



Hitachi Command Suite

Automation Director

User Guide

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Preface

This manual provides information about Hitachi Automation Director.

- [Intended audience](#)
- [Product version](#)
- [Release notes](#)
- [Related documents](#)
- [Document conventions](#)
- [Conventions for storage capacity values](#)
- [Accessing product documentation](#)
- [Getting help](#)
- [Comments](#)

Intended audience

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

Product version

This document revision applies to Hitachi Automation Director v8.1.4 or later.

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.

Related documents

The documents below are referenced in this document or contain more information about the features described in this document.

- *Hitachi Command Suite Automation Director Installation and Configuration Guide, MK-92HC204*
- *Hitachi Command Suite Automation Director API Reference Guide, MK-92HC217*
- *Hitachi Command Suite Automation Director Messages, MK-92HC221*
- *Hitachi Command Suite Automation Director Service Builder User Guide, MK-92HC222*
- *Hitachi Command Suite Automation Director Release Notes, RN-92HC206*
- Hitachi Command Suite documentation
- Hitachi Tuning Manager documentation

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click OK .
<i>Italic</i>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: <i>copy source-file target-file</i>

Convention	Description
	Note: Angled brackets (< >) are also used to indicate variables.
Monospace	Indicates text that is displayed on screen or entered by the user. Example: <code>pairdisplay -g oradb</code>
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: <code>pairdisplay -g <group></code> Note: Italic font is also used to indicate variables.
[] 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 important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions or consequences (for example, disruptive operations).
	WARNING	Warns the user of severe conditions or consequences (for example, destructive operations).

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

Physical capacity unit	Value
1 exabyte (EB)	1,000 PB or 1,000 ⁶ bytes

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

Logical capacity unit	Value
1 block	512 bytes
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 Data Systems Portal: <https://portal.hds.com>. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

[Hitachi Data Systems Support Portal](https://portal.hds.com) is the destination for technical support of your current or previously-sold storage systems, midrange and enterprise servers, and combined solution offerings. The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, log on to the Hitachi Data Systems Support Portal for contact information: <https://portal.hds.com>.

[Hitachi Data Systems Community](https://community.hds.com) is a new global online community for HDS customers, partners, independent software vendors, employees, and prospects. It is an open discussion among these groups about the HDS portfolio of products and services. It is the destination to get answers, discover insights, and make connections. The HDS Community complements our existing Support Portal and support services by providing an area where you can get answers to non-critical issues and questions. **Join the conversation today!** Go to community.hds.com, register, and complete your profile.

Comments

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Thank you!

Getting started with Automation Director

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

- [About Hitachi Automation Director](#)
- [Built-in user accounts](#)
- [Logging in](#)
- [Accessing user profiles](#)
- [Changing the System account password](#)
- [Registering a license](#)
- [Logging out](#)
- [Navigating the interface](#)
- [Navigating help](#)
- [Using search features](#)
- [User workflows by role](#)
- [Launching Service Builder](#)

About Hitachi Automation Director

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 operation, you must necessarily spend 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 requirements and processes. With Hitachi Automation Director, you can easily automate time-consuming manual tasks and streamline provisioning workflows that otherwise take hours to complete.

Automation Director is a software solution that provides the necessary tools to automate and simplify the end-to-end storage provisioning process for storage and data center administrators. The building blocks of the product are pre-packaged automation templates known as service templates.

Automation Director integrates with existing Hitachi Command Suite applications to automate common infrastructure management tasks by utilizing your existing infrastructure services.

Some of the supported features of Automation Director are:

- Pre-configured service templates that help in creating customized automation services.
- Automation services for intelligent provisioning of volumes from different storage classes.
- Role-based access to defined services.
- Performance-based pool selection that chooses the best performance pools from infrastructure groups and provides 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.
- Users can create a customized service catalog to address specific data needs.
- A RESTful API.

Before getting started with Automation Director, understand the following key concepts:

Service templates

A service template is a deployment blueprint for application-based storage capacity provisioning process. It is designed to encapsulate configuration settings, instructions, and tasks needed to automate a provisioning request. The default configuration settings and tasks that are used in designing service templates are based on Hitachi Data Systems best practices and real world data center scenarios including resource allocation, optimization, and

configuration. When you install Automation Director, service templates are automatically installed and are pre-configured for use.

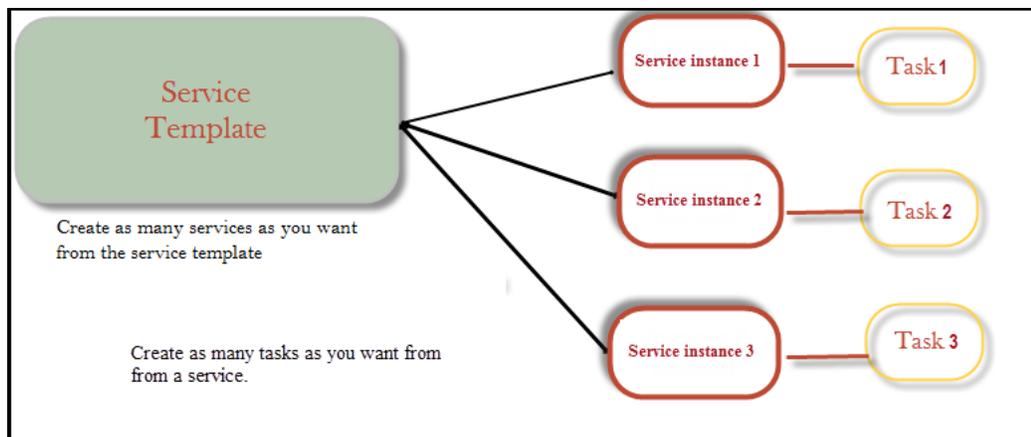
Services

A service is an instance of a service template that has been configured to work with your provisioning needs. When you create a new service, you are actually 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 Automation Director 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, Automation Director 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 the user's 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.

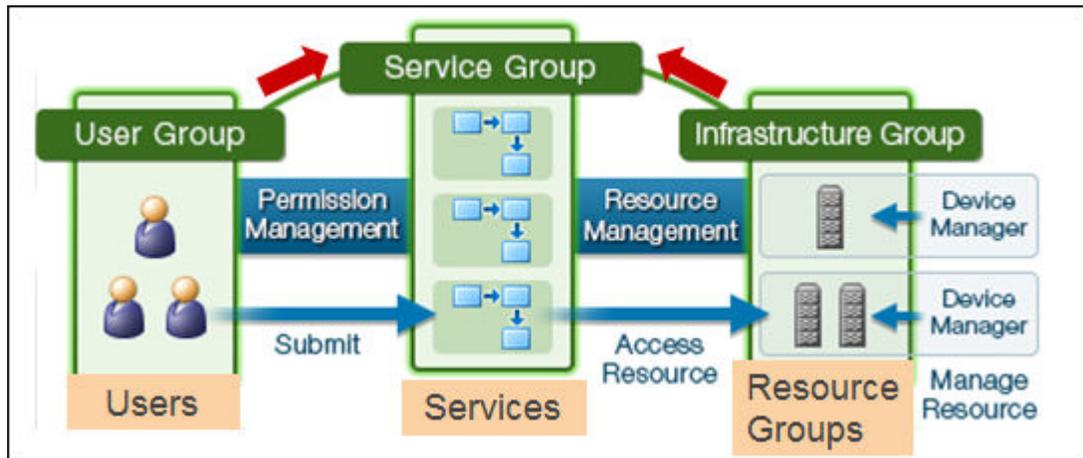


Figure 1-1 Configuration overview

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. Automation Director includes predefined user groups and users can also create new user groups.

User responsibilities

Automation Director provides two global user roles for storage administrators: service administrator and service user.

Service administrator

The service administrator is a storage administrator who has advanced knowledge of data center operations 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 Automation Director, this type of storage administrator is responsible for creating and managing all automation services and delegating the service execution responsibility to service users, when needed.

Service user

The service user is a storage administrator who is responsible for the management of storage provisioning requests which is done by submitting and verifying the completion of automation services and monitoring all pending and scheduled tasks.

System administrator

After Automation Director is installed, the system administrator performs the initial setup tasks of creating pools, discovering storage systems, registering hosts in Hitachi Command Suite, and creating users and defining permissions in Automation Director.

Depending on your role as a user of Automation Director, you can perform the following actions:

Users	Available Actions	Automation Director User Roles
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
System administrators	Modify shared property settings Configure connections to Device Manager Define storage profiles for classification of storage Create users and user groups Create service groups and associate services with them Create infrastructure groups and add storage resources to them Associate infrastructure groups with service groups to enable the services in the service groups to use resources in the infrastructure groups.	Admin
	Actions available in Service Builder:	Admin or Develop

Users	Available Actions	Automation Director User Roles
	Create, modify, build, and release templates and plugins.	

Automation scenarios

This topic outlines common scenarios that might apply to your automation needs.

Scenario 1: Provisioning of storage resources

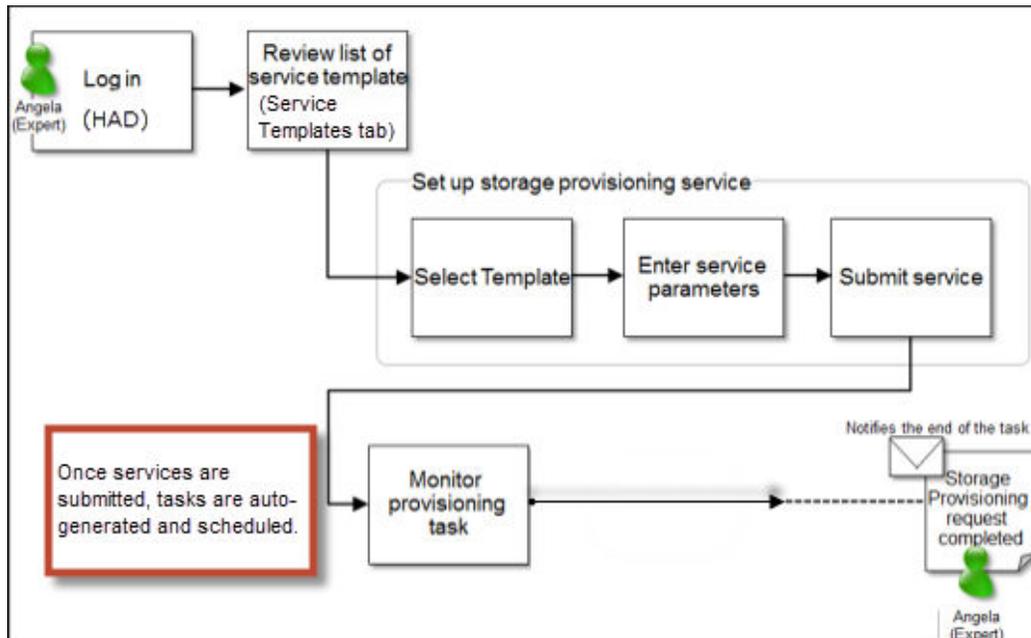
Angela is an expert administrator who usually spends a lot of time processing storage provisioning requests from different departments in the company. Last month, her company purchased Hitachi Automation Director to automate some of the manual tasks her team has been doing to process such requests. Currently, she uses homegrown management tools to configure storage resources for provisioning. After she installed and configured Automation Director, she began to review the pre-packed service templates provided with the application. Angela quickly discovered that the templates are not only pre-configured for use but also capture the manual tasks that used to take a huge amount of her time, even before beginning the actual provisioning work.

She just received a high priority request to provision storage for an Exchange 2010 server within 48 hours. Angela decided to use the "Allocate Volumes for Microsoft Exchange Server" service template. By doing so, 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

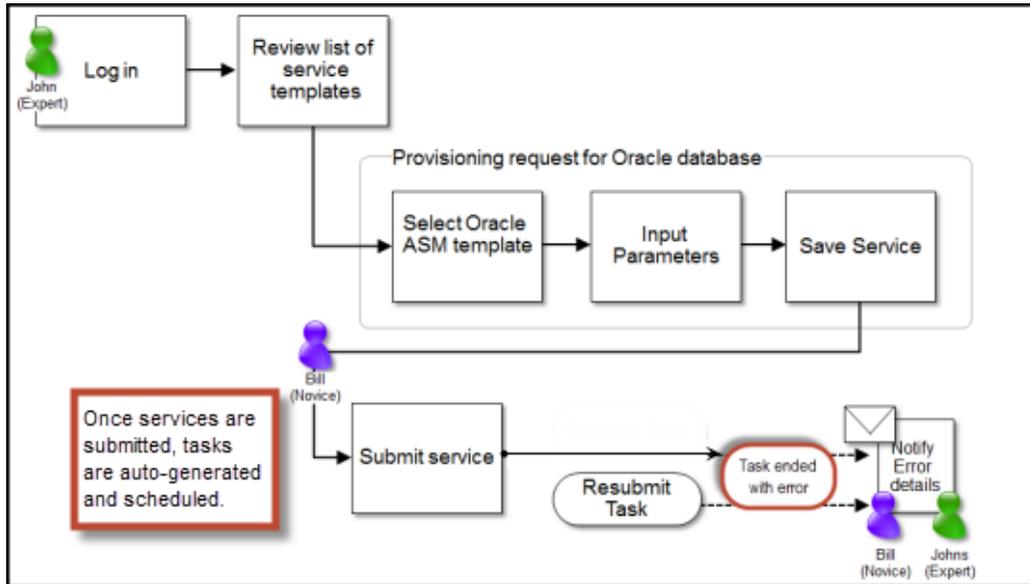
Due to high volume of service requests for storage allocation, John who is an expert administrator has been spending at least 60% of his time closing level 1 tickets, which primarily involve preparing resources for provisioning and then monitoring the status of all submitted requests.

He is beta-testing Automation Director software, which his company is considering for purchase in order 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 a service template that will help save him the manual effort. Using the "Allocate Volumes for Oracle Database" 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.

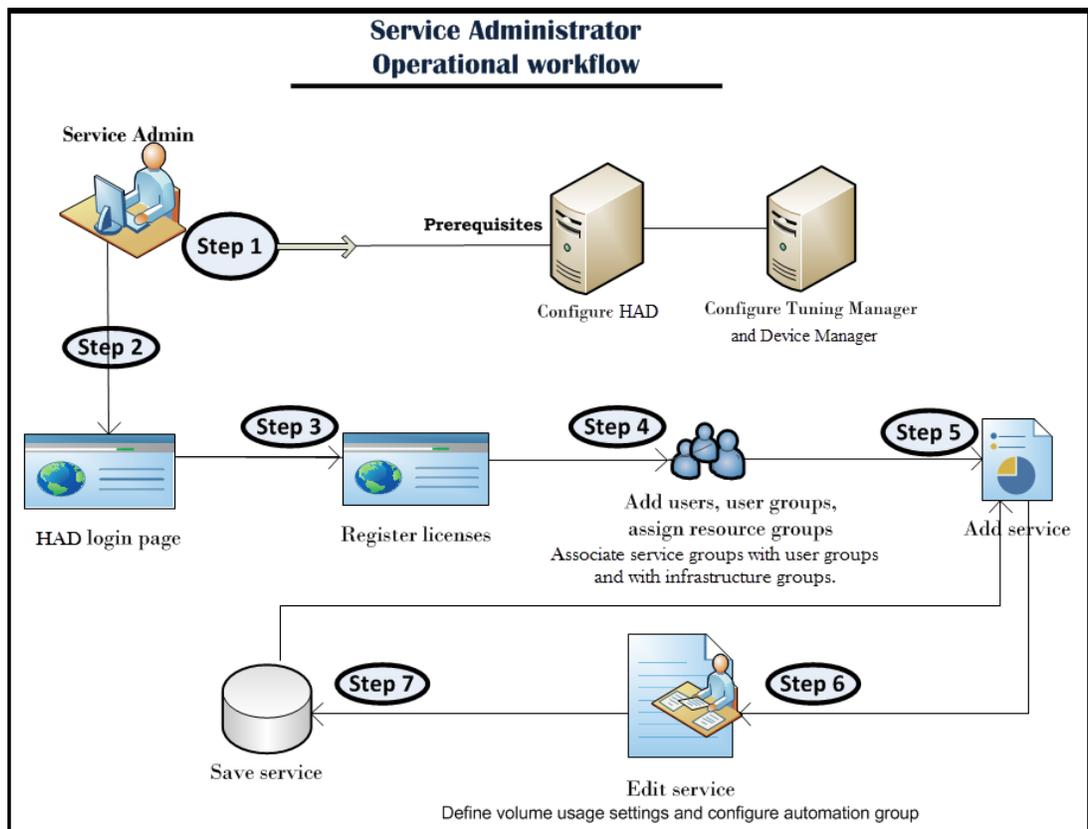
For submitting this service request, John decides to use the task management and monitoring features of the product. He asks Bill, a novice administrator (service user) to submit the "Oracle ASM for accounting" service and schedule it for immediate execution. He leaves for the day after providing clear 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 provides John with the error details. John recommends that Bill resubmit the task and continue to monitor it.

The following figure depicts the scenario:

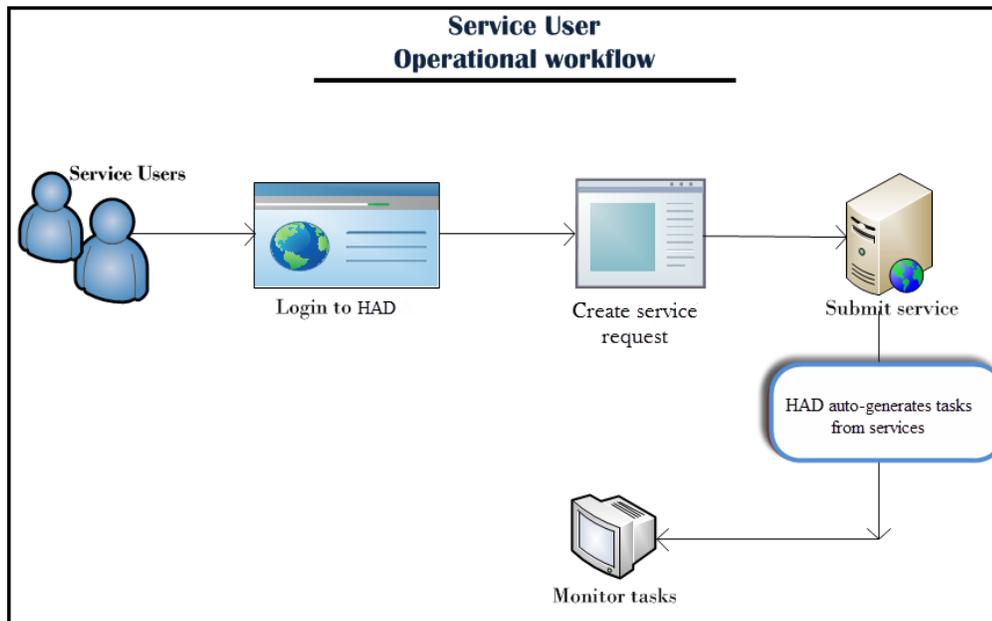


Operational workflow

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.



Built-in user accounts

When Automation Director is installed, a built-in System account is provided.

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 Hitachi Command Suite tasks and providing access to the Hitachi Command Suite GUI. By logging in using the System account, you can access the user management window in Automation Director and manage user access to storage systems registered in Hitachi Command Suite. The System account does not belong to any user group.

Related tasks

- [Changing the System account password](#) on page 23

Logging in

Prerequisites

To log in to Automation Director, have the following information available:

- Automation Director web URL
- User ID
- Password

Procedure

1. In a web browser, enter the Automation Director URL:

`http://HAD-server-address:port-number/Automation/`

where

- *HAD-server-address* is the IP address or host name of the Automation Director server.
- *port-number* is the port number of the Automation Director server. The default port number is 22015.

To access Automation Director in secure mode, enter

`https://HAD-server-address:port-number/Automation/`

where

- *HAD-server-address* is the IP address or host name of the Automation Director server.
- *port-number* is the SSL port number of the Automation Director server. The default port number is 22016.

2. Enter a user ID and password to log in.
3. Click **Login**.

Accessing user profiles

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

Procedure

1. Access your User Profile in one of the following ways:
 - In the global toolbar, click **Tools > 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.

Related tasks

- [Editing the profile for a user account](#) on page 94

Editing a user profile

Procedure

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

Related tasks

- [Changing the password for a user account](#) on page 23

Changing the password for a user account

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

Procedure

1. In 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 all Hitachi Command Suite products. When you install Automation Director for the first time, it is recommended that you change the System account password.

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, and click **OK**.

Result

The default password is changed.

For details about changing user account passwords, see the *Hitachi Automation Director User Guide*.

Registering a license

Register a license when accessing Automation Director for the first time after installation or when a license is expired.

Procedure

1. Enter the Automation Director URL in a web browser.
2. In the login window, click **License**.
3. In the **License Information by Product** dialog box, enter the license key using one of the following methods:
 - Click **Key** and enter the license key.
 - Click **File**, then click **Browse** to upload the license file.
4. Click **Save**.

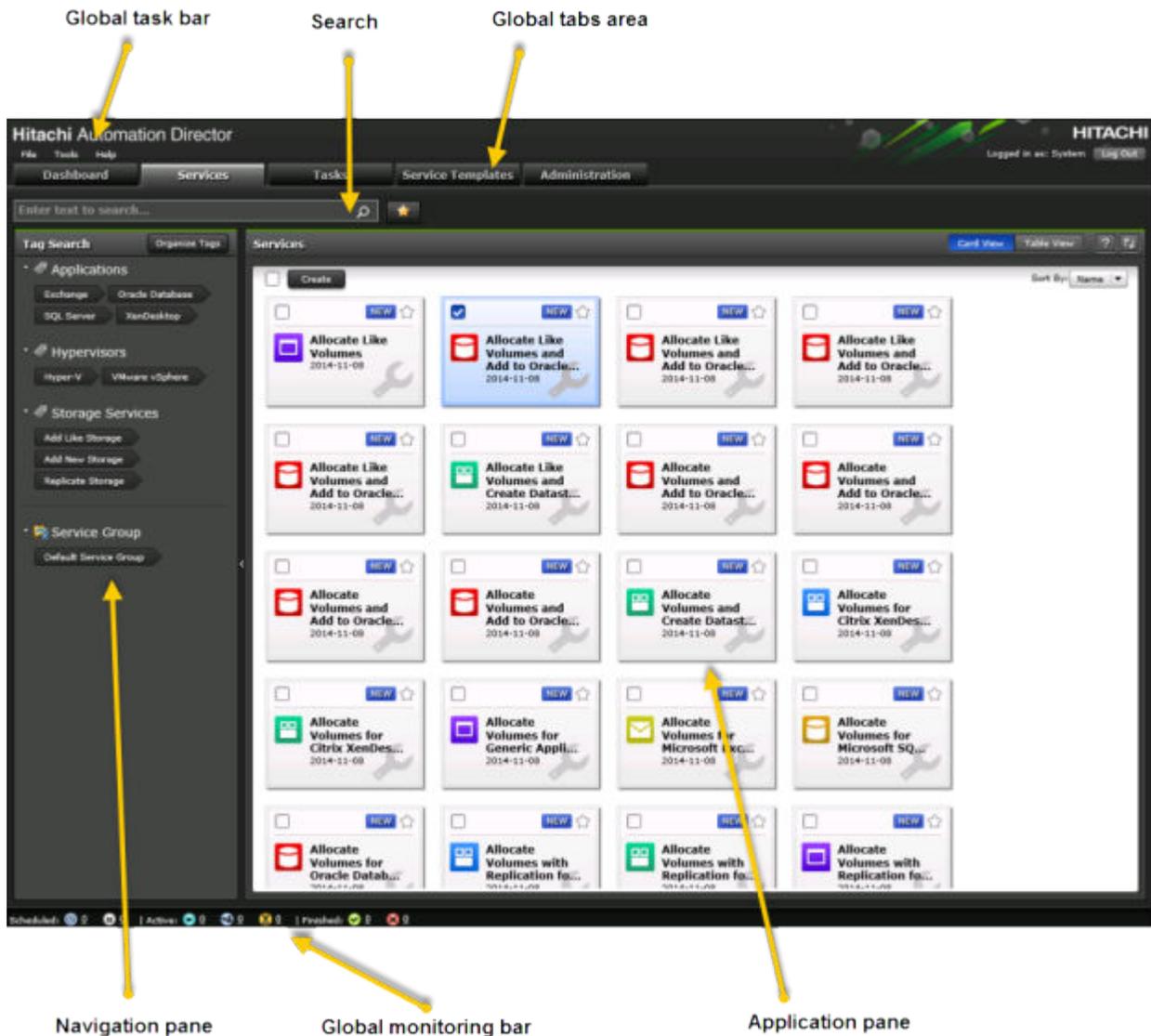
Logging out

For security reasons, log out when you have finished using Automation Director.

To log out of Automation Director, click Log Out on the global task bar.

Navigating the interface

The Hitachi Automation Director graphical user interface (GUI) is organized into six primary areas: global task bar, global tabs area, navigation pane, application pane, global monitoring bar, and search.



Global task bar

The global task bar is always visible, regardless of which window is active. Its three menus provide access to high-level actions and online help. The menus are:

- File: Click this menu to close the application or log out.
- Tools: Click and choose from the following:
 - Service Builder: Open Service Builder. This option is available to Admin and Develop users.
 - User Profile: Open the user profile.
 - Device Manager: Click to open an instance of Device Manager.

- **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 can want to undo your changes, you can restore the display setting to the original (default) settings. To do so, select Tools > Reset Preferences. This action will log you out of the current session. You need to re login to view the default settings.
- **Help:** Click to select one of the following options:
 - Select Online Help and open Help with the navigation pane displayed.
 - Select About to open the About HAD window to view license information.

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, 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 provides links to information about submitted tasks.

Search

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

Navigating help

The Help system provides brief explanations of the features of this product and helps you understand its capabilities. Navigating is the means by which you access the information in the Help system. Automation Director features role-based help.

When you access Help > HAD Help from the global task bar, the navigation pane displays.

If you select the help icon [?] from the application pane or a dialog box, click Show All Contents to display the navigation pane and access the Contents, Index, Search, and Glossary.

Navigating

- To navigate between topics, use the navigation pane, or right-click the topic (left pane) and select Back or Forward.
- 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
Open book icons in the navigation pane to reveal topic entries and subsections. As you move through Help, the current topic is highlighted.
- Index
An alphabetical list of topics. Click an Index entry to display one or more topics to choose to view.
- Search
Search for word or phrase occurrences. Click search results to display topics.
- Glossary
Provides brief explanations of product-related terms.

Printing topics

- To print topics, right-click the topic and select Print or click the printer icon on the button bar.

Role based help

Throughout Automation Director, help is provided based on the current user's login ID and the assigned role and permissions. Role-based help can be found on the Guidance menu and on various windows, views, and dialog boxes. The help content is focused on the displayed features or actions based on the role assigned to the current user.

Using search features

Automation Director provides 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 required. 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 displayed 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.

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 and 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 need to pay attention to a particular 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 the Mark as To Do button.

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 can be 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 the service template, service, or task you want.

Tags are available on the navigation pane of the Services, Tasks, and Service Templates tabs. Only tags used in the tab are displayed. You can click on 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.

Related references

- [Services tab](#) on page 42
- [Tasks tab](#) on page 58
- [Service Templates tab](#) on page 68

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 the **Edit** button to open **Edit Service** window.
3. In the **Settings** pane, use the **Tags** box to modify tags for the service. You can perform any of the following:
 - To add tags, expand the list and select the appropriate 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, and click **OK**.
 - To create a tag group, first create a tag. Then scroll to the bottom of the **Tag Group** list and 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 desired 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 from one of the following methods:

Option	Description
On the Tag Search navigation pane	Click Organize Tags . On the Organize Tags dialog box, enter the new tag group in the tag group section. The Tag Search navigation pane is located on the Services, Tasks, or Service Templates tab.
When creating or modifying a service	On the Edit Service window, in the General Information section about the service, in the Settings pane, under click inside the Tags area to open the list of tag groups and tags. Scroll to the bottom of the list and click Create Tag to open the Create Tag dialog. Enter a tag name and click the Tag Group list to open it. At the end of the list, click Create Tag Group and enter a tag group name. Click OK to save the tag group and the tag.

2. Click **OK**.

User workflows by role

Automation Director supports four user roles and each has its own workflow.

Admin user workflow

The Admin user configures Automation Director.

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

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

1. Log into Automation Director.
2. Click the Administration tab.
3. Connect to one or more instances of Device Manager.
4. Configure connections to VMware vCenter servers and remote connections as needed.
5. Configure remote connections. This setting is necessary to use Oracle services that do not belong to the Default Service Group.
6. Define storage profiles in lieu of or in addition to the delivered storage profiles.
7. Configure the appropriate Replication and Snapshot (Thin Image) Settings. These settings are necessary to use Replication services.
8. Create users. This step is not necessary if you have integrated users from Hitachi Command Suite with Active Directory.
9. Configure user groups, if needed. Automation Director includes six built-in user groups.
10. Create infrastructure groups and assign resources to them. Resources are assigned from resource groups that are managed in Device Manager.
11. 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.
12. Associate infrastructure groups with the service groups to enable the services in the service group to use the resources in the infrastructure groups.

- [Administering Automation Director](#) on page 83

Develop user workflow

The Develop user creates service templates in Service Builder and tests them in Automation Director 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 Automation Director except the Administration tab.

The Develop user workflow is as follows:

1. Log into Automation Director and launch 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 Automation Director.
At this point the template is not available for use.
5. Release the template from Service Builder.
After it has been released, the service template can be accessed in Automation Director and used to create services.

Related concepts

- [Working with service templates](#) on page 67

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 into Automation Director 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.

- [Managing services](#) on page 41

Submit user workflow

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

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 into Automation Director 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. Optionally, monitor the tasks and their status.

- [Managing scheduled tasks](#) on page 57

Launching Service Builder

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

Service Builder can be launched from three different points.

Open Service Builder in one of these three ways:

- Click the Dashboard tab and click one of the options under Manage Template in the Guidance Menu:
 - Create New Template
 - Edit Template
 - Copy Template
- In the global toolbar, click Tools 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 Service Template is available if there is a revision of the template available.

Service Builder opens in a separate browser window.

Related concepts

- [Service Builder workflow](#) on page 33

Service Builder workflow

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

Phase 1 - Preparation

- 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 - Creation

- Create new plug-ins, or copy and modify existing plug-ins, in the Service Template Editor view, for the service template.
- Create the service template as new, or copy and modify an existing service template, in the Service Template Editor 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 in order to submit the service template to the operating environment.

Viewing service and task summaries

The Automation Director dashboard provides immediate insight into the status of services and tasks and enables easy access to user workflows.

- [Viewing the Dashboard](#)

Viewing the Dashboard

When you log in to Automation Director, the dashboard displays 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 provides links to information on how to perform common functions in Automation Director. The current user role determines which categories are displayed. 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 refresh 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 you want displayed on the dashboard. Either select or clear the check boxes for the items you want to appear on the dashboard. You can also click the Settings icon to open the Settings dialog box and select the reports you want to 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 Automation Director.



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.

Most Frequently Failed Services		
Service	No. of Fail...	Last Failed Date
 Add virtual server (LU creatio...	13	2014-07-02
 Check env. for adding virtual...	12	2014-07-02
 Execute remote command	11	2014-07-02
 Citrix XenDesktop5 on HyperV...	10	2014-07-02
 Citrix XenDesktop5 on VSpher...	9	2014-07-02
 Exchange 2010	8	2014-07-02

[More...](#)

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

Related references

- [Services tab](#) on page 42

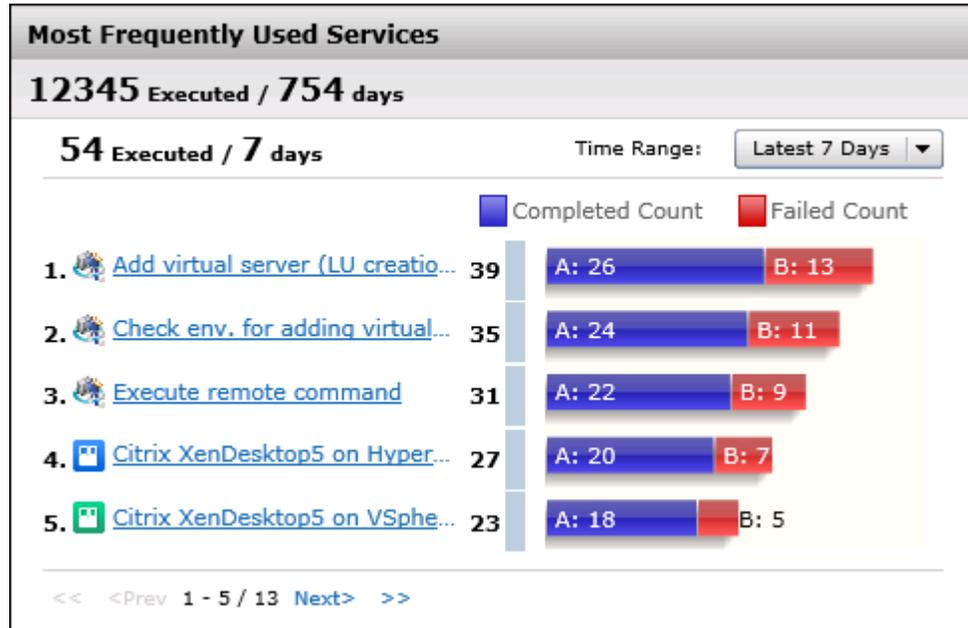
Most Frequently Used Services report

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.

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 executed and the number of days since Automation Director was installed. The second row shows the number of times the service was executed 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 to take.

Related references

- [Services tab](#) on page 42

Tasks Waiting for Action report

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

The Tasks Waiting for Action report lists tasks that require your attention, including

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

Tasks Waiting for Action	
3 Recently Failed More...	
Execute Remote Command2 20... 16 hour(s) ago	Execute Remote Command2
Execute Remote Command2 20... 16 hour(s) ago	Execute Remote Command2
Execute Remote Command2 20... 17 hour(s) ago	Execute Remote Command2
0 Long Running More...	
0 Waiting for Input More...	

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

Related references

- [Tasks tab](#) on page 58

My Tasks report

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

My Tasks	
0 Active More...	
4 Finished More...	
Oracle Database (Medi... 4d ago	Oracle Database (Medi...
Oracle Database (Medi... 5d ago	Oracle Database (Medi...
Oracle Database (Medi... 5d ago	Oracle Database (Medi...
Oracle Database (Medi... 6d ago	Oracle Database (Medi...
0 Scheduled More...	

The task states and corresponding statuses are listed below:

Task state	Task status
Active	<ul style="list-style-type: none"> • In Progress • In Progress (with Error) • In Progress (Terminating) • Waiting for Input • Long Running
Scheduled	<ul style="list-style-type: none"> • Waiting to execute • Suspended
Finished	<ul style="list-style-type: none"> • Completed successfully

Task state	Task status
	<ul style="list-style-type: none"> Failed

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

Related references

- [Tasks tab](#) on page 58

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.

Related tasks

- [Submitting a service](#) on page 50

Related references

- [Services tab](#) on page 42

Managing services

This module describes how to manage Automation Director services.

- [Overview of Automation Director services](#)
- [Workflow for creating a service](#)
- [Creating or editing a service](#)
- [Testing a new service](#)
- [Releasing a service](#)
- [Submitting a service](#)
- [Disabling a service](#)
- [Deleting a service](#)
- [Example of provisioning for Microsoft Exchange Server applications](#)

Overview of Automation Director services

A service is a customized set of instructions that follow a process flow to automate provisioning tasks. Services are integrated with the infrastructure groups so they operate within the designated storage profiles to 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 Automation Director 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.

Related concepts

- [Workflow for creating a service](#) on page 45

Related tasks

- [Creating or editing a service](#) on page 45

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 Services. Each group has one or more tags.

To use tags, click on 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 them using the buttons at the top of the Services pane.

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

Table 3-1 Watermarks

Watermark	Description
	Service is in Debug status.
	Service is in Test status or Maintenance status.
	Service is in Disable status.

Table 3-2 Graphic properties

Graphic	Description
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's card to open the service preview and view information about the service and access additional controls.

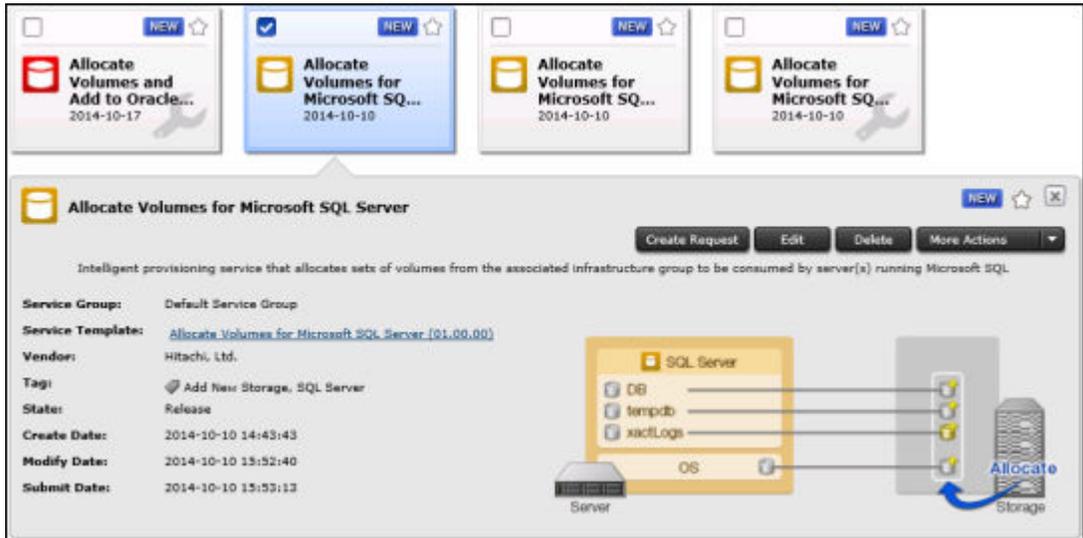


Figure 3-1 Service preview

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

Action	Description
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.

Action	Description
Related Tasks	Displays the tasks related to the service under the Tasks tab.
Reset Counter	Resets the count for the number of executed, successes, and failures.
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 a 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.

Related tasks

- [Creating or editing a service](#) on page 45
- [Testing a new service](#) on page 49
- [Releasing a service](#) on page 50
- [Submitting a service](#) on page 50

Creating or editing a service

Users with the Admin, Develop, or Modify roles can create services.

Procedure

1. Choose one of the following ways to begin creating a service:
 - Start from a template:
 - On the **Dashboard**, in the **Guidance Menu**, click **Create New Service** to open the **Select Service Template** window. Click a template to open the service template preview. Click **Create Service** to open the **Create Service** window.

- On the **Service Templates** tab, click the service template you want to use to open the service template preview. Click **Create Service** to open the **Create Service** window.
- On the **Services** tab, in the **Services** pane, click the **Create** button to open the **Select Service Template** window. Click a template to open the service template preview. Click **Create Service** to open the **Create Service** window.
- On the **Administration** tab, under **Resources and Permissions**, click **Service Groups**. Click the **Create** button in the **Services** pane to open the **Select Service Template** window. Click a template to open the service template preview. Click **Create Service** to open the **Create Service** window.
- Copy a service from the list of services on the **Services** tab. To begin, click the service that you want to copy. In the service preview pane, click **More Actions > Copy**.
- To edit a service, select the service in the **Services** tab and click **Edit** to open the **Edit Services** window.



Note: If you want to change the Service Group, use the **Copy** action to copy the service.

2. 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 are copying an existing service, the default values for the parameters will be different than if you are creating a service.

- 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.



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.

3. Expand **Advanced Options** and select the options you want:
 - Scheduling Options:
 - Immediate**: Run the service when it is submitted.
 - Scheduled**: Run the service once.
 - Recurrence**: Run the service multiple times.
4. 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 certain settings or to hide them altogether.
5. 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.
 - Click **Cancel** to close the window without saving any changes.

Related concepts

- [Workflow for creating a service](#) on page 45

Related tasks

- [Testing a new service](#) on page 49
- [Releasing a service](#) on page 50
- [Submitting a service](#) on page 50

Related references

- [Example of provisioning for Microsoft Exchange Server applications](#) on page 51

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.

Setting	Description
Name	Name to display in the Services tab.
Description	Name to display in the Services tab.
State	The status of the service. There are two options when 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	<p>The service group of users who can access the service.</p> <hr/> <p> Note: If you are editing a service instead of creating a new service, you cannot change the Service Group. If you want to change the Service Group, use the Copy action to copy the service.</p>
Template	<p>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.</p> <p>In the Template Preview, you can click View Flow to open the flow window for the template.</p>
Advanced Options	<p>Scheduling options for the service.</p> <ul style="list-style-type: none"> • Scheduling Options: <ul style="list-style-type: none"> Immediate: Run the service when it is submitted. Scheduled: Run the service once. Recurrence: Run the service multiple times. • Display Flow Detail for Submit User: Select to display

Setting	Description
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	Cancel any changes and closes the window.

Related concepts

- [Workflow for creating a service](#) on page 45

Related tasks

- [Creating or editing a service](#) on page 45
- [Deleting a service](#) on page 51
- [Releasing a service](#) on page 50
- [Disabling a service](#) on page 51

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 Tasks tab under the Debug view. 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, and 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.

Postrequisites

Release the service.

Related tasks

- [Releasing a service](#) on page 50

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

Prerequisites

- 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 as required by the service.



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.

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.

Postrequisites

(Optional) Monitor the tasks and their status.

Related tasks

- [Releasing a service](#) on page 50

Disabling a service

When a service is no longer needed, you can change its status to Disabled. You cannot submit a service that has been 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**.
The service status is changed to Disabled.

Deleting a service

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

Prerequisites

- On the Tasks tab, in the task view, verify no tasks exist that were generated 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 at once. On the **Services** tab, from the table view, select the services you want to delete and click **Delete**.

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

Example of provisioning for Microsoft Exchange Server applications

This section describes the steps to provision volumes for Microsoft Exchange server applications using the predefined Allocate Volumes for Microsoft Exchange Server 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 desired storage size, configuration, and I/O profile. Although the values in the template are based on the best practices, the values you set may 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 for Microsoft Exchange Server template and click Create Service.
2. In the Create Service window, in the Settings pane, enter the following information:

Parameters	Description	Values
General Settings		
Name	The name of the service	Allocate Volumes Example
Description	A brief description of the service	A test service to allocate volumes on a Microsoft Exchange server
Status	The status of the service	Test
Tags	The categories for the service	Allocate New Storage, Exchange
Service Group	The service group of users who can access the service	Default Service Group
Advanced Options		
Scheduling Options	The time when the service executes	Immediate
Volume Settings		
Active DB:		
Number of Volumes	The number of volumes to allocate for the active database	12
Volume Capacity	The size of the allocated volumes	2000.0 GB
Storage Profile	The type of storage resources to allocate	Gold Write
Full Allocation	Specifies whether to use full allocation	Disable

Parameters	Description	Values
LUN Starts From	The starting LUN number setting	0
Passive DB:		
Number of Volumes	The number of volumes to allocate for the passive database	12
Volume Capacity	The size of the allocated volumes	2000.0 GB
Storage Profile	The type of storage resources to allocate	Gold Write
Full Allocation	Specifies whether to use full allocation	Disable
LUN Starts From	The starting LUN number setting	0
Active Log:		
Number of Volumes	The number of volumes to allocate for the active log	12
Volume Capacity	The size of the allocated volumes	200.0 GB
Storage Profile	The type of storage resources to allocate	Ultimate
Full Allocation	Specifies whether to use full allocation	Disable
LUN Starts From	The starting LUN number setting	0
Passive Log:		
Number of Volumes	The number of volumes to allocate for the passive log	12
Volume Capacity	The size of the allocated volumes	200.0 GB
Storage Profile	The type of storage resources to allocate	Ultimate
Full Allocation	Specifies whether to use full allocation	Disable
LUN Starts From	The starting LUN number setting	0
OS VM:		
Number of Volumes	The number of volumes to allocate for the operating system	3
Volume Capacity	The size of the allocated volumes	600.0 GB
Storage Profile	The type of storage resources to allocated	Silver
Full Allocation	Specifies whether to use full allocation	Disable
LUN Starts From	The starting LUN number setting	0
Advanced Options		

Parameters	Description	Values
Number of Paths	The number of LUN paths to allocate per host	4
Host Mode Settings:	The host type for the allocated volumes	VSP G1000
Host Mode	The host mode for the allocated volumes	Auto
Host Mode Options	The host mode options for the allocated volumes	13. SIM report at link failure

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.

1. On the Services tab, select the Allocate Volumes Example service in Test status and click Create Request.
2. In the Submit Service Request window, in the Settings pane, retain the values for the Volume Settings. Enter the following information:

Parameters	Description	Values
Host Settings		
Target Hosts	The number of target hosts	Single Host
Host Detail	The host name or IP address from Device Manager	TestHostName
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 on a Microsoft Exchange server
Schedule Type	The time when the task executes	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 and 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 and click More Actions > Release.

Submit the service:

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

1. On the Services tab, select the Allocate Volumes Example service in Release status and click Create Request.
2. In the Submit Service Request window, in the Settings pane, retain the values for the Volume Settings. Enter the following information:

Parameters	Description	Values
Host Settings		
Target Hosts	The number of target hosts	Single Host
Host Detail	The host name or IP address from Device Manager	Enter the host name or IP address
Task Settings		
Task Name	The name of the task	Allocation Task Example
Description	A brief description of the task	A task to allocate volumes on a Microsoft Exchange server
Schedule Type	The time when the task executes	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 and click Show Details to view the task summary, details, result, log, and notes.

Managing scheduled tasks

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

- [About tasks](#)
- [About task status](#)
- [Viewing task details](#)
- [Responding to tasks](#)
- [Suspending scheduled tasks](#)
- [Resuming scheduled tasks](#)
- [Canceling scheduled tasks](#)
- [Stopping tasks](#)
- [Creating a similar request](#)
- [Archiving tasks](#)
- [Deleting tasks from history](#)

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. The tasks in Automation Director correspond with the tasks that perform functions in Hitachi Command Suite without having to manually enter the task each time. You can monitor the progress of a task as it executes its function through completion.

The dashboard provides 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 require a response. The Global Monitoring Bar Area found at the bottom of every tab in Automation Director provides 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, cancelling, 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.

Related concepts

- [About task status](#) on page 60

Related tasks

- [Viewing task details](#) on page 61
- [Creating a similar request](#) on page 64
- [Configuring email and log settings](#) on page 111

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 Task, History and Debug tabs.

Tasks

The Tasks tab enables users to do the following:

- View and 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 and click Show Details to see the details of the task.
- Click More Actions to see other actions available to manage tasks.

Tag Search pane

The Tag Search pane enables users to filter services 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 on 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.

Within 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.

Table 4-1 More Actions

Action	Description
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.
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 and 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. This tab has available the same actions as the Task tab.

Related concepts

- [About task status](#) on page 60

Related tasks

- [Viewing task details](#) on page 61

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 categories, status, and the actions that you can perform on tasks.

Task category	Task status	Description	Available actions
Active	In Progress	Task is running.	Stop the task.
	Waiting for Input	Task is pending user input.	Respond to the task.
	Long Running	Task is running longer than expected.	Stop the task.
	In Progress(with Error)	Task detected an error.	Stop the task.
	In Progress(Terminating)	Task is terminating.	None.
Scheduled	Waiting	Task is scheduled and waiting to execute at the scheduled time.	Suspend the task. Cancel the task.
	Suspended	Task is scheduled, but will not execute at the scheduled time.	Resume the scheduled task.
	Canceled	Task is canceled.	Resubmit the task. Archive the task.
Finished	Completed	Task completed.	Resubmit the task. Archive the task.
	Failed	Tasks failed.	Resubmit the task. Archive the task.

Automation Director can send email notifications to users when a task fails to execute, or when a task requires input from a user in order to continue. The Admin role is required to set up email notifications.

Related tasks

- [Stopping tasks](#) on page 64
- [Responding to tasks](#) on page 62

- [Suspending scheduled tasks](#) on page 63
- [Canceling scheduled tasks](#) on page 63
- [Resuming scheduled tasks](#) on page 63
- [Creating a similar request](#) on page 64
- [Archiving tasks](#) on page 65
- [Configuring email and log settings](#) on page 111

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, and click Show Details.

The following controls are available:

- Input Response: Click to respond if a task is in Waiting for Input status.
- Archive Tasks: 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 > Stop tasks: Click to stop running the task.
- More Actions > Create Similar Request: Click to open the Submit Similar Request window where you can resubmit the same request. This can be used if a task has failed or if you need to alter some parameters. Either way, a new task will be created with a different Task ID.

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.
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

Property	Description
	template flow in the Service Template Editor view in Automation Director Service Builder.
Owner	The originator of the task.
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 of the schedule.
Submitted Time	The time of the task was submitted.
Scheduled Time	The time the task is scheduled to start, if it is set to start on a schedule.
Start Time	The start time of a task.
Step Start Time	Start time of the long-running step, or the time the task started waiting for input.
End Time	The end time of a task.
Submitted Data tab	Displays the parameters set for the task when submitted and may vary depending on the service.
Results tab	Displays the results of any output properties that were set.
Log tab	The log information can be copied and pasted into other applications and may be useful in debugging.
Notes tab	An HTML text editor is provided to enter additional information regarding the task. For example, a user may need to add information that can be viewed by an administrator when assistance is needed with a task.

Responding to tasks

Some tasks may require input from a user to continue executing (for example, a manager's approval) and may send an email notification indicating that 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 requires a response and click **Input Response**.
2. In the **Input Response** dialog box, input the response.
3. Click **OK**.

Related tasks

- [Configuring email and log settings](#) on page 111

Suspending scheduled tasks

You can temporarily suspend tasks that are scheduled to execute 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 is suspended and the task status changes to **Suspended**.

Related tasks

- [Resuming scheduled tasks](#) on page 63

Resuming scheduled tasks

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

If you resume a schedule after the scheduled start time, the task is executed immediately. If the original schedule of the task is in the past, then the task must first be cancelled, 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**.

Related tasks

- [Suspending scheduled tasks](#) on page 63

Canceling scheduled tasks

You can cancel scheduled tasks that are In Waiting status. A canceled task cannot be resumed.

When you cancel a service, you must cancel the related tasks. Cancel a task when you want to cancel a service and its related tasks are scheduled but has not yet executed.

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 is canceled and the status changes to **Canceled**.

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

Related tasks

- [Creating a similar request](#) on page 64

Stopping tasks

To stop a service that has been executed, 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 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 > Stop**.
3. In the **Stop Task** window, click **OK**.
The task is stopped and the status changes to **Terminated**.

However, it does not stop the task running on Hitachi Command Suite and the task status reflects the execution results according to the results on Hitachi Command Suite.

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

Related tasks

- [Viewing task details](#) on page 61
- [Submitting a service](#) on page 50

Creating a similar request

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

If a task has failed due to an issue that has since been resolved, or if the task was canceled, you can create a similar request without recreating the settings. The new task will have a new Task ID.

Procedure

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

Related concepts

- [About task status](#) on page 60

Archiving tasks

Automation Director automatically archives tasks every 7 days, starting with the oldest executed 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. The task details are not displayed 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 want to 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 it is no longer necessary to retain tasks for reference purposes, or if tasks created while testing a service template is 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 want to delete.
2. Click **Remove**.
3. In the **Remove Tasks** dialog box, click **OK**.

Working with service templates

A service template is the starting point for creating a new service. Automation Director provides pre-configured service templates to assist in creating automation services. These templates can be configured to meet your service requirements.

- [Viewing service template information](#)
- [Importing a released service template](#)
- [Creating a service from the Service Templates tab](#)
- [Exporting a service template](#)
- [Deleting a service template](#)
- [Updating a service template version](#)
- [About provisioning service templates](#)
- [About Oracle Database provisioning and expansion templates](#)
- [About replication service templates](#)
- [About Snapshot \(Thin Image\) service templates](#)
- [About allocating like volumes service templates](#)

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 services with 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 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 services that have been tagged.

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

To use tags, click on 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 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 once, 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 into Automation Director. This can be used to import a template from another environment.
Create	Launch Service Builder to create a new service template. For more information, see the <i>Hitachi Command Suite Automation Director Service Builder User Guide</i> .
Create Service	Create a new service from the specified service template.
Copy and Edit	Launch Service Builder to create a new service template based on the specified template. For more information, see the <i>Hitachi Command Suite Automation Director Service Builder User Guide</i> .
View Flow	Launch Service Builder to view the flow of the template in the Service Template Editor view. For more information, see the <i>Hitachi Command Suite Automation Director Service Builder User Guide</i> .
Import	Import an archived file of a service template.
Export	Export a file and save it outside Automation Director.
Delete	Delete an existing template.

Control	Use
Apply Latest Version	Apply the latest version of the template to the associated service.
Update Service Template	<p>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.</p> <p>For more information, see the <i>Hitachi Command Suite Automation Director Service Builder User Guide</i>.</p>

Properties

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

Property	Description
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 where you can select a template and 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.

Property	Description
Component Outdated (in Table View)	Template includes outdated components.

Graphic properties in the Card View

The Card View includes graphic signals as follows:

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 into Automation Director.

You will need to export and import templates if you are using two different Automation Director environments. Service templates that are built and released in the test environment must be exported and then imported into the production environment.

All templates that are provided with Automation Director 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. Click **Import Service Template** in the **Dashboard Guidance Menu** or click **Import** in the **Service Templates** tab to open the **Import Service Template** window.
2. Browse to the template file with the file extension `.st` and 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.

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 suit specific requirements.

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 once.
 - 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 would appear to a user. Then click **Save and Close** to save the service.
 - Click **Cancel** to close the window without saving any changes.

Postrequisites

Test the service if you created it in Test state.

Exporting a service template

Admin and Develop users can export templates from Automation Director.

You may need to export templates in the case where there are two separate Automation Director environments. Templates from one environment can be exported and then imported into the other environment.

Procedure

1. On the **Service Templates** tab, select a template and in the **More Actions** menu, click **Export**.
A confirmation dialog appears.
2. Click **OK**.
3. Choose a location and enter a name for the file.

Deleting a service template

Admin and Develop users can delete a service template.

Procedure

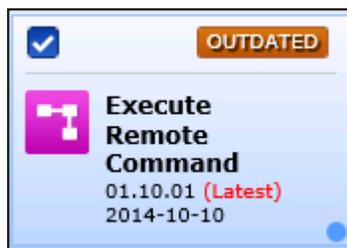
1. Select a service template in the **Service Templates** tab.
2. Click **More Actions > Delete**.
3. Confirm your choice.
The template is no longer in Service Templates tab and you cannot create a service from the template. Only templates which are not used by services or templates can be deleted.

Updating a service template version

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

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

Templates that are outdated have an "OUTDATED" badge in the Card View.



In the Templates tab, click Card View and click template you need to update to open Copy Service Template dialog in Service Builder.

For more information, see the *Hitachi Command Suite Automation Director Service Builder User Guide*.

About provisioning service templates

Automation Director provisioning templates automates 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.
- Define and allocate to tiers with similar characteristics for each storage system.
- Execute provisioning services immediately or at a scheduled date and time.
- Assign provisioning services to specific users and service groups so users can execute services independently of an administrator.
- Can be customized to meet specific operational needs and storage requirements.

Automation Director provides 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.

For example, in the Services tab, in the Tag Search pane, click Add New Storage and then click SQL Server to view all services created with the Allocate Volumes for Microsoft SQL Server template.

Allocate Volumes for Microsoft SQL Server

An intelligent provisioning service that allocates sets of volumes from the associated infrastructure group to be consumed by server(s) running Microsoft SQL.

The volumes are for OS boot image, database, tempdb database and transaction log.

Allocate Volumes for Microsoft Exchange Server

An intelligent provisioning service that allocates sets of volumes from the associated infrastructure group to be consumed by server(s) running Microsoft Exchange.

The volumes are for OS boot image, active database, passive database, active log and passive log.

Allocate Volumes for Oracle Database

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running Oracle ASM.

The volumes are for data, log and archive.

Allocate Volumes for Citrix XenDesktop on Microsoft Hyper-V

An intelligent provisioning service that allocates sets of volumes from the associated infrastructure group to be consumed by server(s) running XenDesktop on Microsoft Hyper-V.

The volumes are for infrastructure servers such as provisioning servers and desktops.

Allocate Volumes for Citrix XenDesktop on VMware vSphere

An intelligent provisioning service that allocates sets of volumes from the associated infrastructure group to be consumed by server(s) running XenDesktop on VMware vSphere.

The volumes are for infrastructure servers such as provisioning servers and desktops.

Allocate Volumes for Generic Application

An intelligent provisioning service that allocates sets of volumes from the associated infrastructure group to be consumed by server(s) running a generic application.

This service creates volumes for OS boot image, application and data, and allocates them to specified hosts.

Allocate Volumes and Create Datastore on VMware vSphere

An intelligent provisioning service that allocates volumes for a selected VMware vSphere server from the associated infrastructure group and creates a datastore instance on the vSphere server.

Related concepts

- [About replication service templates](#) on page 77

- [About allocating like volumes service templates](#) on page 81

Related references

- [About Oracle Database provisioning and expansion templates](#) on page 76

About Oracle Database provisioning and expansion templates

The predefined service templates 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 templates provide 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 templates are customized to operate based on the type of environment.

The About Oracle Database provisioning and expansion templates are 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.
- Execute services immediately, or at a scheduled date and time.
- Assign services to specific users and service groups so users can execute services independently of an administrator.
- Can be customized to meet specific operational needs and storage requirements.

An Oracle Database provisioning and expansion template conducts a preliminary check that determines whether the Single Server configuration exists or the Oracle RAC configuration exists. Then the template checks and acquires the specified Oracle ASM information. The path to all the specified database servers is checked 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 requirements (for example, capacity or number) and allocate the newly created volumes to the Oracle DB.

Automation Director provides the following templates by the type of host platform. Services that are created by these templates 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 templates, you will need to configure agentless remote connections.

Allocate Volumes and Add to Oracle Database for AIX

An intelligent provisioning service that allocates volumes for a specified Oracle server of AIX platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Volumes and Add to Oracle Database for Solaris

An intelligent provisioning service that allocates volumes for a specified Oracle server of Solaris platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Volumes and Add to Oracle Database for Linux

An intelligent provisioning service that allocates volumes for a specified Oracle server of Linux platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Volumes and Add to Oracle Database for Windows

An intelligent provisioning service that allocates volumes for a specified Oracle server of Windows platform from the associated infrastructure group and add them to a specified Oracle disk group.

About replication service templates

Automation Director allows system administrators to automate the series of tasks involved in setting up and submitting replication services for a given operating environment through a collection of predefined service templates. In combination with provisioning services, the replication templates provide the ability to allocate the P-VOL, allocate the S-VOL on the same device as the P-VOL, within the assigned storage profile. A configuration (CCI) file is generated for the created volumes. The replication services reference the copy pair definitions that are configured in the Administration tab.



Note: If you plan on using Thin Image pools, you should use the Snapshot related templates for replication.

The replication templates are designed to provide the following features:

- Automate the replication tasks to reduce the amount of time to configure each request manually.
- Define and allocate to tiers with similar characteristics for each storage system.
- Assign automatically the LDEV label for the S-VOL.
- Execute services immediately, or on a scheduled date and time.
- Assign services to specific users and service groups so users can execute services independently of an administrator.

- Can be customized to meet specific operational needs and storage requirements.

The templates can set up services to create new primary volumes (P-VOL) and secondary volumes (S-VOL) within the assigned storage profile. When creating new volumes for the P-VOL and S-VOL, a pair configuration file is automatically generated. The templates provide the option to perform an initial copy by ShadowImage and creates a new copy group and assigns a copy group name. Prefixes for the copy group name, new volume label, copy pair name and LDEV label are configurable. In the case of AMS and HUS, the third generation becomes "simplex".



Note: Automation Director does not support of creation of a ShadowImage pair which is established between different virtual storage arrays.

Before setting up the replication services, be sure to configure any existing pair definitions for each CCI instance. The HORCM (or CCI) instances are required by the services when replicating volumes.



Note: In Automation Director, "Create copy pair" means to create a HORCM file. "Initial copy" means to create copy pairs and start data copy. If "Initial copy" is checked in Copy Pair Settings in the Create Service window or the Edit Service window, the status of pairs will be "PAIR". Otherwise, it will be "SMPL".

Automation Director provides the following templates for replication services. The created volumes are for OS boot image, database, tempdb database and transaction logs. Services created using these templates are tagged under Add New Storage and Replicate Storage.

Before setting up the replication services, be sure to configure any existing pair definitions for each CCI instance. The HORCM (or CCI) instances are required by the services when replicating volumes.

Allocate Volumes with Replication for Microsoft SQL Server

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running Microsoft SQL.

Allocate Volumes with Replication for Microsoft Exchange Server

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running Microsoft Exchange.

Allocate Volumes with Replication for Citrix XenDesktop on Microsoft Hyper-V

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running XenDesktop on Microsoft Hyper-V.

Allocate Volumes with Replication for Citrix XenDesktop on VMware vSphere

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running XenDesktop on VMware vSphere.

Allocate Volumes with Replication for Oracle Database

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running Oracle ASM.

Allocate Volumes with Replication for Generic Application

An intelligent provisioning service that allocates sets of volumes with in-system replication from the associated infrastructure group to be consumed by server(s) running a generic application.

Related concepts

- [About replication settings](#) on page 106

About Snapshot (Thin Image) service templates

Automation Director allows system administrators to automate the series of tasks involved in setting up and submitting thin image services for a given operating environment through a collection of predefined service templates. In combination with provisioning services, the thin image templates provide the ability to instigate a Thin Image pairing. The thin image services reference the "Replication Settings" definitions that are configured in the Administration tab.

The Snapshot (Thin Image) templates are designed to provide the following features:

- Define and allocate to tiers with similar characteristics for each storage system.
- Assign automatically the LDEV label for the S-VOL.
- Execute services immediately, or on a scheduled date and time.
- Assign services to specific users and service groups so users can execute services independently of an administrator.
- Creation of Thin Image pairs.
- Automatic setting of Copy Group/Snapshot Groups for each generation of Thin Image pairing.

- Automatic setting of Consistency Groups (CTG) for each generation of Thin Image pairing.
- Can be customized to meet specific operational needs and storage requirements.

The templates provide the option to select whether a created pair is managed by using a Copy Group or a Snapshot Group. If either group is selected, a group is created for each generation. Also, the user can create a Consistency Group that has a one-to-one correspondence to the group. Immediately after a pair is created (immediately after the HAD task is complete), the status of the pair becomes "PSUS". Therefore, immediately after the pair is created, the collection of differential data begins without having to split the pair which would be necessary under other configuration scenarios.

Before setting up the Snapshot (Thin Image) services, be sure to configure any existing pair definitions for each CCI instance. The HORCM (or CCI) instances are required by the services when replicating volumes.



Note: In Automation Director, "Create copy pair" means to create a HORCM file if the group type is "Copy Group".

Automation Director provides the following templates for Snapshot (Thin Image) services. The created volumes are for OS boot image, database, tempdb database and transaction logs. Services created using these templates are tagged under Add New Storage and Replicate Storage.

Allocate Volumes with Snapshot for Microsoft SQL Server

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running Microsoft SQL.

Allocate Volumes with Snapshot for Microsoft Exchange Server

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running Microsoft Exchange.

Allocate Volumes with Snapshot for Citrix XenDesktop on Microsoft Hyper-V

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running XenDesktop on Microsoft Hyper-V.

Allocate Volumes with Snapshot for Citrix XenDesktop on VMware vSphere

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running XenDesktop on VMware vSphere.

Allocate Volumes with Snapshot for Oracle Database

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running Oracle ASM.

Allocate Volumes with Snapshot for Generic Application

Intelligent allocation service that uses sets of volumes with in-system replication (Delta backup, Thin Image) from the associated infrastructure group to be consumed by server(s) running a generic application.

About allocating like volumes service templates

The add like volume 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.

Automation Director provides provisioning templates 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 these templates 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 templates will suggest similar volumes located within the same resource group as the source volumes.

Automation Director provides the following service templates to add like volumes:

Allocate Like Volumes

Add like provisioning service allocates an identical volume for the selected server and volume within the associated infrastructure group.

This service creates volumes with the same physical characteristics as the existing volumes, and allocates them to the specified hosts. Services created using this template are tagged under Add Like Storage.

Allocate Like Volumes and Create Datastore on VMware vSphere

This service creates volumes specifically for the vSphere datastore with the same physical characteristics as one of the existing volumes, and allocates them to the specified hosts. The vSphere datastore is then configured to recognize the new volumes. Services created using this template are tagged under Add Like Storage.

Add like provisioning service that allocates an identical volume for a selected VMware vSphere server volume from the associated infrastructure group and creates a datastore instance on the vSphere server.

Allocate Like Volumes and Add to Oracle Database for AIX

Add like provisioning service allocates identical volumes for a specified Oracle server of AIX platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Like Volumes and Add to Oracle Database for Solaris

Add like provisioning service allocates identical volumes for a specified Oracle server of Solaris platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Like Volumes and Add to Oracle Database for Linux

Add like provisioning service allocates identical volumes for a specified Oracle server of Linux platform from the associated infrastructure group and add them to a specified Oracle disk group.

Allocate Like Volumes and Add to Oracle Database for Windows

Add like provisioning service allocates identical volumes for a specified Oracle server of Windows platform from the associated infrastructure group and add them to a specified Oracle disk group.

Administering Automation Director

This module describes administrative tasks that system administrators can perform in Automation Director.

- [Viewing the Administration tab](#)
- [Setup workflow](#)
- [Managing groups in Automation Director](#)
- [Viewing your user profile](#)
- [Managing users and permissions](#)
- [Configuring connection settings](#)
- [Managing storage profiles](#)
- [Managing replication settings](#)
- [Using shared properties](#)
- [Configuring email and log settings](#)

Viewing the Administration tab

The Administration tab includes the views and tools to set up and configure Automation Director. It includes the necessary connection settings to Hitachi Device Manager, other hosts, and third party products, as well as the tools to set up users, groups, permissions, and relationships.

- Create agentless remote connections to register hosts.
- Utilize storage profiles to categorize and manage the characteristics of storage performance and pools upon which services execute. Available are the predefined storage profiles based on best practices, and the ability to customize profiles according to your own requirements.
- Set up replication and Snapshot (Thin Image) services with CCI instances.
- 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 through Hitachi Device Manager.

Setup workflow

After installing Automation Director, you must perform some initial setup tasks to configure the system.

To set up the product, make sure you have the Admin role in Automation Director. Automation Director users require the Modify (or higher) role in Hitachi Command Suite.

The following steps summarize the initial setup workflow:

- 1.** Register a license.
Before you can log on to Automation Director, you must register a valid license.
- 2.** Log in to Automation Director.
Use the built-in system account to log in to Automation Director for the first time. Change the system account password (recommended).
- 3.** Configure Hitachi Device Manager connections.
Register and manage connection information to Hitachi Device Manager instances.
- 4.** Configure VMware vCenter connections, if applicable.
Register and manage connection settings to VMware vCenter servers.
- 5.** Configure remote connections.

Register other hosts using agentless remote connections. This setting is necessary to use Oracle services that do not belong to the Default Service Group.

6. Set up users and user groups.
Automation Director users are automatically registered through the Hitachi Command Suite Common Component. Users require the View (or higher) role in Hitachi Command Suite. The **Admin** role in Hitachi Command Suite with the user management permission is required to add and assign users to user groups in Automation Director. A user must belong to at least one user group.
7. Set up infrastructure groups.
Create infrastructure groups and assign resource and service groups.
8. Set up service groups.

Managing groups in Automation Director

There are various types of groups in Automation Director to organize and manage access to services and resources. You will need to build the 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, DP pools, LDEV IDs, and storage ports. Resource groups are managed by Hitachi Device Manager.
- **User groups:** A user group is a set of users in Automation Director who share the same level of access.
- **Service group:** A service group is one or more services in Automation Director. A service group can be assigned to a user group to control access to services in the service group.
- **Infrastructure group:** An infrastructure group is a set of resource groups in Automation Director. 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 Automation Director 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 should 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.

Predefined user groups cannot be modified. The following table describes the predefined user groups that are provided when Automation Director is installed:

User group	Description
AdminGroup	The AdminGroup has administrative privileges over all of Automation Director.
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 operation.
DevelopGroup	Intended for users who create or modify templates.
PeerGroup	The user group to which the HaUser built-in account is assigned.
ViewGroup	Enables users in custom user groups to log into Device Manager.

If a custom user group is created, all users in the group must have at least View (or higher) role in Hitachi Command Suite. For more information on user groups in Hitachi Command Suite, see the *Hitachi Command Suite User Guide*.

Creating a user group

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

Procedure

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

Related concepts

- [About user groups](#) on page 85

About service groups

Service groups manage the access and permissions to a service and the storage requirements 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 1 user group and 1 infrastructure group.

There are 3 types service groups:

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 connections, or infrastructure groups. 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**.

Postrequisites

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

Related concepts

- [About service groups](#) on page 86

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.
- **Resources tab:**
 - The **Summary - Capacity per Storage Profile** pane shows the used, free, and subscribed capacities of each storage profile associated with the infrastructure groups.
Click the name of a storage profile to show more details in the **Storage Profiles** pane.
 - The **Infrastructure Groups** pane shows the infrastructure groups associated with the selected service group.
Click **Assign** to assign or remove infrastructure groups.
Click the name of an infrastructure group to show more details in the **Infrastructure Groups** page.
- **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.

Related concepts

- [About service groups](#) on page 86

Assigning services to a service group

Provide 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 refresh 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.

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 and 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 storage resources available to the service. A service group must contain at least 1 infrastructure group.

Creating an infrastructure group

Admin users can create infrastructure groups.

Before creating an infrastructure group, you should 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**.

Postrequisites

Assign the resource groups and service groups.

Viewing infrastructure groups

The infrastructure group view lists the associated resource groups 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 resources and service 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 Resource Groups:** The number of Hitachi Device Manager resource groups associated with the infrastructure group.
- **No. of Service Groups:** The number of associated service groups.
- **No. of Pools:** The number of pools associated with the infrastructure group.
- **Total Capacity:** The total capacity of pools under the infrastructure group.
- **Used Capacity:** The amount of total capacity in use, including reserved capacity.
- **Free Capacity:** The free capacity of pools under the infrastructure group.
- **Subscribed Capacity:** The size of pools reserved for the infrastructure group.
- **Used %:** The percentage of total capacity used by the infrastructure group including reserved capacity.

- Subscription: The percentage of pools subscribed to the infrastructure group.
- No. of TI Pools: Number of TI Pools matching the criteria.
- Total Capacity of TI Pools: Total capacity of the Storage included in the TI Pool group (including capacity yet to be allocated).
- Used Capacity of TI Pools: Sum of the used capacity out of the allocated capacity for the Storage in the TI Pool group.
- Free Capacity of TI Pools: Free capacity out of the total allocated capacity for the Storage in the Pool group.
- Used % of TI Pools: Ration of Used Capacity in the TI Pool (Used Capacity/ Total Capacity * 100)

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

- **Resources tab** - displays a summary of the associated infrastructure group and its used, free, and subscribed capacities.
The following resource group properties are provided:
 - Name: The resource group name.
 - No. Pools: Number of Pools matching the criteria.
 - Total Capacity: Total capacity of Storage included in this Pool group (including capacity yet to be allocated).
 - Used Capacity: Sum of the reserved and the used capacity out of the allocated capacity of Storage in this Pool group.
 - Free Capacity: Free capacity out of the total allocated capacity of Storage in this Pool group.
 - Subscribed Capacity: Sum total of Subscribed (size of volume finally extensible) in this Pool group.
 - Used %: Ratio of Used Capacity. Used Capacity/Total Capacity *100.
 - Subscription: Ratio of Subscribed Capacity. Subscribed Capacity/Total Capacity *100.
 - No. of TI Pools: Number of TI Pools matching criteria.
 - Total Capacity of TI Pools: Total capacity of Storage included in this TI Pool group (including that yet to be allocated).
 - Used Capacity of TI Pools: Sum of the used capacity out of the allocated capacity of Storage in the TI Pool group.
 - Free Capacity of TI Pools: Free capacity out of the total allocated capacity of Storage in this Pool group.
 - Used % of TI Pools: Ratio of Used Capacity in the TI Pool. Used Capacity/Total Capacity *100.
 - Storage System: Storage array.
 - Model: Array type.
 - Serial No.: Serial no. of the storage device (device product number).
 - Virtual Storage Machine: Serial number of the virtual storage system.
 - Virtual Serial No.: Serial number of the storage system.
 - Virtual Model: Display name of the storage system type.
 - Device Manager: Address of HDvM.

- **Services Group tab** - a list of associated services.
The following service group properties are provided:
 - Name: The 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. On the **Resources** tab, click **Assign**.
3. From the **Assign Resource Groups** view, select resource groups from the available resource groups and click **Add**.
The selected resource groups are moved to the assigned resource groups.
4. Click **OK** to save.



Caution: Do not assign resource groups that include DP pools for Hitachi NAS Platform. Do not assign resource groups that include storage devices that are selected for nondisruptive migration.

Related concepts

- [About infrastructure groups](#) on page 89

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 and click **Add**.
The selected service group is moved to the assigned service groups.
4. Click **OK**.

Related concepts

- [About service groups](#) on page 86
- [About infrastructure groups](#) on page 89

Viewing your user profile

Admin users can change their profiles and passwords from the Administration tab.

1. Access your User Profile on the Administration tab by clicking User Profile.
2. Click Edit Profile to open the Edit Profile window.
3. Click Change Password to open the Change Password window.

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

Editing your own user profile

As your role changes in Automation Director, you should update 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.

Changing your own password

As your password expires or is compromised, it will need to be changed.

Procedure

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

Result

Your password is changed.

Managing users and permissions

Admin users can view and modify user profiles and permissions. Other users can modify the user profile and password in the Tools menu.

About user roles

The user role determines what a user can see, access, and perform in Automation Director. User roles are assigned when assigning a user group to a service group.

The following table describes the four roles in Automation Director:

Role	Access level description	Included privileges
Admin	This level of access is intended for administrators to: <ul style="list-style-type: none">• Manage users and user groups• Manage storage including resource groups• Customize services• Import service templates	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• Create and edit service templates using Service Builder• Test service templates and services created from templates	<ul style="list-style-type: none">• Access to Service Builder
Modify	This level of access is intended for expert level users to: <ul style="list-style-type: none">• Edit services• Submit services• Create services from templates	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• Submit services• Schedule services• Monitor and resubmit tasks	<ul style="list-style-type: none">• Submit Service dialog box• Task Details dialog box

The View (or higher) role in Hitachi Command Suite is required to allow users access from the Automation Director GUI. For more information on access rights to Hitachi Command Suite, see the *Hitachi Command Suite User Guide, MK-90HC172*.

Viewing users

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

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 details of the user profile.

Creating a user account

All users not allowed to log in with the System account require a user account for access to HAD.

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**.
This will launch a user management window.
2. Click **Users** to display the current user list.
3. Click **Add User** and specify user profile information.
4. Click **OK**.

Result

The user list is re-displayed and will include the new user.

Related concepts

- [About user roles](#) on page 93

Editing the profile for a user account

Modify the name, email address, and description for a user account.

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
This will launch a user management window.
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**.
The user profile is displayed.
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 and registered users as well as 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

To grant a user new permissions or remove existing permissions, change permission settings in the user account.



Tip: For a user of Device Manager or Tiered Storage Manager (GUI), specify a role for the user group which is assigned to the user, instead of granting user permissions.

Procedure

1. On the **Administration** tab, click **Users and Permissions**.
This will launch a user management window.
2. Click **Users**, select the target user by clicking the **User-ID** link, and click **Change Permission**.
3. Edit the permissions and click **OK**.
The user account is re-displayed, including granted permission.
4. Verify the correct user permissions are selected.

Result

The user permissions are changed.

Related concepts

- [About user roles](#) on page 93

Changing the lock status of user accounts

A user account can be locked or unlocked by an administrator.

Procedure

1. On the **Administration** tab, select **Users and Permissions**.
This will launch a user management window.
2. Click **Users**, select the check box for the user whose lock status you want to change.
3. Click **Lock Users** or **Unlock Users**.
A verification dialog box displays.
4. Click **Ok** to lock or unlock the account, or click **Cancel**.
5. Verify that the user account has been locked (a lock icon displays in the user list), or that the previously locked user can now log in.

User ID and password policies

User IDs and passwords must adhere to specific requirements.

HAD User IDs and passwords have the same requirements:

- Number of characters: 1-256.
- Characters allowed: A-Z, a-z, 0-9 ! # \$ % & ' () * + - . = @ \ ^ _ | .

If using external authentication servers such as LDAP (and others), note that User IDs and passwords must be valid for the external authentication server and Hitachi Command Suite products.

Configuring external authentication for users

External authentication systems can be used to authenticate user logins.

External authentication systems, such as LDAP (for example, Active Directory), RADIUS, or Kerberos may be used to authenticate HAD users as they log in. You can re-configure existing accounts, or create new accounts to use external authentication.

Prerequisites

- The HAD server must be linked to an external authentication server. See the *Hitachi Command Suite Administrator Guide*.
- The HAD server must be configured to support user authentication, which activates the Change Auth button in the GUI, and which presents authentication options such as Internal for a local account, or LDAP for external authentication.
- The HAD user ID must exist on the external authentication server. It is recommended that user ID information be acquired from the external authentication server administrator before creating accounts.

Procedure

1. From the **Administration** tab, select **Users and Permissions**.
2. Select **Users** folder, then select one or more users (using the check box) whose authentication method you want to change, 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, a **User ID** and **Password** are both 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 desired fields, and click **OK** to create the user account.

3. If you have selected existing users, click **Change Auth**. A dialog box is displayed. From the drop down list, select the desired authentication method (for example, LDAP) and click **OK**. The user list will be re-displayed.
4. Review the **Authentication** column to verify the authentication method.

Result

On the next login attempt by each user, the users login credentials (user ID and password) will be validated using the external authentication server.



Tip: Set permissions or roles so that the registered user can perform necessary operations using HAD products. Also consider adding user accounts to user groups with assigned roles for controlled access to resource groups.

Related tasks

- [Creating a user account](#) on page 93
- [Configuring external authentication for groups](#) on page 97

Configuring external authentication for groups

External authentication systems can be used to authenticate user groups.

External authentication systems, such as LDAP (for example, Active Directory), RADIUS, or Kerberos may be used to authenticate HCS user group members as they log in. 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, user permissions can be managed by using the Active Directory groups (authorization groups) registered on the external authorization server. In this case, user permissions are specified for each group.

Prerequisites

- The HAD server must be linked to an external authentication (authorization) server. See the *Hitachi Command Suite Administrator Guide*.
- The HAD server must be configured to support group authentication, which activates the Groups folder in the GUI.
- The HAD user group must exist on the external authentication (authorization) server. It is recommended that domain and group information, as required below, 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 displayed, see the pre-requisites above.
3. Select the desired **Domain Name** to display the **Group List**, which may be empty ('No Groups' is displayed). 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 re-display the **Group List**. Note that 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 HAD permissions for the group (repeat this for each new group).
6. Your groups will now be visible from the **Administration** tab, **User Groups**. You can affiliate the groups with resource groups and roles, just like HAD user groups. If you delete external authentication groups from **Users and Permissions** at a later time, the groups are also removed from the **User Groups** list.

Result

On the next login attempt by each group member, the users login credentials (User ID and Password) will be validated using the external authentication (authorization) server.



Tip: To delete registered authorization groups, select the check boxes of the groups to be deleted, and then click **Delete Groups**.

Related tasks

- [Configuring external authentication for users](#) on page 96

Deleting users

If a user is not using Automation Director, you can delete the user account. An Admin user 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**.
The selected user is deleted from the **User List**.

Configuring connection settings

Configuring Automation Director requires setting the connection information to Device Manager instances, other hosts, and third party tools.

Configuring Device Manager connections

You can register and manage connection information for multiple Hitachi Device Manager instances.

Automation Director retrieves the information from each instance and collectively reports on resource capacity and usage through the storage profiles. In addition, Automation Director storage services utilize Device Manager instances for volume allocation and replication tasks. The user defined for Device Manager Connections requires Modify or above privileges associated with one or more resources on the connected Device Manager. In addition, when you use Thin Image services, the user needs Modify or above privileges associated with one or more resources defined for Replication Manager. You can register up to 50 Device Manager connections. Admin users can set up the Device Manager connections.



Note: Registering duplicate instances will cause an incorrect capacity calculation.

Procedure

1. On the **Administration** tab, click **Connection Settings > Device Manager Connections**.
2. Click **Add** and enter the following information:
 - **Name:** Enter a name for the instance of Device Manager.
 - **IP Address/Host Name**
 - **Protocol:** Select **http** (default) or **https**.
 - **Port**
 - **User ID**
 - **Password**
3. Click **OK**.

Configuring VMware vCenter connections

Automation Director services can execute remote operations on VMware vCenter servers. A connection setting is required for the VMware vCenter server. This type of connection enables Automation Director Services to create data stores in a VMware environment. The Admin role is required to set up the connection.

Procedure

1. From the **Administration** tab, **Connection Settings > Connections to VMware vCenter**.
2. Click **Add** and enter the following information:
 - **Name**
 - **IP Address/Host Name**
 - **Protocol:** **https**. Cannot be changed.
 - **Port**

- **User ID**
 - **Password**
3. Click **OK**.

Configuring remote connections

Automation Director services can execute remote operations 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.

Procedure

1. On the **Administration** tab, click **Connection Settings > Agentless Remote Connections**.
2. Click **Add** to add a connection. To edit a connection, select the checkbox next to the connection and 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 host is anonymous.
 - Protocol: If authentication is used, select WMI, SSH, or Telnet.
 - User ID: Required if authentication is used.
 - Password: Required if authentication is used.
 - Super User's Password: Required if Protocol is SSH or Telnet.
3. Click **OK**.

Managing storage profiles

About storage profiles

A storage profile is the classification of storage resources based on the characteristics of a disk, such as disk type, disk capacity, RAID level and the number of physical drives in a parity group, across storage systems. A storage profile comprises a set of these characteristics, and is used to group similar hardware configurations together. These storage profile groupings translate into expected levels of performance that are applied to provisioning services. The capacity and usage summaries provided by the storage profiles allow you to easily determine and allocate the appropriate level of resources.

Storage profiles are used to identify and automate the allocation of available, unassigned volumes from different tiers configured in various storage systems managed by Hitachi Device Manager instances in your storage environment. You can select a storage profile that suits your service requirements. For example, for an Oracle application that is used for

archiving emails, you can assign a storage profile that identifies volumes from SATA drives across all managed storage systems. Whereas, for an Oracle application that is used for an online banking service, you can assign a storage profile that identifies volumes from SSD drives across all managed storage systems.

In combination with infrastructure groups, storage profiles can simplify and standardize storage provisioning requests by applying sets of volumes to services. Infrastructure groups are assigned to a storage profile based on their storage requirements. When a service is submitted, Automation Director automatically examines the infrastructure group environment to find available pools of storage that meet the assigned storage profile.

Access the Storage Profile pane on the Administration tab under Storage Service Settings.



Caution: If you select More Actions > Restore Default, all built-in storage profiles and are reset to factory default settings and user-created storage profiles are deleted.

The Storage Profile pane shows the following information:

- **Name:** The name assigned to the profile. The default profiles are Bronze, Dynamic, Gold Read, Gold Write, Silver, Ultimate, Bronze (TI), Gold Write (TI), and Silver (TI) profiles . You can click a name to open the Criteria Summary of Storage Profile to view the criteria for the profile.
- **Pool Type:** The pool type associated with a given criteria.
- **Description:** Purpose or intended use of the profile.
- **No. of Pools:** The number of pools that match the storage profile.
- **Total Capacity:** The total capacity of pools that match the storage profile.
- **Used Capacity:** The used capacity of pools that match the storage profile, including reserved capacity.
- **Free Capacity:** The available capacity of pools that match the storage profile.
- **Subscribed Capacity:** The size of pools reserved for the storage profile.
- **Used %:** The capacity percentage used by pools that match the storage profile, including reserved capacity.
- **Subscription:** The percentage of reserved capacity of pools that match the storage profile.

Related tasks

- [Creating a storage profile](#) on page 103
- [Restoring predefined storage profiles to default settings](#) on page 106

Related references

- [Default storage profiles](#) on page 102

Default storage profiles

Automation Director provides predefined storage profiles based on best practices associated with workloads using storage infrastructure. These default profiles are completely customizable to meet your storage requirements.

Name	Purpose	Default Criteria
Bronze	Economical usage	Pool Type: HDP Array Type: Any Volume Location: Internal, External Disk Type: SATA
Bronze (TI)		Pool Type: TI Array Type: Any Volume Location: Internal, External Disk Type: SATA
Dynamic	To support workloads that fluctuate frequently.	Pool Type: HDT Array Type: Any Tiering Policy: All Tier 1 Volume Location: Any Tier 2 Volume Location: Any Tier 3 Volume Location: Any
Gold Read	For read-intensive workloads	Pool Type: HDP Array Type: Any Volume Location: Internal Disk Type: SAS 15K, RAID5 (All), RAID6 (All)
Gold Write	For write-intensive workloads	Pool Type: HDP Array Type: Any Volume Location: Internal Disk Type: SAS 15K RAID Level: RAID0 (All), RAID1 (All)
Gold Write (TI)	For write-intensive workloads	Pool Type: TI Array Type: Any Volume Location: Internal Disk Type: SAS 15K RAID Level: RAID0 (All), RAID1 (All)

Name	Purpose	Default Criteria
Silver	Mid-level performance SAS	Pool Type: HDP Array Type: Any Volume Location: Internal Disk Type: SAS 10K
Silver (TI)		Pool Type: TI Array Type: Any Volume Location: Internal Disk Type: SAS 10K
Ultimate	SSD and flash drives	Pool Type: HDP Array Type: Any Volume Location: Internal Disk Type: SSD and flash drives

Related concepts

- [About storage profiles](#) on page 100

Related tasks

- [Creating a storage profile](#) on page 103

Creating a storage profile

You can create custom storage profiles to meet your storage requirements. Users with the Admin role can create storage profiles.

Procedure

1. On the **Administration** tab, click **Storage Service Settings > Storage Profiles**.
2. Click **Create** to open the **Create Storage Profile** dialog box and enter a **Name** and **Description** for the storage profile.



Note: You cannot change the name of a storage profile after it has been saved.

3. In the **Criteria** panel, select **HDP, HDT, or TI** as the **Pool Type** and enter the following information, depending on your selection:

Pool Type	Criteria	Description
HDP	Array Type	Select Any or select Specific and choose a

Pool Type	Criteria	Description
		<p>supported storage system type.</p> <hr/>  <p>Note: Device Manager version 8.1.3 or later is a prerequisite for selecting "VSP Gx00" as the array type.</p> <hr/>
	Volume Location	Select Any or specify Internal or External .
	Physical Characteristics	<p>If the Volume Location is Any or Internal, you can select make selections for the following characteristics:</p> <p>Disk Type</p> <p>RAID Level</p> <p>Disk Size</p> <p>No. of Drives in Pool</p>
HDT	Array Type	Select Any or select specific types.
	Tiering Policy	<p>Select the level of tiers in the tiering policy: All, T1, T2/T2, T2, T2/T3, or T3.</p> <p>If you choose T2/T3 and you want to match a pool that has two tiers, select Any for the Volume Location of Tier 3 and do not appoint anything in Physical Characteristics of Tier 3.</p> <p>Similarly, if you choose T1/T2 and you want to match a pool which has one tier, select Any for the Volume Location of Tier 2 and do not appoint anything in Physical Characteristics of Tier 2.</p>

Pool Type	Criteria	Description
	Tiering Conditions	Enter the conditions for each tier in the tiering policy.
	Volume Location	For each Tier, you can select Any location or any combination of Internal and external High, Mid or Low .
	Physical Characteristics	For internal volumes, you can click [+] to add conditions to the tiering policy. Select any or select specifics for each: Disk Type RAID Level Disk Size No. of Drives in Pool
TI	Array Type	Select Any or select Specify Criteria and choose a supported storage system type.
	Volume Location	Select Any or specify Internal or External .
	Physical Characteristics	If the Volume Location is Any or Internal , you can select make selections for the following characteristics: Disk Type RAID Level Disk Size No. of Drives in Pool

4. If necessary, click **[+]** to add additional conditions to the storage policy.
5. When the criteria information is complete, click **Resources Matching Criteria** to view the matching resources in the right-hand panel. The table displays the aggregate number of pools, total capacity, and used capacity based upon the criteria. In addition, the aggregate number of pools, total capacity, and used capacity by infrastructure groups based on the criteria is displayed.
6. Click **OK** to save the profile and return to the **Storage Profiles** view.

Related concepts

- [About storage profiles](#) on page 100

Related references

- [Default storage profiles](#) on page 102

Restoring predefined storage profiles to default settings

In the event that the predefined storage profiles have been modified, they can be reset to the original settings.



Note: Returning the storage profiles to default settings affects *all* nine predefined profiles and deletes any custom created profiles. The predefined profiles cannot be restored on an individual basis.

Procedure

1. From the **Administration** tab, click **Storage Profiles**.
2. From the **Storage Profiles** view, click **Restore Default**.
3. Click **OK** to confirm.

Related concepts

- [About storage profiles](#) on page 100

Related references

- [Default storage profiles](#) on page 102

Managing replication settings

About replication settings

Registration of Hitachi Open Remote Copy Manager (HORCM) instances on pair management servers is required to manage primary and secondary volumes associated with replication and Snapshot (Thin Image). Provisioning services with replication and Snapshot (Thin Image) use this information during the pair definition process. When using replication and Snapshot (Thin Image) services, you must import the server certificates for Hitachi Device Manager from the Device Manager agent's trust store. Refer to "*Configuring an SSL client-Importing a server certificate into the truststore for the Device Manager agent*" in the Hitachi Command Suite Administrator Guide for details.

Configuring replication settings

Access replication settings on the Administration tab by navigating to Storage Service Settings > Replication Settings.

Storage Systems Settings

The Replication Settings for Storage Systems includes the following information:

- **Storage System:** The storage device name.
- **Status:** Status information using information extracted from HDvM via a Device Manager Connection. The following status transitions are provided:
 - **Enabled:** The storage system is being used for replication.
 - **Disabled:** The storage system is not being used for replication.
 - **Unconfigured:** No instance on the pair management server has been configured.
 - **Unavailable:** The storage system has no available pair management server.



Note: If the Status is Enabled or Disabled, the status is not changed and the Pair Management Server settings are maintained even if the storage system or Pair Management Server becomes unavailable. Instead, a warning or an error in the entry provides the current status.

- **Create Time:** Date and time the setting was created.
- **Modify Time:** Date and time the setting was modified.
- **Primary/Secondary:** The primary and secondary servers which are assigned to the pair management servers in the Pair Management column.
- **Pair Management Server:** Name of the pair management server configured in Device Manager.
- **Instance No.:** The instance ID number on the pair management server. This can be edited in the Edit Replication Setting dialog box.
- **UDP Port:** The UDP port number on the pair management server. This can be edited in the Edit Replication Setting dialog box. If an instance number is specified, then the port is automatically supplied and cannot be changed.
- **Device Manager:** Information regarding the HDvM connection used to manage the storage system.



Note: Even if you are only using Thin Image services with the Snapshot Group, you must still configure the appropriate Replication Settings.

Replication Settings Actions

The following replications setting actions are available:

- **Edit:** Edits replication settings. When selected, the Edit Replication Settings dialog box appears.
- **Clear:** Deletes the information on the Pair Management Server and updates the status.

- Refresh: Refreshes information from HDvM so you can add or delete entries for the Replication Settings or make other modifications.



Note: A Refresh is always required under the following conditions:

1. When you change the Replication Manager mode (Normal/Maintenance).
 2. When you upgrade HAD from v8.1.3 or before, to v8.1.4 or later.
-

Related concepts

- [About replication settings](#) on page 106

Related tasks

- [Editing a CCI instance](#) on page 108

Editing a CCI instance

You can edit existing pair definitions for each CCI instance. The Admin role is required to edit a CCI instance.

Procedure

1. On the **Administration** tab, navigate to **Storage Service Settings > Replication Settings**.
2. In the **Replication Settings** pane, click **Edit** to open the **Edit Replication Settings** dialog box and enter the following information for primary and secondary servers:
 - **Pair Management Server:** Select one of the available choices.
 - **Instance No.:** Select an instance and UDP port pair. For the primary server, you can also specify these values manually.
 - **Enable/Disable:** Choose to enable or disable the storage system for replication.
3. Click **OK** to save your changes.

Related concepts

- [About replication settings](#) on page 106

Related references

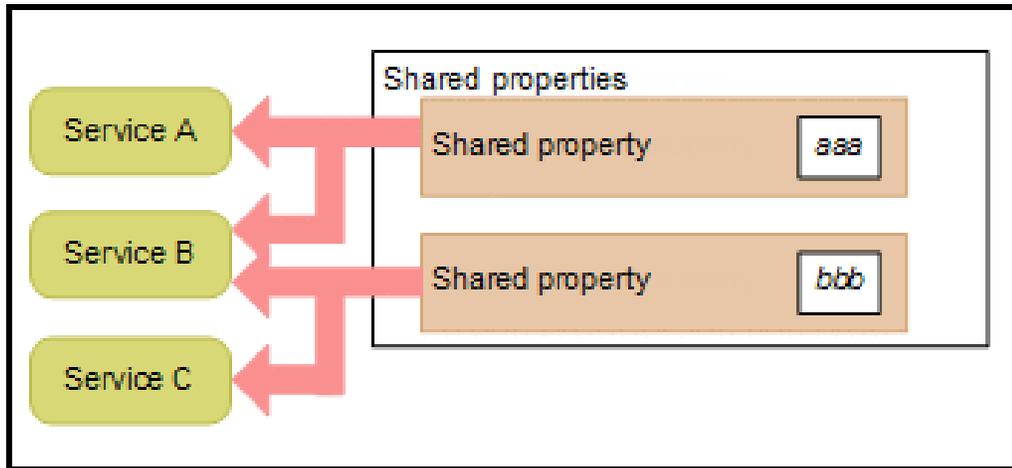
- [Configuring replication settings](#) on page 106

Using shared properties

Automation Director 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 may share the same Device Manager 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:



Automation Director provides 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.

Related tasks

- [Modifying the shared properties](#) on page 110

Related references

- [Built-in shared properties](#) on page 109

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 Automation Director:

Shared service properties	Description	Values
Upper Limit of the Task Status Polling Duration	Upper limit (hrs.) of the polling duration for task in Device Manager.	The default is 240 hours.
Task Status Polling Interval	Polling interval (seconds) for monitoring task running in Device Manager.	The default is 60 seconds.
Timeout for Receiving Responses to Volume Allocation and Polling Requests	Timeout (seconds) for receiving responses to volume allocation and polling requests in Device Manager.	The default is 60 seconds.
Auto-Configuration of Volume Labels at Volume Allocation	Specifies whether to set a volume allocation. If you specify "true", and do not provide a volume label, then a volume label is automatically assigned.	True or False
Reflection of Volume Labels into the Storage System	Specifies whether to apply the volume labels to Storage Navigator during volume label configuration at volume allocation. If you specify "true", the volume label is applied.	True or False

Related concepts

- [Using shared properties](#) on page 108

Related tasks

- [Modifying the shared properties](#) on page 110

Modifying the shared 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 and click **Edit**.
3. Enter the value of the property and click **OK**.

Related concepts

- [Using shared properties](#) on page 108

Related references

- [Built-in shared properties](#) on page 109

Configuring email and log settings

The system settings are used to configure the email notifications and log parameters in Automation Director. The Admin role is required to configure the system settings.

Email notifications are sent to users when a task fails to execute, or when a task requires input from a user in order to continue. If input is required, the user will be required to input an email address as a service input parameter. Also, Automation Director will refer the Server Address (SMTP setting) entry 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. Automation Director supports SMTP Servers where SMTP-AUTH is set.
 - **Server Port:** SMTP server port number.
 - **User ID:** for the email account.
 - **Password:** for the email account.
 - **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:
 - **E-mail notification:** on or off.
 - **Task Threshold Settings**
 - **Severe:** output for only severe logs.
 - **Information:** Output for severe and informational logs.
 - **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**.



Automation Director CLI commands

A set of Automation Director and Hitachi Command Suite Common Component commands are available to run on the command line interface (CLI).

To run the CLI commands, the Admin, Modify, or Submit role is required for Automation Director and Administrator permission for the operating system.

- [Hitachi Command Suite CLI commands](#)
- [Automation Director CLI commands](#)
- [submittask command](#)

Hitachi Command Suite CLI commands

A set of Hitachi Command Suite Common Component commands are available on the CLI.

Navigate to `<system-drive>\Program Files\HiCommand\Automation\Base64\bin` and open the command prompt to run Hitachi Command Suite Common Component commands.

For more information about the Hitachi Command Suite Common Component CLI commands, command syntax and description, see the *Hitachi Command Suite Administrator Guide*.

Automation Director CLI commands

Automation Director provides a set of CLI commands.

Navigate to `<system-drive>\Program Files\HiCommand\Automation\bin` and open the command prompt to run the following Automation Director CLI commands:

Command	Description	Syntax
backupsystem	Backs up the system configuration and database information in the specified directory.	<p>backupsystem <code>{/dir directory-name [/auto] /help}</code></p> <p>Admin role is not required to execute this command.</p> <p>where</p> <ul style="list-style-type: none"> • <code>/dir</code> is an absolute or relative directory path that contains backup data. • <code>/auto</code> directs the Automation Director and Hitachi Command Suite services and database to start and stop automatically.
deleteservicetemplate	Deletes a service template.	<p>deleteservicetemplate <code>{/name service-template-key-name /vendor vendor-ID /version XX.YY.ZZ /user username {/password password /passwordfile password-file} /help}</code></p> <p>where</p> <ul style="list-style-type: none"> • <code>/name</code> is the key name of a service template. • <code>/vendor</code> is the vendor ID of a service template. • <code>/version</code> is a version of a service template. • <code>/user</code> is a user ID. • <code>/password</code> is the password of the user that is specified in the <code>/user</code> option. • <code>/passwordfile</code> is a password file (with absolute or relative path) that includes the encrypted user credentials.

Command	Description	Syntax
encryptpassword	Creates a file that includes an encrypted user name and password. You can specify the password file instead of the password for any Automation Director command that allows the /passwordfile option.	<pre>encryptpassword {/user <i>username</i> /password <i>password</i> /passwordfile <i>password-file</i> /help }</pre> <p>where</p> <ul style="list-style-type: none"> • /user is the ID of the user who is added to the password file. • /password is the password 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.
importservicetemplate	Imports a service template package.	<pre>importservicetemplate {/file <i>ServiceTemplate</i> /user <i>UserName</i> {/password <i>Password</i> /passwordfile <i>PasswordFile</i>} /help}</pre> <p>where</p> <p>/file is the service template file to import.</p> <ul style="list-style-type: none"> • /user is a user ID. • /password is the password of the user that is specified in the /user option. • /passwordfile is a password file (with absolute or relative path) that includes the encrypted user credentials.
listservices	Exports a list of services or a list of service templates to a CSV file.	<pre>listservices {/output {<i>services</i> servicetemplates} /file <i>output-file</i> [/encoding <i>encoding</i>] /user <i>username</i> {/password <i>password</i> /passwordfile <i>password-file</i>} /help}</pre> <p>where</p> <ul style="list-style-type: none"> • /output is either <i>services</i> (export services) or <i>servicetemplates</i> (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 in order to output services list. The Modify role is required in order to output service templates list. • /password is the password of the user that is specified in /user. • /passwordfile is the absolute or relative path of the password file.
listtasks	Exports a list of tasks to a CSV file.	<pre>listtasks {[/<i>startrange</i> {<i>yyyy-mm-dd</i> ,<i>yyyy-mm-dd</i> <i>yyyy-mm-dd,yyyy-mm-dd</i>} /output {<i>tasks</i> <i>histories</i> <i>taskdetails</i>}</pre>

Command	Description	Syntax
		<pre>{/file OutputFile /taskdetaildir DirectoryName} [/encoding encoding] /user username {/password password /passwordfile password-file} / help}</pre> <p>where</p> <ul style="list-style-type: none"> • /startrange is the date range of the task start date. Use this to limit the contents of the list to tasks executed 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. • /password is the password of the user that is specified in /user. • /passwordfile is the absolute or relative path of the password file.
restoresystem	Restores the system configuration and database information from the specified directory where the data was backed up.	<pre>restoresystem{/dir DirectoryName [/auto] /help}</pre> <p>where</p> <p>/dir is an absolute or relative directory path that contains data that is backed up by the backupssystem command</p> <p>/auto directs the Automation Director and Hitachi Command Suite services and database to start and stop automatically.</p>
setupcluster	Sets up an Automation Director cluster environment.	<pre>setupcluster {/exportpath ExportPath /help}</pre> <p>where</p> <p>/exportpath is the absolute or relative path of the directory on a shared disk used to store the database and server information .</p>
stoptask	Stops a running task.	<pre>stoptask {/taskid task-ID /user username {/password password /passwordfile password-file} /help}</pre> <p>where</p> <ul style="list-style-type: none"> • /taskid is a task ID. You can confirm the task ID from the Task Details screen, output of submittask command, output of listtasks command. • /user is a user ID. • /password is the password of the user that is specified in /user.

Command	Description	Syntax
		<ul style="list-style-type: none"> <code>/passwordfile</code> is the absolute or relative path of the password file.
<code>submittask</code>	Submits a task for a service.	For more information, see submittask command on page 117

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.
- Re-registration of tasks.

If this option is specified, you can re-register tasks that were outputted 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 {/password Password | /passwordfile
PasswordFile}
[/wait] | /help}
```

Syntax: Scheduled execution of a service

```
submittask [/servicename ServiceName [/servicegroup ServiceGroup]
[/taskname TaskName]
[/taskdescription TaskDescription]
[{{[/property Key "Value"... | /propertyfile
PropertyFile}}]
/user UserName {/password Password | /passwordfile
PasswordFile}
/scheduledate yyyy-mm-dd /schedulesettime hh:mm | /help}
```

Syntax: Recurrent execution of a service

```
submittask [/servicename ServiceName [/servicegroup ServiceGroup]
[/taskname TaskName]
[/taskdescription TaskDescription]
[{{[/property Key "Value"... | /propertyfile
PropertyFile}}]
/user UserName {/password Password | /passwordfile
PasswordFile}
/recurrencepattern {daily | weekly:sun,mon,...,sat |
```

```
monthly:{dd,dd,...,dd | endofmonth}}
/recurrence time hh:mm /recurrence start yyyy-mm-dd |
/help}
```

Syntax: Re-registration of tasks

```
submittask {/reregister /taskdetaildir DirectoryName
[/setoriginalsubmitter]
/user UserName
{/password Password | /passwordfile PasswordFile} |
/help}
```

Permission

- To run this command, you must have the Admin, Modify, or Submit role in Automation Director and Administrator permission for the operating system.
- 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 <i>service-name_YYYYMMDDhhmmss</i> , where <i>service-name</i> is the value of the /servicename option and <i>YYYYMMDDhhmmss</i> 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.

Option	Description
	<p>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').</p> <p>This is an optional parameter.</p>
/property	<p>Specify a property key and value.</p> <p>One or more property key-value combinations that are used by the service to be performed.</p> <p>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.</p> <p>You cannot specify both the /property and the /propertyfile options. If you do, then an error occurs.</p> <p>You can specify this option more than once, 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 <code>server.editor.publicProperty.perTemplate.maxnum</code> key in the <code>config_user.properties</code> file.</p> <ul style="list-style-type: none"> • <i>key</i> 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 once causes an error. • <i>value</i> is the value for the <i>key</i> property. If the value includes a space or special character, the value must be enclosed in double quotation marks (").
/propertyfile	<p>Specify a property file. Use an absolute or relative path.</p> <p>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.</p> <p>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.</p> <p>This option and the /property option cannot be specified at the same time. If both options are specified, then an error occurs.</p> <p>Additional requirements:</p> <ul style="list-style-type: none"> • Location: The properties file can be in any directory. However, the user who runs the command must be able to access it. • File name: Any file name. • Key-value combination format: <i>property-key=property-value</i>(linefeed code) <i>property-key=property-value</i>(linefeed code) <p>If you add a suffix @FILE to the key, it is possible to specify a text file to value. For example, <code>key@FILE=C:\properties\valuefile.txt</code>.</p>
/user	Specify a user ID.

Option	Description
	<p>The ID for the Automation Director user who has access permission to execute the service.</p> <p>The ID can be 1 to 256 half-width alphanumeric characters long. It can consist of any characters, except the following: ! # \$ % & () * + - . = @ \ ^ _ . The ID is not case-sensitive.</p>
/password	<p>Specify a password.</p> <p>The password for the user that is specified by the /user option.</p> <p>You must specify either this option or the /passwordfile option. If both options are specified, or if neither is specified, an error is returned. The ID can be 1 to 256 half-width alphanumeric characters long. It can consist of any characters, except the following: ! # \$ % & () * + - . = @ \ ^ _ .</p>
/passwordfile	<p>Specify a password file. Use an absolute or relative path.</p> <p>The absolute or relative path to the password file for the user who is specified in the /user option.</p> <p>You can create a password file by using the encryptpassword command. You must specify either this option or the /password option. If both options are specified, or if neither is specified, an error is returned.</p>
/wait	<p>Wait for a task to finish.</p> <p>Provides the task execution result (normal termination or failure). If the /wait option is not specified, the command terminates without waiting for the task to terminate. In this case, a message reporting the task ID is provided only when the task execution has started normally.</p>
/scheduledate	<p>Specify a date for executing a service.</p> <p>When this option is specified, any of the following conditions will result in an error:</p> <ul style="list-style-type: none"> • An invalid combination of arguments. • 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 <p>Format:</p> <p>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.</p>
/scheduletime	<p>Specify a time for executing a service.</p> <p>When this option is specified, any of the following conditions will result in an error:</p> <ul style="list-style-type: none"> • An invalid combination of arguments. • 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.

Option	Description
	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	<p>Specify a pattern for a recurring service.</p> <p>Use this option with the /recurrencetime option, and the /recurrencestart option.</p> <p>When this option is specified, the following conditions will result in an error:</p> <ul style="list-style-type: none"> • An invalid combination of arguments. • The format of the specified fixed execution cycle is incorrect. <p>Recurrence options and formats:</p> <ul style="list-style-type: none"> • Daily: specify "daily" • 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. <ul style="list-style-type: none"> ○ 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	<p>Specify the execution time for a recurring service.</p> <p>Use this option with the /recurrencepattern option, and the /recurrencestart option.</p> <p>When this option is specified, the following conditions will result in an error:</p> <ul style="list-style-type: none"> • An invalid combination of arguments. • The form of the specified time is inaccurate. <p>Format:</p> <p>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.</p>
/recurrencestart	<p>Specify a date for a recurring service to start.</p> <p>Use this option with the /recurrencepattern option, and the /recurrencetime option.</p> <p>When this option is specified, the following conditions will result in an error:</p> <ul style="list-style-type: none"> • An invalid combination of arguments. • The form of the specified date is inaccurate. • The specified date is outside the range on January 1, 1994 to December 31, 2036. <p>Format:</p>

Option	Description
	Specify the date in the form of "yyyy-mm-dd." I 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.
<code>/reregister</code>	Specify if you want to re-register scheduled tasks. This option has no value.
<code>/taskdetaildir</code>	Specify a folder that was outputted by the <code>listtasks</code> command with the <code>/taskdetails</code> option. Use an absolute or relative path. The folder must be located on a local disk. The maximum path length is 180 characters.
<code>/setoriginalsubmitter</code>	Specify whether you want to re-register tasks as the user at the point in time in which task details were output. This option has no value. When this option is not specified, the user ID specified as the <code>/user</code> of the <code>submittask</code> command serves as the executor of the task after re-registration.
<code>/help</code>	Display 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 invalid.
2	The command stopped.
3	The service status is invalid.
4	The number of commands that can be run simultaneously is exceeded.
5	Communication failed.
6	Authentication failed.
7	An invalid path is specified.
9	Path not found.
10	Path cannot be accessed.
14	You do not have permission to run the command.
130	The service did not start.

Return code	Description
131	The property file does not exist.
132	The property file has an invalid format.
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 is invalid.
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 /password password
```

Example: Scheduled execution of a service

```
submittask /servicename "Execute Remote Command"
/propertyfile "C:\temp\properties.txt"
/scheduledate 2015-01-23 /scheduletime 12:34
/user Bob /password password
```

Example: Recurrent execution of a service

```
submittask /servicename "Execute Remote Command"
/propertyfile "C:\temp\properties.txt"
/recurrencepattern weekly:sun,mon,sat
/recurrencestart 12:34 /recurrencestart 2015-01-23
/user Bob /password password
```

Example: Re-registration of tasks

```
submittask /reregister /taskdetaildir "C:\temp\taskdetails"
/user Bob /password password
```


Services catalog

Automation Director settings are detailed in the following topics.

- [General Settings for services](#)
- [Allocate Volumes: Service details](#)
- [Allocate Volumes with Replication: Service details](#)
- [Allocate Volumes with Snapshot \(Thin Image\): Service details](#)
- [Allocate Volumes and Create Datastore on VMware vSphere: Service details](#)
- [Allocate Volumes and Add to Oracle Database: Service details](#)
- [Allocate Like Volumes and Add to Oracle Database: Service details](#)
- [Allocate Like Volumes: Service details](#)
- [Allocate Like Volumes and Create Datastore on VMware vSphere: Service details](#)
- [Task Settings for services](#)
- [Additional service templates](#)

General Settings for services

The pre-configured services include the following general settings:

Table B-1 General Settings

Settings pane	Description
Name	User-defined name for the service. Pre-configured services have default names.
Description	User-defined description for the service. Pre-configured services have default descriptions.
Status	Test or Release. Use Test if the service has not been tested.
Tags	Use tags to classify services and help to 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 details

Settings

These settings are applicable to the following service templates:

- Allocate Volumes for Microsoft SQL Server
- Allocate Volumes for Microsoft Exchange Server
- Allocate Volumes for Citrix XenDesktop on Microsoft Hyper-V
- Allocate Volumes for Citrix XenDesktop on VMware vSphere
- Allocate Volumes for Oracle Database
- Allocate Volumes for Generic Application

Table B-2 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Usage	Specify a Volume Usage name.
	Number of Volumes	Specify the restriction of the number of volumes to allocate.
	Volume Capacity	Specify the restriction of the size of the allocated volumes.

Navigation pane	Settings pane	Description
	Storage Profile	Select a Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to the specified capacity when you create volumes.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.

Table B-3 Submit Service Request settings

Navigation pane	Settings pane	Description
Volume Settings	Number of Volumes	Specify the number of volumes to allocate.
	Volume Capacity	Specify the size of the allocated volumes.
	Storage Profile	Display the selected Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Host Settings	Target Hosts	Select a target host.

Prerequisites

The following software is required in order to use the Allocate Volumes service templates:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with Fibre Channel and iSCSI as the supported interface between host and storage subsystem:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110

Allocate Volumes with Replication: Service details

Settings

These settings are applicable to the following service templates:

- Allocate Volumes with Replication for Microsoft SQL Server

- Allocate Volumes with Replication for Microsoft Exchange Server
- Allocate Volumes with Replication for Citrix XenDesktop on Microsoft Hyper-V
- Allocate Volumes with Replication for Citrix XenDesktop on VMware vSphere
- Allocate Volumes with Replication for Oracle Database
- Allocate Volumes with Replication for Generic Application

Table B-4 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Usage	Specify a Volume Usage name.
	Number of Volumes	Specify the restriction of the number of volumes to allocate.
	Volume Capacity	Specify the restriction of the size of the allocated volumes.
	Storage Profile	Select a Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to the specified capacity when you create volumes.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.
Copy Pair Settings	Number of Generations	Specify the number of generations.
	Initial Copy	Specify whether or not to create a copy pair and execute an initial copy.
	Prefix of Copy Group Name	Specify the prefix of the copy group name.
Secondary Volume Settings	Create Copy Pair	Specify whether or not to creates a copy pair definition.
	Storage Profile	Select Storage Profile.

Navigation pane	Settings pane	Description
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to the specified capacity when you create volumes.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Secondary Volume Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.

Table B-5 Submit Service Request settings

Navigation pane	Settings pane	Description
Volume Settings	Number of Volumes	Specify the number of volumes to allocate.
	Volume Capacity	Specify the size of the allocated volumes.
	Storage Profile	Display the selected Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Host Settings	Target Hosts	Select a target host.
Copy Pair Settings	Prefix of Copy Group Name	Specify the prefix of the copy group name.
Secondary Volume Settings	Display the following parameter values that are specified in Edit Service. <ul style="list-style-type: none"> Create Copy Pair Storage Profile 	
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Backup Host Settings	Target Hosts	Select a target host.

Prerequisites

The following software is required in order to use the Allocate Volumes with Replication service templates:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- Pair Management server
Device Manager Agent and CCI.

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- Pair Management server
Server on which Device Manager Agent and CCI are installed.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.
2001	Communication from the Device Manager agent to Device Manager.
2443	Secure communication from the Device Manager agent to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with Fibre Channel and iSCSI as the supported interface between host and storage subsystem:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110

Allocate Volumes with Snapshot (Thin Image): Service details

Settings

These settings are applicable to the following service templates:

- Allocate Volumes with Snapshot for Microsoft SQL Server
- Allocate Volumes with Snapshot for Microsoft Exchange Server
- Allocate Volumes with Snapshot for Citrix XenDesktop on Microsoft Hyper-V
- Allocate Volumes with Snapshot for Citrix XenDesktop on VMware vSphere
- Allocate Volumes with Snapshot for Oracle Database
- Allocate Volumes with Snapshot for Generic Application

Table B-6 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Usage	Specify a Volume Usage name.
	Number of Volumes	Specify the restriction of the number of volumes to allocate.
	Volume Capacity	Specify the restriction of the size of the allocated volumes.
	Storage Profile	Select a Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to the specified capacity when you create volumes.

Navigation pane	Settings pane	Description
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.
Copy Pair Settings	Group Type	Select SnapShot Group or Copy Group.
	Number of Generations	Specify the number of generations.
	CTG Option	Specify whether to use the Consistency Group option.
	Prefix of Group Name	Specifies the prefix for the group name.
Secondary Volume Settings	Create Copy Pair	Specify whether or not to creates a copy pair definition.
	Storage Profile	Select Storage Profile.
	Average differential data size per collection (%)	Specify the average differential data size per collection in percentage.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Secondary Volume Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.
Backup Host Settings	Host Group Name	Specify a Host Group Name to connect with S-VOL. When the host is specified through the Submit Service Request screen, this setting is ignored. The Host Group Name must be created in advance.

Table B-7 Submit Service Request settings

Navigation pane	Settings pane	Description
Volume Settings	Number of Volumes	Specify the number of volumes to allocate.
	Volume Capacity	Specify the size of the allocated volumes.
	Storage Profile	Display the selected Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Host Settings	Target Hosts	Select a target host.
Copy Pair Settings	Prefix of Group Name	Specify the prefix of the group name.
Secondary Volume Settings	Display the following parameter values that are specified in Edit Service. <ul style="list-style-type: none"> • Create Copy Pair • Storage Profile 	
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Backup Host Settings	Selected Hosts (Dummy Host Group Name)	Specify a Single Host, Multiple Hosts, or Host Group and then enter the appropriate hosting name or IP address. The Host Group Name must be created in advance and the specified host must belong to the same Resource Group as the host specified for Host Settings.

Prerequisites

The following software is required in order to use the Allocate Volumes with Snapshot service templates:

- Device Manager v8.1.4-00 or later
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- Replication Manager v8.1.4-00 or later
- Pair Management server
Device Manager Agent v8.1.4-00 and CCI v01-30 or later



Note: When executing Snapshot (Thin Image) services on VSM of VSP G1000, the user defined for Device Manager connections must have Admin role on All Resources.

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- Pair Management server
Server on which Device Manager Agent and CCI are installed.
- Replication Manager server
Server on which Replication Manager software is installed.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.
2001	Communication from the Device Manager agent to Device Manager.
2443	Secure communication from the Device Manager agent to Device Manager.
25200	Communication from Automation Director to Replication Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with Fibre Channel and iSCSI as the supported interface between host and storage subsystem:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600

Allocate Volumes and Create Datastore on VMware vSphere: Service details

Settings

The table below lists the service details for the Allocate Volumes and Create Datastore on VMware vSphere service template.

Table B-8 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Usage	Specify a Volume Usage name.
	Number of Volumes	Specify the restriction of the number of volumes to allocate.
	Volume Capacity	Specify the restriction of the size of the allocated volumes.
	Storage Profile	Select a Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
	Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to the specified capacity when you create volumes.
	LUN Starts From	Specify the starting logical unit number assigned to the volume for a host.
Advanced Options	Number of Paths	Specify the number of LUN paths per volume.
	Host Mode	Select a Host Mode.
	Host Mode Options	Select Host Mode Options.
Datastore Environment Settings	Datastore Name Prefix	Specify the datastore name prefix.
	VMFS Version	Specify the VMFS Version.
	Block Size	Specify the Block size.
	Storage I/O Control	Specify the Storage I/O Control.
	Latency Threshold	Specify the Latency threshold.

Table B-9 Submit Service Request settings

Navigation pane	Settings pane	Description
Volume Settings	Number of Volumes	Specify the number of volumes to allocate.
	Volume Capacity	Specify the size of the allocated volumes.
	Storage Profile	Display the selected Storage Profile.
	Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Host Settings	Target Hosts	Select a target host or VMware cluster.
Datastore Environment Settings	Datastore Name Prefix	Specify the datastore name prefix.

Prerequisites

The following software is required in order to use the Allocate Volumes and Create Datastore on VMware vSphere service template:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- VMware vCenter Server v5.5, v5.1, v5.0, or v4.1.
- VMware vSphere ESXi v5.5, v5.1 or v5.0 or VMware ESX Server v4.1 for management of virtual servers.

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- vCenter server
Server on which VMware vCenter is installed.
- ESX server
Server on which VMware vSphere ESXi (or VMware ESX Server) is installed.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110
- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with iSCSI as the interface between the host and storage subsystems are not supported by the Allocate Volumes and Create Datastore on VMware vSphere services.

Allocate Volumes and Add to Oracle Database: Service details

Settings

The settings below are applicable to the following service templates:

- Allocate Volumes and Add to Oracle Database for AIX
- Allocate Volumes and Add to Oracle Database for Solaris
- Allocate Volumes and Add to Oracle Database for Linux
- Allocate Volumes and Add to Oracle Database for Windows

Table B-10 Edit Service settings

Navigation pane	Settings pane		Description
Oracle Server Settings	Oracle Server	Oracle primary server name	In an Oracle RAC configuration, specify the host name of a primary DB server. In the case of Single Instance configuration, specify the host name of an Oracle DB server. Specify the host name that is registered in Oracle DB.
		Oracle member server name (display only when Oracle RAC is selected)	In an Oracle RAC configuration, specify the host name of a member DB server. In a Single Instance configuration, you do not need to specify. Specify the host name that is registered in Oracle DB.
		Oracle Server User ID	Specify the user ID of the Oracle DB server.
		Oracle Server Password	Specify the OS password of the Oracle DB server.
		Oracle Server SU Password	Specify the SU password of the Oracle DB server.
	Oracle ASM	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
		Oracle grid home directory path	Specify the path of the home directory of

Navigation pane	Settings pane		Description
			Oracle Grid Infrastructure.
		Oracle grid user ID	Specify the user ID for the Oracle Grid Infrastructure.
		Oracle grid user password	Specify the user password for the Oracle Grid Infrastructure.
		Prefix of the ASM link name	Specify the Prefix of the ASM link name.
		Disk group name	Specify the Oracle ASM disk group to which a volume is to be added.
Volume Settings		Volume Usage	Specify a Volume Usage name
		Number of Volumes	Specify the restriction of the number of volumes to allocate
		Volume Capacity	Specify the restriction of the size of the allocated volumes
		Storage Profile	Select a Storage Profile
		Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
		Full Allocation	For VSP G1000, by selecting the "Enable" option, you can reserve pages that correspond to

Navigation pane	Settings pane		Description
			the specified capacity when you create volumes.
		LUN Starts From	Specify the starting logical unit number assigned to the volume for a host
Advanced Options		Number of Paths	Specify the number of LUN paths per volume
		Host Mode	Select a Host Mode
		Host Mode Options	Select Host Mode Options
Device File Permission Settings (Only for AIX/Linux/Solaris)		Owner name for permissions	Specify the owner information set for the volume.
		Group name for permissions	Specify the group name set for the volume.
		Permission	This property is the access permission information to be set for the volume.
AIX Device File Attribute Settings (Only for AIX)		Attribute algorithm	Specify the channel selection algorithm for the multipath feature.
		Attribute mode	Specify the mode of the health check for the multipath feature
		Attribute interval	Specify the interval of the health check for the multipath feature.

Navigation pane	Settings pane		Description
		Attribute queue depth	Specify the number of I/O requests that each device can handle at one time.
Linux ConfFile Directory Settings: (Only for Linux)		multipath.conf path	Specify the path that contains the multipath.conf. This parameter can be omitted. If you do not specify a value, the directory "/" etc" or "/usr/share/dec/device-mapper-multipath-0.4.9" is searched. If the file is not in the directory, an error occurs.
Operation Log Settings		Directory path used temporarily for log files	Specify the output directory for log files on the DB server.
		Directory path for log files on the Local Server	Specify the output directory for log files on the service execution server.
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. Example: mailA,mailB

Navigation pane	Settings pane		Description
		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
		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
		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.
		Subject line	Specify the subject line of

Navigation pane	Settings pane		Description
			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 will terminate abnormally.

Table B-11 Submit Service Request settings

Navigation pane	Settings pane		Description
Oracle Server Settings	Oracle Server	Oracle primary server name	In an Oracle RAC configuration, specify the host name of a member DB

Navigation pane	Settings pane		Description
			server. In a Single Instance configuration, you do not need to specify. Specify the host name that is registered in Oracle DB.
		Oracle member server name (display only when Oracle RAC is selected)	In an Oracle RAC configuration, specify the host name of a member DB server. In the case of Single Instance configuration, you do not need to specify. Specify the host name that is registered in Oracle DB.
		Oracle Server User ID	Specify the user ID of the Oracle DB server.
		Oracle Server Password	Specify the OS password of the Oracle DB server.
		Oracle Server SU Password	Specify the SU password of the Oracle DB server.
	Oracle ASM	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
		Oracle grid home directory path	Specify the path of the home directory of Oracle Grid Infrastructure.
		Oracle grid user ID	Specify the user ID for the Oracle Grid Infrastructure.

Navigation pane	Settings pane		Description
		Oracle grid user password	Specify the user password for the Oracle Grid Infrastructure.
		Prefix of the ASM link name	Specify the Prefix of the ASM link name.
		Disk group name	Specify the Oracle ASM disk group to which a volume is to be added.
Host Settings		Target Hosts	Select a target host.
Volume Settings		Number of Volumes	Specify the number of volumes to allocate.
		Volume Capacity	Specify the size of the allocated volumes.
		Storage Profile	Display the selected Storage Profile.
		Volume Label	Specify a Volume Label to be set. This setting is only displayed when you set the shared property value.
Device File Permission Settings (Only for AIX/Linux/Solaris)		Owner name for permissions	Specify the owner information set for the volume.
		Group name for permissions	Specify the group name set for the volume.
		Permission	This property is the access permission information to be set for the volume.

Navigation pane	Settings pane	Description
Linux ConfFile Directory Settings (Only for Linux)		multipath.conf path Specify the path that contains the multipath.conf. This parameter can be omitted. If you do not specify a value, the directory "/" etc" or "/usr/share/dec/device-mapper-multipath-0.4.9" is searched. If the file is not in the directory, an error occurs.
Operation Log Settings		Directory path used temporarily for log files Specify the output directory for log files on the DB server.
		Directory path for log files on the Local Server Specify the output directory for log files on the service execution server.

Prerequisites

The following software is required in order to use the Allocate Volumes and Add to Oracle Database service templates:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- Oracle Database 11g Enterprise Edition (v11.0.2 or later)



Note: The database system listed below must have already been set up on the Oracle DB servers:

- Single instance(ASM)
- RAC 2 nodes(ASM)

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- Oracle DB server
Server on which Oracle Database is installed.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110
- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with iSCSI as the interface between the host and storage subsystems are not supported by the Allocate Volumes services.

Operating systems and multipath drivers:

Service	OS version	Multipath driver
Allocate Volumes and Add to Oracle Database for AIX	AIX v7.1 (PowerPC)	OS standard (AIX v7.1 (PowerPC))

Service	OS version	Multipath driver
Allocate Volumes and Add to Oracle Database for Linux	Red Hat Enterprise Linux Server 6 (64-bit x86_64) v6.4	device-mapper-1.02.77-9.el6.x86_64.rpm or later (Red Hat Enterprise Linux Server 6 (64-bit x86_64) 6.4)
	Red Hat Enterprise Linux Server 6 (64-bit x86_64) v6.5	device-mapper-1.02.79-8.el6.x86_64.rpm or later (Red Hat Enterprise Linux Server 6 (64-bit x86_64) 6.5)
Allocate Volumes and Add to Oracle Database for Solaris	Solaris v10 (SPARC, 64bit)	OS standard (Solaris 10 (SPARC, 64bit))
Allocate Volumes and Add to Oracle Database for Windows	Windows Server 2008 R2 Standard/Enterprise/Datacenter SP1	OS standard (Windows Server 2008 R2 Standard/Enterprise/Datacenter SP1)
	Windows Server 2012 Standard/Datacenter	OS standard (Windows Server 2012 Standard/Datacenter)

Allocate Like Volumes and Add to Oracle Database: Service details

Settings

These settings are applicable to the following service templates:

- Allocate Like Volumes and Add to Oracle Database for AIX
- Allocate Like Volumes and Add to Oracle Database for Linux
- Allocate Like Volumes and Add to Oracle Database for Solaris
- Allocate Like Volumes and Add to Oracle Database for Windows

Table B-12 Edit Service settings

Navigation pane	Settings pane		Description
Oracle Server Settings	Oracle Server	Oracle primary server name	In an Oracle RAC configuration, specify the host name of a primary DB server. In the case of Single Instance configuration, specify the host name of an Oracle DB server. Specify the host name

Navigation pane	Settings pane		Description
			that is registered in Oracle DB.
		Oracle member server name(display only when Oracle RAC is selected)	In an Oracle RAC configuration, specify the host name of a member DB server. In the case of Single Instance configuration, you do not need to specify. Specify the host name that is registered in Oracle DB.
		Oracle Server User ID	Specify the user ID of the Oracle DB server.
		Oracle Server Password	Specify the OS password of the Oracle DB server.
		Oracle Server SU Password	Specify the SU password of the Oracle DB server.
	Oracle ASM	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
		Oracle grid home directory path	Specify the path of the home directory of Oracle Grid Infrastructure.
		Oracle grid user ID	Specify the user ID for the Oracle Grid Infrastructure.
		Oracle grid user password	Specify the user password for the Oracle Grid Infrastructure.
		Prefix of the ASM link name	Specify the Prefix of the ASM link name.
		Disk group name	Specify the Oracle ASM disk group to which a volume is to be added.
Volume Settings		Volume Capacity	Specify the restriction on the size of the allocated volumes.
		Number of Volumes	Specify the restriction on the number of volumes to allocate.

Navigation pane	Settings pane	Description
Device File Permission Setting (Only for AIX/Linux/Solaris)	Owner name for permissions	Specify the owner information set for the volume.
	Group name for permissions	Specify the group name set for the volume.
	Permission	This property is the access permission information to be set for the volume.
AIX Device File Attribute Setting (Only for AIX)	Attribute algorithm	Specify the channel selection algorithm for the multipath feature.
	Attribute mode	Specify the mode of the health check for the multipath feature
	Attribute interval	Specify the interval of the health check for the multipath feature.
	Attribute queue depth	Specify the number of I/O requests that each device can handle at one time.
Linux ConfFile Directory Settings (Only for Linux)	multipath.conf path	Specify the path that contains the multipath.conf. This parameter can be omitted. If you do not specify a value, the directory "/etc" or "/usr/share/dec/device-mapper-multipath-0.4.9" is searched. If the file is not in the directory, an error occurs.
Operation Log Settings	Directory path used temporarily for log files	Specify the output directory for log files on the DB server.
	Directory path for log files on the Local Server	Specify the output directory for log files on the service execution server.
User-Response Wait Settings	TO addresses	Specify the email addresses to enter in the TO field of

Navigation pane	Settings pane		Description
			notification emails sent when the service is waiting for a user response. Separate multiple addresses with commas. 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. 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. 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, and utf-8. If you omit this property, utf-8 is set.

Table B-13 Submit Service Request settings

Navigation pane	Settings pane		Description
Oracle Server Settings	Oracle Server	Oracle primary server name	In an Oracle RAC configuration, specify the host name of a

Navigation pane	Settings pane		Description
			primary DB server. In the case of Single Instance configuration, specify the host name of an Oracle DB server. Specify the host name that is registered in Oracle DB.
		Oracle member server name(display only when Oracle RAC is selected)	In an Oracle RAC configuration, specify the host name of a member DB server. In a Single Instance configuration, you do not need to specify. Specify the host name that is registered in Oracle DB.
		Oracle Server User ID	Specify the user ID of the Oracle DB server.
		Oracle Server Password	Specify the OS password of the Oracle DB server.
		Oracle Server SU Password	Specify the SU password of the Oracle DB server.
	Oracle ASM	Oracle ASM instance ID	Specify the Oracle ASM instance ID.
		Oracle grid home directory path	Specify the path of the home directory of Oracle Grid Infrastructure.
		Oracle grid user ID	Specify the user ID for the Oracle

Navigation pane	Settings pane		Description
			Grid Infrastructure.
		Oracle grid user password	Specify the user password for the Oracle Grid Infrastructure.
		Prefix of the ASM link name	Specify the Prefix of the ASM link name.
		Disk group name	Specify the Oracle ASM disk group to which a volume is to be added.
Source Volume		Existing volumes	Select the referenced volume.
Volume Settings		Volume Capacity	Display the restriction of the size of the allocated volumes.
		Number of Volumes	Specify the number of volumes to allocate.
Device File Permission Setting (Only for AIX/Linux/Solaris)		Owner name for permissions	Specify the owner information set for the volume.
		Group name for permissions	Specify the group name set for the volume.
		Permission	This property is the access permission information to be set for the volume.
Linux ConfFile Directory Settings (Only for Linux)		multipath.conf path	Specify the path that contains the multipath.conf. This parameter can be omitted. If you do not

Navigation pane	Settings pane		Description
			specify a value, the directory "/" etc" or "/usr/share/dec/device-mapper-multipath-0.4.9" is searched. If the file is not in the directory, an error occurs.
Operation Log Settings		Directory path used temporarily for log files	Specify the output directory for log files on the DB server.
		Directory path for log files on the Local Server	Specify the output directory for log files on the service execution server.

Prerequisites

The following software is required in order to use the Allocate Like Volumes and Add to Oracle Database service templates:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- Oracle Database 11g Enterprise Edition (v11.0.2 or later)



Note: The database system listed below must have already been set up on the Oracle DB servers:

- Single instance(ASM)
- RAC 2 nodes(ASM)
- Device Manager Agent (v8.0.1 or later) and RAID Manager (v01-32-03/00 or later)

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server

- Server on which Tuning Manager software is installed.
- Oracle DB server
 - Server on which Oracle Database is installed.
- Pair Management server
 - Server on which Device Manager Agent and CCI are installed.



Note: Device Manager Agent and CCI are only required if you want to use global-active device pair volumes.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.
2001	If you specify global-active device pair volumes in Source Volume Setting, port number 2001 is used for communication from the Device Manager agent to Device Manager.
2443	If you specify global-active device pair volumes in Source Volume Setting, port number 2443 is used for secure communication from the Device Manager agent to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110
- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with iSCSI as the interface between the host and storage subsystems are not supported by the Allocate Like Volumes and Add to Oracle Database services.

Operating systems and multipath drivers:

Service	OS version	Multipath driver
Allocate Like Volumes and Add to Oracle Database for AIX	AIX V7.1 (PowerPC)	OS standard (AIX v7.1 (PowerPC))
Allocate Like Volumes and Add to Oracle Database for Linux	Red Hat Enterprise Linux Server 6 (64-bit x86_64) v6.4	device-mapper-1.02.77-9.el6.x86_64.rpm or later (Red Hat Enterprise Linux Server 6 (64-bit x86_64) 6.4)
	Red Hat Enterprise Linux Server 6 (64-bit x86_64) v6.5	device-mapper-1.02.79-8.el6.x86_64.rpm or later (Red Hat Enterprise Linux Server 6 (64-bit x86_64) 6.5)
Allocate Like Volumes and Add to Oracle Database for Solaris	Solaris v10 (SPARC, 64bit)	OS standard (Solaris 10 (SPARC, 64bit))
Allocate Like Volumes and Add to Oracle Database for Windows	Windows Server 2008 R2 Standard/Enterprise/Datacenter SP1	OS standard (Windows Server 2008 R2 Standard/Enterprise/Datacenter SP1)
	Windows Server 2012 Standard/Datacenter	OS standard (Windows Server 2012 Standard/Datacenter)

Allocate Like Volumes: Service details

Settings

The following settings are applicable to the Allocate Like Volumes service template:

Table B-14 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Capacity	Specify the restriction on the size of the allocated volumes.
	Number of Volumes	Specify the restriction on the number of volumes to allocate.

Table B-15 Submit Service Request settings

Navigation pane	Settings pane	Description
Source Volume	Existing volumes	Select the referenced volume.
Volume Settings	Volume Capacity	Display the restriction on the size of the allocated volumes.
	Number of Volumes	Specify the number of volumes to allocate.

Prerequisites

The following software is required in order to use the Allocate Like Volumes service template:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- Device Manager-Agent (v8.0.1 or later) and RAID Manager (v01-32-03/00 or later)

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- Pair Management server
Server on which Device Manager Agent and CCI are installed.



Note: Device Manager Agent and CCI are only required if you want to use global-active device pair volumes.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.
2001	If you specify global-active device pair volumes in Source Volume Setting, port number 2001 is

Port number	Use
	used for communication from the Device Manager agent to Device Manager.
2443	If you specify global-active device pair volumes in Source Volume Setting, port number 2443 is used for secure communication from the Device Manager agent to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with Fibre Channel and iSCSI as the supported interface between host and storage subsystem:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110

Allocate Like Volumes and Create Datastore on VMware vSphere: Service details

Settings

The following service template details are applicable to the Allocate Like Volumes and Create Datastore on VMware vSphere service template.

Table B-16 Edit Service settings

Navigation pane	Settings pane	Description
Volume Settings	Volume Capacity	Specify the restriction of the size of the allocated volumes.
	Number of Volumes	Specify the restriction of the number of volumes to allocate.

Table B-17 Submit Service Request settings

Navigation pane	Settings pane	Description
Source Volume	Available Datastores/Extents	Select the referenced datastore.
Volume Settings	Volume Capacity	Specify the size of the allocated volumes.
	Number of Volumes	Specify the number of volumes to allocate.
Datastore Environment Settings	Datastore Name Prefix	Specify the datastore name prefix.

Prerequisites

The following software is required in order to use the Allocate Like Volumes and Create Datastore on VMware vSphere service template:

- Device Manager v8.1.1-00 or later.
- Tuning Manager v8.1.1-00 or later is required only if you want to leverage Tuning Manager performance data to enable Automation Director to perform an intelligent selection of the pool when provisioning across a set of pools or arrays.
- VMware vCenter Server v5.5, v5.1, v5.0, or v4.1.
- VMware vSphere ESXi v5.5, v5.1 or v5.0, or VMware ESX Server v4.1.
For management of virtual servers.
- Device Manager Agent (v8.0.1 or later) and RAID Manager (v01-32-03/00 or later)

Server requirements

The following servers are needed:

- Device Manager server
Server on which Device Manager software is installed.
- Tuning Manager server
Server on which Tuning Manager software is installed.
- vCenter server
Server on which VMware vCenter Server is installed.
- Pair Management server

Server on which Device Manager Agent and CCI are installed.



Note: Device Manager Agent and CCI are only required if you want to use global-active device pair volumes.

Default ports

Port number	Use
22015	Communication from Automation Director to Device Manager.
22016	Secure communication from Automation Director to Device Manager.
2001	If you specify global-active device pair volumes in Source Volume Setting, port number 2001 is used for communication from the Device Manager agent to Device Manager.
2443	If you specify global-active device pair volumes in Source Volume Setting, port number 2443 is used for secure communication from the Device Manager agent to Device Manager.

Supported platforms

Models with Fibre Channel as the supported interface between host and storage system:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Adaptable Modular Storage AMS2500
- Hitachi Adaptable Modular Storage AMS2300
- Hitachi Adaptable Modular Storage AMS2100
- Hitachi Adaptable Modular Storage AMS2010
- Hitachi Unified Storage 150
- Hitachi Unified Storage 130
- Hitachi Unified Storage 110
- Hitachi Universal Storage Platform V
- Hitachi Universal Storage Platform VM
- Hitachi Virtual Storage Platform
- Hitachi Virtual Storage Platform G1000
- Hitachi Unified Storage VM

Models with iSCSI as the interface between the host and storage subsystems are not supported in the Allocate Like Volumes and Create Datastore on VMware vSphere services.

Task Settings for services

Each pre-configured service includes task settings.

Table B-18 Task settings

Settings pane		Description
Task Name		A task name is required.
Description		Enter a description if needed.
Schedule Type Not all options are available in every service.	Immediate	Run the task immediately when it is submitted.
	Scheduled	Run the task on a schedule by selecting the start time.
	Recurrence	Run the task on a recurring schedule by selecting a start date, execution time and interval (daily, weekly, or monthly).

Additional service templates

Automation Director provides some service templates that are not imported by default.

The following service templates can be imported into Automation Director.

Table B-19 Additional service templates

Template file name (*.st)	Template name	Description
changeVMSpec_vSphere	Modify Virtual Machine Configuration	Modifies the virtual server configuration in the VMware vSphere environment.
createCloneVMvSphere	Clone Virtual Machine	Creates a clone of a virtual server in the VMware vSphere environment.
deleteCloneVMvSphere	Delete Cloned Virtual Machine	Deletes a clone of a virtual server in the VMware vSphere environment.
deleteDatastoreAndLU	Delete Datastore on VMware vSphere	Deletes a data store and a logical unit in an environment that includes VMware vSphere and Device Manager.
migrateVM_vSphere	Migrate Virtual Machine	Migrates multiple virtual servers in a VMware vSphere environment.

osShowUsers	Get List of Users from Server	Obtains a list of Windows or Linux OS users from a specific host.
osShowUsersAll	Get Lists of Users from Multiple Servers	Obtains a list of Windows or Linux OS users from multiple hosts.
powerOffVM_vSphere	Stop Virtual Machine	Stops multiple virtual servers in a VMware vSphere environment.
powerOnVM_vSphere	Start Virtual Machine	Starts multiple virtual servers in a VMware vSphere environment.
rebootVM_vSphere	Restart Virtual Machine	Restarts multiple virtual servers in a VMware vSphere environment.
snapshotVMvSphere	Create Snapshot of Virtual Machine	Creates a snapshot of the virtual machine for updating the status of a virtual server.
storageGetInfo	Get List of Storage Systems from Device Manager	Acquires a list of storage devices registered in Device Manager.
vsphereAddDisk	Add Virtual Disk to Virtual Machine	Adds a disk to a virtual server in a VMware vSphere environment.
vsphereDeleteVDisk	Remove Virtual Disk from Virtual Machine	Deletes a virtual server in a VMware vSphere environment.
vsphereDeleteVM	Delete Virtual Machine	Deletes a virtual server in a VMware vSphere environment.
vsphereDeployVM	Deploy and Setup OS on Virtual Machine	Creates a virtual server in a VMware vSphere environment.
vsphereDeployVMCheck	Pre-check for OS Deployment on Virtual Machine	Checks the environment prerequisites for adding a virtual server (deployment and OS initialization)
vsphereGetInfo	Get List of Virtual Machines from VMware vSphere	Acquires a list of VMware vSphere virtual servers.
<i>Imported by default, and available in the Service Templates tab and Service Builder.</i>	Pre-check for Datastore Creation on VMware vSphere	Checks the environment prerequisites for adding a virtual server (creation of LU and data store)
<i>Imported by default, and available in the Service Templates tab and Service Builder.</i>	Execute Remote Command	Executes a command on the remote execution target server.

<i>Imported by default, and available in the Service Templates tab and Service Builder.</i>	Create Datastore on VMware vSphere	Creates a logical unit and a data store in an environment that includes VMware vSphere and Device Manager.
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Importing service templates using a remote desktop connection

You can access the Automation Director server via remote desktop connection and import service templates.

Procedure

1. Access the Automation Director server using remote desktop connection.
2. Log into Automation Director with a user role higher than Develop.
3. Do one of the following to import service templates:
 - On the dashboard, in the Guidance Menu, click **Import Service Template**.
 - Navigate to **Tools > Service Builder** and click **Import** under **Actions for Service Templates**.
4. Browse to `<Automation Director installation folder>\public\contents` and select a file with the `.st` extension.



Glossary

A

allocated volume

An LDEV for which one or more host LUN paths are defined.

C

capacity

The amount of data storage space available on a disk drive or storage system. Measured in MB, but it can also be measured in other units such as TB and PB, depending on the total storage space.

copy pair

A primary and secondary volume pair linked by the volume replication functionality of a storage system.

CU (Control Unit)

Created in an storage system. Also called a CU image. The LDEVs created in a storage system are connected to a single CU, and a number is assigned to each CU for identifying its LDEVs. Therefore, volumes (LDEVs) in a storage system are specified by the CU number (CU#) and LDEV number.

D

data drive

A physical data storage device that can be either a hard disk drive (HDD) or a flash (solid-state) drive.

data pool

One or more logical volumes designated to temporarily store original data. When a snapshot is taken of a primary volume, the data pool is

used if a data block in the primary volume is to be updated. The original snapshot of the volume is maintained by storing the changeable data blocks in the data pool.

DB

Database

device

A physical or logical unit with a specific function.

DEVN

Device number that is assigned to each logical address when using an LDEV on a mainframe host.

DHCP

Dynamic Host Configuration Protocol

DKCMAIN

Disk controller main

DKP

Disk processor

DKU

Disk unit

E**external path**

A path from a storage port of a storage system to a volume on a connected external storage system.

external volume

A logical volume whose data resides on drives that are in an externally connected storage system.

F**FCoE**

Fibre Channel over Ethernet. An encapsulation of Fibre Channel frames over Ethernet networks. This allows Fibre Channel to use 10-gigabit Ethernet networks (or higher speeds) while preserving the Fibre Channel protocol.

G

global-active device

A storage system feature that provides high-availability copy pairs to support simultaneous, uninterrupted host and cluster active-active I/O within and across geographically disparate data centers. This feature protects against storage system and site failures by providing continuous access to data.

I

internal volume

A logical volume whose data resides on drives that are physically located within the storage system. See also *external volume*.

L

LDAP

Lightweight Directory Access Protocol

LDEV (logical device)

A volume created in a storage system. See also LU.

LU (logical unit)

A volume created in an open storage system. See also *LDEV*.

LUN (logical unit number)

A management number assigned to an LU in a storage system. A LUN is a number assigned to identify an LU for the port in the storage system to which the LU is connected, either by the port or by the host group assigned to the port. An open system host uses a LUN to access a particular LU.

P

P-VOL (primary volume)

The source volume that is copied to another volume using the volume replication functionality of a storage system.

R

RADIUS

Remote Authentication Dial In User Service

RAID level

The type of RAID implementation. RAID levels include RAID 0, RAID 1, RAID 2, RAID 3, RAID 4, RAID 5 and RAID 6.

resource group

Resources grouped by storage system, parity group, LDEV ID, storage port, etc.

role

Operation(s) permission that users in a user group have for resources in a resource group.

S

S-VOL (secondary volume)

The copy destination volume of two volumes that are associated in a copy pair by a storage system volume replication functionality.

SAN

Storage area network

SAS (Serial Attached SCSI)

A replacement for Fibre Channel drives in high performance applications. See SCSI.

SATA (Serial Advanced Technology Attachment)

A version of the ATA interface that uses a serial connection architecture.

T

tiered storage

A layered structure of performance levels, or tiers, that matches data access requirements with the appropriate performance tiers.

U

unallocated volume

An LDEV for which no host paths are assigned.

user group

A group of users who use the same resources and have the same operation(s) permission (see "role") for the resources. Externally authenticated groups can be used as user groups.

V

VMA

Volume management area

VOLSER

The label of a volume assigned by the mainframe host.

volume

A collective name for the logical devices (LDEVs) and logical units (LUs) that are created in a storage system.



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