

HP XP7 SNMP Agent User Guide

Abstract

This document describes and provides instructions for using the HP SNMP Agent on a HP XP7 Storage (XP7) system.

Complete information for performing specific tasks in Remote Web Console is contained in the HP XP7 Storage software user guides.



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Contents

1	Introduction	5
	SNMP Manager overview	5
	How SNMP works	5
	Management Information Base overview	6
	SNMP Agent configuration	6
	SNMP Agent overview	7
	SNMP traps	7
	SNMP Agent operations	7
	SNMP Agent reported errors	8
	Component status information from SNMP Manager	8
2	Using SNMP	10
	Editing alert settings	10
	Managing community IP addresses	10
	Adding a community IP address	10
	Changing a community IP address	11
	Deleting a community IP address	12
	Managing community	12
	Adding a community name	12
	Changing a community name	13
	Deleting a community name	13
	Managing SNMP IP addresses	14
	Adding an SNMP Manager IP address	14
	Deleting an SNMP Manager IP address	15
	Testing the SNMP trap report	15
3	SNMP supported MIBs	16
	SNMP Agent failure report trap contents	16
	SNMP Agent extension trap types	16
	Standard MIB specifications	16
	MIBs supported by SNMP Agent	16
	SNMP Agent MIB access mode	17
	Example object identifier system	17
	MIB mounting specifications supported by SNMP Agent	17
	Extension MIB specifications	18
	Extension MIB configuration	18
	raidExMibName	19
	raidExMibVersion	19
	raidExMibAgentVersion	20
	raidExMibDkcCount	20
	raidExMibRaidListTable	20
	raidExMibDKCHWTable	21
	raidExMibDKUHWTable	22
	raidExMibTrapListTable	22
4	SNMP failure trap reference	24
	SNMP failure trap reference codes	24
5	Troubleshooting	40
	Getting help	40
	Solving SNMP problems	40
6	Support and other resources	41
	Contacting HP	41

Related information.....	41
Websites.....	41
Typographic conventions.....	42
7 Documentation feedback.....	43
A Regulatory information.....	44
Belarus Kazakhstan Russia marking.....	44
Turkey RoHS material content declaration.....	44
Ukraine RoHS material content declaration.....	44
Warranty information.....	44
Glossary.....	46
Index.....	47

1 Introduction

Abstract

This chapter provides an overview of the SNMP implementation for monitoring HP XP7 Storage storage systems, including the agent and management functions.

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.

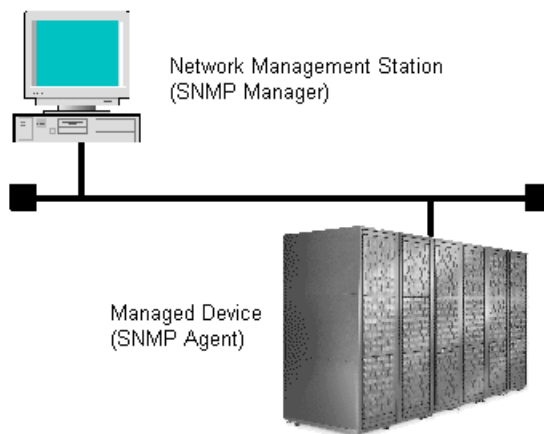
The SNMP Manager graphically displays information collected from two or more SNMP agents, accumulates the information in the database, and analyzes problems discovered while accumulating this information.

NOTE: HP XP7 supports SNMPv1.

How SNMP works

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.

The following figure shows an example SNMP environment.



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.

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 dialogue 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 parameters, 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.

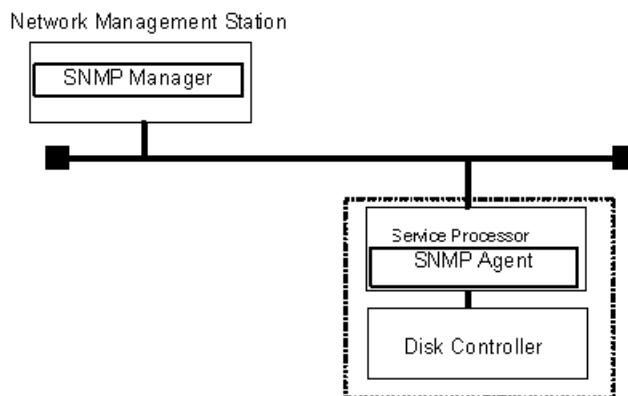
The MIB definition file, `VSPG1000MIB.txt`, is located in the `program\SNMP` folder of the software media kit.

SNMP Agent configuration

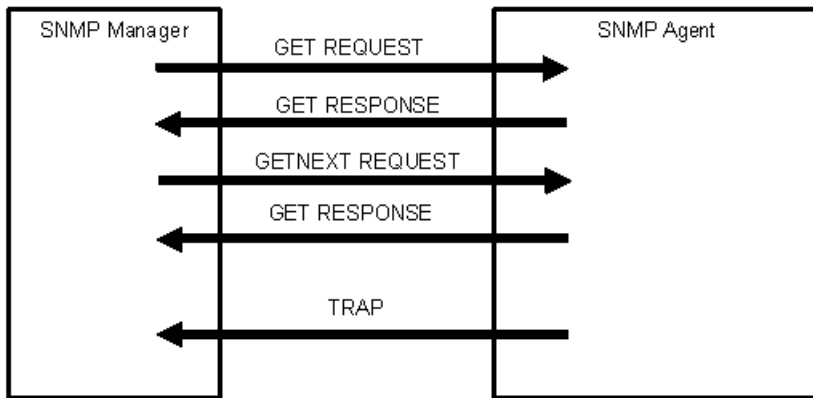
The HP XP7 Storage SNMP Agent is installed on the service processor (SVP), which is the computer within the storage array that manages the storage system.

The HP XP7 Storage 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.

The following figure illustrates the SNMP environment.



The following figure shows an example of SNMP operations using an SNMP manager.



SNMP Agent overview

The SNMP Agent is mounted on a 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 SNMP trap function.

SNMP traps

An SNMP Agent reports storage system errors to the SNMP Manager using the SNMP trap function. When an error occurs, the SNMP Agent issues an SNMP trap to the SNMP Manager that includes the product number, nickname, reference code, and an identifier of the component.

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

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

Operations that an SNMP Agent can perform fall into three categories, GET REQUEST, GETNEXT REQUEST, and TRAP.

The following table describes the types of SNMP Agent operations.

Operation	Description
GET REQUEST	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 REQUEST	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.

SNMP Agent reported errors

Several different types of errors can be reported when GET REQUEST and GETNEXT REQUEST operations are sent to an SNMP Agent.

The following table describes the errors that can be reported for GET REQUEST and GETNEXT REQUEST operations and suggested corrective action.

Error	Description	Corrective action
noError (0)	Normal	N/A
noSuchName (2)	<ul style="list-style-type: none">There are no MIB objects that are required. (Not supported.)The GETNEXT REQUEST command that is specified for the following object identifier of the last supported MIB object is received.	Verify that the name of the requested object is correct.
readOnly (4)	SET REQUEST is received.	SET REQUEST 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.

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.

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.

Status	Description
Moderate failure detected	Partial failure.
Service failure detected	Minor failure.

2 Using SNMP

Abstract

This chapter describes how to use Remote Web Console to manage SNMP Manager IP addresses, community names, and community IP addresses. It also explains how to test SNMP trap reports.

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.
-

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task. For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
2. For **Notification Alert**, select one of the following:
 - **All**(Sends alerts of all SIMs.)
 - **Host Report**(Sends alerts only of SIMs that report to hosts. 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**.

Managing community IP addresses

Adding a community IP address

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

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task. For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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.

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.

A maximum of 32 communities can be added.
A maximum of 32 IP addresses can be added to one community.
6. Click **OK**.

The IP address you entered is 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**.

Changing a community IP address

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

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task.
For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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 is 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**.

Deleting a community IP address

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

Prerequisites

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

For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.
In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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**.

Managing community

Adding a community name

This topic describes how to add a community name.

Prerequisites

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

For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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” \(page 10\)](#).
7. Click **Finish**.
8. In the **Confirm** window, enter a name for the task, confirm the settings, and then click **Apply**.

Changing a community name

This topic describes how to change a community name.

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task.
For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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 enter up to 180 alphanumeric characters. The following special characters are not allowed: ", \, ;, :, ,, *, ?, <, >, |, /, ^, &, 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**.

Deleting a community name

This topic describes how to delete a community name.

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task. For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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**.

Managing SNMP IP addresses

Adding an SNMP Manager IP address

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

Prerequisites

You must have the Storage Administrator (Initial Configuration) role to perform this task. For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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**
The IP address that you entered is added to the IP addresses listed 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**.

Deleting an SNMP Manager IP address

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

Prerequisites

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

For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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 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**.

Testing the SNMP trap report

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

Prerequisites

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

For more information, see the *HP XP7 Remote Web Console User Guide*.

Procedure

1. In HP XP7 Command View Advanced Edition Suite:
 1. On the **Resources** tab, click **Storage Systems**, expand the **Storage Systems** tree, right-click the target storage system, and then select **Other Functions**.
 2. From the **Settings** menu, select **Environmental Setting > Edit Alert Settings**.In Remote Web Console:
 1. Display the Remote Web Console main window.
 2. 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 then report the test SNMP trap.
4. Verify whether the SNMP trap report (reference code 7ffff) is received by the SNMP manager registered in the community.

3 SNMP supported MIBs

Abstract

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

SNMP Agent failure report trap contents

A standard 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. A failure report trap contains additional information about the failure, such as the area, date, and time of the failure.

If you obtain the information with the `GetRequest` command, access the MIB by using the product number of the device as an index.

The following table shows the 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 code.
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.

SNMP Agent extension trap types

SNMP Agent uses the extension trap types `RaidEventUserAcute`, `RaidEventUserSerious`, `RaidEventUserModerate`, and `RaidEventUserService`.

The following table describes the SNMP Agent extension trap types.

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

Standard MIB specifications

MIBs supported by SNMP Agent

SNMP Agent supports a limited number of MIBs. If you send a GET request for an object (MIB) that is not supported, you will receive `NoSuchName` as a GET RESPONSE.

The following table lists MIBs and whether they are supported.

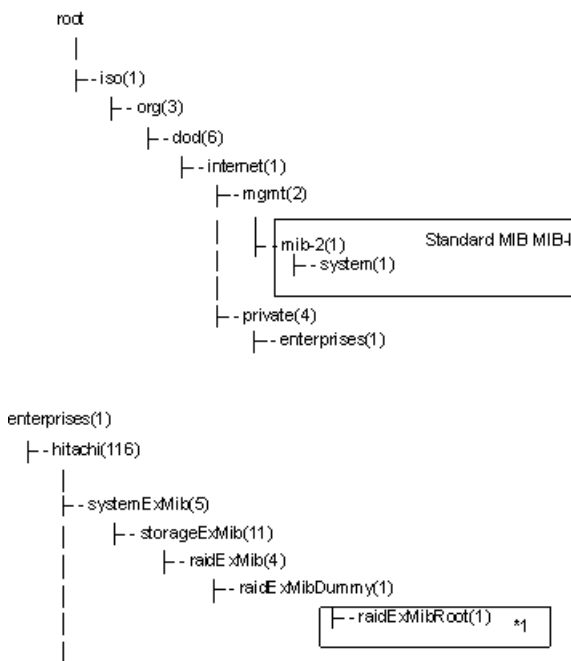
MIB	Supported?	
Standard MIB: MIB-II	system group	Yes
	interface group	No
	at group	No
	ip group	No
	icmp group	No
	tcp group	No
	udp group	No
	egp group	No
snmp group	No	
Extension MIB	Yes	

SNMP Agent MIB access mode

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

Example object identifier system

The following figures show an example object system supported by an SNMP Agent.



* 1: The HP XP7 SNMP extended MIB.

Related references

- “Extension MIB configuration” (page 18)

MIB mounting specifications supported by SNMP Agent

SNMP Agent supports two 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.

Name	Description	Mounted value
sysObjectID {system 2}	This is the product identification number.	Fixed value. See “Example object identifier system” (page 17) . 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

Extension MIB configuration

The following shows the HP XP7 extension MIB object system.

```
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
```

The following figures show an example extension MIB configuration.

```
└- enterprises(1)
  └- hitachi(116)
    |
    └- systemExMib(5)
      └- storageExMib(11)
        └- raidExMib(4)
          └- raidExMibDummy(1)
            └- raidExMibRoot(1) →①
```

```

②→  |- raidExMibRoot(1)
      |- raidExMibName(1)
      |- raidExMibVersion(2)
      |- raidExMibAgentVersion(3)
      |- raidExMibDkcCount(4)
      |- raidExMibRaidListTable(5)
      |   |- raidExMibRaidListEntry (1)
      |     |- raidlistSerialNumber(1)
      |     |- raidlistMibNickName(2)
      |     |- raidlistDKCMainVersion(3)
      |     |- raidlistDKCProductName(4)
      |- raidExMibDKCHWTable (6)
      |   |- raidExMibDKCHWEntry(1)
      |     |- dkcRaidListIndexSerialNumber(1)
      |     |- dkchWProcessor(2)
      |     |- dkchWCSW(3)
      |     |- dkchWCache(4)
      |     |- dkchWSM(5)
      |     |- dkchWPS(6)
      |     |- dkchWBattery(7)
      |     |- dkchWFan(8)
      |     |- dkchWEnvironment(9)
      →③

```

```

④→  |- raidExMibDKUHWTable (7)
      |   |- raidExMibDKUHWEntry (1)
      |     |- dkuRaidListIndexSerialNumber(1)
      |     |- dkuHWPS(2)
      |     |- dkuHWFan(3)
      |     |- dkuHWEEnvironment(4)
      |     |- dkuHWDrive(5)
      |- raidExMibTrapListTable (8)
      |   |- raidExMibTrapListEntry (1)
      |     |- eventListIndexSerialNumber(1)
      |     |- eventListNickName(2)
      |     |- eventListIndexRecorderNo(3)
      |     |- eventListREFCODE(4)
      |     |- eventListDate(5)
      |     |- eventListTime(6)
      |     |- eventListDescription(7)

```

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

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

Name	Type	Description	Mounted value	Attribute
raidlistDKCProductName ::=RaidExMibRaidListEntry(4)	DisplayString	Storage system product type.	7 characters*	read-only
*XP7 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}

```

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

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

Note:

The status of each component is a single digit which shows the following:

1: Normal.

Name	Type	Description	MIB value	Attribute
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 }

```

The following table lists the information displayed for each disk device component.

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
Note: 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 }

```

The following table lists the information displayed for each failure.

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.	<i>yyyy/mm/dd</i> (10 characters)	read-only
eventListTime ::=raidExMibTrapListEntry (6)	DisplayString	Time when the failure occurred.	<i>hh:mm:ss</i> (8 characters)	read-only
eventListDescription ::=raidExMibTrapListEntry (7)	DisplayString	Detailed information about the failure.	256 characters maximum	read-only

4 SNMP failure trap reference

Abstract

This chapter describes the failure trap reference codes, including sections and alert levels.

SNMP failure trap reference codes

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

For details on alert levels, see the *HP XP7 Remote Web Console User Guide*.

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
18	00	00	AuditLog lost	DKC environment	MODERATE	Yes
18	01	00	AuditLog Access Impossible	Drive	MODERATE	Yes
21	20	xx	Channel port blocking	Processor	MODERATE	Yes
21	80	xx	Logical path(s) on the remote copy connections was logically blocked (Due to an error condition)	Processor	MODERATE	Yes
21	81	xx	RIO PATH AUTOMATICALLY RECOVERED	Processor	SERVICE	Yes
21	90	xx	AL_PA VALUE CONFLICT	Processor	SERVICE	No
21	93	xx	LINK FAILURE	Processor	SERIOUS	Yes
21	94	xx	LINK FAILURE2	Processor	SERIOUS	Yes
21	a3	xx	HTP blocking	Processor	MODERATE	Yes
21	a4	xx	Fiber Cable Failure	Processor	SERVICE	No
21	a6	xx	Optical signal output failure	Processor	MODERATE	No
21	a7	xx	LED status change failure	Processor	MODERATE	No
21	a8	xx	SFP wrong type	Processor	MODERATE	No
21	a9	xx	IP address conflict detection	Processor	SERVICE	No
21	aa	xx	SFP TxFault	Processor	MODERATE	No
21	bx	xx	HTP hard error	Processor	MODERATE	Yes
21	d0	xx	External storage system connection path blocking	Processor	MODERATE	Yes
21	d1	xx	External storage system connection path restore	Processor	SERVICE	No
21	d2	xx	Threshold over by external storage system connection path response time-out	Processor	SERVICE	Yes
21	d4	xx	Blocking the Data Migration path	Processor	MODERATE	No
21	d5	xx	Data Migration Path Recovery	Processor	SERVICE	No
30	70	xx	CHK1A THRESHOLD OVER	Processor	SERVICE	No
30	71	xx	CHK1B THRESHOLD OVER	Processor	SERVICE	No
30	72	xx	CHK3 THRESHOLD OVER	Processor	SERVICE	No

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
30	73	xx	PROCESSOR BLOCKING	Processor	MODERATE	Yes
30	75	xx	FM ERROR	Processor	MODERATE	Yes
30	76	xx	Incorrect SUM value of FM	Processor	SERVICE	No
30	77	xx	PROCESSOR MEMORY TEMPORARY ERROR	Processor	SERVICE	No
30	80	xx	WCHK1 dump	Processor	MODERATE	No
30	a1	00	DKC Blockade	Processor	ACUTE	Yes
32	xx	xx	CHA/DKA - CM Logical path blockade	Cache	MODERATE	No
33	xx	xx	CHA/DKA - MP Logical path blockade	Cache	MODERATE	No
34	xx	xx	MP - CM Logical path blockade	Cache	MODERATE	No
35	xx	xx	MP - MP Logical path blockade	Cache	MODERATE	No
38	8f	00	P/S OFF IMPOSSIBLE	PS(DKC)	MODERATE	No
38	9f	00	P/S OFF IMPOSSIBLE(DEVICE RESERVED)	PS(DKC)	MODERATE	No
38	c1	x0	MPB temperature abnormality	Processor	MODERATE	No
39	90	xx	Undefined Package is mounted	Processor	MODERATE	No
39	91	xx	V-R OR SERIAL NUMBER IS INCONSISTENT	Processor	MODERATE	No
39	92	x0	MPB temperature abnormality warning	Processor	MODERATE	No
39	93	xx	REPLACE FAILED	Processor	MODERATE	No
39	9d	x0	MP injustice dc voltage control	Processor	MODERATE	No
39	9e	x0	INJUSTICE ce MODE	Processor	MODERATE	No
39	9f	x0	Injustice CEDT0	Processor	MODERATE	No
39	b0	xx	SMA SLAVE ERROR	Processor	SERVICE	No
3a	0x	xx	LDEV Blockade (Effect of microcode error)	Processor	MODERATE	Yes
3c	95	00	CHA/DKA Type disagreement	Processor	MODERATE	No
3c	c0	xx	CHA patrol check error	Processor	SERVICE	No
3c	c1	xx	CHA Memory Correctable error	Processor	SERVICE	No
3c	cd	xx	CHA Injustice dc voltage control	Processor	MODERATE	No
3c	ce	xx	CHA temperature abnormality	Processor	MODERATE	No
3d	c0	xx	DKA patrol check error	Processor	SERVICE	No
3d	c1	xx	DKA Memory Correctable error	Processor	SERVICE	No
3d	cd	xx	DKA Injustice dc voltage control	Processor	MODERATE	No
3d	ce	xx	DKA temperature abnormality	Processor	MODERATE	No
41	00	xx	Format complete	Drive	SERVICE	No
41	01	00	Quick Format finish	Drive	SERVICE	No
43	4x	xx	DRIVE MEDIA ERROR	Drive	SERVICE	No

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
43	bx	xx	Drive blockade (media)(with redundancy)	Drive	SERIOUS	Yes
43	cx	xx	Drive blockade (media)(without redundancy)	Drive	SERIOUS	Yes
45	1x	xx	CORRECTION COPY START	Drive	SERVICE	Yes
45	2x	xx	CORRECTION COPY NORMAL END	Drive	SERVICE	Yes
45	3x	xx	CORRECTION COPY ABNORMAL END	Drive	SERIOUS	Yes
45	4x	xx	CORRECTION COPY DISCONTINUED	Drive	SERVICE	No
45	5x	xx	Correction copy warning end(With blockade LDEV or some error)	Drive	SERVICE	Yes
46	1x	xx	DYNAMIC SPARING(DRIVE COPY)START	Drive	SERVICE	Yes
46	2x	xx	DYNAMIC SPARING(DRIVE COPY)NORMAL END	Drive	SERVICE	Yes
46	3x	xx	DYNAMIC SPARING(DRIVE COPY)ABNORMAL END	Drive	MODERATE	Yes
46	4x	xx	DYNAMIC SPARING(DRIVE COPY)DISCONTINUED	Drive	SERVICE	No
46	5x	xx	Dynamic sparing warning end(With blockade LDEV or some error)(Drive copy)	Drive	SERVICE	Yes
47	dx	xx	BC Z/BCCopy abnormal end	Failure with paired volumes	MODERATE	Yes
47	e5	00	All FlashCopy Option abnormal end by SM volatile	Failure with paired volumes	MODERATE	Yes
47	e7	00	FORCIBLE SUSPEND BY SM VOLATILE	Failure with paired volumes	MODERATE	Yes
47	ec	00	Fast Snap ABNORMAL END BY SM VOLATILE	Failure with paired volumes	MODERATE	Yes
47	fx	xx	Auto LUN Abnormal End	Auto LUN	MODERATE	No ²
48	21	xx	PRE STAGING ABNORMAL END	Cache Residency	SERVICE	No ²
49	10	xx	CACHE WRITE PENDING RATIO IS OVER 65%	Cache	SERVICE	No
4a	10	00	OEM drive Microcode exchange start	Drive	SERVICE	No
4a	20	00	OEM drive Microcode exchange normal end	Drive	SERVICE	No
4a	30	00	OEM drive Microcode exchange abnormal end	Drive	MODERATE	No
4a	40	00	OEM drive Microcode exchange discontinued	Drive	SERVICE	No
4a	80	xx	Expander Micro Exchange failed	Processor	MODERATE	No
4b	2x	xx	Compatible FlashCopy ABNORMAL END	Failure with paired volumes	MODERATE	Yes
4b	3x	xx	Fast Snap ABNORMAL END	Failure with paired volumes	MODERATE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
4b	4x	xx	FlashCopy Hierarchical memory access error	Failure with paired volumes	MODERATE	Yes
4c	10	xx	PDEV Erase Start	Drive	SERVICE	No
4c	20	xx	PDEV Erase Normal End	Drive	SERVICE	No
4c	30	xx	PDEV Erase Abnormal End	Drive	SERVICE	No
4d	1x	xx	Differential area blocking	Drive	SERIOUS	Yes
50	1x	xx	DRIVE TEMPORARY ERROR	Drive	SERVICE	No
50	2x	xx	DRIVE MEDIA ERROR	Drive	SERVICE	No
50	5x	xx	Flash module drive internal battery error (ORM)	Drive	SERVICE	No
50	8x	xx	Flash module drive internal battery error	Drive	MODERATE	No
50	bx	xx	Flash drive End of life	Drive	SERVICE	Yes
50	cx	xx	Flash module drive End of life	Drive	SERVICE	Yes
50	dx	xx	Flash module drive battery warning	Drive	SERVICE	No
50	ex	xx	Flash module drive battery capacity shortage	Drive	MODERATE	No
50	f0	00	Flash module drive micro-program version warning	Drive	MODERATE	No
60	1x	xx	Pool utilization threshold excess	Fast Snap pool	MODERATE	Yes
60	2x	xx	Pool blocking	Fast Snap pool	MODERATE	Yes
60	30	00	SM Space Warning	SM	MODERATE	Yes ³
61	00	xx	BACKUP/RESTORE SM INFORMATION FAILED	SM	MODERATE	No
62	0x	xx	The THP POOL Warning Threshold was exceeded.	Thin Provisioning pool	MODERATE	Yes
62	2x	xx	The THP POOL FULL	Thin Provisioning pool	MODERATE	Yes
62	3x	xx	The THP POOL error is detected (XXX : Pool ID)	Thin Provisioning pool	MODERATE	Yes
62	40	00	SM(THP/FS) AREA DEPLETION	Thin Provisioning pool	MODERATE	Yes
62	50	00	THPpool threshold continues to be exceeded	Thin Provisioning pool	MODERATE	Yes
62	6x	xx	The THP POOL Depletion threshold was exceeded	Thin Provisioning pool	MODERATE	Yes
62	7x	xx	The THP POOL LDEV blockade	Thin Provisioning pool	MODERATE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
62	80	00	THPProtect attribute setting of DRU	Thin Provisioning pool	SERVICE	Yes
66	00	xx	LDEV Blockade (Effect of Encryption key lost)	SM	MODERATE	No
66	01	00	No free encryption key	Encryption key	MODERATE	Yes
66	02	00	Remaining free encryption key warning	Encryption key	SERVICE	Yes
66	10	00	Acquisition failure of the outside encryption key	Encryption key	MODERATE	Yes
67	00	00	Warning for depletion of cache management devices	Fast Snap	MODERATE	Yes
70	xx	00	Logical inconsistency	SVP failure	MODERATE	No
71	xx	00	Heap error	SVP failure	MODERATE	No
72	xx	00	File error	SVP failure	MODERATE	No
73	xx	00	LAN error	SVP failure	MODERATE	No
74	xx	xx	SSVP error	SVP failure	MODERATE	Yes
75	xx	00	Windows error	SVP failure	MODERATE	No
76	00	00	CUDG3 detected error	SVP failure	MODERATE	No
76	04	00	CUDG3 detected error	SVP failure	MODERATE	No
76	10	00	LCDG3 detected error	SVP failure	MODERATE	No
79	00	xx	BOOT detected error	SM	MODERATE	No
7a	00	00	NORMAL END	SVP failure	SERVICE	No
7a	01	00	ABNORMAL END(SVP)	SVP failure	SERVICE	No
7a	02	00	ABNORMAL END(MP)	SVP failure	SERVICE	No
7a	03	xx	VERSION CHK ERROR	SVP failure	SERVICE	No
7a	04	xx	Sum check error	SVP failure	SERVICE	No
7a	05	xx	HTP patch error	SVP failure	SERVICE	No
7a	10	00	WARNING(CONFIGURATION INCONSISTENCY)	SVP failure	SERVICE	No
7a	11	00	WARNING(S-SVP BUSY)	SVP failure	SERVICE	No
7a	12	xx	Warning (HTP busy)	SVP failure	SERVICE	No
7a	20	00	INTERNET DOWNLOAD ERROR	SVP failure	SERVICE	No
7a	23	00	Discontinuation by the user	SVP failure	SERVICE	No
7b	00	03	ISDN Router failure	SVP failure	MODERATE	Yes
7c	00	00	SVP reboot stop (FD Inserted)	SVP failure	MODERATE	No
7c	01	0x	BATTERY LIFE IS OVER	Battery	SERVICE	No
7c	02	00	Audit Log failure of Host instruction configuration change	SVP failure	MODERATE	No
7c	03	00	Audit Log FTP Transfer failed	SVP failure	MODERATE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
7c	04	00	Dump Tool failed	SVP failure	SERVICE	Yes
7c	05	00	Invalid SIM data detection	SVP failure	SERVICE	No
7e	12	xx	MP Operating Ratio Error	Monitor	MODERATE	Yes
7e	20	xx	Loss Of Signal Count(Fibre) Excess	Monitor	MODERATE	No
7e	21	xx	Bad Received Character Count(Fibre) Excess	Monitor	MODERATE	No
7e	22	xx	Loss Of Synchronization Count(Fibre) Excess	Monitor	MODERATE	No
7e	23	xx	Link Failure Count(Fibre) Excess	Monitor	MODERATE	No
7e	24	xx	Received EOFa Count(Fibre) Excess	Monitor	MODERATE	No
7e	25	xx	Discarded Frame Count(Fibre) Excess	Monitor	MODERATE	No
7e	26	xx	Bad CRC Count(Fibre) Excess	Monitor	MODERATE	No
7e	27	xx	Protocol Error Count(Fibre) Excess	Monitor	MODERATE	No
7e	28	xx	Expired Frame Count (Fibre) Excess	Monitor	MODERATE	No
7e	29	xx	HTP/FNP Multiplicity Excess	Monitor	MODERATE	No
7e	2c	xx	HTP/FNP Read Data Transfer Ratio Error	Monitor	MODERATE	No
7e	2d	xx	HTP/FNP Write Data Transfer Ratio Error	Monitor	MODERATE	No
7e	2e	xx	HTP/FNP Operating Ratio Error	Monitor	MODERATE	No
7e	30	00	Read Hit Ratio Excess	Monitor	MODERATE	No
7e	40	xx	Link Failure Count(FCoE) Excess	MONITORING INFORMATION	MODERATE	No
7e	41	xx	Virtual Link Failure Count(FCoE) Excess	MONITORING INFORMATION	MODERATE	No
7e	43	xx	Symbol Error Count(FCoE) Excess	MONITORING INFORMATION	MODERATE	No
7e	45	xx	FCS Error Count(FCoE) Excess	MONITORING INFORMATION	MODERATE	No
7e	ax	xx	Cache Use Ratio Error	Monitor	MODERATE	No
7e	bx	xx	Cache Write Pending Ratio Error	Monitor	MODERATE	No
7e	cx	xx	Cache MCU Side File Use Ratio Error	Monitor	MODERATE	No
7f	f1	00	Cnt AcS Z/Cnt AcS	SVP failure	SERVICE	No
7f	f1	02	BC Z/BC	SVP failure	SERVICE	No
7f	f1	03	Cnt AcJ	SVP failure	SERVICE	No
7f	f1	04	FS	SVP failure	SERVICE	No
7f	f1	05	FlashCopy	SVP failure	SERVICE	No
7f	f1	06	Auto LUN	SVP failure	SERVICE	No
7f	f2	xx	STANDBY SVP FAIL	SVP failure	MODERATE	No
7f	f3	xx	SVP FAIL OVER	SVP failure	MODERATE	No

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
7f	f7	xx	The term of validity is over	License key	MODERATE	Yes
7f	f8	xx	The capacity of validity is over	License key	MODERATE	Yes
7f	f9	xx	The PP is invalid by assumption PP invalidity	License key	MODERATE	Yes
7f	fa	0x	Synchronization time failure	SVP failure	SERVICE	Yes
ac	52	xx	HDU power off(CL1)	PS(DKU)	MODERATE	Yes
ac	53	xx	HDU power off(CL2)	PS(DKU)	MODERATE	Yes
ac	54	xx	HDU power recovered(CL1)	PS(DKU)	SERVICE	No
ac	55	xx	HDU power recovered(CL2)	PS(DKU)	SERVICE	No
ac	60	00	DKC was set to power error mode	PS(DKC)	MODERATE	No
ac	61	00	DKC was released from power error mode	PS(DKC)	SERVICE	No
ac	62	00	When DKC was set to power error mode, Urgent Destaging start succeeded	PS(DKC)	SERVICE	No
ac	63	00	When DKC was set to power error mode, Urgent Destaging start failed.	PS(DKC)	MODERATE	No
ac	80	0x	Server failure	DKC environment	SERIOUS	No
ac	90	00	DB Validation error	Drive	SERIOUS	No ²
af	14	x0	MPB overcurrent detection warning	Environmental error	MODERATE	No
af	50	xx	DBPS error	PS(DKU)	MODERATE	No
af	60	xx	DBPS ac input error	PS(DKU)	MODERATE	No
af	70	00	HDU External temperature warning	Environmental error	MODERATE	Yes
af	71	00	HDU External temperature Alarm	Environmental error	MODERATE	Yes
af	80	xx	SSW error	DKC environment	MODERATE	No
af	d1	xx	Battery charge EMPTY	Battery	MODERATE	No
af	d4	xx	CM Backup mounting warning	Cache	MODERATE	No
af	f0	xx	SSW data disagreement	DKC environment	MODERATE	No
bf	10	1x	External temperature alarm	Environmental error	MODERATE	Yes
bf	11	1x	External high temperature warning	Environmental error	MODERATE	Yes
bf	12	1x	External low temperature warning	Environmental error	MODERATE	Yes
bf	13	1x	Internal temperature alarm	Environmental error	MODERATE	Yes
bf	14	1x	Internal temperature warning_2	Environmental error	MODERATE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
bf	15	1x	Internal temperature warning_1	Environmental error	MODERATE	Yes
bf	16	1x	External high temperature warning (40 degrees C)	Environmental error	MODERATE	Yes
bf	22	xx	SSVP voltage warning (PS_SUB)	PS(DKC)	MODERATE	Yes
bf	23	xx	SSVP voltage warning (SVP supply)	PS(DKC)	MODERATE	Yes
bf	4x	1x	DKCPS warning	PS(DKC)	MODERATE	Yes
bf	6x	1x	DKCPS input voltage abnormality	PS(DKC)	MODERATE	Yes
bf	7x	1x	DKCFAN warning	Fan(DKC)	MODERATE	Yes
bf	85	a3	JP remains	Environment	MODERATE	Yes
bf	86	a3	JP remains	Environment	MODERATE	Yes
bf	9x	ax	Communication Error between SSVP and MN	DKC environment	MODERATE	No
bf	a0	ax	Logic PS voltage alarm disagreement	PS(DKC)	MODERATE	No
bf	a2	ax	External temperature disagreement	DKC environment	MODERATE	No
bf	a3	ax	Internal temperature alarm disagreement	DKC environment	MODERATE	No
bf	a4	ax	Internal temperature warning disagreement	DKC environment	MODERATE	No
bf	a5	ax	PSOFFREQ I/F disagreement	DKC environment	MODERATE	No
bf	a6	ax	PSOFFOK I/F disagreement	DKC environment	MODERATE	No
bf	a7	ax	SYSON I/F disagreement	DKC environment	MODERATE	No
bf	a8	ax	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	a9	ax	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	aa	a0	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	aa	a4	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	ab	a0	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	ab	a4	DKCPS I/F disagreement	DKC environment	MODERATE	No
bf	ac	a0	Communication Error between MN and MN	Environment	MODERATE	No
bf	ac	a1	Communication Error between MN and MN	Environment	MODERATE	No
bf	ac	a4	Communication Error between MN and MN	Environment	MODERATE	No

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
bf	ac	a5	Communication Error between MN and MN	Environment	MODERATE	No
bf	ad	a3	Cable connection error	Environment	MODERATE	No
bf	ad	a4	Cable connection error	Environment	MODERATE	No
bf	ae	a1	Cable connection error	Environment	MODERATE	No
bf	af	a0	PCTL/PNL abnormally	Environment	MODERATE	No
bf	af	a4	PCTL/PNL abnormally	Environment	MODERATE	No
bf	bx	ax	PCTL/PNL abnormally	DKC environment	MODERATE	No
bf	c0	10	DKC ALARM LED light on	DKC environment	SERIOUS	Yes
bf	e3	a2	Duplex SVP Setup fail	SVP failure	MODERATE	Yes
bf	e4	00	SVP FAN0 error	SVP failure	MODERATE	No
bf	e4	01	SVP FAN1 error	SVP failure	MODERATE	No
bf	e4	02	SVP FAN2 error	SVP failure	MODERATE	No
bf	e4	06	EXTENDER Hardware error	SVP failure	MODERATE	No
bf	e4	07	USB interface error	SVP failure	MODERATE	No
bf	e4	08	SVP receiving voltage error (CL1)	SVP failure	MODERATE	No
bf	e4	09	SVP receiving voltage error (CL2)	SVP failure	MODERATE	No
cf	10	xx	SAS CTL blocking	Processor	MODERATE	Yes
cf	11	xx	A SAS PORT, one of 2WL, is partial blocked	Processor	SERVICE	No
cf	12	xx	SAS PORT blocked	Processor	MODERATE	Yes
cf	6x	xx	Logical DMA blocking	Processor	MODERATE	Yes
cf	80	xx	DRR TEMPORARY ERROR	Processor	SERVICE	No
cf	81	xx	DMA temporary error	Processor	SERVICE	No
cf	82	xx	DRR BLOCKING	Processor	MODERATE	Yes
cf	83	xx	DMA blocking	Processor	MODERATE	Yes
cf	88	xx	LR blocking	Processor	MODERATE	Yes
cf	89	xx	All DMA blocking	Processor	MODERATE	Yes
cf	bx	xx	MFDMA blocking	Processor	MODERATE	Yes
cf	dx	xx	Logical DRR blocking	Processor	MODERATE	No
d0	0x	xx	Cnt Ac-S Z/Cnt Ac-Sstarted the initial copy or out of sync for this volume	Failure with paired volumes	SERVICE	Yes
d0	1x	xx	Cnt Ac-S Z/Cnt Ac-Scompleted the initial copy for this volume	Failure with paired volumes	SERVICE	Yes
d0	2x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was deleted(Operation from an SVP/Web Console or a host processor)	Failure with paired volumes	SERVICE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
d0	6x	xx	Cnt Ac-S Zcompleted the Create pair(No copy suspend)	Failure with paired volumes	SERVICE	Yes
d1	0x	xx	Remote Copy pair status change (MCU Command) (From Simplex to Duplex Pending)	Failure with paired volumes	SERVICE	Yes
d1	1x	xx	Remote Copy pair status change (MCU Command) (From Simplex to Duplex)	Failure with paired volumes	SERVICE	Yes
d1	2x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Duplex)	Failure with paired volumes	SERVICE	Yes
d1	3x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend)	Failure with paired volumes	SERVICE	Yes
d1	4x	xx	Remote Copy pair status change (MCU Command) (From Duplex to Suspend)	Failure with paired volumes	SERVICE	Yes
d1	5x	xx	Remote Copy pair status change (MCU Command) (From Duplex to Simplex)	Failure with paired volumes	SERVICE	Yes
d1	6x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Simplex)	Failure with paired volumes	SERVICE	Yes
d1	7x	xx	Remote Copy pair status change (MCU Command) (From Suspend to Simplex)	Failure with paired volumes	SERVICE	Yes
d1	8x	xx	Remote Copy pair status change (MCU Command) (From Suspend to Duplex Pending)	Failure with paired volumes	SERVICE	Yes
d1	9x	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend(continue))	Failure with paired volumes	SERVICE	Yes
d1	ax	xx	Remote Copy pair status change (MCU Command) (From Duplex Pending to Suspend(complete))	Failure with paired volumes	SERVICE	Yes
d1	bx	xx	Remote Copy pair status change (MCU Command) (From Suspend (continue) to Suspend)	Failure with paired volumes	SERVICE	Yes
d4	0x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS	Yes
d4	1x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was suspended (Due to an unrecoverable failure on the P-VOL or the remote copy connections)	Failure with paired volumes	SERIOUS	Yes
d4	2x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was suspended (Due to an unrecoverable failure on the S-VOL)	Failure with paired volumes	SERIOUS	Yes
d4	3x	xx	Cnt Ac-S Zfor this volume was suspended (Caused by DFW to the S-VOL was prohibited)	Failure with paired volumes	SERIOUS	Yes
d4	4x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was suspended (Due to an internal error condition detected by the RCU)	Failure with paired volumes	SERIOUS	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
d4	5x	xx	Cnt Ac-S Z/Cnt Ac-Sfor this volume was suspended (Caused by Delete pair operation was issued to the S-VOL)	Failure with paired volumes	SERIOUS	Yes
d4	6x	xx	The S-VOL has suspended. (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS	Yes
d4	7x	xx	The S-VOL has suspended (Due to an unrecoverable failure on the S-VOL)	Failure with paired volumes	SERIOUS	Yes
d4	fx	xx	Status of the P-VOL was not consistent with the S-VOL	Failure with paired volumes	SERIOUS	Yes
d5	7x	xx	Command device operation execution of command device in state of ONLINE	Drive	SERVICE	No
d8	0x	xx	PAIR VOLUME ESTABLISH	Failure with paired volumes	SERVICE	Yes
d8	1x	xx	COPY START	Failure with paired volumes	SERVICE	Yes
d8	2x	xx	COPY NORMAL END	Failure with paired volumes	SERVICE	Yes
d8	3x	xx	SUSPEND END	Failure with paired volumes	SERVICE	Yes
d8	4x	xx	SUSPEND END	Failure with paired volumes	SERVICE	Yes
d8	5x	xx	PAIR END	Failure with paired volumes	SERVICE	Yes
d8	6x	xx	PAIR END	Failure with paired volumes	SERVICE	Yes
d8	7x	xx	PAIR NORMAL END	Failure with paired volumes	SERVICE	Yes
d8	8x	xx	A Delta volume to be used by the Cnt Ac-J was defined	Failure with paired volumes	SERVICE	Yes
d8	9x	xx	A Delta volume to be used by the Cnt Ac-J was redefined	Failure with paired volumes	SERVICE	Yes
d9	0x	xx	A change to an S-VOL was received from the MCU (From Simplex to Duplex Pending)	Failure with paired volumes	SERVICE	Yes
d9	1x	xx	A change to an S-VOL was received from the MCU (From Simplex to Duplex)	Failure with paired volumes	SERVICE	Yes
d9	2x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Duplex)	Failure with paired volumes	SERVICE	Yes
d9	3x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Suspend)	Failure with paired volumes	SERVICE	Yes
d9	4x	xx	A change to an S-VOL was received from the MCU (From Duplex to Suspend)	Failure with paired volumes	SERVICE	Yes
d9	5x	xx	A change to an S-VOL was received from the MCU (From Duplex to Simplex)	Failure with paired volumes	SERVICE	Yes
d9	6x	xx	A change to an S-VOL was received from the MCU (From Duplex Pending to Simplex)	Failure with paired volumes	SERVICE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
d9	7x	xx	A change to an S-VOL was received from the MCU (From Suspend to Simplex)	Failure with paired volumes	SERVICE	Yes
d9	8x	xx	A change to an S-VOL was received from the MCU (From Suspend to Duplex Pending)	Failure with paired volumes	SERVICE	Yes
d9	9x	xx	A change to an S-VOL was received from the MCU (HOLD -> PAIR)	Failure with paired volumes	SERVICE	Yes
d9	ax	xx	A change to an S-VOL was received from the MCU (HOLD -> COPY)	Failure with paired volumes	SERVICE	Yes
d9	bx	xx	A change to an S-VOL was received from the MCU (HOLD -> SMPL)	Failure with paired volumes	SERVICE	Yes
d9	cx	xx	A change to an S-VOL was received from the MCU (From Simplex to Suspend)	Failure with paired volumes	SERVICE	Yes
d9	dx	xx	A change to an S-VOL was received from the MCU (SMPL -> HOLD)	Failure with paired volumes	SERVICE	Yes
d9	ex	xx	A change to an S-VOL was received from the MCU (PSUX(Suspend) -> HOLD)	Failure with paired volumes	SERVICE	Yes
d9	fx	xx	A change to an S-VOL was received from the MCU (From Duplex to Duplex Pending)	Failure with paired volumes	SERVICE	Yes
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	No
da	1x	xx	A change to an S-VOL was received from the RCU (A suspension transaction was completed.)	Failure with paired volumes	SERVICE	No
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	No
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	No
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	No
da	5x	xx	A change to an S-VOL was received from the RCU (A pair deletion was completed.)	Failure with paired volumes	SERVICE	No
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	No
dc	0x	xx	PAIR SUSPEND(RIO PATH CLOSE)	Failure with paired volumes	SERIOUS	Yes
dc	1x	xx	PAIR SUSPEND(MVOL ERROR)	Failure with paired volumes	SERIOUS	Yes
dc	2x	xx	PAIR SUSPEND(RVOL ERROR)	Failure with paired volumes	SERIOUS	Yes
dc	4x	xx	PAIR SUSPEND(SUSPEND REPORT)	Failure with paired volumes	SERIOUS	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
dc	5x	xx	PAIR SUSPEND(SIMPLEX REPORT)	Failure with paired volumes	SERIOUS	Yes
dc	6x	xx	PAIR SUSPEND(COMMUNICATION ERROR AT RCU)	Failure with paired volumes	SERIOUS	Yes
dc	7x	xx	PAIR SUSPEND(ERROR DETECTED AT RCU)	Failure with paired volumes	SERIOUS	Yes
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	No
dc	9x	xx	ERASE FAIL	Failure with paired volumes	SERIOUS	Yes
dc	ax	xx	Pair suspend (Spread by error of another Affiliate)	Failure with paired volumes	SERIOUS	Yes
dc	e0	xx	Cnt Ac-J M-JNL Meta overflow warning	Failure with paired volumes	MODERATE	No
dc	e1	xx	Cnt Ac-J M-JNL Data overflow warning	Failure with paired volumes	MODERATE	No
dc	e2	xx	Cnt Ac-J R-JNL Meta overflow warning	Failure with paired volumes	MODERATE	No
dc	e3	xx	Cnt Ac-J R-JNL Data overflow warning	Failure with paired volumes	MODERATE	No
dc	f0	xx	The Cnt Ac-J Read JNL was interrupted for one minute (A failure on the MCU side was detected)	Failure with paired volumes	MODERATE	No
dc	f1	xx	The Cnt Ac-J Read JNL was interrupted for five minutes (A failure on the MCU side was detected)	Failure with paired volumes	SERIOUS	No
dc	f2	xx	The Cnt Ac-J Read JNL was interrupted for one minute (A failure on the RCU side was detected)	Failure with paired volumes	MODERATE	No
dc	f3	xx	The Cnt Ac-J Read JNL was interrupted for five minutes (A failure on the RCU side was detected)	Failure with paired volumes	SERIOUS	No
dc	f4	xx	Cnt Ac-JxCnt Ac-J M-JNL Meta full Warning	Failure with paired volumes	MODERATE	No
dc	f5	xx	Cnt Ac-JxCnt Ac-J M-JNL Data full Warning	Failure with paired volumes	MODERATE	No
dd	0x	xx	HA for this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS	Yes
dd	1x	xx	HA for this volume was suspended (Due to a failure on the volume)	Failure with paired volumes	SERIOUS	Yes
dd	2x	xx	HA for this volume was suspended (Due to an internal error condition detected)	Failure with paired volumes	SERIOUS	Yes
dd	3x	xx	Status of the P-VOL was not consistent with the S-VOL	Failure with paired volumes	SERIOUS	Yes
de	e0	xx	Quorum Disk Restore	Drive	SERVICE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
de	f0	xx	Quorum Disk Blocked	Drive	SERIOUS	Yes
df	6x	xx	Drive port temporary error (Drive path: Boundary 0)	Drive	SERVICE	No
df	7x	xx	Drive port temporary error (Drive path: Boundary 1)	Drive	SERVICE	No
df	8x	xx	DRIVE PORT BLOCKADE(PATH 0)	Drive	MODERATE	Yes
df	9x	xx	DRIVE PORT BLOCKADE(PATH 1)	Drive	MODERATE	Yes
df	ax	xx	LDEV blockade(Drive path: Boundary 0/Effect of Drive port blockade)	Drive	SERIOUS	Yes
df	bx	xx	LDEV blockade(Drive path: Boundary 1/Effect of Drive port blockade)	Drive	SERIOUS	Yes
df	cx	xx	Drive Link Rate Abnormality (Path 0)	Drive	SERVICE	Yes
df	dx	xx	Drive Link Rate Abnormality (Path 1)	Drive	SERVICE	Yes
df	fx	xx	Response late Drive	Drive	SERVICE	No
ef	0x	xx	Drive blockade (drive)(with redundancy)	Drive	SERIOUS	Yes
ef	1x	xx	Drive blockade (drive) (without redundancy)	Drive	SERIOUS	Yes
ef	2x	xx	DRIVE BLOCKADE(EFFECT OF DRIVE COPY NORMAL END)	Drive	SERVICE	Yes
ef	4x	xx	PINNED SLOT	Drive	MODERATE	No
ef	5x	xx	Abnormal end of Write processing in External storage system	Drive	MODERATE	No
ef	9x	xx	LDEV blockade (Effect of drive blockade)	Drive	SERIOUS	Yes
ef	ax	xx	DRIVE TEMPORARY ERROR	Drive	SERVICE	No
ef	cx	xx	Correction access occurred	Drive	SERIOUS	Yes
ef	d0	00	External storage system connection device blockade	Drive	SERIOUS	Yes
ef	d4	00	Blocking the Data Migration source device	Drive	MODERATE	No
ef	fe	xx	UNIT CONNECTION ERROR	DKC environment	MODERATE	Yes
ef	ff	0x	DRIVE CLOSE(DKU TYPE UNMATCH)	Drive	SERIOUS	No
fe	00	00	Cache battery is being charged	Cache	SERIOUS	Yes
fe	01	0x	End of Cache Write Through	Cache	SERVICE	No
fe	02	0x	Start of Cache Write Through	Cache	MODERATE	Yes
fe	03	0x	Cache SSD mounting capacity shortage	Cache	SERIOUS	No
ff	4x	xx	PINNED SLOT	Cache	MODERATE	No
ff	5x	xx	Abnormal end of Read processing in External storage system	Drive	MODERATE	No
ff	9c	0x	MPA warning	Cache	MODERATE	No
ff	c2	xx	CACHE MODULE GROUP BLOCKADE PROCESSING END	Cache	SERVICE	Yes

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
ff	c3	0x	CACHE PACKAGE BLOCKADE PROCESSING END	Cache	SERVICE	Yes
ff	cc	0x	CM/CMA patrol check error	Cache	SERVICE	No
ff	cd	0x	Area is volatilized	Cache	SERVICE	No
ff	ce	0x	Package is volatilized	Cache	SERVICE	No
ff	cf	xx	Package is volatilized	Cache	SERVICE	No
ff	de	xx	WDCP loss of duplicated information	SM	SERVICE	No
ff	e2	0x	SM area blocking	SM	SERIOUS	Yes
ff	e4	0x	REPLACE FAILED	Cache	SERIOUS	No
ff	e6	00	CONFIGURATION INFORMATION COMPARE ERROR	SM	ACUTE	No
ff	e7	00	Rebooted with volatilization after an instantaneous down	SM	SERIOUS	Yes
ff	e8	00	Definition/Installation mismatch	SM	ACUTE	No
ff	ea	0x	RECOVERY OF AREA BLOCKED TEMPORARILY WAS COMPLETED	SM	SERVICE	Yes
ff	ee	0x	AREA TEMPORARY BLOCKING	SM	SERVICE	Yes
ff	ef	00	Rebooted without volatilization after an instantaneous down	SM	SERVICE	No
ff	f0	xx	DIMM Correctable error	Cache	SERVICE	No
ff	f1	xx	Cache temporary error	Cache	SERVICE	Yes
ff	f2	xx	Module group blocking	Cache	MODERATE	Yes
ff	f3	0x	PACKAGE BLOCKING	Cache	MODERATE	Yes
ff	f4	00	AREA BLOCKING	Cache	SERIOUS	Yes
ff	f4	01	AREA BLOCKING	Cache	SERIOUS	Yes
ff	f5	0x	Both areas failed	Cache	MODERATE	No
ff	f6	xx	CM Injustice dc voltage control	Cache	MODERATE	No
ff	f8	0x	CMA Memory Correctable error	Cache	SERVICE	No
ff	f9	0x	REPLACE FAILED	Cache	SERVICE	No
ff	fa	xx	Battery warning	Battery	MODERATE	No
ff	fb	xx	CMBK warning	Cache	MODERATE	No
ff	fc	xx	CM Temperature abnormality warning	Cache	MODERATE	No
ff	fd	xx	Module group failure detection outside of config	Cache	SERVICE	No
ff	fe	xx	Warning for forcible volatile mode	Cache	MODERATE	No

Legend:

- **Yes:** This SIM performs the host report.
- **No:** This SIM does not perform the host report.
- **x:** A hexadecimal number between 0 and f.

Trap reference code			Description	Section	Alert level	Host report ¹
SIM 22	SIM 23	SIM 13				
<ol style="list-style-type: none"> 1. If you select All for Notification Alert in the Edit Alert Settings window, the SNMP agent reports all SIMs. If you select Host Report, the SNMP agent reports only SIMs that perform the host report. 2. This SIM is not reported to the host, but the SNMP agent reports the SIM when Host Report is selected for Notification Alert in the Edit Alert Settings window. 3. The SNMP agent does not report this SIM when Host Report is selected for Notification Alert in the Edit Alert Settings window, because the SIM is reported to the host, but not to the SVP. 						

5 Troubleshooting

Abstract

This chapter provides troubleshooting information for the SNMP Agent.

Getting help

If you have difficulty with any of the procedures included in this document, or if a procedure does not provide the answer or results you expect, please contact HP technical support.

Solving SNMP problems

This topic describes some problems that can occur with SNMP. You should install a secondary SVP. Otherwise, traps could be reported to an IP address that is not specified in SNMP settings.

The following problems can occur:

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, you might not receive SNMP agent cold traps when the SVP is rebooted.
- The 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 SVP OS 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 HP XP7. Error reports include storage system nicknames, which can be used to identify each storage system.

6 Support and other resources

Contacting HP

For worldwide technical support information, see the HP Support Center:

<http://www.hp.com/go/hpsc>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Related information

The following documents [and websites] provide related information:

- *HP XP7 Continuous Access Journal for Mainframe Systems User Guide*
- *HP XP7 Continuous Access Synchronous for Mainframe Systems User Guide*
- *HP XP7 Continuous Access Synchronous User Guide*
- *HP XP7 External Storage for Open and Mainframe Systems User Guide*
- *HP XP7 for Compatible FlashCopy Mirroring User Guide*
- *HP XP7 Provisioning for Mainframe Systems User Guide*
- *HP XP7 RAID Manager User Guide*
- *HP XP7 Remote Web Console Messages*
- *HP XP7 RemoteWeb Console User Guide*

You can find these documents at:

- HP Business Support Center website (Manuals page):
<http://www.hp.com/support/manuals>
Click **Storage** > **Disk Storage Systems** > **XP Storage**, and then select your Storage System.
- HP Enterprise Information Library website:
<http://h17007.www1.hp.com/us/en/storage/info-library/index.aspx>
Under Products and Solutions, click **HP XP Storage**. Then, click **XP7 Storage** under HP XP Storage.

Websites

- HP Event Monitoring Service and HA Monitors Software:
<http://www.hp.com/go/hpux-ha-monitoring-docs>
- HP Technical Support website:
<http://www.hp.com/support>

- Single Point of Connectivity Knowledge (SPOCK) website:
<http://www.hp.com/storage/spock>
- White papers and Analyst reports:
<http://www.hp.com/storage/whitepapers>

Typographic conventions

Table 1 Document conventions

Convention	Element
Blue text: Table 1 (page 42)	<ul style="list-style-type: none"> • Cross-reference links and e-mail addresses • A cross reference to the glossary definition of the term in blue text
Blue, underlined text: http://www.hp.com	Website addresses
Bold text	<ul style="list-style-type: none"> • Keys that are pressed • Text typed into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
<i>Italic</i> text	Text emphasis
Monospace text	<ul style="list-style-type: none"> • File and directory names • System output • Code • Commands, their arguments, and argument values
<i>Monospace, italic</i> text	<ul style="list-style-type: none"> • Code variables • Command variables
Monospace, bold text	Emphasized monospace text



WARNING! Indicates that failure to follow directions could result in bodily harm or death.



CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.



IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.



TIP: Provides helpful hints and shortcuts.

7 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

A Regulatory information

For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at <http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>.

Belarus Kazakhstan Russia marking



Manufacturer and Local Representative Information

Manufacturer's information:

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Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (HP serial number format for this product)

Valid date formats include:

- YWW, where Y indicates the year counting from within each new decade, with 2000 as the starting point; for example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- YYWW, where YY indicates the year, using a base year of 2000; for example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

HP ProLiant and X86 Servers and Options

<http://www.hp.com/support/ProLiantServers-Warranties>

HP Enterprise Servers

<http://www.hp.com/support/EnterpriseServers-Warranties>

HP Storage Products

<http://www.hp.com/support/Storage-Warranties>

HP Networking Products

<http://www.hp.com/support/Networking-Warranties>

Glossary

Abstract

Terms:

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

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.

managed node See managed device.

management information base (MIB) A virtual database of objects that can be monitored by a network management system. SNMP uses standardized MIBs that allow any SNMP-based tool to monitor any device defined by a MIB file.

MIB See management information base.

S

Simple Network Management Protocol (SNMP) 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 See Simple Network Management Protocol.

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

SNMP Manager Software that is installed on the network management station that collects and manages information from SNMP agents installed in the managed devices on the network.

SNMP trap An event generated by an SNMP agent from the managed resource that communicates an event, such as an error or failure.

U

UDP See user datagram protocol.

user datagram protocol (UDP) Software that requests data regarding the status of a managed node.

Index

A

- access mode
 - MIB, 17
- adding
 - community IP addresses, 10
 - community names, 12
 - SNMP Manager IP addresses, 14
- alerts
 - editing settings, 10
- architecture
 - SNMP environment, 6

B

- Belarus Kazakhstan Russia EAC marking, 44

C

- changing
 - community IP addresses, 11
 - community names, 13
- codes
 - SNMP failure trap reference, 24
- cold trap function, troubleshooting, 40
- community
 - adding IP addresses, 10
 - adding names, 12
 - changing IP addresses, 11
 - changing names, 13
 - deleting IP addresses, 12
 - deleting names, 13
- components
 - storage system, 8
- configuration
 - extension MIB, 18
 - SNMP Agent, 6
- configuring
 - alert settings, 10
- contacting HP, 41
- conventions
 - document, 42
 - text symbols, 42

D

- definition files, trouble inputting, 40
- deleting
 - community IP addresses, 12
 - community names, 13
 - SNMP Manager IP addresses, 15
- document
 - conventions, 42
 - related information, 41
- documentation
 - HP website, 41
 - providing feedback on, 43

E

- EAC marking
 - Belarus Kazakhstan Russia, 44
- editing
 - alert settings, 10
- environment
 - SNMP, 6
- errors
 - REQUEST operation, 8
 - SNMP Agent, reported by, 8
- EuroAsian Economic Commission (EAC), 44
- extension trap
 - supported types, 16
- extension traps
 - protocol data unit, 16

F

- failure
 - SNMP trap reference codes, 24
 - trap report, 16

H

- help
 - getting support, 40
 - obtaining, 41
- HP
 - technical support, 41

I

- interaction
 - SNMP Manager and SNMP Agent, 5
- introduction, 5
- IP addresses
 - adding, for community, 10
 - adding, for SNMP Manager, 14
 - changing, for community, 11
 - deleting, for community, 12
 - deleting, for SNMP Manager, 15

M

- Management Information Base
 - overview, 6
- MIB
 - access mode, 17
 - extension configuration, 18
 - extension specifications, 18
 - mounting specifications, 17
 - object identifier systemconfigurationMIB, 17
 - overview, 6
 - raidExMibAgentVersion, 20
 - raidExMibDkcCount, 20
 - raidExMibDKCHWTable, 21
 - raidExMibDKUHWTable, 22
 - raidExMibName, 19
 - raidExMibRaidListTable, 20

- raidExMibTrapListTable, 22
- raidExMibVersion, 19
- supported types, 16
- MIB definition files, trouble inputting, 40
- mounting
 - MIB specifications, 17
 - system groups, 17

N

- names
 - adding, for community, 12
 - changing, for community, 13
 - deleting, for community, 13

O

- objects
 - identifier system, 17
- operations
 - REQUEST, 8
 - SNMP Agent, 7
- overview
 - Management Information BaseMIB, 6
 - SNMP Agent, 7
 - SNMP Manager, 5
 - SNMPSimple Network Management Protocol, 5

P

- PDU, 16
- protocol data unit, 16

R

- raidExMibAgentVersion, 20
- raidExMibDkcCount, 20
- raidExMibDKCHWTable, 21
- raidExMibDKUHWTable, 22
- raidExMibName, 19
- raidExMibRaidListTable, 20
- raidExMibTrapListTable, 22
- raidExMibVersion, 19
- regulatory information, 44
 - Turkey RoHS material content declaration, 44
 - Ukraine RoHS material content declaration, 44
- related documentation, 41
- reports
 - testing, for SNMP traps, 15

S

- security function, troubleshooting, 40
- Simple Network Management Protocol
 - overview, 5
- SNMP
 - environmentarchitecture, 6
 - failure trap reference codes, 24
 - interaction of manager and agent, 5
 - overview, 5
 - traps, 7
- SNMP Agent
 - configuration, 6
 - environment, 6

- errors reported, 8
- operations, types of, 7
- overview, 7
- traps, 7
- SNMP Manager
 - adding IP addresses, 14
 - components, status ofstatus of components, 8
 - deleting IP addresses, 15
 - environment, 6
 - overview, 5
- specifications
 - extension MIB, 18
 - MIB mounting, 17
- status
 - storage system components, 8
- support
 - getting help, 40
- symbols in text, 42
- system groups
 - mounting, 17

T

- technical support, 41
 - HP, 41
- testing
 - SNMP trap report, 15
- text symbols, 42
- traps
 - failure report, 16
 - SNMP, 7
 - SNMP Agent, 7
 - SNMP failure reference codes, 24
 - supported types, 16
 - testing, of SNMP trap reports, 15
 - triggers, 7
- troubleshooting
 - abnormal response to SNMP commands, 40
 - inputting MIB definition files, 40
 - SNMP cold trap function, 40
 - SNMP security function, 40
- Turkey RoHS material content declaration, 44
- typographic conventions, 42

U

- Ukraine RoHS material content declaration, 44

W

- warranty information
 - HP Enterprise servers, 44
 - HP Networking products, 44
 - HP ProLiant and X86 Servers and Options, 44
 - HP Storage products, 44
- websites, 41
 - product manuals, 41