

# Hitachi Storage Connector for Cisco UCS<sup>®</sup> Director

User's Guide  
v01.0.0

## FASTFIND LINKS

[Supported Storage Systems](#)

[Document Organization](#)

[Getting Help](#)

[Contents](#)

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# Contents

|   |           |
|---|-----------|
| Preface .....                                       | 5         |
| Intended Audience .....                             | 5         |
| Software Version.....                               | 6         |
| Release Notes.....                                  | 6         |
| Document Organization.....                          | 6         |
| Referenced Documents .....                          | 6         |
| Document Conventions .....                          | 7         |
| Conventions for Storage Capacity Values .....       | 8         |
| Getting Help .....                                  | 9         |
| Comments .....                                      | 9         |
| <b>1 Introduction.....</b>                          | <b>10</b> |
| Supported Storage Systems .....                     | 11        |
| Required Storage System Microcode .....             | 11        |
| Supported Configurations .....                      | 11        |
| Storage System Inventory .....                      | 13        |
| Storage System Licenses .....                       | 13        |
| Supported Tasks .....                               | 13        |
| Supported Workflows.....                            | 15        |
| <b>2 System Requirements and Installation .....</b> | <b>17</b> |
| Summary of Steps .....                              | 18        |
| Architecture.....                                   | 19        |
| Required Hardware and Software .....                | 20        |
| Support Storage Agent Configurations.....           | 21        |
| Agent Configuration Diagram .....                   | 21        |
| Hitachi Storage Agent Requirements .....            | 22        |
| Install the Hitachi Storage Agent v01.0.0 .....     | 22        |
| Deploy a Virtual Appliance .....                    | 22        |

|  |           |
|--|-----------|
| Install the Hitachi Storage Connector.....                   | 24        |
| Prerequisites.....   | 24        |
| Install and Deploy the Connector.....                        | 24        |
| Create a Pod in Cisco UCS Director.....                      | 25        |
| Add Hitachi Storage Accounts to the Pod.....                 | 25        |
| Test Connection to the Hitachi Storage Account.....          | 26        |
| <b>3 Import, Validate, and Run Workflows (Optional).....</b> | <b>27</b> |
| Import and Validate Hitachi Workflows.....                   | 28        |
| Run Hitachi Workflows.....                                   | 28        |
| Check Multiple Workflow Results.....                         | 28        |
| <b>4 Logging and Troubleshooting.....</b>                    | <b>29</b> |
| Logging.....   | 30        |
| View Logs.....   | 30        |
| Troubleshooting.....   | 30        |
| Storage Connector for Cisco UCS Director.....                | 30        |
| Hitachi Storage Agent v01.0.0.....                           | 31        |
| Forward Logs for Assistance.....                             | 31        |
| <b>5 Excerpt from CCI Guide.....</b>                         | <b>35</b> |
| Setting the Command Device.....                              | 36        |


# Preface

This document describes how to use the Hitachi Storage Connector for Cisco UCS® Director.

This preface includes the following information:

- ▣ [Intended Audience](#)
- ▣ [Software Version](#)
- ▣ [Release Notes](#)
- ▣ [Document Organization](#)
- ▣ [Referenced Documents](#)
- ▣ [Document Conventions](#)
- ▣ [Convention for Storage Capacity Values](#)
- ▣ [Getting Help](#)

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**Note**  The use of *Hitachi Storage Connector for Cisco UCS® Director* and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

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## Intended Audience

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This user guide addresses users of the Hitachi Storage Connector for Cisco UCS® Director. This user guide assumes that the reader is an experienced user of Cisco UCS Director.

It is assumed the Administrator installing the Connector is well versed with administration of Hitachi Storage subsystems, including: creating accounts, licensing of hardware and software and storage configuration. Content related to the administration of Hitachi Storage is not duplicated in this document.

## Software Version

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This document revision applies to Hitachi Storage Connector for Cisco UCS Director software version **v01.0.0** and Cisco UCS Director version **5.3.0.0**

## Release Notes

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Release notes can be found on the documentation CD. Release notes contain requirements and more recent product information that may not be fully described in this manual. Be sure to review the release notes before installation.

## Document Organization

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The following table provides an overview of the contents and organization of this document. Click the [chapter title](#) in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

| Chapter  | Description  |
|--|--|
| <a href="#">Introduction</a>                                   | Description of supported storage systems, tasks, and workflows.  |
| <a href="#">System Requirements and Installation</a>           | Overview of installation process, required hardware and software, and installation of the Hitachi Storage Agent (REST-based web service) and the Connector for Cisco UCS Director. |
| <a href="#">Import, Validate, and Run Workflows (Optional)</a> | Import workflows, set task inputs, and validate workflows.   |
| <a href="#">Logging and Troubleshooting</a>                    | Log name, location, and forwarding instructions. Troubleshooting information for Hitachi Storage Agent and the Connector for Cisco UCS Director.                                   |

## Referenced Documents

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| # | Name  | Description  |
|---|---|--|
| 1 | <i>Unified Compute Platform with Cisco UCS Deployment Guide</i> , December 2013 Version 1 | Detailed description and instructions for system configurations. Hitachi internal document.                                  |
| 2 | <i>Hitachi Virtual Storage Platform: Documentation Roadmap</i> , MK-90RD7039-06           | Describes all the tasks required for installation, setup, configuration, and maintenance. Lists documents by task.           |
| 3 | <i>Hitachi Virtual Storage Platform G1000: Product Overview</i> , MK-92RD8051             | Gives an overview of VSP G1000 hardware and software features, overview of setup and configuration. Lists documents by task. |





| # | Name   | Description   |
|---|--|---|
| 4 | <i>Hitachi Unified Storage VM: Product Overview Guide, MK-92HM7003</i> | Overview of HUS VM hardware and software features, setup, and configuration. Lists documents by task. |

## Document Conventions

This document uses the following typographic conventions:

| Convention          | Description   |
|---------------------|---|
| <b>Bold</b>         | Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click <b>OK</b> .   |
| <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><br><b>Note:</b> Angled brackets (<>) also indicate variables. |
| <b>screen/code</b>  | Indicates text on the screen or that you enter. Example: <b># pairedisplay -g oradb</b>   |
| <> angled brackets  | Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: <b># pairedisplay -g &lt;group&gt;</b><br><b>Note:</b> Italic font also indicates variables.      |
| [ ] square brackets | Optional values. Example: [a   b] indicates that you can select a, b, or nothing.   |
| { } braces          | Required or expected values. Example: { a   b } indicates that you must select either a or b.   |
| vertical bar        | A choice between two or more options or arguments. Examples:<br>[a   b] indicates that you can select a, b, or nothing.<br>{ a   b } indicates that you must select either a or b.                      |

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

| Icon  | Label          | Description   |
|---|----------------|---|
|  | <b>Note</b>    | Calls attention to important and/or additional information.                                     |
|  | <b>Tip</b>     | Provides helpful information, guidelines, or suggestions for performing tasks more effectively. |
|  | <b>Caution</b> | Warns the user of adverse conditions and/or consequences (for example, disruptive operations).  |
|  | <b>WARNING</b> | Warns the user of severe conditions and/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 KB                   | 1,000 bytes              |
| 1 MB                   | 1,000 <sup>2</sup> bytes |
| 1 GB                   | 1,000 <sup>3</sup> bytes |
| 1 TB                   | 1,000 <sup>4</sup> bytes |
| 1 PB                   | 1,000 <sup>5</sup> bytes |
| 1 EB                   | 1,000 <sup>6</sup> bytes |

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

| Logical Capacity Unit | Value                                |
|-----------------------|--------------------------------------|
| 1 KB                  | 1,024 (2 <sup>10</sup> ) bytes       |
| 1 MB                  | 1,024 KB or 1,024 <sup>2</sup> bytes |
| 1 GB                  | 1,024 MB or 1,024 <sup>3</sup> bytes |
| 1 TB                  | 1,024 GB or 1,024 <sup>4</sup> bytes |
| 1 PB                  | 1,024 TB or 1,024 <sup>5</sup> bytes |
| 1 EB                  | 1,024 PB or 1,024 <sup>6</sup> bytes |
| 1 BLOCK               | 512 BYTES                            |



## Getting Help

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The Hitachi Data Systems Support Center staff is available 24 hours a day, seven days a week. Provisions for patches and fixes are restricted to normal business hours, 8 a.m. to 5 p.m. PST.

To reach us, please visit the support Web site for current telephone numbers and other contact information: <http://www.hds.com/services/support/>.

Before calling the Hitachi Data Systems Support Center, please provide as much information about the problem as possible, including:

- The circumstances surrounding the error or failure.
- The exact content of any error message(s) displayed on the host system(s).
- Logging information as detailed in the *Logging and Troubleshooting* section of this document.

## Comments

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Please send us your comments on this document: [doc.comments@hds.com](mailto:doc.comments@hds.com). Include the document title, number, and revision, and refer to specific section(s) and paragraph(s) whenever possible. **Thank you!** (All comments become the property of Hitachi Data Systems Corporation.)

# Introduction

The Hitachi Storage Connector for Cisco UCS Director supports tasks that can be used for inventory, orchestration, and in workflows. To aid in storage management and troubleshooting, the Storage Connector for Cisco UCS Director provides system logging options and troubleshooting support.

This chapter contains the following sections:

- [Supported Storage Systems](#)
- [Supported Tasks](#)
- [Supported Workflows](#)

## Supported Storage Systems

---

The Storage Connector for Cisco UCS Director supports the following Hitachi storage systems. In Cisco UCS Director, each type of storage system is controlled by a single account.

- Hitachi Unified Storage VM (HUS VM)
- Hitachi Virtual Storage Platform (VSP)
- Hitachi Virtual Storage Platform G1000 (VSP G1000).

## Required Storage System Microcode

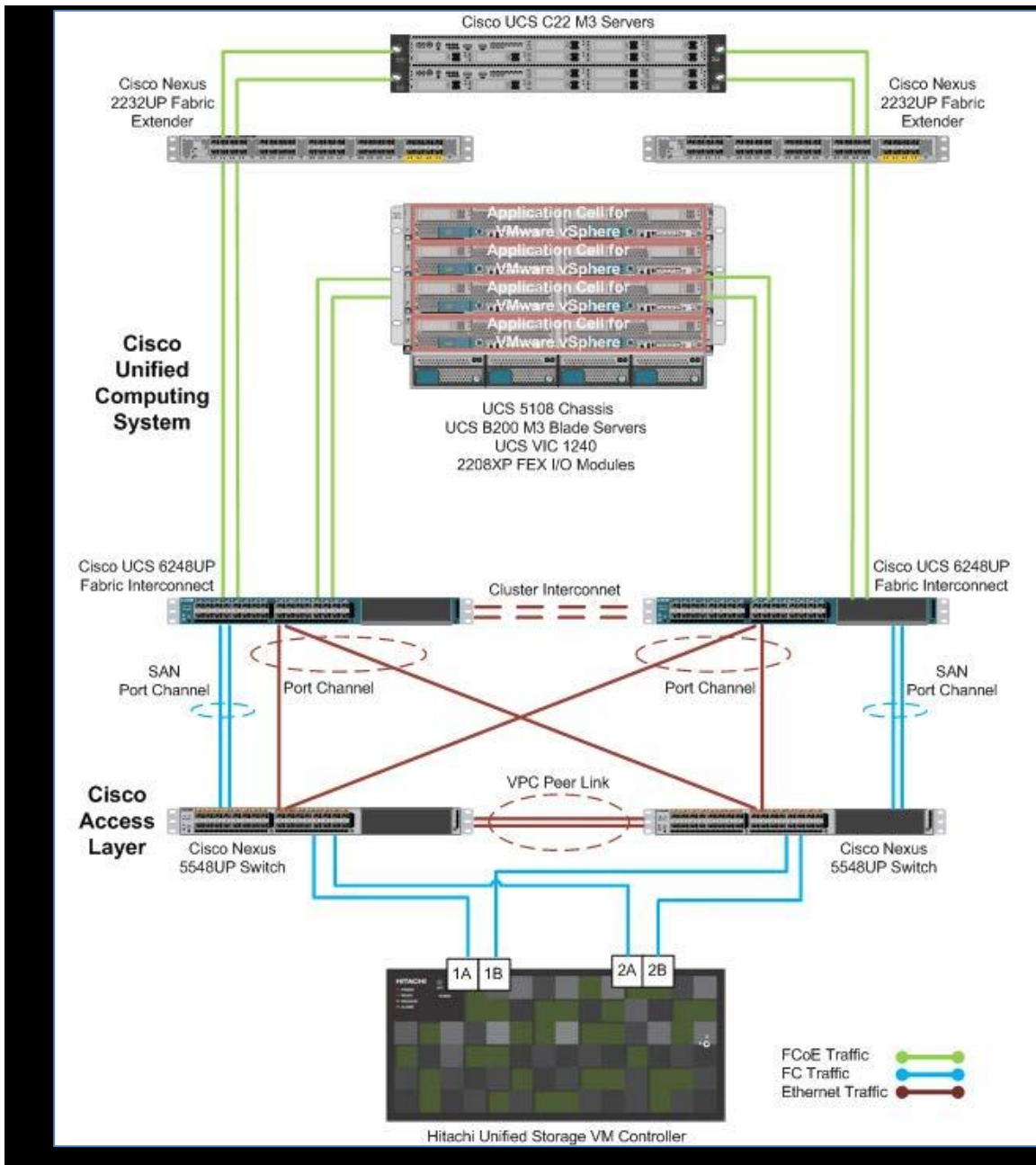
Minimum microcode/firmware requirements are as follows:

| System Model | Microcode/Firmware |
|--------------|--------------------|
| HUS VM       | 73-03-09-00/00     |
| VSP          | 70-06-21-00/00     |
| VSP G1000    | 80-02-01-00/00     |

## Supported Configurations

Figure 1 is a reference architecture approved by Cisco Corp. For more details on supported hardware configurations, please refer to the Cisco UCS Director 5.3 compatibility matrix.

**Figure 1. A Cisco-verified Configuration**



The reference architecture mirrors closely the configuration used for testing and qualification of the Hitachi Storage Connector for UCS Director, however, configuration of a Pod in the Virtual, Computer and Networking layers is only limited by what Cisco USC Director supports.

## Storage System Inventory

The Storage Connector for Cisco UCS Director collects the following storage system information that is displayed by the Cisco UCS Director:

- Storage capacity
- Microcode and SVP IP Addresses
- Storage system components:
  - Ports and Port World Wide Names (WWPNs)
  - Parity Groups
  - Host Groups
  - Pools
  - License Information
  - Logical Units (LDEVs)

---

**Note**

When using a Hitachi Storage system with Resource Groups implemented, you do not see those inventory items that the Storage User chose in the initial account setup for no access.

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## Storage System Licenses

To use the features provided by the Storage Connector, the following licenses must be installed on your Hitachi storage system:

- Dynamic Provisioning
- LUN Manager
- Hitachi Storage Navigator

## Supported Tasks

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The Storage Connector for Cisco UCS Director supports the following tasks for the supported Hitachi storage systems.

| Grouping              | Task Name           | Description  |
|-----------------------|---------------------|--|
| Logical device (LDEV) | Create LDEV         | Create a basic or dynamic provisioning logical device. |
|                       | Create Dynamic Pool | Create a dynamic or thin image pool.                   |
|                       | Delete Dynamic Pool | Delete dynamic or thin image pool.                     |
|                       | Delete LDEV         | Delete a logical device.                               |
|                       | Format LDEV         | Format a logical device.                               |

| Grouping                             | Task Name                       | Description  |
|--------------------------------------|---------------------------------|--|
| Host group management                | Add Host to Host Group          | Add a host HBA WWN to a host group.  |
|                                      | Add LUN Path to Host Group      | Add logical units to a host group.   |
|                                      | Create Host Group               | Create a new host group.   |
|                                      | Delete Host Group               | Delete an existing host group.   |
|                                      | Remove Host from Host Group     | Remove a host WWN from the host group.   |
|                                      | Remove LUN Path from Host Group | Remove logical unit mappings from a host group.  |
|                                      | Set Host Mode for Host Group    | Set the host group mode according to host OS.  |
| Storage virtualization (vSphere 5.5) | Associate LUN as Datastore      | Create new VMware Datastore from new LUN or Extend existing Datastore with a new LUN.      |
|                                      | Delete Datastore                | Delete VMware Datastore (underlying LDEV remains intact).                                  |
| SAN Operations                       | Get Storage Port WWPN           | Provided to allow for Workflows that involve SAN operations (for example, zoning changes). |

## LDEV Create

When creating LDEVs through the UCS Director interface, LDEV IDs are chosen at random to avoid conflict when multiple users are working on the system. To choose a specific LDEV ID, select the **Edit LDEV ID** checkbox. Note that if an LDEV ID is chosen that does not belong to the Resource Group of the User chosen during account setup, the operation fails with a "Permission Denied" error.

## Delete LDEV/Pool Tasks

As with Hitachi Storage Navigator, attempting to delete LDEVs or Pools that have LUN Paths assigned to Host Groups, or Virtual LDEVs on Pools, will fail. You must first delete the Virtual LDEVs (DP Pools) or Remove the LUN Paths to the LDEVs before attempting to delete.

## Host Group Management

When adding hosts to a Host Group, the Host Name is optional; however, if you add a Host to a Host Group without a name, adding a name or renaming after the addition is not supported at this time. You must delete the host and re-add to include the Host Name.

## Supported Workflows

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Hitachi provides sample workflows for use with the Storage Connector for Cisco UCS Director. Use of provided workflows is optional.

| Workflow                              | Description  |
|---------------------------------------|--|
| Provision storage to an existing host | This workflow provisions a new logical device to a physical ESXi host.                                 |
| Provision Datastore on a new LDEV     | This workflow creates a new Datastore from a new logical device on a Hitachi storage system.           |
| Extend a Datastore with a new LDEV    | This workflow creates a new logical device and attaches it as an extent on an existing ESXi Datastore. |





## System Requirements and Installation

This chapter contains the following sections:

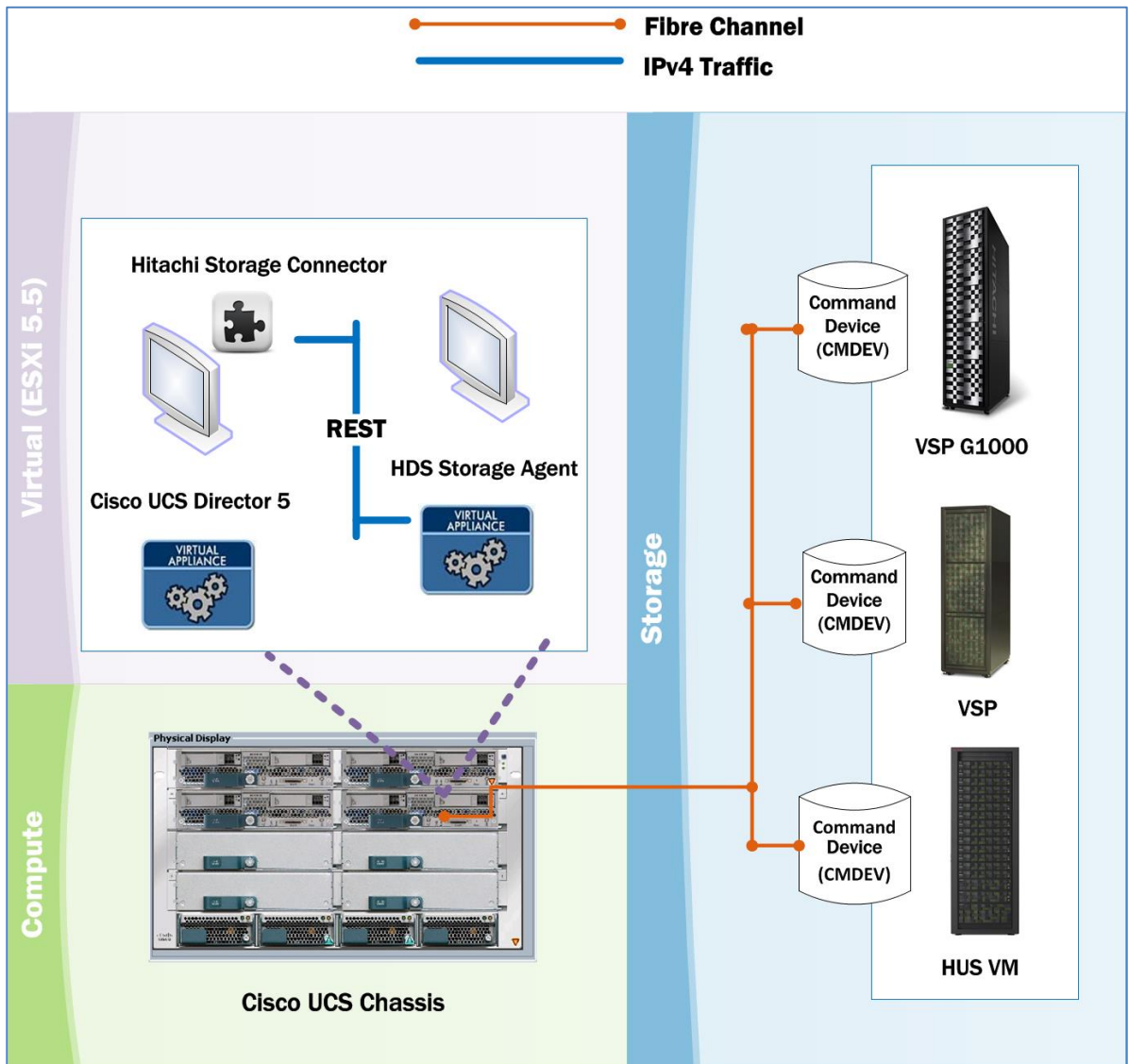
- ▣ [Summary of Steps](#)
- ▣ [Architecture](#)
- ▣ [Required Hardware and Software](#)
- ▣ [Install the Hitachi Storage Agent](#)
- ▣ [Install the Hitachi Storage Connector](#)

## Summary of Steps

---

1. Assemble the required hardware and software.
2. Download the .iso file that contains all connector-related files.
3. Deploy the Hitachi Storage Agent virtual appliance.
4. Add the Hitachi Storage Open Automation Connector to Cisco UCS Director.
5. In Cisco UCS Director, create a Hitachi pod from a generic source pod or use an existing Hitachi pod.
6. Add Hitachi storage accounts to the pod.
7. Test connections to the Hitachi storage account.
8. [\(Optional\) Import, validate, and run Hitachi storage workflows.](#)

# Architecture



**Figure 2 High-Level Connector Diagram**

## Required Hardware and Software

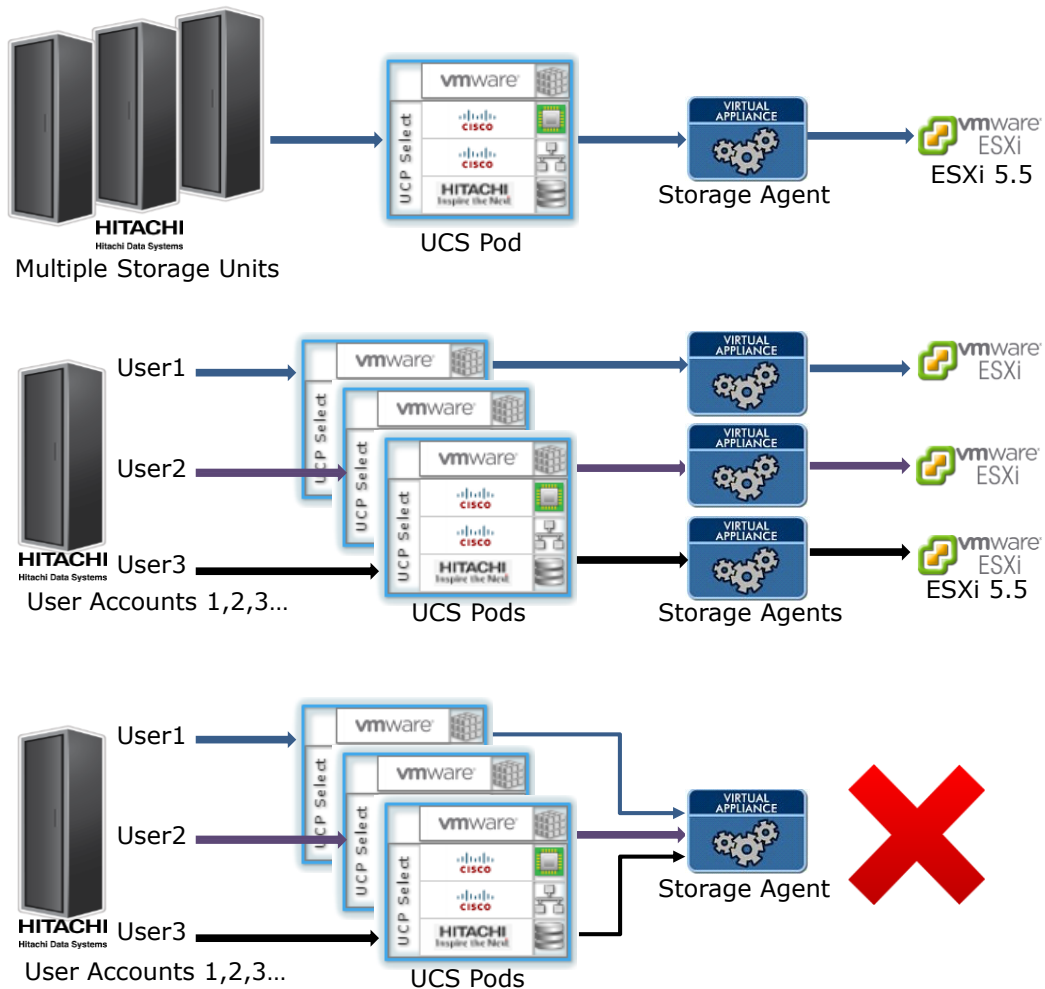
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- Supported Hitachi storage, microcode, and licenses
- Hitachi storage system serial number
- Hitachi Storage Navigator (SVP) IP Address
- Hitachi Storage Navigator user account with administrator rights
- Software: UCS Director 5.3.0.0 with appropriate license
- Virtualization: VMWare ESXi 5.5
- Hitachi Storage Agent v01.0.0

## Support Storage Agent Configurations

| Configuration   | Supported   |
|---|---|
| Multiple Hitachi Storage systems in a single Pod with a Single Storage Agent                                  | Yes, up to 10   |
| Multiple accounts from a single Hitachi Storage system assigned to multiple Pods with multiple Storage Agents | Yes, each account must be mapped to a Storage Agent on a separate ESXi instance |
| Multiple accounts from a single Hitachi Storage system in multiple Pods with a Single Agent                   | No (see <b>Figure 3</b> below)  |

## Agent Configuration Diagram



**Figure 3: Configuration Examples**

# Hitachi Storage Agent Requirements

## Virtual Appliance

- VMware ESXi 5.5 server with:
  - 1 GB of free memory
  - A datastore with 1 GB of available space
  - A Command Device from the Hitachi storage system
- VMware vSphere Client (or vSphere Web Client)
- A static IPv4 address to assign to the virtual appliance

## Download Files

The Hitachi-UCSD-Plugin-v01.0.0.iso file contains:

| File                                   | Description                                      |
|--|--|
| <b>HDSStorageConnector-v01.0.0.zip</b> | Hitachi Storage Connector                        |
| <b>HDSStorageAgent-v01.0.0.ova</b>     | Hitachi Storage Agent Virtual Appliance          |
| <b>HitachiWorkflows.wfdx</b>           | Workflows provided for supported storage systems |

## Install the Hitachi Storage Agent v01.0.0

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The Hitachi Storage Agent is a web service that relays requests between Hitachi storage systems and Cisco UCS Director using a REST interface. You must install and configure the Hitachi Storage Agent before adding a Hitachi storage account to Cisco UCS Director.

Install the Hitachi Storage Agent by deploying the Hitachi Storage Agent Virtual Appliance on an ESXi 5.5 server.


## Deploy a Virtual Appliance

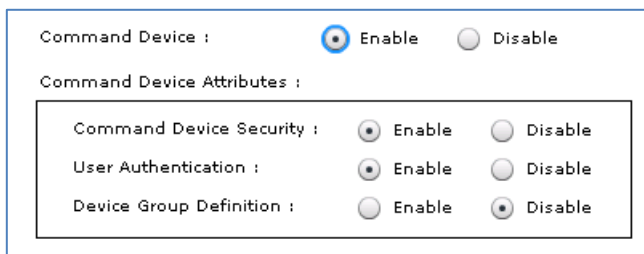
### Prerequisite: Create a Command Device

Communication between the Hitachi Storage Agent and the Hitachi storage system is carried in-band and requires a Command Device. We recommend that a Command Device be created and mapped to the ESXi host before completing the following steps. For instructions on how to install, configure, and map a Command Device for your storage system, refer to the chapter "Setting the Command Device" in the following document. For your convenience, this chapter has also been reproduced in [Chapter 5](#) of this document.

| Document  | Description  |
|---|--|
| <i>Command Control Interface: Installation and Configuration Guide, MK-90RD7008</i> | Describes command control interface (CCI) features, installation, and configuration for the Hitachi storage systems: HUS VM, VSP, VSP G1000, and USP V/VM. |

The following figure illustrates the Command Device required settings. The settings are the same for all supported storage subsystems.

**Note**  When creating a Command Device, the sequence of events is important. Do not map the LDEV to a Host Group before designating it a Command Device.




Command Device :  Enable  Disable

Command Device Attributes :

|                           |   |  |
|---------------------------|---|--|
| Command Device Security : | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable            |
| User Authentication :     | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable            |
| Device Group Definition : | <input type="radio"/> Enable            | <input checked="" type="radio"/> Disable |

## Deploy the Virtual Appliance

**Note**  Do not power on the virtual machine before mapping the Command Device(s) or they will not be configured. If the Virtual Machine is already on after mapping the Command Device, you must reboot to initiate the Discovery sequence.

1. Using vSphere Client, connect either to a vSphere vCenter instance or directly to the ESXi server.
2. In vSphere Client, from the **File** menu, select **Deploy OVF Template**. The Deploy Wizard opens.
3. Complete the following options in the Deploy Wizard.

| Option                     | Description   |
|----------------------------|---|
| Source                     | Type a URL or navigate to the OVA package location.                                 |
| OVF template details       | Verify that you selected the correct OVA template for this installation.            |
| End user license agreement | Accept the end user license agreement.  |
| Name and location          | Name the appliance or keep the default name.  |
| Specify Host/Cluster       | Select whether to deploy the virtual machine on the host or cluster (vCenter only). |

| Option          | Description   |
|-----------------|---|
| Networking Info | Static IPv4 address, Gateway, and DNS for the Hitachi Storage Agent.          |
| Storage         | Select the datastore location for virtual machine files.                      |
| Provisioning    | Select the provisioning type. Both thin and thick provisioning are supported. |

The virtual appliance is deployed to the specified ESXi host. The speed of this process depends on the network speed. It takes about two minutes on a typical Gigabit Ethernet connection.

4. Before powering on the virtual machine, map the Command Device to the [Hitachi storage system](#).
  - a. Right-click the newly deployed virtual appliance and select **Edit Settings**.
  - b. On the **Hardware** tab, click **Add > Hard Disk > Raw Device Mapping**.
  - c. Select the previously created [Command Device](#).
  - d. Accept all the defaults. Click **Finish**.
5. Power on the virtual machine. The Hitachi Storage Agent will query for command devices and will configure itself automatically.



**Tip** If you have trouble identifying the Command Devices, you can match the Device WWN with the LDEV ID. The last four digits of the Device WWN, starting with naa.6006 correspond to the LDEV ID.

## Install the Hitachi Storage Connector

### Prerequisites

Locate the **HDSStorageConnector-v01.0.0** file you extracted from the .iso file that you [downloaded](#) from the Cisco Solution Partners site.

### Install and Deploy the Connector

1. Login to Cisco UCS Director using the Admin role credential.
2. In Cisco UCS Director, from the **Administration** menu, select **Open Automation**.
3. On the **Connectors** tab, click **Add**.
4. Extract the files from **HDSStorageConnector-v01.0.0**. Click **Open**.
5. Click **Upload**, and then click **Submit**.



6. Select the newly added module. Click **Enable**.
7. Use SSH to connect to the Cisco UCS Director instance and log in as **shelladmin** (Default password is **changeme**).
8. To enable the Hitachi Storage Connector, stop all services (option 3), and then restart all services (option 4).

---

**Note** After the Cisco USC Director becomes available, be sure to check that the Connector is Enabled/Active in the same location where it was added.



## Create a Pod in Cisco UCS Director

In Cisco UCS Director, create a Hitachi pod that will contain all your Hitachi storage accounts. Alternatively, locate an existing pod already in use for a Hitachi product such as Unified Computing System (UCP) Select.

**Note:** A pod may contain more than one storage account, but a single storage account may not be added to multiple pods.

1. In Cisco UCS Director, click on **Converged** in the menu. Click **Add**.
2. Complete the required fields.
3. Select **Generic** or UCP Select from the menu. Click **Add**.

## Add Hitachi Storage Accounts to the Pod

For each storage system to be used, add a Hitachi storage account to your pod. Accounts are available for generic pods or UCP Select pods.

Do the following to add a Hitachi storage account:

1. In Cisco UCS Director, from the **Administration** menu, select the **Physical Accounts** tab. Click **Add**.
2. Select the pod you created.
3. Under **Category**, select **Storage**.
4. Select the desired model of Hitachi storage. Click **Submit**.
5. Complete the form as required. See the following table for a description of the fields.

| Label                 | Description   | Optional/Required |
|-----------------------|---|-------------------|
| Account Name          | Choose a name by which this account can be referenced. We suggest a portion of the serial number to make identification easier. | Required          |
| Description           | Description of the physical hardware.   | Optional          |
| Storage Serial Number | Serial number of the Hitachi Storage Connector.   | Required          |

| Label              | Description   | Optional/<br>Required |
|--------------------|---|-----------------------|
| Storage IP Address | IPv4 address of the storage SVP.                              | Required              |
| Storage User       | Authorized user on the SVP with storage administrator rights. | Required              |
| Storage Password   | User password (administrator privileges).                     | Required              |
| Agent IP Address   | IP Address of the Hitachi Storage Agent virtual appliance.    | Required              |
| Contact            | Contact information for storage administrator.                | Optional              |
| Location           | Physical location of storage.                                 | Optional              |

6. Click **Submit**.

**Note:** The time required to add the account depends on the size of the storage system and network speed.

### About Resource Group Support

In this release of the Storage Connector we have basic support for Resource Groups. The Storage Connector filters out those resources it does not have access to based on the Storage User who was used for the initial setup of the storage subsystem. Configuration changes to Resource Groups must be made on the SVP or through Hitachi Command Suite.

## Test Connection to the Hitachi Storage Account

Find out about connection problems in a few ways:

- After the Storage Connector for Cisco UCS Director is added to Cisco UCS Director, the connector warns about connection problems.
- Use the Test Connection action within Cisco UCS Director:
  - From the Administration menu, click Physical Accounts.
  - In the **Physical Accounts** tab, highlight the account to be tested.
  - Click Test Connection.

## Import, Validate, and Run Workflows (Optional)

Hitachi provides [storage workflows](#) and [tasks](#) for use with the Storage Connector for Cisco UCS Connector.

This chapter includes the following sections:

- ▣ [Import and Validate Hitachi Workflows](#)
- ▣ [Run Hitachi Workflows](#)
- ▣ [Check Multiple Workflow Results](#)

## Import and Validate Hitachi Workflows

---

For each workflow you import, you must set inputs for all tasks and validate each workflow.

1. Locate the **HitachiWorkflows.wfdx** file in the Sample Workflows folder extracted from the .iso file that you [downloaded](#) from the Cisco Solution Partners site.
2. In Cisco UCS Director, under the **Policies** menu, select **Orchestration**.
3. Under the **Workflows** tab, click the **Import** button, and then browse to where you have download **HitachiWorkflows.wfdx**.
4. On the Workflows tab, open the folder HDS Workflows to view the imported workflows.
5. Double-click on a workflow to open it in the Workflow Designer. The Workflow Designer displays all tasks contained in the workflow. And can be used as is or modified to fit the environment.

## Run Hitachi Workflows

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1. In Cisco UCS Director, open the **Workflows** tab.
2. Do one of the following:
  - In the **Workflows** tab, click **Execute Now**.
  - Open the Workflow Designer for the desired workflow. Click **Execute Now**.

A dialog appears and requests workflow inputs.
3. Enter workflow inputs as appropriate, and click **Submit**.

**Note:** All fields marked with \* are required.

The workflow service request is executed. A message indicates whether the service request was successful.
4. Click **Show Detail Status** for more information about the service request.

## Check Multiple Workflow Results

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As a way to check the status of many workflow service requests, do the following:

1. Open **Cisco UCS Director > Organizations** menu > **Service Requests** tab.
2. Select a workflow trial from the list of service requests, and then click **View Details** on the tab menu.

# 4

## Logging and Troubleshooting

This chapter includes the following sections:

- ▣ [Logging](#)
- ▣ [Troubleshooting](#)

## Logging

---

The Cisco UCS Director handles logging for the Connector.

### View Logs

1. Within Cisco UCS Director, select **Administration** from the menu, and select **Support Information**.
2. Within the Support Information drop down, select **Show Log > Infra Manager > Show Logs**.

A browser page displays all recent activity. The page can be saved and shared with the Hitachi Data Systems Support Center if desired.

## Troubleshooting

---

### Storage Connector for Cisco UCS Director

| Symptom   | Possible Cause   | Resolution  |
|---|--|---|
| The <b>HDSStorageConnector-v01.0.0</b> module has been added, but no Hitachi storage systems are available. | Cisco UCS Director services have not been restarted after adding the module. | Connect using SSH to the Cisco UCS Director instance. Stop all Director-related services, then restart.                               |
|   | The module is not enabled.   | Highlight the module and click <b>Enable</b> . Restart Cisco UCS Director.  |
| Unable to add the Hitachi Storage physical account.   | Hitachi storage accounts are only available for UCP Select and generic pods. | Ensure that the pod type is generic or UCP Select.  |
|   | The Hitachi Storage Agent is not configured properly.                        | See <a href="#">Hitachi Storage Agent</a> .   |
|   | The user does not have sufficient rights.                                    | Ensure that the user has Administrator rights.  |
|   | Command Device mapped after booting or not mapped                            | Assure that a Command Device is mapped to the VM as a Raw Device Mapping (RDM). Reboot VM if mapping was done after VM was powered on |
|   | The IP address of storage systems and/or Storage Agent is unreachable.       | Ensure that no proxy or firewall exists between the Cisco UCS Director network and the Storage Navigator.                             |

| Symptom                                     | Possible Cause   | Resolution  |
|---|--|---|
| Information <LDEV/Host Group, etc> Missing. | Inventory collection has not happened or is in progress. | If the account was added recently, wait for inventory collection to finish. |

## Hitachi Storage Agent v01.0.0

Events within the Hitachi Storage Agent are logged to two files:

```
/tmp/metro.log
/tmp/histor.log
```

## Forward Logs for Assistance

If more assistance is needed, use the following log collection script. It forwards logs to the HDS Global Service Center.

Run the `collect_metro_info.sh` script located in the `/opt/hitachi/metro` directory.

### Check Network Configuration

Confirm that the IP and gateway information was correctly assigned during deployment. The easiest way to do this is by using SSH and connecting to the IPv4 address of the virtual machine.

Default user name: **root** Default password: **hitachi**

- Once connected, check the networking configuration by issuing the following command:

```
/opt/vmware/share/vami/vami_config_net
```

The following menu appears:

```
0) Show Current Configuration (scroll with
Shift+PgUp/PgDown)
1) Exit this program
2) Default Gateway
3) Hostname
4) DNS
5) Proxy Server
6) IP Address Allocation for eth0
```

- To see the current configuration, enter 0 or press **Enter**.
- Make changes as necessary using the provided menu options.

## Check the Hitachi Storage Agent (Virtual Appliance and Linux Server)

To test the Hitachi Storage Agent, run the `metro_check.sh` script.

1. Open the directory `/opt/hitachi/metro`.
2. Run `./metro_check.sh`.

Successful output looks like the following:

```
Metro RPM Install Check          [ PASS ]
HORCM Process Check              [ PASS ]
HORCM RAIDqry Check             [ PASS ]
Metro Process Check              [ PASS ]
Metro cURL Check                 [ PASS ]
Metro Monitor(cron) Check        [ PASS ]
```

Use the following table to troubleshoot test failures.

| Test                       | Troubleshooting Tips  |
|----------------------------|---|
| HORCM Process Check        | Failure indicates that the HORCM service is not running. The problem may be with Command Device discovery or with XML file configuration.<br><ol style="list-style-type: none"><li>1. Check the following:<ul style="list-style-type: none"><li>▪ In <code>MetroServerAPI.xml</code>, confirm that the <code>&lt;ip_address&gt;</code> tag contains the VMware virtual machine/standalone host IP address.</li><li>▪ In <code>api.xml</code>: confirm that the <code>&lt;horcm_instance&gt;</code> tag contains at least one entry. Also confirm that the serial number matches the serial number of the Hitachi storage system.</li></ul></li><li>2. Reboot the appliance and see whether the problem has cleared.</li></ol> |
| Metro Process Check        | Metro Process Check failures are most likely due to failures of the first three checks. If the Metro Process Check fails when the first three tests are successful, look at <code>/tmp/metro.log</code> for more information.   |
| Metro cURL Check           | The Metro cURL Check tests whether the Hitachi Storage Agent accepts HTTPS requests. Failure may indicate a problem with the network configuration.<br>Check the network settings as outlined in the previous section.  |
| Metro Monitor (cron) Check | If the final check fails, this should not affect the functionality of Storage Agent, but it is indicative of a configuration problem during installation. Contact Support if this occurs.   |



In addition to the self-test script, you can check to see if the Storage Agent can see the mapped Command devices by issuing the following command:

```
ls /dev/sd* | /HORCM/usr/bin/inqraid
```

In the output the LDEV should say OPEN-V-CM, similar to the following:

```
/dev/sdb -> CHNO = 0 TID = 1 LUN = 0  
[SQ] CL2-D Ser = 93935 LDEV =7179 [HITACHI ] [OPEN-V-CM]  
A-LUN[PoolID 0003] SSID = 0x0020
```





## Excerpt from CCI Guide

This chapter contains the following section, reproduced from the “*Command Control Interface Installation and Configuration Guide*, MK-90RD7008:

- ▣ [Setting the Command Device](#)

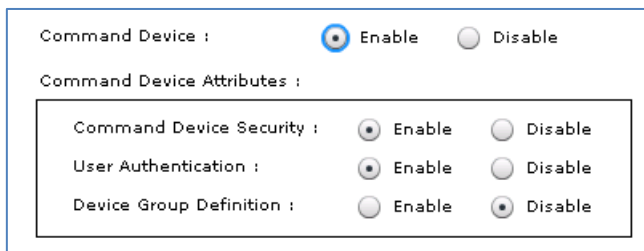
## Setting the Command Device

For in-band CCI operations, commands are issued to the RAID storage system via the command device. The command device is a user-selected, dedicated logical volume on the storage system that functions as the interface to the CCI software on the UNIX/PC host. The command device is dedicated to CCI operations and cannot be used by any other applications. The command device accepts read and write commands that are executed by the storage system and returns read requests to the UNIX/PC host.

The command device can be any OPEN-V device that is accessible to the host. A LUSE volume cannot be used as a command device. The command device uses 16 MB, and the remaining volume space is reserved for CCI and its utilities. A Virtual LUN volume as small as 36 MB can be used as a command device.

First you set the command device using Hitachi Command Suite or Device Manager - Storage Navigator, and then you define the command device in the HORCM\_CMD section of the configuration definition file for the CCI instance on the attached host. When you use a command for provisioning, user authentication is required. Set enable the user authentication on the security attribute of a command device.

The following figure illustrates the Command Device required settings. The settings are the same for all supported storage subsystems.



The screenshot shows a configuration window for the Command Device. At the top, there is a label 'Command Device :' followed by two radio buttons: 'Enable' (which is selected) and 'Disable'. Below this is a section titled 'Command Device Attributes :'. Inside this section, there are three rows of settings, each with a label and two radio buttons: 'Command Device Security :' with 'Enable' selected and 'Disable' unselected; 'User Authentication :' with 'Enable' selected and 'Disable' unselected; and 'Device Group Definition :' with 'Enable' unselected and 'Disable' selected.

To set a command device:

1. Make sure the device that will be set as a command device does not contain any user data. Once a volume is set as a command device, it is inaccessible to the host.
2. Log on to Hitachi Command Suite or Storage Navigator, and connect to the storage system on which you want to set a command device.
3. Configure the device as needed before setting it as a command device. For example, you can create a custom-size device that has 36 MB of storage capacity for use as a command device. For instructions, see the Provisioning manual or the Virtual LUN manual for the storage system.

4. Locate and select the device, and set the device as a command device. If you want to use the CCI Protection Facility, also enable command device security at this time. For instructions, see the Provisioning Installing and configuring CCI 2-11 Command Control Interface Installation and Configuration Guide manual or the LUN Manager manual for the storage system. For information about the Protection Facility, see the Command
5. Write down the system raw device name (character-type device file name) of the command device (for example, /dev/rdisk/c0t0d1s2 in Solaris, \\.\CMD-Ser#-ldev#-Port# in Windows). You will need this information when you define the command device in the configuration definition file.



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