

# Hitachi Virtual Storage Platform G1000 Hitachi SNMP Agent User Guide

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## Glossary

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# Preface

This document describes and provides instructions for using the SNMP Agent on a Hitachi Virtual Storage Platform G1000 (VSP G1000) storage system.

Please read this document carefully to understand how to use this product, and maintain a copy for reference purposes.

- [Intended audience](#)
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## Intended audience

This document is intended for system administrators, Hitachi Data Systems representatives, and authorized service providers who install, configure, and operate the Hitachi Virtual Storage Platform G1000 storage system.

Readers of this document should be familiar with the following:

- Data processing and RAID storage systems and their basic functions.
- The Hitachi Virtual Storage Platform G1000 storage system and the *Hitachi Virtual Storage Platform G1000 Product Guide*.
- The Device Manager - Storage Navigator software for the Hitachi Virtual Storage Platform G1000, the *Hitachi Command Suite User Guide*, and the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Product version

This document revision applies to Hitachi Virtual Storage Platform G1000 microcode 80-02-0x or later.

## Release notes

The Hitachi Virtual Storage Platform G1000 Release Notes are available on the Hitachi Data Systems Portal: <https://portal.hds.com>. 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.

## Document revision level

Revision	Date	Description
MK-92RD8015-00	April 2014	Initial release
MK-92RD8015-01	August 2014	Supersedes and replaces MK-92RD8015-00
MK-92RD8015-02	October 2014	Supersedes and replaces MK-92RD8015-01

## Changes in this revision

- Added the maximum number of communities that can be added (32) and the maximum number of IP addresses that can be added to a community (32) ([Adding a community IP address on page 2-2](#), [Adding a community name on page 2-5](#)).
- Added the maximum number of SNMP Manager IP addresses that can be added (32) ([Adding an SNMP Manager IP address on page 2-7](#)).
- Updated SNMP failure trap reference codes ([Table 4-1 SNMP failure trap reference codes on page 4-2](#)).

## Referenced documents

Hitachi Virtual Storage Platform G1000 documents:

- *Hitachi Command Suite User Guide*, MK-90HC172
- *Command Control Interface User and Reference Guide*, MK-90RD7010
- *Hitachi Virtual Storage Platform G1000 Provisioning Guide for Mainframe Systems*, MK-92RD8013
- *Hitachi Virtual Storage Platform G1000 Provisioning Guide for Open Systems*, MK-92RD8014
- *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*, MK-92RD8016

## Document conventions



This document uses the following terminology conventions:



Convention	Description
Hitachi Virtual Storage Platform G1000, VSP G1000	Unless otherwise noted, these terms refer to all models of the Hitachi Virtual Storage Platform G1000 storage system.

This document uses the following typographic conventions.

Convention	Description
<b>Regular text bold</b>	In text: keyboard key, parameter name, property name, hardware label, hardware button, hardware switch In a procedure: user interface item
<i>Italic</i>	Variable, emphasis, reference to document title, called-out term
Screen text	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > (angle brackets)	Variable (used when italic is not enough to identify variable)
[ ] (square brackets)	Optional value
{ } (braces)	Required or expected value
(vertical bar)	Choice between two or more options or arguments

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

Icon	Meaning	Description
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Note	Calls attention to important and/or additional information.

Icon	Meaning	Description
	Caution	Warns the user of adverse conditions and/or consequences, such as disruptive tasks.
	WARNING	Warns the user of severe conditions and/or consequences, such as destructive tasks.

## Convention for storage capacity values

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

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

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

Logical capacity unit	Value
1 block	512 bytes
1 cylinder (cyl)	Open-systems: <ul style="list-style-type: none"> <li>• OPEN-V: 960 KB</li> <li>• Other than OPEN-V: 720 KB</li> </ul> Mainframe: 870 KB
1 kilobyte (KB)	1,024 ( $2^{10}$ ) bytes
1 megabyte (MB)	1,024 KB or $1,024^2$ bytes
1 gigabyte (GB)	1,024 MB or $1,024^3$ bytes
1 terabyte (TB)	1,024 GB or $1,024^4$ bytes
1 petabyte (PB)	1,024 TB or $1,024^5$ bytes
1 exabyte (EB)	1,024 PB or $1,024^6$ bytes

## Accessing product documentation

The Hitachi Virtual Storage Platform G1000 user documentation is available on the Hitachi Data Systems Portal: <https://portal.hds.com>. Please check this site for the most current documentation, including important updates that may have been made after the release of the product.



## Getting help

The Hitachi 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 Portal for contact information: <https://portal.hds.com>

## Comments

Please send us your comments on this document: [doc.comments@hds.com](mailto:doc.comments@hds.com). Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation.

**Thank you!**



# Introduction

This topic provides an overview of the SNMP implementation for monitoring the Hitachi Virtual Storage Platform G1000, including the agent and management functions.

- [SNMP Manager overview](#)
- [SNMP Agent configuration](#)
- [Component status information from SNMP Manager](#)

## SNMP Manager overview

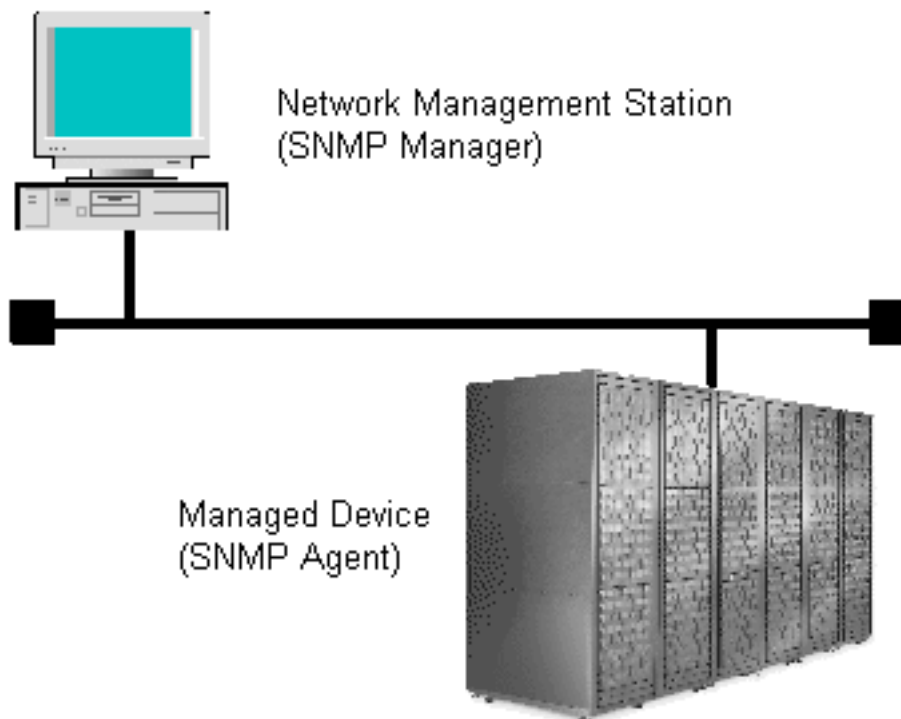
SNMP Manager is installed in the network management station. It collects and manages information from SNMP agents installed in the managed devices on the network. The SNMP Manager graphically displays information collected from two or more SNMP agents, accumulates the information in the database, and analyzes problems discovered while accumulating this information.



**Note:** Hitachi Virtual Storage Platform G1000 supports SNMPv1.

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## SNMP Manager and SNMP Agent interaction



**Figure 1-1 Example SNMP environment**

Simple Network Management Protocol (SNMP) is an industry-standard protocol for managing and monitoring network devices, including disk devices, routers, and hubs. SNMP uses Simple Gateway Management Protocol (SGMP) to manage TCP/IP gateways.

An SNMP manager monitors the devices, which are referred to as managed nodes. Typically, an SNMP Manager polls the SNMP agents on a periodic basis. The manager receives the reports from the agents and determines whether the devices are operating normally. If an abnormal event occurs, an SNMP Agent can report the condition without a request from the manager, by using a trap message.

The network management station can collect the status (information) of all managed nodes. This information can be examined to determine if an abnormal event has occurred.

When an SNMP manager polls an agent, the following dialogue takes place:

- An SNMP Manager sends a request packet to an SNMP Agent, which requests data regarding the status of the managed node.
- The SNMP Agent sends a response packet back to the SNMP Manager.
- SNMP uses the TCP/IP User Datagram Protocol (UDP). If the SNMP Agent does not respond within a specified time period, the SNMP Manager re-sends the request packet. That time period is set by the system administrator, taking into account the network traffic and operation policy.
- If an SNMP Agent again does not respond to the resent packet, the SNMP Manager assumes that an error has occurred. Depending on the times set for polling and response, this can take several seconds.

If an SNMP Agent detects an abnormal event, it sends a trap to the SNMP Manager. However, if a trap is dropped in transmission, the SNMP Manager does not know that it was sent. For this reason, you should use both polling and traps to determine whether an abnormal event has occurred.

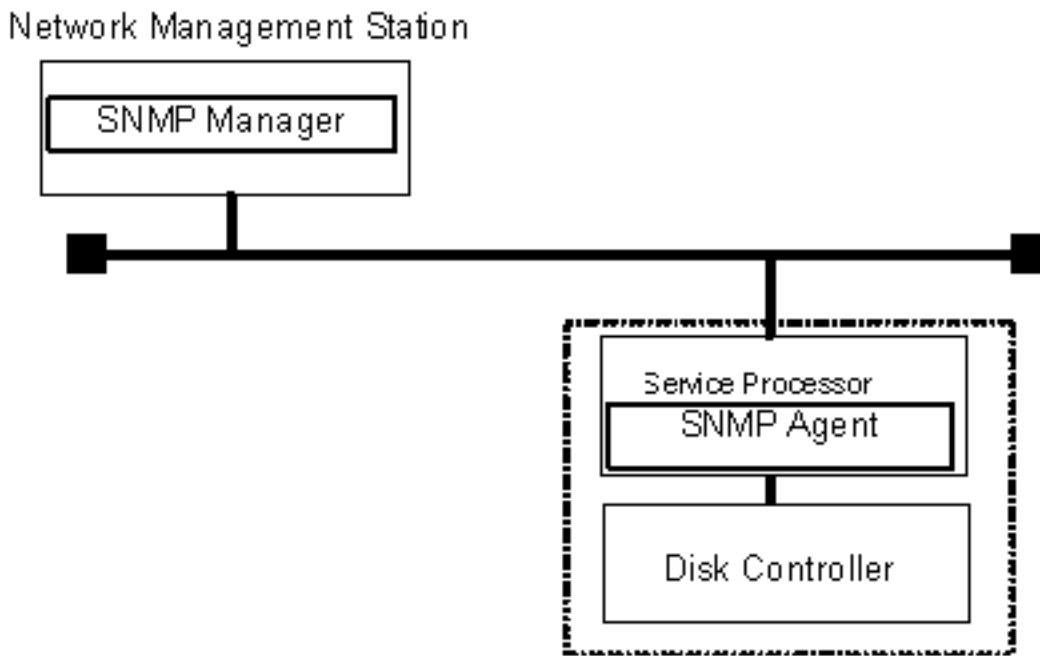
## Management Information Base overview

The standardized configuration and database of network management information is called a Management Information Base (MIB). A standard MIB is common to all SNMP interfaces. An extension MIB is defined by the particular managed device or protocol.

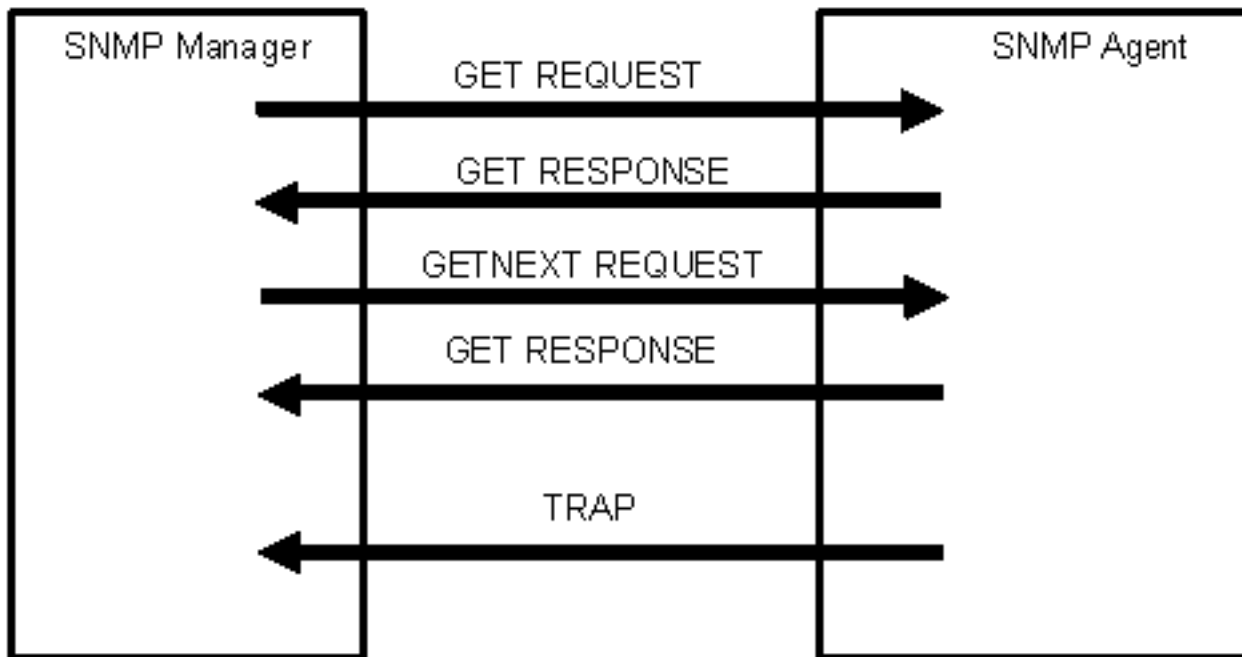
A MIB is a collection of standardized configuration and network management information that is contained in each device on the network. Each MIB contains a set of parameters called managed objects. Each managed object consists of a parameter name, one or more parameter(s), and a group of operations that can be executed with the object. The MIB defines the type of information that can be obtained from a managed device, and the device settings that can be controlled from a management system.

## SNMP Agent configuration

The Hitachi Virtual Storage Platform G1000 SNMP Agent is installed on the SVP, which is the computer within the storage array that manages the storage system. The Hitachi Virtual Storage Platform G1000 has an exclusive LAN for communications between a storage system and the SVP, and a separate LAN for SNMP. The configuration of each Network Management Station is determined by the type of SNMP Manager. [Figure 1-2 SNMP environment architecture on page 1-4](#) illustrates the SNMP environment. [Figure 1-3 Example of SNMP operations on page 1-4](#) shows an example of SNMP operations using an SNMP Manager.



**Figure 1-2 SNMP environment architecture**



**Figure 1-3 Example of SNMP operations**

## SNMP Agent overview

The SNMP Agent is mounted on the managed device (hard disk, etc.) in the network. It collects error information, the usage condition, and other information about the device, and forwards the information to the SNMP Manager. The SNMP Agent reports disk storage system failures to the manager using the functions described in the following paragraphs.

## SNMP traps

An SNMP Agent uses the SNMP trap function to report a storage system error to the SNMP Manager. If an error occurs, an SNMP Agent issues an SNMP trap that reports the failure to an SNMP Manager. When issuing an SNMP trap, an SNMP Agent also reports a product number, nickname, reference code, and an identifier of the component.

The following table lists the events that trigger an SNMP Agent trap.

**Table 1-1 SNMP Agent events**

Events	Description
Acute failure detected.	All operations in a storage system stopped.
Serious failure detected.	Operation in a component where a failure occurred stopped.
Moderate failure detected.	Partial failure.
Service failure detected.	Minor failure.

An SNMP Agent logs the most recent 10,000 traps, so you can see the trap history of a particular device.

## SNMP Agent operations

The following table lists the types of SNMP Agent operations.

**Table 1-2 Types of SNMP Agent operations**

Operation	Description
GET	Obtains a specific MIB object value. GET REQUEST is the request from an SNMP Manager, and GET RESPONSE is the agent's response to that request.
GETNEXT	Continuously finds a MIB object. GETNEXT REQUEST is the request from an SNMP Manager, and GETNEXT RESPONSE is the agent's response to that request.
TRAP	Reports an event (failure) to an SNMP Manager. TRAP occurs without a request from the SNMP Manager.

## Error report

The following table lists the errors to be reported for the REQUEST operations.

**Table 1-3 REQUEST operation errors**

Error	Description	Corrective action
noError (0)	Normal	N/A

Error	Description	Corrective action
noSuchName (2)	<ul style="list-style-type: none"> <li>There are no MIB objects that are required. (Not supported.)</li> <li>The GETNEXT REQUEST command that is specified for the following object identifier of the last supported MIB object is received.</li> </ul>	Verify that the name of the requested object is correct.
readOnly (4)	SET REQUEST is received.	SET operation is not supported.
genErr (5)	Error occurred for other reasons.	Retry the operation.

## Component status information from SNMP Manager

You can obtain the status information of certain storage system components from the SNMP Manager. The following table lists the components for which the status can be obtained.

**Table 1-4 Storage system components**

Area	Component name
Storage System	Processor(s)
	BUS
	Cache
	Shared memory
	Power supplies
	Batteries
	Fans
	Others
Disk Unit	Power supplies
	Fans
	Environments
	Drives

The following table lists the status of storage system components, as well as the trap report functions.

**Table 1-5 Storage system component status**

Status	Description
Normal	Normal operation.
Acute failure detected	All operations in a storage system stopped.
Serious failure detected	Operation in a component where a failure occurred stopped.
Moderate failure detected	Partial failure.
Service failure detected	Minor failure.



## Using SNMP

This topic describes how to use Device Manager - Storage Navigator to manage SNMP Manager IP addresses, community names, and community IP addresses. It also explains how to test SNMP trap reports.

- [Editing alert settings](#)
- [Managing community IP addresses](#)
- [Managing community](#)
- [Managing SNMP IP addresses](#)
- [Testing the SNMP trap report](#)

## Editing alert settings

This topic describes how to set the Edit Alert Settings.



**Caution:** Be sure to document your storage system name before this process, because the settings will be cleared when the SVP is replaced.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

  - a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. For **Notification Alert**, select one of the following:
  - o **All** (Sends alerts to all hosts.)
  - o **Host Report** (Sends alerts only to hosts that have a SIM report setting defined. Alert destinations are common to Syslog, SNMP, and Email.)
3. Select the **SNMP** tab.
4. For **Extension SNMP**, select **Enable** to enable that option.
5. In **SNMP Trap Settings**, set the SNMP trap or community.
6. In **SNMP Trap Settings**, set the SNMP manager.
7. In **System Group Information**, enter the Storage System Name, Contact, and Location.
8. Click **Finish**.
9. Enter a name for the task in the **Confirm** window, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Managing community IP addresses

### Adding a community IP address

This topic describes the procedure to add a community IP address:

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:

- a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
- b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
- b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

2. Select the **SNMP** tab.
3. In **SNMP Trap Settings**, click **SNMP Trap > Add**.
4. In the **Add SNMP Trap** window, select **IPv4** or **IPv6** for the version of the IP address.




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**Note:** Any IP address that has all values set to zero (0) cannot be specified for IPv4 and IPv6. The IPv6 address is specified by entering eight hexadecimal numbers that are separated by colons (:) using a maximum of 4 digits from zero (0) to FFFF inclusive. The default form of the IPv6 address can be specified.

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5. Enter the IP address, and then enter a community name or select from the pull-down menu of existing community names.  
A maximum of 32 communities can be added.  
A maximum of 32 IP addresses can be added to one community.
6. Click **OK**.
7. Click **Finish**.
8. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Changing a community IP address

This topic describes the procedure to change a community IP address.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
- b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

2. Select the **SNMP** tab.
3. In **SNMP Trap Settings**, select one or more specific IP addresses, and click **SNMP Trap > Change**.
4. In the **Change SNMP Trap** window, select **IPv4** or **IPv6** for the version of the IP address.



**Note:** Any IP address that has all values set to zero (0) cannot be specified for IPv4 and IPv6. The IPv6 address is specified by entering eight hexadecimal numbers that are separated by colons (:) using a maximum of 4 digits from zero (0) to FFFF inclusive. The default form of the IPv6 address can be specified.

5. Enter the IP address, and then enter a community name or select from the pull-down menu of existing community names.
6. Click **OK**. The IP address you entered will be added to the IP addresses listed under **SNMP Trap Settings**.
7. Click **Finish**.
8. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Deleting a Community IP address

This topic describes the procedure to delete a community IP address.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. In **SNMP Trap Settings**, select one or more specific Community and IP Address combinations, and then click **SNMP Trap > Delete**.
  4. Click **Finish**.
  5. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

# Managing community

## Adding a community name

This topic describes how to add a community name.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. In **SNMP Trap Settings**, click **Community > Add**.
  4. In the **Add Community** window, enter the desired community name in the **Community** field.

A maximum of 32 communities can be added.

You can enter up to 180 alphanumeric characters. The following special characters are not allowed: ", \, ;, :, ,, \*, ?, <, >, |, /, ^, &, and %.

5. Click **OK**.
6. To add one or more IP addresses to the new community, see [Adding a community IP address on page 2-2](#).
7. Click **Finish**.
8. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Deleting a community name

This topic describes how to delete a community name.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

- In Device Manager - Storage Navigator (mainframe-only environment):
- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. In **SNMP Trap Settings**, click **Community > Delete**.
  4. Click **Finish**.
  5. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Changing a community name

This topic describes how to change a community name.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
- b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

2. Select the **SNMP** tab.
3. In **SNMP Trap Settings**, click **Community > Change**.
4. In the **Change Community** window, enter the new community name in the **Community** field. You can use up to 180 alphanumeric characters, except for ", \, ;, :, ,, \*, ?, <, >, |, /, ^, &, and %.
5. Click **OK**.
6. Click **Finish**.
7. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

# Managing SNMP IP addresses

## Adding an SNMP Manager IP address

This topic describes how to add the SNMP Manager IP address.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. In **SNMP Managers**, click **Add**.
  4. In the **Add SNMP Manager** window, select **IPv4** or **IPv6** for the IP address.
  5. Enter the desired IP address in the **IP Address** field.

A maximum of 32 SNMP Manager IP addresses can be added.



**Note:** Any IP address that has all values set to zero (0) cannot be specified for IPv4 and IPv6. The IPv6 address is specified by entering eight hexadecimal numbers that are separated by colons (:) using a maximum of 4 digits from zero (0) to FFFF inclusive. The default form of the IPv6 address can be specified.

---

6. Click **OK**, and the IP address that you entered is added to the **IP Address** list in the **SNMP Manager** window.
7. Click **Finish**.
8. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Deleting an SNMP Manager IP address

This topic describes how to delete an SNMP Manager IP address.

**Prerequisite:** You must have the Storage Administrator (the Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:

- a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
- b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. In **SNMP Managers**, select one or more unwanted IP addresses from the **IP Address** list, and then click **Delete**.
  4. Click **Finish**.
  5. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

## Testing the SNMP trap report

This topic describes the procedure to test the SNMP trap report.

**Prerequisite:** You must have Storage Administrator (Initial Configuration) role to perform this task.

1. In Hitachi Command Suite:
  - a. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.

In Device Manager - Storage Navigator (mainframe-only environment):

- a. Display the Device Manager - Storage Navigator main window.
  - b. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. Select the **SNMP** tab.
  3. Click **Send Test SNMP Trap**.

Reports the test SNMP trap to the community registered in the storage system. Reports the events registered in the storage system instead of the events that are set on the **SNMP** tab. If you want to test the events set on the **SNMP** tab, click Finish and apply to the storage system, and report the test SNMP trap.
  4. Verify whether the SNMP trap report (reference code 7FFFFFF) is received by the SNMP manager registered in the community.



For more information, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.



## SNMP supported MIBs

This topic describes the standard and extension MIB specifications, and trap configuration.

- [Trap configuration](#)
- [Supported traps](#)
- [Standard MIB specifications](#)
- [Extension MIB specifications](#)
- [Extension MIB configuration](#)

# Trap configuration

## Failure report trap

An extension trap protocol data unit (PDU) includes the product number of the device that experienced the failure, the device nickname, and a failure reference code. If you obtain the information with **GetRequest** command, access the MIB by using the product number of the device as an index. The following table shows the failure report trap.

**Table 3-1 Failure report trap**

Name	Object identifier	Type	Description
eventTrapSerialNumber	.1.3.6.1.4.1.116.5.11.4.2.1	INTEGER	The product number of the device that experienced the failure.
eventTrapNickname	.1.3.6.1.4.1.116.5.11.4.2.2	DisplayString	The device nickname.
eventTrapREFCODE	.1.3.6.1.4.1.116.5.11.4.2.3	DisplayString	The failure reference
eventTrapPartsID	.1.3.6.1.4.1.116.5.11.4.2.4	OBJECT IDENTIFIER	The area where the failure occurred.*
eventTrapDate	.1.3.6.1.4.1.116.5.11.4.2.5	DisplayString	Failure occurrence date.
eventTrapTime	.1.3.6.1.4.1.116.5.11.4.2.6	DisplayString	Failure occurrence time.
eventTrapDescription	.1.3.6.1.4.1.116.5.11.4.2.7	DisplayString	Detailed information of a failure.

\*The object identifier for a failure in a storage system processor would be .1.3.6.1.4.1.116.5.11.4.1.1.6.1.2.

## Supported traps

The following table lists the supported extension trap types.

**Table 3-2 Extension trap types**

Specific Trap Code	Trap	Description
1	RaidEventUserAcute	All operations in a storage system stopped.
2	RaidEventUserSerious	Operation in a component where a failure occurred stopped.
3	RaidEventUserModerate	Partial failure.
4	RaidEventUserService	Minor failure.

# Standard MIB specifications

## Supported MIBs

The following table lists the supported MIBs. If you send a GET request for an object (MIB) that is not supported, you will receive *NoSuchName* as a GET RESPONSE.

**Table 3-3 Supported MIBs**

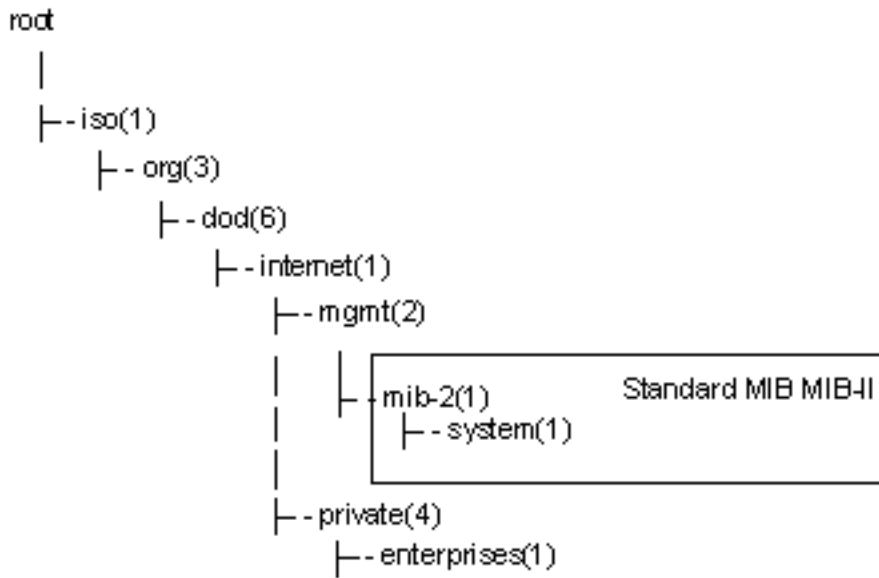
MIB		Supported?
Standard MIB: MIB-II	system group	Yes
	interface group	No
	at group	No
	ip group	No
	icmp group	No
	tcp group	No
	udp group	No
	egp group	No
snmp group	No	
Extension MIB		Yes

## MIB access mode

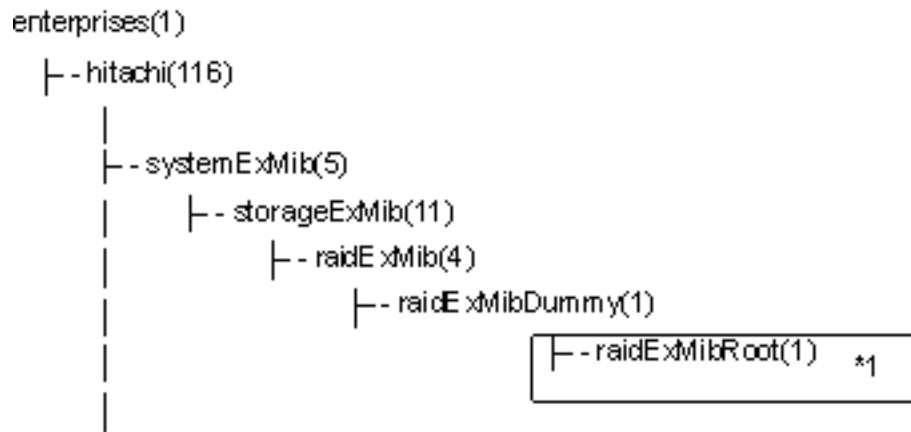
The access mode for MIB in all communities is read only. If you send a GET request for a SET operation, you will receive *NoSuchName* as a GET RESPONSE.

## Object identifier system

An example object system supported by an SNMP Agent is shown the following figures.

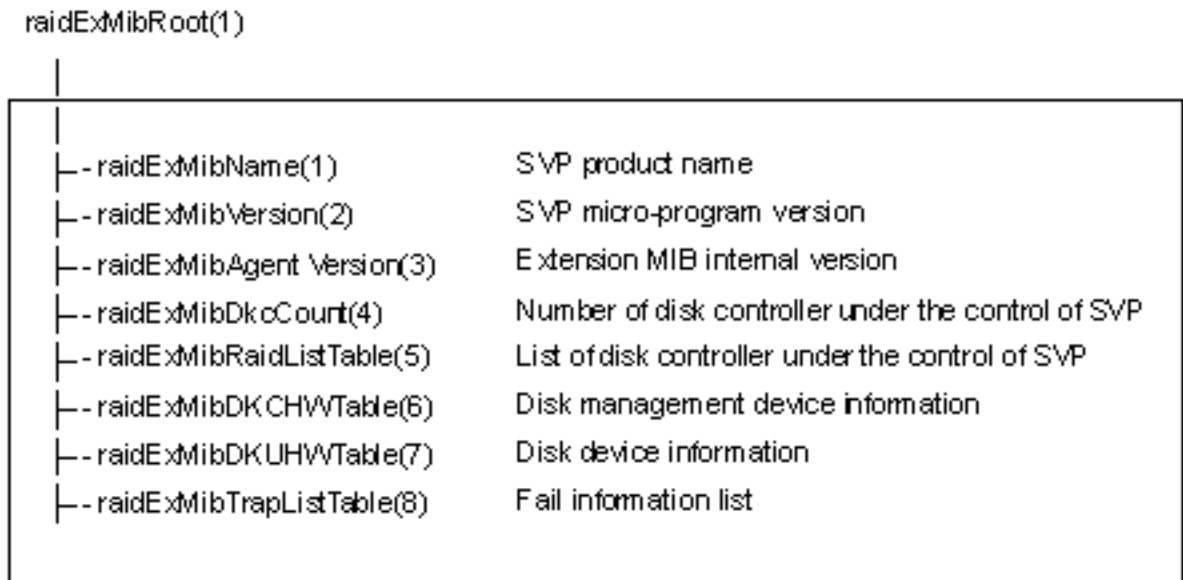


**Figure 3-1 Object system (1)**



**Figure 3-2 Object system (2)**

\*1: The VSP G1000 SNMP extended MIB



**Figure 3-3 Object system (3)**

## MIB mounting specifications

The supported MIB mounting specifications are as follows:

- mgmt OBJECT IDENTIFIER ::= { iso(1) org(3) dod(6) internet(1) 2 }
- mib-2 OBJECT IDENTIFIER ::= { mgmt 1 }

An SNMP Agent mounts only system groups in mib-2, as shown in the following.

**Table 3-4 System groups**

Name	Description	Mounted value
sysObjectID {system 2}	This is the product identification number.	Fixed value. See <a href="#">Object identifier system on page 3-3</a> . 1.3.6.1.4.1.116.5.11.4.1.1
sysUpTime {system 3}	An accumulated time from an SNMP agent.	Unit: 100 ms
sysContact {system 4}	A manager who manages an agent or a contact address.	Maximum 180 characters in an ASCII characters string. Input by a user from an SNMP setting window.*
sysName {system 5}	The name of an agent manager	Maximum 180 characters in an ASCII characters string. Input by a user from an SNMP setting window.*
sysLocation {system 6}	An agent setup location.	Maximum 180 characters in an ASCII characters string. Input by a user from an SNMP setting window.*
sysService {system 7}	Value indicating a service.	Fixed value 76 (decimal)
*The following symbols cannot be used: \ , / : ; * ? " < >   & % ^		

## Extension MIB specifications

The following shows the Extension MIB configuration.

```
raidExMibRoot(1)
|--raidExMibName(1)          SVP product name
|--raidExMibVersion(2)      SVP Micro-program version
|--raidExMibAgentVersion(3) Extension MIB internal version
|--raidExMibDkcCount(4)    Number of DKC under the control of SVP
|--raidExMibRaidListTable(5)List of DKC under the control of SVP
|--raidExMibDKCHWTable(6)  Disk control device information
|--raidExMibDKUHWTable(7)  Disk device information
|--raidExMibTrapListTable(8)Error information list
```

### raidExMibName

**raidExMibName** indicates the SVP product name.

```
raidExMibName          OBJECT-TYPE
    SYNTAX              DisplayString
    ACCESS              read-only
    STATUS              mandatory
    DESCRIPTION        "SVP product name."
    ::= { raidExMibRoot 1 }
```

### raidExMibVersion

**raidExMibVersion** indicates the micro-program version.

```
raidExMibVersion      OBJECT-TYPE
    SYNTAX              DisplayString
    ACCESS              read-only
    STATUS              mandatory
    DESCRIPTION        "SVP micro-program version."
    ::= { raidExMibRoot 2 }
```

### raidExMibAgentVersion

**raidExMibAgentVersion** indicates the internal version of the extension MIB.

```
raidExMibAgentVersion OBJECT-TYPE
    SYNTAX              DisplayString
    ACCESS              read-only
    STATUS              mandatory
    DESCRIPTION        "Extension agent version."
    ::= { raidExMibRoot 3 }
```

### raidExMibDkcCount

**raidExMibDkcCount** suggests the number of a storage system under the control of the SVP.



```

raidExMibDkcCount      OBJECT TYPE
SYNTAX                 INTEGER
ACCESS                 read-only
STATUS                 mandatory
DESCRIPTION            "Number of DKC which is registered
                        on the SVP"

 ::= { raidExMibRoot 4 }

```

## raidExMibRaidListTable

**raidExMibRaidListTable** indicates the storage system under the control of the SVP.

```

raidExMibRaidListTable OBJECT TYPE
SYNTAX                 SEQUENCE OF raidExMibRaidListEntry
ACCESS                 not-accessible
STATUS                 mandatory
DESCRIPTION            "List of DKC which is registered
                        on the SVP."

 ::= { raidExMibRoot 5 }

raidExMibRaidListEntry OBJECT TYPE
SYNTAX                 RaidExMibRaidListEntry
ACCESS                 not-accessible
STATUS                 mandatory
DESCRIPTION            "Entry of DKC list."
INDEX                  { raidlistSerialNumber }

 ::= { raidExMibRaidListTable 1 }

```

The following table lists the information displayed for each storage system.

**Table 3-5 Storage system information**

Name	Type	Description	Mounted value	Attribute
raidlistSerialNumber :: =RaidExMibRaidListEntry (1)	INTEGER	Storage system product number (index).	1-99,999	read-only
raidlistMibNickName :: =RaidExMibRaidListEntry (2)	DisplayString	Storage system nickname.	(Max. 18 characters)	read-only
raidlistDKCMainVersion :: =RaidExMibRaidListEntry (3)	DisplayString	Microcode version.	Max. 10 characters	read-only
raidlistDKCProductName :: =RaidExMibRaidListEntry (4)	DisplayString	Storage system product type.	7 characters*	read-only
*RAID800 will be used as storage system product type raidlistDKCProductName.				

## raidExMibDKCHWTable

**raidExMibDKCHWTable** indicates the status of the storage system components.

```

raidExMibDKCHWTable OBJECT TYPE
SYNTAX SEQUENCE OF RaidExMibDKCHWEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION "Error information of the DKC."
 ::= { raidExMibRoot 6 }

raidExMibDKCHWEntry OBJECT TYPE
SYNTAX RaidExMibDKCHWEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION "Entry of DKC information."
INDEX { dkcRaidListIndexSerialNumber }
 ::= { raidExMibDKCHWTable 1 }

```

**Table 3-6 Storage system component information**

Name	Type	Description	MIB value	Attribute
dkcRaidListIndexSerialNumber ::=raidExMibDKCHWEntry (1)	INTEGER	Storage system product number (index).	1-99,999	read-only
dkcHWProcessor ::=raidExMibDKCHWEntry (2)	INTEGER	Status of processor.	See Note	read-only
dkcHWCSW ::=raidExMibDKCHWEntry (3)	INTEGER	Status of internal star.	See Note	read-only
dkcHWCACHE ::=raidExMibDKCHWEntry (4)	INTEGER	Status of cache.	See Note	read-only
dkcHWSM ::=raidExMibDKCHWEntry (5)	INTEGER	Status of shared memory.	See Note	read-only
dkcHWPS ::=raidExMibDKCHWEntry (6)	INTEGER	Status of power supply.	See Note	read-only
dkcHWBattery ::=raidExMibDKCHWEntry (7)	INTEGER	Status of battery.	See Note	read-only
dkcHWFan ::=raidExMibDKCHWEntry (8)	INTEGER	Status of fan.	See Note	read-only
dkcHWEEnvironment ::=raidExMibDKCHWEntry (9)	INTEGER	Information of an operational environment.	See Note	read-only

Name	Type	Description	MIB value	Attribute
<b>Note:</b>				
The status of each component is a single digit which shows the following:				
1: Normal.				
2: Acute failure detected.				
3: Serious failure detected.				
4: Moderate failure detected.				
5: Service failure detected.				

## raidExMibDKUHWTable

**raidExMibDKUHWTable** indicates the status of the storage system components.

```

raidExMibDKUHWTable OBJECT TYPE
SYNTAX                SEQUENCE OF RaidExMibDKUHWEntry
ACCESS                not-accessible
STATUS                mandatory
DESCRIPTION           "Error information of the DKU."
 ::= { raidExMibRoot 7 }

raidExMibDKUHWEntry  OBJECT TYPE
SYNTAX                RaidExMibDKUHWEntry
ACCESS                not-accessible
STATUS                mandatory
DESCRIPTION           "Entry of DKU information."
INDEX                 { dkuRaidListIndexSerialNumber }
 ::= { raidExMibDKUHWTable 1 }

```

**Table 3-7 Disk device components information**

Name	Type	Description	MIB value	Attribute
dkuRaidListIndexSerialNumber ::=raidExMibDKUHWEntry (1)	INTEGER	Storage system product number (index).	1-99,999	read-only
dkuHWPS ::=raidExMibDKUHWEntry (2)	INTEGER	Status of power supply.	See Note	read-only
dkuHWFan ::=raidExMibDKUHWEntry (3)	INTEGER	Status of fan.	See Note	read-only
dkuHWEEnvironment ::=raidExMibDKUHWEntry (4)	INTEGER	Status of environment monitor.	See Note	read-only
dkuHWDDrive ::=raidExMibDKUHWEntry (5)	INTEGER	Status of drive.	See Note	read-only

Name	Type	Description	MIB value	Attribute
<b>Note:</b>				
The status of each component is a single digit which shows the following:				
1: Normal.				
2: Acute failure detected.				
3: Serious failure detected.				
4: Moderate failure detected.				
5: Service failure detected.				

## raidExMibTrapListTable

**raidExMibTrapListTable** shows the history of the failure traps.

```

raidExMibTrapListTable OBJECT TYPE
SYNTAX SEQUENCE OF RaidExMibTrapListEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION "Trap list table."
 ::= { raidExMibRoot 8 }
raidExMibTrapListEntry OBJECT TYPE
SYNTAX RaidExMibTrapListEntry
ACCESS non-accessible
STATUS mandatory
DESCRIPTION "Trap list table index."
INDEX { eventListIndexSerialNumber ,
        eventListIndexRecordNo }
 ::= { raidExMibTrapListTable 1 }

```

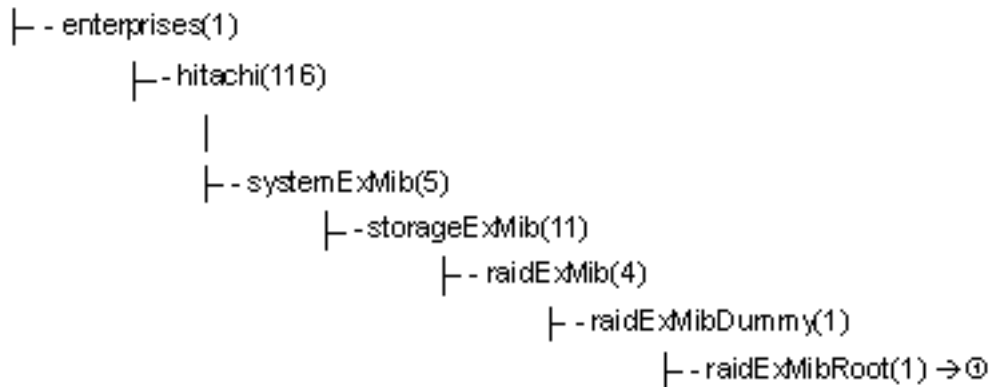
**Table 3-8 Failure information**

Name	Type	Description	MIB value	Attribute
eventListIndexSerialNumber ::=raidExMibTrapListEntry (1)	INTEGER	Storage system product number (index).	1-99,999	read-only
eventListNickname ::=raidExMibTrapListEntry (2)	DisplayString	Storage system nickname.	18 characters maximum	read-only
eventListIndexRecordNo ::=raidExMibTrapListEntry (3)	Counter	Number of records.	1-256	read-only
eventListREFCODE ::=raidExMibTrapListEntry (4)	DisplayString	Reference code (index).	6 characters	read-only
eventListData ::=raidExMibTrapListEntry (5)	DisplayString	Date when the failure occurred.	yyyy/mm/dd (10 characters)	read-only

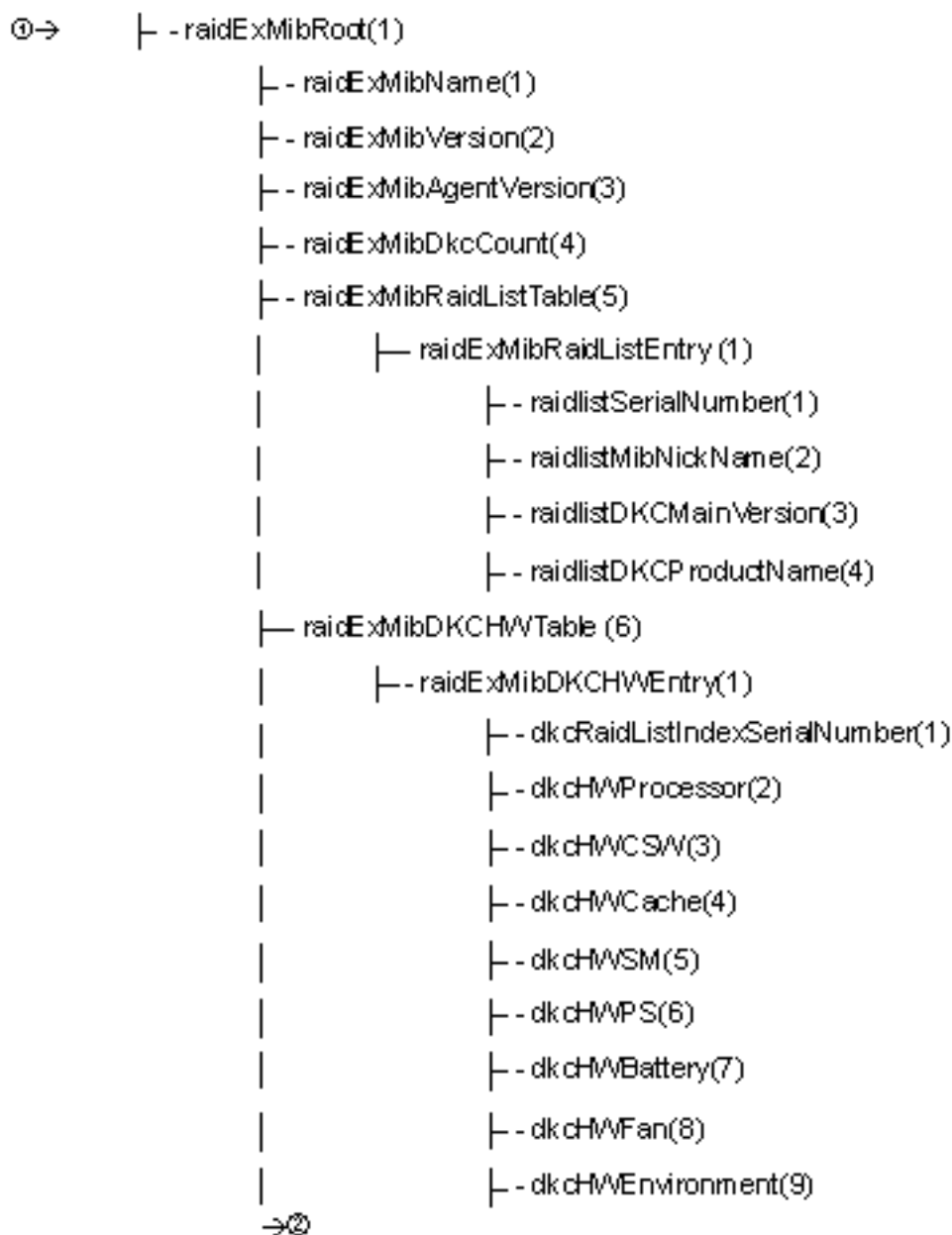
Name	Type	Description	MIB value	Attribute
eventListTime ::=raidExMibTrapListEntry (6)	DisplayString	Time when the failure occurred.	hh:mm:ss (8 characters)	read-only
eventListDescription ::=raidExMibTrapListEntry (7)	DisplayString	Detailed information about the failure.	256 characters maximum	read-only

## Extension MIB configuration

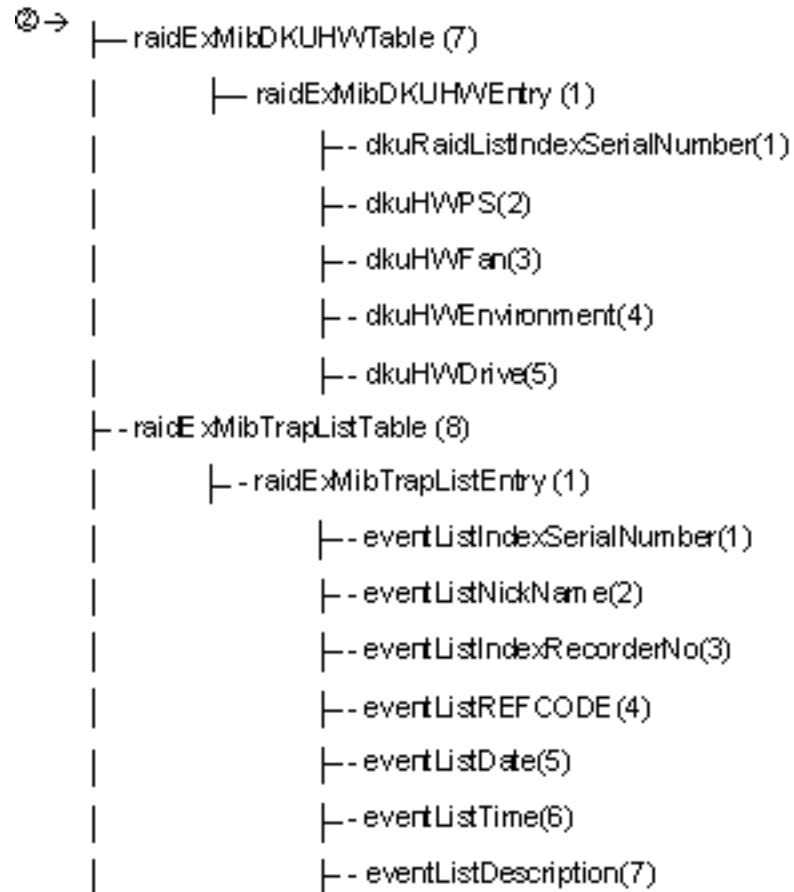
Following figures show extension MIB configurations (1) and (2).



**Figure 3-4 Extension MIB configuration (1)**



**Figure 3-5 Extension MIB configuration (2)**



**Figure 3-6 Extension MIB configuration (3)**





## SNMP failure trap reference

This topic shows the trap reference code, description, and alert level.

- [SNMP failure trap reference codes](#)

## SNMP failure trap reference codes

The following lists and describes the SNMP failure trap reference codes.

For details on alert levels, see the *Hitachi Command Suite User Guide* or the *Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide*.

**Table 4-1 SNMP failure trap reference codes**

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
18	00	00	AuditLog lost	DKC environment	MODERATE
18	01	00	AuditLog Access Impossible	Drive	MODERATE
21	20	xx	Channel port blocking	Processor	MODERATE
21	80	xx	Logical path(s) on the remote copy connections was logically blocked (Due to an error condition)	Processor	MODERATE
21	81	xx	RIO PATH AUTOMATICALLY RECOVERED	Processor	SERVICE
21	90	xx	AL_PA VALUE CONFLICT	Processor	SERVICE
21	93	xx	LINK FAILURE	Processor	SERIOUS
21	94	xx	LINK FAILURE2	Processor	SERIOUS
21	A3	xx	HTP blocking	Processor	MODERATE
21	A4	xx	Fiber Cable Failure	Processor	SERVICE
21	A6	xx	Optical signal output failure	Processor	MODERATE
21	A7	xx	LED status change failure	Processor	MODERATE
21	A8	xx	SFP wrong type	Processor	MODERATE
21	A9	xx	IP address conflict detection	Processor	SERVICE
21	AA	xx	SFP TxFault	Processor	MODERATE
21	Bx	xx	HTP hard error	Processor	MODERATE
21	D0	xx	External storage system connection path blocking	Processor	MODERATE
21	D1	xx	External storage system connection path restore	Processor	SERVICE
21	D2	xx	Threshold over by external storage system connection path response time-out	Processor	SERVICE
21	D4	xx	Blocking the Data Migration path	Processor	MODERATE
21	D5	xx	Data Migration Path Recovery	Processor	SERVICE
30	70	xx	CHK1A THRESHOLD OVER	Processor	SERVICE
30	71	xx	CHK1B THRESHOLD OVER	Processor	SERVICE
30	72	xx	CHK3 THRESHOLD OVER	Processor	SERVICE
30	73	xx	PROCESSOR BLOCKING	Processor	MODERATE
30	75	xx	FM ERROR	Processor	MODERATE
30	76	xx	Incorrect SUM value of FM	Processor	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
30	77	xx	PROCESSOR MEMORY TEMPORARY ERROR	Processor	SERVICE
30	80	xx	WCHK1 dump	Processor	ACUTE
30	A1	00	DKC Blockade	Processor	ACUTE
32	xx	xx	CHA/DKA - CM Logical path blockade	Cache	MODERATE
33	xx	xx	CHA/DKA - MP Logical path blockade	Cache	MODERATE
34	xx	xx	MP - CM Logical path blockade	Cache	MODERATE
35	xx	xx	MP - MP Logical path blockade	Cache	MODERATE
38	8F	00	P/S OFF IMPOSSIBLE	PS(DKC)	MODERATE
38	9F	00	P/S OFF IMPOSSIBLE(DEVICE RESERVED)	PS(DKC)	MODERATE
38	C1	x0	MPB temperature abnormality	Processor	MODERATE
39	90	xx	Undefined Package is mounted	Processor	MODERATE
39	91	xx	V-R OR SERIAL NUMBER IS INCONSISTENT	Processor	MODERATE
39	92	x0	MPB temperature abnormality warning	Processor	MODERATE
39	93	xx	REPLACE FAILED	Processor	MODERATE
39	9D	x0	MP injustice DC voltage control	Processor	MODERATE
39	9E	x0	INJUSTICE CE MODE	Processor	MODERATE
39	9F	x0	Injustice CEDT0	Processor	MODERATE
39	B0	xx	SMA SLAVE ERROR	Processor	SERVICE
3A	0x	xx	LDEV Blockade (Effect of microcode error)	Processor	MODERATE
3C	95	00	CHA/DKA Type disagreement	Processor	MODERATE
3C	C0	xx	CHA patrol check error	Processor	SERVICE
3C	C1	xx	CHA Memory Correctable error	Processor	SERVICE
3C	CD	xx	CHA Injustice DC voltage control	Processor	MODERATE
3C	CE	xx	CHA temperature abnormality	Processor	MODERATE
3D	C0	xx	DKA patrol check error	Processor	SERVICE
3D	C1	xx	DKA Memory Correctable error	Processor	SERVICE
3D	CD	xx	DKA Injustice DC voltage control	Processor	MODERATE
3D	CE	xx	DKA temperature abnormality	Processor	MODERATE
41	00	xx	Format complete	Drive	SERVICE
41	01	00	Quick Format finish	Drive	SERVICE
43	4x	xx	DRIVE MEDIA ERROR	Drive	SERVICE
43	Bx	xx	Drive blockade (media)(with redundancy)	Drive	SERIOUS
43	Cx	xx	Drive blockade (media)(without redundancy)	Drive	SERIOUS
45	1x	xx	CORRECTION COPY START	Drive	SERVICE
45	2x	xx	CORRECTION COPY NORMAL END	Drive	SERVICE
45	3x	xx	CORRECTION COPY ABNORMAL END	Drive	SERIOUS
45	4x	xx	CORRECTION COPY DISCONTINUED	Drive	SERIOUS

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
45	5x	xx	Correction copy warning end(With blockade LDEV or some error)	Drive	SERVICE
46	1x	xx	DYNAMIC SPARING(DRIVE COPY)START	Drive	SERVICE
46	2x	xx	DYNAMIC SPARING(DRIVE COPY)NORMAL END	Drive	SERVICE
46	3x	xx	DYNAMIC SPARING(DRIVE COPY)ABNORMAL END	Drive	MODERATE
46	4x	xx	DYNAMIC SPARING(DRIVE COPY)DISCONTINUED	Drive	SERIOUS
46	5x	xx	Dynamic sparing warning end(With blockade LDEV or some error)(Drive copy)	Drive	SERVICE
47	Dx	xx	SI-MF/SI Copy abnormal end	Failure with paired volumes	MODERATE
47	E5	00	All FlashCopy(R) Option abnormal end by SM volatile	Failure with paired volumes	MODERATE
47	E7	00	FORCIBLE SUSPEND BY SM VOLATIL	Failure with paired volumes	MODERATE
47	EC	00	Thin Image ABNORMAL END BY SM VOLATILE	Failure with paired volumes	MODERATE
47	Fx	xx	Volume Migration Abnormal End	Volume Migration	MODERATE
48	21	xx	PRE STAGING ABNORMAL END	Cache Residency	SERVICE
49	10	xx	CACHE WRITE PENDING RATIO IS OVER 65%	Cache	SERVICE
4A	10	00	OEM drive Microcode exchange start	Drive	SERVICE
4A	20	00	OEM drive Microcode exchange normal end	Drive	SERVICE
4A	30	00	OEM drive Microcode exchange abnormal end	Drive	MODERATE
4A	40	00	OEM drive Microcode exchange discontinued	Drive	SERVICE
4A	80	xx	Expander Micro Exchange failed	Processor	MODERATE
4B	2x	xx	Compatible FlashCopy(R) ABNORMAL END	Failure with paired volumes	MODERATE
4B	3x	xx	Thin Image ABNORMAL END	Failure with paired volumes	MODERATE
4B	4x	yy	FlashCopy(R) Hierarchical memory access error	Failure with paired volumes	MODERATE
4C	10	xx	PDEV Erase Start	Drive	SERVICE
4C	20	xx	PDEV Erase Normal End	Drive	SERVICE
4C	30	xx	PDEV Erase Abnormal En	Drive	SERVICE
50	1x	xx	DRIVE TEMPORARY ERROR	Drive	SERVICE
50	2x	xx	DRIVE MEDIA ERROR	Drive	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
50	5x	xx	Flash module drive internal battery error (ORM)	Drive	SERVICE
50	8x	xx	Flash module drive internal battery error	Drive	MODERATE
50	Bx	xx	Flash drive End of life	Drive	SERVICE
50	Cx	xx	Flash module drive End of life	Drive	SERVICE
50	Dx	xx	Flash module drive battery warning	Drive	SERVICE
50	Ex	xx	Flash module drive battery capacity shortage	Drive	MODERATE
50	F0	00	Flash module drive micro-program version warning	Drive	MODERATE
60	1x	xx	Pool utilization threshold excess	Thin Image pool	MODERATE
60	2F	FE	Pools blocking by SM volatile	Thin Image pool	MODERATE
60	2x	xx	Pool blocking	Thin Image pool	MODERATE
60	30	00	SM Space Warning	SM	MODERATE
61	00	xx	BACKUP/RESTORE SM INFORMATION FAILED	SM	MODERATE
62	0x	xx	The DP POOL Warning Threshold was exceeded.	Dynamic Provisioning pool	MODERATE
62	2x	xx	The DP POOL FULL	Dynamic Provisioning pool	MODERATE
62	3x	xx	The DP POOL error is detected (XXX : Pool ID)	Dynamic Provisioning pool	MODERATE
62	40	00	SM(DP/TI) AREA DEPLETION	Dynamic Provisioning pool	MODERATE
62	50	00	DP pool threshold continues to be exceeded.	Dynamic Provisioning pool	MODERATE
62	6x	xx	The DP POOL Depletion threshold was exceeded.	Dynamic Provisioning pool	MODERATE
62	7x	xx	The DP POOL LDEV blockade	Dynamic Provisioning pool	MODERATE
62	80	00	DP Protect attribute setting of DRU	Dynamic Provisioning pool	SERVICE
66	00	xx	LDEV Blockade (Effect of Encryption key lost)	SM	MODERATE
66	01	00	No free encryption key	Encryption key	MODERATE
66	02	00	Remaining free encryption key warning	Encryption key	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
66	10	00	Acquisition failure of the outside encryption key	Encryption key	MODERATE
67	00	00	Warning for depletion of cache management devices	Thin Image	MODERATE
70	xx	00	Logical inconsistency	SVP failure	MODERATE
71	xx	00	Heap error	SVP failure	MODERATE
72	xx	00	File error	SVP failure	MODERATE
73	xx	00	LAN error	SVP failure	MODERATE
74	xx	xx	SSVP error	SVP failure	MODERATE
75	xx	00	Windows error	SVP failure	MODERATE
76	00	00	CUDG3 detected error	SVP failure	MODERATE
76	04	00	CUDG3 detected error	SVP failure	MODERATE
76	10	00	LCDG3 detected error	SVP failure	MODERATE
79	00	xx	BOOT detected error	SM	MODERATE
7A	00	00	NORMAL END	SVP failure	SERVICE
7A	01	00	ABNORMAL END(SVP)	SVP failure	SERVICE
7A	02	00	ABNORMAL END(MP)	SVP failure	SERVICE
7A	03	xx	VERSION CHK ERROR	SVP failure	SERVICE
7A	04	xx	Sum check error	SVP failure	SERVICE
7A	05	xx	HTP patch error	SVP failure	SERVICE
7A	10	00	WARNING(CONFIGURATION INCONSISTENCY)	SVP failure	SERVICE
7A	11	00	WARNING(S-SVP BUSY)	SVP failure	SERVICE
7A	12	xx	Warning (HTP busy)	SVP failure	SERVICE
7A	20	00	INTERNET DOWNLOAD ERROR	SVP failure	SERVICE
7A	23	00	Discontinuation by the user	SVP failure	SERVICE
7B	00	03	ISDN Router failure	SVP failure	MODERATE
7C	00	00	SVP reboot stop (FD Inserted)	SVP failure	MODERATE
7C	01	0x	BATTERY LIFE IS OVER	Battery	SERVICE
7C	02	00	Audit Log failure of Host instruction configuration change	SVP failure	MODERATE
7C	03	00	Audit Log FTP Transfer failed	SVP failure	MODERATE
7C	04	00	Dump Tool failed	SVP failure	SERVICE
7C	05	00	Invalid SIM data detection	SVP failure	SERVICE
7E	12	xx	MP Operating Ratio Error	Monitor	MODERATE
7E	20	xx	Loss Of Signal Count(Fibre) Excess	Monitor	MODERATE
7E	21	xx	Bad Received Character Count(Fibre) Excess	Monitor	MODERATE
7E	22	xx	Loss Of Synchronization Count(Fibre) Excess	Monitor	MODERATE
7E	23	xx	Link Failure Count(Fibre) Excess	Monitor	MODERATE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
7E	24	xx	Received EOFa Count(Fibre) Excess	Monitor	MODERATE
7E	25	xx	Discarded Frame Count(Fibre) Excess	Monitor	MODERATE
7E	26	xx	Bad CRC Count(Fibre) Excess	Monitor	MODERATE
7E	27	xx	Protocol Error Count(Fibre) Excess	Monitor	MODERATE
7E	28	xx	Expired Frame Count (Fibre) Excess	Monitor	MODERATE
7E	29	xx	HTP/FNP Multiplicity Excess	Monitor	MODERATE
7E	2C	xx	HTP/FNP Read Data Transfer Ratio Error	Monitor	MODERATE
7E	2D	xx	HTP/FNP Write Data Transfer Ratio Error	Monitor	MODERATE
7E	2E	xx	HTP/FNP Operating Ratio Error	Monitor	MODERATE
7E	30	00	Read Hit Ratio Excess	Monitor	MODERATE
7E	40	xx	Link Failure Count(FCoE) Excess	MONITORING INFORMATION	MODERATE
7E	41	xx	Virtual Link Failure Count(FCoE) Excess	MONITORING INFORMATION	MODERATE
7E	43	xx	Symbol Error Count(FCoE) Excess	MONITORING INFORMATION	MODERATE
7E	45	xx	FCS Error Count(FCoE) Excess	MONITORING INFORMATION	MODERATE
7E	Ax	xx	Cache Use Ratio Error	Monitor	MODERATE
7E	Bx	xx	Cache Write Pending Ratio Error	Monitor	MODERATE
7E	Cx	xx	Cache MCU Side File Use Ratio Error	Monitor	MODERATE
7F	F1	00	TC-MF/TC	SVP failure	SERVICE
7F	F1	02	SI-MF/SI	SVP failure	SERVICE
7F	F1	03	UR	SVP failure	SERVICE
7F	F1	04	TI	SVP failure	SERVICE
7F	F1	05	FlashCopy(R)	SVP failure	SERVICE
7F	F1	06	Volume Migration	SVP failure	SERVICE
7F	F2	xx	STANDBY SVP FAIL	SVP failure	MODERATE
7F	F3	xx	SVP FAIL OVER	SVP failure	MODERATE
7F	F7	xx	The term of validity is over	License key	MODERATE
7F	F8	xx	The capacity of validity is over	License key	MODERATE
7F	F9	xx	The PP is invalid by assumption PP invalidity	License key	MODERATE
7F	FA	00	Synchronization time failure	SVP failure	SERVICE
AC	50	xx	HDU POWER OFF	PS(DKU)	MODERATE
AC	51	xx	HDU power recovered	PS(DKU)	SERVICE
AC	52	xx	HDU power off(CL1)	PS(DKU)	MODERATE
AC	53	xx	HDU power off(CL2)	PS(DKU)	MODERATE
AC	54	xx	HDU power recovered(CL1)	PS(DKU)	SERVICE
AC	55	xx	HDU power recovered(CL2)	PS(DKU)	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
AC	60	00	DKC was set to power error mode	PS(DKC)	MODERATE
AC	61	00	DKC was released from power error mode	PS(DKC)	SERVICE
AC	62	00	When DKC was set to power error mode, Urgent Destaging start succeeded	PS(DKC)	SERVICE
AC	63	00	When DKC was set to power error mode, Urgent Destaging start failed.	PS(DKC)	MODERATE
AC	80	0x	Server failure	DKC environment	SERIOUS
AC	90	00	DB Validation error	Drive	SERIOUS
AF	50	xx	DBPS error	PS(DKU)	MODERATE
AF	60	xx	DBPS AC input error	PS(DKU)	MODERATE
AF	70	00	HDU External temperature warning	Environmental error	MODERATE
AF	71	00	HDU External temperature Alarm	Environmental error	MODERATE
AF	80	xx	SSW error	DKC environment	MODERATE
AF	D1	xx	Battery charge EMPTY	Battery	MODERATE
AF	D4	xx	CM Backup mounting warning	Cache	MODERATE
AF	F0	xx	SSW data disagreement	DKC environment	MODERATE
BF	10	1x	External temperature alarm	Environmental error	MODERATE
BF	11	1x	External high temperature warning	Environmental error	MODERATE
BF	12	1x	External low temperature warning	Environmental error	MODERATE
BF	13	1x	Internal temperature alarm	Environmental error	MODERATE
BF	14	1x	Internal temperature warning_2	Environmental error	MODERATE
BF	15	1x	Internal temperature warning_1	Environmental error	MODERATE
BF	16	1x	External high temperature warning (40 degree C)	Environmental error	MODERATE
BF	22	xx	SSVP voltage warning (PS_SUB)	PS(DKC)	MODERATE
BF	23	xx	SSVP voltage warning (SVP supply)	PS(DKC)	MODERATE
BF	4x	1x	DKCPS warning	PS(DKC)	MODERATE
BF	6x	1x	DKCPS input voltage abnormality	PS(DKC)	MODERATE
BF	7x	1x	DKCFAN warning	Fan(DKC)	MODERATE
BF	85	A3	JP remains	Environment	MODERATE
BF	86	A3	JP remains	Environment	MODERATE



Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
BF	9x	Ax	Communication Error between SSVp and MN	DKC environment	MODERATE
BF	A0	Ax	Logic PS voltage alarm disagreement	PS(DKC)	MODERATE
BF	A2	Ax	External temperature disagreement	DKC environment	MODERATE
BF	A3	Ax	Internal temperature alarm disagreement	DKC environment	MODERATE
BF	A4	Ax	Internal temperature warning disagreement	DKC environment	MODERATE
BF	A5	Ax	PSOFFREQ I/F disagreement	DKC environment	MODERATE
BF	A6	Ax	PSOFFOK I/F disagreement	DKC environment	MODERATE
BF	A7	Ax	SYSON I/F disagreement	DKC environment	MODERATE
BF	A8	Ax	DKCPS I/F disagreement	DKC environment	MODERATE
BF	A9	Ax	DKCPS I/F disagreement	DKC environment	MODERATE
BF	AA	A0	DKCPS I/F disagreement	DKC environment	MODERATE
BF	AA	A4	DKCPS I/F disagreement	DKC environment	MODERATE
BF	AB	A0	DKCPS I/F disagreement	DKC environment	MODERATE
BF	AB	A4	DKCPS I/F disagreement	DKC environment	MODERATE
BF	AC	A0	Communication Error between MN and MN	Environment	MODERATE
BF	AC	A1	Communication Error between MN and MN	Environment	MODERATE
BF	AC	A4	Communication Error between MN and MN	Environment	MODERATE
BF	AC	A5	Communication Error between MN and MN	Environment	MODERATE
BF	AD	A3	Cable connection error	Environment	MODERATE
BF	AD	A4	Cable connection error	Environment	MODERATE
BF	AE	A1	Cable connection error	Environment	MODERATE
BF	AF	A0	PCTL/PNL abnormally	Environment	MODERATE
BF	AF	A4	PCTL/PNL abnormally	Environment	MODERATE
BF	Bx	Ax	PCTL/PNL abnormally	DKC environment	MODERATE
BF	C0	10	DKC ALARM LED light on	DKC environment	SERIOUS
BF	E3	A2	Duplex SVP Setup fail	SVP failure	MODERATE
BF	E4	00	SVP FAN0 error	SVP failure	MODERATE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
BF	E4	01	SVP FAN1 error	SVP failure	MODERATE
BF	E4	02	SVP FAN2 error	SVP failure	MODERATE
BF	E4	06	EXTENDER Hardware error	SVP failure	MODERATE
BF	E4	07	USB interface error	SVP failure	MODERATE
BF	E4	08	SVP receiving voltage error (CL1)	SVP failure	MODERATE
BF	E4	09	SVP receiving voltage error (CL2)	SVP failure	MODERATE
CF	10	xx	SAS CTL blocking	Processor	MODERATE
CF	11	xx	A SAS PORT, one of 2WL, is partial blocked	Processor	SERVICE
CF	12	xx	SAS PORT blocked	Processor	MODERATE
CF	6x	xx	Logical DMA blocking	Processor	MODERATE
CF	80	xx	DRR TEMPORARY ERROR	Processor	SERVICE
CF	81	xx	DMA temporary error	Processor	SERVICE
CF	82	xx	DRR BLOCKING	Processor	MODERATE
CF	83	xx	DMA blocking	Processor	MODERATE
CF	88	xx	LR blocking	Processor	MODERATE
CF	89	xx	All DMA blocking	Processor	MODERATE
CF	Bx	xx	MFDMA blocking	Processor	MODERATE
CF	Dx	xx	Logical DRR blocking	Processor	MODERATE
D0	0x	xx	TC-MF/TC started the initial copy or out of sync for this volume	Failure with paired volumes	SERVICE
D0	1x	xx	TC-MF/TC completed the initial copy for this volume	Failure with paired volumes	SERVICE
D0	2x	xx	TC-MF/TC for this volume was deleted(Operation from an SVP/Web Console or a host processor)	Failure with paired volumes	SERVICE
D0	6x	xx	TC-MF completed the Create pair(No copy suspend)	Failure with paired volumes	SERVICE
D1	0x	xx	Remote Copy pair status change (MCU Command) (From Simplex to Duplex Pending)	Failure with paired volumes	SERVICE
D1	1x	xx	Remote Copy pair status change (MCU Command) (From Simplex to Duplex)	Failure with paired volumes	SERVICE
D1	2x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Duplex)	Failure with paired volumes	SERVICE
D1	3x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend)	Failure with paired volumes	SERVICE
D1	4x	xx	Remote Copy pair status change (MCU Command) (From Duplex to Suspend)	Failure with paired volumes	SERVICE
D1	5x	xx	Remote Copy pair status change (MCU Command) (From Duplex to Simplex)	Failure with paired volumes	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
D1	6x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Simplex)	Failure with paired volumes	SERVICE
D1	7x	xx	Remote Copy pair status change (MCU Command) (From Suspend to Simplex)	Failure with paired volumes	SERVICE
D1	8x	xx	Remote Copy pair status change (MCU Command) (From Suspend to Duplex Pending)	Failure with paired volumes	SERVICE
D1	9x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend(continue))	Failure with paired volumes	SERVICE
D1	Ax	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend(complete))	Failure with paired volumes	SERVICE
D1	Bx	xx	Remote Copy pair status change (MCU Command) (From Suspend (continue) to Suspend)	Failure with paired volumes	SERVICE
D4	0x	xx	TC-MF/TC for this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS
D4	1x	xx	TC-MF/TC for this volume was suspended (Due to an unrecoverable failure on the P-VOL or the remote copy connections)	Failure with paired volumes	SERIOUS
D4	2x	xx	TC-MF/TC for this volume was suspended (Due to an unrecoverable failure on the S-VOL)	Failure with paired volumes	SERIOUS
D4	3x	xx	TC-MF for this volume was suspended (Caused by DFW to the S-VOL was prohibited)	Failure with paired volumes	SERIOUS
D4	4x	xx	TC-MF/TC for this volume was suspended (Due to an internal error condition detected by the RCU)	Failure with paired volumes	SERIOUS
D4	5x	xx	TC-MF/TC for this volume was suspended (Caused by Delete pair operation was issued to the S-VOL)	Failure with paired volumes	SERIOUS
D4	6x	xx	The S-VOL has suspended. (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS
D4	7x	xx	The S-VOL has suspended (Due to an unrecoverable failure on the S-VOL)	Failure with paired volumes	SERIOUS
D4	Fx	xx	Status of the P-VOL was not consistent with the S-VOL	Failure with paired volumes	SERIOUS
D5	7x	xx	Command device operation execution of command device in state of ONLINE	Drive	SERVICE
D8	0x	xx	PAIR VOLUME ESTABLISH	Failure with paired volumes	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
D8	1x	xx	COPY START	Failure with paired volumes	SERVICE
D8	2x	xx	COPY NORMAL END	Failure with paired volumes	SERVICE
D8	3x	xx	SUSPEND END	Failure with paired volumes	SERVICE
D8	4x	xx	SUSPEND END	Failure with paired volumes	SERVICE
D8	5x	xx	PAIR END	Failure with paired volumes	SERVICE
D8	6x	xx	PAIR END	Failure with paired volumes	SERVICE
D8	7x	xx	PAIR NORMAL END	Failure with paired volumes	SERVICE
D8	8x	xx	A Delta volume to be used by the UR was defined	Failure with paired volumes	SERVICE
D8	9x	xx	A Delta volume to be used by the UR was redefine	Failure with paired volumes	SERVICE
D9	0x	xx	A change to an S-VOL was received from the MCU (From Simplex to Duplex Pending)	Failure with paired volumes	SERVICE
D9	1x	xx	A change to an S-VOL was received from the MCU (From Simplex to Duplex)	Failure with paired volumes	SERVICE
D9	2x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Duplex)	Failure with paired volumes	SERVICE
D9	3x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Suspend)	Failure with paired volumes	SERVICE
D9	4x	xx	A change to an S-VOL was received from the MCU (From Duplex to Suspend)	Failure with paired volumes	SERVICE
D9	5x	xx	A change to an S-VOL was received from the MCU (From Duplex to Simplex)	Failure with paired volumes	SERVICE
D9	6x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Simplex)	Failure with paired volumes	SERVICE
D9	7x	xx	A change to an S-VOL was received from the MCU (From Suspend to Simplex)	Failure with paired volumes	SERVICE
D9	8x	xx	A change to an S-VOL was received from the MCU (From Suspend to Duplex Pending)	Failure with paired volumes	SERVICE
D9	9x	xx	A change to an S-VOL was receiver from the MCU (HOLD -> PAIR)	Failure with paired volumes	SERVICE
D9	Ax	xx	A change to an S-VOL was receiver from the MCU (HOLD -> COPY)	Failure with paired volumes	SERVICE
D9	Bx	xx	A change to an S-VOL was receiver from the MCU (HOLD -> SMPL)	Failure with paired volumes	SERVICE
D9	Cx	xx	A change to an S-VOL was received from the MCU (From Simplex to Suspend)	Failure with paired volumes	SERVICE

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
D9	Dx	xx	A change to an S-VOL was receiver from the MCU (SMPL -> HOLD)	Failure with paired volumes	SERVICE
D9	Ex	xx	A change to an S-VOL was receiver from the MCU (PSUx(Suspend) -> HOLD)	Failure with paired volumes	SERVICE
D9	Fx	xx	A change to an S-VOL was received from the MCU (From Duplex to Duplex Pending)	Failure with paired volumes	SERVICE
DA	0x	xx	A change to an S-VOL was received from the RCU (A request for suspension was received.)	Failure with paired volumes	SERVICE
DA	1x	xx	A change to an S-VOL was received from the RCU (A suspension transaction was completed.)	Failure with paired volumes	SERVICE
DA	2x	xx	A change to an S-VOL was received from the RCU (An instruction to delete a pair was received in the Suspend status.)	Failure with paired volumes	SERVICE
DA	3x	xx	A change to an S-VOL was received from the RCU (An instruction to delete a pair was received in the Duplex Pending status.)	Failure with paired volumes	SERVICE
DA	4x	xx	A change to an S-VOL was received from the RCU (An instruction to delete a pair was received in the Duplex status.)	Failure with paired volumes	SERVICE
DA	5x	xx	A change to an S-VOL was received from the RCU (A pair deletion was completed.)	Failure with paired volumes	SERVICE
DA	6x	xx	A change to an S-VOL was received from the RCU (An instruction to delete a pair was received in the Hold status.)	Failure with paired volumes	SERVICE
DC	0x	xx	PAIR SUSPEND(RIO PATH CLOSE)	Failure with paired volumes	SERIOUS
DC	1x	xx	PAIR SUSPEND(MVOL ERROR)	Failure with paired volumes	SERIOUS
DC	2x	xx	PAIR SUSPEND(RVOL ERROR)	Failure with paired volumes	SERIOUS
DC	4x	xx	PAIR SUSPEND(SUSPEND REPORT)	Failure with paired volumes	SERIOUS
DC	5x	xx	PAIR SUSPEND(SIMPLEX REPORT)	Failure with paired volumes	SERIOUS
DC	6x	xx	PAIR SUSPEND(COMMUNICATION ERROR AT RCU)	Failure with paired volumes	SERIOUS
DC	7x	xx	PAIR SUSPEND(ERROR DETECTED AT RCU)	Failure with paired volumes	SERIOUS
DC	8x	xx	A volume being used by an S-VOL was suspended (PS OFF on the MCU side was detected)	Failure with paired volumes	SERVICE
DC	9x	xx	ERASE FAIL	Failure with paired volumes	SERIOUS

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
DC	Ax	xx	Pair suspend (Spread by error of another Affiliate)	Failure with paired volumes	SERIOUS
DC	E0	xx	UR M-JNL Meta overflow warning	Failure with paired volumes	MODERATE
DC	E1	xx	UR M-JNL Data overflow warning	Failure with paired volumes	MODERATE
DC	E2	xx	UR R-JNL Meta overflow warning	Failure with paired volumes	MODERATE
DC	E3	xx	UR R-JNL Data overflow warning	Failure with paired volumes	MODERATE
DC	F0	xx	The UR Read JNL was interrupted for one minute (A failure on the MCU side was detected)	Failure with paired volumes	MODERATE
DC	F1	xx	The UR Read JNL was interrupted for five minutes (A failure on the MCU side was detected)	Failure with paired volumes	SERIOUS
DC	F2	xx	The UR Read JNL was interrupted for one minute (A failure on the RCU side was detected)	Failure with paired volumes	MODERATE
DC	F3	xx	The UR Read JNL was interrupted for five minutes (A failure on the RCU side was detected)	Failure with paired volumes	SERIOUS
DC	F4	xx	URxUR M-JNL Meta full Warning	Failure with paired volumes	MODERATE
DC	F5	xx	URxUR M-JNL Data full Warning	Failure with paired volumes	MODERATE
DD	0x	xx	GAD for this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS
DD	1x	xx	GAD for this volume was suspended (Due to a failure on the volume)	Failure with paired volumes	SERIOUS
DD	2x	xx	GAD for this volume was suspended (Due to an internal error condition detected)	Failure with paired volumes	SERIOUS
DD	3x	xx	Status of the P-VOL was not consistent with the S-VOL	Failure with paired volumes	SERIOUS
DE	E0	xx	Quorum Disk Restore	Drive	SERVICE
DE	F0	xx	Quorum Disk Blocked	Drive	SERIOUS
DF	6x	xx	Drive port temporary error (Drive path: Boundary 0)	Drive	SERVICE
DF	7x	xx	Drive port temporary error (Drive path: Boundary 1)	Drive	SERVICE
DF	8x	xx	DRIVE PORT BLOCKADE(PATH 0)	Drive	MODERATE
DF	9x	xx	DRIVE PORT BLOCKADE(PATH 1)	Drive	MODERATE
DF	Ax	xx	LDEV blockade(Drive path: Boundary 0/ Effect of Drive port blockade)	Drive	SERIOUS

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
DF	Bx	xx	LDEV blockade(Drive path: Boundary 1/ Effect of Drive port blockade)	Drive	SERIOUS
DF	Cx	xx	Drive Link Rate Abnormality (Path 0)	Drive	SERVICE
DF	Dx	xx	Drive Link Rate Abnormality (Path 1)	Drive	SERVICE
DF	Fx	xx	Response late Drive	Drive	SERVICE
EF	0x	xx	Drive blockade (drive)(with redundancy)	Drive	SERIOUS
EF	1x	xx	Drive blockade (drive) (without redundancy)	Drive	SERIOUS
EF	2x	xx	DRIVE BLOCKADE(EFFECT OF DRIVE COPY NORMAL END)	Drive	SERVICE
EF	4x	xx	PINNED SLOT	Drive	MODERATE
EF	5x	xx	Abnormal end of Write processing in External storage system	Drive	MODERATE
EF	7x	xx	VDEV BLOCKADE(ENCRYPTION SETUP OF DRIVE BLOCKADE)	Drive	SERIOUS
EF	9x	xx	LDEV blockade (Effect of drive blockade)	Drive	SERIOUS
EF	Ax	xx	DRIVE TEMPORARY ERROR	Drive	SERVICE
EF	Cx	xx	Correction access occurred	Drive	SERIOUS
EF	D0	00	External storage system connection device blockade	Drive	SERIOUS
EF	D4	00	Blocking the Data Migration source device	Drive	MODERATE
EF	FE	xx	UNIT CONNECTION ERROR	DKC environment	MODERATE
EF	FF	0x	DRIVE CLOSE(DKU TYPE UNMATCH)	Drive	SERIOUS
FE	00	00	Cache battery is being charged	Cache	SERIOUS
FE	01	0x	End of Cache Write Through	Cache	SERVICE
FE	02	0x	Start of Cache Write Through	Cache	MODERATE
FE	03	0x	Cache SSD mounting capacity shortage	Cache	SERIOUS
FF	4x	xx	PINNED SLOT	Cache	MODERATE
FF	5x	xx	Abnormal end of Read processing in External storage system	Drive	MODERATE
FF	9C	0x	MPA warning	Cache	MODERATE
FF	C2	xx	CACHE MODULE GROUP BLOCKADE PROCESSING END	Cache	SERVICE
FF	C3	0x	CACHE PACKAGE BLOCKADE PROCESSING END	Cache	SERVICE
FF	CC	0x	CM/CMA patrol check error	Cache	SERVICE
FF	CD	0x	Area is volatilized	Cache	SERVICE
FF	CE	0x	Package is volatilized	Cache	MODERATE
FF	CF	xx	Package is volatilized	Cache	SERVICE
FF	DE	xx	WDCP loss of duplicated information	SM	SERVICE
FF	E2	0x	SM area blocking	SM	SERIOUS

Trap reference code			Description	Section	Alert level
SIM2 2	SIM2 3	SIM1 3			
FF	E4	0x	REPLACE FAILED	Cache	SERIOUS
FF	E6	00	CONFIGURATION INFORMATION COMPARE ERROR	SM	ACUTE
FF	E7	00	Rebooted with volatilization after an instantaneous down	SM	SERIOUS
FF	E8	00	Definition/Installation mismatch	SM	ACUTE
FF	EA	0x	RECOVERY OF AREA BLOCKED TEMPORARILY WAS COMPLETED	SM	SERVICE
FF	EE	0x	AREA TEMPORARY BLOCKING	SM	SERVICE
FF	EF	00	Rebooted without volatilization after an instantaneous dow	SM	SERVICE
FF	F0	xx	DIMM Correctable error	Cache	SERVICE
FF	F1	xx	Cache temporary error	Cache	SERVICE
FF	F2	xx	Module group blocking	Cache	MODERATE
FF	F3	0x	PACKAGE BLOCKING	Cache	MODERATE
FF	F4	00	AREA BLOCKING	Cache	SERIOUS
FF	F4	01	AREA BLOCKING	Cache	SERIOUS
FF	F5	0x	Both area failed	Cache	MODERATE
FF	F6	xx	CM Injustice DC voltage control	Cache	MODERATE
FF	F8	0x	CMA Memory Correctable error	Cache	SERVICE
FF	F9	0x	REPLACE FAILED	Cache	SERVICE
FF	FA	xx	Battery warning	Battery	MODERATE
FF	FB	xx	CMBK warning	Cache	MODERATE
FF	FC	xx	CM Temperature abnormality warning	Cache	MODERATE
FF	FD	xx	Module group failure detection outside of config	Cache	SERVICE
FF	FE	xx	Warning for forcible volatile mode	Cache	MODERATE
xx	xx	xx	Other failures	Other failures	SERIOUS



# Troubleshooting

This topic provides troubleshooting information for the Hitachi SNMP Agent.

- [Getting help](#)
- [Solving SNMP problems](#)

## Getting help

If you have difficulty with any of the procedures included in this topic, or if a procedure does not provide the answer or results you expect, please contact Hitachi Data Systems Support Center. See <https://hdssupport.hds.com> for more details.

## Solving SNMP problems

Install a secondary SVP. If you do not, traps could be reported to an IP address that is not specified in SNMP settings. This could have serious consequences, including the following:

- **SNMP security function**

If the SNMP security function is working, and a command is executed from an IP address that is not entered, you will get a “no reply” return and a certification error is received for a trap.

- **SNMP cold trap function**

- Depending on your network environment, when the SVP is rebooted you might not receive Microsoft agent SNMP Agent cold traps.
- The Microsoft SNMP Agent might report Link up/Link down Trap when the SVP reboots.
- A number of Link up/Link down Traps may be reported when the OS of the SVP is Windows 7.

- **Abnormal response to SNMP command**

If an error occurs in the SVP, traps might not be sent.

- **Problems inputting MIB definition files**

If you cannot input two or more MIB definition files because of the specifications of the SNMP manager software, use the MIB definition files for Hitachi Virtual Storage Platform G1000. Error reports include storage system nicknames, which can be used to identify each storage system.



# Glossary

This glossary defines the special terms used in this document. Click the letter links below to navigate.

## C

### Community Name

An SNMP entity in which up to 32 names and up to 32 IP addresses can be registered.

## E

### Extension Trap

An error message generated by a third-party node and sent to the SNMP agent.

## F

### Failure Trap

An error message that indicates a problem within a managed node.

## I

### IPv4

Internet Protocol version 4

### IPv6

Internet Protocol version 6

#	<a href="#">A</a>	<a href="#">B</a>	<a href="#">C</a>	<a href="#">D</a>	<a href="#">E</a>	<a href="#">F</a>	<a href="#">G</a>	<a href="#">H</a>	<a href="#">I</a>	<a href="#">J</a>	<a href="#">K</a>	<a href="#">L</a>	<a href="#">M</a>	<a href="#">N</a>	<a href="#">O</a>	<a href="#">P</a>	<a href="#">Q</a>	<a href="#">R</a>	<a href="#">S</a>	<a href="#">T</a>	<a href="#">U</a>	<a href="#">V</a>	<a href="#">W</a>	<a href="#">X</a>	<a href="#">Y</a>	<a href="#">Z</a>
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## M

### Managed Device

A network node on which the SNMP agent software is installed. Using the agent, managed devices exchange node-specific information with the SNMP management software.

### MIB

Management Information Base - a standardized configuration and database of network management information. It is common to all SNMP interfaces

## S

### SNMP

Simple Network Management Protocol - an industry-standard protocol that is used to manage and monitor network-attached devices for conditions that warrant administrative attention. The devices can include disk devices, routers, and hubs. SNMP uses Simple Gateway Management Protocol (SGMP) to manage TCP/IP gateways.

### SNMP Agent

Software that is installed on the SVP and responds to queries from the SNMP manager.

### SNMP Manager

Software that It is installed on the computer where Device Manager - Storage Navigator is installed.

### SNMP Trap

An error message generated by a node and sent to the SNMP agent. The SNMP agent passes the message to the SNMP manager.

## U

### UDP

user datagram protocol - software that requests data regarding the status of a managed node.

#	A	B	<a href="#">C</a>	D	<a href="#">E</a>	<a href="#">F</a>	G	H	<a href="#">I</a>	J	K	L	<a href="#">M</a>	N	O	P	Q	R	<a href="#">S</a>	T	<a href="#">U</a>	V	W	X	Y	Z
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