use the nocopy option	Specify whether to perform an initial copy when creating a pair.
	Assign CTG	Specify whether to register the new pairs in a consistency group.
	CTG ID	Specify whether to select the consistency group ID automatically or manually.
	CTG ID - Manual Selection	Specify the consistency group ID by using a hexadecimal (base 16) number.
	MU Number	Specify whether to select the mirror unit (MU) automatically or manually.
	MU Number - Manual Selection	Specify the mirror unit (MU) mirror unit number by using a number from 0 to 3.
	Path Group ID	Specify whether to select the path group ID automatically or manually. If you specify "Auto Selection", 0 is automatically chosen.
	Path Group ID - Manual Selection	Specify the path group ID by using a hexadecimal (base 16) number in the range from 00 to FF.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Reduction Force Copy	Specify whether to forcibly create a pair for the volume for which the capacity saving function (deduplication and compression) is enabled.
	Quorum Disk ID	Specify the Quorum disk ID.
	Copy Group	Specify the existing copy group.
Note:		
1. If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the largest free pool capacity will be selected after volume allocation.		

Submit service settings

The following table lists the Submit service settings for the Allocate Volumes with Remote Replication (Global-Active Device) service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for P-Vols.
	Storage System	Specify the storage system for P-Vols.
	Target Volumes	Specify whether to use existing volumes or create new ones.
	Resource Group	Specify the resource group for P-Vols.
	Pool Selection[1]	Specify whether to select pool at volume allocation. If you select "Automatic", then a pool will be selected automatically.
	Pool	Specify the pool for P-Vols.
	Capacity Format	Specify the volume capacity format as Byte or Block.
	Volume Settings	Specify the parameters required to create new volumes for P-Vols.
	Volume Usage	Specify the volume usage.
	Number of Volumes	Specify the number of volumes.

Navigation pane	Settings pane	Description
	Volume Capacity	Depending on the chosen capacity format, specify the volume capacity in bytes or blocks (1 block = 512 bytes).
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions to narrow down the volume list.
	Volume Filter Join Type	Specify the source volume filter join type.
	Rows per Page	Specify the number of rows to display per page.
	Current Page	Specify the page number to display in the volumes.
	Volumes	Specify the volume to be used as the primary volume.
Resource Criteria	Resource Criteria	Specify the resource criteria.
Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.

Navigation pane	Settings pane	Description
	Number of Hosts	Select the number of hosts to allocate per volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts to which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Enable ALUA on Preferred Path	Enable ALUA on the preferred path.
	Enable Host Mode Option on Non-preferred Path	Enable the Host Mode option on the non-preferred path.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.

Navigation pane	Settings pane	Description
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Secondary Volume Settings	Configuration Manager Connection	Specify the Ops Center API Configuration Manager connection for S-Vols.
	Storage System	Specify the storage system for S-Vols.
	Resource Group	Specify the resource group for S-Vols.
	Secondary Pool Selection[1]	Specify whether to select a pool at volume allocation. If you select 'Automatic', then a pool will be selected automatically.
	Pool	Specify the pool for S-Vols.
	Secondary Volume Settings	Specify the parameters required to create new volumes for S-Vols.
	Primary Volume LDEV ID	Specify the primary volume LDEV ID.
	Volume Usage	Specify the volume usage.
	Volume Label	Specify the volume label.
	Disk Type	Specify the disk type to be used to configure the pool.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Secondary Volume Resource Criteria	Resource Criteria	Specify the resource criteria.
Backup Host Settings	Port Type	Specify the port type as Fibre or iSCSI.
	Secondary Host Mode/Secondary Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.

Navigation pane	Settings pane	Description
	Host Mode Options	Specify the host mode options.
	Secondary Number of Hosts	Select the number of hosts to allocate per volume.
	Secondary Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Secondary Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Secondary Host Settings	Specify information about the hosts for which the volumes will be allocated.
	Host Name	Specify the host name.
	WWN Settings	Specify the WWN settings when using the Fibre port setting.
	WWN	Specify the World Wide Name (WWN).
	WWN Nickname	Specify the WWN nickname.
	Enable ALUA on Preferred Path	Enable ALUA on the preferred path.
	Enable Host Mode Option on Non-preferred Path	Enable the Host Mode option on the non-preferred path.
	iSCSI Settings	Specify the iSCSI settings when using the iSCSI port type.
	iSCSI Name	Specify the iSCSI name.
	iSCSI Nickname	Specify the iSCSI nickname.
Fabric Settings for Secondary Volumes	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in the Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all defined connections for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.

Navigation pane	Settings pane	Description
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing Zone setting. If you specify False, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings for Secondary Volumes	Update Zone Configurations	Specify True to enable zone setting modification.
	Use Existing Zone Aliases	Specify True to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you specify False, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.

Navigation pane	Settings pane	Description
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Copy Pair Settings Note: The maximum number of copy pairs you can create is 99.	Target Copy Group	Specify whether to use an existing copy group or create a new one.
	Copy Group Name	Specify the name of the new copy group to create.
	Copy Pace	Specify the copy speed. The larger the value specified, the faster the copy speed will be.
	Use the nocopy option	Specify whether to perform an initial copy when creating a pair.
	Assign CTG	Specify whether to register the new pairs in a consistency group.
	CTG ID	Specify whether to select the consistency group ID automatically or manually.
	CTG ID - Manual Selection	Specify the consistency group ID by using a hexadecimal (base 16) number.
	MU Number	Specify whether to select the mirror unit (MU) automatically or manually.
	MU Number - Manual Selection	Specify the mirror unit (MU) mirror unit number by using a number from 0 to 3.
	Path Group ID	Specify whether to select the path group ID automatically or manually. If you specify "Auto Selection", 0 is automatically chosen.
	Path Group ID - Manual Selection	Specify the path group ID by using a hexadecimal (base 16) number in the range from 00 to FF.
	Reduction Force Copy	Specify whether to forcibly create a pair for the volume for which the capacity saving function (deduplication and compression) is enabled.
	Quorum Disk ID	Specify the Quorum disk ID.
	Copy Group	Specify the existing copy group.
Note:		

Navigation pane	Settings pane	Description
1. If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/ Submit Service window, the largest free pool capacity will be selected after volume allocation.		

Allocate Like Volumes service templates

The following Ops Center Automator Allocate Like Volumes template for allocating like volumes is provided with the software and is preconfigured.

Allocate Like Volumes with Configuration Manager

Allocates new volumes to the host to which the specified source volume is allocated with the same LUN path.

Supported platforms

For information on supported platforms, see .

Default ports

Port number	Use
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Allocate Like Volumes with Configuration Manager: Service details

The following service template details apply to the Allocate Like Volumes with Configuration Manager service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Allocate Like Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Storage System	Connection	Select the Ops Center API Configuration Manager Web Service Connection. Information such as IP address and credentials is registered in Ops Center Automator to communicate with Ops Center API Configuration Manager.
	Storage System	Select the storage system.
Volume	Source Volume Filter	Specify the source volume filter.
	Source Volume Filter Join Type	Specify the join type of the source volume filter.
	Source Volume	Specify the source volume.
	Capacity	Specify the capacity of the volumes to create.
	Number of Volumes	Specify the number of volumes to create.
	Pool	Specify the pool.
	Volume Label	Specify the volume label. If this is not specified, the same label as the source volume is used. In Ops Center API Configuration Manager, the only available characters are "a-z A-Z 0-9 . @ _ : , -", so other characters are eliminated even if the label of source volume contains the character.

Navigation pane	Settings pane	Description
	LDEV ID Starts From	Specify where to search available LDEV IDs from the specified LDEV ID. If you don't specify an LDEV ID, the LDEV ID is searched from the smallest ID in the specified resource group.
	LUN Starts From	Specify where to search available LUNs from the specified LUN.
	Virtual LDEV ID Starts From	Specify where to search available virtual LDEV IDs from the specified virtual LDEV ID. This parameter is ignored when the specified source volume is not linked to a virtual storage machine or when the volume of HUS VM or VSP is specified as the source volume.
	Resource Group	Specify where to search LDEV IDs from the specified resource group. This parameter is ignored if HUS VM or VSP is specified as the source volume. If you don't specify a resource group, the LDEV ID is searched from the same resource group as the source volume. Specifying the resource group is only supported for VSP 5000 series, VSP G1000, VSP G1500, VSP F1500, VSP Gx00 models, VSP Fx00 models, and VSP Nx00 models.

Navigation pane	Settings pane	Description
		The LDEV ID will be searched from the same resource group as the source volume when HUS VM or VSP is specified as the source volume.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Like Volumes with Configuration Manager service template.

Navigation pane	Settings pane	Description
Storage System	Connection	Select the Ops Center API Configuration Manager Web Service Connection. Information such as IP address and credentials is registered in Ops Center Automator to communicate with Ops Center API Configuration Manager.
	Storage System	Select the storage system.
Volume	Source Volume Filter	Specify the source volume filter.
	Source Volume Filter Join Type	Specify the join type of the source volume filter.
	Source Volume	Specify the source volume.
	Capacity	Specify the capacity of the volumes to create.
	Number of Volumes	Specify the number of volumes to create.
	Pool	Specify the pool.

Navigation pane	Settings pane	Description
	Volume Label	Specify the volume label. If this is not specified, the same label as the source volume is used. In Ops Center API Configuration Manager, the only available characters are "a-z A-Z 0-9 . @ _ : , -", so other characters are eliminated even if the label of source volume contains the character.
	LDEV ID Starts From	Specify where to search available LDEV IDs from the specified LDEV ID. If you don't specify an LDEV ID, the LDEV ID is searched from the smallest ID in the specified resource group.
	LUN Starts From	Specify where to search available LUNs from the specified LUN.
	Virtual LDEV ID Starts From	Specify where to search available virtual LDEV IDs from the specified virtual LDEV ID. This parameter is ignored when the specified source volume is not linked to a virtual storage machine or when the volume of HUS VM or VSP is specified as the source volume.
	Resource Group	Specify where to search LDEV IDs from the specified resource group. This parameter is ignored if HUS VM or VSP is specified as the source volume.

Navigation pane	Settings pane	Description
		If you don't specify a resource group, the LDEV ID is searched from the same resource group as the source volume.
		Specifying the resource group is only supported for VSP 5000 series, VSP G1000, VSP G1500, VSP F1500, VSP Gx00 models, VSP Fx00 models, and VSP Nx00 models.
		The LDEV ID will be searched from the same resource group as the source volume when HUS VM or VSP is specified as the source volume.

Data mobility service templates

The Ops Center Automator data mobility service templates provide data mobility services that include provisioning and reserving LDEV IDs from a Virtual Storage Machine (VSM), creating remote copy pairs for migration, implementing online data migration, and reporting the virtualized configuration among multiple sites.

The following Ops Center Automator Data Mobility service templates are provided with the software and are preconfigured.

Allocate Volumes from Virtual Storage Machine
> Allocates new volumes from a Virtual Storage Machine and reserves the same LDEV IDs on other storage systems for data migration.

Export Virtual Storage Machine Configuration Across Sites
> Gives a report showing configuration details of the Virtual Storage Machine across sites including information regarding the High Availability pair for Data Mobility Services.

Create High Availability Pair for Migration
> Creates a High Availability pair from a Virtual Storage Machine between two storage systems for data migration.

Migrate Data Using High Availability Pair
> Enables online data migration using a High Availability pair between two storage systems from a Virtual Storage Machine.

Supported platforms

For information on supported platforms, see Service template supported platforms (on page 237).

Default ports

Port number	Use
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Allocate Volumes from Virtual Storage Machine: Service details

This service enables the creation and allocation of volumes from a Virtual Storage Machine (VSM) while reserving the same LDEV IDs on other storage systems.

The following service template details apply to the Allocate Volumes from Virtual Storage Machine service template.

Software and setup prerequisites

For software and setup prerequisites, see Service template prerequisites (on page 189).

Edit Service settings

The following table lists the Edit Service settings for the Allocate Volumes from Virtual Storage Machine service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System	Shows a table from which you can choose the storage system.
	Virtual Storage Machine	Specifies the Virtual Storage Machine (VSM) from a list.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Number of Volumes	Specifies the number of volumes to be made available for the service. If necessary, you can specify a Single Value, Multiple Values, or a Range.
	LDEV ID Starts From	Specifies the starting LDEV ID in hexadecimal format.
	Volume Capacity	Specifies the volume capacity in MB, GB, or TB.
	Pool	Shows a table from which you can choose the pool.
	Volume Label	Specifies the volume label.
	LUN Starts from	Specifies the starting value for the LUN.
Host Settings	Target Host Group/iSCSI Target	Specifies the option of using an existing, or creating a new Target Host Group/iSCSI Target. You can choose an existing target from the provided table or, when creating a new target, you can specify the Host Group Settings depending on the port type you select.
	Existing Host Groups Or iSCSI Targets	Shows a table from which you can choose an existing Host Group/iSCSI Target. Your selections are shown beneath the table.
	Port Type	Specifies either Fibre or iSCSI as the port type.
	Host Group Settings	Specifies the parameters needed to create a new Host Group/iSCSI target. Port: Specifies the port of the host group target. WWN Settings: Specifies the WWN settings when using the Fibre port setting.

Navigation pane	Settings pane	Description
		Host Group Name -- Specifies the host group name when using the Fibre port type.
		iSCSI Settings -- Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name -- Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode -- Specifies the host mode.
		Host Mode Options -- Specifies the host mode options.
Reservation Settings	Reservation Targets	Specifies the storage systems with the volume to set the reserve attribute from a selection of table entries. Specify the Ops Center API Configuration Manager Connection/Reservation Target Storage System.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Volumes from Virtual Storage Machine service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System	Shows a table from which you can choose the storage system.
	Virtual Storage Machine	Specifies the Virtual Storage Machine (VSM) from a list.

Navigation pane	Settings pane	Description
	Number of Volumes	Specifies the number of volumes to be made available for the service.
	LDEV ID Starts From	Specifies the starting LDEV ID in hexadecimal format.
	Volume Capacity	Specifies the volume capacity in MB, GB, or TB.
	Pool	Shows a table from which you can choose the pool.
	Volume Label	Specifies the volume label.
	LUN Starts from	Specifies the starting value for the LUN.
Host Settings	Target Host Group/iSCSI Target	Specifies the option of using an existing, or creating a new Target Host Group/ iSCSI Target. You can choose an existing target from the provided table or, when creating a new target, you can specify the Host Group Settings depending on the port type you select.
	Existing Host Groups Or iSCSI Targets	Shows a table from which you can choose an existing Host Group/iSCSI Target. Your selections are shown beneath the table.
	Port Type	Specifies either Fibre or iSCSI as the port type.
	Host Group Settings	Specifies the parameters needed to create a new Host Group/iSCSI target.

Port: Specifies the port of the host group target.

WWN Settings: Specifies the WWN settings when using the Fibre port setting. |

Navigation pane	Settings pane	Description
		Host Group Name: Specifies the host group name when using the Fibre port type.
		iSCSI Settings: Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name: Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode: Specifies the host mode.
		Host Mode Options: Specifies the host mode options.
Reservation Settings	Reservation Targets	Specifies the storage systems with the volume to set the reserve attribute from a selection of table entries. Specify the Ops Center API Configuration Manager Connection/Reservation Target Storage System.

Export Virtual Storage Machine Configuration Across Sites: Service details

This service generates a report showing the Virtual Storage Machine (VSM) configuration details for multiple sites, which can be output in .cvs file format to a specified file location.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Export Virtual Storage Machine Configuration Across Sites service template.

Navigation pane	Settings pane	Description
Virtual Storage Machine Settings:	Virtual Storage Machine:	Specifies the Virtual Storage Machine from a list of pull-down options.
	Report Output File Path:	Specifies the file path for the report output.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Export Virtual Storage Machine Configuration Across Sites service template.

Navigation pane	Settings pane	Description
Virtual Storage Machine Settings:	Virtual Storage Machine:	Specifies the Virtual Storage Machine from a list of pull-down options.
	Report Output File Path:	Specifies the file path for the report output.

The configuration report gives the name of the Virtual Storage Machine and Physical Storage Machine along with the serial numbers and relevant details for specific machines.

Create High Availability Pair for Migration: Service details

This service creates a high availability pair from a Virtual Storage Machine (VSM) between two storage systems for data migration.

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service settings

The following table lists the Edit Service settings for the Create High Availability Pair for Migration service template.

Navigation pane	Settings pane	Description
Migration Source Settings:	Source Configuration Manager Connection:	Shows a table from which you can choose the source Configuration Manager Connection used for migration.

Navigation pane	Settings pane	Description
	Source Storage System:	Shows a table from which you can choose the source storage system.
	Source Volumes Filter:	Specifies filters to narrow down the selection of source volumes. You can filter by key (LDEV ID, Label, or Pool ID), using an operator, or by a specific value.
	Join Filters by:	Specifies either "and" or "or" for joining filters.
	Source Volumes:	Shows a table from which you can choose the source volumes. Your selections are shown after the table.
Migration Target Settings:	Target Configuration Manager Connection:	Shows a table from which you can choose the target Configuration Manager connection used for the migration.
	Target Storage System:	Shows a table from which you can choose the target storage system.
	Pool:	Shows a table from which you can choose the pool.
	Volume Label:	Specifies the volume label.
	LUN Starts from:	Specifies the starting value for the LUN. If necessary, you can specify a Single Value, Multiple Values, or a Range.

Navigation pane	Settings pane	Description
Host Settings:	Target Host Group/iSCSI Target:	Specifies the option of using an existing, or creating a new Target Host Group/iSCSI Target. You can choose an existing target from the provided table or, when creating a new target, you can specify the Host Group Settings depending on the port type you select.
	Existing Host Groups Or iSCSI Targets:	Shows a table from which you can choose an existing Host Group/iSCSI Target. Your selections are shown after the table.
	Port Type:	Specifies either Fibre or iSCSI as the port type.
	Host Group Settings:	Specifies the parameters needed to create a new Host Group/iSCSI target. Port: -- Specifies the port of the host group target. WWN Settings: -- Specifies the WWN settings when using the Fibre port setting. Host Group Name: -- Specifies the host group name when using the Fibre port type. iSCSI Settings: -- Specifies the iSCSI settings when using the iSCSI port type. iSCSI Target Name: -- Specifies the iSCSI target name when using the iSCSI port type. Host Mode: -- Specifies the host mode. Host Mode Options: -- Specifies the host mode options.

Navigation pane	Settings pane	Description
Copy Group Settings	Target Copy Group:	Specifies the option of using an existing, or creating a new Copy Group.
	Copy Group:	Shows a table from which you can choose an existing Copy Group.
	Copy Group Name:	Specifies the name when creating a new Copy Group.
	Copy Pair Name:	Specifies the Copy Pair name.
	Quorum Disk ID:	Specifies the Quorum disk ID.
	Path Group ID:	Specifies the Path Group ID.
	Consistency Group:	Uses a Consistency Group when the check box is checked.
	Consistency Group ID:	Specifies the Consistency Group ID when the Consistency Group check box is checked.
	MU Number:	Specifies the MU number.
	Copy Pace:	Specifies a Copy Pace from 1 to 15.
	Perform Initial Copy:	Performs an Initial Copy when the check box is checked.

📄 **Note:** Ops Center Automator automatically sets the ALUA attribute as follows for data migration:

- P-VOL -- Active/Optimized

- S-VOL -- Active/Non-optimized

If necessary, you can set the ALUA attribute manually to continue using high availability technology after using this service.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Create High Availability Pair for Migration service template.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Migration Source Settings:	Source Configuration Manager Connection:	Shows a table from which you can choose the source Configuration Manager Connection used for migration.
	Source Storage System:	Shows a table from which you can choose the source storage system.
	Source Volumes Filter:	Specifies filters to narrow down the selection of source volumes. You can filter by key (LDEV ID, Label, or Pool ID), using an operator, or by a specific value.
	Join Filters by:	Specifies either "and" or "or" for joining filters.
	Source Volumes:	Shows a table from which you can choose the source volumes. Your selections are shown after the table.
Migration Target Settings:	Target Configuration Manager Connection:	Shows a table from which you can choose the target Configuration Manager connection used for the migration.
	Target Storage System:	Shows a table from which you can choose the target storage system.
	Pool:	Shows a table from which you can choose the pool.
	Volume Label:	Specifies the volume label.
	LUN Starts from:	Specifies the starting value for the LUN. If necessary, you can specify a Single Value, Multiple Values, or a Range.

Navigation pane	Settings pane	Description
Host Settings:	Target Host Group/iSCSI Target:	Specifies the option of using an existing, or creating a new Target Host Group/ iSCSI Target. You can choose an existing target from the provided table or, when creating a new target, you can specify the Host Group Settings depending on the port type you select.
	Existing Host Groups Or iSCSI Targets:	Shows a table from which you can choose an existing Host Group/iSCSI Target. Your selections are shown after the table.
	Port Type:	Specifies either Fibre or iSCSI as the port type.
	Host Group Settings:	Specifies the parameters needed to create a new Host Group/iSCSI target. Port: -- Specifies the port of the host group target. WWN Settings: -- Specifies the WWN settings when using the Fibre port setting. Host Group Name: -- Specifies the host group name when using the Fibre port type. iSCSI Settings: -- Specifies the iSCSI settings when using the iSCSI port type. iSCSI Target Name: -- Specifies the iSCSI target name when using the iSCSI port type. Host Mode: -- Specifies the host mode. Host Mode Options: -- Specifies the host mode options.

Navigation pane	Settings pane	Description
Copy Group Settings	Target Copy Group:	Specifies the option of using an existing, or creating a new Copy Group.
	Copy Group:	Shows a table from which you can choose an existing Copy Group.
	Copy Group Name:	Specifies the name when creating a new Copy Group.
	Copy Pair Name:	Specifies the Copy Pair name.
	Quorum Disk ID:	Specifies the Quorum disk ID.
	Path Group ID:	Specifies the Path Group ID.
	Consistency Group:	Uses a Consistency Group when the check box is checked.
	Consistency Group ID:	Specifies the Consistency Group ID when the Consistency Group check box is checked.
	MU Number:	Specifies the MU number.
	Copy Pace:	Specifies a Copy Pace from 1 to 15.
	Perform Initial Copy:	Performs an Initial Copy when the check box is checked.

Migrate Data Using High Availability Pair: Service details

This service enables online data migration between two storage systems.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Migrate Data Using High Availability Pair service template.

Navigation pane	Settings pane	Description
Migration Settings:	Source Configuration Manager Connection:	Shows a table from which you can choose the source Configuration Manager connection used for migration.
	Source Storage System:	Shows a table from which you can choose the source storage system.
	Specify Target by:	Specifies either Source Volume or Copy Group for the target resources used for migration.
	Source Volumes Filter:	Specifies filters to narrow down the selection of source volumes. You can filter by key (LDEV ID, Label, or Pool ID), using an operator, or by a specific value.
	Join Filters by:	Specifies either "and" or "or" for joining filters.
	Source Volumes:	Shows a table from which you can choose the source volumes. Your selections are shown beneath the table.
	Target Configuration Manager Connection:	Shows a table from which you can choose the target Configuration Manager connection used for migration.
	Target Storage System:	Shows a table from which you can choose the target storage system.
	Copy Group:	Shows a table from which you can choose an existing copy group.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Migrate Data Using High Availability Pair service template.

Navigation pane	Settings pane	Description
Migration Settings:	Source Configuration Manager Connection:	Shows a table from which you can choose the source Configuration Manager connection used for migration.
	Source Storage System:	Shows a table from which you can choose the source storage system.
	Specify Target by:	Specifies either Source Volume or Copy Group for the target resources used for migration.
	Source Volumes Filter:	Specifies filters to narrow down the selection of source volumes. You can filter by key (LDEV ID, Label, or Pool ID), using an operator, or by a specific value.
	Join Filters by:	Specifies either "and" or "or" for joining filters.
	Source Volumes:	Shows a table from which you can choose the source volumes. Your selections are shown beneath the table.
	Target Configuration Manager Connection:	Shows a table from which you can choose the target Configuration Manager connection used for migration.
	Target Storage System:	Shows a table from which you can choose the target storage system.
	Copy Group:	Shows a table from which you can choose an existing copy group.

ESX cluster service templates

The Ops Center Automator ESX cluster service templates are provided with the software and are preconfigured.

Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster

Allocates volumes to VMware ESX cluster hosts, configures zoning, and creates a VMware datastore under a datastore cluster.

Add Host to Cluster in vCenter

Allocates existing volumes used as datastores by ESX cluster hosts to new ESX hosts.

Remove Host from Cluster in vCenter

Unmounts VMFS datastores, unallocates volumes from specified ESX hosts, and deletes zoning.

Supported platforms

For information on supported platforms, see Service template supported platforms (on page 237).

Default ports

The default ports and their uses are as follows:

Port number	Use
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Installing Python and Python Library (Windows OS)

Procedure

1. Install Python 3.*x* on the same server as Ops Center Automator.

    a. Download the Python installer from following site: https://www.python.org/downloads/windows/.

    b. Go to the download location and run the installation.
       The **Install Python** wizard opens.

    c. Select both options: **Install launcher for all users** and **Add Python 3.*x* to PATH**.

    d. Click **Install Now**.

       You should not customize your installation, but if you do, you must ensure that you select the option to install pip from the Optional Features. The pip component is required to install the Python libraries.

2. Install **pyvmomi**, which is the Python library that enables Ops Center Automator to communicate with vCenter.

   - For an online environment, follow these steps:

     • From the command line, run the following command to download the library and install it into the Python environment: `pip install pyvmomi`.

     • Verify that the library is installed correctly by using the following command: `pip list pyvmomi`.

     • For more information go to https://github.com/vmware/pyvmomi.

   - For an offline environment, follow these steps:

     • Download the following seven libraries in an online environment:

       ▪ six (https://pypi.org/project/six/)

       ▪ urllib3 (https://pypi.org/project/urllib3/)

       ▪ certifi (https://pypi.org/project/certifi/)

       ▪ idna (https://pypi.org/project/idna/)

       ▪ charset-normalizer (https://pypi.org/project/charset-normalizer/)

       ▪ requests (https://pypi.org/project/requests/)

       ▪ pyvmomi (https://pypi.org/project/pyvmomi/)

     • For each library, decompress the downloaded file and run following command: `python setup.py install`.

   For more detailed information about installing the Python library, go to https://github.com/vmware/pyvmomi.

Result

Python and the Python Library are now installed on Ops Center Automator.

Installing Python and Python Library (Linux OS)

Procedure

1. Install Python on the same server as Ops Center Automator.

   - Download the gzipped source file from the following site: https://www.python.org/downloads/source/.

   - Decompress the gzipped source file and run following commands:

     • `./configure`

     • `make`

     • `sudo make install`

   - In the **Administration** tab of Ops Center Automator, use the **Shared Properties Settings** to configure the python install path to the shared property of the **Python Interpreter Path**.

2. Install **pyvmomi** (Python library for Ops Center Automator to talk with vCenter).

- For an online environment, follow these steps:

  - Run the following command on the command line to download the library and install it into the Python environment: `pip install pyvmomi`.

  - Verify that the library is installed correctly by using the following command: `pip list pyvmomi`.

  - For more information go to https://github.com/vmware/pyvmomi.

- For an offline environment, follow these steps:

  - Download the following seven libraries in an online environment:

    - six (https://pypi.org/project/six/)

    - urllib3 (https://pypi.org/project/urllib3/)

    - certifi (https://pypi.org/project/certifi/)

    - idna (https://pypi.org/project/idna/)

    - charset-normalizer (https://pypi.org/project/charset-normalizer/)

    - requests (https://pypi.org/project/requests/)

    - pyvmomi (https://pypi.org/project/pyvmomi/)

  - For each library, decompress the downloaded file and run following command: `python setup.py install`.

Result

Python and the Python Library are now installed on Ops Center Automator.

Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster: Service details

The Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster service template enables you to allocate volumes to VMware ESX cluster hosts, configure zoning, and create a VMware datastore under a datastore cluster.

The following service template details apply to the Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster service template.

Navigation pane	Settings pane	Description
Target ESX Cluster	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
	Perform LIP Reset	Perform LIP reset on the ESX host. If you enable LIP Reset, you must also register agentless remote connection settings for each ESX Server.
	ESX Prompt Pattern	Specifies the command prompt pattern to use when running `esxcli` on the ESX server. You do not need to specify this if "Perform LIP Reset" is disabled.
Target Storage	Configuration Manager Connection	Select the Configuration Manager server which is registered as a Web Service Connection in the Administration Tab.
	Storage System	Select a storage system.
	Resource Group	Specify the resource group from which resources are used (for example LDEV ID and host group ID). You must specify the resource group for VSM when allocating volumes in VSM.
	Virtual Model	Select the Virtual Model associated with VSM. This is needed when allocating volumes to VSM. This field is inactive when the Virtual Storage System ID is 0 in the Resource Group.

Navigation pane	Settings pane	Description
	Virtual Serial Number	Specify the Virtual Serial Number associated with VSM when allocating volumes in VSM.
	Port Selection	Select the storage port selection criteria: ▪ "Smaller number of hosts": Select the port with the smallest registered WWN. (Default value) ▪ "Smaller number of volumes": Select the port with the smallest registered LUN.
Resource Criteria	Storage Port	Specify a storage port for provisioning.
Volume Settings	Number of Volumes	Specify the number of volumes to create.
	LDEV ID Starts From	Specify the starting LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Capacity	Specify the volume capacity.
	Pool	Shows a table from which you can choose the pool.
	Volume Label	Specify the volume label.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
	Virtual LDEV ID Starts From	Specify the starting Virtual LDEV ID as a hexadecimal number for the volume to allocate.
Host Group Settings	Script for Host Group Naming	Specify a naming rule for the Host Group name as a script.
	Host Mode	Specify the host mode.

Navigation pane	Settings pane	Description
	Host Mode Options	Specify the host mode options.
Fabric Settings	Use Fabric Settings	Determines whether to use fabric information from the FC switch manager services for LUN path selection.
	BNA Connections	Select a Brocade Network Advisor server which is registered as a Web Service Connection in the Administration Tab.
	Resource Group	Specify the Resource Group of the BNA to narrow down target resources.
	Target Fabrics	Specify Fabrics in BNA if narrowing down target resources (optional).
	Use Existing Zone	Specify whether to narrow down target resources to those in existing zones.
	Use Active Zone Only	Specify whether to use the active zone only.
	Num. of Hops Restriction	Specify whether to narrow down target resources based on hop count for the path.
	Maximum Num. of Hops	Specify the maximum number of hops when "Num. of Hops Restriction" is set to True.
Zone Settings	Update Zone Configurations	Specify whether to add or create zones.
	Use Existing Zone Aliases	Specify whether to update existing zone alias.
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Zone Configurations to Update	Specify a range of zones in which zones are created when "Update Current Active Zone Config" is False.
	Interval for each Fabric Settings	Specify the wait time in minutes between configuring fabrics.
	Script for Zone Naming	Enables zone naming using javascript.
	Script for Host Zone Alias Naming	Enables naming of the Host Zone Alias for host WWNs using javascript.
	Script for Storage Zone Alias Naming	Enables naming of the Storage Zone Alias for storage ports using javascript.
Datastore Settings	Datastore Cluster Name	Select a Datastore Cluster name.
	Datastore Name Prefix	Specify the prefix of the Datastore name. A 4-digit sequential number is automatically added after the prefix.
	VMFS Version	Specify the VMFS version of the Datastore.
	Block Size	Specify the block size of the Datastore.
	Storage I/O Control	Specify whether to enable storage I/O control of the Datastore.
	Threshold Type	Specify the type of threshold, either "Latency Threshold" or "Throughput Threshold".
	Threshold Value	Specify the value of the threshold.
Notification Settings	To Addresses	Specify the To email addresses. Use a comma to separate multiple addresses.

Navigation pane	Settings pane	Description
	Cc Addresses	Specify the Cc email addresses. Use a comma to separate multiple addresses.
	Subject	Specify the email subject.
	Body	Specify the email body.
	Response Input Dialog Box	Specify HTML or text in the Response Entry dialog box. To change a service property value in the Response Entry dialog box, specify the property key for the "name" attribute of an input tag (<input>) or a select tag (<select>).

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster service template.

Navigation pane	Settings pane	Description
Target ESX Cluster	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
Target Storage	Configuration Manager Connection	Select the Configuration Manager server which is registered as a Web Service Connection in the Administration Tab.
	Storage System	Select a storage system.
	Resource Group	Specify the resource group from which resources are used (for example LDEV ID and host group ID). You must specify the resource group for VSM when allocating volumes in VSM.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Virtual Model	Select the Virtual Model associated with VSM. This is needed when allocating volumes to VSM. This field is inactive when the Virtual Storage System ID is 0 in the Resource Group.
	Virtual Serial Number	Specify the Virtual Serial Number associated with VSM when allocating volumes in VSM.
	Port Selection	Select the storage port selection criteria: ▪ "Smaller number of hosts": Select the port with the smallest registered WWN. (Default value) ▪ "Smaller number of volumes": Select the port with the smallest registered LUN.
Resource Criteria	Storage Port	Specify a storage port for provisioning.
Volume Settings	Number of Volumes	Specify the number of volumes to create.
	LDEV ID Starts From	Specify the starting LDEV ID as a hexadecimal number for the volume to allocate.
	Volume Capacity	Specify the volume capacity.
	Pool	Shows a table from which you can choose the pool.
	Volume Label	Specify the volume label.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Virtual LDEV ID Starts From	Specify the starting Virtual LDEV ID as a hexadecimal number for the volume to allocate.
Host Group Settings	Script for Host Group Naming	Specify a naming rule for the Host Group name as a script.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
Fabric Settings	BNA Connections	Select a Brocade Network Advisor server which is registered as a Web Service Connection in the Administration Tab.
	Resource Group	Specify the Resource Group of the BNA to narrow down target resources.
	Target Fabrics	Specify Fabrics in BNA if narrowing down target resources (optional).
	Use Existing Zone	Specify whether to narrow down target resources to those in existing zones.
	Use Active Zone Only	Specify whether to use the active zone only.
	Num. of Hops Restriction	Specify whether to narrow down target resources based on hop count for the path.
	Maximum Num. of Hops	Specify the maximum number of hops when "Num. of Hops Restriction" is set to True.
Zone Settings	Update Zone Configurations	Specify whether to add or create zones.
	Use Existing Zone Aliases	Specify whether to update existing zone alias.

Navigation pane	Settings pane	Description
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.
	Zone Configurations to Update	Specify a range of zones in which zones are created when "Update Current Active Zone Config" is False.
	Interval for each Fabric Settings	Specify the wait time in minutes between configuring fabrics.
	Script for Zone Naming	Enables zone naming using javascript.
	Script for Host Zone Alias Naming	Enables naming of the Host Zone Alias for host WWNs using javascript.
	Script for Storage Zone Alias Naming	Enables naming of the Storage Zone Alias for storage ports using javascript.
Datastore Settings	Datastore Cluster Name	Select a Datastore Cluster name.
	Datastore Name Prefix	Specify the prefix of the Datastore name. A 4-digit sequential number is automatically added after the prefix.
	VMFS Version	Specify the VMFS version of the Datastore.
	Block Size	Specify the block size of the Datastore.
	Storage I/O Control	Specify whether to enable storage I/O control of the Datastore.
	Threshold Type	Specify the type of threshold, either "Latency Threshold" or "Throughput Threshold".

Navigation pane	Settings pane	Description
	Threshold Value	Specify the value of the threshold.
Notification Settings	To Addresses	Specify the To email addresses. Use a comma to separate multiple addresses.
	Cc Addresses	Specify the Cc email addresses. Use a comma to separate multiple addresses.
	Subject	Specify the email subject.
	Body	Specify the email body.
	Response Input Dialog Box	Specify HTML or text in the Response Entry dialog box. To change a service property value in the Response Entry dialog box, specify the property key for the "name" attribute of an input tag (<input>) or a select tag (<select>).

Zone naming conventions

The following table lists the zone naming conventions for use with the Allocate Fabric Aware Volumes and Create Datastore for ESX Cluster service template.

Type	Zone name	Zone alias name (Host side/ Storage side)
Input	One object has the following properties: ▪ hostName: Host name ▪ hostPortWorldWideName: WWN of HBA. Separator notation is based on FC switch manager services. ▪ storagePortWorldWideName: WWN of CHA. Separator notation is based on FC switch manager services. ▪ storageSystemSerialNumber: Serial number of physical storage system ▪ storagePortName: Display port name of the storage system ▪ serviceProperties: List of the service properties passed to the plug-in	

Type	Zone name	Zone alias name (Host side/ Storage side)
Output	Zone name to add to the specified Zone Configuration.	Zone alias name to add to the zone specified in the Zone name convention.
Handling when the output is the same name	Same zone name of the same fabric refers to the same zone. In the case of an existing zone: Add an alias in the zone and add to the Zone Configuration. null: Do not create a zone.	Same zone alias name of the same fabric refers to the same alias. In the case of an existing alias: Add WWN in the alias and add to the Zone. null: Do not create an alias.
Handling when unavailable characters are used for output	Characters other than alphanumeric characters and "_" are converted to "_" and become part of the name.	
If the output string is too long	When the output string is over 60 characters, the 61st and subsequent characters are truncated.	When the output string is over 64 characters or more, the 65th and subsequent characters are truncated.
Validation	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters. ▪ When having a non-standard prefix for the zone. ("LSAN_","TI_", "QOS[HML][0-9]+_")(case ignored)	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters.

Add Host to Cluster in vCenter: Service details

The Add Host to Cluster in vCenter service template enables you to allocate existing volumes used as datastores by ESX cluster hosts to a new ESX host.

The following service template details apply to the Add Host to Cluster in vCenter service template.

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service settings

The following table lists the Edit Service settings for the Add Host to Cluster in vCenter service template.

Navigation pane	Settings pane	Description
Target ESX Cluster	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
	ESX Hosts	Specify ESX host names.
Target Storage	Configuration Manager Connection	Select the Configuration Manager server which is registered as a Web Service Connection in the Administration Tab.
	Storage System	Select a storage system.
	Resource Group	Specify the resource group from which resources are used (for example LDEV ID and host group ID). You must specify the resource group for VSM when allocating volumes in VSM.
	Port Selection	Select the storage port selection criteria: ▪ "Smaller number of hosts": Select the port with the smallest registered WWN. (Default value) ▪ "Smaller number of volumes": Select the port with the smallest registered LUN.
Resource Criteria	Storage Port	Specify the storage port for provisioning.
Host Group Settings	Script for Host Group Naming	Specify a naming rule for the Host Group name as a script.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
Fabric Settings	Use Fabric Settings	Determines whether to use fabric information from the FC switch manager services for LUN path selection.
	BNA Connections	Select a Brocade Network Advisor server which is registered as a Web Service Connection in the Administration Tab.
	Resource Group	Specify the Resource Group of the BNA to narrow down target resources.
	Target Fabrics	Specify Fabrics in BNA if narrowing down target resources (optional).
	Use Existing Zone	Specify whether to narrow down target resources to those in existing zones.
	Use Active Zone Only	Specify whether to use the active zone only.
	Num. of Hops Restriction	Specify whether to narrow down target resources based on hop count for the path.
	Maximum Num. of Hops	Specify the maximum number of hops when "Num. of Hops Restriction" is set to True.
Zone Settings	Update Zone Configurations	Specify whether to add or create zones.
	Use Existing Zone Aliases	Specify whether to update existing zone alias.
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.

Navigation pane	Settings pane	Description
	Zone Configurations to Update	Specify a range of zones in which zones are created when "Update Current Active Zone Config" is False.
	Interval for each Fabric Settings	Specify the wait time in minutes between configuring fabrics.
	Script for Zone Naming	Enables zone naming using javascript.
	Script for Host Zone Alias Naming	Enables naming of the Host Zone Alias for host WWNs using javascript.
	Script for Storage Zone Alias Naming	Enables naming of the Storage Zone Alias for storage ports using javascript.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Add Host to Cluster in vCenter service template.

Navigation pane	Settings pane	Description
Target ESX Cluster	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
	ESX Hosts	Specify ESX host names.
Target Storage	Configuration Manager Connection	Select the Configuration Manager server which is registered as a Web Service Connection in the Administration Tab.
	Storage System	Select a storage system.

Navigation pane	Settings pane	Description
	Resource Group	Specify the resource group from which resources are used (for example LDEV ID and host group ID). You must specify the resource group for VSM when allocating volumes in VSM.
	Port Selection	Select the storage port selection criteria: ▪ "Smaller number of hosts": Select the port with the smallest registered WWN. (Default value) ▪ "Smaller number of volumes": Select the port with the smallest registered LUN.
Resource Criteria	Storage Port	Specify the storage port for provisioning.
Host Group Settings	Script for Host Group Naming	Specify a naming rule for the Host Group name as a script.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
Fabric Settings	BNA Connections	Select a Brocade Network Advisor server which is registered as a Web Service Connection in the Administration Tab.
	Resource Group	Specify the Resource Group of the BNA to narrow down target resources.
	Target Fabrics	Specify Fabrics in BNA if narrowing down target resources (optional).
	Use Existing Zone	Specify whether to narrow down target resources to those in existing zones.

Navigation pane	Settings pane	Description
	Use Active Zone Only	Specify whether to use the active zone only.
	Num. of Hops Restriction	Specify whether to narrow down target resources based on hop count for the path.
	Maximum Num. of Hops	Specify the maximum number of hops when "Num. of Hops Restriction" is set to True.
Zone Settings	Update Zone Configurations	Specify whether to add or create zones.
	Use Existing Zone Aliases	Specify whether to update existing zone alias.
	Update Current Active Zone Configuration	Determines whether to use Zone Active configuration when adding or creating a zone.
	Zone Configurations to Update	Specify a range of zones in which zones are created when "Update Current Active Zone Config" is False.
	Interval for each Fabric Settings	Specify the wait time in minutes between configuring fabrics.
	Script for Zone Naming	Enables zone naming using javascript.
	Script for Host Zone Alias Naming	Enables naming of the Host Zone Alias for host WWNs using javascript.
	Script for Storage Zone Alias Naming	Enables naming of the Storage Zone Alias for storage ports using javascript.

Zone naming conventions

The following table lists the zone naming conventions for use with the Add Host to Cluster in vCenter service template.

Type	Zone name	Zone alias name (Host side/ Storage side)
Input	One object has the following properties: ▪ hostName: Host name ▪ hostPortWorldWideName: WWN of HBA. Separator notation is based on FC switch manager services. ▪ storagePortWorldWideName: WWN of CHA. Separator notation is based on FC switch manager services. ▪ storageSystemSerialNumber: Serial number of physical storage system ▪ storagePortName: Display port name of the storage system ▪ serviceProperties: List of the service properties passed to the plug-in	
Output	Zone name to add to the specified Zone Configuration.	Zone alias name to add to the zone specified in the Zone name convention.
Handling when the output is the same name	Same zone name of the same fabric refers to the same zone. In the case of an existing zone: Add an alias in the zone and add to the Zone Configuration. null: Do not create a zone.	Same zone alias name of the same fabric refers to the same alias. In the case of an existing alias: Add WWN in the alias and add to the Zone. null: Do not create an alias.
Handling when unavailable characters are used for output	Characters other than alphanumeric characters and "_" are converted to "_" and become part of the name.	
If the output string is too long	When the output string is over 60 characters, the 61st and subsequent characters are truncated.	When the output string is over 64 characters or more, the 65th and subsequent characters are truncated.

Type	Zone name	Zone alias name (Host side/ Storage side)
Validation	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters. ▪ When having a non-standard prefix for the zone. ("LSAN_","TI_", "QOS[HML][0-9]+_")(case ignored)	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters.

Remove Host from Cluster in vCenter: Service details

The Remove Host from Cluster in vCenter service template enables you to unmount VMFS datastores, unallocate volumes from the specified ESX host, and delete zoning.

The following service template details apply to the Remove Host from Cluster in vCenter service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Remove Host from Cluster in vCenter service template.

Navigation pane	Settings pane	Description
Target ESX Host	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
	ESX Host	Specify the ESX host name.

Navigation pane	Settings pane	Description
	Enter Maintenance Mode	Select this option to enter Maintenance Mode. **Note:** Virtual machines running on a host entering maintenance mode need to be migrated to another host (either manually or automatically by DRS) or shut down. The host is in a state of "Entering Maintenance Mode" until all running virtual machines are powered down or migrated to different hosts.
	Timeout	Specify how long (in seconds) the service waits before timing out. In the event of a response timeout, the service ends abnormally.
	Evacuate Powered Off VMs	Select this option to move powered-off or suspended virtual machines to another ESX host when the ESX host enters Maintenance Mode. You must select this option to continue to use these virtual machines after removing the ESX host. If you do not select this option, powered-off and suspended virtual machines are not moved to other ESX hosts.
	Unmount Datastore	Select this option to unmount the datastore from the ESX host before migrating or shutting down the storage volume.
Unallocate Settings	Delete Host Group	Select this option to delete the host group.
Remove Zoning Settings	Remove Zoning	Select this option to remove zoning settings. By default, this check box is not selected. (false)

Appendix C: Services catalog

Submit Service Request settings

The following table lists the Submit Service Request settings for the Remove Host from Cluster in vCenter service template.

Navigation pane	Settings pane	Description
Target ESX Host	vCenter Connection	Specify a vCenter Server that is registered as a Web Service Connection in the Administration Tab.
	ESX Cluster	Specify the ESX Cluster name.
	ESX Host	Specify ESX host name.
	Enter Maintenance Mode	Select this option to enter Maintenance Mode. **Note:** Virtual machines running on a host entering maintenance mode need to be migrated to another host (either manually or automatically by DRS) or shut down. The host is in a state of "Entering Maintenance Mode" until all running virtual machines are powered down or migrated to different hosts.
	Timeout	Specify how long (in seconds) the service waits before timing out. In the event of a response timeout, the service ends abnormally.
	Evacuate Powered Off VMs	Select this option to move powered-off or suspended virtual machines to another ESX host when the ESX host enters Maintenance Mode. You must select this option to continue to use these virtual machines after removing the ESX host. If you do not select this option, powered-off and suspended virtual machines are not moved to other ESX hosts.

Navigation pane	Settings pane	Description
	Unmount Datastore	Select this option to unmount the datastore from the ESX host before migrating or shutting down the storage volume.
Unallocate Settings	Delete Host Group	Select this option to delete the host group.
Remove Zoning Settings	Remove Zoning	Select this option to remove zoning settings. By default, this check box is not selected. (false)

ESXi host service templates

The Allocate Volumes, Fabric, and Datastore for ESXi Host service template is provided with the software and are preconfigured.

Supported platforms

For information on supported platforms, see .

Default ports

The port numbers and their uses are as follows:

Port number	Use
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Allocate Volumes, Fabric, and Datastore for ESXi Host: Service details

This service template allocates volumes to the VMware vSphere server (ESXi host), configures zoning, and creates VMware datastores.

Appendix C: Services catalog

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service Settings

The following table lists the Edit Service settings for the Allocate Volumes, Fabric, and Datastore for ESXi Host service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.
	Storage System	Specify the storage system.
	Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the Resource Group.
	Pool Selection*	Specify whether to select a pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Select the volume capacity format.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Usage	
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	Specify the volume capacity in bytes.

Navigation pane	Settings pane	Description
	Volume Capacity	Specify the volume capacity in blocks. (1 block = 512 bytes)
	Volume Label	Specify the volume label.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
	Volume Usage	Select the volumes usage.
Host Settings	vCenter Connection	Specify the vCenter connection.
	ESXi Host	Specify the ESXi Host.
	Perform LIP Reset	Select true to perform LIP reset on the ESXi host when the created volumes are not visible on the ESXi host. Note: If the ESXi host has specific paths, the specific paths might also reset. If you enable LIP Reset, you must also register agentless remote connection settings for each ESXi server.

Navigation pane	Settings pane	Description
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Fabric Connection Type	This property defines connection type information.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.

Navigation pane	Settings pane	Description
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Datastore Settings	Datastore Cluster	Specify the datastore cluster to which to add the datastores you are creating.
	Datastore Name Prefix	Specify the prefix of the datastore. A 4-digit sequential number is automatically added after the prefix.
	VMFS Version	Specify the VMFS version for the datastore.
	Block Size	Specify the block size for the datastore.
	Storage I/O Control	Select this option to enable storage I/O control for the datastore.
	Threshold Type	Specify the type of threshold, either "Latency Threshold" or "Throughput Threshold".
	Threshold Value	Specify the value of the latency threshold if storage I/O control is enabled.
Notification Settings	To Addresses	Specify the To email addresses. Use a comma to separate multiple addresses.
	Cc Addresses	Specify the Cc email addresses. Use a comma to separate multiple addresses.
	Bcc Addresses	Specify the Bcc email addresses. Use a comma to separate multiple addresses.

Navigation pane	Settings pane	Description
	Encoding	Specify us-ascii, iso-2022-jp, shift_jis, euc-jp, or utf-8 for the email encoding.
	Subject	Specify the email subject.
	Body	Specify the email body.
	Response Input Dialog Box	Specify HTML or text in the Response Entry dialog box. To change a service property value in the Response Entry dialog box, specify the property key for the "name" attribute of an input tag (<input>) or a select tag (<select>).
	Response Timeout	Specify a timeout (in minutes) for the Response Entry dialog box. The range is between 1 and 20,160 minutes.

Notes:

* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria:

1. Select the pool with the largest free pool capacity after volume allocation.
2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table.
3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Priority		**Storage model**
1	VSP 5200, 5600, 5200H, 5600H	
2	VSP 5100, 5500, 5100H, 5500H	
3	VSP F1500, VSP G1500, VSP G1000	
4	VSP E1090, VSP E1090H	
5	VSP E990	
6	VSP E790, VSP E790H	
7	VSP E590, VSP E590H	
8	VSP F900, VSP G900	
9	VSP F700, VSP G700	
10	VSP F370, VSP G370	
11	VSP F350, VSP G350	
12	VSP F800, VSP G800, VSP N800	
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600	
14	VSP G200	

Submit Service Request settings

The following table lists the Submit Service Request settings for the Allocate Volumes, Fabric, and Datastore for ESXi Host service template.

Navigation pane	Settings pane	Description
Volume Settings	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Storage System	Specify the storage system.
	Resource Group Selection	Specify whether to select a resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the Resource Group.
	Pool Selection*	Specify whether to select a pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Select the volume capacity format.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Usage	
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	Specify the volume capacity in bytes.
	Volume Capacity	Specify the volume capacity in blocks. (1 block = 512 bytes)
	Volume Label	Specify the volume label.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	

Navigation pane	Settings pane	Description
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
	Volume Usage	Select the volumes usage.
Host Settings	vCenter Connection	Specify the vCenter connection.
	ESXi Host	Specify the ESXi Host.
	Perform LIP Reset	Select true to perform LIP reset on the ESXi host when the created volumes are not visible on the ESXi host. Note: If the ESXi host has specific paths, the specific paths might also reset. If you enable LIP Reset, you must also register agentless remote connection settings for each ESXi server.
	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Host Mode	Specify the host mode.
	Host Mode Options	Specify the host mode options.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Fabric Connection Type	This property defines connection type information.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Datastore Settings	Datastore Cluster	Specify the datastore cluster to which to add the datastores you are creating.

Navigation pane	Settings pane	Description
	Datastore Name Prefix	Specify the prefix of the datastore. A 4-digit sequential number is automatically added after the prefix.
	VMFS Version	Specify the VMFS version for the datastore.
	Block Size	Specify the block size for the datastore.
	Storage I/O Control	Select this option to enable storage I/O control for the datastore.
	Threshold Type	Specify the type of threshold, either "Latency Threshold" or "Throughput Threshold".
	Threshold Value	Specify the value of the latency threshold if storage I/O control is enabled.
Notification Settings	To Addresses	Specify the To email addresses. Use a comma to separate multiple addresses.
	Cc Addresses	Specify the Cc email addresses. Use a comma to separate multiple addresses.
	Bcc Addresses	Specify the Bcc email addresses. Use a comma to separate multiple addresses.
	Encoding	Specify us-ascii, iso-2022-jp, shift_jis, euc-jp, or utf-8 for the email encoding.
	Subject	Specify the email subject.
	Body	Specify the email body.

Navigation pane	Settings pane	Description
	Response Input Dialog Box	Specify HTML or text in the Response Entry dialog box. To change a service property value in the Response Entry dialog box, specify the property key for the "name" attribute of an input tag (<input>) or a select tag (<select>).
	Response Timeout	Specify a timeout (in minutes) for the Response Entry dialog box. The range is between 1 and 20,160 minutes.

Notes:

* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria:

1. Select the pool with the largest free pool capacity after volume allocation.
2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table.
3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.

Navigation pane	Settings pane	Description

Priority	Storage model
1	VSP 5200, 5600, 5200H, 5600H
2	VSP 5100, 5500, 5100H, 5500H
3	VSP F1500, VSP G1500, VSP G1000
4	VSP E1090, VSP E1090H
5	VSP E990
6	VSP E790, VSP E790H
7	VSP E590, VSP E590H
8	VSP F900, VSP G900
9	VSP F700, VSP G700
10	VSP F370, VSP G370
11	VSP F350, VSP G350
12	VSP F800, VSP G800, VSP N800
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600
14	VSP G200

Zone naming conventions

The following table lists the zone naming conventions for use with the Allocate Volumes, Fabric, and Datastore for ESXi Host service template.

Type	Zone name	Zone alias name (Host side/ Storage side)
Input	One object has the following properties: ▪ hostName: Host name ▪ hostPortWorldWideName: WWN of HBA. Separator notation is based on FC switch manager services. ▪ storagePortWorldWideName: WWN of CHA. Separator notation is based on FC switch manager services.	

Appendix C: Services catalog

Type	Zone name	Zone alias name (Host side/ Storage side)
	▪ storageSystemSerialNumber: Serial number of physical storage system ▪ storagePortName: Display port name of the storage system ▪ serviceProperties: List of the service properties passed to the plug-in	
Output	Zone name to add to the specified Zone Configuration.	Zone alias name to add to the zone specified in the Zone name convention.
Handling when the output is the same name	Same zone name of the same fabric refers to the same zone. In the case of an existing zone: Add an alias in the zone and add to the Zone Configuration. null: Do not create a zone.	Same zone alias name of the same fabric refers to the same alias. In the case of an existing alias: Add WWN in the alias and add to the Zone. null: Do not create an alias.
Handling when unavailable characters are used for output	Characters other than alphanumeric characters and "_" are converted to "_" and become part of the name.	
If the output string is too long	When the output string is over 60 characters, the 61st and subsequent characters are truncated.	When the output string is over 64 characters or more, the 65th and subsequent characters are truncated.
Validation	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters. ▪ When having a non-standard prefix for the zone. ("LSAN_","TI_", "QOS[HML][0-9]+_")(case ignored)	An error occurs if the return value is one of following: ▪ Other than String ▪ When starting from non-alphabetic characters.

Expand Volume Capacity service template

You can use the Ops Center Automator Expand Volume Capacity service template to expand volume capacity.

Appendix C: Services catalog

The Expand Volume Capacity service template is provided with the software and is preconfigured:

Supported platforms

For information on supported platforms, see <u>Service template supported platforms (on page 237)</u>.

Default ports

The port numbers and their uses are as follows:

Port number	Use
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Expand Volume Capacity: Service details

The Expand Volume Capacity service template enables you to expand the existing volume capacity.

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service settings

The following table lists the Edit Service settings for the Expand Volume Capacity service template.

Navigation pane	Settings pane	Description
Storage System	Connection	Select the Ops Center API Configuration Manager Web Service Connection for the storage system to be configured.
	Storage System	Select the storage system.

Navigation pane	Settings pane	Description
Volume Settings	Source Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions and narrow it down.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Currrent Page)	Use the filter to display only the specified page number of the source volumes.
	Source Volume	Specify the source volume.
	Expansion Type	Specify the expansion type.
	Capacity Format	Select how to specify the capacity format.
	Capacity	Specify the capacity in bytes.
	Capacity	Specify the capacity in blocks.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Expand Volume Capacity service template.

Navigation pane	Settings pane	Description
Storage System	Connection	Select the Ops Center API Configuration Manager Web Service Connection for the storage system to be configured.
	Storage System	Select the storage system.

Navigation pane	Settings pane	Description
Volume Settings	Source Volume Filter	Specify conditions for filtering the candidate volumes. Not all candidates are displayed when there are many candidate volumes. Specify the conditions and narrow it down.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Currrent Page)	Use the filter to display only the specified page number of the source volumes.
	Source Volume	Specify the source volume.
	Expansion Type	Specify the expansion type.
	Capacity Format	Select how to specify the capacity format.
	Capacity	Specify the capacity in bytes.
	Capacity	Specify the capacity in blocks.

File share service templates

The Ops Center Automator File Share service template enables you to provide services that include creating an Enterprise Virtual Server (EVS), a file system, a CIFS share, and an NFS export for Hitachi.

The following Ops Center Automator file share service template is provided with the software and is preconfigured.

Configure CIFS/NFS for Hitachi

Creates an EVS, a file Secure communication from Ops Center Automator to Ops Center API Configuration Manager. system, and a share (CIFS share, NFS export, or both) for Hitachi.

Appendix C: Services catalog

Supported platforms

For information on supported platforms, see <u>Service template supported platforms (on page 237)</u>.

Configure CIFS/NFS for Hitachi: Service details

The Configure CIFS/NFS for Hitachi service template enables you to create an EVS, a file system, and a share (CIFS share, NFS export, or both) for Hitachi.

The following service template details apply to the Configure CIFS/NFS for Hitachi service template.

Software and setup prerequisites

For software and setup prerequisites, see <u>Service template prerequisites (on page 189)</u>.

Edit Service settings

The following table lists the Edit Service settings for the Configure CIFS/NFS for Hitachi service template.

Navigation pane	Settings pane	Description
Target Storage Settings	Connection Type	Select the connection type.
	Server/Cluster[1]	Specify the IP address or host name of the Server/Cluster. The Admin user must add the Server/Cluster host user credentials to the Agentless Remote Connection settings in the Administration tab.
	SMU Server[2]	Specify the IP address or host name of the SMU Server. The Admin user must add the SMU Server user credentials to the Agentless Remote Connection settings in the Administration tab.
	Server/Cluster[2]	Specify the Server/Cluster name.
	Server/Cluster Settings[2]	Specify the Server/Cluster configuration.
	Server/Cluster Name[2]	Specify the Server/Cluster name. This property is reflected in "Server/Cluster".

Navigation pane	Settings pane	Description
	Node IP Addresses for Concurrent Tasks[2]	Specify the IPv4 addresses of all nodes in the cluster for when the number of maximum connections of NAS Module tasks are simultaneously running and the limit is exceeded. If this happens, and this parameter is not set, the service can simultaneously run the maximum number of tasks only and the rest of the tasks will fail with a connection error.
	Server/Cluster[2]	Select the Server/Cluster name.
	Max Connection Retry Count	Specify the maximum number of tries for SMU connections. It takes about one minute per try.
	Sharing Protocol	Select the sharing protocol.
	Create EVS	Specify whether to create an Enterprise Virtual Server (EVS).
	Create File System	Specify whether to create a file system.
	Use Virtual Volume	Specify whether to create new Virtual Volumes, use existing Virtual Volumes, or not use Virtual Volumes.
	Create Share (CIFS/NFS)	Specify whether to create a CIFS share, an NFS export, or both.
EVS Settings	Security Context	Specify whether an EVS uses the global cluster-wide settings or uses individual security settings.
	IP Version	Specify the IP version.
	IP Address of EVS	Specify the IPv4 address of the Enterprise Virtual Server (EVS).
	Subnetmask of EVS	Specify the Subnetmask of the Enterprise Virtual Server (EVS).
	IP Address/Prefix Length of EVS	Specify the IPv6 address and prefix length of the Enterprise Virtual Server (EVS).

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	EVS Port	Specify the Port of the Enterprise Virtual Server (EVS).
	EVS Label	Specify the Enterprise Virtual Server (EVS) label.
	SMB Max Version	Specify the maximum version of the SMB.
	Configure DNS Settings	Specify whether to configure DNS server settings.
	DNS Server	Specify the IP address (IPv4 or IPv6) or host name of the DNS Server.
	Security Mode (CIFS & NFS)	Specify the file system default security mode for the CIFS and NFS protocols.
	Security Mode (CIFS)	Specify the file system default security mode for the CIFS protocoandl.
	Security Mode (NFS)	Specify the file system default security mode for the NFS protocol.
Active Directory Settings	Configure Active Directory Settings	Specify whether to configure Active Directory settings.
	DC	Specify the IP address (IPv4 or IPv6) of the Domain Controller (DC).
	DC Admin User	Specify the Administrator User of the Domain Controller (DC).
	DC Admin Password	Specify the Administrator Password of the Domain Controller (DC).
	CIFS Server Name	Specify the account name of the CIFS server in Active Directory.
	Folder	The Active Directory folder in which to create the computer account. By default, the computer account is created in the Computers folder.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Add User Groups to Local Administrators Group	Specify which user groups to add to the CIFS Server Administrators Group.
	Add SPNs	Specify whether to modify the Service Principal Names (SPNs) folder property for the Active Directory service account.
		The Admin user must add the Domain Controller to the Agentless Remote Connections settings on the Administration Tab before running the service.
	SPNs	Specify the Service Principal Names (SPNs).
LDAP Settings	Configure LDAP Settings	Specify whether to configure LDAP settings.
	LDAP Server	Specify the LDAP Server settings.
	IP Address or Host Name	Specify the IPv4 IP address or host name of the LDAP Server.
	Port	Specify the port for the LDAP Server.
	LDAP Server User	Specify the User for the LDAP Server.
	LDAP Server Password	Specify the Password for the LDAP Server.
	Domain Name	Specify the Domain Name of the LDAP Server.
	LDAP Schema	Select the LDAP schema.
	Priority	Select whether the priority is LDAP or DNS.
File System Settings	File System Label	Specify the file system label.
	Storage Pool	Specify the storage pool.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Capacity	Specify the amount of storage to allocate to the file system in GiB or TiB. By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Block Size in KiB	Select the Block Size of the file system.
	Allocation Type	Select the Allocation Type for the file system.
	Deduplication	Specify whether to enable file deduplication.
	Security Mode (CIFS & NFS)	Specify the file system security mode for the CIFS and NFS protocols.
	Security Mode (CIFS)	Specify the file system security mode for the CIFS protocol.
	Security Mode (NFS)	Specify the file system security mode for the NFS protocol.
	Email Contact	Specify the email addresses for sending email notification when the file system exceeds a size threshold. Ensure that you configure the SMTP settings on the related SMU in advance.
	User Quota Defaults	The quota default values define a template that the system uses to automatically generate a quota in response to a file being saved on the file system. If a file is saved, and the respective defaults are set, a user quota is created for each user.
	Add Quota Defaults	Specify whether to add user quota defaults for the file system.

Navigation pane	Settings pane	Description
	Hard Limit	Specify whether to enable a hard limit for the user quota defaults. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the user quota default usage limit in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the user quota default usage warning threshold. (%)
	Usage Severe Threshold (%)	Specify the user quota default usage severe threshold. (%)
	File Count Limit	Specify the user quota default file count limit.
	File Count Warning Threshold (%)	Specify the user quota default file count warning threshold. (%)
	File Count Severe Threshold (%)	Specify the user quota default file count severe threshold. (%)
	Group Quota Defaults	The quota default values define a template that the system uses to automatically generate a quota in response to a file being saved on the file system. If a file is saved, and the respective defaults are set, each group quota is created for the user's domain respectively.
		Group quota defaults are created with the Automatically Create Quotas for Domain Users option. Therefore, default quotas for the group Domain Users are also created automatically. By default, every NT user belongs to the group Domain Users, which includes every NT user in the quota unless each user's primary group has been set explicitly.
		For additional information, see "Setting user/group defaults" in the *File Services Administration Guide*.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Add Quota Defaults	Specify whether to add group quota defaults for the file system.
	Hard Limit	Specify whether to enable a hard limit for the group quota defaults. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the group quota default usage limit in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the group quota default usage warning threshold. (%)
	Usage Severe Threshold (%)	Specify the group quota default usage severe threshold. (%)
	File Count Limit	Specify the group quota default file count limit.
	File Count Warning Threshold (%)	Specify the group quota default file count warning threshold. (%)
	File Count Severe Threshold (%)	Specify the group quota default file count severe threshold. (%)
Virtual Volumes and Quota Settings	Common Settings for Virtual Volumes & Quotas	Specify common properties for virtual volumes and quotas.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system label.
	Common Settings for Virtual Volumes	Specify common properties for virtual volumes.
	Security Mode (CIFS & NFS)	Specify the virtual volume security mode for the CIFS and NFS protocol.
	Security Mode (CIFS)	Specify the virtual volume security mode for the CIFS protocol.
	Security Mode (NFS)	Specify the virtual volume security mode for the NFS protocol.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Email Contact	Specify the email contact to receive information about volume usage. Ensure that you configure the SMTP settings on the related SMU in advance.
	Quota Settings for Virtual Volumes	Specify the quota settings for virtual volumes.
	Add Quotas	Specify whether to add quotas for virtual volumes.
	Hard Limit	Specify whether to enable a hard limit for virtual volumes. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the usage limit for virtual volumes in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the usage warning threshold for virtual volumes. (%) By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Usage Severe Threshold (%)	Specify the usage severe threshold for virtual volumes. (%)
	File Count Limit	Specify the file count limit for virtual volumes.
	File Count Warning Threshold (%)	Specify the file count warning threshold for virtual volumes. (%)
	File Count Severe Threshold (%)	Specify the file count severe threshold for virtual volumes. (%)
	Quota Settings for Users and Groups	Specify the quota settings for users and groups.
	Add Quotas	Specify whether to add quotas for users and groups.

Navigation pane	Settings pane	Description
	Hard Limit	Specify whether to enable a hard limit for users and groups. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the usage limit for users and groups in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the usage warning threshold for users and groups. (%)
		By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Usage Severe Threshold (%)	Specify the usage severe threshold for users and groups. (%)
	File Count Limit	Specify the file count limit for users and groups.
	File Count Warning Threshold (%)	Specify the file count warning threshold for users and groups. (%)
	File Count Severe Threshold (%)	Specify the file count severe threshold for users and groups. (%)
	Each Virtual Volume & Quota	Specify properties of each virtual volume and quota.
	Virtual Volume Name	Specify the virtual volume name.
	Path	Specify the file system folder path to use as the root of the virtual volume.
	User Accounts for Quotas	Specify one or more user accounts for which to restrict the available space or the number of files for the virtual volumes. To specify two or more accounts, separate them by using line breaks for each.

Navigation pane	Settings pane	Description
	Group Account for Quotas	Specify one or more group accounts for which to restrict the available space or the number of files for the virtual volumes. To specify two or more accounts, separate them by using line breaks for each.
CIFS Share Settings	CIFS Share Name	Specify the CIFS share name.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system name.
	Path	Specify the folder to which the CIFS share points.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "CIFS Share Detail" section of the Hitachi NAS online help.
	Share Permissions	Specify the user/group accounts and permissions for adding share access authentication entries to shares. Specify permissions as follows: ax = allow x, dx = deny x, where x is: r(Read), c(Change), cr(Change & Read) or f(Full Control). To specify two or more accounts, separate them by using line breaks for each. For example, this entry allows you to grant Change & Read rights to members of the "EXAMPLE \Finance" group: EXAMPLE \Finance(acr)
	CIFS Share Settings	Specify the CIFS share properties.
	Virtual Volume[3]	Select a virtual volume.

Navigation pane	Settings pane	Description
	Virtual Volume[4]	Specify an existing virtual volume.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "CIFS Share Detail" section of the Hitachi NAS online help.
	Share Permissions	Specify the user/group accounts and permissions for adding share access authentication entries to shares. Specify permissions as follows: ax = allow x, dx = deny x, where x is: r(Read), c(Change), cr(Change & Read) or f(Full Control). To specify two or more accounts, separate them by using line breaks for each. For example, this entry allows you to grant Change & Read rights to members of the "EXAMPLE\Finance" group: EXAMPLE\Finance(acr)
NFS Export Settings	NFS Export Name	Specify the NFS export name.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system name.
	Path	Specify the subpath of the shared folder. Do not include a "/" or the file system name. If you specify more than the subpath, the shared folder will be the root of the file system by default.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "NFS Export Detail" section of the Hitachi NAS online help.
	CIFS Share Settings	Specify NFS export properties.
	Virtual Volume[3]	Select a virtual volume.
	Virtual Volume[4]	Specify an existing virtual volume.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "NFS Export Detail" section of the Hitachi NAS online help.

1. This setting is only displayed when you select "Internal" as the Connection Type.
2. This setting is only displayed when you select "External" as the Connection Type.
3. This "Virtual Volume" property is shown when the "Use Virtual Volume" property is "Create Virtual Volume". Select the name that you specified in the Virtual Volume Settings.
4. This "Virtual Volume" property is shown when the "Use Virtual Volume" property is "Use Existing Virtual Volume".

Submit Service Request settings

The following table lists the Submit Service Request settings for the Configure CIFS/NFS for Hitachi service template.

Navigation pane	Settings pane	Description
Target Storage Settings	Connection Type	Select the connection type.
	Server/Cluster[1]	Specify the IP address or host name of the Server/Cluster. The Admin user must add the Server/Cluster host user credentials to the Agentless Remote Connection settings in the Administration tab.

Navigation pane	Settings pane	Description
	SMU Server[2]	Specify the IP address or host name of the SMU Server. The Admin user must add the SMU Server user credentials to the Agentless Remote Connection settings in the Administration tab.
	Server/Cluster[2]	Specify the Server/Cluster name.
	Server/Cluster Settings[2]	Specify the Server/Cluster configuration.
	Server/Cluster Name[2]	Specify the Server/Cluster name. This property is reflected in "Server/Cluster".
	Node IP Addresses for Concurrent Tasks[2]	Specify the IPv4 addresses of all nodes in the cluster for when the number of maximum connections of NAS Module tasks are simultaneously running and the limit is exceeded. If this happens, and this parameter is not set, the service can simultaneously run the maximum number of tasks only and the rest of the tasks will fail with a connection error.
	Server/Cluster[2]	Select the Server/Cluster name.
	Max Connection Retry Count	Specify the maximum number of tries for SMU connections. It takes about one minute per try.
	Sharing Protocol	Select the sharing protocol.
	Create EVS	Specify whether to create an Enterprise Virtual Server (EVS).
	Create File System	Specify whether to create a file system.
	Use Virtual Volume	Specify whether to create new Virtual Volumes, use existing Virtual Volumes, or not use Virtual Volumes.
	Create Share (CIFS/NFS)	Specify whether to create a CIFS share, an NFS export, or both.

Navigation pane	Settings pane	Description
EVS Settings	Security Context	Specify whether an EVS uses the global cluster-wide settings or uses individual security settings.
	IP Version	Specify the IP version.
	IP Address of EVS	Specify the IPv4 address of the Enterprise Virtual Server (EVS).
	Subnetmask of EVS	Specify the Subnetmask of the Enterprise Virtual Server (EVS).
	IP Address/Prefix Length of EVS	Specify the IPv6 address and prefix length of the Enterprise Virtual Server (EVS).
	EVS Port	Specify the Port of the Enterprise Virtual Server (EVS).
	EVS Label	Specify the Enterprise Virtual Server (EVS) label.
	SMB Max Version	Specify the maximum version of the SMB.
	Configure DNS Settings	Specify whether to configure DNS server settings.
	DNS Server	Specify the IP address (IPv4 or IPv6) or host name of the DNS Server.
	Security Mode (CIFS & NFS)	Specify the file system default security mode for the CIFS and NFS protocols.
	Security Mode (CIFS)	Specify the file system default security mode for the CIFS protocol.
	Security Mode (NFS)	Specify the file system default security mode for the NFS protocol.
Active Directory Settings	Configure Active Directory Settings	Specify whether to configure Active Directory settings.
	DC	Specify the IP address (IPv4 or IPv6) of the Domain Controller (DC).

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	DC Admin User	Specify the Administrator User of the Domain Controller (DC).
	DC Admin Password	Specify the Administrator Password of the Domain Controller (DC).
	CIFS Server Name	Specify the account name of the CIFS server in Active Directory.
	Folder	The Active Directory folder in which to create the computer account. By default, the computer account is created in the Computers folder.
	Add User Groups to Local Administrators Group	Specify which user groups to add to the CIFS Server Administrators Group.
	Add SPNs	Specify whether to modify the Service Principal Names (SPNs) folder property for the Active Directory service account. The Admin user must add the Domain Controller to the Agentless Remote Connections settings on the Administration Tab before running the service.
	SPNs	Specify the Service Principal Names (SPNs).
LDAP Settings	Configure LDAP Settings	Specify whether to configure LDAP settings.
	LDAP Server	Specify the LDAP Server settings.
	IP Address or Host Name	Specify the IPv4 IP address or host name of the LDAP Server.
	Port	Specify the port for the LDAP Server.
	LDAP Server User	Specify the User for the LDAP Server.
	LDAP Server Password	Specify the Password for the LDAP Server.

Navigation pane	Settings pane	Description
	Domain Name	Specify the Domain Name of the LDAP Server.
	LDAP Schema	Select the LDAP schema.
	Priority	Select whether the priority is LDAP or DNS.
File System Settings	File System Label	Specify the file system label.
	Storage Pool	Specify the storage pool.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	Capacity	Specify the amount of storage to allocate to the file system in GiB or TiB. By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Block Size in KiB	Select the Block Size of the file system.
	Allocation Type	Select the Allocation Type for the file system.
	Deduplication	Specify whether to enable file deduplication.
	Security Mode (CIFS & NFS)	Specify the file system security mode for the CIFS and NFS protocols.
	Security Mode (CIFS)	Specify the file system security mode for the CIFS protocol.
	Security Mode (NFS)	Specify the file system security mode for the NFS protocol.
	Email Contact	Specify the email addresses for sending email notification when the file system exceeds a size threshold. Ensure that you configure the SMTP settings on the related SMU in advance.

Navigation pane	Settings pane	Description
	User Quota Defaults	The quota default values define a template that the system uses to automatically generate a quota in response to a file being saved on the file system. If a file is saved, and the respective defaults are set, a user quota is created for each user.
	Add Quota Defaults	Specify whether to add user quota defaults for the file system.
	Hard Limit	Specify whether to enable a hard limit for the user quota defaults. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the user quota default usage limit in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the user quota default usage warning threshold. (%)
	Usage Severe Threshold (%)	Specify the user quota default usage severe threshold. (%)
	File Count Limit	Specify the user quota default file count limit.
	File Count Warning Threshold (%)	Specify the user quota default file count warning threshold. (%)
	File Count Severe Threshold (%)	Specify the user quota default file count severe threshold. (%)

Navigation pane	Settings pane	Description
	Group Quota Defaults	The quota default values define a template which the system uses to automatically generate a quota in response to a file being saved on the file system. If a file is saved, and the respective defaults are set, each group quota is created for the user's domain respectively.
		Group quota defaults are created with the Automatically Create Quotas for Domain Users option. Therefore, default quotas for the group Domain Users are also created automatically. By default, every NT user belongs to the group Domain Users, which includes every NT user in the quota unless each user's primary group has been set explicitly.
		For additional information, see "Setting user/group defaults" in the *File Services Administration Guide*.
	Add Quota Defaults	Specify whether to add the group quota defaults for the file system.
	Hard Limit	Specify whether to enable a hard limit for the group quota defaults. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the group quota default usage limit in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the group quota default usage warning threshold. (%)
	Usage Severe Threshold (%)	Specify the group quota default usage severe threshold. (%)
	File Count Limit	Specify the group quota default file count limit.
	File Count Warning Threshold (%)	Specify the group quota default file count warning threshold. (%)

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	File Count Severe Threshold (%)	Specify the group quota default file count severe threshold. (%)
Virtual Volumes and Quota Settings	Common Settings for Virtual Volumes & Quotas	Specify common properties for virtual volumes and quotas.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system label.
	Common Settings for Virtual Volumes	Specify common properties for virtual volumes.
	Security Mode (CIFS & NFS)	Specify the virtual volume security mode for the CIFS and NFS protocol.
	Security Mode (CIFS)	Specify the virtual volume security mode for the CIFS protocol.
	Security Mode (NFS)	Specify the virtual volume security mode for the NFS protocol.
	Email Contact	Specify the email contact to receive information about volume usage. Ensure that you configure the SMTP settings on the related SMU in advance.
	Quota Settings for Virtual Volumes	Specify the quota settings for virtual volumes.
	Add Quotas	Specify whether to add quotas for virtual volumes.
	Hard Limit	Specify whether to enable a hard limit for virtual volumes. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the usage limit for virtual volumes in MiB, GiB, or TiB.

Navigation pane	Settings pane	Description
	Usage Warning Threshold (%)	Specify the usage warning threshold for virtual volumes. (%)
		By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Usage Severe Threshold (%)	Specify the usage severe threshold for virtual volumes. (%)
	File Count Limit	Specify the file count limit for virtual volumes.
	File Count Warning Threshold (%)	Specify the file count warning threshold for virtual volumes. (%)
	File Count Severe Threshold (%)	Specify the file count severe threshold for virtual volumes. (%)
	Quota Settings for Users and Groups	Specify the quota settings for users and groups.
	Add Quotas	Specify whether to add quotas for users and groups.
	Hard Limit	Specify whether to enable a hard limit for users and groups. When enabled, the amount of space and number of files specified in the usage and file count limits cannot be exceeded.
	Usage Limit	Specify the usage limit for users and groups in MiB, GiB, or TiB.
	Usage Warning Threshold (%)	Specify the usage warning threshold for users and groups. (%)
		By choosing "Show More Options," you can specify a Single Value, Multiple Values, or a Range. When selecting a range, you must specify the minimum, maximum, and a default value.
	Usage Severe Threshold (%)	Specify the usage severe threshold for users and groups. (%)

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	File Count Limit	Specify the file count limit for users and groups.
	File Count Warning Threshold (%)	Specify the file count warning threshold for users and groups. (%)
	File Count Severe Threshold (%)	Specify the file count severe threshold for users and groups. (%)
	Each Virtual Volume & Quota	Specify properties of each virtual volume and quota.
	Virtual Volume Name	Specify the virtual volume name.
	Path	Specify the file system folder path to use as the root of the virtual volume.
	User Accounts for Quotas	Specify one or more user accounts for which to restrict the available space or the number of files for the virtual volumes. To specify two or more accounts, separate them by using line breaks for each.
	Group Account for Quotas	Specify one or more group accounts for which to restrict the available space or the number of files for the virtual volumes. To specify two or more accounts, separate them by using line breaks for each.
CIFS Share Settings	CIFS Share Name	Specify the CIFS share name.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system name.
	Path	Specify the folder to which the CIFS share points.

Navigation pane	Settings pane	Description
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "CIFS Share Detail" section of the Hitachi NAS online help.
	Share Permissions	Specify the user/group accounts and permissions for adding share access authentication entries to shares. Specify permissions as follows: ax = allow x, dx = deny x, where x is: r(Read), c(Change), cr(Change & Read) or f(Full Control). To specify two or more accounts, separate them by using line breaks for each. For example, this entry allows you to grant Change & Read rights to members of the "EXAMPLE\Finance" group: EXAMPLE\Finance(acr)
	CIFS Share Settings	Specify the CIFS share properties.
	Virtual Volume[3]	Select a virtual volume.
	Virtual Volume[4]	Specify an existing virtual volume.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "CIFS Share Detail" section of the Hitachi NAS online help.
	Share Permissions	Specify the user/group accounts and permissions for adding share access authentication entries to shares. Specify permissions as follows: ax = allow x, dx = deny x, where x is: r(Read), c(Change), cr(Change & Read) or f(Full Control).

Navigation pane	Settings pane	Description
		To specify two or more accounts, separate them by using line breaks for each.
		For example, this entry allows you to grant Change & Read rights to members of the "EXAMPLE \Finance" group: EXAMPLE \Finance(acr)
NFS Export Settings	NFS Export Name	Specify the NFS export name.
	EVS	Specify the existing Enterprise Virtual Server (EVS) label.
	File System	Specify the existing file system name.
	Path	Specify the subpath of the shared folder. Do not include a "/" or the file system name. If you specify more than the subpath, the shared folder will be the root of the file system by default.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "NFS Export Detail" section of the Hitachi NAS online help.
	CIFS Share Settings	Specify NFS export properties.
	Virtual Volume[3]	Select a virtual volume.
	Virtual Volume[4]	Specify an existing virtual volume.
	Access Configuration	Specify the IP addresses of clients that can access the share (up to 950 characters are allowed in this field). See the IP Address Configuration content in the "NFS Export Detail" section of the Hitachi NAS online help.

1. This setting is only displayed when you select "Internal" as the Connection Type.
2. This setting is only displayed when you select "External" as the Connection Type.

Navigation pane	Settings pane	Description
3. This "Virtual Volume" property is shown when the "Use Virtual Volume" property is "Create Virtual Volume". Select the name that you specified in the Virtual Volume Settings.		
4. This "Virtual Volume" property is shown when the "Use Virtual Volume" property is "Use Existing Virtual Volume".		

Differences between UI and messages

The following terms are referred to differently between the UI and the system messages.

- Storage pool: span-instance-name
- Size limit: confine-to-GiB

Global-Active Device service template

The Ops Center Automator Global-Active Device Setup service template is provided with the software and is preconfigured. This service template enables you to automate portions of the GAD setup process. This service creates virtual storage machines, assigns Quorum Disk IDs, creates remote paths, and allocates command devices to create global-active devices. Using this template, you can set up some of the basic requirements the first time you use the template and then skip those steps whenever you use template again. You can then use the GAD configuration for any purpose as a prerequisite for using the Online Migration service template.

Supported platforms

For information on supported platforms, see .

Default ports

The port number and their uses are as follows:

Port number	Use
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Setting up global-active device

Setting up GAD consists of several steps. However, many of the steps are now automated when you use the Ops Center Automator GAD Setup service. The following procedure shows the steps to set up GAD when using the service.

Procedure

1. Review the required software and setup prerequisites listed in Global-Active Device Setup: Service details (on page 413).

   📄 **Note:** All setup prerequisites are included in this procedure, but you can find specifics based on storage system model in the service details topic.

2. Connect the storage system ports.

   a. Physically connect the ports between the primary (source) storage system and the secondary (target) storage system.

   b. If you are using Fibre Channel (FC) for the remote connection between the source and target storage systems, set the zone information.

      - If you are using a Brocade FC switch, see the Brocade Network Advisor (BNA) documentation for more information.

      - If you are using a Cisco FC switch, see the Data Center Network Manager (DCNM) documentation for more information.

   c. Physically connect the ports between the source and target storage system and the storage system on which you plan to create the Quorum disk.

   d. If you are using Fibre Channel (FC) for the remote connection between the source and target storage systems, and the storage system with the Quorum disk, set the zone information using BNA or DCNM.

3. Complete the following Quorum Disk setup steps using either Command Control Interface (CCI) or Storage Navigator. (Not required if using diskless Quorum)

   For more information, see the *Command Control Interface Command Reference*.

   a. Set the attributes of the remote connection port and the port connected to the Quorum Disk.

   b. Create the volume for the Quorum disk.

   c. Register the Quorum disk as an external volume on both the source and target storage systems.

4. Complete the following Ops Center API Configuration Manager setup steps. You complete these steps one time and do not need to repeat them.

   a. In Ops Center Automator, set up a web service connection to both Ops Center API Configuration Manager servers managing the storage systems.

      See Configuring Ops Center API Configuration Manager connections (on page 95) for more information.

b. Register the source storage system and the target storage system into Ops Center API Configuration Manager.

- To complete this task from the Ops Center Automator UI, see Registering storage systems to an Ops Center API Configuration Manager connection (on page 103).

- To complete this task using Ops Center API Configuration Manager, see the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

5. In Ops Center Automator, complete the following steps:

a. On the **Services** tab, select the GAD Setup service, and in the service preview pane, click **Create Request**.

b. Configure the GAD Setup service by entering the required information. For more information on the required parameter settings, see Global-Active Device Setup: Service details (on page 413).

The configuration information you enter enables the service to complete the following actions when you run the GAD Setup service:

- Register the specified volume as a Quorum Disk.

- Create a remote path group using the combination of the selected ports.

- (Optionally) Allocate the command device for the source and target storage system to the pair management server. You can select whether to create the command device when you submit the service.

- Create a Virtual Storage Machine (VSM) with the serial number of the source storage system on the target storage system.

c. Submit the service and verify that the task completed successfully.

6. Install CCI on the pair management server.

See the Global-Active Device User Guide for more information.

Next steps

If you set up GAD for use with the Online Migration service template, continue with Migrating online data (on page 435) or continrue with Migrating online data with Configuration Manager (on page 454) if you are using the Online Migation with Configuration Manager service templates.

Global-Active Device Setup: Service details

This service creates virtual storage machines, assigns Quorum disk IDs, creates remote paths, and allocates command devices to create global-active devices.

Software and setup prerequisites

For software and setup prerequisites, see Service template prerequisites (on page 189).

Edit Service settings

The following service template details apply to the Global-Active Device Setup service template.

Navigation pane	Settings pane	Description
Select Storage System	Primary Configuration Manager Connection	Specify the Configuration Manager connection of the primary (source) storage system for migration.
	Primary Storage System	Specify the primary (source) storage system for migration.
	Secondary Configuration Manager Connection	Specify the Configuration Manager connection of the secondary (target) storage system for migration.
	Secondary Storage System	Specify the secondary (target) storage system for migration.
Virtual Storage Machine Settings	VSM Configuration	Select whether to create a Virtual Storage Machine (VSM).
	Virtual Storage Machine	Specify the VSM on the primary storage as the migration source.
	Resource Group Name	Specify the name of the resource group on the primary and secondary storage for the virtual storage machines.
Quorum Settings	Quorum Configuration	Select whether to configure a Quorum disk.
	Quorum Disk ID	Specify the Quorum disk ID.
	Add Quorum Disk without Volume	Check this when defining a Quorum disk which does not need external volumes.
	Volume Filter (Primary)	Use the filters to display only the primary volumes that match the specified criteria.
	Volume (Primary)	Select the volume to use as the Quorum disk on the primary storage.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Volume Filter (Secondary)	Use the filters to display only the secondary volumes that match the specified criteria.
	Volume (Secondary)	Select the volume to use as the Quorum disk on the secondary storage.
	Primary CCI Instance Min	Specify the minimum value for the range of CCI instances to run on the primary storage.
	Primary CCI Instance Max	Specify the maximum value for the range of CCI instances to run on the primary storage.
	Secondary CCI Instance Min	Specify the minimum value for the range of CCI instances to run on the secondary storage.
	Secondary CCI Instance Max	Specify the maximum value for the range of CCI instances to run on the secondary storage.
Remote Path Setting	Configure Remote Paths	Select whether to set remote path groups.
	Remote Path Setting	Specify the remote path.
	Primary Storage MCU Initiator Port	Select the primary storage system MCU initiator port from the list.
	Primary Storage RCU Target Port	Select the primary storage system RCU target port from the list.
	Secondary Storage MCU Initiator Port	Select the secondary storage system MCU initiator port from the list.
	Secondary Storage RCU Target Port	Select the secondary storage system RCU target port from the list.
	Path Group ID	Specify the path group ID.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Select Pair Management Servers	Skip Pair Management Server Configurations (Primary)	Skip configuring a pair management server for the primary storage system if the configuration already exists.
	Use Existing or Create New (Primary)	Select whether to use an existing host group or SCSI target or create a new host group or iSCSI target.
	Existing Host Groups or iSCSI Targets (Primary)	Select an existing host group or iSCSI Target.
	Port Type (Primary)	Select the Port type.
	Host Group Settings (Primary)	Specifies the parameters needed to create a new host group/iSCSI target.
		Port: Specifies the port of the host group target.
		WWN Settings: Specifies the WWN settings when using the fibre port setting.
		Host Group Name: Specifies the host group name when using the fibre port type.
		iSCSI Settings: Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name: Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode: Specifies the host mode.
		Host Mode Options: Specifies the host mode options.
	Skip Pair Management Server Configurations (Secondary)	Skip configuring a Pair Management Server for the Secondary Storage if the configuration already exists.

Navigation pane	Settings pane	Description
	Use Existing or Create New (Secondary)	Select whether to use an existing host group or iSCSI target or create a new host group or iSCSI target.
	Existing Host Groups or iSCSI Targets (Secondary)	Select an existing host group or iSCSI target
	Port Type (Secondary)	Select the Port Type.
	Host Group Settings (Secondary)	Specifies the parameters needed to create a new Host Group/iSCSI target.
		Port: Specifies the port of the host group target.
		WWN Settings: Specifies the WWN settings when using the fibre port setting.
		Host Group Name: Specifies the host group name when using the fibre port type.
		iSCSI Settings: Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name: Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode: Specifies the host mode.
		Host Mode Options: Specifies the host mode options.
Pair Management Server Settings	Security Enabled	Select this option to enable command device security.
	User Authentication Enabled	Select this option to enable user authentication.
	Device Group Definition Enabled	Select this option to enable device group definition.
	Volume Capacity	Specify the volume capacity.
	Volume Label	Specify the volume label.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Volume Type (Primary)	Select the primary command device volume type.
	Pool (Primary)	Select the pool in which to create the primary command device.
	Parity Group (Primary)	Select the parity group.
	LDEV ID Starts from (Primary)	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate. If this field is listed as "allocated" in another template, you must change it.
	LUN Starts From (Primary)	Specify the starting logical unit number assigned to the volume for a host.
	Volume Type (Secondary)	Select the secondary command device volume type.
	Pool (Secondary)	Select the pool in which to create the secondary command device.
	Parity Group (Secondary)	Select the parity group.
	LDEV ID Starts From (Secondary)	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate. If this field is listed as "allocated" in another template, you must change it.
	LUN Starts From (Secondary)	Specify the starting logical unit number assigned to the volume for a host.

Submit Service settings

The following service template details apply to the Global-Active Device Setup service template.

Navigation pane	Settings pane	Description
Select Storage System	Primary Configuration Manager Connection	Specify the Configuration Manager connection of the primary (source) storage system for migration.
	Primary Storage System	Specify the primary (source) storage system for migration.
	Secondary Configuration Manager Connection	Specify the Configuration Manager connection of the secondary (target) storage system for migration.
	Secondary Storage System	Specify the secondary (target) storage system for migration.
Virtual Storage Machine Settings	VSM Configuration	Select whether to create a Virtual Storage Machine.
	Virtual Storage Machine	Specify the VSM on the primary storage system as the migration source.
	Resource Group Name	Specify the name of the resource group on the primary and secondary storage systems for the virtual storage machines.
Quorum Settings	Quorum Configuration	Select whether to configure a Quorum disk.
	Quorum Disk ID	Specify the Quorum disk ID.
	Add Quorum Disk without Volume	Verify this when defining a Quorum disk which does not need external volumes.
	Volume Filter (Primary)	Use the filters to display only the primary volumes that match the specified criteria.
	Volume (Primary)	Select the volume to use as the Quorum disk on the primary storage system.
	Volume Filter (Secondary)	Use the filters to display only the secondary volumes that match the specified criteria.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Volume (Secondary)	Select the volume to use as the Quorum disk on the secondary storage system.
Remote Path Setting	Configure Remote Paths	Select whether to set remote path groups.
	Remote Path Setting	Specify the remote path.
	Primary Storage MCU Initiator Port	Select the primary storage system MCU initiator port from the list.
	Primary Storage RCU Target Port	Select the primary storage system RCU target port from the list.
	Secondary Storage MCU Initiator Port	Select the secondary storage system MCU initiator port from the list.
	Secondary Storage RCU Target Port	Select the secondary storage system RCU target port from the list.
	Path Group ID	Specify the path group ID.
Select Pair Management Servers	Skip Pair Management Server Configurations (Primary)	Skip configuring a pair management server for the primary storage system if the configuration already exists.
	Use Existing or Create New (Primary)	Select whether to use an existing host group or iSCSI target or create a new host group or iSCSI target.
	Existing Host Groups or iSCSI Targets (Primary)	Select an existing host group or iSCSI Target.
	Port Type (Primary)	Select the port type.
	Host Group Settings (Primary)	Specifies the parameters needed to create a new host group or iSCSI target. Port: Specifies the port of the host group target. WWN Settings: Specifies the WWN settings when using the fibre port setting.

Navigation pane	Settings pane	Description
		Host Group Name: Specifies the host group name when using the fibre port type.
		iSCSI Settings: Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name: Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode: Specifies the host mode.
		Host Mode Options: Specifies the host mode options.
	Skip Pair Management Server Configurations (Secondary)	Skip configuring a pair management server for the secondary storage system if the configuration already exists.
	Use Existing or Create New (Secondary)	Select whether to use an existing host group or iSCSI target or create a new host group or iSCSI target.
	Existing Host Groups or iSCSI Targets (Secondary)	Select an existing host group or iSCSI target
	Port Type (Secondary)	Select the port type.
	Host Group Settings (Secondary)	Specifies the parameters needed to create a new host group or iSCSI target.
		Port: Specifies the port of the host group target.
		WWN Settings: Specifies the WWN settings when using the fibre port setting.
		Host Group Name: Specifies the host group name when using the fibre port type.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
		iSCSI Settings: Specifies the iSCSI settings when using the iSCSI port type.
		iSCSI Target Name: Specifies the iSCSI target name when using the iSCSI port type.
		Host Mode: Specifies the host mode.
		Host Mode Options: Specifies the host mode options.
Pair Management Server Settings	Security Enabled	Select this option to enable command device security.
	User Authentication Enabled	Select this option to enable user authentication.
	Device Group Definition Enabled	Select this option to enable device group definition.
	Volume Capacity	Specify the volume capacity.
	Volume Label	Specify the volume label.
	Volume Type (Primary)	Select the primary command device volume type.
	Pool (Primary)	Select the pool in which to create the primary command device.
	Parity Group (Primary)	Select the parity group.
	LDEV ID Starts from (Primary)	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate. If this field is listed as "allocated" in another template, you must change it.
	LUN Starts From (Primary)	Specify the starting logical unit number assigned to the volume for a host.
	Volume Type (Secondary)	Select the secondary command device volume type.

Navigation pane	Settings pane	Description
	Pool (Secondary)	Select the pool in which to create the secondary command device.
	Parity Group (Secondary)	Select the parity group.
	LDEV ID Starts From (Secondary)	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate. If this field is listed as "allocated" in another template, you must change it.
	LUN Starts From (Secondary)	Specify the starting logical unit number assigned to the volume for a host.

IO control service templates

The following Ops Center Automator IO control service templates for controlling performance are provided with the software and are preconfigured.

Get IO Control

Gets IO control setting information.

Set IO Control

Sets the IO control for the WWN or iSCSI name and the volume having LUN paths. If the IO control is already set to the specified resources, the setting is overwritten.

Remove IO Control

Removes the IO control setting from the WWN/iSCSI name and volume.

Supported platforms

For information on supported platforms, see .

Default ports

The port numbers and their uses are as follows:

Port number	Use
443	Secure communication from Ops Center Automator to Ops Center Administrator.

Port number	Use
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Get IO Control: service details

The Get IO Control service template enables you to get IO control setting information.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Get IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.

Navigation pane	Settings pane	Description
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
	Target	Specify the target type as either all resources or specific resources.
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Get IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
	Target	Specify the target type as either all resources or specific resources.

Navigation pane	Settings pane	Description
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.

Set IO Control: service details

The Set IO Control service template enables you to set the IO control for the WWN/iSCSI name and the volume having LUN paths.

If the IO control is already set to the specified resources, the setting is overwritten.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Set IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.

Navigation pane	Settings pane	Description
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.
IO Control Settings	Target IO Control Metric	Specify the Target IO Control Metric as either IOPS or Transfer Rate.
	Upper Limit	Specify the IOPS Upper Limit value.
	Upper Limit	Specify the Transfer Rate Upper Limit value.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Set IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Port Type	Specify the port type as Fibre or iSCSI.

Navigation pane	Settings pane	Description
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.

Navigation pane	Settings pane	Description
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.
IO Control Settings	Target IO Control Metric	Specify the Target IO Control Metric as either IOPS or Transfer Rate.
	Upper Limit	Specify the IOPS Upper Limit value.
	Upper Limit	Specify the Transfer Rate Upper Limit value.

Remove IO Control: service details

Use the Remove IO Control service template to remove the IO control setting from the WWN/iSCSI name and volume.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Remove IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.

Navigation pane	Settings pane	Description
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Remove IO Control service template.

Navigation pane	Settings pane	Description
Target Settings From Storage	Selection	Specify Select from Storage or Select from Host.
	Configuration Manager Connection	Specify the Configuration Manager Connection.
	Storage System	Specify the Storage System.
	Port Type	Specify the port type as Fibre or iSCSI.
	Host Group / iSCSI Target Filter	Use the filters to display only the host groups or iSCSI targets that match the specified criteria.
	Join Host Group / iSCSI Target Filters By	Use the "and" and the "or" operators to join multiple filters.
	Host Group / iSCSI Target Filter (Rows/Page)	Use the filter to display only the specified number of host groups or iSCSI targets.

Navigation pane	Settings pane	Description
	Host Group / iSCSI Target Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of host groups or iSCSI targets.
	Host Group	Specify the Host Group.
	Volume	Specify the volume attached to the host group.
	WWN	Specify the host WWN.
	iSCSI Target	Specify the iSCSI target.
	Volume	Specify the volume attached to the iSCSI target.
	iSCSI Name	Specify the iSCSI name.
Target Settings From Hosts	Selection	Specify Select from Storage or Select from Host.
	Storage Management Connection	Specify the Storage Management Connection.
	Hosts Filter	Use the filters to display only the hosts that match the specified criteria.
	Join Host Filters by	Use the "and" and the "or" operators to join multiple filters.
	Host Filter (Rows/Page)	Use the filter to display only the specified number of hosts.
	Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of hosts.
	Hosts	Specify the hosts.
	Volumes Selection Type	Specify the Volume Selection Type as either all volumes or specific volumes.
	Host Attached Volumes	Specify the volume attached to the host.

Online migration service templates

The Ops Center Automator Online Migration service template is provided with the software and is preconfigured. This service template uses GAD and enables you to automate portions of the online migration process. Using this template, you can set up some of the basic requirements the first time you use the template and then skip those steps whenever you use template again. This service enables you to migrate a host in an online state through Ops Center Protector, access the switch management server to obtain existing fabric configuration and zoning information when allocating new volumes to the host, and then update the zoning information.

Supported platforms

For information on supported platforms, see <u>Service template supported platforms (on page 237)</u>.

Default ports

Port number	Use
443	Secure communication from Ops Center Automator to Ops Center Protector (Data Instance Director). Secure communication from Ops Center Automator to Ops Center Administrator
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Migrating online data

Setting up online migration consists of several steps. However, many of the steps are now automated when you use the Ops Center Automator Online Migration service. The following procedure shows the steps required to set up and migrate online data when using the service.

Procedure

1. If GAD is not set up, complete the steps in <u>Setting up global-active device (on page 412)</u>.

Appendix C: Services catalog

2. Verify the setup prerequisites and required software listed in <u>Service template prerequisites (on page 189)</u>. The setup prerequisites consist of creating various Ops Center Protector resources and setting up SSL to implement secure communications between the Ops Center Protector server and the Ops Center Automator server.

   For more information, see "Setting up secure communication with a Ops Center Protector server" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

3. Install and register the Ops Center Protector client module.

   For more information, see the *Hitachi Ops Center Protector User Guide*.

   a. Install the Ops Center Protector client module on the pair management server used by Ops Center Protector.

   b. Register the Ops Center Protector client module in the Ops Center Protector server.

   > 📄 **Note:** This is unnecessary if Ops Center Protector is installed on a single host.

4. Complete the following resource setup steps using either Command Control Interface (CCI) or Storage Navigator.

   For more information, see the *Command Control Interface Command Reference*.

   a. Register resources to the VSM.

   b. To specify the source resource as Volumes, identify the volume to migrate.

   c. Delete any replication pairs in the source migration source volume.

      If a local/remote pair is set in the migration source volume, the GAD pair is not created.

   > 📄 **Note:** If you specify "Migrate the volumes with Asynchronous Remote Clone pairs" option, the GAD pair is created even if an asynchronous remote clone pair is set in the migration source volume. In this case, deleting asynchronous remote clone pairs is not required.

5. Complete the following Ops Center Protector setup steps. You complete these steps one time and do not need to repeat them.

   For additional information on Data Flows, see the *Hitachi Ops Center Protector User Guide*.

   a. In Ops Center Protector, verify that the primary (source) storage system and the secondary (target) storage system are registered as a Hitachi Block Device Node.

   b. In Ops Center Protector, create a Data Flow to use as a template for GAD pair creation.

   c. When you create a Data Flow in Ops Center Protector, make sure to select the [Use Automatically Provisioned Host Group] check box in [Secondary Volume Host Groups] in the Replicate wizard under Policies.

6. In Ops Center Automator, verify that the following web service connections exist. If not, create them as needed.

> **Note:** If you plan to set up secure communication between Ops Center Automator and any of the following servers, you must do so before you create the web service connection. For additional information, see the setup prerequisites listed in <u>Service template prerequisites (on page 189)</u>.

- Web service connection to the Ops Center Protector server.

- (Optionally) Web service connection to the Ops Center Administrator server where the migration source host is registered.

- (Optionally) Web service connection to the Brocade Network Advisor (BNA) or Data Center Network Manager (DCNM) server.

You complete this step one time and do not need to repeat it in the future.

For more information, see <u>Configuring Web Service Connections (on page 94)</u>.

7. In Ops Center Automator, complete the following steps:

   a. On the **Services** tab, select the Online Migration service, and in the service preview pane, click **Create Request**.

   b. Configure the Online Migration service by entering the required information. For more information on the required parameter settings, see <u>Online Migration: service details (on page 438)</u>.

      The configuration information you enter enables the service to complete the required tasks when you run the Online Migration service.

   c. Submit the service.

The service completes the following actions:

- Creates a diskless Quorum for use with Global-Active Device. Acquire and creates a free Quorum ID common to the source storage system and target storage system.

- Creates the zone information between the target storage and the host.

- Creates a Global-Active Device pair on Ops Center Protector by using the specified Data Flow.

   For additional information on Data Flows, see the *Hitachi Ops Center Protector User Guide*.

> **Note:** The service waits until the initial copy process of the Global-Active Device pair creation process finishes before starting the next action.

- Reclaims zero pages of Global-Active Device S-Vol if the Run Zero Page Reclaim property is selected

- Creates asynchronous remote clone pairs with Ops Center Protector if the source volumes have asynchronous remote clone pairs.

- Waits for the initial copy completion of asynchronous remote clone pairs if the source volumes have asynchronous remote clone pairs.

- Allocates a path on the target volume that matches the path on the source volume.

   After finishing the path allocation, the service pauses and waits for you to verify that you have completed the next tasks manually.

> 📄 **Note:** If you specify the same Source Storage and Target Storage in the
> Online Migration service and submit multiple tasks at the same time, the
> tasks might fail. In this case, verify the pair status of the specified Source
> Volume. If the Global-Active Device pair was created, delete it, and then
> resubmit the task.

8. Switch the path from the source volume to the target volume so that the host recognizes
   the target volume path using one of the following methods.

   - Log in to the host and use the multipath management software to switch the path.

   - If the host is in a cluster configuration, use the cluster management software to
     change the settings.

9. Return to the Ops Center Automator UI and do the following:

   a. In the Ops Center Automator **Task** window, click **Input Reponse** and then click
      Migrate.

      The service starts running again and continues with the following automated
      actions:

      - Deletes the Global-Active Device pair with Ops Center Protector.

      - Unallocates the source volume and path with Ops Center API Configuration
        Manager.

      - Deletes the diskless Quorum if you are using diskless Quorum.

      - Deletes any existing asynchronous remote clone pairs of the source volumes.

      - (Optionally) Deletes the source volume and the unnecessary Host Group using
        Ops Center API Configuration Manager.

        > 📄 **Note:** Do not select this option during template configuration to
        > return to the original status if the migration fails.

   b. After the service finishes running, verify that the task completed successfully.
      You are now finished in the Ops Center Automator UI.

10. Configure the replication of the target volume by restoring the backup of the local/
    remote pair that you deleted in step 4c.

    You can do this with either Command Control Interface (CCI) or Storage Navigator.

    For more information, see the *Command Control Interface Command Reference* or the
    Storage Navigator User Guide.

Online Migration: Service details

The Online Migration service template enables you to migrate a host in an online state
through Ops Center Protector, access the switch management server to obtain existing fabric
configuration and zoning information when allocating new volumes to the host, and then
update the zoning information.

> 📄 **Note:** When using this template, be aware of the following:
>
> - This service automatically enables the host mode option "88. Port Consolidation" for the target host groups when the migration is performed. This lets you specify the same port on the target storage system even if there are multiple source storage systems for the same server.
>
> - When you create a new host group, the host group number of the specified resource group is given priority. If the host group numbers that are registered in the specified resource group are insufficient, the host group number in the resource group named "meta_resource" is used.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Online Migration service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as Volumes or Hosts.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Storage System	Specify the source storage system for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.
	Source Volume Filter	Use the filters to display only the source volumes that match the specified criteria.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source volumes.
	Source Volumes	Specify the source volumes.

Navigation pane	Settings pane	Description
	Source Ops Center Administrator Connection	Specify the source Ops Center Administrator connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Source Host Filter (Rows/ Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration.
	Storage Port Mappings	Specify the mapping between the source and target storage ports. Based on the mapping, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.
Replication Settings	Ops Center Protector (Data Instance Director) Connection	Specify the Ops Center Protector or Data Instance Director connection.
	Template Data Flow	Specify the data flow for the template.
	Source Node	Specify the source Block Device Node.
	Target Node	Specify the target Block Device Node.
	Pool	Specify the target pool.
	Resource Group	Specify the target resource group.

Navigation pane	Settings pane	Description
	Use Diskless Quorum	Specify whether to use automatic diskless volume creation.
	Quorum Disk	Specify the Quorum disk.
	Copy Pace	Specify the Copy Pace. (Slow: 3, Medium: 8, Fast: 15)
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Asynchronous Remote Clone Migration Settings	Migrate the volumes with Asynchronous Remote Clone pairs	Specify whether to migrate the volumes with Asynchronous Remote Clone pairs if the source volumes have Asynchronous Remote Clone pairs.
	Copy the new Node name from Source Node	Select the check box to copy the new node name from the source node.
	Node name prefix for migrated Node	Specify the node name prefix of the source Block host node for a new Asynchronous Remote Clone dataflow.
	Remote Storage System Node for Secondary Volumes	Specify the target Block Device Node for new Asynchronous Remote Clone dataflow.
	Pool for Secondary Volumes	Specify the target pool for new Asynchronous Remote Clone dataflow.
	Resource Group for Secondary Volumes	Specify the target resource group for the new Asynchronous Remote Clone dataflow.
	Master Journal	Specify the master journal volume for the new Asynchronous Remote Clone dataflow.
	Remote Journal	Specify the remote journal volume for the new Asynchronous Remote Clone dataflow.

Navigation pane	Settings pane	Description
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specifies whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.
	Subject:	Specify the email subject.
	Notification mail body	Specifies the text of the email body.
	Notification text	Specifies the text of the User-Response Wait dialog box.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
	Response Timeout (minutes)	Specify the maximum wait time for the response in minutes.
	Storage System Lock Wait Time (seconds)	Specify the maximum wait time for the storage system lock in seconds.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all connections that are defined for the product name listed in Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.

Navigation pane	Settings pane	Description
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all fabrics monitored by the BNA.
	Use Existing Zone	Specify whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing zone setting. If you specify False, the system selects connectable paths regardless of the existing zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.

Navigation pane	Settings pane	Description
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the zone information using javascript.

Submit Service Request settings

The following table lists the Submit Service Request settings for the Online Migration service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as Volumes or Hosts.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Storage System	Specify the source storage system for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.
	Source Volume Filter	Use the filters to display only the source volumes that match the specified criteria.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source volumes.
	Source Volumes	Specify the source volumes.

Navigation pane	Settings pane	Description
	Source Ops Center Administrator Connection	Specify the Source Ops Center Administrator Connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Source Host Filter (Rows/ Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration.
	Storage Port Mappings	Specify the mapping between the source and target storage ports. Based on the mapping, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.
Replication Settings	Ops Center Protector (Data Instance Director) Connection	Specify the Ops Center Protector or Data Instance Director connection.
	Template Data Flow	Specify the data flow for the template.
	Source Node	Specify the source Block Device Node.
	Target Node	Specify the target Block Device Node.
	Pool	Specify the target pool.
	Resource Group	Specify the target resource group.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Use Diskless Quorum	Specify whether to use automatic diskless volume creation.
	Quorum Disk	Specify the Quorum Disk.
	Copy Pace	Specify the Copy Pace. (Slow: 3, Medium: 8, Fast: 15)
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Asynchronous Remote Clone Migration Settings	Migrate the volumes with Asynchronous Remote Clone pairs	Specify whether to migrate the volumes with Asynchronous Remote Clone pairs if the source volumes have Asynchronous Remote Clone pairs.
	Copy the new Node name from Source Node	Select the check box to copy the new node name from the source node.
	Node name prefix for migrated Node	Specify the node name prefix of the source Block host node for a new Asynchronous Remote Clone dataflow.
	Remote Storage System Node for Secondary Volumes	Specify the target Block Device Node for new Asynchronous Remote Clone dataflow.
	Pool for Secondary Volumes	Specify the target pool for new Asynchronous Remote Clone dataflow.
	Resource Group for Secondary Volumes	Specify the target resource group for the new Asynchronous Remote Clone dataflow.
	Master Journal	Specify the master journal volume for the new Asynchronous Remote Clone dataflow.
	Remote Journal	Specify the remote journal volume for the new Asynchronous Remote Clone dataflow.

Navigation pane	Settings pane	Description
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specifies whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.
	Subject:	Specify the email subject.
	Notification mail body	Specifies the text of the email body.
	Notification text	Specifies the text of the User-Response Wait dialog box.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Connection Names	Specify the connection name defined in Web Service Connections on the Administration tab. Separate multiple values by commas. If this value is omitted, the system uses all connections that are defined for the product name listed in Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all fabrics monitored by the BNA.

Navigation pane	Settings pane	Description
	Use Existing Zone	Specify whether to select a predefined zone or any connectable path. If you specify True, the system selects paths within the range of the existing zone setting. If you specify False, the system selects connectable paths regardless of the existing zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.

Navigation pane	Settings pane	Description
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the zone information using javascript.

Storage port aggregation

The service determines the migration source path volume by using a combination of the specified source and target storage ports. However, when the migration source host group is shared between servers in some cases and not in others, there is a high possibility that the migration path will be different than what the user intended. In this case, it is not possible to combine a group of migration source storage ports into a single migration target storage port. In most cases, the storage port is divided to increase fault tolerance, so if you are migrating to a configuration without, or with reduced, fault tolerance, you should not run a migration until you understand the possible issues involved.

Online migration with Configuration Manager service templates

The Ops Center Automator Online migration with Configuration Manager service templates are provided with the software and is preconfigured. These service templates use global-active device and enable you to automate portions of the online migration process.

Create Online Migration Pair
> This service runs from the creation of zones to the creation of copy pairs for online host migration through Configuration Manager. After this service is complete, you must submit the Migrate Data for Online Migration Pair service to complete the migration.

Create Online Migration Pairs for Multiple Hosts
> This service enables you to submit a Create Online Migration Pair service task for each specified host. After the auto-submitted tasks are complete, you must submit the Migrate Data for Online Migration Pair service for each task to complete the migration.

Migrate Data for Online Migration Pair
> This service runs from the swap of copy pairs to the deletion of source volumes for online host migration through Configuration Manager. Before submitting this service, the Create Online Migration Pair service must be completed.

Clean up Online Migration Pair
> This service enables you to clean up the resources created by the Create Online Migration Pair task.

Notes editing feature

The Create Online Migration Pair and Create Online Migration Pairs for Multiple Hosts services have a Notes feature to automatically describe the current migration progress. By checking Notes of these services, the user can determine the migration progress of the task (for example, whether the Migrate Data for Online Migration Pair task has been run) and decide the next action to take. The user can specify the first string of Notes as a filter to display the Create Online Migration Pair tasks in a specific migration progress.

> 📄 **Note:** Whether the user runs the Create Online Migration Pair service or the Create Online Migration Pairs for Multiple Hosts service, the migration progress will be added only to Notes of the Create Online Migration Pair task.

The following strings are output to Notes:

- `Initial copy started`: Indicates whether the Migrate Data for Online Migration Pair task can be run when the Create Online Migration Pair task is terminated (for example, due to a server restart).

- `Initial copy finished`: Indicates whether the Create Online Migration Pair task has been finished.

- `Migration started (task id: `*`task_id`*`)`: Indicates whether the Migrate Data for Online Migration Pair task for the indicated task has been started.

- `Migration finished`: Indicates whether the Migrate Data for Online Migration Pair task has been finished.

- `Cleanup started (task id: `*`task_id`*`)`: Indicates whether the Clean up Online Migration Pair task for the indicated task has been started.

- `Cleanup finished`: Indicates whether the Clean up Online Migration Pair task has been finished.

> 📄 **Note:** When using this feature, be aware of the following:
>
> - Filtering can be performed in the task list window.
>
> - The Online migration with Configuration Manager services must be in the same service group.
>
> - Notes can contain a maximum of 1024 characters.
>
> - Do not use Ops Center Automator to edit Notes of the Create Online Migration Pair tasks while the Create Online Migration Pair, Migrate Data for Online Migration Pair, and Clean up Online Migration Pair tasks are running.

Supported platforms

For information on supported platforms, see Service template supported platforms (on page 237).

> 📄 **Note:** For information on the supported platforms required to run mulitiples task concurrently, see Additional prerequisites for multiple runs (on page 451).

Default ports

Port number	Use
443*	Secure communication from Ops Center Automator to Ops Center Administrator.
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.
* Create Online Migration Pair	

Additional prerequisites for multiple runs

The Create Online Migration Pair, Migrate Data for Online Migration Pair, and Clean up Online Migration Pair service tasks can be run up to 25 times concurrently by satisfying the following additional prerequisites. If the additional prerequisites are not met, only a single task can be run concurrently. For multiple runs, the Create Online Migration Pairs for Multiple Hosts service can be used to submit multiple Create Online Migration Pair services at once.

Software requirements for multiple runs

- Ops Center Automator v10.8.2 or later

- Ops Center Administrator v10.7.0 or later (only required when you specify "Select Hosts" for the "Source Selection" property)

- Ops Center API Configuration Manager v10.7.0 or later

Setup requirements for multiple runs

- The Ops Center Automator server and Ops Center API Configuration Manager server must be on different servers.

- The migration source storage system must be the same storage system for all migration tasks to be run at the same time.

- The migration target storage system must be the same storage system for all migration tasks to be run at the same time.

Appendix C: Services catalog

Additional Ops Center Automator server settings

▪ The Ops Center Automator server must be set to "High performance mode". For more information, refer to "changemode command (on page 163)" and "Configuring the performance mode" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

▪ You must change the following values in the `config_user.properties` file:

```
plugin.threadPoolSize: 100
logger.TA.MaxFileSize: 100240
```

See "Changing the system configuration" in the *Hitachi Ops Center Automator Installation and Configuration Guide.*

Additional Ops Center API Configuration Manager server settings

▪ The communication mode must be "fcConnectionMode". For details, see "Appendix A. Changing the communication mode of the REST API server" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

▪ The setting for the number of storage systems to be managed must be "BalanceMode" or "HighPerformanceMode". For more information, refer to "Setting the number of storage systems to be managed by the REST API" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide*.

▪ You must change the following values in `StartupV.properties`

```
rest.java.heapMemory.size: 6144
```

Refer to "Setting the java heap memory size on the Ops Center API Configuration Manager server" in the *Hitachi Ops Center Automator Installation and Configuration Guide* for more information.

▪ You must register a single Ops Center API Configuration Manager to be used in multiple runs as the notification destination of configuration changes in the migration source and target storage systems. See "Appendix D: Sending notifications about changes to storage system configurations" in the *Hitachi Ops Center API Configuration Manager REST API Reference Guide* for more information.

Requirements for the server where the Ops Center product is installed

Ops Center Automator must meet the system requirements described below in addition to the requirements described in the *Hitachi Ops Center Automator Installation and Configuration Guide*.

Table 6 Additional server requirements for Ops Center Automator

Item	Value
OS	Windows (x64)
CPU	8 Core or higher

Appendix C: Services catalog

Item	Value
Memory	16 GB or higher

The Ops Center API Configuration Manager must meet the system requirements described below in addition to the requirements described in "Hardware and disk space requirements" in the *Hitachi Ops Center API Configuration Manager System Requirements*.

Table 7 Additional server requirements for Ops Center API Configuration Manager

Item	Value
OS	Windows (x64)
CPU	4 Core or higher
Memory	8 GB or higher

Scale of resources to be migrated

The upper limit of resources to be migrated that can be specified when running multiple tasks is shown in below.

Table 8 Upper limit of resources to be migrated

Item	Upper limit value
Maximum number of hosts	Up to 25 hosts in total for multiple running tasks
Maximum number of volumes	Up to 500 volumes in total for multiple running tasks
Maximum number of volumes that can be selected in a single task	Up to 500 volumes
Maxiumum number of paths per volume	Up to 16 paths both before and after migration

You can specify up to 500 volumes for all running tasks, but the maximum number of initial copy pairs that can be run simultaneously in the storage system is 64 by default. The storage system will gradually perform initial copy as long as the maximum number of initial copies is not exceeded.

If you want to increase the number of initial copy pairs to be copied simultaneously, you need to increase the maximum number of initial copies from the "Remote Replication Options" window in Storage Navigator. If the Diskless Quorum feature is not used, the maximum number of initial copies should not exceed 200, because the Quorum disk may not be able to handle it.

For details, refer to the Global-Active Device User Guide for each storage system.

Storage systems supporting multiple runs

You must use the following storage systems when you run multiple Online Migration with Configuration Manager tasks.

Storage systems with the Use Diskless Quorum option enabled:

- VSP G1000, VSP G1500, and VSP F1500: 80-06-86-00/00 or later

- VSP 5100, 5500, 5100H, 5500H: 90-06-21-00/00 or later

- VSP 5200, 5600, 5200H, 5600H: 90-08-01-00/00 or later

Storage systems with the Use Diskless Quorum option disabled:

- VSP G1000, VSP G1500, and VSP F1500: 80-06-82-00/00-04 or later

- VSP 5100, 5500, 5100H, 5500H: 90-04-06-00/00-05 or later

- VSP 5200, 5600, 5200H, 5600H: 90-08-01-00/00 or later

> 📄 **Note:** Multiple runs only support the VSP G1000, VSP G1500, and VSP F1500 as migration source storage systems and VSP G1000, VSP G1500, VSP F1500, VSP 5100, 5500, 5100H, 5500H, and VSP 5200, 5600, 5200H, 5600H as migration target storage systems.

Migrating online data with Configuration Manager

Setting up online migration consists of several steps. However, many of the steps are now automated when you use the Ops Center Automator Create Online Migration Pair, Migrate Data for Online Migration Pair, and Clean up Online Migration Pair services.
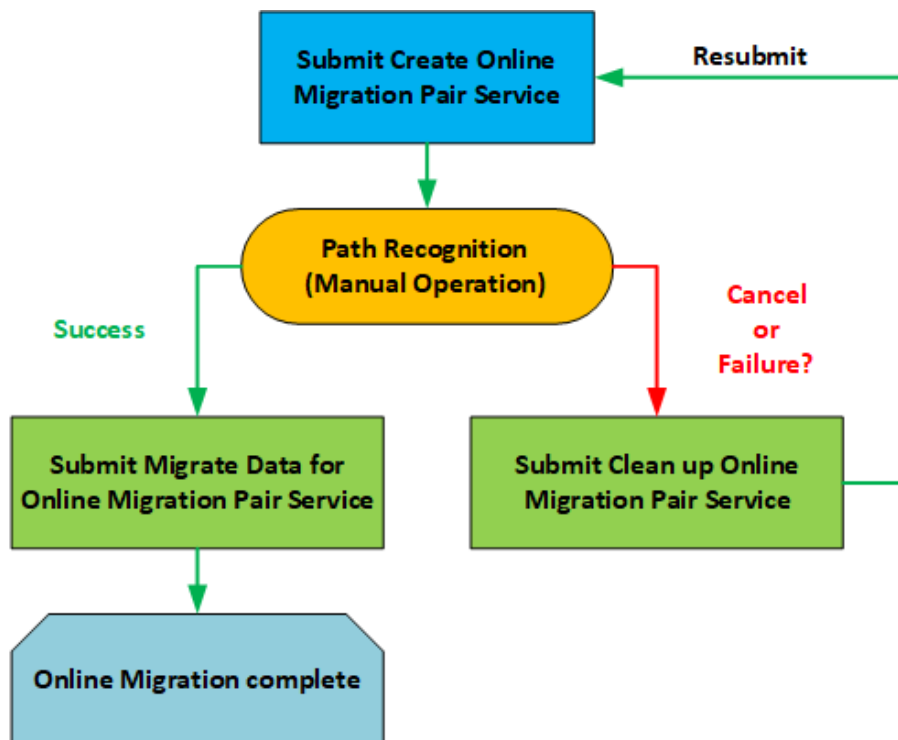
The following procedure provides the steps required to set up and migrate online data when using the service.

Procedure

1. If GAD is not set up, complete the steps in <u>Setting up global-active device (on page 412)</u>.

2. Verify the setup prerequisites and required software listed in <u>Service template prerequisites (on page 189)</u>. The setup prerequisites consist of creating various Ops Center Automator resources as well as setting secure communications between the Ops Center Administrator server and the Ops Center Automator server.

3. Complete the following resource setup steps using either Command Control Interface (CCI) or Storage Navigator.

   For more information, see the *Command Control Interface Command Reference*.

   a. Register resources to the VSM.

   b. If you want to specify the source resource as Volumes, identify the volume to migrate.

   c. Delete any replication pairs in the source migration source volume.

      If a local/remote pair is set in the migration source volume, the GAD pair is not created.

4. In Ops Center Automator, verify that the following web service connections exist. If not, create them as needed.

   > 📄 **Note:** If you plan to set up secure communication between Ops Center Automator and any of the following servers, you must do so before you create the web service connection. For additional information, see "Importing certificates for web service connections" in the *Hitachi Ops Center Automator Installation and Configuration Guide*.
   >
   > - Web service connection to the Ops Center Administrator server where the migration source host is registered.
   >
   > - (Optionally) Web service connection to Brocade FC switches or Data Center Network Manager (DCNM).

   You complete this step one time and do not need to repeat it in the future.

   For more information, see <u>Configuring Web Service Connections (on page 94)</u>.

5. In Ops Center Automator, complete the following steps:

   a. On the **Services** tab, select the Create Online Migration Pair service, and in the service preview pane, click **Create Request**.

   b. Configure the Create Online Migration Pair service by entering the required information. For more information on the required parameter settings, see <u>Create Online Migration Pair: Service details (on page 457)</u>.

      The configuration information you enter enables the service to complete the required tasks when you submit the Create Online Migration Pair service.

   c. Submit the service.

   The service completes the following actions:

> **Note:** If you want to submit multiple Create Online Migration Pair services at once, use the Create Online Migration Pairs for Multiple Hosts service.

- Creates the zone information between the target storage and the host.

- Allocates a path on the target volume that matches the path on the source volume.

- Creates a diskless Quorum for use with Global-Active Device. Acquire and creates a free Quorum ID common to the source storage system and target storage system. If you want to enable the Use Diskless Quorum option, see Create Online Migration Pair: Service details (on page 457).

- Creates a Global-Active Device pair with Ops Center API Configuration Manager.

- Reclaims zero pages of Global-Active Device S-Vol if the Run Zero Page Reclaim property is selected.

  After finishing the previous actions, the service pauses and waits for you to manually verify that you have completed the above tasks.

> **Note:** If you specify the same Source Storage and Target Storage in the Create Online Migration Pair service and submit multiple tasks at the same time, the tasks might fail. In this case, check the pair status of the specified Source Volume. If the Global-Active Device pair was created, run Clean up Online Migration Pair, and then resubmit the task.

6. Switch the path from the source volume to the target volume so that the host recognizes the target volume path using one of the following methods.

   - Log in to the host and use the multipath management software to switch the path.

   - If the host is in a cluster configuration, use the cluster management software to change the settings.

7. Return to the Ops Center Automator UI and do one of the following:

   - To resubmit the Create Online Migration Pair task if it failed or to cancel the migration, you must submit the Clean up Online Migration Pair service to delete the resources created in the target storage system. See Clean up Online Migration Pair: Service details (on page 486) for more information.

   - If the Create Online Migration Pair task completes successfully, you can submit the Migrate Data for Online Migration Pair service.

8. In Ops Center Automator, complete the following steps:

   a. On the **Services** tab, select the Migrate Data for Online Migration Pair service, and in the service preview pane, click **Create Request**.

   b. Configure the Migrate Data for Online Migration Pair service by entering the required information. For more information on the required parameter settings, see Migrate Data for Online Migration Pair: Service details (on page 484).

      The configuration information you enter enables the service to complete the required tasks when you submit the Create Online Migration Pair service.

   c. Submit the service.

The task starts running and with the following automated actions:

- Deletes the Global-Active Device pair with Ops Center API Configuration Manager.

- Unallocates the source volume and path with Ops Center API Configuration Manager.

- Deletes the diskless Quorum if you are using diskless Quorum.

- (Optionally) Deletes the source volume and the unnecessary Host Group using Ops Center API Configuration Manager.

> 📄 **Note:** Do not select this option during template configuration if you want to return to the original status if the migration fails.

Migrating online pairs for multiple hosts

The Ops Center Automator Create Online Migration Pairs for Multiple Hosts service allows you to submit online migration jobs using multiple hosts. This template has the same input items as the Create Online Migration Pair service, and when multiple hosts are selected for task, the Create Online Migration Pair task automatically runs as one host and one task.
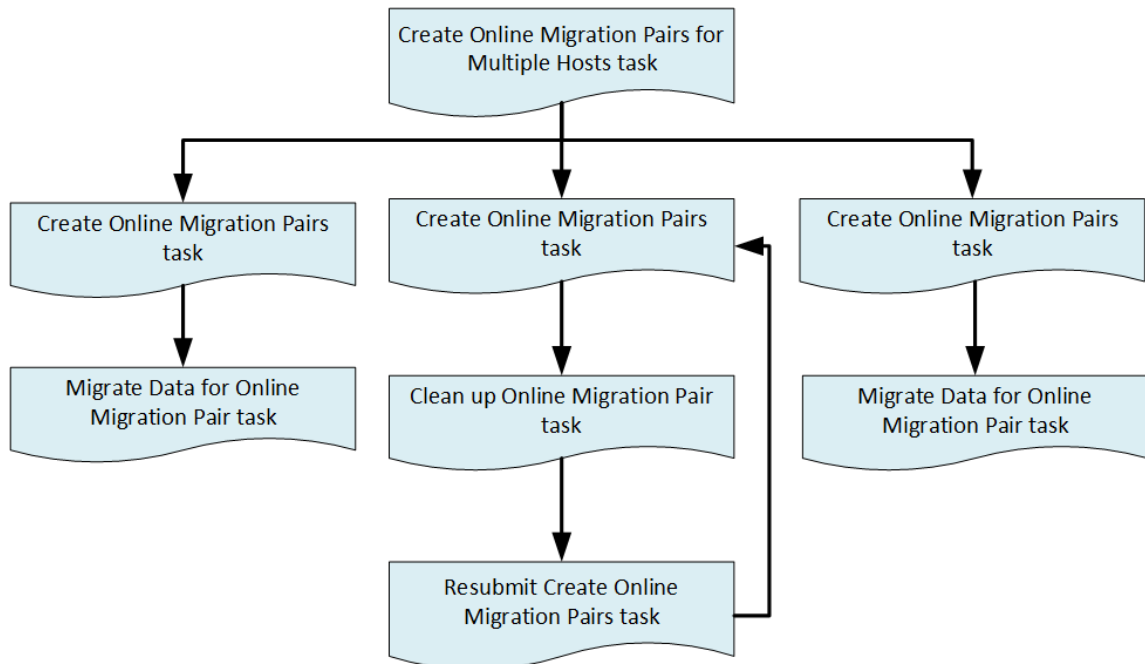
Create Online Migration Pair: Service details

The Create Online Migration Pair service template runs from the creation of zones to the creation of copy pairs for online host migration through Configuration Manager. After this service is complete, you must submit the Migrate Data for Online Migration Pair service to complete the migration.

📄 **Note:** When using this template, be aware of the following:

- The Online Migration with Configuration Manager service template that existed in v10.5.1 or earlier has been split into two service templates: Create Online Migration Pair and Migrate Data for Online Migration Pair. We recommend that you use the new service templates.

- In the configuration where the source volumes have clone pairs, before running the tasks, wait a few minutes after the clone process, or update the storage system cache of configuration information.

- In the configuration where the source volumes have clone pairs, make sure that no secondary volume of the clone pairs is included in the source volumes, and that no secondary volume of the clone pairs is allocated to the selected host as source hosts.

- When you use the Capacity Saving settings, remember that Capacity Saving works even when copying data by GAD, except when After migration is selected for the Set Capacity Saving property. See "About adaptive data reduction" in the *Provisioning Guide* for your storage system in advance.

- This service automatically enables the host mode option "88. Port Consolidation" for the target host groups when the migration is performed. This lets you specify the same port on the target storage system even if there are multiple source storage systems for the same server.

- When you create a new host group, the host group number of the specified resource group is given priority. If the host group numbers that are registered in the specified resource group are insufficient, the host group number in the resource group named "meta_resource" is used.

- If the Use Diskless Quorum option is enabled and the task fails and one of the following conditions are met, the automatically created Diskless Quorum might remain. In this case, check the Quorum ID shown in the message and manually delete the Diskless Quorum:

  - KNAE07604-I is not output to the task log. This message is output for the source and target storage systems respectively.

  - KNAE07606-I is output to the task log.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit service settings

The following table lists the Edit Service settings for the Create Online Migration Pair service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as volumes or hosts.

Navigation pane	Settings pane	Description
	Source Storage Management	Specify the source storage management connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Join Host Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Host Filter (Rows/Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Storage System	Specify the source storage system for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.
	Source Volume Filter	Use the filters to display only the source volumes that match the specified criteria.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source volumes.

Navigation pane	Settings pane	Description
	Source Volumes	Specify the source volumes. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration. In the "Compression Acceleration" column,"unavailable" is displayed in the following cases: ▪ The migration target storage system does not have the required settings to enable Compression Acceleration. ▪ The migration target storage system is a storage model that does not support enabling Compression Acceleration. If "available" is displayed, Compression Acceleration will be automatically enabled when the capacity saving function is enabled. If "unavailable" is displayed, Compression Acceleration will be automatically disabled when the capacity saving function is enabled.
	Target Resource Group	Specify the target resource group.
	Target Pool	Specify the target pool.
	Storage Port Mappings	Specify mappings for the source and target storage ports. Based on the mappings, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.

Navigation pane	Settings pane	Description
	Capacity Saving Settings for Target Volumes	Specify how to apply Capacity Saving settings to target volumes.
		If "Same as source volumes" is specified, the settings will be applied in the same way as the Capacity Saving settings for source volumes.
		If "Specify Capacity Saving settings" is specified, the settings selected in the following properties will be applied.
		If you select the storage system with "Compression Acceleration" available in the "Target Storage System", then Compression Acceleration is enabled when the capacity saving function is enabled. If you select a storage system where "Compression Acceleration" is unavailable, then Compression Acceleration is disabled.
	Select Capacity Saving Function	Specify the Capacity Saving Function for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Select Capacity Saving Mode	Specify the Capacity Saving Mode for the target volumes. Refer to your storage system product documentation for the optimal setting.

Navigation pane	Settings pane	Description
	Set Capacity Saving	Specify when to apply Capacity Saving settings to the target volumes.
		If "Before migration" is specified, the settings are applied before copying from the source volumes to the target volumes. In this case, Capacity Saving is in effect from the start of migration, but the time required for migration increases.
		If "After migration" is specified, the settings are applied after copying from the source volumes to the target volumes is complete. In this case, the migration time will not increase, and Capacity Saving will begin after the migration is complete.
Replication Settings	Copy Pace	Specify the copy speed. Increasing the value increases the copy speed.
	Path Group ID Selection	Specify whether to manually select the path group ID.
	Path Group ID	Specify the path group ID.
	Use Diskless Quorum	Specify whether to use automatic diskless volume creation.
	Quorum Disk	Specify the quorum disk.
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specify whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Subject:	Specify the email subject.
	Notification mail body	Specify the text of the email body.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.
	Add Migration Progress to Notes	Specify whether to automatically add the migration progress to Notes of the Create Online Migration Pair task. If you enable this feature, create the Migrate Data for Online Migration Pair and Clean up Online Migration Pair services in the same service group as the Create Online Migration Pair service.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Script for Storage Zone Alias Naming	Specify the zone information.

Submit service settings

The following table lists the Submit Service settings for the Create Online Migration Pair service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as volumes or hosts.
	Source Storage Management	Specify the source storage management connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Join Host Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Host Filter (Rows/ Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Storage System	Specify the source storage system for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Source Volume Filter	Use the filters to display only the source volumes that match the specified criteria.
	Join Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Volume Filter (Rows/Page)	Use the filter to display only the specified number of source volumes.
	Source Volume Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source volumes.
	Source Volumes	Specify the source volumes. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration. In the "Compression Acceleration" column,"unavailable" is displayed in the following cases: ▪ The migration target storage system does not have the required settings to enable Compression Acceleration. ▪ The migration target storage system is a storage model that does not support enabling Compression Acceleration. If "available" is displayed, Compression Acceleration will be automatically enabled when the capacity saving function is enabled. If "unavailable" is displayed, Compression Acceleration will be automatically disabled when the capacity saving function is enabled.
	Target Resource Group	Specify the target resource group.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Target Pool	Specify the target pool.
	Storage Port Mappings	Specify mappings for the source and target storage ports. Based on the mappings, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.
	Capacity Saving Settings for Target Volumes	Specify how to apply Capacity Saving settings to target volumes. If "Same as source volumes" is specified, the settings will be applied in the same way as the Capacity Saving settings for source volumes. If "Specify Capacity Saving settings" is specified, the settings selected in the following properties will be applied. If you select the storage system with "Compression Acceleration" available in the "Target Storage System", then Compression Acceleration is enabled when the capacity saving function is enabled. If you select a storage system where "Compression Acceleration" is unavailable, then Compression Acceleration is disabled.
	Select Capacity Saving Function	Specify the Capacity Saving Function for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Select Capacity Saving Mode	Specify the Capacity Saving Mode for the target volumes. Refer to your storage system product documentation for the optimal setting.

Navigation pane	Settings pane	Description
	Set Capacity Saving	Specify when to apply Capacity Saving settings to the target volumes.
		If "Before migration" is specified, the settings are applied before copying from the source volumes to the target volumes. In this case, Capacity Saving is in effect from the start of migration, but the time required for migration increases.
		If "After migration" is specified, the settings are applied after copying from the source volumes to the target volumes is complete. In this case, the migration time will not increase, and Capacity Saving will begin after the migration is complete.
Replication Settings	Copy Pace	Specify the copy speed. Increasing the value increases the copy speed.
	Path Group ID Selection	Specify whether to manually select the path group ID.
	Path Group ID	Specify the path group ID.
	Use Diskless Quorum	Specify whether to use automatic diskless volume creation.
	Quorum Disk	Specify the quorum disk.
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specify whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.

Navigation pane	Settings pane	Description
	Subject:	Specify the email subject.
	Notification mail body	Specify the text of the email body.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.
	Add Migration Progress to Notes	Specify whether to automatically add the migration progress to Notes of the Create Online Migration Pair task. If you enable this feature, create the Migrate Data for Online Migration Pair and Clean up Online Migration Pair services in the same service group as the Create Online Migration Pair service.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.

Navigation pane	Settings pane	Description
	Script for Storage Zone Alias Naming	Specify the zone information.

Create Online Migration Pairs for Multiple Hosts: Service details

This service automatically submits a Create Online Migration Pair service task for each specified host. After the auto-submitted tasks are complete, you must submit the Migrate Data for Online Migration Pair service for each task to complete the migration.

> 📄 **Note:** When using this template, be aware of the following:
>
> - The automated run of Create Online Migration Pair tasks used by this service is only supported only when Source Selection is Select Hosts. Since this service does not support volume selection, Select Volumes is not displayed in the Edit Service window.
>
> - When multiple hosts are specified in this service, they are always divided into one-host per one-task format, and Create Online Migration Pair is run. If you want to run Create Online Migration Pair on multiple hosts at once, such as multiple hosts in a cluster configuration or multiple hosts to which the same volume has been allocated, you need to select multiple hosts and submit the Create Online Migration Pair service, instead of using this service.
>
> - When you select multiple hosts in this service, the Create Online Migration Pair service will be automatically submitted by the number of hosts selected, so the selected number of hosts must be the upper limit or less of multiple runs of Create Online Migration Pair, Migrate Data for Online Migration Pair, and Clean up for Online Migration Pair tasks. A maximum of 25 hosts can be selected for execution. However, if N multiple task runs have already been performed for Create Online Migration Pair, Migrate Data for Online Migration Pair, and Clean up for Online Migration Pair, the maximum number of hosts that can be specified for this service is "25 - N". If you do not meet the requirements for multiple runs, the maximum number of hosts that can be specified in this service is 1.
>
>   See for more information.
>
> - While the Create Online Migration Pairs for Multiple Hosts service task is running, do not edit the auto-created Create Online Migration Pair service whose name starts with "[Auto-registered Service for Create Online Migration Pair]". Since this service automatically edits the Create Online Migration Pair service, it is possible that the automatic run of the Create Online Migration Pair task might fail or run with incorrect input parameters if it is manually edited during that time.
>
> - When running multiple tasks by the automatic run of Create Online Migration Pair tasks using this service, not all tasks are run automatically simultaneously, but each task is run sequentially after a few minutes.
>
> - If the Use Diskless Quorum option is enabled and the task fails and one of the following conditions are met, the automatically created Diskless Quorum might remain. In this case, check the Quorum ID shown in the message and manually delete the Diskless Quorum:
>   - KNAE07604-I is not output to the task log. This message is output for the source and target storage systems respectively.
>   - KNAE07607-I is output to the task log.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit service settings

The following table lists the Edit service settings for the Create Online Migration Pair for Multiple Host service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as hosts.
	Source Storage Management	Specify the source storage management connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Join Host Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Host Filter (Rows/Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration.

Navigation pane	Settings pane	Description
		In the "Compression Acceleration" column,"unavailable" is displayed in the following cases: ▪ The migration target storage system does not have the required settings to enable Compression Acceleration. ▪ The migration target storage system is a storage model that does not support enabling Compression Acceleration. If "available" is displayed, Compression Acceleration will be automatically enabled when the capacity saving function is enabled. If "unavailable" is displayed, Compression Acceleration will be automatically disabled when the capacity saving function is enabled.
	Target Resource Group	Specify the target resource group.
	Target Pool	Specify the target pool.
	Storage Port Mappings	Specify mappings for the source and target storage ports. Based on the mappings, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.
	Capacity Saving Settings for Target Volumes	Specify how to apply Capacity Saving settings to target volumes. If "Same as source volumes" is specified, the settings will be applied in the same way as the Capacity Saving settings for source volumes. If "Specify Capacity Saving settings" is specified, the settings selected in the following properties will be applied.

Navigation pane	Settings pane	Description
		If you select the storage system with "Compression Acceleration" available in the "Target Storage System", then Compression Acceleration is enabled when the capacity saving function is enabled. If you select a storage system where "Compression Acceleration" is unavailable, then Compression Acceleration is disabled.
	Select Capacity Saving Function	Specify the Capacity Saving Function for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Select Capacity Saving Mode	Specify the Capacity Saving Mode for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Set Capacity Saving	Specify when to apply Capacity Saving settings to the target volumes. If "Before migration" is specified, the settings are applied before copying from the source volumes to the target volumes. In this case, Capacity Saving is in effect from the start of migration, but the time required for migration increases. If "After migration" is specified, the settings are applied after copying from the source volumes to the target volumes is complete. In this case, the migration time will not increase, and Capacity Saving will begin after the migration is complete.
Replication Settings	Copy Pace	Specify the copy speed. Increasing the value increases the copy speed.
	Path Group ID Selection	Specify whether to manually select the path group ID.
	Path Group ID	Specify the path group ID.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Use Diskless Quorum	Specify whether to use automatic diskless quorum creation. If selected, a common diskless quorum is created for each generated task of the Create Online Migration Pair service.
	Quorum Disk	Specify the quorum disk.
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specify whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.
	Subject:	Specify the email subject.
	Notification mail body	Specify the text of the email body.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Add Migration Progress to Notes	Specify whether to automatically add the migration progress to Notes of the Create Online Migration Pair task. If you enable this feature, create the Migrate Data for Online Migration Pair and Clean up Online Migration Pair services in the same service group as the Create Online Migration Pairs for Multiple Hosts service.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the zone information.
Auto-registration Task Settings	Automatically Set the Task Name	Select to set the task name automatically for auto-registered tasks.
	Task Name	Specify the task name for auto-registered tasks.
	Mark the Tasks as "To Do"	Select to mark the auto-registered tasks as To Do.

Submit service settings

The following table lists the Submit service settings for the Create Online Migration Pair for Multiple Host service template.

Navigation pane	Settings pane	Description
Source Settings	Source Selection	Specify the source resource as hosts.
	Source Storage Management	Specify the source storage management connection for selecting migration source hosts.
	Source Hosts Filter	Use the filters to display only the source hosts that match the specified criteria.
	Join Host Filters By	Use the "and" and the "or" operators to join multiple filters.
	Source Host Filter (Rows/Page)	Use the filter to display only the specified number of source hosts.
	Source Host Filter (Current Page)	Use the filter to display only the specified page number of the rows per page number of source hosts.
	Source Hosts	Specify the source hosts. If you select a host to which the clone copy pair volume is attached, confirm that the volume is not the secondary volume of the clone copy pair.
	Source Configuration Manager Connection	Specify the source Configuration Manager connection for migration.
	Source Volume Filter (Resource Group)	Use the filters to display only the source volumes that belong to the resource group.
	Resource Group Name	Select the resource group to filter.
Target Settings	Target Configuration Manager Connection	Specify the target Configuration Manager connection for migration.
	Target Storage System	Specify the target storage system for migration.

Navigation pane	Settings pane	Description
		In the "Compression Acceleration" column, "unavailable" is displayed in the following cases: ▪ The migration target storage system does not have the required settings to enable Compression Acceleration. ▪ The migration target storage system is a storage model that does not support enabling Compression Acceleration. If "available" is displayed, Compression Acceleration will be automatically enabled when the capacity saving function is enabled. If "unavailable" is displayed, Compression Acceleration will be automatically disabled when the capacity saving function is enabled.
	Target Resource Group	Specify the target resource group.
	Target Pool	Specify the target pool.
	Storage Port Mappings	Specify mappings for the source and target storage ports. Based on the mappings, the system configures the I/O path between the host and the target storage ports.
	Source Storage Port	Select a source storage port from the list of registered ports.
	Target Storage Ports	Select one or more target storage ports from the list of registered ports.
	Capacity Saving Settings for Target Volumes	Specify how to apply Capacity Saving settings to target volumes. If "Same as source volumes" is specified, the settings will be applied in the same way as the Capacity Saving settings for source volumes. If "Specify Capacity Saving settings" is specified, the settings selected in the following properties will be applied.

Navigation pane	Settings pane	Description
		If you select the storage system with "Compression Acceleration" available in the "Target Storage System", then Compression Acceleration is enabled when the capacity saving function is enabled. If you select a storage system where "Compression Acceleration" is unavailable, then Compression Acceleration is disabled.
	Select Capacity Saving Function	Specify the Capacity Saving Function for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Select Capacity Saving Mode	Specify the Capacity Saving Mode for the target volumes. Refer to your storage system product documentation for the optimal setting.
	Set Capacity Saving	Specify when to apply Capacity Saving settings to the target volumes. If "Before migration" is specified, the settings are applied before copying from the source volumes to the target volumes. In this case, Capacity Saving is in effect from the start of migration, but the time required for migration increases. If "After migration" is specified, the settings are applied after copying from the source volumes to the target volumes is complete. In this case, the migration time will not increase, and Capacity Saving will begin after the migration is complete.
Replication Settings	Copy Pace	Specify the copy speed. Increasing the value increases the copy speed.
	Path Group ID Selection	Specify whether to manually select the path group ID.
	Path Group ID	Specify the path group ID.

Navigation pane	Settings pane	Description
	Use Diskless Quorum	Specify whether to use automatic diskless quorum creation. If selected, a common diskless quorum is created for each generated task of the Create Online Migration Pair service.
	Quorum Disk	Specify the quorum disk.
	Run Zero Page Reclaim	Specify whether to run zero page reclaim when the online migration is completed.
Email Settings	Send email notification when the migration target volume path allocation is complete.	Specify whether to send an email notification when the migration target volume path allocation is complete. This enables you to confirm the path allocation listed in the email, then bring it online.
	To:	Specify the primary (To) email notification addresses.
	Cc:	Specify additional Cc email notification addresses.
	Bcc:	Specify additional Bcc email notification addresses.
	Subject:	Specify the email subject.
	Notification mail body	Specify the text of the email body.
Migration Settings	Delete the Host Group	Select the check box to delete the host group.
	Delete the Volume	Select the check box to delete the volume.
	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Add Migration Progress to Notes	Specify whether to automatically add the migration progress to Notes of the Create Online Migration Pair task. If you enable this feature, create the Migrate Data for Online Migration Pair and Clean up Online Migration Pair services in the same service group as the Create Online Migration Pairs for Multiple Hosts service.
Fabric Settings	Use Fabric Settings	Specify True to enable fabric information collection.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If omitted, all fabrics defined as FOS_PrimarySwitch or DCNM in Connections will be used.
	Fabric Connection Type	Specify the fabric type, either FOS_PrimarySwitch or DCNM to filter the Category in Connections.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing active Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Zone Settings	Update Zone Configurations	Specify True to enable the modify zone settings functionality.
	Use Existing Zone Aliases	Specify True to use predefined zone aliases regardless of the naming conventions the user specifies. If you specify False, the system selects zone aliases that follow the naming conventions. In either case, if there are no existing zone aliases, the system creates new zone aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Specify True to add a zone to the active zone configuration.
	Zone Configurations to Update	To add a zone to a zone configuration other than the active configuration, specify the name of the zone configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the zone alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the zone information.
Auto-registration Task Settings	Automatically Set the Task Name	Select to set the task name automatically for auto-registered tasks.
	Task Name	Specify the task name for auto-registered tasks.
	Mark the Tasks as "To Do"	Select to mark the auto-registered tasks as To Do.

Migrate Data for Online Migration Pair: Service details

The Migrate Data for Online Migration Pair service template runs from the swap of copy pairs to the deletion of source volumes for online host migration through Configuration Manager. Before submitting this service, the Create Online Migration Pair service must be completed.

📄 **Note:**

▪ The Online Migration with Configuration Manager service template that existed in v10.5.1 or earlier has been split into two service templates: Create Online Migration Pair and Migrate Data for Online Migration Pair. We recommend that you use the new service templates.

▪ Tasks that do not meet the following conditions cannot be migrated:

• Template key name: Copy_NDM_CM

• Template vendor ID: com.hitachi.software.dna.cts

• Template version: The service template version (VV.RR in VV.RR.SS) of the Create Online Migration Pair task must be the same as the Migrate Data for Online Migration Pair service template.

• Status: Completed or Failed

• Task status: The following conditions must be met:

--The Create Online Migration Pair task has reached the "Wait for Copy Completion" step placed under the "Create Online Migration Pair" step.

--Other Migrate Data for Online Migration Pair tasks or Clean up Online Migration Pair tasks that target the same Create Online Migration Pair task have not been started.

▪ Only non-archived Create Online Migration Pair tasks can be migrated. With the default settings, the Create Online Migration Pair task is archived 7 days after the task ends. Change this setting if you need to migrate after 7 days.

▪ You must run the Migrate Data for Online Migration Pair task with the same permissions as the user who ran the Create Online Migration Pair task.

▪ The target storage systems must be registered in the same API Configuration Manager that was used when running the Create Online Migration Pair task and the API Configuration Manager must be registered in Web Service Connections.

▪ If the Use Diskless Quorum option is enabled and the task fails and the following condition is met, the automatically created Diskless Quorum might remain. In this case, check the Quorum ID shown in the Results tab and manually delete the Diskless Quorum:

• KNAE07604-I is not output to the task log. This message is output for the source and target storage systems respectively.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit service settings

The following table lists the Edit service settings for the Migrate Data for Online Migration Pair service template.

Navigation pane	Settings pane	Description
Target Selection	Target Task Filter (Rows/Page)	Specify the number of tasks to display on the window. The default is 1000.
	Target Task Filter (Current Page)	Specify the number of pages of tasks to display. The default is 1.
	Target Task	Select the target task.
Migration Settings	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.The default is 604800.
	Response Timeout (minutes)	Specify the maximum wait time for the response in minutes. The default is 20160.

Submit service settings

The following table lists the Submit service settings for the Migrate Data for Online Migration Pair service template.

Navigation pane	Settings pane	Description
Target Selection	Target Task Filter (Rows/Page)	Specify the number of tasks to display on the window. The default is 1000.
	Target Task Filter (Current Page)	Specify the number of pages of tasks to display. The default is 1.
	Target Task	Select the target task.

Clean up Online Migration Pair: Service details

The Clean up Online Migration Pair service template enables you to clean up the resources created by the Create Online Migration Pair task.

> **Note:**
>
> - Tasks that do not meet the following conditions cannot be cleaned up
>
>   - Template key name: Copy_NDM_CM
>
>   - Template vendor ID: com.hitachi.software.dna.cts
>
>   - Template version: The service template version (*VV.RR* in *VV.RR.SS*) of the Create Online Migration Pair task must be the same as the Clean up Online Migration Pair service template.
>
>   - Status: Completed or Failed
>
>   - Task status: The Migrate Data for Online Migration Pair task that targets the Create Online Migration Pair task has not been started.
>
> - Only non-archived Create Online Migration Pair tasks can be cleaned up. With the default settings, the Create Online Migration Pair task is archived 7 days after the task ends. Change this setting if you need to clean up after 7 days.
>
> - You must run the Clean up Online Migration Pair task with the same permissions as the user who ran the Create Online Migration Pair task.
>
> - The target storage systems must be registered in the same API Configuration Manager that was used when running the Create Online Migration Pair task and the API Configuration Manager must be registered in Web Service Connections.
>
> - To clean up a Create Online Migration Pair task with errors, you need to remove the cause of the error before running the Clean up Online Migration Pair task.
>
> - If the target resources configuration changes before the Clean up Online Migration Pair task is run, it might not be able to delete them. If there are resources that could not be deleted, a warning message is displayed. Confirm the message and then delete the target resources manually.
>
> - If the Clean up Online Migration Pair task ends in an error, you must remove the cause of the error, and then resubmit the task.
>
> - The task will fail with a KNAE07538-E message if the pair status becomes abnormal due to a storage system failure after the Create Online Migration Pair task has successfully completed. In this case, perform recovery according to the following procedure.
>
>   1. Recover from the failure by referring to "Disaster recovery of global-active device" in the Global-Active Device User Guide for each storage system.
>   2. After recovering according to the Global-Active Device User Guide, refresh the storage system information in Ops Center API Configuration Manager from the Ops Center Automator server.
>   3. Submit the Clean up Online Migration Pair service again.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Clean up Online Migration Pair service template.

Navigation pane	Settings pane	Description
Target Selection	Target Task Filter (Rows/ Page)	Specify the number of tasks displayed on the window at one time.
	Target Task Filter (Current Page)	Specify the page number of tasks displayed in the window.
	Target Task	Select the clean up target task.
Cleanup Settings	Storage System Lock Wait Time (seconds)	Specify the lock waiting time upper limit when acquiring the storage lock while changing the configuration.
	Response Timeout (minutes)	Specify the maximum wait time for the response in minutes.

Submit Service settings

The following table lists the Submit Service settings for the Clean up Online Migration Pair service template.

Navigation pane	Settings pane	Description
Target Selection	Target Task Filter (Rows/ Page)	Specify the number of tasks displayed on the window at one time.
	Target Task Filter (Current Page)	Specify the page number of tasks displayed in the window.
	Target Task	Select the clean up target task.

ServiceNow ticketing service templates

You can combine the Ops Center Automator ServiceNow ticketing templates to create different types of services for processing ServiceNow workflows that include running an Ops Center Automator automation service.

> 📄 **Note:** For information about the ServiceNow Workflow Integration package that has an XML file containing the update set required to integrate an Ops Center Automator service into a ServiceNow workflow, see <u>ServiceNow workflow integration (on page 123)</u>.

The following Ops Center Automator ServiceNow ticketing service templates are provided with the software and are preconfigured:

Call ServiceNow Table API
Makes a call to the ServiceNow Table API.

Create ServiceNow Incident Ticket
Creates a new ServiceNow incident ticket.

Update ServiceNow Incident Ticket
Updates a ServiceNow incident ticket.

Retrieve ServiceNow Incident Tickets
Retrieves a single ServiceNow incident ticket or a group of incident tickets.

Default ports

Port number	Use
443	Secure communication from Ops Center Automator to ServiceNow.

Call ServiceNow Table API: Service details

This service enables calls to the ServiceNow Table API.

The following service template details apply to the Call ServiceNow Table API service template.

This service template does not have an associated service.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Call ServiceNow Table API service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.

Navigation pane	Settings pane	Description
	Table Name	Specify the table name to execute the API. This setting is required.
	HTTP Method	Specify the method, which is POST, PUT, or GET. This setting is required.
	sys_id	Specify the system ID (sys_id).
	Query Parameters	Specify the query parameter in a form concatenated with an encoded character string.
	Request Body	Specify the request body in JSON format.

Submit Service settings

The following table lists the submit Service settings for the Call ServiceNow Table API service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
	Table Name	Specify the table name to execute the API. This setting is required.
	HTTP Method	Specify the method, which is POST, PUT, or GET. This setting is required.
	sys_id	Specify the system ID (sys_id).
	Query Parameters	Specify the query parameter in a form concatenated with an encoded character string.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Request Body	Specify the request body in JSON format.

Create ServiceNow Incident Ticket: Service details

This service enables you to create an incident ticket.

The following service template details apply to the Create ServiceNow Incident Ticket service template.

This service template does not have an associated service.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Create ServiceNow Incident Ticket service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
Request Section	active	Active
	activity_due	Activity due
	additional_assignee_list	Additional assignee list
	approval	Approval
	approval_history	Approval history
	approval_set	Approval set
	assigned_to	Assigned to
	assignment_group	Assignment group
	business_duration	Business duration
	business_service	Business service
	business_stc	Business resolve time

Navigation pane	Settings pane	Description
	calendar_duration	Duration
	calendar_stc	Resolve time
	caller_id	Caller
	category	Category
	child_incidents	Child incidents
	closed_at	Closed
	closed_by	Closed by
	cmdb_ci	Configuration item
	company	Company
	contact_type	Contact type
	correlation_display	Correlation display
	correlation_id	Correlation ID
	delivery_plan	Delivery plan
	delivery_task	Delivery task
	description	Description
	due_date	Due date
	escalation	Escalation
	expected_start	Expected start
	follow_up	Follow up
	group_list	Group list
	hold_reason	On hold reason
	impact	Impact
	incident_state	Incident state
	location	Location
	made_sla	Made SLA
	notify	Notify
	number	Number
	opened_at	Opened

Navigation pane	Settings pane	Description
	opened_by	Opened by
	order	Order
	parent	Parent
	parent_incident	Parent incident
	priority	Priority
	reassignment_count	Reassignment count
	reopen_count	Reopen count
	reopened_by	Last reopened by
	reopened_time	Reopened time
	route_reason	Route reason
	service_offering	Service offering
	severity	Severity
	short_description	Short description
	sla_due	SLA due
	state	State
	subcategory	Subcategory
	sys_class_name	Task type
	sys_created_by	Created by
	sys_created_on	Created
	sys_domain	Domain
	sys_domain_path	Domain path
	sys_mod_count	Updates
	sys_updated_by	Updated by
	sys_updated_on	Updated
	task_effective_number	Effective number
	time_worked	Time worked
	universal_request	Universal request
	upon_approval	Upon approval

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	upon_reject	Upon reject
	urgency	Urgency
	user_input	User input
	work_end	Work end
	work_start	Work start
Note Section	comments	Additional comments
	comments_and_work_notes	Comments and work notes
	watch_list	Watch list
	work_notes	Work notes
	work_notes_list	Work notes list
Related Record Section	caused_by	Caused by Change
	problem_id	Problem
	rfc	Change Request
Resolution Information Section	close_code	Resolution code
	close_notes	Resolution notes
	knowledge	Knowledge
	resolved_at	Resolved
	resolved_by	Resolved by
Query Parameters	sysparm_display_value	Whether to return the actual values of field or return the display values. ▪ false: Return only the actual values. ▪ true: Return only the display values. ▪ all: Return both.
	sysparm_exclude_reference_link	Whether to add detailed information of the reference field. ▪ false: Do not add ▪ true: Add

Navigation pane	Settings pane	Description
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_input_display_value	Whether to set the input values as the display value or as the actual value. ▪ false: Actual value ▪ true: Display value
	sysparm_suppress_auto_sys_field	Whether to suppress auto generation of System field. ▪ false: Do not suppress ▪ true: Suppress
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.

Submit Service settings

The following table lists the submit Service settings for the Create ServiceNow Incident Ticket service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
Request Section	active	Active

Navigation pane	Settings pane	Description
	activity_due	Activity due
	additional_assignee_list	Additional assignee list
	approval	Approval
	approval_history	Approval history
	approval_set	Approval set
	assigned_to	Assigned to
	assignment_group	Assignment group
	business_duration	Business duration
	business_service	Business service
	business_stc	Business resolve time
	calendar_duration	Duration
	calendar_stc	Resolve time
	caller_id	Caller
	category	Category
	child_incidents	Child incidents
	closed_at	Closed
	closed_by	Closed by
	cmdb_ci	Configuration item
	company	Company
	contact_type	Contact type
	correlation_display	Correlation display
	correlation_id	Correlation ID
	delivery_plan	Delivery plan
	delivery_task	Delivery task
	description	Description
	due_date	Due date
	escalation	Escalation
	expected_start	Expected start

Navigation pane	Settings pane	Description
	follow_up	Follow up
	group_list	Group list
	hold_reason	On hold reason
	impact	Impact
	incident_state	Incident state
	location	Location
	made_sla	Made SLA
	notify	Notify
	number	Number
	opened_at	Opened
	opened_by	Opened by
	order	Order
	parent	Parent
	parent_incident	Parent incident
	priority	Priority
	reassignment_count	Reassignment count
	reopen_count	Reopen count
	reopened_by	Last reopened by
	reopened_time	Reopened time
	route_reason	Route reason
	service_offering	Service offering
	severity	Severity
	short_description	Short description
	sla_due	SLA due
	state	State
	subcategory	Subcategory
	sys_class_name	Task type
	sys_created_by	Created by

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	sys_created_on	Created
	sys_domain	Domain
	sys_domain_path	Domain path
	sys_mod_count	Updates
	sys_updated_by	Updated by
	sys_updated_on	Updated
	task_effective_number	Effective number
	time_worked	Time worked
	universal_request	Universal request
	upon_approval	Upon approval
	upon_reject	Upon reject
	urgency	Urgency
	user_input	User input
	work_end	Work end
	work_start	Work start
Note Section	comments	Additional comments
	comments_and_work_notes	Comments and work notes
	watch_list	Watch list
	work_notes	Work notes
	work_notes_list	Work notes list
Related Record Section	caused_by	Caused by Change
	problem_id	Problem
	rfc	Change Request
Resolution Information Section	close_code	Resolution code
	close_notes	Resolution notes
	knowledge	Knowledge
	resolved_at	Resolved
	resolved_by	Resolved by

Appendix C: Services catalog

Navigation pane	Settings pane	Description
Query Parameters	sysparm_display_value	Whether to return the actual values of field or return the display values. ▪ false: Return only the actual values. ▪ true: Return only the display values. ▪ all: Return both.
	sysparm_exclude_reference _link	Whether to add detailed information of the reference field. ▪ false: Do not add ▪ true: Add
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_input_display_valu e	Whether to set the input values as the display value or as the actual value. ▪ false: Actual value ▪ true: Display value
	sysparm_suppress_auto_sy s_field	Whether to suppress auto generation of System field. ▪ false: Do not suppress ▪ true: Suppress
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.

Update ServiceNow Incident Ticket: Service details

This service enables you to update an incident ticket.

The following service template details apply to the Update ServiceNow Incident Ticket service template.

This service template does not have an associated service.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Update ServiceNow Incident Ticket service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
	sys_id	Specify the system ID (sys_id) of the ticket. This setting is required.
Request Section	active	Active
	activity_due	Activity due
	additional_assignee_list	Additional assignee list
	approval	Approval
	approval_history	Approval history
	approval_set	Approval set
	assigned_to	Assigned to
	assignment_group	Assignment group
	business_duration	Business duration
	business_service	Business service
	business_stc	Business resolve time
	calendar_duration	Duration

Navigation pane	Settings pane	Description
	calendar_stc	Resolve time
	caller_id	Caller
	category	Category
	child_incidents	Child incidents
	closed_at	Closed
	closed_by	Closed by
	cmdb_ci	Configuration item
	company	Company
	contact_type	Contact type
	correlation_display	Correlation display
	correlation_id	Correlation ID
	delivery_plan	Delivery plan
	delivery_task	Delivery task
	description	Description
	due_date	Due date
	escalation	Escalation
	expected_start	Expected start
	follow_up	Follow up
	group_list	Group list
	hold_reason	On hold reason
	impact	Impact
	incident_state	Incident state
	location	Location
	made_sla	Made SLA
	notify	Notify
	number	Number
	opened_at	Opened
	opened_by	Opened by

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	order	Order
	parent	Parent
	parent_incident	Parent incident
	priority	Priority
	reassignment_count	Reassignment count
	reopen_count	Reopen count
	reopened_by	Last reopened by
	reopened_time	Reopened time
	route_reason	Route reason
	service_offering	Service offering
	severity	Severity
	short_description	Short description
	sla_due	SLA due
	state	State
	subcategory	Subcategory
	sys_class_name	Task type
	sys_created_by	Created by
	sys_created_on	Created
	sys_domain	Domain
	sys_domain_path	Domain path
	sys_mod_count	Updates
	sys_updated_by	Updated by
	sys_updated_on	Updated
	task_effective_number	Effective number
	time_worked	Time worked
	universal_request	Universal request
	upon_approval	Upon approval
	upon_reject	Upon reject

Navigation pane	Settings pane	Description
	urgency	Urgency
	user_input	User input
	work_end	Work end
	work_start	Work start
Note Section	comments	Additional comments
	comments_and_work_notes	Comments and work notes
	watch_list	Watch list
	work_notes	Work notes
	work_notes_list	Work notes list
Related Record Section	caused_by	Caused by Change
	problem_id	Problem
	rfc	Change Request
Resolution Information Section	close_code	Resolution code
	close_notes	Resolution notes
	knowledge	Knowledge
	resolved_at	Resolved
	resolved_by	Resolved by
Query Parameters	sysparm_display_value	Whether to return the actual values of the field or return the display values. ▪ false: Return only the actual values. ▪ true: Return only the display values. ▪ all: Return both.
	sysparm_exclude_reference_link	Whether to add detailed information for the reference field. ▪ false: Do not add ▪ true: Add

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_input_display_value	Whether to set the input values as the display value or as the actual value. ▪ false: Actual value ▪ true: Display value
	sysparm_suppress_auto_sys_field	Whether to suppress auto-generation of the System field. ▪ false: Do not suppress ▪ true: Suppress
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.

Submit Service settings

The following table lists the submit Service settings for the Update ServiceNow Incident Ticket service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.

Navigation pane	Settings pane	Description
	sys_id	Specify the system ID (sys_id) of the ticket. This setting is required.
Request Section	active	Active
	activity_due	Activity due
	additional_assignee_list	Additional assignee list
	approval	Approval
	approval_history	Approval history
	approval_set	Approval set
	assigned_to	Assigned to
	assignment_group	Assignment group
	business_duration	Business duration
	business_service	Business service
	business_stc	Business resolve time
	calendar_duration	Duration
	calendar_stc	Resolve time
	caller_id	Caller
	category	Category
	child_incidents	Child incidents
	closed_at	Closed
	closed_by	Closed by
	cmdb_ci	Configuration item
	company	Company
	contact_type	Contact type
	correlation_display	Correlation display
	correlation_id	Correlation ID
	delivery_plan	Delivery plan
	delivery_task	Delivery task

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	description	Description
	due_date	Due date
	escalation	Escalation
	expected_start	Expected start
	follow_up	Follow up
	group_list	Group list
	hold_reason	On hold reason
	impact	Impact
	incident_state	Incident state
	location	Location
	made_sla	Made SLA
	notify	Notify
	number	Number
	opened_at	Opened
	opened_by	Opened by
	order	Order
	parent	Parent
	parent_incident	Parent incident
	priority	Priority
	reassignment_count	Reassignment count
	reopen_count	Reopen count
	reopened_by	Last reopened by
	reopened_time	Reopened time
	route_reason	Route reason
	service_offering	Service offering
	severity	Severity
	short_description	Short description
	sla_due	SLA due

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	state	State
	subcategory	Subcategory
	sys_class_name	Task type
	sys_created_by	Created by
	sys_created_on	Created
	sys_domain	Domain
	sys_domain_path	Domain path
	sys_mod_count	Updates
	sys_updated_by	Updated by
	sys_updated_on	Updated
	task_effective_number	Effective number
	time_worked	Time worked
	universal_request	Universal request
	upon_approval	Upon approval
	upon_reject	Upon reject
	urgency	Urgency
	user_input	User input
	work_end	Work end
	work_start	Work start
Note Section	comments	Additional comments
	comments_and_work_notes	Comments and work notes
	watch_list	Watch list
	work_notes	Work notes
	work_notes_list	Work notes list
Related Record Section	caused_by	Caused by Change
	problem_id	Problem
	rfc	Change Request

Navigation pane	Settings pane	Description
Resolution Information Section	close_code	Resolution code
	close_notes	Resolution notes
	knowledge	Knowledge
	resolved_at	Resolved
	resolved_by	Resolved by
Query Parameters	sysparm_display_value	Whether to return the actual values of the field or return the display values. ▪ false: Return only the actual values. ▪ true: Return only the display values. ▪ all: Return both.
	sysparm_exclude_reference_link	Whether to add detailed information for the reference field. ▪ false: Do not add ▪ true: Add
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_input_display_value	Whether to set the input values as the display value or as the actual value. ▪ false: Actual value ▪ true: Display value
	sysparm_suppress_auto_sys_field	Whether to suppress auto-generation of the System field. ▪ false: Do not suppress ▪ true: Suppress

Navigation pane	Settings pane	Description
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.

Retrieve ServiceNow Incident Tickets: Service details

This service enables you to retrieve an incident ticket or a group of incident tickets.

The following service template details apply to the Retrieve ServiceNow Incident Tickets service template.

This service template does not have an associated service.

Software and setup prerequisites

For software and setup prerequisites, see Service template prerequisites (on page 189).

Edit Service settings

The following table lists the Edit Service settings for the Retrieve ServiceNow Incident Tickets service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
	sys_id	Specify the system ID (sys_id) of the ticket to retrieve information for a single ticket.

Navigation pane	Settings pane	Description
Query Parameters	sysparm_display_value	Whether to return the actual values of the field or return the display values. - false: Return only the actual values. - true: Return only the display values. - all: Return both.
	sysparm_exclude_reference _link	Whether to add detailed information for the reference field. - false: Do not add - true: Add
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.
	sysparm_query	Specify the query string that filters the response data. The specified value will be encoded before sending a Table API request. (Only for multiple information acquisition)
	sysparm_suppress_paginati on_header	Whether to suppress the pagination header.

Navigation pane	Settings pane	Description
		(Only when acquiring multiple pieces of information.) ▪ false: Do not suppress ▪ true: Suppress
	sysparm_limit	Specify the maximum number of results returned per page. (default: 10,000) (Only when acquiring multiple pieces of information.)
	sysparm_query_category	Specify the name of the query category (read replica category) to use for queries. The specified value will be encoded before sending a Table API request. (Only when acquiring multiple pieces of information.)
	sysparm_query_no_domain	Whether to restrict the record search to only the domains for which the logged in user is configured. ▪ false: Restrict ▪ true: Do not restrict If this setting is omitted, the default is false.
	sysparm_no_count	Whether to include the number of search results in the results. ▪ false: Do not include ▪ true: Include

Submit Service settings

The following table lists the submit Service settings for the Retrieve ServiceNow Incident Tickets service template.

Navigation pane	Settings pane	Description
ServiceNow	ServiceNow Connection Name	Specify the ServiceNow connection name registered in the Web Service Connection. This setting is required.
	sys_id	Specify the system ID (sys_id) of the ticket to retrieve information for a single ticket.
Query Parameters	sysparm_display_value	Whether to return the actual values of the field or return the display values. ▪ false: Return only the actual values. ▪ true: Return only the display values. ▪ all: Return both.
	sysparm_exclude_reference_link	Whether to add detailed information for the reference field. ▪ false: Do not add ▪ true: Add
	sysparm_fields	Specify the field names you want to return in the response in comma-separated values. The specified value will be encoded before sending a Table API request.
	sysparm_view	A parameter that renders the response according to the specified UI view. The specified value will be encoded before sending a Table API request. This is overridden by sysparm_fields.
	sysparm_query	Specify the query string that filters the response data.

Navigation pane	Settings pane	Description
		The specified value will be encoded before sending a Table API request. (Only for multiple information acquisition)
	sysparm_suppress_paginati on_header	Whether to suppress the pagination header. (Only when acquiring multiple pieces of information.) ▪ false: Do not suppress ▪ true: Suppress
	sysparm_limit	Specify the maximum number of results returned per page. (default: 10,000) (Only when acquiring multiple pieces of information.)
	sysparm_query_category	Specify the name of the query category (read replica category) to use for queries. The specified value will be encoded before sending a Table API request. (Only when acquiring multiple pieces of information.)
	sysparm_query_no_domain	Whether to restrict the record search to only the domains for which the logged in user is configured. ▪ false: Restrict ▪ true: Do not restrict If this setting is omitted, the default is false.

Navigation pane	Settings pane	Description
	sysparm_no_count	Whether to include the number of search results in the results. ▪ false: Do not include ▪ true: Include

Smart Allocation for Oracle Databases template

Allocates set of volume on a storage system, and adds the volume to the disk group for Oracle ASM for Linux.

The Smart Allocation for Oracle Databases service template is provided with the software and is preconfigured.

Supported platforms

For information on supported platforms, see .

Default ports

The port numbers and their uses are as follows:

Port number	Use
22	Secure communication from Ops Center Automator to Oracle server.
22015	Communication from Ops Center Automator client to Ops Center Automator server.
22016	Secure communication from Ops Center Automator client to Ops Center Automator server.
23450	Communication from Ops Center Automator to Ops Center API Configuration Manager.
23451	Secure communication from Ops Center Automator to Ops Center API Configuration Manager.

Smart Allocation for Oracle Databases: Service details

Allocates set of volume on a storage system, and adds the volume to the disk group for Oracle ASM for Linux.

The following service template details apply to the Smart Allocation for Oracle Databases service template.

Software and setup prerequisites

For software and setup prerequisites, see .

Edit Service settings

The following table lists the Edit Service settings for the Smart Allocation for Oracle Databases service template.

Navigation pane	Settings pane	Description
Oracle Server Settings	Oracle Type	Specifies whether the target Oracle environment is a Single Instance environment or an Oracle RAC environment. Select Single Instance or Oracle RAC.
	Oracle primary server name	Specify the host name of the Oracle database primary server.
	Oracle member server name	Specify the host name of an Oracle database member server.
	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
	Oracle grid home directory path	Specify the home folder path of the Oracle grid infrastructure.
	Oracle grid user ID	Specify an Oracle grid infrastructure user ID.
	Disk group name	Specify an Oracle ASM disk group name.
	Oracle Grid User Password	Specify the password for the Oracle grid infrastructure.
Host Settings	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Number of Hosts	Select the number of hosts to allocate volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	Host Settings	Specify information about the hosts where the volumes will be allocated.
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.
	Storage System	Specify the storage system.
	Resource Group Selection	Specify whether to select resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the resource group.
	Pool Selection[*]	Specify whether to select pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Settings	
	Volume Usage	Specify the volume usage to be assigned.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	When Byte is selected for Capacity Format, specify the volume capacity format in bytes. When Block is selected for Capacity Format, the volume capacity format is specified by the number of blocks.

Navigation pane	Settings pane	Description
	Volume Label	Specify the volume label.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Device File Permission Settings	Owner name for permissions	Specify the owner name.
	Group name for permissions	Specify the group name.
	Owner Permission	Set the Owner permissions.
	Group Permission	Set the Group permissions.
	Other permission	Set the Other permissions.
Linux Conf File Directory Settings	multipath.conf.path	Specify the location of the `multipath.conf.path` file.
Operation Log Settings	Directory path for work	Specify the directory for work on the database server.
	Directory path for log files on Ops Center Automator	Specify the directory path used for temporary Ops Center Automator server log files.

Navigation pane	Settings pane	Description
User-Response Wait Settings	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB
	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB
	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB
	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are: ▪ us-ascii ▪ iso-2022-jp ▪ shift_jis ▪ euc-jp ▪ utf-8 If you omit this property, utf-8 is set.
	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.
	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.

Navigation pane	Settings pane	Description
	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.
	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service ends abnormally. The range is between 1 and 20,160 minutes.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.

Navigation pane	Settings pane	Description
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.
Notes:		

Navigation pane	Settings pane	Description
* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria: 1. Select the pool with the largest free pool capacity after volume allocation. 2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table. 3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.		

Priority	Storage model
1	VSP 5200, 5600, 5200H, 5600H
2	VSP 5100, 5500, 5100H, 5500H
3	VSP F1500, VSP G1500, VSP G1000
4	VSP E1090, VSP E1090H
5	VSP E990
6	VSP E790, VSP E790H
7	VSP E590, VSP E590H
8	VSP F900, VSP G900
9	VSP F700, VSP G700
10	VSP F370, VSP G370
11	VSP F350, VSP G350
12	VSP F800, VSP G800, VSP N800
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600
14	VSP G200

Submit Service settings

The following table lists the Submit Service settings for the Smart Allocation for Oracle Databases service template.

Navigation pane	Settings pane	Description
Oracle Server Settings	Oracle Type	Specifies whether the target Oracle environment is a Single Instance environment or an Oracle RAC environment. Select Single Instance or Oracle RAC.
	Oracle primary server name	Specify the host name of the Oracle database primary server.
	Oracle member server name	Specify the host name of an Oracle database member server.
	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
	Oracle grid home folder path	Specify the home folder path of the Oracle grid infrastructure.
	Oracle grid user ID	Specify an Oracle grid infrastructure user ID.
	Disk group name	Specify an Oracle ASM disk group name.
Host Settings	Host Mode/Host Mode Options	Specify the parameters for creating a new host group.
	Number of Hosts	Select the number of hosts to allocate volume.
	Multiple Hosts Per Storage Port	Select to share storage ports with multiple hosts.
	Multiple Hosts Per Host Group	Select to share host groups with multiple hosts.
	Host Settings	Specify information about the hosts where the volumes will be allocated.
Volume Settings	Configuration Manager Connection	Shows a table from which you can choose the Configuration Manager connection.
	Storage System Selection	Specify whether to select storage system at volume allocation. If you select Automatic, then a storage system will be selected automatically.
	Storage System	Specify the storage system.

Navigation pane	Settings pane	Description
	Resource Group Selection	Specify whether to select resource group at volume allocation. If you select Meta resource, then the meta resource group will be selected.
	Resource Group	Specify the resource group.
	Pool Selection*	Specify whether to select pool at volume allocation. If you select Automatic, then a pool will be selected automatically.
	Pool	Specify the pool.
	Capacity Format	Specify the volume capacity format as Block or Byte.
	Volume Settings	Specify the parameters for creating new volumes.
	Volume Settings	
	Volume Usage	Specify the volume usage to be assigned.
	Number of Volumes	Specify the number of volumes.
	Volume Capacity	When Byte is selected for Capacity Format, specify the volume capacity format in bytes. When Block is selected for Capacity Format, the volume capacity format is specified by the number of blocks.
	Volume Label	Specify the volume label.
	LDEV Setting	
	LDEV ID Starts From	Specify the startup LDEV ID as a hexadecimal number for the volume to allocate.
	Virtual LDEV ID Starts From	Specify the startup Virtual LDEV ID for the volume to allocate.
	LUN Setting	

Navigation pane	Settings pane	Description
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Resource Criteria	Resource Criteria	Specify the Storage Port Configuration Expressions (Name and Value) that meets the specified criteria (Equals, Not Equals, Starts with, and Ends with) based on the selected condition (All or Any).
Device File Permission Settings	Owner name for permissions	Specify the owner name.
	Group name for permissions	Specify the group name.
	Owner Permission	Set the Owner permissions.
	Group Permission	Set the Group permissions.
	Other permission	Set the Other permissions.
Linux Conf File Directory Settings	multipath.conf.path	Specify the location of the `multipath.conf.path` file.
Operation Log Settings	Directory path for work	Specify the directory for work on the database server.
	Directory path for log files on Ops Center Automator	Specify the directory path used for temporary Ops Center Automator server log files.
User-Response Wait Settings	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB
	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB

Appendix C: Services catalog

Navigation pane	Settings pane	Description
	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas; for example: mailA,mailB
	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are: ▪ us-ascii ▪ iso-2022-jp ▪ shift_jis ▪ euc-jp ▪ utf-8 If you omit this property, utf-8 is set.
	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.
	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.
	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.
	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service ends abnormally. The range is between 1 and 20,160 minutes.
Fabric Settings	Use Fabric Settings	Select this option to enable fabric information collection.

Navigation pane	Settings pane	Description
	Connections	Specify the connection defined in the Web Service Connections on the Administration tab. If this value is omitted, the system uses all connections that are defined for the product name listed in the Web Service Connections.
	Resource Groups	Specify the switch management server resource group. Separate multiple values by commas.
	Target Fabrics	Specify the fabric name. Separate multiple values by commas. If this value is omitted, the system uses all the fabrics that the BNA monitors.
	Use Existing Zone	Specifies whether to select a predefined zone or any connectable path. If you select this option, the system selects paths within the range of the existing Zone setting. If you don not select this option, the system selects connectable paths regardless of the existing Zone setting.
	Number of Hops Restriction	Determines whether restrict path selection to within an assigned number of hops. When this property enabled, the service will fail if there is no path that matched the specified collection range.
	Maximum Number of Hops	When using the Number of Hops Restriction option, specify the collection range by the number of hops.
Zone Settings	Update Zone Configurations	Select this option to enable the modification of zone settings.

Navigation pane	Settings pane	Description
	Use Existing Zone Aliases	Select this option to use predefined Zone Aliases regardless of the naming conventions the user specifies. If you do not select this option, the system selects Zone Aliases that follow the naming conventions. In either case, if there are no existing Zone Aliases, the system creates new Zone Aliases that follow the naming conventions.
	Update Current Active Zone Configuration	Select this option to add a Zone to the active Zone Configuration.
	Zone Configurations to Update	To add a zone to a Zone Configuration other than the active configuration, specify the name of the Zone Configuration in which to add the zone.
	Script for Zone Naming	Specify the naming convention script that determines the Zone name for the path.
	Script for Host Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the host port.
	Script for Storage Zone Alias Naming	Specify the naming convention script that determines the Zone Alias name for the storage port.

Notes:

* If you select Automatic for Pool Selection in the Volume Settings panel of the Edit/Submit Service window, the pool is automatically selected using the following criteria:

1. Select the pool with the largest free pool capacity after volume allocation.
2. If the free pool capacity is the same, select the pool on the storage system with the lower priority in the following table.
3. If no storage port is found where an LU path with the selected storage system and pool combination can be created, go back to 1 and select the next candidate pool.

Navigation pane	Settings pane	Description
Priority	**Storage model**	
1	VSP 5200, 5600, 5200H, 5600H	
2	VSP 5100, 5500, 5100H, 5500H	
3	VSP F1500, VSP G1500, VSP G1000	
4	VSP E1090, VSP E1090H	
5	VSP E990	
6	VSP E790, VSP E790H	
7	VSP E590, VSP E590H	
8	VSP F900, VSP G900	
9	VSP F700, VSP G700	
10	VSP F370, VSP G370	
11	VSP F350, VSP G350	
12	VSP F800, VSP G800, VSP N800	
13	VSP F400, VSP F600, VSP G400, VSP G600, VSP N400, VSP N600	
14	VSP G200	

Task Settings for services

All preconfigured services include the following task settings.

Settings pane		Description
Task Name		Enter a task name (required.)
Description		Enter a description if needed.
Schedule Type Not all options are available for every service.	Immediate	Run the task immediately when it is submitted.
	Scheduled	Run the task on a schedule by selecting the start time.

Appendix C: Services catalog

Appendix D: Additional service templates

Ops Center Automator has the following types of additional templates:

- Service templates that are provided with the product, but are not imported by default and do not have an associated service.

- Service templates that are not provided with the product. You download these templates first, then import them. These templates do not have an associated service.

For the additional service templates which are not imported by default, you can import them by accessing the server through a remote connection and then using the Ops Center Automator UI.

vSphere service templates

The following is a list of the additional Ops Center Automator vSphere templates, which are not imported by default. However, you can import them by accessing the server through a remote connection and then using the Ops Center Automator UI. See Importing service templates (on page 634) for more information.

📄 **Note:** To install PowerCLI, a vSphere templates prerequisite, see the *Release Notes* and *User's Guide* of each version available on the following website:

https://code.vmware.com/web/tool/11.5.0/vmware-powercli

Migrate Virtual Machine
    Migrates multiple virtual servers in a VMware vSphere environment.

Stop Virtual Machine
    Stops multiple virtual servers in a VMware vSphere environment.

Start Virtual Machine
    Starts multiple virtual servers in a VMware vSphere environment.

Restart Virtual Machine
    Restarts multiple virtual servers in a VMware vSphere environment.

Create Snapshot of Virtual Machine
    Creates a snapshot of the virtual machine for updating the status of a virtual server.

Add Virtual Disk to Virtual Machine
    Adds a disk to a virtual server in a VMware vSphere environment.

Remove Virtual Disk from Virtual Machine
    Deletes a virtual disk in a VMware vSphere environment.

Delete Virtual Machine
>   Delete Virtual Machine

Deploy and Setup OS on Virtual Machine
>   Creates a virtual server in a VMware vSphere environment.

Get List of Virtual Machines from VMware vSphere
>   Acquires a list of VMware vSphere virtual servers.

Script execution through the vCenter server
>   In a VMware vSphere environment, transmits the specified non-interactive script file from the target server to the guest OS on the virtual server, and then runs the script file on the guest OS. Scripts can be deleted after execution.

Migrate Virtual Machine: Service details

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Migrate Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Migrate Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.foreachVmName	Virtual server name(s)	Specify the virtual server name or names. Specify server names as they appear in VMware vCenter Server, not by host name. Separate multiple virtual servers with commas. The maximum number of virtual servers you can specify is 99.	R
vmware.destinationName	Virtual server destination	Specify the name of the destination VMware vSphere ESXi (or VMware ESX Server), resource pool, cluster, or folder.	R

Note: Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.
- Each virtual server name is unique among the vCenter servers.
- The firewall of the target virtual server is set to allow responses to ICMP (ECHO).
- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

▪ vCenter server: This is a server on which VMware vCenter Server is installed.

▪ vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

▪ Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

> **Note:** If a target virtual server's power is on, the plug-in performs hot migration (migration with the power on); if the target virtual server's power is off, the plug-in performs cold migration (migration with the power off).

Software requirements

One of the following is required:

▪ VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

▪ VMware PowerCLI 6.5 Release1

▪ VMware PowerCLI 6.5.1, 6.5.4

▪ VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

▪ When you move multiple virtual servers, the target VMware vSphere ESXi (or VMware ESX Server) might experience a high workload.

▪ The same virtualization software product must be used for the source and the target.

▪ The virtualization software that runs the virtual servers must be running.

▪ The virtual server name, cluster name, vApp name, and resource pool name must be unique within the vCenter Server.

> **Note:** The same name cannot be assigned to more than one virtual server, cluster, vApp, and resource pool although their types are different, such as a duplication of a cluster name and a vApp name or a duplication of a cluster name and a resource pool name.

▪ If a cluster is specified as a virtual server's migration target, the virtual server being migrated must exist in the resource pool under the specified target cluster.

▪ If a folder is specified as a virtual server's migration target, there must be at least one virtual server under the specified target folder.

▪ In an environment that uses a VMware vCenter Server version earlier than 4.1 U2, if an inactive virtual machine is migrated to an ESX in a different data center, an error might occur, in which case task execution fails.

Stop Virtual Machine: Service details

This service template turns off the power to multiple virtual servers in a VMware vSphere environment.

The general steps for using this service template to stop a virtual machine are as follows:

1. The power status of each virtual server is obtained.
2. If a virtual server's power status is on, it is turned off.

The specified group of virtual servers are turned off according to the number of seconds specified through the `vmware.checkPowerStateInterval` property and then verified to determine if the power is off, which it does up to the number of times specified through the `vmware.checkPowerStateCount` property. If the default values are not suitable, specify values that suit your environment.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Stop Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
vmware.checkPowerStateCount	Power status check count	Specifies the number of times to verify the power status when confirming that the virtual server is stopped. In combination with the power status verification interval, this determines the maximum wait time.	R
vmware.checkPowerStateInterval	Power status check interval	Specifies the interval in seconds for verifying the power status when confirming that the virtual server is stopped.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Stop Virtual Machine service template.

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
vmware.foreachVmName	Virtual server name(s)	Specify the virtual server name or names. Specify server names as they appear in VMware vCenter Server, not by host name. Separate multiple virtual servers with commas. The maximum number of virtual servers you can specify is 99.	R

> **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.
- Each virtual server name is unique among the vCenter servers.
- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.
- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.
- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1
- VMware PowerCLI 6.5 Release1
- VMware PowerCLI 6.5.1, 6.5.4
- VMware PowerCLI 10.1.0, 10.1.1

Start Virtual Machine: Service details

This service template turns on power to multiple virtual servers in a VMware vSphere environment.

The general steps for using this service template to start a virtual machine are as follows:

1. The power status of each virtual server is obtained.
2. If a virtual server's power status is off, it is turned on.
3. An ICMP echo request is sent to verify that a virtual server is started.

The specified group of virtual servers are turned off according to the number of seconds specified through the `vmware.checkPowerStateInterval` property and then verified to determine if the power is off, which it does up to the number of times specified through the `vmware.checkPowerStateCount` property. If the default values are not suitable, specify values that suit your environment.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Start Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
vmware.checkPowerStateCount	Power status check count	Specify the number of times the service tries to verify the power status to confirm that the virtual server has started. The maximum wait time is determined by this property and the property that defines the power status verification interval.	R
vmware.checkPowerStateInterval	Power status check interval	Specify the interval at which the service tries to acquire the power status to confirm that the virtual server has started.	R

Property Key	Property Name	Description	Required or optional
common.icmpEchoTimeout	Timeout period for ICMP echo requests	Specify in milliseconds how long the service waits for a reply to an ICMP echo request sent to confirm startup of a virtual server.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Start Virtual Machine service template.

Property Key	Property Name	Description	Required
vmware.foreachVmName	Virtual server name(s)	Specify the virtual server name or names. Specify server names as they appear in VMware vCenter Server, not by host name. Separate multiple virtual servers with commas. The maximum number of virtual servers you can specify is 99.	R

> 📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- Each virtual server name is unique among the vCenter servers.

- The firewall of the target virtual server is set to allow responses to ICMP (ECHO).

- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are required:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- The VMware vSphere ESXi (or VMware ESX Server) that is to be started cannot be specified. Start the service template on VMware vSphere ESXi (or VMware ESX Server) that contains virtual servers.

- Adjust the ICMP echo timeout value (common.icmpEchoTimeout property) for the local environment.

- Depending on the state of the system environment, the virtual server might successfully start but the network connection verification might fail, possibly causing the task to end abnormally. Verify the task log to see if an error has occurred with the network connection verification (the component "Obtain the IP address of a virtual server" (vsphereGetVMIPaddress) or the component "Send ICMP echo request message" (osSendIcmp)). If an error has occurred in these components, verify whether the virtual server is started.

- If many IP addresses (#1) are set for the NIC of the virtual server, an error might occur in the component "Send ICMP echo request message" and the task might end abnormally. Verify that the total length of the IP addresses set for the NIC is within 1,024 characters.

  #1: You can set the following IP address types. For example, if 64 or less addresses are set for IPv4 only, no problem will occur.

  - IPv4 (maximum length is 16 characters)

  - IPv4 (maximum length is 36 characters)

  - IPv4 and IPv6 set by DHCP

Restart Virtual Machine: Service details

This service template restarts multiple virtual servers in a VMware vSphere environment.

The general steps for using this service template to restart a virtual machine are as follows:

1. The status of a virtual server is obtained.

2. If a virtual server's power status is on, the service template restarts the virtual server. If the virtual server's power status is off, the corresponding virtual server processing results in an error.

3. An ICMP echo request is sent to verify that the virtual server is started.

   The specified group of virtual servers are turned off according to the number of seconds specified through the `vmware.checkPowerStateInterval` property and then verified to determine if the power is off, which it does up to the number of times specified through the `vmware.checkPowerStateCount` property. Therefore, the maximum wait time is the product of these two property values times two (in seconds). If the default values are not suitable, specify values that suit your environment.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Restart Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
vmware.checkPower StateCount	Power status check count	Specify the number of times the service tries to verify the power status to confirm that the virtual server has stopped and started. The maximum wait time is determined by this property and the property that defines the power status verification interval.	R
vmware.checkPower StateInterval	Power status check interval	Specifies the interval in seconds for verifying the power status when confirming that the virtual server is stopped or started.	R

Property Key	Property Name	Description	Required or optional
common.icmpEchoTimeout	Timeout period for ICMP echo requests	Specify in milliseconds how long the service waits for a reply to an ICMP echo request sent to confirm startup of a virtual server.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Restart Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.foreachVmName	Virtual server name(s)	Specify the virtual server name or names. Specify server names as they appear in VMware vCenter Server, not by host name. Separate multiple virtual servers with commas. The maximum number of virtual servers you can specify is 99.	R

📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- Each virtual server name is unique among the vCenter servers.

- VMwareTools is installed on the target virtual server.

- The firewall of the target virtual server is set to allow for responses to ICMP (ECHO).

Appendix D: Additional service templates

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- Adjust the ICMP echo timeout value (common.icmpEchoTimeout property) for the local environment.

- Depending on the state of the system environment, the virtual server might successfully start, but the network connection verification might fail, possibly causing the task to end abnormally. Verify the task log to see if an error has occurred with the network connection verification (the component "Obtain the IP address of a virtual server" (vsphereGetVMIPaddress) or the component "Send ICMP echo request message" (osSendIcmp)). If an error has occurred in these components, verify whether the virtual server is started.

- If many IP addresses (#1) are set for the NIC of the virtual server, an error might occur in the component "Send ICMP echo request message" and the task might end abnormally. Verify that the total length of the IP addresses set for the NIC is within 1,024 characters.

  #1: You can set the following addresses types. For example, if 64 or less addresses are set for IPv4 only, no problem occurs.

  - IPv4 (maximum length is 16 characters)

  - IPv4 (maximum length is 36 characters)

  - IPv4 and IPv6 set by DHCP

Create Snapshot of Virtual Machine: Service details

This service template creates a snapshot of the virtual machine for updating the status of a virtual server.

The general steps for using this service template to create a snapshot of a virtual machine are as follows:

1. A snapshot of the virtual server is created.

2. After creating the snapshot, the wait for the response part of the service is run to wait for the user to complete changes to the status or data of the virtual server. The UI waiting for a response allows the user to select "Commit (to use the change result) or Roll back (to cancel).

3. The snapshot of the virtual server is deleted. If the user selects Commit from the UI waiting for a response, the changes made after creating the snapshot are committed, and the snapshot is deleted. If the user selects Roll back from the UI waiting for a response, the changes made after creating the snapshot are discarded, and the snapshot is deleted. The maximum length of the virtual server name property `vmware.vmName` is 60 characters.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Create Snapshot of Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
vmware.snapshotNa me	Snapshot name	Specify the name of the snapshot.	R
UserResponsePlugin .toAddress	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .ccAddress	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .bccAddress	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .mailSubject	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .mailBody	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .encodeType	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are us-ascii, iso-2022-jp, shift_jis, euc-jp, and utf-8. If you omit this property, utf-8 is set.	O
UserResponsePlugin .dialogText	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .responseTimeOut	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Create Snapshot of Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.vmName	Virtual server name	Specify the name of the virtual server. This name is used to represent the virtual server in VMware vCenter server. It is not used as a host name by the OS.	R

📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- No duplicate virtual server names can be under the same vCenter.

- No duplicate snapshot names can be in the same virtual server.

- VMware Tools is installed on the target virtual server.

- The pre-change power status of the target virtual server is OFF.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- Do not run this service for multiple instances of the same virtual server at the same time.

- Do not target any virtual servers on which a raw, RDM physical mode or independent disk is set.

- HTML tags can be specified in the additional information property UserResponseplugin.dialogText in the window for entering a response. The property accepts the same tags and attributes as those available in the User-Response Wait Plug-in.

- If an error occurs while running this service, confirm the snapshot name from the task log and verify whether the snapshot is present. If the snapshot remains, commit or discard the snapshot. Do not leave a snapshot created by this service for an extended period time. Before starting the server, apply or discard the snapshot and delete it; not doing so can cause unnecessary data storage capacity use.

Add Virtual Disk to Virtual Machine: Service details

This service template adds disks to multiple virtual servers.

The general steps for using this service template to add a virtual disk to a virtual machine are as follows:

1. The power status of a virtual server is obtained.

2. Verifies that the power status is off.

   a. If the power status is not off, the service template uses the User-Response Wait Plug-in to determine whether to turn off the power.

   b. A user with the Modify permission can specify an email destination, email message contents, timeout value, and information to be visible in the window by the User-Response Wait Plug-in.

   c. If the user selects Shutdown in the UI of the User-Response Wait plug-in, the service template shuts down the virtual server.

Appendix D: Additional service templates

    d. If the user selects Cancel or if a response timeout occurs, the service ends abnormally without running the procedure on the virtual server.

When the virtual server is being ended, the service template waits for the time (in seconds) specified in the VMware.checkPowerStateInterval property and verifies that the power is off, which it does up to the number of times specified in the vmware.checkPowerStateCount property. If the default values are not suitable, specify values that suit your environment.

3. Adds a virtual disk to the virtual server.

If there are multiple virtual servers, the service template adds to each virtual server a virtual disk that satisfies the specified conditions. This processing is performed in parallel.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Add Virtual Disk to Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
UserResponsePlugin .toAddress	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .ccAddress	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .bccAddress	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .mailSubject	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .mailBody	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .encodeType	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are us-ascii, iso-2022-jp, shift_jis, euc-jp, and utf-8. If you omit this property, utf-8 is set.	O
UserResponsePlugin .dialogText	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .responseTimeOut	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.	R
vmware.checkPower StateCount	Power status check count	Specifies the number of times to verify the power status when confirming that the virtual server is stopped. In combination with the power status verification interval, this determines the maximum wait time.	R
vmware.checkPower StateInterval	Power status check interval	Specifies the interval in seconds for verifying the power status when confirming that the virtual server is stopped.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Add Virtual Disk to Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.foreachVmName	Virtual server name(s)	Specify the virtual server name or names. Specify server names as they appear in VMware vCenter Server, not by host name. Separate multiple virtual servers with commas. The maximum number of virtual servers you can specify is 99.	R
vmware.dataStoreName	Datastore name	If Flat is selected as the virtual disk, specifies the datastore name on which the virtual disk is to be created. If RawVirtual or RawPhysical is selected as the virtual disk, then specifies the datastore name where the LUN mapping is to be saved.	R
vmware.capacity	Volume size (GB)	Specify the volume size in GB. This property is mandatory when "Flat" is specified as the virtual disk type. This property is ignored when the virtual disk type is "RawVirtual" or "RawPhysical".	O

Property Key	Property Name	Description	Required or optional
vmware.vHardDiskType	Virtual disk type	Specify the type of the virtual disk as follows: ▪ lat: the virtual disk is created on a VMFS. ▪ RawPhysical: the virtual disk is configured using physical raw device mapping. ▪ RawVirtual: the virtual disk is configured using virtual raw device mapping.	O
vmware.deviceName	LUN device name	Specify the type of the virtual disk as follows: ▪ Flat: the virtual disk is created on a VMFS. ▪ RawPhysical: the virtual disk is configured using physical raw device mapping. ▪ RawVirtual: the virtual disk is configured using virtual raw device mapping.	O

Note: Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Appendix D: Additional service templates

Prerequisites

The following conditions must be met:

- The virtual servers to be added to the virtual disk are off.

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- Each virtual server name is unique among the vCenter servers.

- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- This service template does not initialize the virtual disks added to the virtual servers. If necessary, log on to the OS on each virtual server and initialize the disk.

- Do not run multiple instances of this service on the same virtual server.

- If you specify HTML tags in UserResponseplugin.dialogText, the permitted tags and attributes are the same as those for the User-Response Wait Plug-in.

Remove Virtual Disk from Virtual Machine: Service details

This service template deletes a virtual disk from a virtual server in a VMware vSphere environment.

The general steps for using this service template to remove a virtual disk from a virtual machine are as follows:

1. Obtains the power status of a virtual server.

2. Verifies that the power status is off.

   a. If the power status is not off, the service template uses the User-Response Wait Plug-in to determing whether the power is being turned off.

    b. A user with the Modify permission can specify an email destination, email message contents, timeout value, and information to be visible in the window by the User-Response Wait Plug-in.

    c. If the user selects Shutdown in the UI of the User-Response Wait plug-in, the service template shuts down the virtual server.

    d. If the user selects Cancel or if a response timeout occurs, the service ends abnormally without running the process on the virtual server.

When the virtual server is being ended, the service template waits for the time (in seconds) specified in the VMware.checkPowerStateInterval property and verifies that the power is off, which it does up to the number of times specified in the vmware.checkPowerStateCount property. If the default values are not suitable, specify values that suit your environment.

3. Deletes a virtual disk from a virtual server.

A maximum of 60 characters can be specified in the virtual server name property `vmware.vmName`.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Remove Virtual Disk from Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R

Property Key	Property Name	Description	Required or optional
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
UserResponsePlugin .toAddress	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .ccAddress	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .bccAddress	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .mailSubject	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .mailBody	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .encodeType	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are us-ascii, iso-2022-jp, shift_jis, euc-jp, and utf-8. If you omit this property, utf-8 is set.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .dialogText	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.	O
UserResponsePlugin .responseTimeOut	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.	R
vmware.checkPower StateCount	Power status check count	Specifies the number of times to verify the power status when confirming that the virtual server is stopped. In combination with the power status verification interval, this determines the maximum wait time.	R
vmware.checkPower StateInterval	Power status check interval	Specifies the interval in seconds for verifying the power status when confirming that the virtual server is stopped.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Remove Virtual Disk from Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.vmName	Virtual server name	Specify the name of the virtual server. This name is used to represent the virtual server in VMware vCenter server. It is not used as a host name by the OS.	R
vmware.vHardDiskName	Virtual disk name	Specify display name on VMware vCenter for the virtual hard disks.	R

> **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.
- Each virtual server name is unique among the vCenter servers.
- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.
- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.
- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1
- VMware PowerCLI 6.5 Release1
- VMware PowerCLI 6.5.1, 6.5.4
- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- If the virtual disk to delete contains data that you need, make a backup before deleting it.

- The virtual disk is also deleted from the data store.

- Do not run multiple instances of this service on the same virtual server.

- If you specify HTML tags in UserResponseplugin.dialogText, the permitted tags and attributes are the same as those for the User-Response Wait plug-in.

Delete Virtual Machine: Service details

This service template deletes a Virtual Machine.

The general steps for using this service template to delete a virtual machine are as follows:

1. The power status of a virtual server is obtained.

2. Verifies that the power status is off.

   a. If the power status is not off, the service template uses the User-Response Wait Plug-in to determine whether to turn off the power.

   b. A user with the Modify permission can specify an email destination, email message contents, timeout value, and information to show in the window by the User-Response Wait Plug-in.

   c. If the user selects Shutdown in the UI of the User-Response Wait plug-in, the service template shuts down the virtual server.

   d. If the user selects Cancel or if a response timeout occurs, the service ends abnormally without running the process on the virtual server.

   When the virtual server is being ended, the service template waits for the time (in seconds) specified in the VMware.checkPowerStateInterval property and verifies that the power is off, which it does up to the number of times specified in the vmware.checkPowerStateCount property. If the default values are not suitable, specify values that suit your environment. If there are multiple virtual servers, a virtual disk is added to each virtual server that satisfies the specified conditions. This processing is performed in parallel.

3. Deletes the server.

   A maximum of 60 characters can be specified in the virtual server name property **`vmware.vmName`**.

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Delete Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
UserResponsePlugin .toAddress	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .ccAddress	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .bccAddress	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. Example: mailA,mailB	O
UserResponsePlugin .mailSubject	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.	O

Property Key	Property Name	Description	Required or optional
UserResponsePlugin .mailBody	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.	O
UserResponsePlugin .encodeType	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are us-ascii, iso-2022-jp, shift_jis, euc-jp, and utf-8. If you omit this property, utf-8 is set.	O
UserResponsePlugin .dialogText	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.	O
UserResponsePlugin .responseTimeOut	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.	R

Property Key	Property Name	Description	Required or optional
vmware.checkPower StateCount	Power status check count	Specifies the number of times to verify the power status when confirming that the virtual server is stopped. In combination with the power status verification interval, this determines the maximum wait time.	R
vmware.checkPower StateInterval	Power status check interval	Specifies the interval in seconds for verifying the power status when confirming that the virtual server is stopped.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Delete Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.vmName	Virtual server name	Specify the name of the virtual server. This name is used to represent the virtual server in VMware vCenter server. It is not used as a host name by the OS.	R

Note: Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- Each virtual server name is unique among the vCenter servers.

- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- Do not run multiple instances of this service on the same virtual server.

- If you specify HTML tags in UserResponseplugin.dialogText, the permitted tags and attributes are the same as those for the User-Response Wait plug-in.

Deploy and Setup OS on Virtual Machine: Service details

This service template adds a virtual server to a VMware vSphere environment by using a template.

The general steps for using this service template to deploy and set up an OS on a Virtual Machine are as follows:

1. A virtual server is created using an existing template.
2. The initial information for the virtual server is specified.

a. Specifies initial information for the OS (such as computer name and company name). Depending on the virtual server's OS, the service template specifies the following settings:

For a Windows-based OS, as initial OS settings, the service template specifies a computer name, company name, and organization name. The service template uses sysprep to clear the system information for the virtual server and then specifies the OS information.

For Linux OS, as initial OS settings, the service template specifies a computer name.

b. Specifies the IP address of the virtual server. You can specify a maximum of two IP address for a virtual server. The order in which IP addresses are set depends on the number of NICs on the virtual server as follows:

   i. If the virtual server has one NIC, and the management and application IP addresses are both specified, the service template sets the IP address for management in the NIC preferentially. Note that the application IP address is discarded. If only a management IP address or only an application IP address is specified, the service template sets the specified IP address in the NIC.

   ii. If the virtual server has two NICs, and the management and application IP addresses are both specified, the service template sets the management IP address in the first NIC set in the virtual server's OS and the application IP address in the second NIC set in the virtual server's OS. If only a management IP address or only an application IP address is specified, the service template sets the specified IP address in the first NIC set in the virtual server's OS.

3. If multiple IP addresses are specified for the virtual server, the service template sets a static route for the virtual server's OS.

4. A port group is specified for the virtual server.

When the OS of the virtual server to create is a Windows-based OS:

- An organization name and an owner name are required. If no organization name is specified, "Organization" is assumed; if no owner name is specified, "Owner" is assumed.

- Entry and re-entry of an OS user password are required. If one of them is omitted or if the entered passwords do not match, "Password123" is set as the password.

- WORKGROUP or DOMAIN must be selected from the OS.selectWorkgroupDomain selection list. If neither WORKGROUP nor DOMAIN is selected, "WORKGROUP" is set as the workgroup. If no workgroup name or domain name is entered, "WORKGROUP" is set as the workgroup.

- When WORKGROUP is selected from the OS.selectWorkgroupDomain selection list, a maximum of 15 bytes can be specified for the workgroup name. If the specified workgroup name exceeds 15 bytes, "WORKGROUP" is assumed.

- When DOMAIN is selected from the OS.selectWorkgroupDomain selection list, a domain name, domain user name, and domain password are required. If any one of them is omitted or a specified value is not valid, "WORKGROUP" is set as the workgroup.

When the OS of the virtual server to create is Linux OS:

- When the OS of the virtual server to be created is Linux OS, a domain name and DNS suffix are required. If the specification is omitted, "localdomain" is assumed.

When the OS of the virtual server to create is a Windows-based OS or Linux OS:

- All four of IP address, subnet mask, default gateway, and DNS server must be specified. If any one of them is omitted, none of them is set.

- If the OS information acquisition repeat count is omitted, "72" is assumed.

- If the OS information acquisition repeat interval is omitted, "5" is assumed.

- You must specify both the current port group name and the new port group name. If either is omitted, the port group is not renamed. If there are multiple port groups with the same name, only one of them is renamed.

- All three of destination IP address, subnet mask, and default gateway must be specified. If any one of them is omitted, a static route is not set.

- A maximum of 60 characters can be specified in the virtual server name property (vmware.vmName).

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Deploy and Setup OS on Virtual Machine service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R
windows.orgName	Organization (company name): Windows only	Specify the organization name for the virtual server OS (Windows-based OS only). When there is no input, "Organization" is set up.	O
windows.ownerName	Owner name: Windows only	Specify the owner name for the OS on the virtual server (Windows-based OS only). When there is no input, "Owner" is set as the Owner name.	O

Property Key	Property Name	Description	Required or optional
OS.selectWorkgroup Domain	Select workgroup or domain : Windows only	Specify whether the virtual server belongs to a workgroup or domain (Windows-based OS only).	O
OS.workgroupName DomainName	Workgroup/domain name	Specify the name of the workgroup or domain of virtual server. A workgroup is specified a maximum of 15 characters. A domain of a maximum of 63 characters is specified in a Windows-based OS. In Linux OS, a domain of a maximum of 256 characters is specified.	O
OS.domainUserNam e	Domain user name: Windows only	Specify the domain user name for the virtual server (Windows-based OS only). When "DOMAIN" is chosen by selection of a workgroup/domain, it is necessary to input.	O
OS.domainUserPass word	Domain password: Windows only	Specify the domain password for the virtual server (Windows-based OS only). When "DOMAIN" is chosen by selection of a workgroup/domain, it is necessary to input.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
OS.dnsSuffix	DNS suffix: Linux only	Specify the DNS suffix of the virtual server (Linux OS only). When there is no input, "localdomain" is set as the DNS suffix.	O
OS.subnetMaskMan	Subnet mask (management LAN)	Specify the subnet mask for the management LAN of the virtual server. You cannot specify an IPv6 address.	O
OS.defaultGWMan	Default gateway (management LAN)	Specify the default gateway for the management LAN of the virtual server. You cannot specify an IPv6 address.	O
OS.dnsMan	DNS server IP address (management LAN)	Specify the IP address of the DNS server for the management LAN of the virtual server. You cannot specify an IPv6 address.	O
OS.subnetMask2	Subnet mask (for second NIC)	Specify the 2nd subnet mask for the virtual server. You cannot specify an IPv6 address.	O
OS.defaultGW2	Default gateway (for second NIC)	Specify the 2nd default gateway for the virtual server. You cannot specify an IPv6 address.	O
OS.dns2	DNS server IP address (for second NIC)	Specify the 2nd IP address of the DNS server for the virtual server. You cannot specify an IPv6 address.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
OS.subnetMask3	Subnet mask (for third NIC)	Specifies the subnet mask that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O
OS.defaultGW3	Default gateway (for third NIC)	Specifies the default gateway that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O
OS.dns3	DNS server IP address (for third NIC)	Specifies the IP address of the DNS server that is set for the virtual server. In a Windows-based OS, this value is set on the third NIC recognized by the OS. IPv6 addresses are not supported.	O
OS.subnetMask4	Subnet mask (for fourth NIC)	Specifies the subnet mask that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O
OS.defaultGW4	Default gateway (for fourth NIC)	Specifies the default gateway that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
OS.dns4	DNS server IP address (for fourth NIC)	Specifies the IP address of the DNS server that is set for the virtual server. In a Windows-based OS, this value is set on the fourth NIC recognized by the OS. IPv6 addresses are not supported.	O
OS.destIPAddress	Destination IP of static route	Specify the destination IP address of the static route.	O
OS.subnetMaskStaticcRoute	Subnet mask (static route)	Specify the subnet mask for the static route. You cannot specify an IPv6 address.	O
OS.defaultGWStaticRoute	Default gateway (static route)	Specify the default gateway for the static route. You cannot specify an IPv6 address.	O
vmware.checkOSInitCount	Number of tries to acquire OS information	Specify the number of times the service tries to acquire OS information to confirm that the OS has been initialized. The maximum wait time is determined by this property and the property that defines the checkOSInitCountInterval.	O

Property Key	Property Name	Description	Required or optional
vmware.checkOSInit CountInterval	Interval for acquiring OS information (minutes)	Specify the interval at which the service tries to acquire OS information to confirm that the OS has been initialized.	O

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Deploy and Setup OS on Virtual Machine service template:

Property Key	Property Name	Description	Required or optional
vmware.vmName	Virtual server name	Specify the name of the virtual server. This name is used to represent the virtual server in VMware vCenter server. It is not used as a host name by the OS.	R
vmware.templateNa me	Template name	Specify the name of the template on which the virtual server is to be based.	R
vmware.vmHostNam e	ESX server name	Specify the ESX server name to be visible in the Hosts and Clusters inventory view managed by VMware vCenter server.	R
vmware.dataStoreNa me	Datastore name	Specify the datastore name.	R
vmware.resourcePoo lName	Resource pool name	Specify the resource pool, vApp, or cluster where the virtual server will be provisioned.	O

Property Key	Property Name	Description	Required or optional
vmware.portGroupName	Port group name	Specify the name of the port group currently assigned to the virtual server.	O
vmware.portGroupNameNew	Port group name (updated)	Specify a new port group name to assign to the virtual server.	O
OS.computerName	Computer/host name	Specify the computer name (host name) used by the OS. The computer name of a maximum of 15 characters is specified, in the case of a Windows-based OS. The computer name of a maximum of 63 characters is specified, in the case of Linux OS.	R
OS.osUserPassword	Administrator password: Windows-specific	Specifies the Administrator password specified in the OS (Windows-based OS systems only). If nothing is entered, "Password123" is specified.	O
OS.osUserPasswordReEnter	Re-enter Administrator password: Windows-specific	Re-enter the Administrator password specified in the OS (Windows-based OS systems only). If nothing is entered, "Password123" is specified.	O

Property Key	Property Name	Description	Required or optional
OS.productKey	OS product key :Windows-based OS only	Specify the OS product key (for Windows-based OS virtual servers) in the format XXXXX-XXXXX-XXXXX-XXXXX-XXXXX (Windows-based OS only).	O
Linux.adminPassword	OS root user password :Linux OS only	Specify the root user's password of OS for carrying out a OS setting verification. For creating Linux OS virtual server, specifying the root user's password is mandatory.	O
OS.ipAddressMan	IP address (management LAN)	Specify the IP address for the management LAN of the virtual server. You cannot specify an IPv6 address.	O
OS.ipAddress2	IP address (for second NIC)	Specify the 2nd IP address for the virtual server. You cannot specify an IPv6 address.	O
OS.ipAddress3	IP address (for third NIC)	Specifies the IP address that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
OS.ipAddress4	IP address (for fourth NIC)	Specifies the IP address that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.	O
OS.timeZoneWin	Time zone: Windows-based OS setting	Specifies the time zone that the OS on the virtual server is set to (for Windows-based OS only). If nothing is entered, the time zone "International Date Line West" is used.	O
OS.timeZoneLin	Time zone: Linux OS setting	Specifies the time zone that the OS on the virtual server is set to (for Linux OS only). If nothing is entered, the time zone in the template is used.	O

📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- Conditions for the settings on VMware vSphere ESXi (or VMware ESX Server)

    - A data store is registered.

    - A port group is set up. For a port group that is set up for the virtual server, specify a port group on the network using a standard virtual switch (vNetwork or vSphere standard switch.)

    - The template used for deployment is already created.

    - If the virtual server is stored in a resource pool, and the resource pool, cluster, and vApp names are unique. The same name cannot be assigned to more than one resource pool, cluster, and vApp although their types are different, such as a duplication of a cluster name and a vApp name or a duplication of a cluster name and a resource pool name.

    - Data store name.

    - Resource pool name.

    - vApp name.

- Conditions for the template used for deployment: 34530093christine van every

    - VMware Tools are installed.

    - The running of remote commands is allowed by the settings (administrative share for Windows-based OS and SSH for Linux OS is enabled.)

    - NICs are configured (up to two).

    - The reception of and response to pings is allowed.

    - For a Windows-based OS, the administrator password is left blank.

    - For a Windows-based OS, run sysprep. To run sysprep, the maximum number of Windows-based OS initializations (three times) must not be reached.

    - When you convert a virtual server to a template, first ensure that the virtual server is stopped.

- Condition of the virtual server:

    - The virtual server name is not duplicated under the management of an identical vCenter.

- The authentication information of the virtual server to deploy is registered to the agentless connection destination definition in the "Management" tab in advance.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

Appendix D: Additional service templates

- ESX server: Server on which VMware vSphere ESXi (or VMware ESX Server) is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- The specified port group must be able to communicate with the local server. If there are multiple NICs for the virtual server, set one of the NICs to a port group that can communicate with the local server.

- Whether OS initialization processing is completed is determined by whether the information set in the OS can be acquired. The time required for determining completion of initialization depends on the value specified for the OS information acquisition repeat interval (vmware.checkOSInitCountInterval property) and the specification of the OS information acquisition repeat count (vmware.checkOSInitCount property). If the specified value is too small, a timeout might occur even during OS initialization. Adjust the value for the performance of the virtualization environment being used. Initially, specify the settings so that the OS information acquisition repeat interval is at least a few hours.

- Do not specify for the IP addresses to set with values that are not valid as IP addresses in the virtual server's OS, such as management and application IP addresses. For example, network addresses, broadcast addresses, and special addresses such as 0.0.0.0 and 255.255.255.255 cannot be specified. If an address is entered that is not valid, the virtual server deployment processing results in an error. For a management IP address, specify an IP address that can be used to communicate with the local server. Be aware that even though the correct address is specified, deployment might fail.

- While the virtual server is being deployed, do not use any other service to modify it. Doing so might cause deployment of the virtual server to fail. Also, do not modify the virtual server directly from a vCenter server.

- When you are deploying Linux OS, specify a root password for the template OS in the Linux.adminPassword property (using the permitted characters.)

- Do not specify in advance any template information that is specified when the virtual server is created. If a computer name or host name and IP address are already set in the template, virtual server creation might fail. If virtual server creation fails (for example, static route processing results in an error), delete the virtual server, re-create a template in which no computer name, host name, or IP address is set, and then run the service again.

- The IP addresses are set as described in Function. However, depending on the order in which NICs are set in the virtual server's OS, the IP addresses might not be set as intended. After you create the virtual server, verify whether the correct IP addresses are set. If the correct IP addresses are not set, change them manually.

Get List of Virtual Machines from VMware vSphere: Service details

This service template obtains a list of virtual server information.

If no ESX server name is specified, the service template obtains information about all virtual servers on all ESX servers in the specified vCenter server. By specifying a specific ESX server name, only information for that specific server is obtained.

The general steps for using this service template to obtain a listing of virtual server information are as follows:

1. A list of virtual server information is output in CSV format to a temporary file in the remote system.
2. The temporary file is forwarded from the remote system to a specified output file on the local system.
3. The temporary file is deleted from the remote system. The service template outputs the following items to a CSV file (the items are separated by the comma):

   a. ESX server name (header name: HostName)
   b. Virtual server name (header name: VMName)
   c. Virtual server power status (header name: PowerState)
   d. Number of CPUs in the virtual server#1 (header name: NumCpu)
   e. Virtual server memory capacity (MB) (header name: MemoryMB)

   #1: The number of CPUs depends on the VMware vCenter Server version:

   If the VMware vCenter Server version is 4.1 or earlier, this is the number of virtual processors.

   If the VMware vCenter Server version is 5.0 or later, this is the total number of cores (number of virtual sockets × number of cores per socket).

Service Definition Properties

The following table lists the properties visible in the **Service Definition** window for the Get List of Virtual Machines from VMware vSphere service template.

Property Key	Property Name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R

Appendix D: Additional service templates

Property Key	Property Name	Description	Required or optional
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R

Service Definition and Submit Service Properties

The following table lists the properties visible in the **Service Definition** and **Submit Service** windows for the Get List of Virtual Machines from VMware vSphere service template.

Property Key	Property Name	Description	Required or optional
vmware.vmHostName	ESX server name	Specify the ESX server name to show in the Hosts and Clusters inventory view managed by VMware vCenter server.	O
vmware.listOutputFileNameRemote	Output file name (remote)	Specifies the full path name of the temporary file to output virtual server information to the VMware vCenter control server.	R
vmware.listOutputFileNameLocal	Output file name (local)	Specifies the full path name of the file on the local server for acquiring the virtual server information.	R

Note: Although some of the properties in the tables indicate that they can be omitted, they mmight be required when used in conjunction with some other property setting as indicated in the descriptions.

Prerequisites

The following conditions must be met:

- VMware vSphere ESXi (or VMware ESX Server) is managed by VMware vCenter Server.

- Each virtual server name is unique among the vCenter servers.

- VMwareTools is installed on the target virtual server.

Server requirements

To use this service template, the following servers are needed:

- vCenter server: This is a server on which VMware vCenter Server is installed.

- vCenter control server: This is a server on which VMware vSphere PowerCLI is installed.

- Virtual server: This is a virtual server managed by the vCenter server and VMware vSphere ESX.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- If the file name specified for the remote or the local system already exists, that file is overwritten. In addition, the file in the remote system is deleted. For this reason, you must make sure that the specified file names are correct.

- If there is no folder on the specified path in the remote system, a folder is created. Any folder that is created remains and is not deleted; for this reason, you must delete unneeded folders periodically.

Script execution through the vCenter server: Service details

This service template functions in the VMware vSphere environment to transmit the specified non-interactive script file from the target server to the guest OS on the virtual server through the vCenter server, and then runs the script file on the guest OS. The script file can be deleted if it is no longer needed.

The following is an overview of the processing:

1. Run the PowerCLI commandlet `Copy-VMGuestFile` on the target server to transmit the specified script from the target server to the guest OS on the virtual server.

2. Run the PowerCLI commandlet `Invoke-VMScript` on the target server to run the script transmitted in (1). Then, run the scripts on the virtual server by using the following codes.

Windows batch file (extension `.bat`):

```
"& 'script-file-path-on-the-guest-OS-(vmware.scriptFileOnGuest-
property)' 'script-argument-(vmware.scriptParameter-property)' ;
exit $LASTEXITCODE"
```

Windows PowerShell script (extension `.ps1`):

```
"Set-ExecutionPolicy RemoteSigned -Scope Process ; & 'script-
file-path-on-the-guest-OS-(vmware.scriptFileOnGuest-property)'
'script-argument-(vmware.scriptParameter-property)' ; exit
$LASTEXITCODE"
```

Shell script (extension `.sh`):

```
"/bin/bash 'script-file-path-on-the-guest-OS-
(vmware.scriptFileOnGuest-property)' 'script-argument-
(vmware.scriptParameter-property)' "
```

The standard output and standard error output of each script run on the virtual server is stored in the file on the target server that is specified as the output file path (`vmware.scriptOutputFilePath` property) of the script.

3. If yes is specified for whether to delete the script (`vmware.deleteScriptEnabled` property), the script transmitted from the target server to the guest OS on the virtual server can be deleted. To delete the script, use the following code applicable to the virtual server environment.

Windows-based OS:

```
"Remove-Item -LiteralPath 'script-file-path-on-the-guest-OS-
(vmware.scriptFileOnGuest-property)' -Force "
```

Linux OS:

```
"/bin/rm -f 'script-file-path-on-the-guest-OS-
(vmware.scriptFileOnGuest-property)' "
```

Server requirements

The following servers are needed:

- vCenter server

  Server where VMware vCenter Server is installed.

- ESX server

  Server where VMware vSphere ESXi is installed.

- vCenter control server (execution target server)

  Server where VMware vSphere PowerCLI is installed. Plug-ins are transferred to this server and run by this product.

- Virtual server

  Virtual server that is managed by the vCenter server and VMware vSphere ESX.

Prerequisites

- VMware vSphere ESXi must be managed by VMware vCenter Server.

- Conditions related to the settings on VMware vCenter Server:

  - Virtual servers must have a unique name.

  - Server names are case-sensitive in VMware, but not in the vSphere PowerCLI instance run from this plug-in.

- Conditions related to the virtual server:

  - The virtual server must be running.

  - If the virtual server OS is a Windows-based OS, Windows PowerShell 2.0 or later must be installed.

  - VMwareTools must be installed on the virtual server.

Software requirements

One of the following is required:

- VMware vSphere PowerCLI 6.3 Release1, 6.0 Release3, 6.0 Release1

- VMware PowerCLI 6.5 Release1

- VMware PowerCLI 6.5.1, 6.5.4

- VMware PowerCLI 10.1.0, 10.1.1

Usage guidelines

- If a file with the same name exists in the location specified by the path to the script file on the guest OS (`vmware.scriptFileOnGuest` property) or the path to the output file for the script (`vmware.scriptOutputFilePath` property), the existing file is overwritten. If any of the folders specified by the file path do not exist, that folder is created and the file is transmitted. Delete the created folder if it is no longer necessary.

- If a folder with the same name exists in the location specified by the path to the script file on the guest OS (`vmware.scriptFileOnGuest` property), the target script file is transmitted and stored in the existing folder without any change to the file name. If this occurs, the script fails and the service ends abnormally.

- If an error occurs during file transmission, the file that is being transmitted to the virtual server is not deleted automatically. Delete this file if it is not necessary.

- Do not run interactive scripts that need user entry, or scripts that display a UI and do not end automatically.

- Do not run this service template on the same virtual server simultaneously.

- The script specified as the script file on the VMware vCenter control server (`vmware.scriptFileOnHost` property) is transferred to the guest OS in binary format. Create the script in advance on the guest OS by using executable line break codes and character codes.

Service Definition Properties

The following table lists the properties shown in the **Service Definition** window.

📄 **Note:** Consider the following precautions when setting properties:

- You can specify the following script files for the script file path on the guest OS (`vmware.scriptFileOnGuest` property): Windows batch file (extension `.bat`), Windows PowerShell script (extension `.ps1`), and shell script (extension `.sh`).

- When you specify multiple arguments for the script argument (`vmware.scriptParameter` property), you can separate arguments by using a single-byte comma (,) or single-byte hyphen (-).

Property key	Property name	Description	Required or optional
vmware.targetHost	Host name of VMware vCenter control server	Specify the host name or IP address of the server (a server with vSphere PowerCLI installed) that will be used to control VMware vCenter. You cannot specify an IPv6 address.	R
vmware.vCenterServerName	VMware vCenter server name	Specify the host name or IP address of the VMware vCenter server. You cannot specify an IPv6 address.	R
vmware.userName	User name for VMware vCenter Server connection	Specify the user name to use when connecting to the VMware vCenter server.	R

Appendix D: Additional service templates

Property key	Property name	Description	Required or optional
vmware.password	Password for VMware vCenter Server connection	Specify the password to use when connecting to the VMware vCenter server.	R
vmware.portNumber	Port number for VMware vCenter Server connection	Specify the port number to use when connecting to the VMware vCenter server (specifically, the port number of the VMware vCenter server's Web service). If you omit this property, the default value of the VMware vCenter server applies.	O
vmware.protocol	Protocol for VMware vCenter Server connection	Specify the protocol to use when connecting to the VMware vCenter server.	R

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window and the **Submit Service** window.

Property key	Property name	Description	Required or optional
vmware.vmName	Virtual server name	Specify the name of the virtual server. This name is used to represent the virtual server in VMware vCenter server. It is not used as a host name by the OS.	R

Appendix D: Additional service templates

Property key	Property name	Description	Required or optional
vmware.guestOSUserName	User name for logging in to the guest OS	Specify the user name for logging in to the guest OS.	R
vmware.guestOSUserPassword	Password for logging in to the guest OS	Specify the password for logging in to the guest OS.	R
vmware.scriptFileOnHost	Script file on the VMware vCenter control server	Specify the full path of the script file on the VMware vCenter control server that is the transmission source.	R
vmware.scriptFileOnGuest	Script file on the guest OS	Specify the full path of the script file on the guest OS that is the transmission destination. The script file specified for this property is run after transmission.	R
vmware.scriptParameter	Script argument	Specify a script argument. To specify multiple arguments, separate the arguments by using the specified delimiter for script arguments (a single-byte comma or single-byte hyphen).	O
vmware.scriptParamDelimiter	Delimiter for script arguments	Specify a delimiter for script arguments. You can specify a single-byte comma (,) or a single-byte hyphen (-). If this property is omitted, values specified for the script argument are handled as a single argument.	O

Property key	Property name	Description	Required or optional
vmware.scriptOutput FilePath	Script output file path	Specify the full path of the file on the VMware vCenter control server in which the standard output and standard error output of the script are stored.	R
vmware.deleteScript Enabled	Whether to delete the script	Specify whether to delete the script after execution. If yes is selected, the script is deleted. If no is selected, the script is not deleted.	R

OS service templates

The following additional OS service templates are not imported by default. However, you can import them by accessing the server through a remote connection and then using the Ops Center Automator UI. See for more information.

Get List of Users from Server
Obtains a list of Windows-based OS or Linux OS users from a specific host.

Get Lists of Users from Multiple Servers
Obtains a list of Windows-based OS or Linux OS users from multiple hosts.

Execute Remote Command
Runs a command on the remote execution target server.

Get List of Users from Server: Service details

This service template obtains a list of Windows-based OS or Linux OS users.

The general steps for using this service template to get a list of users from a server are as follows:

1. An OS user list is obtained and output in text format to a specified file. For Windows-based OS, the output format of the file is the same as the output result of the net user command.
2. The file is transferred to the folder specified by the local server.
3. The transferred source file on the Windows-based OS or Linux OS server is deleted.

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** and **Submit Service Request** windows for the Get List of Users from Server service template.

Property Key	Property Name	Description	Required
OS.targetHost	Windows/Linux server host name	Specify the host name or IP address of a Windows-based OS or Linux OS server from which an OS user list is to be obtained. IPv6 addresses are not supported.	R
OS.userType	OS user type	Specify "local" or "domain" as the OS user type. This property only takes effect when the agent server is running Windows-based OS.	O
OS.listOutputFileNameRemote	Output file name (remote)	Specifies the full path name of the file on the Windows-based OS server or Linux OS server where the list of OS users is output. The remote file is deleted after the transfer.	R
OS.listOutputFileNameLocal	Output file name (local)	Specifies the local file name where the list of OS users is output.	R

📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Server requirements

- Supported Windows-based OS or Linux OS servers

Usage guidelines

- If you are running this service in a Linux OS environment, do not use multibyte characters in properties.

- If you specify multibyte characters, and the OS of the server obtaining the list of OS users is a Windows-based OS, specify a value for the output file name (remote) property that is no longer than 256 bytes.

- If you specify multibyte characters, specify a value for the output file name (local) property that is no longer than 256 bytes.

- If the file names specified for remote and local already exist, the existing files are overwritten. The file on the remote side is also deleted. For this reason, make sure that file names are specified correctly.

- If there is no folder at the path specified as remote, the folder is created. The created folder is left undeleted. If it is not used periodically, delete it.

Get Lists of Users from Multiple Servers: Service details

This service template acquires a list of Windows-based OS or Linux OS users and servers listed in a CSV file.

The general steps for using this service template to get a list of users from multiple servers are as follows:

1. A list of Windows-based OS or Linux OS servers is obtained from the specified column in the CSV file. State the column name in the first line of the CSV file. State the data in the 2nd through 100th lines. At least one column must state the host name or IP address. Here is an example:

   ```
   Host name
   hostVM001
   hostVM002
   ```

2. No more than 99 host names or IP addresses can be stated in a CSV file and the total character string length of host names or IP addresses + the host count cannot exceed 1,017 characters.

3. The fields read are verified for the following conditions. If any of these conditions are met, the task fails.

   a. A field exceeds 1024 in character string length.

   b. A field contains the following special characters , < > | ; & * ? ` % or a double quote (") not at an end of a field, or a backslash (\) at the end of a field.

   c. A field contains a control character (0x00 through 0x1f.)

4. An OS user list is output in text format to the specified file for each Windows-based OS or Linux OS server. The name of the file is `OS_Users_XXXX`, where *XXXX* specifies the host name or IP address as stated in the string specified in the CSV file. For Windows-based OS, the output format of the file is the same as the output result of the net user command.

5. The OS user list file is transferred to the folder specified by the local server. The transfer source file on the Windows-based OS or Linux OS server is deleted.

> **Note:** If reading a CSV fails, wait for the seconds specified in the `OS.fileOpenRetryInterval` property, and then repeat the number of times specified in the `OS.fileOpenRetryCount` property to try again for reading a file. If necessary, modify the property values for your system environment.

Service Definition Properties

The following table lists the properties shown in the **Service Definition** window for the Get Lists of Users from Multiple Servers service template.

Property Key	Property Name	Description	Required or optional
OS.fileOpenRetryCount	Retry count for reading a file: Windows specific	Specifies the number of times to try again when reading a file fails (only applicable to Windows-based OS). This value multiplied by the interval between tries gives the maximum waiting time. If "0" is specified, another try is not performed.	R
OS.fileOpenRetryInterval	Retry interval for reading a file: Windows specific	Specifies the interval in seconds between tries when reading a file fails (only applicable to Windows-based OS).	R

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** and **Submit Service** windows for the Get Lists of Users from Multiple Servers service template.

Property Key	Property Name	Description	Required or optional
OS.excelFileName	CSV file name (local)	Specifies the full path name of the CSV file where the list of servers is managed.	R
OS.Column1	Column number for the server names	Specifies the column number in the CSV file as a number from 1 through 255.	R
OS.userType	OS user type	Specify "local" or "domain" as the OS user type. This property only takes effect when the server acquiring the list of OS users is running Windows-based OS.	O
OS.listOutputFolder NameRemote_Wind ows	Output folder for Windows OS (remote)	Specifies the full path of the folder on the Windows-based OS server where the list of OS users is output. The remote file is deleted after the transfer. The output folder must be specified if the servers where the user list is acquired include a Windows-based OS server.	O

Property Key	Property Name	Description	Required or optional
OS.listOutputDirectoryNameRemote_Linux	Output directory for Linux (remote)	Specifies the full path of the folder on the Linux OS server where the list of OS users is output. The remote file is deleted after the transfer. The output folder must be specified if the servers where the user list is acquired include a Linux OS server.	O
OS.listOutputFolderNameLocal	Output folder name (local)	Specifies the full path name of the file where the list of OS users is output.	R

📄 **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Server requirements

To use this service template, the following servers are needed:

- Windows-based OS or Linux OS servers.

Usage guidelines

- To run this service, the local server (loopback address resolved by localhost) and the server acquiring the list of OS users must be set as agentless connection destinations.

- IP addresses in the CSV file must be enclosed in double quotation marks.

- If the OS of the server acquiring the list of OS users is Linux OS, do not use multibyte characters in properties.

- Because of ODBC driver restrictions, the following characters within parenthesis cannot be used in CSV file names: ([ ] ! `) .

- If you specify multibyte characters and the OS of the server acquiring the list of OS users is Windows-based OS, specify a value for the Windows-based OS output folder (remote) property that is no longer than 248 bytes.

- If you specify multibyte characters, specify a value for the output folder name (local) property that is no longer than 256 bytes.

Appendix D: Additional service templates

- When the folder names specified as remote and local already exist, the existing folders are overwritten. Also, when there is a file by the same name in the folder, it is also overwritten. For this reason, verify that folder names are specified correctly.

- If there is no folder at the path specified as remote, the folder is created. The created folder is left undeleted. If it is not used periodically, delete it.

Execute Remote Command: Service details

This service template runs commands stored on a server and outputs the results.

Service Definition Properties

The following table lists the properties shown in the **Service Definition** and **Submit Service** windows for the Execute Remote Command service template.

Property Key	Property Name	Description	Required or optional
common.targetHost	Host name of target server	Specifies the host name or IP address of the target server. IPv6 addresses are not supported.	R
common.remoteCommand	Command	Specify the full path of the command to run on the target server. If the path contains a space, enclose the entire path in double quotation marks.	R
common.remoteCommandParameter	Command parameters	Specify the parameters for the command to run on the target server. If a parameter contains a space, enclose the entire parameter in double quotation marks.	O

> **Note:** Although some of the properties in the tables indicate that they can be omitted, they might be required when used in conjunction with some other property setting as indicated in the descriptions.

Appendix D: Additional service templates

Usage guidelines

- If the standard output result of the command exceeds 100 KB, the service ends abnormally.

- Up to 1,024 characters of the standard output result of the command are stored in property `common.stdoutProperty`; any output more than this is discarded.

- Interactive commands and scripts that need user input and commands that do not end automatically using a UI display or similar input cannot be run.

- If the OS running on the target server is Linux, the command is run in the default locale defined in the agentless-connection target for the connected user.

Server requirements

To use this service template, the following servers are needed:

- Target server: This is the server on which a supported version of Windows-based OS or Linux OS is installed. The commands must already be stored on the server.

Hyper-V 2016 service templates

The following is a list of the additional Ops Center Automator Hyper-V 2016 service templates, which are not imported by default. However, you can import them by accessing the server through a remote connection and then using the Ops Center Automator UI. See Importing service templates (on page 634) for more information.

Add a virtual server (deploy/OS initial settings)
  Adds a new virtual server in a Hyper-V environment using an exported virtual server.

Add virtual server (virtual disk)
  Creates a virtual disk in a Hyper-V environment and then adds that virtual disk to a virtual server.

Change virtual server specifications (CPU and memory)
  Changes the specified resource settings (CPU and memory) of a virtual server in a Hyper-V environment.

Delete virtual server
  Deletes virtual servers in a Hyper-V environment.

Obtain virtual server information list
  Obtains a list of information about virtual servers in a Hyper-V environment.

Restart virtual server
  restarts multiple virtual servers in a Hyper-V environment.

Start virtual server
  Starts multiple virtual servers in a Hyper-V environment.

Stop virtual server
  Shuts down the operating systems of multiple virtual servers in a Hyper-V environment.

Appendix D: Additional service templates

Add a virtual server (deploy/OS initial settings): Service details

This service template uses an exported virtual server to add a new virtual server in a Hyper-V environment.

The general steps for using this service template are as follows:

1. A virtual server is created on the Hyper-V server.

    a. Replicate a virtual server from an already exported one in the import destination folder.

    b. Create a virtual server by using the import function on the Hyper-V server.

       Assign a new unique ID to the new virtual server you create. If the specified import destination folder already exists, the folder is used as is.

2. The virtual server's connection destination (management-use) virtual switch is set up.

    You must set up a management-use virtual switch for a NIC to establish communication with the local server.

    If a connection-destination virtual switch has already been set on the exported virtual server, the switch is replaced by the specified one.

    For the first NIC, set up a management-use virtual switch that can communicate with the local server. For the second to fourth NICs, set a management-use or operation-use virtual switch according to the user operating needs.

    If the number of specified virtual switches exceeds the number of NICs on the virtual server, only the virtual switches allocated to NICs are enabled.

3. A response file to be used for OS customization is created and deployed.

    a. Mount the virtual disk of the virtual server to the Hyper-V server.

    b. On the mounted virtual disk, create a response file to be used for OS customization.

    c. Unmount the virtual disk from the Hyper-V server.

4. The virtual server starts, and the initial settings on the virtual server are specified.

    a. Specify the initial OS settings (such as the computer name and company name).

    b. Set the computer name, company name, organization name, and time zone as the initial OS settings.

    c. Set IP addresses for the virtual server.

    A virtual server can have a maximum of four IP addresses. For the first IP address (management-use IP address), set an IP address for managing the deployed virtual server. For the second to fourth IP addresses, set an IP management-use IP address or operation-use IP address according to the user operating needs. Some settings need to connect to the OS by using a management-use IP address. The order in which IP addresses are set differs depending on the number of NICs installed on the virtual server, as follows.

    When only one NIC is installed on the virtual server.

    The IP address to be set for the NIC is determined based on the following priority: IP address for management > second IP address > third IP address > fourth IP address. Among the specified IP addresses, only the one with the highest priority is set and the others are discarded.

    When two or more NICs are installed on the virtual server

    Specified IP addresses are allocated to the NICs in the following order: management-use IP address > second IP address > third IP address > fourth IP address. Specification of blank IP addresses is skipped. For example, if the management-use IP address, second IP address, and fourth IP address are specified (that is, the third IP address is not specified), the fourth IP address is allocated to the third NIC on the virtual server. If the number of specified IP addresses exceeds the number of NICs installed on the virtual server, the IP addresses that are not allocated to NICs are discarded.

5. The virtual server's (second to fourth) connection-destination virtual switches are set.

The connection-destination virtual switches that have already been set on the exported virtual server are replaced with the specified ones.

For the first NIC, set a management-use virtual switch that can communicate with the local server. For the second to fourth NICs, set a management-use or operation-use virtual switch according to the user operating needs.

If the number of specified virtual switches exceeds the number of NICs installed on the virtual server, only the virtual switches allocated to NICs are enabled.

6. A static route is set if the management-use IP address to be set in the OS of the virtual server is specified and two or more IP addresses are set for the virtual server.

7. If DOMAIN is selected from the selection list for the OS.selectWorkgroupDomain property, and the domain name, domain user name, and domain password are specified, processing to join the domain is executed.

The following gives notes on setting properties:

    a. The OS user password must be entered twice (the second entry is for confirmation). If the OS user password is not entered twice, "Password123" is set as the password. This password is also set if the first entered and second entered passwords do not match.

    b. If WORKGROUP is selected from the selection list for OS.selectWorkgroupDomain, the maximum length of the specifiable workgroup name is 15 bytes. If you specify a workgroup name longer than 15 bytes, the string "WORKGROUP" is set, instead of the specified name.

c. If DOMAIN is selected from the selection list for the OS.selectWorkgroupDomain property, the domain name, domain user name, and domain password are required. If any values for these items are missing or domain participation fails, "WORKGROUP" is set as the workgroup name.

d. Make sure to specify both the IP address and subnet mask. If you do not specify both of these items, the IP address, subnet mask and default gateway are not set.

e. If the virtual switch specification is missing, connections to the virtual switches are not established.

f. For the static route, specify the destination IP address, subnet mask and default gateway. If any of these items are missing, the static route is not set.

g. Specifiable time zones are as follows:

- Tokyo Standard Time

- China Standard Time

- GMT Standard Time

- Pacific Standard Time

- Eastern Standard Time

- US Eastern Standard Time

- Central Standard Time

- Central America Standard Time

- US Mountain Standard Time

- Mountain Standard Time

- Alaskan Standard Time

- Hawaiian Standard Time

- Singapore Standard Time

India Standard Time

If no time zone is specified, the time zone set in the exported virtual server is used.

h. Specifiable locales are as follows:

- ja-JP

- en-US

- zh-CN

i. Specifiable OS names are as follows:

- Windows Server 2012

- Windows Server 2012 R2

- Windows Server 2016

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
hyperv.userName [O]	User name for connecting to storage server	Specifies the user name for connecting to the storage server. Specify this property if the storage server is a server other than the Hyper-V server.
hyperv.password [O]	Password for connecting to storage server	Specifies the password for connecting to the storage server. Specify this property if the storage server is a server other than the Hyper-V server.
windows.orgName [R]	Organization name (company name)	Specify the organization name to be set in the OS of the virtual server.
windows.ownerName [R]	Name (owner name)	Specify the owner name to be set in the OS of the virtual server.
OS.selectWorkgroupDomain [R]	Select workgroup/domain	Select which type of entity you want the virtual server to belong to: workgroup or domain.
OS.workgroupNameDomainName [R]	Workgroup/domain name	Specify the name of the workgroup or domain that the virtual server belongs to. The workgroup name can have a maximum of 15 characters. The domain name can have a maximum of 63 characters.
OS.domainUserName [O]	Domain user name	Specify the user name for the domain that the virtual server belongs to. This item must be specified if DOMAIN is selected as the type of entity that you want the virtual server to belong to.
OS.domainUserPassword [O]	Domain password	Specify the password for the domain that the virtual server belongs to. This item must be specified if DOMAIN is selected as the type of entity that you want the virtual server to belong to.

Property key	Property name	Description
OS.subnetMaskMan O	Subnet mask (management LAN)	Specify the subnet mask for the management LAN of the virtual server. You cannot specify an IPv6 address.
OS.defaultGWMan O	Default gateway (management LAN)	Specify the default gateway for the management LAN of the virtual server. You cannot specify an IPv6 address.
OS.dnsMan O	DNS server IP address (management LAN)	Specify the IP address of the DNS server connected to the management LAN to be set on the virtual server. Do not specify an IPv6 address.
hyperv.virtualSwitchMan O	Virtual switch name (for management)	Specifies the virtual switch name (for management) set for the NIC (for management) that is set for the virtual server.
OS.subnetMask2 O	Subnet mask (for second NIC)	Specify the 2nd subnet mask for the virtual server. You cannot specify an IPv6 address.
OS.defaultGW2 O	Default gateway (for second NIC)	Specify the 2nd default gateway for the virtual server. You cannot specify an IPv6 address.
OS.dns2 O	DNS server IP address (for second NIC)	Specify the IP address of the DNS server to be set for the second NIC recognized by the OS of the virtual server. Do not specify an IPv6 address.
hyperv.virtualSwitch2 O	Virtual switch name (for second NIC)	Specifies the virtual switch name (for second NIC) set for the second NIC that is set for the virtual server.
OS.subnetMask3 O	Subnet mask (for third NIC)	Specifies the subnet mask that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.
OS.defaultGW3 O	Default gateway (for third NIC)	Specifies the default gateway that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.

Appendix D: Additional service templates

Property key	Property name	Description
OS.dns3 ^O	DNS server IP address (for third NIC)	Specify the IP address of the DNS server to be set for the third NIC recognized by the OS of the virtual server. Do not specify an IPv6 address.
hyperv.virtualSwitch3 ^O	Virtual switch name (for third NIC)	Specifies the virtual switch name (for third NIC) set for the third NIC that is set for the virtual server.
OS.subnetMask4 ^O	Subnet mask (for fourth NIC)	Specifies the subnet mask that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.
OS.defaultGW4 ^O	Default gateway (for fourth NIC)	Specifies the default gateway that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.
OS.dns4 ^O	DNS server IP address (for fourth NIC)	Specify the IP address of the DNS server to be set for the fourth NIC recognized by the OS of the virtual server. Do not specify an IPv6 address.
hyperv.virtualSwitch4 ^O	Virtual switch name (for fourth NIC)	Specifies the virtual switch name (for fourth NIC) set for the fourth NIC that is set for the virtual server.
OS.destIPAddress ^O	Destination IP of static route	Specify the static-route destination IP address. Do not specify an IPv6 address.
OS.subnetMaskStaticRoute ^O	Subnet mask (static route)	Specify the subnet mask for the static route. You cannot specify an IPv6 address.
OS.defaultGWStaticRoute ^O	Default gateway (static route)	Specify the default gateway for the static route. You cannot specify an IPv6 address.
hyperv.scsiDiskLocation ^R	SCSI controller location	Specify the location of the SCSI controller for which a system disk has been set. This property takes effect only if the generation number of the exported virtual server is 2.
hyperv.osSettingWaitTime ^R	Wait time before initial OS setup finishes	Specify in seconds the time to wait before initial OS setup finishes.

Appendix D: Additional service templates

Property key	Property name	Description
common.icmpEchoTimeout [R]	Timeout period for ICMP echo requests	To verify network connectivity, specify in milliseconds the time to wait for a reply to an ICMP echo request performed after the virtual server starts.
hyperv.checkVmStateEnabledCount [R]	Virtual server status (startup complete) check count	Specifies the number of times to verify whether virtual server startup is complete. This value combined with the verification interval for the virtual server status (startup complete) determines the maximum wait time.
hyperv.checkVmStateEnabledInterval [R]	Virtual server status (startup complete) check interval	Specifies the interval in seconds between verifications for whether virtual server startup is complete.
hyperv.checkJobStateCountGetDriveList [R]	Job monitoring count (Win32_LogicalDisk method)	This property adjusts the job monitoring count for monitoring requests to Hyper-V for processing (Win32_LogicalDisk method). You do not need to change the value of this property.
hyperv.checkJobStateIntervalGetDriveList [R]	Job monitoring interval (Win32_LogicalDisk method)	This property adjusts the job monitoring interval for monitoring requests to Hyper-V for processing (Win32_LogicalDisk method). You do not need to change the value of this property.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property.		
R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.vmName [R]	Virtual server name	Specifies the name of the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.)
hyperv.exportedVmName [R]	Path of exported virtual server folder	Specifies the folder name, as a full path, of the exported virtual server that is used as the copy source of the virtual server. If the storage server is a server other than the Hyper-V server, specify the path in UNC syntax.
hyperv.importFolderPath [R]	Import target	Specifies the full path of the folder where the virtual server is stored.
windows.operatingSystem [R]	Operating system	Specifies the operating system (OS) of the virtual server.
OS.computerName [R]	Computer/host name	Specify the computer name (host name) in the OS.
OS.osUserPassword [O]	Administrator password	Enter the administrator password to be set in the OS. If you enter nothing, "Password123" is set.
OS.osUserPasswordReEnter [O]	Enter administrator password again	Re-enter the administrator password to be set in the OS. If you enter nothing, "Password123" is set.
OS.productKey [O]	OS product key	Specify the OS product key in the following format: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
OS.ipAddressMan [O]	IP address (management LAN)	Specify the IP address for the management LAN of the virtual server. You cannot specify an IPv6 address.

Property key	Property name	Description
OS.ipAddress2 ^O	IP address (for second NIC)	Specify the 2nd IP address for the virtual server. You cannot specify an IPv6 address.
OS.ipAddress3 ^O	IP address (for third NIC)	Specifies the IP address that is set for the third NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.
OS.ipAddress4 ^O	IP address (for fourth NIC)	Specifies the IP address that is set for the fourth NIC recognized by the OS on the virtual server. IPv6 addresses are not supported.
OS.timeZoneWin ^O	Time zone	Specify the time zone to be set in the OS of the virtual server.
OS.systemLocale ^R	System locale	Specifies the system locale that is set for the OS of the virtual server.

O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property.

R: Required

Prerequisites

Conditions related to the settings on the Hyper-V server:

- Virtual switch settings must have been specified.
- Each virtual switch name must be unique within the Hyper-V server.
- An exported virtual server to be deployed must have been created.

Conditions related to the exported virtual server to be deployed:

- The following service of Hyper-V Integration Service must be enabled: Data Exchange

- Before a virtual server is exported from the Hyper-V server, the virtual server must satisfy the following conditions:

  - The administrator user password is blank.

  - The network settings are deleted.

If the network adapter settings have been specified on the virtual host, make sure that the values of the following settings are blank, and then set Obtain an IP address automatically and Obtain DNS server address automatically:

- IP address

- Subnet mask

- Default gateway

- Preferred DNS server

- Alternate DNS server

The OS settings must have been initialized by using Sysprep and the following conditions must be satisfied:

- [Select Enter System Out of Box Experience (OOBE) from System Cleanup Action list.

- Select the Generalize check box.

- Agentless connection must be possible.

- A maximum of four NICs must be set up.

- Connections with virtual switches must be closed.

- The firewall must permit ICMP (ECHO) replies.

- If the container server and the Hyper-V server are different, the folder containing the virtual server exported from the Hyper-V server must be a shared folder.

- No legacy network adapter must be set.

- Snapshots and differential disks must not be created.

Conditions related to the settings on the virtual server:

- The virtual server name must be unique within the Hyper-V server.

Conditions related to this product settings:

- For the following addresses, authentication information must have been set in the agentless connection definition on the Management tab: the local server address (a loopback address that can be resolved from the name "localhost"), Hyper-V server address, and the management-use IP address of the virtual server to be deployed.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

- Exported virtual server

  A virtual server and its full set of configuration files

- Container server

  A server that contains an exported virtual server to be replicated.

Usage guidelines

- If no virtual switch is specified, the connection-destination virtual switch information of the relevant NIC is deleted. As a result, the NIC is disconnected from the virtual switch. Make sure to specify all necessary virtual switches.

- For IP addresses to be set in the OS of the virtual server, enter only values that are treated as IP addresses. For example, you must not specify special addresses such as a network address, broadcast address, "0.0.0.0", or "255.255.255.255". If you enter such a special address, deployment of the virtual server fails. In addition, for management-use IP addresses, enter IP addresses that allow communication with the local server. If you enter an address that is correct but does not allow communication with the local server, deployment might fail.

- While the virtual server is being deployed, make sure that other services do not operate the virtual server. If other services operate the virtual server that is being deployed, deployment might fail. Direct operation from the Hyper-V server is also prohibited.

- IP addresses are set as described in the Function Specifications. However, depending on the order in which NICs are set in the OS of the virtual server, IP addresses might not be set as intended. Therefore, after the virtual server has been created, verify whether IP addresses are set as intended. If IP addresses are not set as intended, correct the settings manually.

- Make sure that IP addresses set on the virtual server are not being used by other servers. If an IP address that is set on another server is set, no NICs on the virtual server are enabled, sometimes causing the task to end abnormally.

- Make sure that the settings to be specified during creation of the virtual server to be deployed have not been set on the exported virtual server. If the computer name, host name, or IP address has already been set on the exported virtual server, virtual server creation might fail (for example, an error occurs in static-route related processing). If creation fails, delete the virtual server, re-create an exported virtual server on which the computer name, host name, or IP address is not set, and then re-execute this service.

- If deployment fails, the response file used to specify the initial OS settings and IP addresses on the virtual server might remain on the system drive of the virtual server. If a response file remains, look for the relevant response file in the task log, and delete the file. Alternatively, delete the virtual server.

- If folders in the specified import destination path do not exist, they are created.

- If virtual disk files remain in folders in the specified import destination path, the task ends abnormally. Look for the folders in the specified path, and then delete them or specify another path.

- This service does not register virtual servers deployed for any services and applications of the failover cluster manager. Register those servers manually according to the user operating needs.

- When virtual disks on a virtual server are mounted to the Hyper-V server, available drive letters on the Hyper-V server are temporarily locked. If there are no available drive letters, an error occurs when the virtual disk is being mounted, and the task ends abnormally. Before you execute this service, make sure that there are as many available drive letters on the Hyper-V server as the number of drives used by the virtual disks on the exported virtual server.

- If the generation number of the exported virtual server is 2, for the hyperv.scsiDiskLocation property, specify the location of the SCSI controller in which the virtual server's system disk is set. If the location of the system disk differs from the location specified for that property, a search for the system disk takes place. In this case, therefore, a longer time might be required to complete deployment.

- Do not change the value of the hyperv.osSettingWaitTime property from the default value. Note, however, that if the wait time specified for the property is not long enough, the next step might start before the initial OS setup finishes, causing the task to end abnormally.

- In this service template, drive letter of drive connected to the deployed virtual server might be changed, to initialize the system information of the OS by sysprep. So that the drive letter might not match between the deployed virtual server and template of the virtual server. Also if the application has been installed on the drive where the drive letter has been changed, there is a possibility that the application might not work correctly.

Add a virtual server (virtual disk): Service details

This service template creates a virtual disk in a Hyper-V environment and then adds that virtual disk to a virtual server.

The general steps for using this service template are as follows:

1. The task obtains the status of the virtual server.

2. The task confirms that the virtual server is not running.

   If the virtual server is not running, the task continues processing. In all other cases, the task runs the User-Response Wait plug-in to verify whether the virtual server is to be shut down.

   If you select Shutdown from the UI of the User-Response Wait plug-in, the virtual server is shut down. If you select Shutdown for a virtual server that is not running, the task ends abnormally without making any changes on the virtual server.

   If you select Cancel or the wait for a user response times out, the task ends abnormally without making any changes on the virtual server.

3. The task creates a virtual disk file in the Hyper-V environment.

   The task can create dynamic (variable-size) or fixed (fixed-size) virtual disks. It cannot create differential virtual disks or pass-through (physical) disks.

   If you specify the property hyperv.vHardDiskFolderPath, a new virtual disk file is created in the folder path specified by the property. If you do not specify this property, a new virtual disk is saved in the default virtual-disk storage folder set on the Hyper-V server.

   If you specify a path that includes non-existent folders, those folders are automatically created.

4. The task connects the virtual disk to the virtual server.

   You can add virtual disks to a SCSI controller but not to an IDE controller.

   The method for connecting a virtual disk to a SCSI controller varies depending on whether the SCSI controller ID number (the property hyperv.scsiControllerNumber) and SCSI controller location number (the property hyperv.scsiLocationNumber) are specified.

   - If neither the SCSI controller ID number nor SCSI controller location number is specified:

     The Hyper-V server automatically connects the virtual disk to an available SCSI controller.

   - If only the SCSI controller ID number is specified:

     The Hyper-V server automatically connects the virtual disk to any location (0 to 63) of the specified SCSI controller.

   - If only the SCSI controller location number is specified:

     The Hyper-V server automatically connects the virtual disk to the specified SCSI controller location of an available SCSI controller (0 to 3).

   - If both the SCSI controller ID number and SCSI controller location number are specified:

     The virtual disk is connected to the specified location of the specified SCSI controller.

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
UserResponsePlugin.toAddress [O]	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.ccAddress [O]	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.bccAddress [O]	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.mailSubject [O]	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.mailBody [O]	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.encodeType [O]	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.
UserResponsePlugin.dialogText [O]	Domain user name	Specify the user name for the domain that the virtual server belongs to. This item must be specified if DOMAIN is selected as the type of entity that you want the virtual server to belong to.

Property key	Property name	Description
UserResponsePlugin.responseTimeOut [R]	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.vmName [R]	Virtual server name	Specifies the name of the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.)
hyperv.vHardDiskName [R]	Virtual Disk File Name	Specify the file name of the virtual disk to be created. Specify "vhd" or "vhdx" as the file extension.
hyperv.vHardDiskFolderPath [O]	Virtual disk storage folder path	Specify the full path to the folder that stores the created virtual disk. If you omit this specification, the virtual disk is stored in the virtual disk folder specified for the Hyper-V server.
hyperv.vHardDiskType [R]	Virtual disk type	Specifies the virtual disk type. Specify one of the following: dynamic (an adjustable-size virtual disk is created) or fixed (a fixed-size virtual disk is created).
hyperv.capacity [R]	Size (GB)	Specifies the size of the virtual disk, in gigabytes (GB).

Property key	Property name	Description
hyperv.scsiControllerNumber O	SCSI controller number	Specifies the SCSI controller number of the virtual server that adds the virtual disk. Specify the SCSI controller number as an integer from 0 in the order that the SCSI controllers were added to the virtual server (displayed in the Hyper-V Manager).
hyperv.scsiLocationNumber O	SCSI controller location number	Specifies the location number of the SCSI controller of the virtual server that adds the virtual disk. Specify the SCSI controller location number as an integer for the unused locations of SCSI controllers that were added to the virtual server.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

Prerequisites

- The name of each virtual server on the Hyper-V server must be unique.

- The Operating System Shutdown service of Hyper-V Integration Services must be enabled on the target virtual server.

- There must be an available SCSI controller on the virtual server.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- This service template does not initialize the virtual disks that are added to the virtual server. If necessary, log in to the OS of the virtual server and initialize the disks.

- Do not concurrently run multiple instances of this service on the same virtual server.

- You can specify HTML tags for the property UserResponseplugin.dialogText. The specifiable tags and attributes are the same as those for the User-Response Wait plug-in. For details, see "User-Response Wait Plug-in" in the *Hitachi Ops Center Automator Service Builder User Guide*.

- You cannot add any virtual disk files that have already been created on a Hyper-V server.

- If you select Shutdown from the UI of the User-Response Wait plug-in, the OS of the virtual server is forcibly shut down. Data in files that are being edited on the virtual server will not be saved.

- If another virtual disk is already connected to the specified SCSI controller location of the specified SCSI controller, this task ends abnormally.

- For second-generation virtual servers, you can add only virtual disks that are in VHDX file format. If you try to connect a created VHD file to a second-generation virtual server, this task ends abnormally.

Change virtual server specifications (CPU and memory): Service details

This service template changes the specified resource settings (CPU and memory) of a virtual server in a Hyper-V environment.

The general steps for using this service template are as follows:

1. The service asks whether CPU and memory settings are to be changed. If you do not want to change either the CPU settings or the memory settings, the service ends abnormally.

2. The service makes sure that the virtual server is stopped.

   If the virtual server is running, the User-Response Wait plug-in to verify whether the virtual server is to be shut down.

   Users who have Modify permission can use this plug-in to specify an email destination, message, timeout value, and information to be displayed.

   If you select Shutdown from the UI of the User-Response Wait plug-in, the virtual server is shut down.

   If you select Cancel or the response-wait processing times out, the task ends abnormally without changing the virtual server specifications.

3. The target settings for the CPU and memory resources of the virtual server are changed. The settings that can be changed are as follows:

- CPU settings that can be changed:

  - Number of virtual processors

  - Number of reserved virtual processor resources

  - Maximum number of virtual processor resources

  - Relative Weight setting of virtual processor resources

  - Processor compatibility

  - Maximum number of processors that can be used on a NUMA node

  - Maximum number of NUMA nodes that can be used by a socket

- Memory settings that can be changed:

  - Startup RAM (MB)

  - Whether to enable dynamic memory

  - Minimum RAM for dynamic memory (MB)

  - Maximum RAM for dynamic memory (MB)

  - Buffer for dynamic memory

  - Memory weight

  - Maximum size of memory available on a NUMA node (MB)

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
UserResponsePlugin.toAddress [O]	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB

Property key	Property name	Description
UserResponsePlugin.ccAddress O	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.bccAddress O	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.mailSubject O	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.mailBody O	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.encodeType O	Encoding	Specify the encoding of notification emails sent when the service is waiting for a user response. The encodings you can specify are us-ascii, iso-2022-jp, shift_jis, euc-jp, and utf-8. If you omit this property, utf-8 is set.
UserResponsePlugin.dialogText O	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.

Property key	Property name	Description
UserResponsePlugin.response TimeOut [R]	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.vmName [R]	Virtual server name	Specifies the name of the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.)
hyperv.selectVmCpuChange [R]	Whether to change the virtual server CPU settings	To change the virtual server CPU settings, select "yes". If you do not want to change the virtual server CPU settings, select "no".
hyperv.selectVmMemoryCha nge [R]	Whether to change the virtual server memory settings	To change the virtual server memory settings, select "yes". If you do not want to change the virtual server memory settings, select "no".
hyperv.cpuCount [O]	Number of virtual processors	Specify the number of virtual processors to be set on a virtual server. Specify an integer of 1 or greater.

Appendix D: Additional service templates

Property key	Property name	Description
hyperv.cpuReserve O	Number of reserved virtual processor resources	Specify the number of virtual processor resources reserved by each virtual server. Specify an integer that does not exceed "Maximum number of virtual processor resources" within the range from 0 to 100.
hyperv.cpuMaximum O	Maximum number of virtual processor resources	Specify the maximum number of virtual processor resources that can be used by each virtual server. Specify an integer that is equal to or greater than "Number of reserved virtual processor resources" within the range from 0 to 100.
hyperv.cpuRelativeWeight O	Relative weight of virtual processor resources	Specify the relative weight of virtual processor resources among virtual servers. Specify an integer in the range from 0 to 10,000.
hyperv.cpuCompatibilityForMigrationEnabled O	Processor compatibility	To enable processor compatibility, specify "true". To disable processor compatibility, specify "false". If specification is omitted, the current setting does not change.
hyperv.cpuMaximumCountPerNumaNode O	Maximum number of processors that can be used on a NUMA node	Specify the maximum number of processors that can be used on a virtual NUMA (Non-Uniform Memory Architecture) node. Specify an integer of 1 or greater.
hyperv.nodeMaximumCountPerNumaSocket O	Maximum number of NUMA nodes that can be used by a socket	Specify the maximum number of virtual NUMA (Non-Uniform Memory Architecture) nodes that can be used by one socket. Specify an integer of 1 or greater.

Property key	Property name	Description
hyperv.memoryStartupMegaBytes^O	Startup RAM (MB)	Specify (in MB) the amount of memory to be used during the startup of the virtual server. Specify an integer of 8 or greater that is a multiple of 2.
hyperv.dynamicMemoryEnabled ^O	Whether to enable dynamic memory	To enable dynamic memory on the virtual server, specify "true". To disable dynamic memory on the virtual server, specify "false". If specification is omitted, the current setting does not change.
hyperv.dynamicMemoryMinimumMegaBytes ^O	Minimum RAM for dynamic memory (MB)	Specify (in MB) the minimum amount of dynamic memory. Specify a multiple of 2 in the range from 8 to the "Startup RAM" value. Specify this item only when dynamic memory is enabled.
hyperv.dynamicMemoryMaximumMegaBytes ^O	Maximum RAM for dynamic memory (MB)	Specify (in MB) the maximum amount of dynamic memory. Specify a multiple of 2 that is not smaller than 8 and the "Startup RAM" value. Specify this item only when dynamic memory is enabled.
hyperv.dynamicMemoryBuffer ^O	Buffer for dynamic memory	Specify the percentage of memory to be reserved as the buffer for dynamic memory of Hyper-V. Specify an integer in the range from 5 to 2,000. Specify this item only when dynamic memory is enabled.
hyperv.memoryPriority ^O	Memory weight	Specify the priority that is applied when available memory is allocated to multiple virtual servers. Specify an integer in the range from 0 to 100.

Property key	Property name	Description
hyperv.memoryMaximumAmountMegaBytesPerNumaNode	Maximum size of memory available on a NUMA node (MB)	Specify (in MB) the maximum amount of memory that can be used on a virtual NUMA (Non-Uniform Memory Architecture) node. Specify an integer of 8 or greater.

O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property.

R: Required

Prerequisites

The name of each virtual server on the Hyper-V server must be unique within a single Hyper-V server.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- Do not run multiple instances of this service simultaneously on the same virtual server.

- You can use certain HTML tags when specifying the property UserResponseplugin.dialogText. The tags and attributes that can be used are the same as those that can be used for the User-Response Wait plug-in. For details, see "User-Response Wait Plug-in" in the *Hitachi Ops Center Automator Service Builder User Guide*.

- The maximum number of virtual processors that can be set for a virtual server differs depending on the Hyper-V server.

- The values that can be specified for the memory-related settings of a virtual server differ depending on the Hyper-V server.

- IIf the service ends abnormally, some CPU or memory settings might have been changed.

- If you select "yes" for the property hyperv.selectVmCpuChange and then run the service without entering a value for any CPU-related setting, the service ends abnormally. Similarly, if you select "yes" for the property hyperv.selectVmMemoryChange and then run the service without entering a value for any memory-related setting, the service ends abnormally.

- If you select "Shutdown" from the UI of the User-Response Wait plug-in, the virtual server shuts down. Data in the files that are currently being edited on the virtual server will not be saved.

Delete virtual server: Service details

This service template creates a virtual disk in a Hyper-V environment and then adds that virtual disk to a virtual server.

The general steps for using this service template are as follows:

1. The task obtains the status of the virtual server.

2. The task confirms that the virtual server is not running.

   If the virtual server is not running, the task continues processing. In all other cases, the task runs the User-Response Wait plug-in to verify whether the virtual server is to be shut down.

   If you select Shutdown from the UI of the User-Response Wait plug-in, the virtual server is shut down. If you select Shutdown for a virtual server that is not running, the task ends abnormally without making any changes on the virtual server.

   If you select Cancel or the wait for a user response times out, the task ends abnormally without making any changes on the virtual server.

3. The task deletes the virtual server.

   The virtual server is deleted from the Hyper-V server. At this time, all snapshots for that virtual server are also deleted.

   If you select "yes" from the selection list for the hyperv.vHardDiskDeletePermanently property, the task deletes all (dynamic, fixed, and differential) virtual disk files that are allocated to the virtual server that is to be deleted. The task does not delete disks or files that are allocated to pass-through (physical) disks, floppy disks, CDs or DVDs. If differential virtual disks are allocated to the virtual server, the task does not delete the virtual disks that are used as the parents of those differential virtual disks.

   If trying to delete virtual disk files on the virtual server fails, the file deletion processing stops, and the task ends abnormally.

4. The task outputs a list of virtual disk files on the virtual server.

   If you specify the hyperv.vhdListOutputFileNameRemote and hyperv.vhdListOutputFileNameLocal properties, the task outputs a CSV file that lists the paths of the virtual disk files allocated to the virtual server that is to be deleted from the Hyper-V server. The task then transfers the CSV file to the local PC and deletes the CSV file from the remote PC. If differential virtual disks are allocated to the virtual server, the virtual disks that are used as the parents of those differential virtual disks are not included in the CSV file.

   If you only specify the hyperv.vhdListOutputFileNameRemote property, the task outputs a CSV file that lists the paths of the virtual disk files, but does not transfer the CSV file to the local PC.

   The following items are output to the file in CSV (comma-separated value) format:

   a. Whether virtual disk files exist (header name: Existence)

Depending on whether virtual disk files are allocated to the virtual server when the server is deleted, one of the following values is output:

- Found: Existence of virtual disk files was confirmed.

- NotFound: Virtual disk files were set up, but their existence were not confirmed.

b. File deletion result (header name: DeleteResult)

If you select "yes" from the selection list for the hyperv.vHardDiskDeletePermanently property, the task outputs the result of deleting the virtual disk files. If you select "no", "Skipped" is output. For the deletion result, one of the following values is output:

- Completed: File deletion finished successfully.

- Failed: File deletion failed.

- Skipped: File deletion was not performed.

c. File path (header name: FilePath)

The paths of the virtual disk files set for the Hyper-V server are output, regardless of the values in (a) and (b).

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
UserResponsePlugin.to Address [O]	TO addresses	Specify the email addresses to enter in the TO field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.cc Address [O]	CC addresses	Specify the email addresses to enter in the CC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB

Property key	Property name	Description
UserResponsePlugin.bccAddress [O]	BCC addresses	Specify the email addresses to enter in the BCC field of notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. For example: mailA,mailB
UserResponsePlugin.mailSubject [O]	Subject line	Specify the subject line of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.mailBody [O]	Email text	Specify the body text of notification emails sent when the service is waiting for a user response.
UserResponsePlugin.encodeType [O]	Additional dialog box text	Enter additional text to appear in the response input dialog box, in text or HTML format. Supported HTML tags are anchor tags, bold tags, break tags, font tags, italics tags, and underline tags.
UserResponsePlugin.dialogText [O]	Domain user name	Specify the user name for the domain that the virtual server belongs to. This item must be specified if DOMAIN is selected as the type of entity that you want the virtual server to belong to.
UserResponsePlugin.responseTimeOut [R]	Response timeout time (minutes)	Specify how long (in minutes) the service waits for a user response before timing out. In the event of a response timeout, the service will end abnormally.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.vmName ^R	Virtual server name	Specifies the name of the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.)
hyperv.vHardDiskDelete Permanently ^R	Deletion of virtual disk file required	Specifies whether to delete virtual disk file used for the virtual server.
hyperv.vhdListOutputFile NameRemote ^O	Output file name (remote)	Specifies, as a full path, the temporary file name for when the virtual disk file list used by the virtual server is output to the Hyper-V server.
hyperv.vhdListOutputFile NameLocal ^O	Output file name (local)	Specifies the name of the file (in full-path format) that contains the list of virtual disk files to be saved to the local server.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

Prerequisites

- The name of each virtual server on the Hyper-V server must be unique.

- The Operating System Shutdown service of Hyper-V Integration Services must be enabled on the target virtual server.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- Do not concurrently run multiple instances of this service on the same virtual server.

- If you previously performed a task (such as a snapshot-related procedure) to make the path of a virtual disk file invisible in the virtual server settings, this service will not delete that virtual disk file. In such a case, manually delete the virtual disk file.

Appendix D: Additional service templates

- You can specify HTML tags for the property UserResponseplugin.dialogText. The specifiable tags and attributes are the same as those for the User-Response Wait plug-in. For details, see "User-Response Wait Plug-in" in the *Hitachi Ops Center Automator Service Builder User Guide*.

- If you specify an existing file for the hyperv.vhdListOutputFileNameRemote or the hyperv.vhdListOutputFileNameLocal properties, the existing file is overwritten. In addition, the file on the remote PC will be deleted, so make sure the specified file name is correct.

- If you specify a path that includes non-existent folders for the hyperv.vhdListOutputFileNameRemote property, those folders are automatically created but not automatically deleted. Periodically delete these folders if they are unnecessary.

- If you specify the hyperv.vhdListOutputFileNameRemote property, a file is output to the remote PC even if the hyperv.vhdListOutputFileNameLocal property is not specified or if an error occurs during the deletion of the virtual server or virtual disk file. Because this service does not delete the output file, manually delete the file if it is unnecessary.

- This service does not delete the registration information of virtual servers from any services and applications of the failover cluster manager. Manually delete the registration information based on the user operational requirements.

- If you select "Shutdown" from the UI of the User-Response Wait plug-in, the OS of the virtual server is forcibly shut down. Data in files that are being edited on the virtual server will not be saved.

Obtain virtual server information list: Service details

This service template obtains a list of information about virtual servers in a Hyper-V environment.

The general steps for using this service template are as follows:

1. A list of virtual server information is output to a temporary file in CSV format on the specified remote PC. The file is encoded in the default encoding of the system on the Hyper-V server.
2. The temporary file on the remote PC is transferred to an output file on the local PC.
3. The temporary file on the remote PC is deleted.

   The following items are output to the file in CSV (comma-separated value) format:

   - Name of the Hyper-V server (header name: ComputerName)

   - Name of the virtual server (header name: VMName)

   - State of the virtual server (header name: State)

   - CPU usage (%) of a virtual server (header name: CPUUsage)

   - Size of the memory (in MB) allocated to the virtual server (header name: MemoryAssigned)

   - Running time of the virtual server (header name: Uptime)

   - Status of the virtual server (header name: Status)

   - Number of virtual processors on the virtual server (header name: ProcessorCount)

Appendix D: Additional service templates

- Startup RAM (in MB) of the virtual server (header name: MemoryStartup)
- Whether dynamic memory is enabled on the virtual server (header name: DynamicMemoryEnabled)

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.listOutputFileNameRemote [R]	Output file name (remote)	Specifies, as a full path, the temporary file name for when virtual server information is output to the Hyper-V server.
hyperv.exportedVmName [R]	Output file name (local)	Specifies the name of the file (in full-path format) that contains the virtual server information to be saved to the local server.
R: Required		

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- If you specify an existing file for the remote or local file, the existing file will be overwritten. In addition, the file on the remote PC will be deleted, so make sure the specified file name is correct.

- If you specify a remote file path that includes non-existent folders, those folders are automatically created. These folders are not automatically deleted. Periodically delete these folders if they are unnecessary.

- If two or more virtual servers have the same name, you will not be able to distinguish these virtual servers in the output CSV file.

Restart virtual server: Service details

This service template starts multiple virtual servers in a Hyper-V environment.

The general steps for using this service template are as follows:

1. For a virtual server that is running, this service template restarts the virtual server. For a virtual server in any state other than the running state, processing for that virtual server ends in an error.
2. If the network connectivity verification is enabled, the IP address (IPv4) set for the virtual server that was started is obtained. Then the local server sends an ICMP echo request to that server to verify whether it is connected to the network.

This processing is run in parallel for the specified virtual servers.

Before a virtual server is started, a verification of the virtual server status is performed for the number of times specified by the hyperv.checkVmStateEnabledCount property, at the interval specified (in seconds) by the hyperv.checkVmStateEnabledInterval property. Adjust the values of these properties based on your environmental needs.

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
hyperv.waitTime [R]	Wait time before starting to obtain IP address	When performing a network connectivity verification, specifies the amount of time, in seconds, after the virtual server starts to wait before starting to obtain the IP address.

Property key	Property name	Description
common.icmpEchoTimeout [R]	Timeout period for ICMP echo requests	Specify in milliseconds how long the service waits for a reply to an ICMP echo request sent to confirm startup of a virtual server.
hyperv.checkVmStateEnabledCount [R]	Virtual server status (startup complete) check count	Specifies the number of times to verify whether virtual server startup is complete. This value combined with the verification interval for the virtual server status (startup complete) determines the maximum wait time.
hyperv.checkVmStateEnabledInterval [R]	Virtual server status (startup complete) check interval	Specifies the interval in seconds between verifications for whether virtual server startup is complete.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.foreachVmName [R]	Virtual server names (multiple names can be specified.	Specifies one or more names for the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.) If specifying multiple names, separate them with commas. You can specify up to 99 names.
hyperv.checkNetworkConnection [R]	Check network connectivity.	Specifies whether to verify network connectivity after starting a virtual server.

Property key	Property name	Description
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property.		
R: Required		

Prerequisites

- The name of each virtual server on the Hyper-V server must be unique.

- The Operating System Shutdown and Data Exchange services of Hyper-V Integration Service on the target virtual server must be enabled.

- If the network connectivity verification is enabled, the local server (the loopback address resolved from the name "localhost") must be set as the agentless connection destination.

- If the network connection verification is enabled, the firewall for the target virtual server must permit ICMP (ECHO) replies.

- The virtual server must be running.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- This service forcibly shuts down the OS of the specified virtual server. When this service is executed, data in files that are being edited on the virtual server will not be saved.

- If the network connectivity verification is enabled, depending on the system environment, the service might not be able to obtain all IP addresses immediately after the virtual server starts. For this reason, even if the virtual server is running, the task might end abnormally, because the osSendIcmp plug-in cannot verify network connectivity for all IPv4 addresses set on the virtual server. To ensure that all IP addresses are obtained, adjust the number of seconds specified for the hyperv.waitTime property, which determines the amount of time to wait after the virtual server starts before obtaining IP addresses.

- To perform the network connection verification, make sure that the total length of the IP addresses (IPv4) set for all NICs on a virtual server does not exceed 1,024 characters. If the total length exceeds 1,024 characters, an error might occur in the plug-in osSendIcmp, causing the task to end abnormally. The maximum length of one IP address (IPv4) including the comma used as an address separator is 16 characters.

- If you enable the network connectivity verification, adjust the value of the common.icmpEchoTimeout property based on your environmental needs.

Start virtual server: Service details

This service template starts multiple virtual servers in a Hyper-V environment.

The general steps for using this service template are as follows:

1. The status of a virtual server is obtained.
2. If the virtual server is stopped, it is started. If the virtual server is already running, the processing to start the virtual server is skipped. In all other cases, processing for that virtual server ends in an error.
3. If the network connection verification is enabled, the IP address (IPv4) set for the virtual server that was started is obtained. Then the local server sends an ICMP echo request to that server to verify whether it is connected to the network.

This processing is run in parallel for the specified virtual servers.

Before a virtual server is started, a verification of the virtual server status is performed for the number of times specified by the hyperv.checkVmStateEnabledCount property, at the interval specified (in seconds) by the hyperv.checkVmStateEnabledInterval property. Adjust the values of these properties based on your environmental needs.

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost R	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
hyperv.waitTime R	Wait time before starting to obtain IP address	When performing a network connectivity verification, specifies the amount of time, in seconds, after the virtual server starts to wait before starting to obtain the IP address.
common.icmpEchoTimeout R	Timeout period for ICMP echo requests	Specify in milliseconds how long the service waits for a reply to an ICMP echo request sent to confirm startup of a virtual server.

Appendix D: Additional service templates

Property key	Property name	Description
hyperv.checkVmStateEnabledCount [R]	Virtual server status (startup complete) check count	Specifies the number of times to verify whether virtual server startup is complete. This value combined with the verification interval for the virtual server status (startup complete) determines the maximum wait time.
hyperv.checkVmStateEnabledInterval [R]	Virtual server status (startup complete) check interval	Specifies the interval in seconds between verifications for whether virtual server startup is complete.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.foreachVmName [R]	Virtual server names (multiple names can be specified.	Specifies one or more names for the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.) If specifying multiple names, separate them with commas. You can specify up to 99 names.
hyperv.checkNetworkConnection [R]	Check network connectivity.	Specifies whether to verify network connectivity after starting a virtual server.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

Appendix D: Additional service templates

Prerequisites

- The name of each virtual server on the Hyper-V server must be unique within a single Hyper-V server.

- The Data Exchange service of Hyper-V Integration Service on the target virtual server must be enabled.

- If the network connection verification is enabled, you must specify the address of the connection destination for agentless monitoring. Make sure to specify a loopback address that can be resolved from the name "localhost".

- If the network connection verification is enabled, the firewall for the target virtual server must permit ICMP (ECHO) replies.

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

- When the network connection verification is performed, depending on the system environment, the task might not be able to obtain all IP addresses immediately after the virtual servers are started. As a result, even if all virtual servers are running, the osSendIcmp plug-in might not be able to confirm network connection for all IP addresses (IPv4) set on the virtual servers, and the task might end abnormally. To ensure that all IP addresses can be obtained, adjust the value (in seconds) of the hyperv.waitTime property, which specifies the amount of time to wait between starting a virtual server to obtaining an IP address.

- To perform the network connection verification, make sure that the total length of the IP addresses (IPv4) set for all NICs on a virtual server does not exceed 1,024 characters. If the total length exceeds 1,024 characters, an error might occur in the plug-in osSendIcmp, causing the task to end abnormally. The maximum length of one IP address (IPv4) including the comma used as an address separator is 16 characters.

- If you enable the network connection verification, adjust the value of the common.icmpEchoTimeout property based on your environmental needs.

Stop virtual server: Service details

This service template shuts down the OSs of multiple virtual servers in a Hyper-V environment.

The general steps for using this service template are as follows:

1. The service asks whether CPU and memory settings are to be changed. If you do not want to change either the CPU settings or the memory settings, the service ends abnormally.

2. If the virtual server is running, the OS of that virtual server is shut down. If the virtual server is stopped, the processing to shut down the OS is skipped. In all other cases, processing for that virtual server fails.

   This processing is run in parallel for the specified virtual servers.

Service Definition and Submit Service Properties

The following table lists the properties shown in the **Service Definition** window for the service template.

Property key	Property name	Description
hyperv.targetHost [R]	Hyper-V server host name	Specifies the host name or IP address of the Hyper-V server. IPv6 addresses are not supported.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

The following table lists the properties shown in the **Service Definition** and the **Submit Service** windows:

Property key	Property name	Description
hyperv.foreachVmName [R]	Virtual server names (multiple names can be specified.	Specifies one or more names for the virtual server. (This is the name of the virtual server as it is displayed in Hyper-V. This is not the host name in the OS.) If specifying multiple names, separate them with commas. You can specify up to 99 names.
O: The property can be omitted. However, the property might be mandatory depending on what is specified for other properties. See the Description of each property. R: Required		

Prerequisites

- The name of each virtual server on the Hyper-V server must be unique within a single Hyper-V server.

- The Shut down operating system service of Hyper-V Integration Service on the target virtual server must be enabled.

Appendix D: Additional service templates

Server requirements

- Hyper-V server

  A server on which Hyper-V is installed.

- Virtual server

  A virtual server managed by Hyper-V.

Usage guidelines

If you run this service, the data of files that are currently being edited on the virtual server will not be saved.

Importing service templates

Before you can use service templates that are not imported by default, you must import them by using the Ops Center Automator UI.

Procedure

1. Access the Ops Center Automator UI.

   - If you are importing templates that are included with the product, you must log on to the Ops Center Automator server machine by using a remote connection.

   - If you are importing templates that you downloaded, you can access the UI from your local machine without using a remote connection.

2. Log on to Ops Center Automator with a user role of Develop or higher.

3. Use one of the following methods to import the service templates:

   - From the **Dashboard Guidance Menu**, go to the **Manage Service Templates** section, then click **Import Service Template**.

   - From the **Service Templates** tab Card View, click **Import**.

     📄 **Note:** If you plan to modify the template after you import it, you can also import the template from the Service Builder tool by accessing the Service Builder **Developing** tab, then clicking **Import**.

4. Browse to the location of the template files:

   - For templates provided with the product, go to one of the following locations and select a file with an .st or .zip extension:

     In Windows-based OS, browse to *automation-software-installation-folder*\public\contents.

     In Linux OS, browse to *automation-software-installation-directory*/public/contents.

   - For templates you downloaded, go to the location in which you saved the downloaded template zip file and select a file with a .zip extension.

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*

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Index

Index

Index

Index

Index

W

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