



Hitachi Storage Adapter for VMware vCenter Operations Management Suite

Dashboard User's Guide

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Preface

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This User's Guide describes the prerequisites to display to a custom dashboard which was created for VMware vCenter Operations Manager user interface (hereinafter referred to as "the dashboard for Hitachi Storage Adapter") the performance information of Hitachi storage system that Hitachi Storage Adapter for VMware vCenter Operations Management Suite (hereinafter referred to as "Hitachi Storage Adapter") collected, the import method of the dashboard for Hitachi Storage Adapter and the display of the dashboard for Hitachi Storage Adapter.

Information on the vSphere environment required by the dashboard for Hitachi Storage Adapter, the setting method of the Hitachi storage system management software and the installation method of Hitachi Storage Adapter are not included. Therefore, ask the vSphere environment administrator, the Hitachi storage system management software administrator and VM administrators to complete the prerequired system configurations in advance.

This document also provides the Hitachi Storage Adapter troubleshooting information. VM administrators can pinpoint the root cause based on this document. If a problem seems to have been caused by Hitachi Storage Adapter, the Hitachi Storage Adapter support personnel should be contacted. Alternatively, if a problem appears to be caused by vSphere environment or the Hitachi storage system management software, the relevant administrators should be contacted to confirm the environment, investigate the cause, and solve the problem.

Software Version

This document supports "Hitachi Storage Adapter for VMware vCenter Operations Management Suite V01.2.2".

Intended Audience

This document is intended for the following audiences:

- Operators of the user interface of the vCenter Operations Manager when used to verify the performance and the configurations of the storage system (herein after referred to as "VM administrators").

Prerequisite Knowledge

This document is intended for users who are familiar with:

- The basic operations of Microsoft Windows Server and Microsoft Windows
- The basic operations of Linux
- The basic operations of VMware vCenter Operations Manager
- The basic operations of Hitachi Device Manager
- The basic operations of Hitachi Tuning Manager

Related Documents

Related documents are as shown below.

- Documents for VMware vCenter Operations Manager 5.8
- Documents for VMware vSphere ESXi and vCenter Server 5.1
- Documents for VMware vSphere ESXi and vCenter Server 5.5
- Documents for VMware vSphere ESXi and vCenter Server 6.0
- Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide
- Hitachi Virtual Storage Platform Open System Configuration Guide
- Hitachi Virtual Storage Platform G1000 Open System Configuration Guide/
Mainframe System Configuration Guide
- Hitachi Virtual Storage Platform G200/G400/G600/G800 System
Configuration Guide
- Hitachi Unified Storage VM System Configuration Guide
- Hitachi Command Suite Installation and Configuration Guide
- Hitachi Command Suite User Guide
- Hitachi Command Suite Tuning Manager Installation Guide
- Hitachi Command Suite Tuning Manager Hardware Reports Reference
- Hitachi Command Suite Tuning Manager Server Administration Guide
- Hitachi Command Suite Tuning Manager Agent Administration Guide
- Hitachi Command Suite Messages
- Hitachi Command Suite Administrator Guide
- Hitachi Command Suite Tuning Manager API Reference Guide

About Figures Listed in the Manual

This manual uses screenshots or partial screenshots from Windows computers in some illustrations. The colors in the screenshots may differ from the colors seen during actual use.

Revision Level

Revision	Date	Description
First edition	February, 2015	-
Second edition	April, 2015	Updating the descriptions with the new version release of Hitachi Storage Adapter for VMware vCenter Operations Management Suite. There is no change on the dashboard.
Third edition	June, 2015	Updating the descriptions with the new version release of Hitachi Storage Adapter for VMware vCenter Operations Management Suite. There is no change on the dashboard.

Acronyms and Abbreviations

#	Term and Abbreviation	Description
1.	Datastore	Virtual area used to store a virtual machine image on ESXi. The actual area is created on a local disk or external storage system.
2.	DP Pool	Abbreviation of Dynamic Provisioning Pool. It consists of more than one exclusive RAID group. Dynamic Provisioning Pool is the area which manages data written in the virtual volume.
3.	ESXi	A bare-metal hypervisor (a virtualization OS) of VMware, Inc.
4.	MPB	Abbreviation of Management Processor Blade. MPB is equipped with four Management Processors (MP) and each MP distributes load of processing.
5.	Parity Group	The group of physical drives which consists RAID in the storage system.
6.	Port	The port for channel adapter or port controller of the storage system.
7.	RAID	Abbreviation of Redundant Arrays of Independent Disks.
8.	VM	Abbreviation of Virtual Machine.
9.	Metric	Indicates the performance index which is collected by vCenter Operations Manager.



1. Overview

This chapter describes the dashboard for Hitachi Storage Adapter.

The dashboard for Hitachi Storage Adapter which displays the performance information of Hitachi storage system that Hitachi Storage Adapter collected is a custom dashboard for VMware vCenter Operations Manager (hereinafter, vCenter Operations Manager) user interface. The view display of each dashboard describes in Chapter 5.



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2. System Requirements

- [Hardware Prerequisites](#)
- [Software Prerequisites](#)

This chapter describes the system requirements to exactly display the import details of the dashboard and the details which are expected on the dashboard.

The dashboard for Hitachi Storage Adapter requires that the Hitachi Storage Adapter operates normally. Therefore, you must meet all of the system requirements of Hitachi Storage Adapter. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite user's Guide for the system requirements of Hitachi Storage Adapter.

2.1. Hardware Prerequisites

Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide.

2.2. Software Prerequisites

The requirements which were not described in Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide are described.

2.2.1. Hitachi Storage Adapter for VMware vCenter Operations Management Suite

Required that Hitachi Storage Adapter for VMware vCenter Operations Management Suite has been installed and the performance information has been collected.

Table 2.2.1-1 Hitachi Storage Adapter for VMware vCenter Operations Management Suite

#	Software	Remarks
1.	Hitachi Storage Adapter for VMware vCenter Operations Management Suite v01.2.2	-

2.2.2. VMware Tools

Some dashboards refer to metrics of VM which were created by VMware Tools. Accordingly, VMware Tools must be installed and operated on VM that VMware vCenter Operations Manager monitors. Refer to Chapter 5 for the details of metrics. The following Table 2.2.1-1 lists the software requirements for VMware Tools.

Table 2.2.2-1 VMware Tools

#	Software	Remarks
1.	VMware Tools from VMware ESX/ESXi 5.1 Update 3	Required software to acquire metrics of VM.
2.	VMware Tools from VMware ESX/ESXi 5.5 Update 2	
3.	VMware Tools from VMware ESX/ESXi 6.0	

3. Restrictions and Considerations

- [Consideration During Importing A Dashboard](#)

This Chapter describes restrictions and considerations.

3.1. Consideration During Importing A Dashboard

3.1.1. Metric collection

Make sure that all the metrics to display in the dashboard have collected before the import of the dashboard. Refer to 5. Display of the dashboard for each description of the dashboard.

3.1.2. Dashboards which require VMware Tools

Table 3.1.2-1 lists the dashboards which require VMware Tools for displaying normally.

Table 3.1.2-1 Dashboards which require VMware Tools

#	Required	Description
1.	X	Hitachi VM Performance Dashboard
2.	X	Hitachi VM Capacity Dashboard
3.	-	Hitachi TopN Dashboard

3.1.3. Dashboards which require Super metrics

To display the dashboard normally, Table 3.1.3-1 lists the dashboards which require super metrics, the super metric file name to import and the super metric name which displays on the screen after import.

Table 3.1.3-1 Dashboards which require super metrics

#	Dashboard	Super Metric File Name	Super Metric Name	Applicable Resource Kind
1.	Hitachi VM Performance Dashboard	-	-	-
2.	Hitachi VM Capacity Dashboard	Hitachi_Datastore_Usage.xml	Hitachi Datastore Usage (%)	Datastore
3.	Hitachi TopN Dashboard	Hitachi_Pool_IO_Density.xml	Hitachi Pool I/O Density	Dynamic Provisioning Pool

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4. Procedure for import of the dashboard

- [Installation and execution of VMware Tools](#)
- [Collection By Hitachi Storage Adapter](#)
- [Importing A Super Metric](#)
- [Applying A Super Metric](#)
- [Importing A Dashboard File](#)

This chapter describes the import procedure for the dashboard.

A flowchart of the import procedure for the dashboard is shown in Figure 4-1. Each procedure is described in Section 4.1 or later.

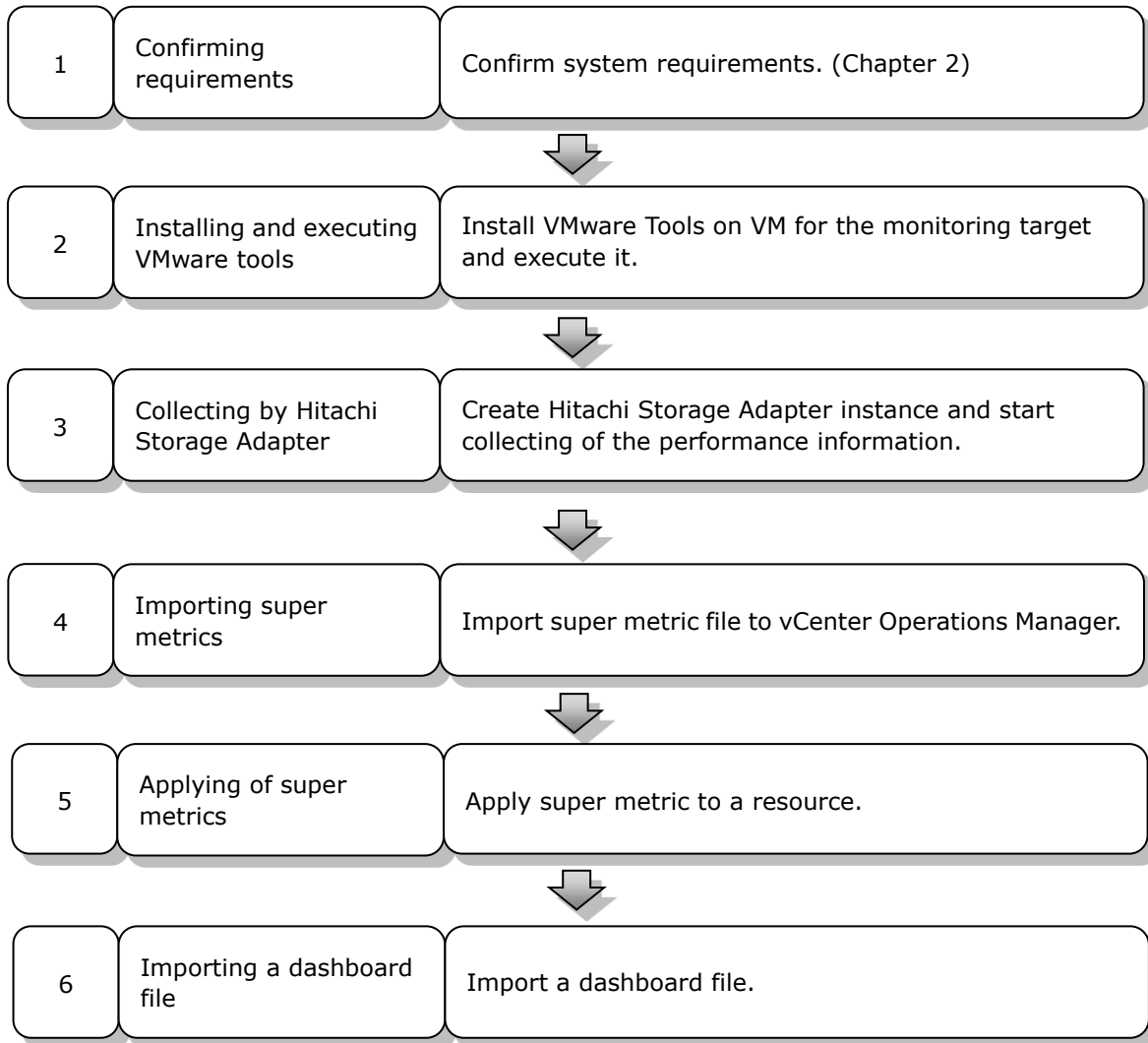


Figure 4-1 Import procedure of the dashboard

4.1. Installation and execution of VMware Tools

Because some dashboards refer to the created metrics by VMware Tools, when you use the dashboard, you need to install VMware Tools on VM which VMware vCenter Operation Manager monitors and execute it. Refer to Section 3.1 for the dashboard required installation and execution of VMware Tools. For the installation method of VMware Tools, refer to the installation and setup guide of vSphere.

4.2. Collection By Hitachi Storage Adapter

Most of information on the dashboard is collected by Hitachi Storage Adapter. Accordingly, Hitachi Storage Adapter is installed on vCenter Operations Manager, and Hitachi Storage Adapter instance is created, then the collection of the performance information of the target storage system is started. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for the installation method of Hitachi Storage Adapter and the creation method of Hitachi Storage Adapter instance.

4.3. Importing A Super Metric

Some dashboards use super metrics. Accordingly, when you use the dashboard, you need to import super metrics and allocate it to the designated resource in advance. Refer to Section 3.1 for the dashboard which requires importing and allocating the super metrics.

The import method of super metrics is shown as follows.

- 1) Log in to Custom UI (<https://<IPaddress>/vcops-custom/>) of vCenter Operations Manager with administrator's account.
- 2) Select **ENVIRONMENT** from the top menu and select **SUPER METRICS...** from the displayed drop-down list.

The **Super Metrics** window is displayed.

- 3) From the Super Metrics window, Select **Super Metric Editor** tab and click **Import** icon.

The **Import Super Metric** window is displayed

- 4) Specify a super metric file with the Browse button in Super Metrics window, and click **Import** button.

Refer to Table 3.1.3-1 for the Super Metric to Import.

- 5) Click **OK** button in the Super Metrics window..

The Import Super Metric window is closed.

The imported super metrics name is displayed when **OK** button is pressed. Refer to Section 3.1 for the displayed super metrics name.

4.4. Applying A Super Metric

Super metrics are applied to the resource in order to collect the imported super metrics. The application procedure for super metrics to the resource is shown as below.

- 1) Log in to Custom UI (<https://<IPaddress>/vcops-custom/>) of vCenter Operations Manager with administrator's account.
- 2) Mouse over on **ENVIRONMENT** in the Top menu. and select **SUPER METRICS...** from the displayed drop-down list.

The **Super Metrics...** window is displayed.

- 3) From the Super Metrics... window, select **Package Editor** tab and click **Add New Super Metric Package** icon.

Super Metric Package Info is displayed in the Super Metrics window.

- 4) Input a Super Metric Name to show to Table 3.1.3-1 in **Package name:** field on the Super Metric Package Info area. Also, select the checkbox to the corresponding super metric in the **Super Metric to Configure** filed.
- 5) Click **OK** button on the Super Metric Package Info area.
- 6) Click **OK** button on the Super Metrics... window.

The Super Metrics... window disappears.

- 7) Mouse over on **ENVIRONMENT** in the Top menu and select **ENVIRONMENT OVERVIEW** from the displayed drop-down list.

The **ENVIRONMENT OVERVIEW** is displayed.

- 8) Select **Resource Kinds** on the left pane, expand a list of resource kinds.
- 9) Select the resource kind to apply to super metrics from the expanded list.

The Resource of the selected Resource kind is displayed on the right pane. Refer to Table 3.1.3-1 for the applicable Resource kind.

- 10) Select all resources from the right side panel of the list tab.
- 11) Click **Edit Resource** in the upper side of the resource list

The Resource Management window is displayed.

12) After having selected **Super Metric Package** check box, select the package which was created in the previous step from the drop down menu.

13) Click **OK** button.

The Resource Management window is closed.

14) Mouse over on **ENVIRONMENT** in the Top menu, and select in order of **CONFIGURATION – RESOURCE KIND DEFAULTS** from the displayed drop-down list.

The **Manage Resource Kind Defaults** window is displayed.

15) Select the resource kind applying the super metrics from the list. Select the package which was created in the previous step from the drop down menu of **Super Metric package**

16) Click **OK** button.

The Manage Resource Kind Defaults window is closed.

4.5. Importing A Dashboard File

To display the defined dashboard on the dashboard window, the dashboard file is imported. The import procedure of the dashboard file is shown as below.

1) Log in to Custom UI (<https://<IPaddress>/vcops-custom/>) of vCenter Operations Manager with administrator's account.

2) Click **Import** in the upper right on the display.

The **IMPORT** window is displayed.

3) From the IMPORT window, Click **Browse** button and select the dashboard file and press **Import** button.

4) Press **OK** button.

The IMPORT window is closed.

When the import of the dashboard file is completed normally, the imported dashboard is displayed in the **DASHBOARDS** menu. Please select the dashboard which was imported from the **DASHBOARDS** menu for displaying the dashboard in HOME.

5. Displaying the dashboard

- [Hitachi VM Performance dashboard](#)
- [Hitachi VM Capacity dashboard](#)
- [Hitachi TopN dashboard](#)

This chapter describes the widget which configures each dashboard and the display of widgets. In addition, for the dashboard using super metrics, the application method of super metrics are described.

5.1. Hitachi VM Performance dashboard

Hitachi VM Performance dashboard displays VM performance in the environment and the relationship between VM and storage resources. The display example of Hitachi VM Performance dashboard is shown in Figure 5.1-1.

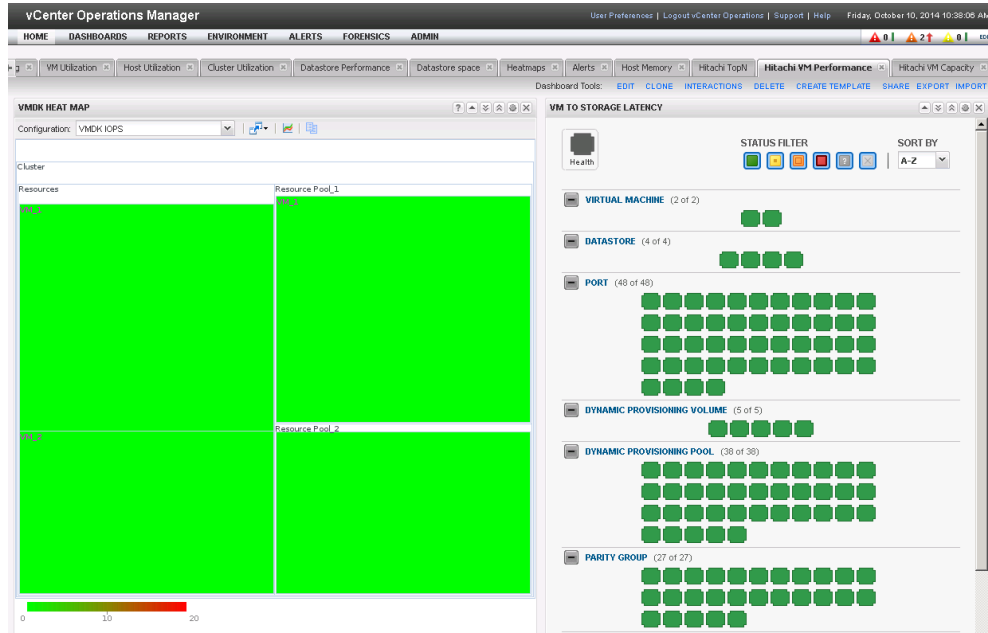


Figure 5.1-1 Display example of Hitachi VM Performance Dashboard

5.1.1. Hitachi VM Performance dashboard file

Table 5.1.1-1 lists the dashboard file name to designate at the import of Hitachi VM Performance dashboard, the dashboard name displayed in **DASHBOARDS** menu and the dashboard title name in HOME.

Table 5.1.1-1 Hitachi VM Performance dashboard name list

#	Dashboard file name	Label in the Dashboard List menu	Dashboard title
1.	HitachiVMPerformance-Dashboard.xml	HITACHI VM PERFORMANCE	Hitachi VM Performance

5.1.2. Super metrics which apply to Hitachi VM Performance dashboard

There are not super metrics applying to Hitachi VM Performance dashboard.

5.1.3. Widget which configures Hitachi VM Performance dashboard

This Chapter describes the widget which configures Hitachi VM Performance dashboard and the display of widgets.

Hitachi VM Performance dashboard is configured with 2 widgets. Table 5.1.3-1 lists the widget which configures Hitachi VM Performance dashboard. The display of each widget describes in Subsection 5.1.3.1 or later.

Table 5.1.3-1 Widget which configures VM Performance dashboard

#	widget
1.	VMDK HEAT MAP
2.	VM TO STORAGE LATENCY

5.1.3.1. VMDK HEAT MAP

VMDK HEAT MAP is a widget which customized heat map widget. There are 2 following Heat Map View and they can be changed by selecting from the pull-down menu. Each Heat Map View is described in the following pages.

VMDK Latency

VMDK Latency is one of Heat Map View which is displayed in VMDK HEAT MAP. Table 5.1.3.1-1 lists the setting details of VMDK Latency. The displayed contents are redrawn every 60 seconds.

Table 5.1.3.1-1 VMDK Latency setting list

#	Component	Metric	Unit of measurement	Value
1.	Heat Map Object Size	Virtual Machine Summary CPU Shares	CPU Resource Share	N/A
2.	Heat Map Object Color	Virtual Machine Virtual Disk Aggregate Total Latency	Milliseconds	N/A
3.	Green Threshold	Heat Map Object Color	Milliseconds	0
4.	Red Threshold	Heat Map Object Color	Milliseconds	20

VMDK IOPS

VMDK IOPS is one of Heat Map View which is displayed in VMDK HEAT MAP. Table 5.1.3.1-2 lists the setting details of VMDK IOPS View. The displayed contents are redrawn every 60 seconds

Table 5.1.3.1-2 VMDK IOPS setting list

#	Component	Metric	Unit of measurement	Value
1.	Heat Map Object Size	Virtual Machine Virtual Disk Aggregate Commands per Second	Commands per Second	N/A
2.	Heat Map Object Color	Virtual Machine Virtual Disk Aggregate Total Latency	Milliseconds	N/A
3.	Green Threshold	Heat Map Object Color	Milliseconds	0
4.	Red Threshold	Heat Map Object Color	Milliseconds	20

5.1.3.2. VM TO STORAGE LATENCY

VM TO STORAGE LATENCY is a widget which customized an custom relationship widget. The color of the object changes depending on the soundness of each resource. Table 5.1.3.2-1 lists the resource kind that VM TO STORAGE LATENCY displays. The displayed contents are redrawn every 60 seconds.

Table 5.1.3.2-1 List of the resource kind on VM TO STORAGE LATENCY

#	Object Name	Metric	Unit of measurement	Yellow Theshold	Orange Threshold	Red Threshold
1	Virtual Machine	Virtual Machine Storage Write Latency (ms)	Milliseconds	5	10	20
2	Datastore	Datastore Disk Command Latency (ms)	Milliseconds	5	10	20
3	Port	Port IO Operation Avg Xfer Rate (Mbps)	Megabytes per Second	800	1000	1200
4	Dynamic Provisioning Volume	DISK IO Operation Write Response Rate (us)	Microseconds	5000	10000	20000
5	Dynamic Provisioning Pool	Pool IO Operation Write Response Rate (us)	Microseconds	5000	10000	20000
6	Parity Group	DISK IO Operation Busy (%)	Percent	50	75	90
7	Management Processor Blade	Processor Processor Busy(%)	Percent	50	60	75
8	Cache	Cache Cache Write Pending Usage (%)	Percent	30	35	40

5.1.4. Hitachi VM Performance dashboard interaction

The following interaction is set to Hitachi VM Performance dashboard.

- When the object on VMDK HEAT MAP is selected, Virtual Machine on VM TO STORAGE LATENCY corresponding to the selected object is highlighted.

5.2. Hitachi VM Capacity dashboard

Hitachi VM Capacity dashboard displays the capacity and the utilization of Dynamic Provisioning Volume and the relationship between the virtual resource and the storage resource which were created on Dynamic Provisioning Volume.

An example display of Hitachi VM Capacity dashboard is shown in Figure 5.2-1.

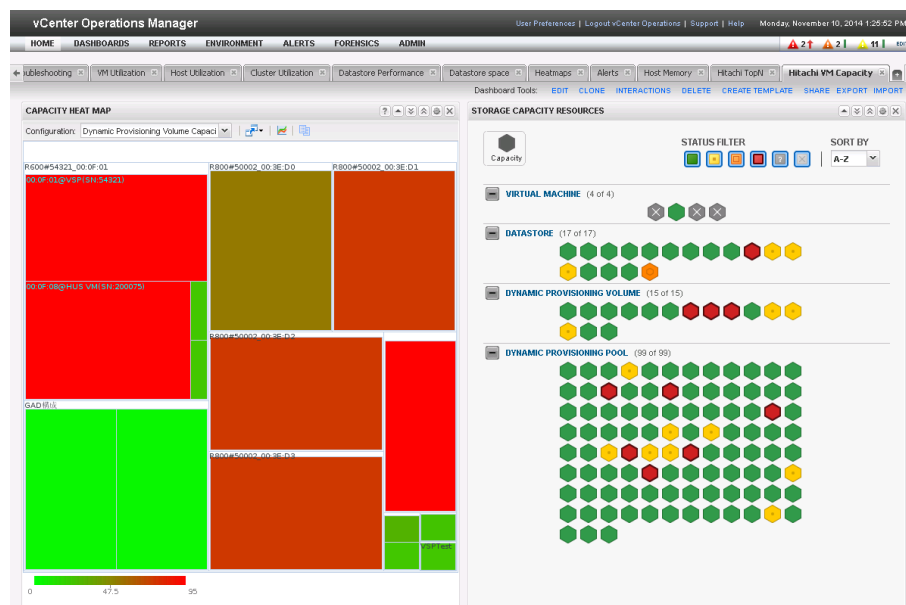


Figure 5.2-1 Example display of Hitachi VM Capacity Dashboard

5.2.1. Hitachi VM Capacity dashboard file

Table 5.2.1-1 lists the dashboard file name to designate at the import of Hitachi VM Capacity dashboard, the dashboard name in **DASHBOARDS** menu and the dashboard title name in Home.

Table 5.2.1-1 Hitachi VM Capacity dashboard name list

#	Dashboard file name	Label in Dashboard List manu	Dashboard title
1.	HitachiVMCapacity-Dashboard.xml	HITACHI VM CAPACITY	Hitachi VM Capacity

5.2.2. Super metrics which apply to Hitachi VM Capacity dashboard

This chapter describes super metrics for Hitachi VM Capacity dashboard.

Table 5.2.2-1 lists super metrics which apply to Hitachi VM Capacity dashboard. Refer to Section 4.3 for the import procedure of super metrics and Section 4.4 for the application procedure of super metrics.

Table 5.2.2-1 Super metrics which apply to Hitachi VM Capacity dashboard

#	Resource Kind	Metric	Description
1.	Datastore	Super Metric Hitachi Datastore Usage	Usage ratio in the total capacity of Datastore.

5.2.3. Widget which configures Hitachi VM Capacity dashboard

This Chapter describes the widget which configures Hitachi VM Capacity dashboard and the details which the widget displays.

Hitachi VM Capacity dashboard is configured with 2 widgets. Table 5.2.3-1 lists the widget which configures Hitachi VM Capacity dashboard. The display of each widget describes in Subsection 5.2.3.1 or later.

Table 5.2.3-1 Widget configuring Hitachi VM Capacity dashboard

#	Widget
1.	CAPACITY HEAT MAP
2.	STORAGE CAPCITY RESOURCES

5.2.3.1. CAPACITY HEAT MAP

CAPACITY HEAT MAP is a widget which customized a heat map widget. There is a Heat Map View as below. Heat Map View is described in the following pages.

- Dynamic Provisioning Volume Capacity

Dynamic Provisioning Volume Capacity

Dynamic Provisioning Volume Capacity is a Heat Map View that is displayed in the CAPACITY HEAT MAP widget. Table 5.2.3.1-1 lists the setting details of Dynamic Provisioning Volume Capacity. The displayed contents are redrawn every 60 seconds.

Table 5.2.3.1-1 Dynamic Provisioning Volume Capacity setting list

#	Component	Metric	Unit of measurement	Value
1.	Heat Map Object Size	Dynamic Provisioning Volume Virtual Volume Capacity (MB)	Megabytes	N/A
2.	Heat Map Object Color	Dynamic Provisioning Volume Capacity Usage (%)	Percent	N/A
3.	Green Threshold	Heat Map Object Color	Percent	0
4.	Red Threshold	Heat Map Object Color	Percent	95

5.2.3.2. STORAGE CAPACITY RESOURCES

STORAGE CAPACITY RESOURCES is a widget which customized an custom relationship widget. The color of the object changes depending on the soundness of each resource. The displayed contents are redrawn every 60 seconds.

Table 5.2.3.2-1 List of resource kind that STORAGE CAPACITY RESOURCES displays

#	Object Name	Metric	Unit of measurement	Yellow Theshold	Orange Threshold	Red Threshold
1	Virtual Machine	Virtual Machine Guest File System Aggregate of all instances Guest File System(%)	Percent	75	85	90
2	Datastore	Super Metric Hitachi Datastore Usage(%)	Percent	75	85	90
3	Dynamic Provisioning Volume	Capacity Usage(%)	Percent	75	85	90
4	Dynamic Provisioning Pool	Capacity Usage(%)	Percent	75	85	90

5.2.4. Hitachi Capacity dashboard interaction

The following interaction is set to Hitachi Capacity dashboard.

- When the object on CAPACITY HEAT MAP is selected, a VM TO STORAGE LATENCY corresponding to the selected object is highlighted.

5.3. Hitachi TopN dashboard

Hitachi TopN dashboard displays the ranking in the monitoring target with the defined metric value and also displays the time transition for change of the metric value.

An example display of Hitachi TopN dashboard is shown in Figure 5.3-1.

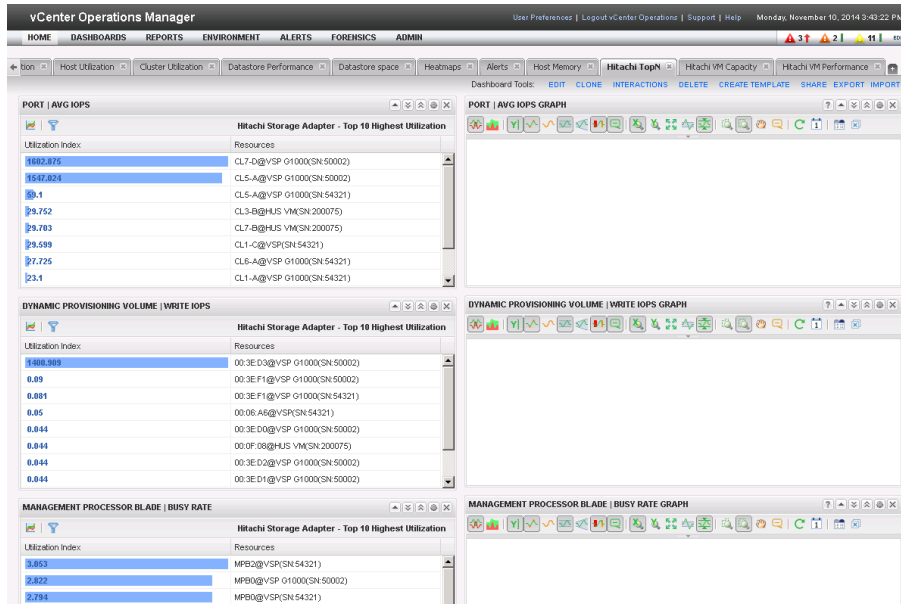


Figure 5.3-1 Example display of Hitachi TopN Dashboard

5.3.1. Hitachi TopN dashboard file

Table 5.3.1-1 lists the dashboard file name to designate at the import of Hitachi TopN dashboard, the dashboard name in **DASHBOARDS** menu and the dashboard title name in HOME.

Table 5.3.1-1 Hitachi TopN dashboard name list

#	Dashboard file name	Label in Dashboard List menu	Dashboard title
1.	HitachiTopN-Dashboard.xml	HITACHI TOPN	Hitachi TopN

5.3.2. Super metrics which apply to Hitachi TopN dashboard

This Chapter describes super metrics for Hitachi TopN dashboard.

Table 5.3.2-1 lists super metrics which apply to Hitachi TopN dashboard. Refer to Section 4.3 for the import procedure of super metrics and refer to Section 5.3.2.1 for the application procedure of super metrics.

Table 5.3.2-1 Super metrics which apply to Hitachi TopN dashboard

#	Resource Kind	Metric	Description
1.	Dynamic Provisioning Pool	Super Metric Hitachi Pool I/O Density	Frequency of read and write operations for virtual volumes mapped to the Dynamic Provisioning pool per capacity of the pool.

5.3.2.1. Application procedure of super metrics to use for Hitachi TopN dashboard

This chapter describes the application method of super metrics to use for Hitachi TopN dashboard. Refer to Section 4.4 for the common application procedure of super metrics and refer to the followings for the specific procedure of Hitachi TopN dashboard.

- 1) Log in to Custom UI (<https://<IPaddress>/vcops-custom/>) of vCenter Operations Manager with administrator's account.
- 2) Select **ENVIRONMENT - ENVIRONMENT OVERVIEW**.
- 3) Click **Resource Kinds** and expand the list of selections.
- 4) Select **Dynamic Provisioning Pool** from the expanded list. Display all the Dynamic Provisioning Pool in the right side.
- 5) Select all Dynamic Provisioning Pool from the list tab on the right panel.
- 6) Click **Edit Resource** on the upper part of the list of Dynamic Provisioning Pool and display the resource management dialog.
- 7) Select **Attribute package** check box. Select **All Attributes to Attribute package** from the drop-down menu, and click **OK**.
- 8) Select a Dynamic Provisioning Pool and click **Edit Resource**.
- 9) Click **Edit** on the right of Attribute package.
- 10) Change Collection Interval (mins.) to **300** and click **OK**.
- 11) Click **OK** button to close Resource Management.

12) Click **ENVIRONMENT - CONFIGURATION - RESOURCE KIND DEFAULTS**.

13) Select **Dynamic Provisioning Pool** from the list. Select **All Attributes to Attribute package** from the drop-down menu, and click **OK**.

5.3.3. Widget which configures Hitachi VM Performance dashboard

This chapter describes the widget which configures Hitachi TopN dashboard and the display of the widget.

Hitachi TopN dashboard is configured with 2 widgets. The widget on the left which customized Top-N widget was configured and the widget on the right which customized the metric graph was configured. The display details of each widget describes in Subsection 5.3.3.1 or later.

5.3.3.1. Widget which customized Top-N widget

A widget which customized TopN widget displays Top 10 Highest Utilization in the past 30 days for metrics of the corresponding resource kind. Table 5.3.3.1-1 lists the widget information of the customized TopN widget.

Table 5.3.3.1-1 Widget which customized Top-N Widget

#	Widget	Resource Kind	Metric
1.	PORT AVG IOPS	Port	Port IO Operation Avg I/O per second
2.	DYNAMIC PROVISIONING VOLUME WRITE IOPS	Dynamic Provisioning Volume	DISK IO Operation Write I/O per second
3.	MANAGEMENT PROCESSOR BLADE BUSY RATE	Management Processor Blade	Processor Processor Busy (%)
4.	DYNAMIC PROVISIONING VOLUME USAGE	Dynamic Provisioning Volume	Capacity Usage (%)
5.	DYNAMIC PROVISIONING POOL USAGE	Dynamic Provisioning Pool	Capacity Usage (%)
6.	DYNAMIC PROVISIONING VOLUME READ IOPS	Dynamic Provisioning Volume	DISK IO Operation Read I/O per second
7.	DYNAMIC PROVISIONING VOLUME SEQUENTIAL TOTAL IOPS	Dynamic Provisioning Volume	DISK IO Operation Sequential Total I/O per second
8.	DYNAMIC PROVISIONING VOLUME TOTAL RESPONSE RATE	Dynamic Provisioning Volume	DISK IO Operation Total Response Rate (us)
9.	DYNAMIC PROVISIONING VOLUME RANDOM TOTAL IOPS	Dynamic Provisioning Volume	DISK IO Operation Random Total I/O per second
10.	DYNAMIC PROVISIONING VOLUME VIRTUAL VOLUME CAPACITY	Dynamic Provisioning Volume	DISK IO Operation Virtual Volume Capacity (MB)
11.	DYNAMIC PROVISIONING POOL HITACHI POOL I/O DENSITY	Dynamic Provisioning Pool	Super Metric Hitachi Pool I/O Density

5.3.3.2. Widget which customized metric graph

The widget which customized the metric graph has been set the interaction to display a graph for the selected metric in the corresponding widget. Table 5.3.3.2-1 lists the widget information of the customized metric graph.

Table 5.3.3.2-1 Widget which customized metric graph

#	Widget	Corresponding Widget
1.	PORT AVG IOPS GRAPH	PORT AVG IOPS
2.	DYNAMIC PROVISIONING VOLUME WRITE IOPS GRAPH	DYNAMIC PROVISIONING VOLUME WRITE IOPS
3.	MANAGEMENT PROCESSOR BLADE BUSY RATE GRAPH	MANAGEMENT PROCESSOR BLADE BUSY RATE
4.	DYNAMIC PROVISIONING VOLUME USAGE GRAPH	DYNAMIC PROVISIONING VOLUME USAGE
5.	DYNAMIC PROVISIONING POOL USAGE GRAPH	DYNAMIC PROVISIONING POOL USAGE
6.	DYNAMIC PROVISIONING VOLUME READ IOPS GRAPH	DYNAMIC PROVISIONING VOLUME READ IOPS
7.	DYNAMIC PROVISIONING VOLUME SEQUENTIAL TOTAL IOPS GRAPH	DYNAMIC PROVISIONING VOLUME SEQUENTIAL TOTAL IOPS
8.	DYNAMIC PROVISIONING VOLUME TOTAL RESPONSE RATE GRAPH	DYNAMIC PROVISIONING VOLUME TOTAL RESPONSE RATE
9.	DYNAMIC PROVISIONING VOLUME RANDOM TOTAL IOPS GRAPH	DYNAMIC PROVISIONING VOLUME RANDOM TOTAL IOPS
10.	DYNAMIC PROVISIONING VOLUME VIRTUAL VOLUME CAPACITY GRAPH	DYNAMIC PROVISIONING VOLUME VIRTUAL VOLUME CAPACITY
11.	DYNAMIC PROVISIONING POOL HITACHI POOL I/O DENSITY GRAPH	DYNAMIC PROVISIONING POOL HITACHI POOL I/O DENSITY

5.3.4. Hitachi TopN dashboard interaction

Refer to Subsection 5.3.3.2 for the interaction of Hitachi TopN dashboard.



6

6. Troubleshooting

- [Troubleshooting During The Importing A Super Metrics](#)
- [Troubleshooting During The importing A Dashboard](#)
- [Troubleshooting During Dashboard Operation](#)
- [Information Collected During Problems Occurrence](#)

This chapter describes the troubleshooting during the operation of Hitachi Storage Adapter for vCenter Operations Manager dashboard when an error occurs.

Also, refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide.

6.1. Troubleshooting During The Import A Super Metrics

Table 6.1-1 lists the troubleshooting during the import of super metrics.

Table 6.1-1 Troubleshooting during the import of super metrics

#	Problem	Solution
1.	Cannot move to the display described in the import procedure.	vCenter Operations Manager provides plural GUI. Make sure whether GUI executing the import procedure is used. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for details.
2.	Cannot import and the message of "Not all key information was found in order to import the dashboard. Please check web.log for more details." is displayed when a super metric file was selected and executed import.	A metric which collects by Hitachi Storage Adapter is used for some super metrics. Accordingly, make sure whether Hitachi Storage Adapter has been installed normally. Also, make sure whether Hitachi Storage Adapter was created and it collects definitely. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for the details.
3.	Cannot import and the message of "The specified file type is not supported." is displayed when a super metric file was selected and executed import.	Cannot use the super metric file having .json extension. Please use the super metric file having .xml extension.

6.2. Troubleshooting During The Importing A Dashboard

Table 6.2-1 lists the troubleshooting during the import of the dashboard.

Table 6.2-1 Troubleshooting during the import of the dashboard

#	Problem	Solution
1.	Cannot move to the display described in the import procedure.	vCenter Operations Manager provides plural GUI. Make sure whether GUI executing the import procedure is used. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for details.
2.	Cannot import and the message of "The specified file type is not supported." is displayed when a dashboard file was selected and executed import.	Can not use the super metric file having .json extension. Please use the super metric file having .xml extension.
3.	Cannot import and the message of "Not all key information was found in order to import the dashboard. Please check web.log for more details." is displayed when a dashboard file is selected and executed import.	<p>A metric which collects by Hitachi Storage Adapter is used for the dashboard. Accordingly, make sure whether Hitachi Storage Adapter has been installed normally. Also, make sure whether Hitachi Storage Adapter was created and it collects definitely.</p> <p>Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for the details</p> <p>The metrics of VM which was created by VMware Tools are used for some dashboards. Make sure whether VMware Tools has been installed in VM which VMware vCenter Operation Manager monitors and is operated. Refer to Subsection 2.2.2 for the details.</p> <p>The super metrics are used for some dashboards. Make sure whether the necessary super metrics for the dashboard were imported normally. Also, make sure whether the super metrics were applied to the corresponding resources. Refer to Chapter 4 for the import procedure and refer to Chapter 5 for the application procedure.</p>

6.3. Troubleshooting During Dashboard Operation

Table 6.3-1 lists the troubleshooting while using the dashboard.

Table 6.3-1 Troubleshooting while using the dashboard

#	Problem	Solution
1.	Do not collect metrics of Virtual Machine.	The metrics which VMware Tools created are collected by VMware adapter. Make sure whether VMware adapter instance collects normally. VMware adapter is a default adapter type of vCenter Operations Manager. Refer to the released documents by VMware for details.
2.	The metrics of the resource that Hitachi Storage Adapter collects are not collected.	Make sure whether Hitachi Storage Adapter has been installed normally. Also, make sure of whether Hitachi Storage Adapter was created and the collection is executed definitely. Refer to Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for the details.
3.	Only some super metrics are not collected.	Make sure whether the super metric has been imported normally. Also, make sure of whether a super metric is applied to a corresponding resource. Refer to Chapter 4 for the import procedure and refer to Chapter 5 for the application procedure.
4.	Some super metric values are not collected according to collection interval.	It is necessary for some super metrics to set the collection interval. Refer to Chapter 5 for the details.

6.4. Information Collected During Problems Occurrence

When a problem cannot be solved by troubleshooting, provide the following to the customer service for this software. Refer to Information Collected During Problems Occurrence in Hitachi Storage Adapter for VMware vCenter Operations Management Suite User's Guide for details.

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