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Hitachi Command Suite

Tuning Manager
Server Administration Guide

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MK-92HC021-38

Hitachi Data Systems

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Glossary

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Preface

This document describes how to manage the Hitachi Command Suite Tuning Manager software on a server. This guide is intended for system administrators who use Tuning Manager to manage data on storage systems. We recommend that the readers of this manual have a basic knowledge of Storage Area Networks (SANs), data processing and peripheral storage device systems and their basic functions, OSs on which the web client runs, and the content of user manuals for their storage systems.

This preface includes the following information:

- Intended audience
- Product version
- Release notes
- Document organization
- Referenced documents
- Document conventions
- Convention for storage capacity values
- Accessing product documentation
- Getting help
- Comments

Intended audience

This document is intended for the following users:

- System administrators
- Application developers
- System integrators
- Technology consultants
- System architects and capacity planners who rely on Tuning Manager reports and forecasts

Product version

This document revision applies to Tuning Manager v8.1.3 or later.

Release notes

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

Document organization

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

Chapter	Description
Overview on page 1-1	Provides an overview of key system administration tasks including configuring and operating Tuning Manager server components.
Working with licenses on page 2-1	Describes how to manage your Tuning Manager server license.
Managing the Tuning Manager server database on page 3-1	Describes how to manage the Tuning Manager server database.
Managing users on page 4-1	Describes how to create and manage Tuning Manager server user accounts.
Configuring connection and initial settings on page 5-1	Describes the settings needed to launch related applications.
Specifying settings for data acquisition from Agents and Device Manager on page 6-1	Describes the functions for acquiring data from Agents and Device Manager (referred to hereafter as *polling*) and how to specify the settings for data acquisition.
Error handling procedures on page 7-1	Explains how to handle any errors that may occur while using Main Console and Performance Reporter.
Working with Common Component on page 8-1	Describes the functions provided by Common Component.

Chapter	Description
Default installation directories for the Tuning Manager series programs on page A-2	Lists the default installation directories for the Tuning Manager series programs.
Glossary on page Glossary-1	Defines the acronyms and abbreviations used in this document.

Referenced documents

The following Hitachi referenced documents can be found on the applicable Hitachi documentation CD:

- Hitachi Command Suite Documents:
  - *Hitachi Command Suite Administrator Guide*, MK-90HC175
  - *Hitachi Command Suite Installation and Configuration Guide*, MK-90HC173
  - *Tuning Manager Agent Administration Guide*, MK-92HC013
  - *Tuning Manager User Guide*, MK-92HC022
  - *Tuning Manager Hardware Reports Reference*, MK-95HC111
  - *Tuning Manager Operating System Reports Reference*, MK-95HC112
  - *Tuning Manager Application Reports Reference*, MK-95HC113
  - *Tuning Manager Messages*, MK-95HC114
  - *Tuning Manager CLI Reference Guide*, MK-96HC119
  - *Tuning Manager Installation Guide*, MK-96HC141
  - *Tuning Manager API Reference Guide*, MK-92HC218

Hitachi Data Systems Portal, http://portal.hds.com

Document conventions

The terms "Universal Storage Platform V" and "Universal Storage Platform VM" refer to all models of the Hitachi Universal Storage Platform V and VM storage systems, unless otherwise noted.

This document uses the following typographic conventions:

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click **OK**.
Italic	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: `copy` *`source-file target-file`* ***Note:*** Angled brackets (< >) are also used to indicate variables.
`screen/code`	Indicates text that is displayed on screen or entered by the user. Example: `# pairdisplay -g oradb`

Convention	Description
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: `# pairdisplay -g <group>` ***Note:*** Italic font is also used to indicate variables.
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a | b] indicates that you can choose a, b, or nothing. { a | b } indicates that you must choose either a or b.

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

Icon	Meaning	Description
	Note	Notes emphasize or supplement important points of the main text.
	Tip	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Cautions indicate that failure to take a specified action could result in damage to the software or hardware.
	WARNING	Warnings indicate that failure to take a specified action could result in loss of data or serious damage to hardware.

Convention for storage capacity values

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

Physical Capacity Unit	Value
1 kilobyte (KB)	1000 (10^3 bytes)
1 megabyte (MB)	1,000 KB or (10^2 bytes)
1 gigabyte (GB)	1,000 MB or (10^3 bytes)
1 terabyte (TB)	1,000 TB or (10^4 bytes)
1 petabyte (PB)	1,000 PB or (10^5 bytes)
1 exabyte (EB)	1,000 EB or (10^6 bytes)

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

Logical Capacity Unit	Value
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1{,}024^2$ bytes
1 GB	1,024 MB or $1{,}024^3$ bytes
1 TB	1,024 GB or $1{,}024^4$ bytes
1 PB	1,024 TB or $1{,}024^5$ bytes
1 EB	1,024 PB or $1{,}024^6$ bytes
1 block	512 bytes

Accessing product documentation

The Tuning Manager user documentation is available on the Hitachi Data Systems Portal: https://portal.hds.com/. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

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

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

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title, number, and revision, and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation. Thank you!

1

Overview

This chapter provides an overview of key system administration tasks including configuring and operating Tuning Manager server components. For details on the GUI framework described in this manual, see the *Tuning Manager User Guide*.

This chapter includes the following topics:

- ☐ Tasks to perform before starting operations
- ☐ Overview of the Tuning Manager administrative GUI
- ☐ Logging in to a Tuning Manager server as an Administrator
- ☐ Logging out
- ☐ Services registered for Tuning Manager server (Windows only)
- ☐ Resident processes of Tuning Manager server
- ☐ Starting services
- ☐ Stopping services
- ☐ Setting up the user property file
- ☐ Ports used by a Tuning Manager server
- ☐ Changing the network settings of the management server
- ☐ Restricting web terminals that can connect to a Tuning Manager server
- ☐ About machine time differences

- ☐ Operating a Tuning Manager server in an IPv6 environment

Tasks to perform before starting operations

Figure 1-1 Flow of tasks to perform before starting operations on page 1-3 shows the flow of the tasks you must perform from when you prepare to install a Tuning Manager server to when you begin operations.

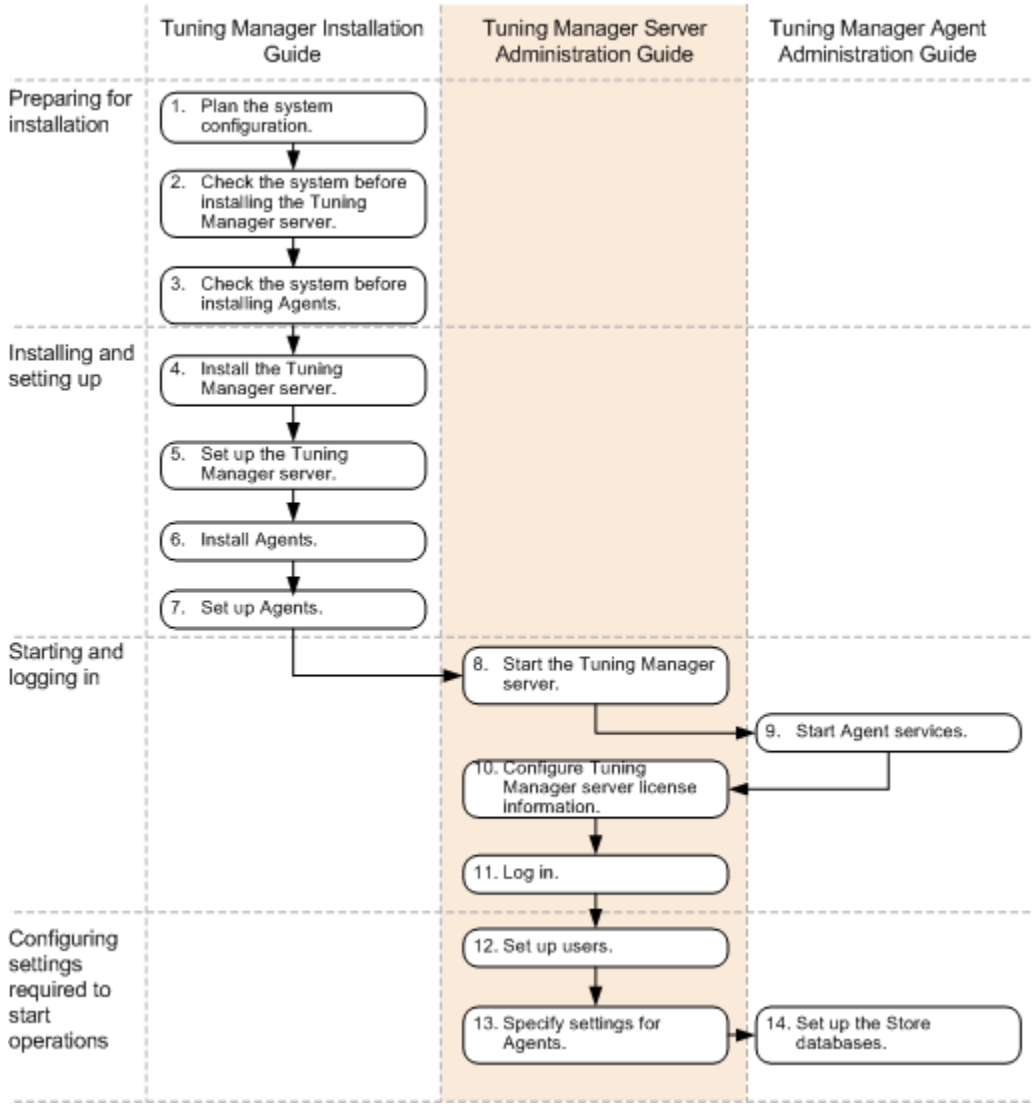

Figure 1-1 Flow of tasks to perform before starting operations

Once you have performed the tasks listed in Figure 1-1 Flow of tasks to perform before starting operations on page 1-3, you can use reports and alarms, called a solution set, which contain the pre-defined information you need to start operating the Tuning Manager server. You can also customize the definitions in the reports and alarms included in the solution set to better match your environment. For details about how to use reports and alarms, see the *Tuning Manager User Guide*.

Table 1-1 Overview and reference location of tasks required before starting operations on page 1-4 provides an overview of the tasks listed in Figure 1-1 Flow of tasks to perform before starting operations on page 1-3, and indicates where you can find a detailed description of each task.

Table 1-1 Overview and reference location of tasks required before starting operations

Number in the figure	Task	Overview	Reference location
8	Start the Tuning Manager server.	Start the Tuning Manager server.	Starting services on page 1-21
10	Configure Tuning Manager server license information.	If you are performing a new installation, you must configure the license information for the Tuning Manager server.	Working with licenses on page 2-1
11	Log in.	Log in to the Tuning Manager server by using a user account that has the Admin (user management) permission.	Logging in to a Tuning Manager server as an Administrator on page 1-15
12	Set up users.	Create user accounts and specify permissions for the accounts.	Managing users on page 4-1
13	Specify settings for Agents.	Configure polling and add monitoring targets in the settings for the Agents.	Specifying settings for data acquisition from Agents and Device Manager on page 6-1

Overview of the Tuning Manager administrative GUI

This section describes the Administrator view of the Tuning Manager server, and functions that can be executed from each component, such as the application bar area, title area, and explorer area shown in Figure 1-2 Administrator view on page 1-4.

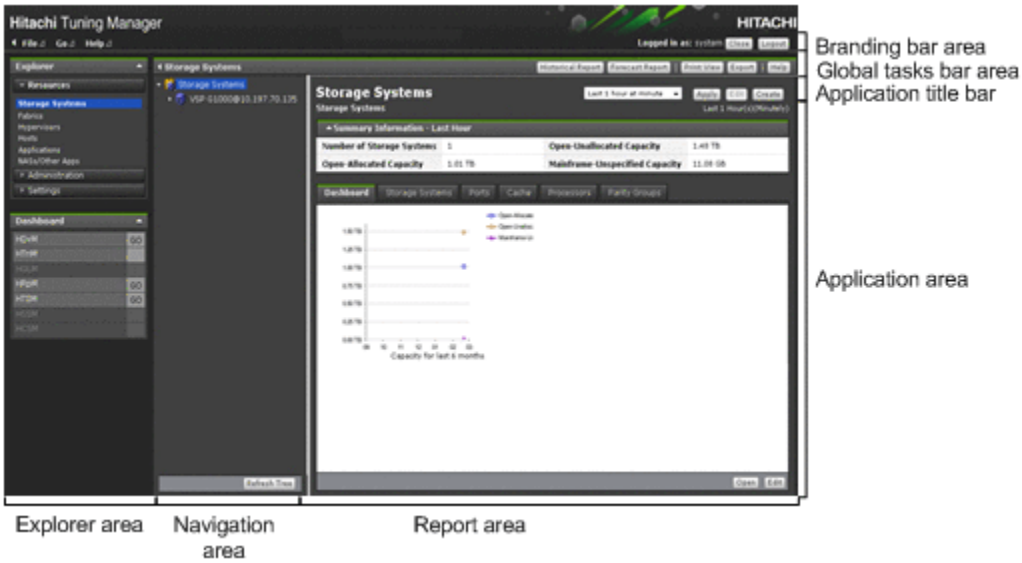

Figure 1-2 Administrator view

- Global tasks bar area

The global tasks bar area provides links for the following operations:

- Logging out from Tuning Manager (see Logging out on page 1-16)
- Running Performance Reporter or other applications (see the *Tuning Manager User Guide*)
- Opening online Help
- Viewing version information (such as product version or license information)
- Viewing the full name user ID of the current user

Note: The full name is displayed only if it has been specified in the user profile file. Otherwise, the user ID is displayed. For details, see Creating a new user account on page 4-5.

If a registered license is not valid for storage systems that are monitored by the Tuning Manager server, a warning message appears on the global tasks bar area. For details on licenses, see Working with licenses on page 2-1.

- Explorer area

  The explorer area provides links to the functions of the Tuning Manager server. For details on the functions linked from the explorer area, see the *Tuning Manager User Guide*.

  - **Resources**

    Displays a resource tree in the navigation area and resource information in the information area.

  - **Administration**

    Allows you to change the settings of the administrative functions for the Tuning Manager server.

  - **Settings**

    Displays information about users.

- Application bar area

  The application bar area displays the administration task that you selected in the explorer area.

  Click **Help** to view the online Help in a separate window.

- Navigation area

  The navigation area displays the menus for the administration task that you selected in the explorer area. The menus differ for each administration task. Some tasks do not have menus.

- Title area

  The title area displays the name of the administration task you selected in the navigation area or explorer area.

- Information area

The information area displays information about resources managed by the Tuning Manager server. Error messages and warning messages might also appear here. You can sort or filter a table that is displayed in the information area. When you sort or filter a table, note the following points:

- The sort order of each item differs depending on the type of the monitoring target.
- If you specify **=** or**<>** as the filtering condition and no data is extracted, filter the table by specifying a range (by using**<**, **>**,**>=**, or **<=**).

Note: If your browser suppresses popup windows or if you have an installed utility that suppresses them, be sure to disable popup suppression when using the Tuning Manager server.

The most recent information cannot be displayed when polling is being performed by the Tuning Manager server. For details, see Specifying settings for data acquisition from Agents and Device Manager on page 6-1.

Data entry guidelines for the Tuning Manager GUI

The following table lists the characters that can be used for text field values, such as the text fields in the **Add User** window.

Table 1-2 Tuning Manager server administrator field entry guidelines

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Add User	**User ID**[1,2]	a to z, A to Z, 0 to 9, and the following special characters: ! @ # $ % ^ & * ( ) _ + - \ | ' . =	256	1	• You cannot specify a hyphen (-) at the beginning. • When a user is added, a user ID must be entered for that user. • You cannot use spaces. • User IDs are not case sensitive.

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Add User	**Password**	a to z, A to Z, 0 to 9 and the following special characters: ! @ # $ % ^ & * ( ) _ + - \ | ' . =	256	4	• You cannot specify a hyphen (-) at the beginning. • If the password is not entered, the password that is already set remains the same. • If user authentication common to all Hitachi Command Suite products is used, when a user is added, a password must be entered. If linkage with an external authentication server is enabled in the exauth.properties file, entering a password is optional • You cannot use spaces. • Passwords are case sensitive. • You cannot use two or more consecutive dollar signs (for example, $$ or $$$). • By setting security options, you can change the conditions for input values.
	Confirm Password	a to z, A to Z, 0 to 9 and the following special characters: ! @ # $ % ^ & * ( ) _ + - \ | ' . =	256	4	

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Add User	**Full Name**	a to z, A to Z, 0 to 9 and the following special characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~	80	0	You can use spaces.
	E-mail	a to z, A to Z, 0 to 9 and the following special characters: _ . @ -	255	0	You must specify an alphanumeric character at the beginning.
	Description	a to z, A to Z, 0 to 9 and the following special characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~	80	0	You can use spaces.

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Edit Profile - user-ID	**Full Name**	a to z, A to Z, 0 to 9 and the following special characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~	80	0	You can use spaces.
	E-mail	a to z, A to Z, 0 to 9 and the following special characters: _ . @-	255	0	You must specify an alphanumeric character at the beginning.
	Description	a to z, A to Z, 0 to 9 and the following special characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~	80	0	You can use spaces.

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Change Password - user-ID	**New Password**	a to z, A to Z, 0 to 9 and the following special characters: ! @ # $ % ^ & * ( ) _ + - \ | ' . =	256	4	• You cannot specify a hyphen (-) at the beginning. • If the password is not entered, the password that is already set remains the same. • You must enter the password. • You cannot use spaces. • Passwords are case sensitive. • You cannot use two or more consecutive dollar signs (for example, $$ or $$$). • By setting security options, you can change the conditions for input values.
	Verify Password	a to z, A to Z, 0 to 9 and the following special characters: ! @ # $ % ^ & * ( ) _ + - \ | ' . =	256	4	
Edit Polling Settings	**Data Backdate Offset**	0 to 96	2	1	N/A
	Retry Interval	0 to 5	1	1	N/A
	Retry Times	0 to 5	1	1	N/A

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Edit Data Retention Setting	**Hourly**	1 to 60	2	1	Applicable when **Day** is selected in the list box.
		1 to 8	1	1	Applicable when **Week** is selected in the list box.
		1 to 2	1	1	Applicable when **Month** is selected in the list box.
	Daily	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 12	2	1	Applicable when **Month** is selected in the list box.
		1	1	1	Applicable when **Year** is selected in the list box.
	Weekly	1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 12	2	1	Applicable when **Month** is selected in the list box.
		1	1	1	Applicable when **Year** is selected in the list box.
	Monthly	1 to 60	2	1	Applicable when **Month** is selected in the list box.
		1 to 5	1	1	Applicable when **Year** is selected in the list box.
	Yearly	1 to 10	2	1	Applicable when **Year** is selected in the list box.

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Edit Data Retention Setting	**Host Configuration**	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 50	2	1	Applicable when **Month** is selected in the list box.
		1 to 10	2	1	Applicable when **Year** is selected in the list box.
	Array Configuration	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 60	2	1	Applicable when **Month** is selected in the list box.
		1 to 10	2	1	Applicable when **Year** is selected in the list box.
	Fabric Configuration	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 60	2	1	Applicable when **Month** is selected in the list box.
		1 to 10	2	1	Applicable when **Year** is selected in the list box.

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Edit Data Retention Setting	**Application Configuration**	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 50	2	1	Applicable when **Week** is selected in the list box.
		1 to 60	2	1	Applicable when **Month** is selected in the list box.
		1 to 10	2	1	Applicable when **Year** is selected in the list box.
	System Reports	1 to 365	3	1	Applicable when **Day** is selected in the list box.
		1 to 12	2	1	Applicable when **Month** is selected in the list box.
		1 to 10	2	1	Applicable when **Year** is selected in the list box.
Edit System Alert	**threshold**	1 to 24	2	1	N/A
	E-mail To	a to z, A to Z, 0 to 9, and the following special characters: ` ~ ! # $ % & ' * + - . / = ? @ ^ _ { | }	320	3	N/A

Tuning manager server window name	Entry field	Specifiable values	Maximum field length	Minimum field length	Notes
Edit System Alert	**Mail Server**	Spaces, a to z, A to Z, 0 to 9, and the following special characters: ` ~ ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ { | }	50	1	• A string consisting of spaces only cannot be specified. • A space leading or trailing the specified character string is not registered. • The Tuning Manager server recognizes \ or ~ as ASCII codes 0x5c and 0x7E, respectively. However, Tuning Manager might recognize an entered \ or ~ as a different character depending on your OS or browser.
	User Name	a to z, A to Z, 0 to 9, and the following special characters: ! # $ % & ' ( ) * + , - . = @ \ ^ _ |	64	1	The Tuning Manager server recognizes \ as ASCII code 0x5c. However, Tuning Manager might recognize an entered \ as a different character depending on your OS or browser.
Edit System Alert	**Password**	a to z, A to Z, 0 to 9, and the following special characters: ! # $ % & ' ( ) * + , - . = @ \ ^ _ |	64	0	The Tuning Manager server recognizes \ as ASCII code 0x5c. However, Tuning Manager might recognize an entered \ as a different character depending on your OS or browser.

Note 1:

If you register the following users, specify a character string that includes a realm:

- A user that is authenticated by another RADIUS server connected via a RADIUS server that is specified as the connection destination in the `exauth.properties` file
- A user that is registered in a Kerberos server and belongs to a realm other than the realm specified as the default in the `exauth.properties` file

Note 2:

If the Tuning Manager server and Device Manager are installed on the same host, a user ID that contains any of the following characters cannot be used to log in to Replication Manager on the same host from the login window:

```
! $ % & ' ( ) * = \ ^ |
```

Logging in to a Tuning Manager server as an Administrator

To log in to a Tuning Manager server as an Administrator (that is, as a user who has the Admin (application management) permission):

1. Launch the Tuning Manager server by entering a URL consisting of the name of the host on which the Tuning Manager server is installed, and the port number.

   In the following example, the host name is `host01` and the port number is `22015`:

   ```
   http://host01:22015/TuningManager/
   ```

   The login screen is displayed.

Note: Adobe Flash Player 10.1 or later is required to be installed in the client in which the browser is used. However, if Tuning Manager server is installed in a host that is different from a host Device Manager is installed in, and only Tuning Manager server is operated, Adobe Flash Player is not required.

The design of the login screen depends on whether Tuning Manager server and Device Manager are installed in the same host or not.

2. Enter the user ID and password of a user who has the Admin (application management) permission.
3. Click **Log In**.
4. To access the Administrator View, click **Administration** in the explorer area.

   A submenu of administration tasks appears.

Note: Before logging in for the first time, you must activate your license key. For detailed information, see Managing licenses on page 2-2. If you have just installed the Tuning Manager server, use the initial user account. For details, see Initial administrator login on page 1-16. For further information about authentication, see About login modes on page 4-2.

Initial administrator login

Hitachi Command Suite products include the following built-in account:

User ID

`system`

Password

`manager`

Permissions

Admin permission for user management and Hitachi Command Suite products.

Use this account when you log in to the Tuning Manager server for the first time.

We recommend that you change the default password as soon as possible after you have logged in to the Tuning Manager server. For details on how to change the password, see Changing passwords on page 4-9.

- About login modes on page 4-2
- Changing your own password on page 4-9

Logging out

Do one of the following to logout:

- In the global tasks bar area. click **Logout** or from the **File** menu, select **Logout**.

Note: Note that in the Single Sign-On (SSO) mode, this operation might close other Hitachi Command Suite products.

- In the SSO mode, to close only the Tuning Manager server, do the following:

  In the global tasks bar area. click the **Close** link or from the **File** menu, select **Close**.

When you want to start Performance Reporter, you can select which Performance Reporter window to display: the Main window or the Report Tree Selection window. If the Main window of Performance Reporter is displayed, the Performance Reporter window remains open even after you log out of the Tuning Manager server. For details about how to start and stop Performance Reporter, see the *Tuning Manager User Guide*.

Services registered for Tuning Manager server (Windows only)

In Windows, Common Component services are registered to use Hitachi Command Suite products. The following shows the correspondence between service names and functions:

When Device Manager is not installed on the Tuning Manager server:

- PFM - Name Server: Name Server service
- PFM - Master Manager: Master Manager service
- PFM - View Server: View Server service
- PFM - Correlator: Correlator service
- PFM - Action Handler: Action Handler service
- PFM - Trap Generator: Trap Generator service
- PFM - Master Store: Master Store service
- PFM - Status Server: Status Server service
- PFM - Agent for HealthCheck: Agent Collector service
- PFM - Agent Store for HealthCheck: Agent Store service
- HiRDB/EmbeddedEdition _HD1 (HiRDB service)
- Hitachi Network Objectplaza Trace Monitor 2: Hitachi Command Suite common trace service
- Hitachi Network Objectplaza Trace Monitor 2 (x64) (Hitachi Command Suite common trace service)
- HBase 64 Storage Mgmt Web Service: Hitachi Command Suite common Web service
- HBase 64 Storage Mgmt SSO Service: Web service for single sign-on common throughout Hitachi Command Suite single sign-on service
- HiCommand Suite TuningManager: Tuning Manager
- HiCommand Performance Reporter: Performance Reporter service
- HCS Tuning Manager REST Application Service: Tuning Manager server REST API component service

  Use this service to work with the Tuning Manager API. This service is not started or stopped on an individual basis because it is started and stopped by the Tuning Manager server service.

When Device Manager is installed on the Tuning Manager server:

- PFM - Name Server: Name Server service
- PFM - Master Manager: Master Manager service
- PFM - View Server: View Server service
- PFM - Correlator: Correlator service
- PFM - Action Handler: Action Handler service
- PFM - Trap Generator: Trap Generator service
- PFM - Master Store: Master Store service
- PFM - Status Server: Status Server service
- PFM - Agent for HealthCheck: Agent Collector service
- PFM - Agent Store for HealthCheck: Agent Store service
- HiRDB/EmbeddedEdition _HD1 (HiRDB service)
- Hitachi Network Objectplaza Trace Monitor 2: Hitachi Command Suite common trace service

- Hitachi Network Objectplaza Trace Monitor 2 (x64) (Hitachi Command Suite common trace service)
- HBase 64 Storage Mgmt Web Service: Hitachi Command Suite common Web service
- HBase 64 Storage Mgmt SSO Service: Web service for single sign-on common throughout Hitachi Command Suite single sign-on service
- HBase 64 Storage Mgmt Common Service: Hitachi Command Suite single sign-on service
- HBase 64 Storage Mgmt Web SSO Service: Hitachi Command Suite single sign-on service
- HCS Device Manager Web Service: Device Manager servlet service
- HiCommand Suite TuningManager: Tuning Manager
- HiCommandServer (Device Manager service)
- Host Data Collector Base Service (Host Data Collector service)
- HiCommand Performance Reporter: Performance Reporter service
- HCS Tuning Manager REST Application Service: Tuning Manager server REST API component service

  Use this service to work with Tuning Manager API. This service is not started or stopped on an individual basis because it is started and stopped by the Tuning Manager server service.

Resident processes of Tuning Manager server

The following table lists and describes the resident Common Component processes in Windows systems.

Table 1-3 Resident processes of Common Component (Windows)

Process	Functionality
HiCommandServer	Device Manager server process. This service is started only when Device Manager is installed on the Tuning Manager server host.
hntr2srv.exe	Hitachi Command Suite common trace service process (Processes the events from the service control panel.)
hntr2mon.exe	Hitachi Command Suite common trace information collection process (Collects integrated trace information.)
httpsd.exe	Hitachi Command Suite common Web service
rotatelogs.exe	A process that runs when web server log data is being chunked according to the time period
httpsd.exe	Hitachi Command Suite Web service for single sign-on The single sign-on service is started only when Device Manager and Tuning Manager are installed on the same host. Do not register this service to cluster resources.
rotatelogs.exe	A process that runs when the log data for HSSO specific log data is being chunked according to the time period

Process	Functionality
hcmdssvctl.exe cjstartweb.exe	Hitachi Command Suite servlet services The following services are started as servlets: • Hitachi Command Suite Single Sign-On service. This service is started only when Device Manager is installed on the Tuning Manager server host. • Tuning Manager server • Performance Reporter service • Device Manager servlet service. This service is started only when Device Manager is installed on the Tuning Manager server host.
hcmdssvctl.exe cjstartsv.exe	J2EE servlet process
pdservice.exe	HiRDB process server control. This service is required to run always. Do not stop this service manually or, register to cluster resources.
jpcnsvr.exe.exe	Name Server service
jpcmm.exe	Master Manager service
jpcsto.exe	Master Store service
Agent.exe	Agent store service
jpctrap.exe	Trap Generator service
jpctraps.exe	Trap Generator service
jpcep.exe	Correlator service
jpcvsvr.exe	View Server service
jpcstatsvr.exe	Status Server service
jpcah.exe	Action Handler service
jpcagt.exe	Agent Collector service
jpc0collect.exe	Agent Collector service

The following table lists and describes the resident Common Component processes in Linux systems.

Table 1-4 Resident processes of Common Component (Linux)

Process	Functionality
hntr2mon	Hitachi Command Suite common trace information collection process (Collects integrated trace information.)
hicmdserver	Device Manager server service. This service is started only when Device Manager is installed on the Tuning Manager server host
jpcnsvr	Name Server service
jpcmm	Master Manager service
jpcsto	Master Store service
Agent	Agent Store service
jpctrap	Trap Generator service

Process	Functionality
jpctraps	Trap Generator service
jpcep	Correlator service
jpcvsvr	View Server service
jpcstatsvr	Status Server service
jpcah	Action Handler service
jpcagt	Agent Collector service
jpc0collect	Agent Collector service
httpsd	Hitachi Command Suite common Web service
httpsd	Hitachi Command Suite Web service for single sign-on The single sign-on service is started only when Device Manager and Tuning Manager are installed on the same host. Do not register this service to cluster resources.
webcont.sh	Hitachi Command Suite servlet services The following services are started as servlets: • Hitachi Command Suite Sign-On service. This service is started only when Device Manager is installed on the Tuning Manager server host. • Tuning Manager server • Performance Reporter service
pdprcd	HiRDB process server control. This service is required to run always. Do not stop this service manually or, register to cluster resources.
rotatelogs	A process that runs when web server log data is being chunked according to the time period
rotatelogs	A process that runs when Hitachi Command Suite web service for single sign-on web server log data is being chunked according to the time period
hcs_hsso	A process that manages a server running Hitachi Command Suite Sign-On service
hcs_*xxx*	A process that manages the services of the servlet-engine-mode server, and J2EE server registered in each product. The value of *xxx* depends on how services are registered in each product. The following lists the names of the processes that are used in the web container server environment provided for HBase v7.0 systems: • hcs_sso: HBase 64 Storage Mgmt Common service • hcs_tm: HiCommand Suite TuningManager • hcs_pr: HiCommand Performance Reporter • hcs_dm: HCS Device Manager Web service • hcs_csm: HCS Compute Systems Manager Web service • hcs_ao: HCS Automation Engine Web service
cjstartweb	Servlet-engine-mode server process
cjstartsv	J2EE server process

Starting services

Before changing the environment settings of the Tuning Manager server, you need to start or stop services. This section describes how to start services manually and provides notes on starting services. For details about how to start services in a cluster system, see the *Tuning Manager Installation Guide*.

About automatically started services

The following services are set to start automatically when you start the OS in which the Tuning Manager server is installed:

- Tuning Manager server service (`HiCommandSuiteTuningManager`)
- Performance Reporter service (`HiCommandPerformanceReporter`)
- HiRDB services
- The common component services (HBase 64 Storage Mgmt SSO Service and HBase 64 Storage Mgmt Web Service)
- Tuning Manager server REST API component service (HCS TuningManager REST Application Service)
  - This service is used when you use the API functions. You cannot start or stop this service independently, because this service depends on the Tuning Manager server service.
  - You need a Tuning Manger server license to use the API functions.

For details about the services of other Hitachi Command Suite products that are installed on the same host, see the manual for each product. For details about the services of Collection Manager, see the *Tuning Manager Agent Administration Guide*.

Starting services manually

This topic describes how to start services manually.

Tuning Manager server service (HiCommand Suite TuningManager)

To start HiCommand Suite TuningManager, execute the following command:

In Windows

```
Common-Component-installation-folder\bin\hcmds64srv
/start /server TuningManager
```

In Linux

```
Common-Component-installation-directory/bin
/hcmds64srv -start -server TuningManager
```

Performance Reporter service (HiCommand Performance Reporter)

To start HiCommand Performance Reporter, execute the following command:

In Windows

```
Common-Component-installation-folder\bin\hcmds64srv /start
/server PerformanceReporter
```

In Linux

```
Common-Component-installation-directory/bin/
hcmds64srv -start -server PerformanceReporter
```

HiRDB service

To start the HiRDB service, execute the following command:

In Windows

```
Common-Component-installation-folder\bin\hcmds64dbsrv
/start
```

In Linux

```
Common-Component-installation-directory/bin/
hcmds64dbsrv -start
```

Services of all Hitachi Command Suite products and HiRDB

To start the services of HiRDB and all Hitachi Command Suite products (including Common Component) that are installed on the same host, execute the following command:

In Windows

```
Common-Component-installation-folder\bin\hcmds64srv /start
```

In Linux

```
Common-Component-installation-directory/bin/
hcmds64srv -start
```

Note: You can also use the `htmsrv` command to start, stop, and check the status of the Collection Manager and Agent services.

Checking service statuses (at service startup)

To check service statuses, execute the command below. When you execute the command, the statuses of the services of all Hitachi Command Suite products (including Common Component) and HiRDB are displayed.

In Windows:

```
Common-Component-installation-folder\bin\hcmds64srv /statusall
```

In Linux:

```
Common-Component-installation-directory/bin/hcmds64srv -
statusall
```

Notes on starting services

Note the following on starting services:

- If the Tuning Manager server has already collected data for a resource over a range of time periods, restarting the Tuning Manager server will not result in data loss, replacement, or redundancy of previously collected data.
- To start the Tuning Manager server service, the services of the HiRDB instance that is used by the prerequisite product Device Manager server must be running.
- When you execute this command immediately after executing the `stop` command of the Tuning Manager server, the `KAPM05007-I` message might appear. This occurs because it takes time to stop the Tuning Manager server service. In this case, wait a while, then re-execute the command to start the Tuning Manager server service.
- Before starting the Tuning Manager server service, the connection settings for Device Manager must be specified. For details about the connection settings for Device Manager, see Configuring connection settings for Device Manager on page 5-2.

Stopping services

Before changing the environment settings of Tuning Manager server, you need to start or stop services. Every service automatically stops when the OS shuts down.

The following sections describe how to stop services manually and provides notes on stopping services. For details about how to start services in a cluster system, see the *Tuning Manager Installation Guide*.

Tuning Manager server service (HiCommand Suite TuningManager)

To stop HiCommand Suite TuningManager, execute the following command:

In Windows:

```
Common-Component-installation-folder\bin\hcmds64srv /stop
/server TuningManager
```

In Linux:

```
Common-Component-installation-directory/bin/
hcmds64srv -stop -server TuningManager
```

Performance Reporter service (HiCommand Performance Reporter)

To stop HiCommand Performance Reporter, execute the following command:

In Windows:

```
Common-Component-installation-folder\bin\hcmds64srv /stop
/server PerformanceReporter
```

In Linux:

```
Common-Component-installation-directory/bin/
hcmds64srv -stop -server PerformanceReporter
```

HiRDB service

To stop the HiRDB service, execute the following command:

In Windows:

```
Common-Component-installation-folder\bin\hcmds64dbsrv /stop
```

In Linux:

```
Common-Component-installation-directory/bin/
hcmds64dbsrv -stop
```

Stopping services of all Hitachi Command Suite products and HiRDB

To stop the services of HiRDB and all Hitachi Command Suite products (including Common Component) that are installed on the same host, execute the following command:

In Windows:

```
Common-Component-installation-folder\bin\hcmds64srv /stop
```

In Linux:

```
Common-Component-installation-directory/bin/
hcmds64srv -stop
```

Note: When the services of HiRDB and all Hitachi Command Suite products are stopped, the KAPM06445-E message might appear. This message appears when HiRDB termination processing takes a lot of time. If it appears, wait a while, and then re-execute the command.

Notes on stopping services

The following notes apply to stopping services:

- In a Windows environment, do not stop the `HiRDB/EmbeddedEdition_HD1` service registered in the **Services** window. This service must be active at all times.

- Do not stop services when polling is being performed. Avoid stopping services during the period 10 minutes before and after the specified polling time, and make sure that `In polling` is not displayed in the status column in the polling status reports. For details about the polling status reports, see Checking polling status reports on page 6-34.
- If the Common Component service has not completely started, do not stop the following services:
  - Tuning Manager server service
  - Performance Reporter service

  If you do this, you might not be able to stop services by using the `stop` option even if the resident process of the service is running. If you cannot stop services, restart the Tuning Manager server host.

Setting up the user property file

After installing and setting up a Tuning Manager server, you might need to specify settings in the `user.properties` file. You can change the settings related to the Tuning Manager server operation by changing the settings in the `user.properties` file. The `user.properties` file is stored in the following location:

In Windows:

Tuning-Manager-installation-folder\conf\user.properties

In Linux:

Tuning-Manager-installation-directory/conf/user.properties

The following information applies to the format of the settings in the `user.properties` file:

- A line that begins with a hash mark (#) is considered to be a comment.
- If the same property name is specified more than once, the value specified last in the file is applied.
- If you specify the installation folder in a Windows environment, use a forward slash (/) as a folder separator, not a backslash (\).
- If you specify backslashes (\) in a value, they must be escaped with another backslash (\\).

To change the settings in the `user.properties` file:

1. Stop the Tuning Manager server services.

   For details on how to stop the Tuning Manager server services, see Stopping services on page 1-23.
2. Back up the `user.properties` file manually.

   To restore a backed up file, stop the Tuning Manager server services, and then overwrite the `user.properties` file in the user property file storage location with the backup file that you saved.
3. Open the `user.properties` file with a text editor, and specify the settings in the following format:

   [*property*] = [*setting-value*]

4. Start the Tuning Manager server services.

   For details on how to start the Tuning Manager server, see Starting services on page 1-21. For details on the settings in the `user.properties` file, see Properties for the user.properties file on page 1-26.

Properties for the user.properties file

The following table provides details on the settings in the `user.properties` file.

Table 1-5 Properties for the user.properties file

Property	Description	Specifiable values	Default value
`alert.email.from`	If you want to send email from the Tuning Manager server, specify the sender's email address.	Values are case sensitive. One-byte space, `A` to `Z`, `a` to `z`, `0` to `9`, and the following special characters: ` ` ~ ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ { | } ` Note: Any backslashes (\) in a value must be escaped with another backslash (\\).	N/A
`alert.email.smtpport`	Specify the SMTP server port number used for email messages sent from the Tuning Manager server.	1 to 65,535	`25`
`alert.email.subject`	Specify the subject of the email sent from the Tuning Manager server.	Values are case sensitive. One-byte space, `A` to `Z`, `a` to `z`, `0` to `9`, and the following special characters: ` ` ~ ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ { | } ` Note: Any backslashes (\) in a value must be escaped with another backslash (\\).	N/A

Property	Description	Specifiable values	Default value
csv.encode.type	Specify the character encoding to be used in the exported CSV file. If you omit this value, UTF-8 will be specified.	Values are not case-sensitive. Shift_JIS or UTF-8	UTF-8
pr.incontextlaunch.mode	Specify which window to display (the Main window or the Report Tree Selection window) when you start Performance Reporter from **Advanced Information** with an agent specified. If a value other than a specifiable value is specified, an error message is output to the log file and the default is set.	Values are not case-sensitive. main: Displays the Main window. tree: Displays the Report Tree Selection window.	tree
table.filter.default.unit.datasize	Specify the data size unit to be selected by default in the window for entering conditions of the filter function.	Values are not case-sensitive. KB, MB,GB, TP, or PB	GB
table.filter.default.unit.transferRate	Specify the data transfer rate unit to be selected by default in the window for entering conditions for the filter function. The data transfer rate unit is KB/sec, MB/sec, GB/sec, TB/sec, or PB/sec, however, the /sec portion is omitted from the values set for this property.	Values are not case-sensitive. KB, MB,GB, TP, or PB	GB
portNumberCLI	Specify the port number that is used by the reporting commands to access the HBase 64 Storage Mgmt Web Service.	0 to 65535	22015

Property	Description	Specifiable values	Default value
`cli.workDir`	Specify the output directory folder path for the temporary file that is output when the **htm-hostgroups** command is executed.	1 to 128 bytes For more information about how to specify the `cli.workDir` property, see Table 1-7 cli.workDir property settings on page 1-34	In Windows: *Tuning-Manager-server-installation-folder*`\system\work` In Linux: *Tuning Manager-server-installation-directory*`/system/work`
`poller.offset`	Specify the offset value to apply for the starting time of the polling schedule (units: minutes). The starting time will be delayed by the specified value.	0 to 59	5
`dbvup.workDir`	Specify the absolute path for the database schema upgrade working directory, which is used temporarily in database upgrade. The specified directory must be empty. For details, see the *Tuning Manager Installation Guide*.	up to 128 bytes Note: The maximum specifiable character value should not exceed 128 bytes. For details about the estimation of the working directory capacity, see Table 1-6 dbvup.workDir property settings on page 1-33	In Windows: *Tuning-Manager-server-installation-folder*`\system\work` In Linux: *Tuning Manager-server-installation-directory*`/system/work`

Property	Description	Specifiable values	Default value
`userData.cleanup.enable`	Specify whether you want to enable or disable this property. If you enable this property, the report windows and historical reports are detected and deleted periodically. Note that the historical report information that is set to be shared is not deleted.	Values are not case sensitive. `true`: User data cleanup property is enabled. The clean up process is initiated along with the Tuning Manager server service and is repeated every 24 hours. `false`: User data cleanup property is disabled.	true
`rpt.flashmode`	Specify whether the charts should be displayed in flash mode or HTML mode.	Values are not case-sensitive. `true`: The charts are displayed in flash mode. `false`: The charts are displayed in HTML mode.	false
`rpt.printView.fullsize`	Specify the size of the charts in the print view. You can view the charts as full-sized images or as thumbnails in the print view.	Values are not case-sensitive. `true`: In the print view, you can view the full size charts. `false`: In the print view, you can view the charts as thumbnails.	true
`rpt.antialiasing`	Specify whether to anti-alias the charts displayed in PNG format.	Values are not case-sensitive. `true`: Charts are anti-aliased. `false`: Charts are not anti-aliased.	true
`rest.discovery.agent.interval`	Specify the automatic refresh interval to display the Agent information from the Agents that use API functions. Specifying 0 disables the periodic refresh	0 to 2,147,483,647	24

Property	Description	Specifiable values	Default value
`rest.discovery.agent.global.primary.enabled`	Specify whether to enable or disable the primary discovery method common to all hosts.	Values are not case-sensitive. • true: The primary discovery method common to all the hosts is enabled. • false: The primary discovery method common to all the hosts is disabled.	true
`rest.discovery.agent.global.primary.protocol`	Specify the primary protocol for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. This property is common to all the hosts.	Values are case insensitive. • http • https	`https`
`rest.discovery.agent.global.primary.port`	Specify the primary port number for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. This property is common to all the hosts.	1 to 65535	24222
`rest.discovery.agent.global.secondary.enabled`	Specify whether to enable or disable the secondary discovery method common to all the hosts.	Values are case insensitive. • true: The secondary discovery method common to all hosts is enabled. • false: The secondary discovery method common to all hosts is disabled.	true

Property	Description	Specifiable values	Default value
`rest.discovery.agent.global.secondary.protocol`	Specify the secondary protocol for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. The property specified is common to all hosts.	Values are case insensitive. You can specify the following values: • http • https	http
`rest.discovery.agent.global.secondary.port`	Specify the secondary port number for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. The property specified is common to all hosts.	0 to 65535	24221
`rest.discovery.agent.host.`*`HostNamen`*[1]`.host`	Specify the IP address for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. Alternatively, specify the agent host name that can resolve to that IP address[2]. Set this property for each host[3].	An IPv4 address or an agent host name that resolves to an IPv4 address. Values are case sensitive	--
`rest.discovery.agent.host.`*`HostNamen`*[1]`.protocol`	Specify the protocol for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. This property is specified for each host separately.	Values are case insensitive. You can specify the following values: • http • https	https

Property	Description	Specifiable values	Default value
`rest.discovery.agent.host.`*`HostNamen`*[1]`.port`	Specify the port number for generating the URL parameter when detecting the HTTP interface information of Tuning Manager Agent REST API component. This property is specified for each host separately.	0 to 65535	24222
`clusterMode`	Specify whether the Tuning Manager Agent REST API component can collect performance data from the agent instances set up on the logical host.	• true: If there are agent instances on the logical host, performance data is collected from them. If not, performance data is collected from the agent instances on the physical host. • false: Performance data is collected from the agent instances on the physical host.	true

Note 1:

For HostNamen, specify the API agent host name (use the host name displayed in the `jpcctrl list` command output).

Note 2:

A host name specified only in the `jpchosts` file cannot resolve to an IP address.

Note 3:

The following shows the property specification rules. If these rules are violated, the Tuning Manager API might not operate correctly.

- If the host name specified for the `HostNamen` property resolves to an IP address:

  SSL communication:

  If the host name specified for the `HostNamen` property is equal to the Common Name (CN) specified during the creation of an SSL certificate, you can omit the value of the property.

If the host name specified for the `HostNamen` property is different from the Common Name (CN) specified during the creation of an SSL certificate, specify the host name that is specified for CN.

Non-SSL communication:

The value of the property can be omitted. However, when the Tuning Manager Server and agent are connected over two or more networks, and if you want to use only a specific network for connection, specify an IP address.

- If the host name specified for the `HostNamen` property does not resolve to an IP address:

  SSL communication:

  Specify the same host name that was specified for the Common Name (CN) during the creation of an SSL certificate.

  Non-SSL communication:

  Specify an IP address.

Table 1-6 dbvup.workDir property settings

Item	Description of specification

Available characters	For Windows:
	`A-Z`, `a-z`, `0-9`, and the following special characters: `_ () (space) : \ .`
	Note: To specify backslash (\) as a value, escape it with an additional backslash (\\). (\\) is considered as one byte.
	For Linux:
	`A-Z`, `a-z`, `0-9`, and the following special characters: `_ /`

Route designation	The following route designation cannot be specified: For Windows: *Drive-name*:\\ For Linux: / You cannot specify a path that contains a symbolic link.
Existence of the directory	For Windows: Path names are not case-sensitive. For Linux: Path names are case-sensitive.
Network drives	Do not specify a network drive.

Item	Description of specification
Access right	The following access permissions are necessary to access a specific path. For Windows: The system user must have read, write and execute permissions. For Linux: The root user must have read, write and execute permissions.

Table 1-7 cli.workDir property settings

Item	Description of specification

Available characters	Windows
	`A-Z`, `a-z`, `0-9`, and the following special characters: `_ () (single-byte space) : \`
	Note: To specify backslash (\) as a value, escape it with an additional backslash (\\). (\\) is considered as one byte.
	Linux:
	`A-Z`, `a-z`, `0-9`, and the following special characters: `_ /`

Restrictions for specifying the directory path	Specify an existing directory. (Do not specify the file name of an existing file.) Do not specify the following for the directory path: • The HTnM installation directory *Tuning-Manager-server-installation-folder* • A root directory Windows: *`Drive-name`*`:\\` Linux: `/` • Directory path starting with \\. If you specify a directory path starting with \\, normalization cannot be performed. • A relative path • A network drive • A path that contains a symbolic link Note that the program does not check whether the directory specified is acceptable.
Notes about specifying the temporary file output directory	• Do not place any files under the temporary file output directory. • Do not change the value of the `cli.workDir` property, while the service is running. • If you change the default temporary file output directory, make sure you delete it manually after removing Tuning Manager. The user-specified path is not deleted automatically when you remove the Tuning Manager.

Item	Description of specification
Access permissions	Windows: A user with administrator privileges is granted read, write and execute permissions. Linux: A user with root privileges is granted read, write and execute permissions.

Ports used by a Tuning Manager server

This section describes the port numbers used by a Tuning Manager server.

Port numbers used to connect to API Agent host

The following table shows the default port numbers used by the Tuning Manager server to connect to the Agent hosts that use the API functions:

Table 1-8 Port numbers used by the Tuning Manager server for connection with the Agent host that use the API functions

Port number	Connection from	Connection to	Remarks
`24221`/TCP	Tuning Manager server	Agent hosts that use the API functions	Access port for Tuning Manager - Agent REST Web Service for non-SSL communication
`24222/tcp`	Tuning Manager server	Agent hosts that use the API functions	Access port for Tuning Manager - Agent REST Web Service for SSL communication

Port numbers used to connect to Device Manager

Table 1-9 Port numbers used by the Tuning Manager server for connection with the Device Manager server on page 1-35 shows the port number used by a Tuning Manager server to connect to a Device Manager server. For details about port numbers that the Tuning Manager server uses when connecting to Agents, see the *Tuning Manager Agent Administration Guide*.

Table 1-9 Port numbers used by the Tuning Manager server for connection with the Device Manager server

Port number	Connection from	Connection to	Remarks
`24230`/TCP	Tuning Manager server	Device Manager	Communication port for the Device Manager host
`22900 -22999`/ TCP	Device Manager	Tuning Manager server	Communication port for the Tuning Manager server host
`22015`/TCP	Tuning Manager server	Device Manager	Communication port for the Device Manager host (non-SSL)

Port number	Connection from	Connection to	Remarks
22016/TCP	Tuning Manager server	Device Manager	Communication port for the Device Manager host (SSL)
22286/TCP	Device Manager	Tuning Manager server	Communication port for the Tuning Manager server host

Operating in a network where a firewall is set

If a firewall is set between the Tuning Manager server host and the Device Manager host, use the port numbers listed in Table 1-9 Port numbers used by the Tuning Manager server for connection with the Device Manager server on page 1-35 to enable communication between the hosts.

Changing the port numbers used to connect to Device Manager

If a firewall is set between the Tuning Manager server host and the Device Manager host, and you need to use a specific port number for communication, or any other application is using the default port number (24230) used when the Tuning Manager server host connects to the Device Manager host, you need to change the port number as follows.

To change the port number:

1. Execute the following commands to stop the Tuning Manager server service:

   In Windows:

   ```
   Common-Component-installation-folder
   \bin\hcmds64srv  /stop /server TuningManager
   ```

   In Linux:

   ```
   Common-Component-installation-directory/bin/
   hcmds64srv -stop -server TuningManager
   ```

2. Execute the following commands to change the port number used to connect to Device Manager:

   In Windows:

   ```
   Tuning-Manager-server-installation-folder\bin\
   htm-dvm-setup  /d Device-Manager-host-name-or-IP-address
    /s Port-number-to-be-used-for-the connection-
   between-Tuning-Manager-server-and-Device-Manager
   ```

   In Linux:

   ```
   Tuning-Manager-server-installation-directory/bin/
   htm-dvm-setup -d Device-Manager-host-name-or-IP-address
    -s Port-number-to-be-used-for-the-connection-
   between-Tuning-Manager-server-and-Device-Manager
   ```

For the `-s` option, specify the value you specified for the service port number option of the **htmsetup** command of Device Manager. Specify a value in the range of 5001 to 65535.

3. Execute the following commands to start the Tuning Manager server service:

   In Windows:

   Common-Component-installation-folder\bin\hcmds64srv /

   start /server TuningManager

   In Linux:

   Common-Component-installation-directory/bin/

   hcmds64srv -start -server TuningManager

Changing the network settings of the management server

After you upgrade a Tuning Manager server from a version earlier than 5.1 in a Windows environment, change the network settings by referring to the procedure below. Note that you must perform this procedure only once after performing an upgrade installation. You do not have to perform this procedure each time you reconnect the network.

To disconnect the network:

1. If HiCommand(R) Suite products whose versions are earlier than 5.7 are running, stop their services.

   For details about how to stop these services, see the manual for each Hitachi Command Suite product version.

2. Execute the following command to stop the services of Hitachi Command Suite products and Common Component:

   Common-Component-installation-folder/bin/hcmds64srv /stop

3. Edit the `pdsys` file and the `def_pdsys` file.

   Change the value for the `pdunit` parameter's `-x` option to the loopback address `127.0.0.1`.

   The default installation locations of the `pdsys` file and `def_pdsys` file are as follows:

   Common-Component-installation-folder/HDB/conf/pdsys

   Common-Component-installation-folder/database/work/def_pdsys

4. Edit the `pdutsys` file and the `def_pdutsys` file.

   Change the value for the `pd_hostname` parameter to the loopback address `127.0.0.1`.

   If the `pd_hostname` parameter does not exist, add the `pd_hostname` parameter to set a loopback address.

   The default installation locations of the `pdutsys` file and `def_pdutsys` file are as follows:

   Common-Component-installation-folder/HDB/conf/pdutsys

Common-Component-installation-folder/database/work/def_pdutsys

5. Edit the HiRDB.ini file.

   Change the value for the PDHOST parameter to the loopback address 127.0.0.1.

   The default installation location of the HiRDB.ini file is as follows:

   Common-Component-installation-folder/HDB/conf/emb/HiRDB.ini

6. Restart the Tuning Manager server host.
7. Execute the following command to make sure that the Common Component service is running:

   Common-Component-installation-folder/bin/hcmds64srv /status

Restricting web terminals that can connect to a Tuning Manager server

You can restrict the web terminals that can connect to a Tuning Manager server by specifying specific hosts in the user_httpsd.conf file.

To restrict the web terminals that can connect to a Tuning Manager server:

1. Execute the following command to stop the HBase 64 Storage Mgmt Web Service, Tuning Manager server, and Performance Reporter services:

   In Windows:

   Common-Component-installation-folder\bin\

   hcmds64srv /stop

   In Linux:

   Common-Component-installation-directory/bin/

   hcmds64srv -stop

2. Open the user_httpsd.conf file.

   The user_httpsd.conf file is located in the following directory.

   In Windows:

   Common-Component-installation-folder\uCPSB\httpsd\conf/

   In Linux:

   Common-Component-installation-directory/uCPSB/httpsd/conf/

3. Register hosts that can be connected to the Tuning Manager server in the last line of the user_httpsd.conf file.

   The following shows the format for registering hosts in the user_httpsd.conf file.

```
<Location /TuningManager>
        order allow,deny
        allow from host [host...]
</Location>
```

   Make sure that hosts are written in one of the following formats:

- The domain name (example: `hitachi.ABCDEFG.com`)
- Part of the domain name (example: `hitachi`)
- The whole IP address (example: `10.1.2.3 127.0.0.1`)
- Part of the IP address (example: `10.1` which, in this case, means `10.1.0.0/16`)
- Network/Netmask format (dot notation) (example:`10.1.0.0/255.255.0.0`)
- Network/*n* (CIDR notation: *n* is the number of bits representing the network address) (example: `10.1.0.0/16`)

Notes on the registration format:

- If you want to specify two or more hosts in a command line for `allow from`, delimit the hosts with a space.
- Multiple lines can be used to specify hosts for `allow from`.
- If you attempt to connect from a machine which has a Tuning Manager server installed, you must also specify the local loop-back address `(127.0.0.1 or localhost)`.
- Make sure that you specify the order in the specified format. If extra spaces or tabs are inserted, the operation will fail.

Example of host registration:

```
<Location /TuningManager>
        order allow,deny
        allow from 127.0.0.1 10.0.0.1
        allow from 10.0.0.0/26
</Location>
```

4. Execute the following commands to start the services of HBase 64 Storage Mgmt Web Service, Tuning Manager server, and Performance Reporter:

   In Windows:

   ```
   Common-Component-installation-folder
   \bin\hcmds64srv /start
   ```

   In Linux:

   ```
   Common-Component-installation-directory/bin
   /hcmds64srv -start
   ```

About machine time differences

If the time of a machine on which a Tuning Manager server is installed does not match the time of a machine on which an Agent is installed, the Tuning Manager server cannot collect data from that Agent correctly. Also, if the time of a machine on which a Tuning Manager server is installed does not match the time of a machine on which a Device Manager server is installed, the Tuning Manager server might not collect data from that Device Manager server correctly. This section explains the behavior when there is a difference between the times and provides notes on changing the times.

In the following sections, the time of the machine on which the Tuning Manager server is installed is called the *Tuning Manager server time*, the time of a machine on which an Agent is installed is called the *Agent time*, and the time of a machine on which a Device Manager server is installed is called the *Device Manager server time*.

Behavior when there is a time difference between a Tuning Manager server and an Agent

This section describes the behavior when there is a time difference between machines while the Tuning Manager server and an Agent are running on different machines.

When the Tuning Manager server time is earlier than the Agent time

This example assumes that the Tuning Manager server time is 12:00 and Agent time is 14:00. When the Tuning Manager server time reaches 12:00, the Tuning Manager server collects the data of 12:00 stored in the Agent. In this case, the Tuning Manager server collects older data (of 12:00) from the Agent, not the latest data (of 14:00) because there is a time difference. The following describes the behavior when you adjust the time:

- When you synchronize the Agent time to the Tuning Manager server time

  The same times are repeated when the Agent time is moved back. In this case, the Agent stores the data for the repeated times by overwriting the previously collected data. If you change the Agent time from 14:00 to 12:00, the Agent overwrites the data for 13:00 and 14:00.

- When you synchronize the Tuning Manager server time to the Agent time

  There are some times at which the Tuning Manager server does not collect data because the Tuning Manager server time is moved forward. The uncollected data is collected the next time the Tuning Manager server collects data. If you change the Tuning Manager server time from 12:00 to 14:00, the data for 13:00 will be collected when the data of 14:00 is collected.

When the Tuning Manager server time is later than the Agent time

This example assumes that the Tuning Manager server time is 12:00 and the Agent time is 10:00. When the Tuning Manager server time reaches 12:00, the Tuning Manager server attempts to collect the data of 12:00 stored in the Agent. In this case, the Tuning Manager server collects the past data from the Agent, which it has not collected yet, because the Agent does not have data for 12:00. The following describes the behavior when you adjust the time.

- When you synchronize the Agent time to the Tuning Manager server time

  There are some times at which the Agent has not stored data because the Agent time is moved forward. If you change the Agent time to 12:00, no data will not be stored for 11:00.

- When you synchronize the Tuning Manager server time to the Agent time

If you turn back the Tuning Manager server time, be careful that the time when the Tuning Manager server will next start is not earlier than the time when the Tuning Manager server previously stopped. Therefore, you need to stop the Tuning Manager server for the time period equal to the time period you turn back the Tuning Manager server time. If you stop the Tuning Manager server at 12:00 of the Tuning Manager server time, and then turn back the Tuning Manager server time two hours, you must start the Tuning Manager server after two hours have passed.

Behavior when there is a time difference between a Tuning Manager server and a Device Manager server

When a Tuning Manager server and a Device Manager server are running on different hosts, if the time difference between the Tuning Manager server and the Device Manager server is 5 minutes or more, logging in to the Tuning Manager server will fail and the message KATN12204-E will be output. In this case, you need to adjust the time difference between the Tuning Manager server and the Device Manager server so that they match each other.

We recommend that you use a time adjusting method such as NTP to automatically correct the time in order to keep the time synchronized on the Tuning Manager and the Device Manager servers. For notes on adjusting times, see Notes on adjusting the time of the machine on which the Tuning Manager series products are installed on page 1-43.

This section describes the results of data collection processing when there is a time difference between hosts.

When the time difference between a Tuning Manager server and a Device Manager server is constant

This example assumes that the time difference between a Tuning Manager server and a Device Manager server is always 30 minutes and that the Tuning Manager server collects the data stored in the Device Manager server at 9:00 and 10:00.

- If the Tuning Manager server time is 30 minutes ahead of the Device Manager server time

  When the Tuning Manager server time reaches 9:00, the Tuning Manager server collects the data stored in the Device Manager server until 8:30 (Device Manager server time). When the Tuning Manager server time reaches 10:00, the Tuning Manager server collects the data stored in the Device Manager server from 8:30 until 9:30 (Device Manager server time).

- If the Tuning Manager server time is 30 minutes behind the Device Manager server time

  When the Tuning Manager server time reaches 9:00, the Tuning Manager server collects the data stored in the Device Manager server until 9:00 (Device Manager server time). At this time, data has been stored in the Device Manager server until 9:30 (Device Manager server

time). However, the Tuning Manager server does not collect the data stored in the Device Manager server after 9:00 (Device Manager server time) until the Tuning Manager server time reaches 10:00.

When setting the Device Manager server time behind the Tuning Manager server time during operation

This example assumes that you set the Device Manager server time behind the Tuning Manager server time during operation, that the Tuning Manager server collects the data stored in the Device Manager server at 9:00 and 10:00, and that there is no time difference between the Tuning Manager server and the Device Manager server until 9:00 (Tuning Manager server time).

When the Tuning Manager server time reaches 9:00, the Tuning Manager server collects the data stored in the Device Manager server until 9:00 (Device Manager server time).

- When setting the Device Manager server time 30 minutes behind the Tuning Manager server time

  When the Tuning Manager server time reaches 10:00, the Tuning Manager server collects the data stored in the Device Manager server from 9:00 to 9:30 (Device Manager server time).

- When setting the Device Manager server time 1 hour and 30 minutes behind the Tuning Manager server time

  When the Tuning Manager server time reaches 10:00, the Tuning Manager server attempts to collect the data stored in the Device Manager server until 10:00 (Device Manager server time). At this time, however, the Tuning Manager server assumes that there is no data stored in the Device Manager server after 9:00 and will not collect data because the Device Manager server time is still 8:30.

When setting the Device Manager server time ahead of the Tuning Manager server time during operation

This example assumes that you set the Device Manager server time ahead of the Tuning Manager server time during operation, that the Tuning Manager server collects the data stored in the Device Manager server at 9:00 and 10:00, and that there is no time difference between the Tuning Manager server and the Device Manager server until 9:00 (Tuning Manager server time).

When the Tuning Manager server time reaches 9:00, the Tuning Manager server collects the data stored in the Device Manager server until 9:00 (Device Manager server time).

- When setting the Device Manager server time 30 minutes ahead of the Tuning Manager server time

  When the Tuning Manager server time reaches 10:00, the Tuning Manager server collects the data stored in the Device Manager server until 10:00 (Device Manager server time). At this time, data has been stored in the Device Manager server until 10:30 (Device Manager server

time). However, the Tuning Manager server does not collect the data stored in the Device Manager server after 10:00 (Device Manager server time) until the next time the Tuning Manager server collects data.

- When setting the Device Manager server time 1 hour ahead of the Tuning Manager server time

  When the Tuning Manager server time reaches 10:00, the Tuning Manager server collects the data stored in the Device Manager server until 10:00 (Device Manager server time). At this time, data has been stored in the Device Manager server until 11:00 (Device Manager server time). However, the Tuning Manager server does not collect the data stored in the Device Manager server after 10:00 (Device Manager server time) until the next time the Tuning Manager server collects data.

Notes on adjusting the time of the machine on which the Tuning Manager series products are installed

If the time of a machine is changed while the Common Component services and the Tuning Manager server service are running, the Tuning Manager server might not operate correctly. If you need to change this time, do so before installation.

If you use a protocol such as NTP to automatically adjust the time, make sure that the protocol functionality gradually adjusts the machine time (and does not immediately synchronize the machine time) if the machine time is ahead of the actual time. There are some functions that gradually adjust the time if the difference between the time of a machine and the actual time is within a certain fixed period, or immediately synchronize the time if the time difference exceeds a certain fixed period. Therefore, set the frequency of the time adjustments for the function that you are using so that the time difference does not exceed the fixed period.

For example, the Windows Time service can gradually adjust the time of a machine without immediately synchronizing the time if the time is ahead of the actual time and the difference between the time of a machine and the actual time is within a certain fixed period. Therefore, check the range in which the Windows Time service can gradually adjust the time, and then set the frequency of the time adjustments for the Windows Time service so that the difference between the time of the machine and the actual time does not exceed that range.

Changing the time after installing the Tuning Manager series products

If you cannot use functionality that adjusts the time automatically, or if you need to change the time immediately, perform the following procedure to change the time of a machine:

1. Stop the services of Common Component and all Hitachi Command Suite products.
2. Change the time of the machine.
3. Restart the services.

Tuning Manager servers enable you to adjust the time by using a system time recorder that is usually used by the NTP service. However, when setting the time back, the time must not be set earlier than the time when the HBase 64 Storage Mgmt Web Service service last stopped. If you change the time of the Tuning Manager server host more than 10 minutes, restart the Tuning Manager server.

Changing the time by performing an overwrite installation

If the time difference is large (for example, a month or year), instead of stopping the Tuning Manager server to adjust the time, you can perform an overwrite installation of the Tuning Manager server. The following describes how to change the time by overwriting the Tuning Manager server.

1. Stop the services of Common Component and all Hitachi Command Suite products.
2. Change the time of the machine.
3. Perform an overwrite installation of the Tuning Manager server.
4. Start the services of Common Component and all Hitachi Command Suite products.

For details about performing an overwrite installation, see the *Tuning Manager Installation Guide*.

Operating a Tuning Manager server in an IPv6 environment

Tuning Manager server 6.0 or later supports IPv6 environments.

Restrictions on operations in an IPv6 environment

When using a Tuning Manager server in an IPv6 environment, the following restrictions apply:

- An IPv6-only environment is not supported. For example, the Tuning Manager server and Device Manager (or Hitachi Command Suite) communicate using IPv4. Set up the OS so that the Tuning Manager server can use both IPv4 and IPv6.
- Only global addresses can be used as IPv6 addresses. You cannot use global unique local addresses (site local addresses) or link addresses.
- When you specify an IP address or a host name for the Tuning Manager server host, Hitachi recommends that you specify the host name. If you specify an IPv6 address, Internet Explorer 6 might not be able to connect to the Tuning Manager server or transitions between screens might not occur.

Settings for operations in an IPv6 environment

To operate a Tuning Manager server in an IPv6 environment, edit the `user_httpsd.conf` file after installing the Tuning Manager server. When you log in, specify the port number that you specified in the `user_httpsd.conf` file, for the URL. The `user_httpsd.conf` file is stored in the following location:

- In Windows:

  Common-Component-installation-folder`\uCPSB\httpsd\conf\`
- In Linux:

  Common-Component-installation-directory`/uCPSB/httpsd/conf/`

Note: Before editing the `user_httpsd.conf` file, stop the Tuning Manager server and Common Component (see Starting services on page 1-21 for details). After you finish editing, restart the Tuning Manager server, Performance Reporter, and Common Component for the changes to take effect (see Stopping services on page 1-23 for details).

To allow a Tuning Manager server and Agents to communicate in an IPv6 environment, edit the `jpchosts` file. For details about how to do this, see the *Tuning Manager Installation Guide*.

If you perform a new installation of the Tuning Manager server 6.0 or later in an environment where IPv6 is enabled, the installer will automatically set the information described in the following subsections.

IPv6 settings

Remove the hash mark (#) from the line that includes `Listen [::]:22015` (the default setting). By default, all IP addresses are set to allow communication.

You must specify the same port number that is specified in the `Listen` line for IPv4. The default port number is `22015`.

The following example shows the updated `user_httpsd.conf` file.

```
ServerName example.com
Listen 22015
Listen [::]:22015
SSLDisable
Listen 22016
#Listen [::]:22016
<VirtualHost *:22016>
  ServerName example.com
  SSLEnable
```

Caution: Do not delete or edit the default setting, `Listen 22015`. If you change or delete it, communication via IPv4 is disabled.

Settings for SSL communication

Remove the hash mark (#) from the line that includes `Listen [::]:22016` (the default setting). By default, all IP addresses are set to allow communication.

You must specify the same port number that is specified in the `Listen` line for IPv4. The default port number for SSL communication is `22016`.

The following shows an example of the `user_httpsd.conf` file (when the port 22015 is open):

```
ServerName example.com
Listen 22015
Listen [::]:22015
SSLDisable
Listen 22016
Listen [::]:22016
<VirtualHost *:22016>
  ServerName example.com
  SSLEnable
```

Caution: Do not delete or edit the default setting, `Listen 22016`. If you change or delete it, communication via IPv4 is disabled.

2

Working with licenses

This chapter covers key topics necessary for managing your Tuning Manager server license and includes the following topics:

- Managing licenses
- Registering a license key
- Viewing the Tuning Manager server version and license information

Managing licenses

A Tuning Manager server accepts the following types of license keys:

- **Temporary**

  A temporary license enables you to use a Tuning Manager server on a trial basis before committing to a permanent license key.

  Temporary licenses are valid for a Tuning Manager server for 120 days after installation. After 120 days, you cannot log in to the Tuning Manager server or use command-line utilities to administer or view information collected by the Tuning Manager server.

  The Tuning Manager server will continue to poll agents and collect data while you obtain a permanent license key to enter.

Note: A temporary license cannot be reactivated after it has expired.

- **Emergency**

  An emergency license key enables you to use an expired license for a maximum of 30 days until you obtain a new permanent license key.

Note: Emergency licenses are valid for a maximum of 30 days, and can be entered only once.

- **Permanent**

  Permanent licenses are valid for using a Tuning Manager server on an ongoing basis. The permanent license key does not expire.

- **Subscription**

  A per-DKC capacity license that has an expiration date. The subscription license key expires on the expiration date defined for the key, irrespective of the registration date and time. A subscription license is also issued as a limited-time additional capacity license for a permanent key for same operations.

Registering a license key

Note: Functionality for migrating license information from a consolidated configuration to a separated configuration is not provided. After the upgrade to a separated configuration has been completed, you must re-enter the license information that was originally entered in the consolidated configuration in the Tuning Manager license window.

To register a license key:

1. Open the dialog box for the Tuning Manager server license information.

   Perform one of the following operations:

   - Before logging in to the Tuning Manager server, click the **Licenses** button in the Tuning Manager server Login panel.
   - After logging in to the Tuning Manager server, in the global tasks bar area, select **Help** and then **About**.

- After logging in to the Tuning Manager server, in the **Explorer** menu, select **Settings** and then **License Info**. To install a license key, in the License Info window, click the **Edit License** button.

If you only want to view license information, go to step 4.

2. Specify the license key that you want to register.

   To enter the license key directly, select the **Key** radio button, and then enter the license key.

   To use a license key file, select the **File** radio button, and then use the **Browse** button to select a license key file.

Note: License keys are case sensitive.

3. To register the license key entered in step 2, click the **Save** button.

   A message reports that the license key has been installed.

4. Click the **Close** button.

Note: If Tuning Manager server and Device Manager are installed in the same host, license information about Hitachi Command Suite products is displayed. If Tuning Manager server is installed in a host that is different from the host in which Device Manager is installed, license information about Tuning Manager server only is displayed.

Viewing the Tuning Manager server version and license information

You can view the Tuning Manager server version and license information through one of the following methods:

- From the **Explorer** menu, choose **Settings** and then **License Info** to view license information in the window that is displayed in the application area.

  To change the registered license information, click the **Edit License** button in the window to display a dialog box for editing license information.

- From the global tasks bar area, choose **Help** and then **About** to view license information in the dialog box that is displayed.

Note: If the Tuning Manager server software and Device Manager are installed on the same host, the license status of each Hitachi Command Suite product is displayed in list format in the window. If the Tuning Manager server software is installed on a host different from the host on which Device Manager is installed, the license status of only the Tuning Manager server is displayed.

You can also change the registered license information from this dialog box.

With either method, if you are using a temporary, emergency, or subscription license, the number of days remaining until the license expires and the license's expiration date are displayed in the area that displays the Tuning Manager server version and license type.

Note: Tuning Manager uses the following conventions for **Current Capacity** values (the conventions vary according to the storage system model):

- For Hitachi USP or Universal Storage Platform V/VM series: 1TB = 1000^4 bytes
- For Hitachi SMS series, or Hitachi HUS100/AMS2000/AMS/WMS series: 1TB = 1024^4 bytes

For **Current Capacity** in the license information dialog box, “Not available” will be displayed for all microcode versions.

3

Managing the Tuning Manager server database

This chapter describes how to manage the Tuning Manager server database and includes the following topics:

- Overview of the Tuning Manager server database
- Displaying the database capacity
- Backing up the database
- Restoring the database
- Changing the total database capacity
- Migrating databases

Overview of the Tuning Manager server database

This section describes the database of the Tuning Manager server.

The database management system for Hitachi Command Suite products is HiRDB. Therefore, the Tuning Manager server database is managed by HiRDB.

The same HiRDB instance manages databases of all Hitachi Command Suite products installed on the same host. For example, if the Tuning Manager server and other Hitachi Command Suite products are installed on the same host, the same HiRDB instance manages the following databases:

- The Tuning Manager server database
- The databases of all other Hitachi Command Suite products installed on that host
- The Common Component database

Displaying the database capacity

To display the database capacity, execute the following command:

In Windows:

Tuning-Manager-installation-folder`\bin\htm-db-status`

In Linux:

Tuning-Manager-installation-directory`/bin/htm-db-status`

Note: For details on the default installation directory for the Tuning Manager server, see the *Tuning Manager Installation Guide*.

For details on the **`htm-db-status`** command, see the *Tuning Manager CLI Reference Guide*.

If you execute the **`htm-db-status`** command, the used database capacity and the total database capacity are displayed as follows:

```
Database Capacity (Used/Total): 15640 / 2048000 kBytes Area Path:

D:\Program
Files\HiCommand\TuningManager\database\TuningManager\TM00
```

The total database capacity is the maximum capacity of the Tuning Manager server database. The used database capacity is the capacity that is being used by the Tuning Manager server, within the total database capacity.

To monitor for database capacity shortages, set an alert that uses email or other means to report that the database capacity is insufficient. For details on how to set an alert, see Specifying Agent polling status alerts on page 6-37.

Backing up the database

Backing up the Tuning Manager server database backs up the data in the Hitachi Command Suite products that are installed on the same host.

The data stored in the following databases will be backed up:

- Tuning Manager server database
- Databases for other Hitachi Command Suite products that have been installed on the host where the Tuning Manager server has been installed
- Common Component database

Note the following precautions when backing up the database:

- When you back up the Tuning Manager server database, always use the **hcmds64backups** command. If you execute this command with the `auto` option specified, the command automatically stops all services of Hitachi Command Suite products and starts HiRDB before starting backup processing. However, the `auto` option is ineffective for the services of Hitachi Command Suite products whose version is earlier than 5.7. If such Hitachi Command Suite products have been installed, you must stop their services manually. For details on how to stop the services of Hitachi Command Suite products whose version is earlier than 5.7, see the manual of each product.
- When Hitachi Command Suite products are used in a cluster environment, always execute the **hcmds64backups** command on the active node.
- For details on the default installation directory for the Tuning Manager server and Common Component, see the *Tuning Manager Installation Guide*.
- Regardless of the backup method for each Hitachi Command Suite product, data for all the Hitachi Command Suite products that have been installed on the same host are backed up. On the same host, backup is required only once because, whether the product used is a Tuning Manager server or any other Hitachi Command Suite product, the same contents are backed up.
- When performing a backup operation, make sure that the backup destination directory has sufficient free capacity. The required free capacity can be calculated as follows:

  required-free-capacity-for-the-backup-destination-directory = (*total-used-database-capacity-for-all-Hitachi-Command-Suite-products-installed-on-the-same-host* + 2.5 GB) × 2

  To check the used database capacity for the Tuning Manager server, execute the**htm-db-status** command. For details on how to use the **htm-db-status** command to check the used database capacity, see Displaying the database capacity on page 3-2.

  If other Hitachi Command Suite products are installed on the same host, refer to the section of the manual for each product that describes how to check the used database capacity.

To back up the databases:

1. If Hitachi Command Suite products whose version is earlier than 5.7 have been installed, stop all their services.

For details on how to stop the services, see the manual for each product.

Note: Do not stop HBase 64 Storage Mgmt Web Service. If you do this, the HiRDB service also stops.

When you need to stop services of other Hitachi Command Suite products, stop the services before backing up the databases. To check whether the services need to be stopped during backup operations, see the manual for each product.

2. Execute the following command to back up the databases (change the parameter values to appropriate values described in Options for the hcmds64backups command on page 3-4):

   Windows: *Common-Component-installation-folder*`\bin\hcmds64backups/dir` *directory-name* `/auto`

   Linux: *Common-Component-installation-directory*`/bin/hcmds64backups/dir` *directory-name* `/auto`

When the **`hcmds64backups`** command is executed, a backup file (`backup.hdb`) is created for the databases of the Hitachi Command Suite products installed on the server on which the command is executed. At the same time, the settings files for Common Component and other Hitachi Command Suite products are also backed up.

Options for the `hcmds64backups` command

The **`hcmds64backups`** command backs up the Tuning Manager database.

The following shows command line usage for the **`hcmds64backups`** command:

Windows: *Common-Component-installation-folder*`\bin\hcmds64backups/dir` *directory-name* `/auto`

Linux: *Common-Component-installation-directory*`/bin/hcmds64backups/dir` *directory-name* `/auto`

The following describes the options for the **`hcmds64backups`** command.

- `dir` *directory-name*

  Specify a directory on the local drive for storing the backup data. If Hitachi Command Suite products are used in a cluster environment, specify the absolute path to a directory in a shared folder.

  If the specified directory does not exist, the directory will be created by executing the command. If you specify an existing directory, make sure that it is empty. In addition, if the directory name contains a space, enclose the name in double quotation marks (`"`).

- `auto`

  You can specify the `auto` option when a Hitachi Command Suite products whose version is 5.7 or later has been installed. When you execute the command with the `auto` option specified, in preparation for database operation, this option automatically stops the services of Hitachi Command Suite products and starts HiRDB. When the database operation has finished, the services of Hitachi Command Suite products

will be started. Therefore, once the command is executed, the services of Hitachi Command Suite products and HiRDB will be started. However, the services of Hitachi Command Suite products whose version is earlier than 5.7 cannot be started or stopped automatically.

Restoring the database

On a Tuning Manager server, you can perform either of the following two restore operations for databases:

- Restoring only the Tuning Manager server data
- Restoring the data of all Hitachi Command Suite products that have been installed

Note the following precautions on restoring databases:

- Be sure to start the service of the agent connected to Tuning Manager server.
- When you restore the Tuning Manager server database, always use the **`hcmds64db`** command. If you execute this command with the `auto` option specified, the command first stops all the services of Hitachi Command Suite products and HiRDB before starting restore processing.
- When Hitachi Command Suite products are used in a cluster environment, always execute the **`hcmds64db`** command on the active node.
- For details on the default installation directory for the Tuning Manager server and Common Component, see the *Tuning Manager Installation Guide*.
- Before restoring the database, be sure to confirm that the following are the same in the backup source Tuning Manager server host and the restore destination Tuning Manager server host. If the following are not the same, the database cannot be restored.
  - Types, versions, and revisions of the installed Hitachi Command Suite products
  - Installation location for each Hitachi Command Suite product, Common Component, each Hitachi Command Suite product database, and Common Component database
  - The IP address and host name of the machines
- When you execute the **`hcmds64db`** command for restoring the database, a temporary file is created. Before restoring the database, make sure that:
  - You have write permission to the backup file directory
  - The backup file directory has as much free space as the size of the existing backup files

To restore the databases:

1. If Hitachi Command Suite products whose version is earlier than 5.7 have been installed, stop all their services.

   For details on how to stop the services, see the manual of each product.

2. Execute the following command to restore the databases:

   Windows: *Common-Component-installation-folder*\bin\hcmds64db /restore *backup-file-name* /type {TuningManager | All} /auto

   Linux: *Common-Component-installation-directory*/bin/hcmds64db /restore *backup-file-name* /type {TuningManager | All} /auto

   For details about the command options for **hcmds64db**, see Options for the hcmds64db command on page 3-6.

Options for the hcmds64db command

The **hcmds64db** command restores the Tuning Manager database.

The following shows command line usage for the **hcmds64db** command on Windows:

Windows: *Common-Component-installation-folder*\bin\hcmds64db / restore *backup-file-name* /type {TuningManager | All} /auto

Linux: *Common-Component-installation-directory*/bin/hcmds64db / restore *backup-file-name* /type {TuningManager | All} /auto

The following shows options for the **hcmds64db** command:

- restore *backup-file-name*

  In *backup-file-name*, specify the absolute path to the backup file (backup.hdb) that is used for restoration.

- type {TuningManager |All}

  Specify TuningManager to restore only the Tuning Manager server data. Specify ALL to restore the data of all Hitachi Command Suite products that have been installed.

- auto

  You can specify the auto option when a Hitachi Command Suite product whose version is 5.7 or later is installed. When you execute the command with the auto option specified, in preparation for database operation, this option automatically stops the services of Hitachi Command Suite products and HiRDB. Once the command is executed, the services of Hitachi Command Suite products and HiRDB will be stopped. However, the services of Hitachi Command Suite products whose version is earlier than 5.7 cannot be started or stopped.

Changing the total database capacity

This topic describes how to change the total database capacity.

As the amount of information managed by the Tuning Manager server increases, the database space might be insufficient. In such a case, you need to either shorten the retention periods for the capacity data for resources or increase the total database capacity. Likewise, if the used database capacity is small, you can increase the free space of the drive by decreasing the total database capacity.

For details on how to check the total database capacity and the used database capacity, see Displaying the database capacity on page 3-2.

Estimating the total database capacity

The initial total database capacity of the Tuning Manager server is 2 GB when it is installed. You can increase the total database capacity to a maximum of 32 GB. This section describes how to estimate the total database capacity needed.

For the total database capacity of the Tuning Manager server, specify the result that is calculated by using the formula explained in this section. The total database capacity can be specified in multiples of 2 GB, up to 32 GB. Make sure that the result of the calculations does not exceed 32 GB.

Also, be sure to round results up to the nearest 2 GB. For example, if the result of the calculations is 10.2 GB, specify a total database capacity from 12 GB to 32 GB.

The following formula can be used to estimate the total database size needed for the Tuning Manager server. For details on the variables used in the formula, see Table 3-1 Variables used in the formula to estimate the total database size on page 3-8.

total-database-size (in GB) =

(18,530 * *P* *S

+ 7,050 * *L* *S

+ 270 * (*DPV* + *L* / 2(see [1])) *M

+ 800 * (*F* +*FM*) *H

+ 320 * *F* *M

+ 2,600 * *D* *H

+ 29,630 * *DM* *H

+ 3,170 * *HOST* * *H*

+ 7,340 * *VM* * *H*

+ 10,100 * *DS* * *H*

+ 290 * *DS* * *H*)/ $1,024^3$

+1.15

+0.45 (see [2])

Note 1:

Do not divide *L* by 2 if the number of externally connected logical devices exceeds one-half of the total number of logical devices. Instead, read the "*L*/ 2" portion as "*L*".

Note 2:

Add this value only when you are using Agent for Oracle.

Table 3-1 Variables used in the formula to estimate the total database size

Variable	Descriptions	Acceptable values
P	The number of storage system ports	A positive number
L	The number of logical devices	A positive number
DPV	The number of Dynamic Provisioning volumes	A positive number
F	The number of file systems	A positive number
FM	The average number of file systems mounted per month	A positive number
D	The number of device files	A positive number
DM (see Note 1)	The number of MPIO device files	A positive number
HOST	The number of virtualization servers	A positive number
VM	The number of virtual machines	A positive number
DS	The number of datastores	A positive number
M (see Note 2)	The number of capacity data collections	A positive number
S	The retention period for historical data of a storage device configuration	A positive number (indicating the number of months)
H	The retention period for historical data of a host configuration	A positive number (indicating the number of months)

Note 1:

If Agent for Server System is running on a host in an MPIO environment, depending on the path management program in use, you might need to use the variable *DM* instead of the variable *D* for the number of device files. To check whether you need to use the variable *DM* for the number of device files, see Table 3-2 Whether it is necessary to use the variable DM for the number of device files in an MPIO environment on page 3-9.

Note 2:

To calculate the variable *M*, use the retention period for each type of capacity data. Calculate the number of capacity data collections as follows:

number-of-capacity-data-collections =number-of-hourly-data-collections +number-of-daily-data-collections +number-of-weekly-data-collections +number-of-monthly-data-collections +number-of-yearly-data-collections

The following table describes how to determine whether you need to use the variable *DM* for the number of device files.

Table 3-2 Whether it is necessary to use the variable *DM* for the number of device files in an MPIO environment

OS	Path management program	Whether it is necessary to use the variable DM
Windows	Dynamic Link Manager	No
	Other than Dynamic Link Manager	Yes
AIX	Any path management program	No
HP-UX		Yes
Linux		Yes

The following table describes how to calculate the number of data collections for each type of capacity data.

Table 3-3 How to calculate the number of capacity data collections

Type of capacity data	Number of capacity data collections for each unit		Number of capacity data collections when the data retention period and the number of times to perform polling is set to the default	
	Period	Number of capacity data collections	Default capacity data retention period	Equation for determining the number of capacity data collections
Hourly data	1 day	24	7 days	7 × 1 = 7 (see Note)
Daily data	1 month	31	3 months	3 × 31 = 93
Weekly data	1 month	4	3 months	3 × 4 = 12
Monthly data	1 year	12	2 years	2 × 12 = 24
Yearly data	1 year	1	5 years	5 × 1 = 5

Note: Hourly data is collected once per polling. By default, polling is performed once per day. Therefore, if the number of times to perform polling is set to the default, hourly data is collected only once per day.

The formula for estimating the total database capacity needs to be used if the interval for adding a resource and the interval for changing the resource configuration satisfy the conditions listed in the following table.

Table 3-4 Conditions under which to use the formula for estimating the total database capacity

Classification	Resource	Interval for adding a resource (average)	Interval for changing the configuration (average)
Storage system	Storage system	Once a day	Once a day
	Port controller	Once a month	Once a month
	Port	Once every three months	Once a day
	Host Group	Once a month	Once a month
	CLPR	Once a month	Once a month
	Processor	Once every three months per port	Once every three months per port
	DKA pair	Once a day	Once a day
	Parity group	Once a month	Once a month
	Concatenated parity group	Once a month	Once a month
	Physical drive	Once every three months per port	Once every three months per port
	Logical device	Once a month	Once a month
	LU path	Once a month	Once a month
	Label	Once a month	Once a month
	Dynamic Provisioning volume	Once a month	Once a month
	SLPR	Once a month	Once a month
	Correspondence between storage system port and host WWN	Once every three months	Once every three months
Host	Host	Once a month	Once a month
	Device file	Once a month	Once a month
	Drive group	Once a month	Once a month
	File system	Once a month	Once a month
	Port	Once a day	Once a day
	Path	Once a day	Once a day
	MPIO environment path	Once a month	Once a month

Classification	Resource	Interval for adding a resource (average)	Interval for changing the configuration (average)
Hypervisor	Virtualization server	Once a month	Once a month
	Virtual machine	Once a month	10 times a month
	Datastore	Once a month	Once a month
	Mapping information for a virtualization server and its datastores	Twice a month	Twice a month
	Mapping information for a virtual machine and its datastores	Twice a month	Twice a month
	Mapping information for a datastore and its logical devices	Twice a month	Twice a month
Switch	Switch	Once a day	Once a day
	Port	Once every three months	Once every three months
Oracle	Oracle instance	Once a day	Once a day
	Tablespace	Once every three months	Once every three months
	Data file	Once every three months per tablespace	Once every three months per tablespace

Expanding the total database capacity

This topic describes how to expand the total database capacity.

Note: Before expanding the total database capacity, make sure that the database is backed up. For details on how to back up the database, see Backing up the database on page 3-2.

To expand the total database capacity:

1. Check the current total database capacity.

   For details on how to check the database capacity, see Displaying the database capacity on page 3-2.

2. Stop all services of Hitachi Command Suite products.

   For details about how to stop the services, see Stopping services on page 1-23.

3. Execute the **`htm-db-setup`** command to increase the total database capacity as follows:

   Windows:

   Tuning-Manager-installation-folder`\bin\htm-db-setup [/size` *increment*`] [/areapath` *database-directory-path*`]`

   Linux:

Tuning-Manager-installation-directory`/bin/htm-db-setup [/size` *increment*`] [/areapath` *database-directory-path*`]`

Specify the appropriate information for each parameter (see Options for the htm-db-setup command on page 3-12 for details).

Note: You cannot use the **`htm-db-setup`** command to *decrease* the current total database capacity. For information on decreasing the total database capacity, see Reducing the total database capacity on page 3-13.

If the Tuning Manager server is in a cluster configuration, execute the **`htm-db-setup`** command on the active node only.

4. Start the Hitachi Command Suite services.

   For details on how to start the services, see Starting services on page 1-21.

Note: HiRDB is automatically started after the **`htm-db-setup`** command is executed.

Options for the `htm-db-setup` command

The **`htm-db-setup`** command is used to increase or reduce the size of the Tuning manager database.

The following shows command line usage for the **`htm-db-setup`** command on Windows:

Windows:

Tuning-Manager-installation-folder`\bin\htm-db-setup [/size` *increment*`] [/areapath` *database-directory-path*`]`

Linux:

Tuning-Manager-installation-directory`/bin/htm-db-setup [/size` *increment*`] [/areapath` *database-directory-path*`]`

The following describes the options for the **`htm-db-setup`** command. When you specify these options, specify the appropriate information for each parameter.

- `-size` *increment*

  Specify the size by which you want to increase the total database capacity in multiples of 2 GB. That is, the size you specify is the new total database capacity minus the current total database capacity. You can specify a multiple of 2 in the range from 2 to 30.

- `areapath` *database-directory-path*

  Specify the absolute path name of the directory for storing the database files.

  If you omit this parameter, the directory for storing the database files will be the directory in which the database files are created, which you selected during installation.

For additional details about the **htm-db-setup** command, see the *Tuning Manager CLI Reference Guide*

Reducing the total database capacity

This topic describes how to reduce the total database capacity.

Before reducing the total database capacity, check both used and total database capacities. For details, see Displaying the database capacity on page 3-2.

Note: The minimum value for the total database capacity is 2 GB. If the amount of data currently stored in the database is 2 GB or less, you cannot reduce the total database capacity.

Before reducing the total database capacity, you must back up the database. For details on how to back up the database, see Backing up the database on page 3-2.

The following example shows how to reduce the total database capacity to 6 GB when the total database capacity is 10 GB and the used capacity is 4 GB.

To reduce the total database capacity:

1. Execute the **hcmds64dbtrans** command to export the database.

   For details on how to export the database, see Exporting the database at the migration source server on page 3-16.

2. Perform an overwrite installation of the Tuning Manager server.

   Do not inherit the existing database. In this case, the total database capacity will become 2GB (the default value).

   For details on how to perform an overwrite installation of the Tuning Manager server, see the *Tuning Manager Installation Guide*.

3. Execute the **htm-db-setup** command to expand the total database capacity to 6 GB.

   For details on how to expand the total database capacity, see Expanding the total database capacity on page 3-11. For details about the options for the **htm-db-setup** command, see Options for the htm-db-setup command on page 3-12.

4. Execute the **hcmds64dbtrans** command to import the database.

   For details on how to import the database, see Importing the database at the migration destination server on page 3-18.

Migrating databases

When you upgrade Hitachi Command Suite products or the number of objects to be managed has increased, you might need another machine. If this occurs, database migration will be one important component of the machine replacement process. For Hitachi Command Suite products, you can use the **hcmds64dbtrans** command to migrate databases. This

command migrates information stored in the database of each Hitachi Command Suite product, and user information managed by Common Component.

You can use the **hcmds64dbtrans** command to migrate the Tuning Manager server database to a machine that has a different environment than the currently operating server machine, in cases such as the following:

- Migration to a different platform machine
- Migration to a machine on which the installation locations for Hitachi Command Suite products are different from the ones on the migration source

Note: For details on the available options for the **hcmds64dbtrans**, see Options for the hcmds64dbtrans command on page 3-14.

To migrate the Tuning Manager server database:

1. Check the amount of the drive capacity used by the database on the migration source server.
2. On the migration destination server, install the Hitachi Command Suite products for which you want to migrate the database.
3. On the migration source server, use the **hcmds64dbtrans** command to export the database.
4. Transfer the exported database archive file from the migration source server to the migration destination server.
5. On the migration destination server, use the **hcmds64dbtrans** command to import the database.

Options for the hcmds64dbtrans command

The following options are available for the **hcmds64dbtrans** command:

- `workpath`

  Specify the absolute path to the directory where you wish to temporarily store database information. In UNIX, do not specify a path that includes a space character. Specify a directory on your local drive.

- `file`

  Specify the absolute path to the archive file of the databases to be imported or exported. In UNIX, do not specify a path that includes a space character.

- `type`

  Specify the names of the Hitachi Command Suite products whose databases will be migrated. Only the databases of the specified products are migrated.

  To migrate the Tuning Manager server database, specify `TuningManager`. For details on the names that you specify when migrating the databases of other products, see the manual for each product. To specify multiple product names, use a comma as the delimiter between the names.

To migrate the databases of all the installed Hitachi Command Suite products at one time, specify `ALL`. The databases of the Hitachi Command Suite products installed on the migration destination server are automatically selected and migrated.

You can use the type option to migrate the databases only when the databases of all the specified products exist in the directory specified by the archive file or the workpath option, and all the specified products are installed on the migration destination server. If any of the products do not meet the conditions above, migration will not be performed.

- `auto`

  You can specify the `auto` option when a Hitachi Command Suite product whose version is 5.7 or later is installed. When you execute the command with the `auto` option specified, in preparation for database operation, this option automatically stops the services of Hitachi Command Suite products and starts HiRDB. When the database operation has finished, the services of Hitachi Command Suite products will be started. Therefore, once the command is executed, the services of Hitachi Command Suite products and HiRDB will be started. However, the services of Hitachi Command Suite products whose version is earlier than 5.7 cannot be started or stopped.

Notes on database migration

The following are notes to keep in mind when migrating databases.

- Notes on changing the connection-target Device Manager:

  If you want to change the connection-target Device Manager when migrating databases, do so after the migration. For details on how to do this, see the section that describes the settings for the connection-target Device Manager in the *Tuning Manager Installation Guide*.

- Notes for configurations and versions of the Hitachi Command Suite products on the migration source and migration destination servers:
  - The database of a Hitachi Command Suite product that is not installed on the migration destination server cannot be migrated. Install all necessary Hitachi Command Suite products on the migration destination server.
  - If the version of any Hitachi Command Suite product installed on the migration destination server is earlier than the version of the same product on the migration source server, the database cannot be migrated. On the migration destination server, install Hitachi Command Suite products whose versions are the same as or higher than the ones on the migration source server.
  - If the version of the Tuning Manager server is earlier than 6.0, first upgrade the Tuning Manager server to v6.0 or later on both the migration source and migration destination servers.
  - Set the same capacity for the Tuning Manager server database on both the migration source and migration destination servers. For details on how to change the capacity of the database, see Changing the total database capacity on page 3-6.

- Notes for user information of the Hitachi Command Suite products on the migration source and migration destination servers:
  - If there is user information on the migration destination server, this user information will be replaced with the user information from the migration source server. Therefore, do not perform a migration to a machine on which user information for Hitachi Command Suite products already exists.
  - You cannot perform migration to integrate the Hitachi Command Suite products that were running on multiple management servers on to one management server because user information will be overwritten with each successive migration.
- Notes about information that is not migrated automatically during the database migration:
  - User properties and logging properties

    To migrate user properties and logging properties, you need to manually copy the files. For details on the storage location of the user property file, see Setting up the user property file on page 1-25. For details on the storage location of the logging property file, see Main Console logs on page 7-16.
  - Performance Reporter initialization settings file (`config.xml`)

    To migrate the Performance Reporter initialization settings file (`config.xml`), you need to manually copy the file. For details on the Performance Reporter initialization settings file, see Configuring initial settings for Performance Reporter on page 5-8.
  - Performance Reporter report and alarm definition information

    You need to re-specify the Performance Reporter report and alarm definition information. For details, see the *Tuning Manager User Guide*.

Installing Hitachi Command Suite products on the migration destination server

On the migration destination server, install the Hitachi Command Suite products whose databases will be migrated. The version of each Hitachi Command Suite product installed on the migration destination server must be the same as or higher than the one on the migration source server.

Exporting the database at the migration source server

To export the databases, a directory for temporarily storing the database information, and a directory for storing the archive file are required. Each of these directories requires more capacity than the total size of the following two directories:

- The directory storing the Tuning Manager server database
- The directory storing the Common Component database (excluding the `SYS` directory and the directories beneath it)

This capacity is a guideline value applied when only the Tuning Manager server database is installed. If Hitachi Command Suite products other than the Tuning Manager server are also installed, take the capacities of those databases into account as well.

Note the following precautions on exporting the databases:

- When you export the databases on the migration source server, always use the **hcmds64dbtrans** command. If you execute this command with the `auto` option specified, the command automatically stops all the services of Hitachi Command Suite products and starts HiRDB before starting export processing. However, the `auto` option is ineffective for the services of Hitachi Command Suite products whose version is earlier than 5.7. If such Hitachi Command Suite products have been installed, you must stop their services manually. For details on how to stop these services, see the manual for each product.
- To create an archive file of the database information, execute the **hcmds64dbtrans** command with the `file` option specified.

  Make sure you have enough free space on the destination directory to create the archive file. If the disk space is too low, the archiving process might fail. If the archive file is not created, you must manually transfer all the files stored in the directory specified by the `workpath` option to the destination directory.
- For details on the default installation directory for the Tuning Manager server and Common Component, see the *Tuning Manager Installation Guide*.

To export the databases:

1. If Hitachi Command Suite products whose version is earlier than 5.7 have been installed, stop all their services. For details on how to stop the services, see the manual for each product.

Note: Do not stop the service named HBase 64 Storage Mgmt Web Service. If you do so, the HiRDB service also stops.

2. Execute the following command to export the databases:

   In Windows:

   ```
   Common-Component-installation-folder\bin\hcmds64dbtrans /
   export /workpath working-folder /file archive-file /auto
   ```

   In Linux:

   ```
   Common-Component-installation-directory/bin/hcmds64dbtrans -
   export -workpath working-directory -file archive-file -auto
   ```

   For details on the available options, see Options for the hcmds64dbtrans command on page 3-14.

Caution: Specify an empty directory for the `workpath` option. If you specify a directory other than an empty directory, export processing will be cancelled. If this occurs, specify an empty directory, and then execute the `hcmds64dbtrans` command again.

3. Transfer the archive file to the migration destination server.

If the archive file cannot be created, transfer all the files stored in the directory specified by the `workpath` option. In that case, do not change the file structure in the directory specified by the `workpath` option.

Importing the database at the migration destination server

On a Tuning Manager server, you can perform either of the following import operations for databases:

- Importing only the Tuning Manager server data
- Importing the data of all Hitachi Command Suite products that have been installed

The following are precautions on importing the databases:

- When you import the databases on the migration destination server, always use the **`hcmds64dbtrans`** command. If you execute this command with the `auto` option specified, the command automatically stops all the services of Hitachi Command Suite products and starts HiRDB before starting import processing. However, the `auto` option is ineffective for the services of Hitachi Command Suite products whose version is earlier than 5.7. If such Hitachi Command Suite products have been installed, you must stop their services manually. For details, see the manual for each product.
- For details on the default installation directory for the Tuning Manager server and Common Component, see the *Tuning Manager Installation Guide*.

To import the databases:

1. If Hitachi Command Suite products whose versions are earlier than 5.7 have been installed, stop all of their services. For details on how to stop the services, see the manual for each product.

Note: Do not stop the service named HBase 64 Storage Mgmt Web Service. If you do so, the HiRDB service also stops.

2. Execute the following command to import the databases:

   Windows:

   ```
   Common-Component-installation-folder\bin\hcmds64dbtrans /
   import /workpath working-folder [/file archive-file ] /type
   {All | name-of-the-Hitachi-Command-Suite-products-whose-
   databases-are-migrated} /auto
   ```

   Linux:

   ```
   Common-Component-installation-folder/bin/hcmds64dbtrans -
   import -workpath working-folder [-file archive-file] -type
   {ALL | name-of-the-Hitachi-Command-Suite-products-whose-
   databases-are-migrated} -auto
   ```

For details on the available options, see Options for the hcmds64dbtrans command on page 3-14.

Caution: Specify an empty directory for the `workpath` option. If the specified directory is not empty, the import processing will be cancelled. If this occurs, specify an empty directory, and then execute the **`hcmds64dbtrans`** command again.

3. After you import the database, it is upgraded for the first time when you start the service. It is necessary to prepare the working directory for the database schema upgrade. Perform the following steps to secure the drive.
   a. Execute the `htm-db-status` command to ascertain the required drive capacity.

      - Check the value of `Used` in the command result.

      ```
      >htm-db-status
      Database Capacity (Used/Total): 30200/2048000 kBytes
      ```

      - Multiply the `Used` value by 0.3.

      If the resulting value is less than 100 megabytes, secure the drive for 100 megabyte capacity. If the resulting value is 100 or more megabytes, secure the drive for the calculated value.

   b. Check whether the default working directory for the database schema upgrade has sufficient capacity.

      The default working directory for database schema upgrade is:

      In Windows:

      Tuning-Manager-server-installation-folder/system/work

      In Linux:

      Tuning-Manager-server-installation-directory/system/work

   c. If there is no sufficient capacity in the default working directory, specify an absolute path to a working directory that meets the capacity requirements in the `user.properties` file.

      dbvup.workDir=*absolute-path-of-any-directory*

   d. Check the system resource limit of the root user (the maximum file size for each process).

      For Linux only:

      Use the `limit` or `ulimit` command in the OS to ensure that the system resource limit is tallest equal to the required drive capacity calculated, and then edit the threshold if necessary.

   Complete the above steps and start the service. Check the Tuning Manager Main Console login window and the log to ensure successful database upgrade. For details about starting services, see Starting services on page 1-21.

4

Managing users

This chapter covers key topics for creating and managing Tuning Manager server user accounts and includes the following topics:

- About login modes
- Overview of user management operations
- User account operations
- Managing user password security

About login modes

A Tuning Manager server uses the Single Sign-On mode (SSO mode) as the login mode.

Common Component can centrally manage user accounts for Hitachi Command Suite products. Therefore, once you have started the Tuning Manager server, you do not need to enter user IDs and passwords for other Hitachi Command Suite products to activate them from the Tuning Manager server. This feature is called Single Sign-On (SSO).

In an environment in which both the Tuning Manager server and Device Manager have been installed on the same host, only one instance of Common Component is installed on the host. This Common Component instance manages the user accounts for the environment.

In an environment in which the Tuning Manager server and Device Manager have been installed on separate hosts, the Common Component instance on the host on which Device Manager has been installed manages the user accounts. For details on how to create and manage user accounts in this case, see the *Hitachi Command Suite Help*.

Overview of user management operations

On a Tuning Manager server, you can set user permissions to restrict operations performed by individual users. For details about permissions, see Available user permissions on page 4-3.

Tuning Manager servers support functions that enhance the security when a user logs in. For details on these functions, see Managing user password security on page 4-12.

Overview of creating and setting up permissions for a new user

The **Administration** menu is available in the explorer area when you log in with the User Management permission or Admin permission. To manage users, in the explorer area choose **Administration**.

To create a new user:

1. Create a new user (see Creating a new user account on page 4-5).
2. Set permissions for the new user (see Setting permissions for a user on page 4-7).

Linking user accounts with an external authentication server

If you want to integrate user account authentication with other Hitachi Command Suite products to provide consolidated management with other applications, you can link to an external authentication server (a Kerberos server, LDAP directory server, or RADIUS server for user authentication).

A user account that is managed by the external authentication server is the same account that is registered in a Hitachi Command Suite product, and the user ID and password for the account are authenticated on the external

authentication server. You can specify for each user whether an account is authenticated as an account specific to a Hitachi Command Suite product or is authenticated on the external authentication server.

When Windows Active Directory is used as an external authorization server, if you register a group of users in the Hitachi Command Suite products, you can specify permissions for the group.

For details on linking with an external authentication server, see the *Hitachi Command Suite Administrator Guide*. For details about GUI operation to change the authentication method, or to enable linkage with an external authentication server, see *Hitachi Command Suite Help*.

By default, Tuning Manager server periodically deletes the report windows and historical chart information generated by the users, who are not managed by the Hitachi Command Suite products. However, the historical chart information that is set to be shared is not deleted. If your operation uses both external certification server and external authentication server, it is recommended to disable the `userData.cleanup.enable` property defined in the `user.properties` file. For details about `userData.cleanup.enable` property, see Properties for the user.properties file on page 1-26.

Note: To distinguish from external authentication, this document uses the phrase user authentication common to Hitachi Command Suite products to indicate user authentication provided by Hitachi Command Suite products.

Available user permissions

There are two types of Tuning Manager Admin permissions: the Admin permission for product operation and the Admin permission for managing users. This document uses the following terms to describe the different types of Admin permissions:

- *Admin permission* refers to the Admin permission for operating the Tuning Manager server.
- *User Management permission* refers to the Admin permission for managing users.

The user management functionality common to all Hitachi Command Suite products enables you to set the following permissions for each user:

- User Management permission, which is common to all Hitachi Command Suite products
- Admin permission for operating the Tuning Manager server
- Permissions for Hitachi Command Suite products other than the Tuning Manager server

  For details on the permissions for Hitachi Command Suite products other than the Tuning Manager server, see the manual for the relevant product.

The following table lists and describes the permissions relating to Tuning Manager server users.

Table 4-1 List of permissions

Classification	Permission	Description
Permissions for Tuning Manager server operations	Admin	Allows the user to change the settings for the functions provided by the Tuning Manager server. If you set the Admin permission for a user, the View permission is set at the same time. A user who has only this permission cannot use the user management functionality of Hitachi Command Suite products.
	View	Allows the user to view the available range of resources.
Permissions for managing users	User Management[1]	Allows the users of Hitachi Command Suite products to use the user management functionality. You can set this permission in combination with any of the Tuning Manager server operation permissions.

Note 1:

To set the User Management permission, select **Admin** for **User Management** in the dialog box for setting user permissions.

User account operations

The following topics describe user account operations on your own or another user's account.

Permissions for user account operations

With the User Management permission, you can perform operations on any user account. Without the User Management permission, you can modify only your own profile (full name, email address, and description) and your password.

The Tuning Manager server user account operations include:

- Creating a user (see Creating a new user account on page 4-5)

  The User Management permission is required for this operation.

- Viewing and changing user permissions (see Setting permissions for a user on page 4-7)

  The User Management permission is required for these operations. However, even users who have the User Management permission cannot change their own permissions.

- Viewing and editing user profiles (see Viewing or editing user profiles on page 4-7)
- Changing passwords (see Changing passwords on page 4-9)
- Changing the lock status of a user account (see Changing the lock status of a user account on page 4-10)

  Only users who have the User Management permission can lock or unlock user accounts.
- Deleting a user (see Deleting a user account on page 4-12)

  The User Management permission is required for this operation. However, even users who have the User Management permission cannot delete their own accounts.
- Linking with an external authentication server (see the *Hitachi Command Suite Administrator Guide*)

Creating a new user account

With the User Management permission, you can create user accounts common to all Hitachi Command Suite products as required. If linkage with an external authentication group is enabled, there is no need to add a user because the external authorization server manages user accounts. For details on the valid values for setting these items, see the *Tuning Manager Server Administration Guide*.

If you edited the `exauth.properties` file to specify settings for linking with an external authentication server, external authentication will be the default method used to authenticate the user to be added. For details on the `exauth.properties` file, see the *Hitachi Command Suite Administrator Guide*.

To create a new user account:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Users and Permissions**. In the navigation area, select **Users**.

   The Users window appears. **User List** is displayed in the Users window.
3. Click the **Add User** button in the Users window.

   The Add User dialog box is displayed.
4. Enter the following information for the new user:
   - **User ID**

     Enter a user ID.
   - **Password**

     You must enter a password if the user to be added will use user authentication common to Hitachi Command Suite products. If linkage to the external authentication server is enabled by using the `exauth.properties` file, entering a password is optional.

Specified conditions might apply to the minimum number of characters or combination of characters that can be used when setting a password. Passwords that do not meet these conditions cannot be set. For information on the specified conditions, contact your system administrator.

- **Verify Password**

  Re-enter the password for confirmation.

- **Full Name** (optional)

  Enter a full name.

  The full name is displayed in the global tasks bar area after a user logs in. If this item is omitted, the user ID will be displayed in the global tasks bar area.

- **E-mail** (optional)

  Enter an email address.

- **Description** (optional)

  Enter a description of the user (for example, their job title).

5. Click the **OK** button to save the settings.

   The user account is created and you are returned to the Users window. Also, the new user account appears in **User List**.

Note: The new user cannot access the Tuning Manager server yet because he or she does not have any permissions. To enable the new user to access the Tuning Manager server, you must set permissions for the user. For details on setting permissions, see Setting permissions for a user on page 4-7.

For the new user to view Hitachi Command Suite resource information, you must set a Hitachi Command Suite permission (Admin, Modify, or View) and assign a resource group to the user. For details on how to set permissions, see Setting permissions for a user on page 4-7. For details on how to assign a resource group, see the *Hitachi Command Suite Help*.

Setting permissions for a user

With the User Management permission, you can set permissions for users other than yourself to access the Tuning Manager server and other Hitachi Command Suite products. If linkage with an external authentication group is enabled, grant the permissions to an authorization group. For details, see the *Hitachi Command Suite Help*.

Note: You cannot change the permissions associated with the `System` account.

Do not change the permissions for the `HaUser` account. This account is the default user for the Device Manager agent.

The User Management permission does not allow you to change your own permissions. To change your own permissions, you must log in to the Tuning Manager server using the `System` account or the user ID of another user who has the User Management permission.

To set permissions for a user:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Users and Permissions**.
3. In the navigation area, expand the **Users** object tree, and then select the user ID for which to set permissions.

   The *user-ID* window appears in the application area. Here you can view the permissions already set for the user.
4. To change the permissions, click the **Change Permission** button.

   The Change Permission-*user-ID* dialog box appears.
5. Select the permissions for each application that you want to set for the user, and then click the **OK** button to save the settings.

   For the combinations of permissions you can set, see Available user permissions on page 4-3.

Viewing or editing user profiles

With the User Management permission, you can view and edit the profile of any user. Without the User Management permission, you can view and edit only your own profile.

If linkage with an external authentication group is enabled, user profiles cannot be changed because the external authorization server manages the user profiles. To edit a profile, use Windows Active Directory.

The procedures for viewing or editing a profile are described in the following topics.

Viewing or editing another user's profile

To view or edit another user's profile:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Users and Permissions**.
3. In the navigation area, expand the **Users** object tree, and then select the user ID whose profile you want to view or edit.

   The *user-ID* window appears in the application area. Here you can view the user's profile and permissions.
4. To edit the profile, click the **Edit Profile** button.

   The Edit Profile - *user-ID* dialog box appears. In this dialog box, you can edit the **Full Name**, **E-mail**, and **Description** settings.
5. Click the **OK** button to save the edited settings.

   The user's profile information in the *user-ID* window is updated.

Viewing or editing your own profile

To view or edit your own profile:

1. Log in to the Tuning Manager server with any user ID.
2. In the explorer area, choose **Settings** and then **User Profile**.

   The User Profile window appears in the application area. Here you can view the profile and permissions of the user account you logged in with.
3. To edit the profile, click the **Edit Profile** button.

   The Edit Profile - *user-ID* dialog box appears. To change your profile, edit the **Full Name**, **E-mail**, and **Description** settings.
4. Click the **OK** button to save the edited settings.

   The edited information is reflected in the User Profile window.

Changing passwords

With the User Management permission, you can change the password of any user. Without the User Management permission, you can change your own password only. For details on the valid values for the setting items, see the *Hitachi Command Suite Administrator Guide*.

Note: When the Tuning Manager server is running in a cluster environment, if you change the password for the System account, specify the same settings on all nodes that make up the cluster. For details on cluster environments, see the *Tuning Manager Installation Guide*.

The passwords and number of unsuccessful login attempts of users for which external authentication is enabled are managed by the external authentication server. Therefore, you cannot change the password for these users on the Tuning Manager server. For details on linking with an external authentication server, see the *Hitachi Command Suite Administrator Guide*.

If Hitachi Command Suite products and Storage Navigator Modular 2 are installed on the same computer, Common Component centrally manages the user accounts for both. Therefore, if you change the password for a user ID in one of a Hitachi Command Suite product or Storage Navigator Modular 2, the password for the other is also changed.

Changing your own password

To change your own password:

1. Log in to the Tuning Manager server using any user account.
2. In the explorer area, choose **Settings** and then **User Profile**.

   The User Profile window appears in the application area.
3. Click the **Change Password** button.

   The Change Password - *user-ID* dialog box appears.
4. Enter your current password in the **Old Password** text box. Type your new password in the **New Password** and **Verify Password** text boxes, and then click the **OK** button.

Changing another user's password

To change another user's password:

1. Log in to the Tuning Manager server with a user account that has the User Management permission.
2. In the explorer area, choose **Administration** and then **Users and Permissions**.
3. In the navigation area, expand the **Users** object tree, and then select the user ID whose password you want to change.

   The *user-ID* window appears in the application area.
4. Click the **Change Password** button.

   The Change Password - *user-ID* dialog box appears.

5. Enter the new password in the **New Password** and **Verify Password** text boxes, and then click the **OK** button.

Changing the lock status of a user account

Users who have the User Management permission can manually lock and unlock user accounts registered in Hitachi Command Suite products.

When a user account is locked, the user cannot log in to any Hitachi Command Suite products until the user account is unlocked.

Users who have the User Management permission can also unlock user accounts that were locked automatically because of repeated login failures. If linkage with an external authentication group is enabled, the settings of the external authentication server are applied for the number of unsuccessful login attempts and the account lock. Therefore, you cannot change the setting for locking user accounts using Hitachi Command Suite products.

Note: Users with the User Management permission cannot lock their own user account.

If you lock the user account of a user who is currently logged in, the user will not be able to perform any operations. Before locking a user account, make sure that the user is not logged in to the Tuning Manager server.

Before you can change the lock status of the `System` account, you must edit Common Component properties. For details on how to edit these properties, see the *Hitachi Command Suite Administrator Guide*.

If all user accounts have been locked, you must use a command to unlock them. For details on how to do this, see the *Hitachi Command Suite Administrator Guide*.

When you change user authentication from external authentication to user authentication common to Hitachi Storage Command Suite products, if a password has not been set for a user account, that user account will be locked. When you set a password, the user account will be unlocked. For details on how to set passwords, see the *Hitachi Command Suite Administrator Guide*.

To manually change the lock status of a user account when linkage with an external authentication group is not enabled:

1. In the explorer area, choose **Administration**, and then **Users and Permissions**. Then select a user in the navigation area.

   The Users window appears. The **User List** is displayed in the Users window.

2. In **User List**, select the user whose account lock status you want to change.

   If you select the check box in the title bar, all users will be selected.

   Even if you select a user account that is locked because no password has been set, the user account cannot be unlocked.

3. Click the **Lock Users** or **Unlock Users** button.

A dialog box is displayed to confirm that you want to change the lock status for the user account.

4. Click the **OK** button to change the account status, or the **Cancel** button to cancel the change.

   You are returned to the Users window. If you changed the lock status, the **Status** field is updated in the **User List**.

Settings for locking the system account

The initial settings specify that the `System` account is not subject to locking. Along with changing the settings to allow the `System` account to be locked, you can also set automatic locking or change the lock status of the `System` account as you can do for other user accounts.

This section describes how to specify that the `System` account is subject to locking.

Note: The changes to the settings are applied when the Common Component service is restarted.

When the `System` account becomes subject to locking, it is subject to both automatic locking and manual locking in all Hitachi Command Suite products, including those whose version is earlier than 6.1.

If all user accounts including `System` have been locked, you must use a command to unlock them. For details on how to unlock user accounts by using a command, see All user accounts are locked on page 7-8.

To make the `System` subject to locking, add the `account.lock.system` property in the `user.conf` file. The following shows the location of the `user.conf` file. If the file does not exist, create it.

In Windows:

Common-Component-installation-folder\conf\user.conf

In Linux:

Common-Component-installation-directory/conf/user.conf

Add the following `account.lock.system` property:

```
account.lock.system = true
```

Note: If you specify `false` for the `account.lock.system` property, the `System` account is not subject to locking.

After you have changed the contents of the `user.conf` file, you must restart the Common Component service to apply the changes. Make sure that you stop the service before restarting it.

For details on how to start a service, see Starting services on page 1-21. For details on how to stop a service, see Stopping services on page 1-23.

Deleting a user account

With the User Management permission, you can delete a user account that is used across one or more Hitachi Command Suite products.

Do not delete the following accounts:

- The `System` account.
- The `HaUser` account.

  The `HaUser` account is the default user account used to log in to the Device Manager agent. If you delete this account, the Device Manager agent cannot transmit information to the Device Manager server.

Note: If you delete the account of a user who is currently logged in, that user will be unable to continue Tuning Manager operations. Before deleting any account, make sure that the user is not logged in to the Tuning Manager server.

To delete a user account from the Tuning Manager server:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Users and Permissions**. In the navigation area, select **Users**.

   The **Users** window appears, which displays **User List**.
3. To delete all listed user accounts:
   a. In **User List**, click the check box in the title bar to select all the check boxes next to all listed user accounts.
   b. Click the **Delete Users** button.

      The Delete User - Confirmation dialog box appears.
   c. Click to confirm and delete all listed user accounts.
4. To delete a specific user:
   a. In **User List**, select the check box of the user that you want to delete.
   b. Select the required user ID in **User List**.

      A *user-ID* window appears.
   c. In the *user-ID* window, click the **Delete User** button to delete the selected account.

      The Delete User - Confirmation dialog box appears.
   d. Click to confirm and delete the selected user's account.

Managing user password security

To manage user password security options, you must log in with an account that has User Management permissions.

Setting security options at login

To enhance security when a user logs in, users who have the User Management permission can set security options.

The following login security options can be set:

- Setting password conditions (see Setting password conditions on page 4-13).
- Setting automatic locking of user accounts (see Setting automatic locking of user accounts on page 4-14).
- Setting a warning banner message (see Setting a warning banner message on page 4-16).

Note: When the Tuning Manager server is operated in a cluster configuration, the security options are set for the active node only. To set the security options for the standby node, you must edit the Common Component properties file or use Common Component commands.

For details on how to set password conditions and automatic locking of user accounts by editing the Common Component properties file, see Security settings for user accounts on page 8-20.

For details on how to set a warning banner message by executing Common Component commands, see Warning banner messages on page 4-15.

When the settings for password conditions or automatic locking of user accounts are changed, the security option settings file (`security.conf`) is overwritten. If you intend to manually edit the settings file, we recommend that you back up the file beforehand. For details on how to edit the settings file manually, see Security settings for user accounts on page 8-20.

Setting password conditions

Users who have the User Management permission can set password conditions.

To prevent users' passwords from being guessed by a third party, the Tuning Manager server enables you to specify password conditions (the minimum number of characters and the combination of characters that can be used).

The password conditions apply when a user account is created or a password is changed. Because the password conditions are not applied to passwords of existing user accounts, existing users can log in to the system even if the passwords do not meet the currently specified conditions.

If an external authentication server authenticates a user, the settings on the external authentication server are applied to the characters that can be used for passwords.

To set password conditions:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Security**. In the navigation area, select **Password**.

   The Password window appears in the application area. The Password window displays the set password conditions.

3. To change the password conditions, click the **Edit Settings** button.

   The Password dialog box appears.

4. Enter the following information to set the password conditions.

   - **Minimum length**

     Specify the minimum number of characters that can be set as a password. The available range is 1 to 256 characters. The default is `4`.

   - **Minimum number of characters**

     Specify the minimum number of uppercase, lowercase, numeric, and symbolic characters that must be included in a password. You must specify the values such that the total number of required types of characters does not exceed the minimum length that can be specified for a password.

     You can specify from 0 to 256 characters. The default is`0`.

   - **Allow password to be the same as the User ID**

     If you select **no**, a user cannot use his or her user ID as a password. The default is **yes**.

5. To change the password conditions, click the **OK** button. To cancel modification of the password conditions, click the **Cancel** button.

   You are returned to the Password window. The password conditions are updated to reflect the new settings.

Setting automatic locking of user accounts

Users who have the User Management permission can set automatic locking of user accounts.

When automatic locking has been set for user accounts, operations by a user are automatically locked if an invalid password for that user account is entered repeatedly. When enabling automatic locking of a user account, you can specify the number of login failures allowed before the user account is automatically locked.

However, the accounts for which external authentication is enabled are not controlled by the settings for automatic account locking described in this topic because such accounts follow the settings specified in an external authentication server.

The settings on the external authentication server are applied to auto-lock control of user accounts that are authenticated by the external authentication server.

Unsuccessful attempts to log in to other Hitachi Command Suite products that use the Single Sign-On function count towards the number of unsuccessful login attempts. For example, if the number of unsuccessful attempts is set to `3`, when a user fails to log in to the Tuning Manager server once, fails to log in to Device Manager once, and then fails to log in to Tiered Storage Manager once, the user account will be automatically locked.

Changing the number of unsuccessful login attempts does not affect users who have already registered a number of unsuccessful attempts or whose user account is locked.

When a user account is locked, the user cannot log in to any Hitachi Command Suite products until the user account is unlocked. For details on how to unlock a user account, see Changing the lock status of a user account on page 4-10.

Note: To allow the System account to be locked automatically, you must edit the Common Component properties file (`user.conf`). For details on how to edit the Common Component properties file, see Settings for locking the system account on page 4-11.

To set automatic locking of a user account:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Security**. In the navigation area, select **Account Lock**.

   The Account Lock window appears in the application area. When automatic locking of a user account has been set in the Account Lock window, the number of allowable consecutive login failures is displayed. If automatic locking has not been set, the Account Lock window indicates **unlimited**.
3. To change the automatic lock setting, click the **Edit Settings** button.

   The Account Lock dialog box appears.
4. In the Account Lock dialog box, change the automatic lock setting for the user account.

   To enable automatic locking of the user account, select **Lockout a user account after number of failed attempts**, and then enter a value from 1 and 10 in **Maximum number of login attempts**.
5. To enable the change to the automatic lock setting for the user account, click the **OK** button. To cancel modification of the automatic lock setting, click the **Cancel** button.

   You are returned to the Account Lock window. The automatic lock setting for the user account is updated.

Warning banner messages

In Hitachi Command Suite products v5.1 or later, with which Common Component is bundled, an optional message (a warning banner) can be displayed as a security risk measure at login. Issuing a warning beforehand to third parties that might attempt invalid access can help reduce the risk of problems such as data loss or information leakage.

A user with Administrator permissions in Windows can freely set this message. The message displayable on the Login window must be no more than 1,000 characters. If a message with the same content is registered in a different language for each locale, the message can be automatically switched to match the locale of the Web browser.

Note: Sample English and Japanese messages are provided in the following locations:

In Windows: *Common-Component-installation-folder*\sample\resource

In Linux: *Common-Component-installation-directory*/sample/resource

When you upgrade or reinstall Tuning Manager, these sample files are overwritten so, if you wish to use a sample file, copy it to another location before you edit it.

If a cluster system is used, configure the same settings on both the active node and the standby node.

Setting a warning banner message

Users who have the User Management permission can set a warning banner message.

For Hitachi Command Suite products of v5.1 or later that come with Common Component, you can set any message (warning banner) as a security measure at login.

To set a warning banner message:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Security**. In the navigation area, select **Warning Banner**.

   The Warning Banner window appears in the application area. If no message has been set, the Warning Banner window indicates **No Message**.
3. Click the **Edit Message** button.

   The Edit Message dialog box appears.
4. In the **Message** text box, enter the new message in HTML format.
5. To check the message, click the **Preview** button.

   If the message has been entered correctly, the HTML image of the message appears in **Preview**. If you have used tags that cannot be used or if there is a problem in the HTML syntax, an error message appears and **Preview** is blank.
6. After you have confirmed that the message is displayed correctly, click the **OK** button to save the editing changes. To cancel editing of the message, click the **Cancel** button.

7. When you are finished setting the message, register it. For details, see Registering a banner message on page 4-19.

Note: To delete a set message *before* you register it, click the **Delete** button.

You can also use the **hcmds64banner** command to set a warning banner message. Unlike Web Client, when you set a message using the **hcmds64banner** command, there are no restrictions on the HTML tags that you can use. You can even set different messages for different locales. For details on how to set a warning banner message using the **hcmds64banner** command, see Warning banner messages on page 4-15.

Note: On Web Client, you can edit only the warning banner message displayed as the default. However, you cannot edit a message set using the **hcmds64banner** command if that message contains HTML tags that cannot be used on Web Client.

Notes about editing a warning banner message in HTML format

The maximum number of characters that you can use, including HTML tags, is 1,000.

HTML tags are not case sensitive.

To display characters used as HTML tags in the message, use the corresponding HTML escape sequence for the character.

To insert a line feed into the message to be displayed, use the HTML tag `<br>` at the desired position.

Note: Line feed characters entered when editing the message are ignored when the message is registered.

When the message is registered, the HTML syntax is neither checked nor corrected. Edit the message correctly in accordance with HTML syntax rules because the edited message will be registered as is. If there is an error in the HTML syntax in the message, the message might not display correctly in the Login window.

There are no restrictions on the characters usable in the message, other than that the character encoding must be Unicode (UTF-8). To display a character used in HTML syntax (e.g., `<`,`>`, `"`, `` ` ``,`&`), use the HTML escape sequence. For example, to display an ampersand (&) in the Login window, write `&amp` in the HTML file.

In addition to the usual characters, you can use HTML tags to change font attributes or place line breaks in desired locations. (The tag characters are also counted in the number of characters.) Usable characters are from the Unicode UTF-8 encoding. The following is an example of a message.

```
<center><b>Warning Notice!</b></center>
  This is a {Company Name Here} computer system, which may be
accessed and used only for authorized {Company Name Here}
business by authorized personnel. Unauthorized access or use of
this computer system may subject violators to criminal, civil,
and/or administrative action. <br>
All information on this computer system may be intercepted,
recorded, read, copied, and disclosed by and to authorized
personnel for official purposes, including criminal
investigations. Such information includes sensitive data
encrypted to comply with confidentiality and privacy
requirements. Access or use of this computer system by any
person, whether authorized or unauthorized, constitutes consent
to these terms. There is no right of privacy in this system.
```

When editing the message on Web Client, you can use the following HTML tags:

```
<b></b><i></i><center></center><br>
```

```
<div dir="ltr"><div dir="rtl"><div style="direction:rtl">
```

```
<div style="direction:ltr"></div>
```

Editing a warning banner message

Users who have the User Management permission can set a warning banner message.

To edit the warning banner message:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Security**. In the navigation area, select **Warning Banner**.

   The Warning Banner window appears in the application area. The set message appears in the Warning Banner window.
3. Click the **Edit Message** button.

   The Edit Message dialog box appears.
4. In the **Message** text box, edit the message in HTML format.
5. To check the edited message, click the **Preview** button.

   If the message has been edited correctly, the HTML image of the message appears in **Preview**. If you have used tags that cannot be used or if there is a problem in the HTML syntax, an error message appears and **Preview** is blank.
6. After you have confirmed that the message is displayed correctly, click the **OK** button to save the editing changes. To cancel editing of the message, click the **Cancel** button.
7. When you are finished editing the message, you must register it again. For details, see Registering a banner message on page 4-19.

Registering a banner message

Use the **hcmds64banner** command to register a new or edited warning banner message.

Note: If a message for the specified locale is already registered, it will be overwritten with the new registered message.

To use the **hcmds64banner** command to register a new or edited warning banner message:

1. Execute the following command:

   In Windows:

   Common-Component-installation-folder\bin\hcmds64banner /add /file *file-name* [/locale *locale-name*]

   In Linux:

   Common-Component-installation-directory/bin/hcmds64banner -add -file *file-name* [-locale *locale-name*]

   The execution results of the **hcmds64banner** command are output to the hcmds64banner*n*.log file.

The following describes the variables used for the **hcmds64banner** command:

- *file-name*: Using an absolute path, specify the file that stores the message.
- *locale-name*: Specify the locale of the language used for the message (e.g., en for English, or ja for Japanese). If omitted, the default locale of the browser set for the server will be specified.

Deleting a warning banner message

The procedure for deleting a warning banner message depends on whether it has been registered.

To use the Tuning Manager GUI to delete an*unregistered* warning banner message:

1. Log in to the Tuning Manager server with an account that has the User Management permission.
2. In the explorer area, choose **Administration**, and then **Security**. In the navigation area, select **Warning Banner**.

   The Warning Banner window appears in the application area. If the Warning Banner window indicates **No Message**, there are no messages to delete.
3. Click the **Edit Message** button.

   The Edit Message dialog box appears.
4. To delete the message, click the **Delete** button.

To use the CLI to delete a*registered* warning banner message:

1. Use the **hcmds64banner** command to delete a registered message. Execute the following command:

   In Windows:

   Common-Component-installation-folder\bin\hcmds64banner /delete [/locale *locale-name*]

   In Linux:

   Common-Component-installation-directory/bin/hcmds64banner -delete [-locale *locale-name*]

Note: For *locale-name*, specify the locale of the message to be deleted (e.g., en for English, or ja for Japanese). If omitted, the default locale of the browser set for the server will be specified.

The execution results of the **hcmds64banner** command are output to the file hcmds64banner*n*.log.

5

Configuring connection and initial settings

A Tuning Manager server can launch related applications. This chapter describes the settings needed to launch related applications and includes the following topics:

- Configuring connection settings for Device Manager
- Configuring connection settings for Agents
- Configuring settings for Agents that use Tuning Manager API
- Configuring Tuning Manager server settings to use Tuning Manager API
- Configuring initial settings for Performance Reporter
- Reviewing a sample initialization settings file
- Editing the initialization settings file (Windows)
- Editing the initialization settings file (Linux)
- Changing the default window for Performance Reporter
- Preparing to use the Device Manager CLI
- Overview of Oracle Java support

Configuring connection settings for Device Manager

Before a Tuning Manager server can be used, the Device Manager connection settings must be specified. A Device Manager can connect to only one Tuning Manager server. Likewise, a Tuning Manager server can connect to only one Device Manager. This section describes the commands used to specify the Device Manager connection settings.

Tuning Manager server host settings

The **htm-dvm-setup** command is used to configure the Tuning Manager server settings for connecting to Device Manager.

The connection settings between the Tuning Manager server and Device Manager are configured automatically when the Tuning Manager server is installed. If you want to change the instance of Device Manager to which the Tuning Manager server connects, execute the **htm-dvm-setup** command to modify the connection settings for Device Manager.

- Installation of the Tuning Manager server precedes installation of Device Manager, which is the prerequisite product of the Tuning Manager server.
- The connected instance of Device Manager is removed and then reinstalled after Tuning Manager server operation has started.
- The Tuning Manager server is migrated to another host and the target Device Manager host is changed.

To manually execute the **htm-dvm-setup** command:

1. Stop the services of all Hitachi Command Suite products and HiRDB.

   For details on how to stop these services, see Stopping services on page 1-23.

2. Start the HiRDB-related services.

   For details on how to start these services, see Starting services on page 1-21.

3. Execute the **htm-dvm-setup** command to configure the Device Manager connection settings.

   The following example shows how to execute the command when configuring Device Manager, which is installed on the Windows host whose name is `host01`, as the connection destination. This example assumes that the Tuning Manager server uses the port number 24230 to remotely connect to the HiRDB on the Device Manager host.

   In Windows:

   ```
   Tuning-Manager-server-installation-folder\bin\htm-dvm-setup
   /d host01 /s 24230
   ```

   In Linux:

   ```
   Tuning-Manager-server-installation-directory/bin/htm-dvm-
   setup -d host01 -s 24230
   ```

   The following example shows how to execute the command when configuring Device Manager, which is installed on the same host as the Tuning Manager server, as the connection destination.

In Windows:

Tuning-Manager-server-installation-folder\bin\htm-dvm-setup /local

In Linux:

Tuning-Manager-server-installation-directory/bin/htm-dvm-setup --local

For details on the **htm-dvm-setup** command, see the *Tuning Manager CLI Reference Guide*.

4. Set the information needed to connect to the server that manages user accounts.

   Execute the following command:

   The user accounts are managed by common component on the host where the connection target Device Manager is installed.

   In Windows:

   - If SSL is set for HBase 64 Storage Mgmt Web service of Device Manager:

     Common-Component-installation-folder\bin\hcmds64prmset /host*Device-Manager-host-name* /sslport *HBase-64-Storage-Mgmt-Web-Service-of-Device-Manager-SSL-port-number*

   - If SSL is not set for HBase 64 Storage Mgmt Web service of Device Manager:

     Common-Component-installation-folder\bin\hcmds64prmset /host *Device-Manager-IP-address-or-host-name* /port *HBase-64-Storage-Mgmt-Web-Service-of-Device-Manager-non-SSL-port number*

   In Linux:

   - If SSL is set for HBase 64 Storage Mgmt Web Service of Device Manager:

     Common-Component-installation-directory/bin/hcmds64prmset -host *Device-Manager-host-name* -sslport *HBase-64-Storage-Mgmt-Web-Service-of-Device-Manager-SSL-port-number*

     For details about the **hcmds64prmset** command, see the *Tuning ManagerCLI Reference Guide*.

   - If SSL is not set for HBase 64 Storage Mgmt Web Service of Device Manager:

Common-Component-installation-directory/bin/hcmds64prmset -host *Device-manager-IP-address-or-host-name* -port *HBase-64-Storage-Mgmt-Web-Service-of-Device-Manager-non-SSL-port-number*

Note: If you specified the Device Manager that is installed on a different host as the connection target, specify the same value for the `host` option as the `-d` option of the **htm-dvm-setup** command.

If you specified the Device Manager installed on the host where Tuning Manager server is installed, specify the `setprimary` option instead of the `host` option.

For the `port` option, specify the port number that is used to access the HBase 64 Storage Mgmt Web Service of the connection target. The default port number is 22015.

Device Manager server host settings

The **htmsetup** command is used to configure the Device Manager settings for connecting to the Tuning Manager server.

If the Tuning Manager server is installed on a different host from Device Manager, you need to execute the **htmsetup** command. If the Tuning Manager server and Device Manager are installed on the same host, you do not need to execute the `htmsetup` command.

The htmsetup command is provided by Device Manager. After executing the **htm-dvm-setup** command on the host on which the Tuning Manager server is installed, execute the **htmsetup** command on the host on which Device Manager is installed.

For details about the **htmsetup** command, see the *Hitachi Command Suite Administrator Guide*.

Configuring connection settings for Agents

Before a Tuning Manager server can be used, the Agent connection settings must be configured.

Agent information is usually automatically registered during installation of a Tuning Manager server. However, some of the following settings need to be modified after starting operation:

- Settings that must be manually configured in Collection Manager

  If the changes below occur after starting operation, you need to delete the service information that is displayed by using the **jpcctrl list** command. If the service information is not deleted, unnecessary service information remains in the location managed by Performance Reporter or Collection Manager.

  - An Agent has been removed.
  - The host name of the Tuning Manager server or an Agent has been changed after starting operation.

If the service information of an Action Handler service is deleted, the alarm action that uses the Action Handler service can no longer be executed. Therefore, you need to re-configure the Action Handler service that executes the alarm action.

To delete the service information, use the **`jpcctrl delete`** command of Collection Manager. After deleting the service information, restart the Collection Manager services. For details, see the *Tuning Manager Agent Administration Guide*.

After restarting Collection Manager, perform the following procedure to reflect the deletion results into the Tuning Manager server GUI:

a. On the Tuning Manager server, display the Data Polling window.

b. Click the **Start Polling** button to update the information.

- Settings that must be manually configured in Main Console

  You do not need to re-configure the settings in Main Console because Main Console refers to the Agent information managed by Collection Manager.

- Settings that must be manually configured in Performance Reporter

  You need to re-configure the settings when you want to update the version of an Agent data model that has already been registered. For details about registering an Agent, see the *Tuning Manager Installation Guide*.

Configuring settings for Agents that use Tuning Manager API

The Tuning Manager server manages information about the Agents that use the Tuning Manager API. You must configure the Agent settings to collect the Agent information.

Specifying automatic refresh interval to collect API Agent information

The Tuning Manager server manages information about the Agents that use the API functions.

To configure the Tuning Manager server to collect the Agent information automatically at regular intervals, you must edit the `rest.discovery.agent.interval` property in the `user.properties` file. For details about how to edit the `user.properties` file, see Setting up the user property file on page 1-25.

Agent information includes the following items:

- Instance information of the Agents (per instance)
- HTTP interface information of the Tuning Manager Agent REST API component (per host)
- Identification information of Agent monitoring targets (per instance)

Note that if you make any of the following changes to the Agent environment, the Agent information might not be refreshed automatically and might be outdated. Therefore, you must manually update the Agent information using the Tuning Manager API. For details about how to use the API functions, see the *Tuning Manager API Reference Guide*.

- Install an Agent
- Set up an Agent instance
- Delete an Agent instance
- Change the host name of an Agent
- Upgrade the data model of an Agent

If you add or delete an Agent that uses the Tuning Manager API, you must use the API to update the Agent information managed by the Tuning Manager server.

Note: In addition to the automatic periodic refresh, you also need to refresh the information manually immediately after starting the Tuning Manager server.

Configuring Tuning Manager server settings to use Tuning Manager API

This section describes the Tuning Manager server settings required for using the Tuning Manager API.

Settings for using the Tuning Manager API

Review the following Tuning Manager server settings for using the Tuning Manager API:

- Restricting API clients connecting to Tuning Manager server.

  To restrict the API clients that can connect to the Tuning Manager server, edit the `user_httpsd.conf` file. For details, see Restricting web terminals that can connect to a Tuning Manager server on page 1-38.

- Changing the port number

  If you change the default port numbers of an API client, you must also change the port numbers of the Tuning Manager server host connecting to the API clients. For details, see Changing the port number of Tuning Manager server host connecting to API Agent host on page 5-7

- Setting up SSL communication between the Tuning Manager server and the API clients. For details, see the *Hitachi Command Suite Administrator Guide*.

- IPv6 settings

  You can use the IPv6 settings defined for the Tuning Manager server. If you configured the IPv6 settings for the Tuning Manager server, you do not need to configure any additional settings for using the API. Note that, after enabling the IPv6 settings on an agent on which the Tuning Manager API is available, you must complete any necessary

preparations for the Agent to communicate with the Tuning Manager server using IPv6. For details, see the *Tuning Manager Agent Administration Guide*.

- Configuration of the user properties file

  When you change the host name of an API Agent host, you must edit the user properties file to reflect the new host name. For details, see the *Tuning Manager Agent Administration Guide*.

- Configuration of the config.xml file

Changing the port number of Tuning Manager server host connecting to API Agent host

If you changed the default port numbers of an Agent host that use Tuning Manager API, you must change the port numbers that are defined on the Tuning Manager server host for establishing communication with the API clients.

The following describes the procedure for changing the port numbers of the Tuning Manager server host:

1. Execute the following command to stop the Tuning Manager server service.

   In Windows:

   ```
   Common-Component-installation-destination-folder\bin\hcmds64srv \stop \server TuningManager
   ```

   In Linux:

   ```
   Common-Component-installation-destination-directory/bin/hcmds64srv -stop -server TuningManager
   ```

2. Specify the port numbers that you specified for the Agent host in the `user.properties` file:

   If you changed the access port for non-SSL communication, edit the following properties:

   - `rest.discovery.agent.global.secondary.port`
   - `rest.discovery.agent.host.HostNamen#.port`

     For HostNamen, specify the host name of the Agent.

   If you changed the access port for SSL communication, edit the following properties:

   - `rest.discovery.agent.global.primary.port`
   - `rest.discovery.agent.host.HostNamen.port`

     For HostNamen, specify the host name of the Agent.

3. Execute the following command to start the Tuning Manager server.

   In Windows:

   ```
   Common-Component-installation-destination-folder\bin\hcmds64srv \start\server TuningManager
   ```

   In Linux:

```
Common-Component-installation-destination-folder/bin/
hcmds64srv -start -server TuningManager
```

Steps required after changing the host name of an Agent host that use Tuning Manager API

If you change the host name of an API Agent host, you also need to change the configuration of the `user.properties file` as follows:

1. Stop the Tuning Manager server services.

   For details, see Stopping services on page 1-23.

2. Specify the host name (for a cluster system, the logical host name) that you specified for the Agent host in the `user.properties` file.

   For `HostNamen`, specify the host name of the Agent. If you do not specify the same host name as the one you specified for the Agent host, you cannot access the Tuning Manager - Agent REST Web Service.

   Edit the following properties in the `user.properties` file:

   - `rest.discovery.agent.host.`*`HostNamen`*`.host`
   - `rest.discovery.agent.host.`*`HostNamen`*`.protocol`
   - `rest.discovery.agent.host.`*`HostNamen`*`.port`

3. Restart the Hitachi Command Suite-related services.

   For details on how to do this, see Starting services on page 1-21.

4. Refresh to update the agent information.

   Use a manual refresh when you update the agent information. For details about how to use the API, see the *Tuning Manager API Reference Guide*.

Configuring initial settings for Performance Reporter

The initialization settings file (`config.xml`) is read from the initialization module that is executed during Performance Reporter startup.

- The Windows initialization settings file (`config.xml`) is located in:

  `Tuning-Manager-server-installation-folder``\`

  `PerformanceReporter\conf\`

- The Linux initialization settings file (`config.xml`) is located in:

  `Tuning-Manager-server-installation-directory/`

PerformanceReporter/conf/

Note: If you want to restore the `config.xml` file to its initial state, overwrite the file in the above location with the `config.xml` file copied from the following directory:

- In Windows:

  Tuning-Manager-server-installation-folder\PerformanceReporter\sample\conf

- In UNIX:

  /opt/HiCommand/TuningManager/PerformanceReporter/sample/conf

For details about the default installation folder for the Tuning Manager server, see the *Tuning Manager Installation Guide*.

Table 5-1 Initialization settings files (config.xml) on page 5-9 shows items in the initialization settings files. All items listed in the table are editable.

Table 5-1 Initialization settings files (config.xml)

Item	Description
logDir	Specify the directory to which the Performance Reporter log file is to be output. The default directories are as follows: • For Windows: *Tuning-Manager-server-installation-folder*\PerformanceReporter\log • For Linux: *Tuning-Manager-server-installation-folder*/PerformanceReporter/log An error occurs if an invalid directory, such as an inaccessible or remote directory, is specified. Also, an error occurs if the specified directory or file name includes invalid characters. For information about this error, see the Windows event log or syslog. If no directory is specified, the default is assumed.
logFileNumber	Specify (as an integer) the number of log files the Performance Reporter can output. • Value range: 1 - 16 • Default: 10 If the specified value is outside the permitted range, the default is assumed.
logFileSize	Specify the size of a log file in megabytes. • Value range: 1 - 100. • Default: 4 If the specified value is outside the permitted range, the default is assumed.
logFileNumberMulti [1]	Specify (as an integer) the number of log files that Performance Reporter outputs for multi-processing (excluding results of the **jpcrpt** command). • Value range: 1 - 64 • Default: 10 If the specified value is outside the permitted range, the default is assumed.

Item	Description
logFileSizeMulti[1]	Specify (in megabytes) the size of a log file for multi-processing (excluding results of the **jpcrpt** command). • Value range: 1 - 16 • Default: 4 If the specified value is outside the permitted range, the default is assumed.
logLevel	Specify one of the following as the log output level: • FATAL: Output log data in the event of a significant event, significant exception, or unresumable error. • WARN: Output log data before or after a call to another program or in the event of a warning. • DEBUG: Output log data during creation of a Performance Reporter main class, during start or end of a main method, or during execution. • TRACE: Output detailed log data during creation of a Performance Reporter normal class, during start or end of a normal method, or during execution. This information is for analysis purposes. The default is WARN. If a value other than one of the above values is specified, the default is assumed.
lineSeparator	Specify the linefeed code used when reports are output in CSV format: CRLF: Linefeed code supported by Windows. The default value is CRLF. If a value other than one of the above values is specified, the default is assumed.
characterCode	Specify one of the following as the character encoding set for output files when reports are output in CSV format: US-ASCII, windows-1252,ISO-8859-1, UTF-8, UTF-16, UTF-16BE, UTF-16LE, Shift_JIS, EUC-JP, EUC-JP-LINUX, or MS932. The default is US-ASCII. If a value other than one of the values listed is specified, the default is assumed.
csvFileName	Specify the name of the file to be output when reports are output in CSV format. No more than 100 characters can be specified. You can specify the following characters: • Numeric characters 0 to 9 • Period (.) • Underscore (_) • One-byte space • Alphabetic characters A to Z and a to z The default is Export.csv. If a character other than one of the above values is specified, the default is assumed.

Item	Description
host[2]	Specify the logical host name or the logical IP address of the Collection Manager to be connected. If you want to specify a logical host name, use no more than 32 bytes of one-byte alphanumeric characters. You cannot specify a space. Also, you cannot specify a host name in FQDN format. When specifying the host name, do not include the domain name. If this specification is omitted or outside the range, `localhost` is set. This item is available only when a cluster system is used.
port	Specify the port number of the Collection Manager to be collected. • Value range: 1024 - 65,535. • Default: 22,286.
maxFetchCount (under the `<vsa>` tag)	Specify (as an integer) the maximum number of records that can be collected from the Collection Manager. • Value range: 1 - 2,147,483,647 • Default: 1,440 If the specified value is outside the permitted range, the default is assumed. Note that the compound reports do not use this value. Instead, they use the **Maximum number of records** value specified while bookmarking.
displayCountPerPage	Specify (as an integer) the number of records that can be displayed per page when a table is displayed in the Report window. • Value range: 1 - 2,147,483,647. • Default: 20. If the specified value is outside the permitted range, the default is assumed.
maxRealtimeCache	Specify (as an integer) the maximum number of records that can be stored in the data cache for one real-time report. • Value range: 1 - 360 • Default: 30 If the specified value is outside the permitted range, the default is assumed.
realtimeCacheInterval[2]	Specify the time limit (milliseconds) of the request interval for auto-refresh of real-time reports. The request interval is checked every 10 seconds to see if it exceeds the time limit. When the time limit of the auto-refresh request interval is exceeded, the server and agent determine that the report processing finished without notification and terminate the processing. • Value range: 60,000 - 3,600,000 • Default: 600,000 If the specified value is outside the permitted range or omitted, the default is assumed.

Item	Description
exponentialDisplayMode	Specify whether the scales of the vertical axis of the graph are displayed as an exponential number, as follows: • `true`: Scales are displayed as an exponential number. • `false`: Scales are not displayed as an exponential number. The default is `true`. If a value other than one of the above values is specified, or no value is specified, the default is assumed. If `true` is specified, scales are displayed as an exponential number when the value is 10^7 or more, or the value is less than 0.01.
selectFormat	Specify the display format for the date as follows: • `pattern-ddMMyyyy` • `pattern-MMddyyyy` • `pattern-yyyyMMdd` The default is `pattern-ddMMyyyy`. If a format other than one of the above formats is specified, the default is assumed.
bookmarkRepository[2]	Specify the storage location of the repository[3] with an absolute path. This repository saves the definition information of the bookmark function. If the specified directory does not exist, the directory is created when starting the service of Performance Reporter. The maximum length of the path: 150 characters The default directories are as follows: • For Windows: *Tuning-Manager-server-installation-folder*\PerformanceReporter\bookmarks • For Linux: *Tuning-Manager-server-installation-directory*/PerformanceReporter/bookmarks
updateInterval	Specify the automatic update interval for the Performance Reporter window. • Value range: 10 - 3,600 • Default: 60 If the specified value is outside the permitted range, the default is assumed. The specified value remains valid until the user who has logged in to Performance Reporter changes the automatic update interval for his or her own environment.
service-agent-collector-node	Define a node to be added to the information tree displayed by the property distribution function of an agent. Use this tag to define the nodes for the Agent Collector service. Specify the entries in the following format: `<param name="node-name" value="true" />` By default the following nodes are defined: • Detail Records[5] • Log Records[5] • Interval Records[5] • API Data Management[6] • DB Data Management[7]

Item	Description
maxFetchCount (under the `<command>` tag)	Use an integer to specify the maximum number of records to be acquired from View Server and that are output to a report by using the **`jpcrpt`** command. • Value range: 1 - 2,147,483,647 • Default: 1,440 For information about how to estimate the number of records, see the appendix in the *Tuning Manager Agent Administration Guide*. If the specified value is outside the permitted range or no value is specified, the default is assumed. Note that the compound reports do not use this value. Instead, they use the **Maximum number of records** value specified while bookmarking.
blockTransferMode	Specify whether to enable the separate-and-send mode. Note: In Tuning Manager v7.5 or later, the value that you specify for the `blockTransferMode` property is used only when you set the `memoryReductionMode` property to `false`. The values that you can specify are as follows: • `true`: The separate-and-send mode is enabled. • `false`: The separate-and-send mode is disabled. The default value is `true`. If you specify an invalid value, or omit the setting, the default value is used. The separate send mode supports the following: • Outputting reports in the CSV format using the **`jpcrpt`** command • Outputting history reports containing a large volume of data without experiencing memory errors in the CSV format using the **`jpcrpt`** command for single agent and multiple agents. A CSV report file of the size 5 MB or larger is considered to be a large report. • Outputting reports in the HTML format using the **`jpcrpt`** command when the `memoryReductionMode` property is enabled (v7.5 or later) • Displaying a GUI report when the `memoryReductionMode` property is enabled (v7.5 or later)
ownPort[2]	Specify the port number used by Performance Reporter (WWW server) for communication with the View Server service. • Value range: 1,024 - 65,535 If you do not specify a value, an available port number is set.
ownCmdPort[2]	Specify the port number used by Performance Reporter (command) for communication with the View Server service. • Value range: 1,024 - 65,535 • Default: Any available port If you do not specify a value, an available port number is set.

Item	Description
ownHost[2]	Specify the host name or the IP address that is used as the callback target from the View Server service when Performance Reporter connects to the View Server service. You must specify the name of the host on which Performance Reporter is running. You can specify the following characters. The specified value must begin with an alphanumeric character. • Numeric characters: 0 to 9 • Periods (.) • Underscore (_) • Alphabetic characters: A to Z and a to z If you want to specify a logical host whose host name is in FQDN format, you must specify the IP address instead of the host name. When no value or a character other than one within the above range is specified, the IP address of the Performance Reporter host is set.
lineSymbolSize	Specify the size of the data points in a line graph. You can specify any of the following values: • `LARGE` • `MEDIUM` • `SMALL` • `AUTO` The default value is `MEDIUM`.
legendSeriesOrderForHBar	Specify the order in which the legends are displayed in a bar graph. You can specify any of the following values: • `FORWARD` • `REVERSE` The default value is `REVERSE`. The values are not case-sensitive. If you omit the setting or specify an invalid value, the system uses the default value.
enableAutoLabelAtDefaultDisp	Specify a value to enable or disable the `ShowAutoLabel` check box. When you set this property to `true`, the tooltips are displayed for the chart elements. You cannot apply this setting for combination reports. You can specify any of the following values: • `true`: The tooltips are enabled by default. • `false`: The tooltips are disabled by default. The default value is `false`. The values are case-sensitive. If you omit the setting or specify an invalid value, the system uses the default value.

Item	Description
autoLabelMaxIntegerDigits	Specify the maximum number of digits for the integer part of a data value displayed in the tooltip. • Value range: 1 to 14 • Default value for config.xml: 7 If the integer part of a data value has more digits than the value specified in this parameter, only the specified number of digits from the end of the integer value are displayed. For example, if the value of this property is 3 and the value for a data point is 123,456, 456 is displayed in the tooltip. If you omit the setting or specify an invalid value, the system uses the default value.
autoLabelMaxFractionDigits	Specify the maximum number of digits for the fractional part of a data value displayed in the tooltip. For example, if the value of this property is 2, and the value for the data point is 1.23656, 1.24 is displayed in the tooltip. The number is rounded to the nearest significant digit. • Value range: 1 to 6 • Default value for config.xml: 3 If you omit the setting or specify an invalid value, the system uses the default value.
autoLabelTruncateLength	Specify the threshold length for the series names and x-axis labels. You can control the length of the series names and x-axis labels and ensure that it fits in the tooltip box by using this parameter. When the string exceeds the maximum length, it will be displayed in the `former-part...latter-part` format. If the value of this parameter is an odd number, the initial-part will have one character more than the final-part. If the value of this parameter is an even number, both the initial-part and the final-part will have equal number of characters. The characters that are not displayed are replaced with an ellipsis (...). If you specify 0, the string is displayed from the beginning, and you cannot see all of the string text. • Value range: 0 to 2,147,483,647 • Default value for config.xml: 0 If you omit the setting, or specify an invalid value, the default value is used.
maxAutoLabelPoints	Specify the maximum number of data points (`(x-axis data, y-axis data)`) that can be auto-labelled in a graphical chart. When the number of data points exceed the limit, the property is automatically disabled. By enabling this property, you can avoid the memory shortage issue. • Default value for config.xml: 1440 • Value range: 1 to 2000 If you omit the setting or specify an invalid value, the default value is used.

Item	Description
foregroundCombinationGraph	Specify the order of displaying a 3D column graph, a stacked column graph, or a line graph for combination reports. You can specify any of the following values: • `3DBAR`: 3DBAR graph is displayed first. • `LINE`: LINE graph is displayed first. The Default value is `3DBAR`. The values are not case-sensitive. If you omit the setting or specify an invalid value, the default value for the program is used.
precision	Specify the maximum number of decimal places for a data label that represent the scale of a graph. The scale of a graph is automatically adjusted by the graph library depending on the size of the display screen. If the fractional part of a data value has more number of digits than the value specified by this parameter, the number is rounded to the nearest significant digit. For example, if the property value is 3, and the data value for the label is 1.34567, 1.346 is displayed. If the fractional part of a data value has less number of digits than the threshold specified by this parameter, the data value is displayed as is, zeroes are not appended at the end. For example, if the property value is 3 and the data value of the label is 0.5, 0.5 is displayed instead of 0.500. • Value range: 0 to 15 • Default value for config.xml: 0 If you set the value of this property to 0, decimal places are not displayed. If you omit the setting or specify an invalid value, the default value is used. If you install Tuning Manager server v7.3 or later as a new installation, the default value of this parameter in the `config.xml` is 3.
appendCommaDisplayedForNum	Specify whether to append a comma for every three digits in the integer part of a data value. Specify any of the following values: • `true`: A comma is inserted for every three digits. • `false`: The property is disabled. Default value for config.xml:false The values are not case-sensitive. If you omit the setting or specify an invalid value, the default value is used.

Item	Description
enableAntiAliasFor NonAreaGraph	Specify whether the graphs should be anti-aliased. You can use this property effectively for line graphs and pie graphs, but not for the area graphs. Anti-aliasing smooths out the rough areas in a chart and the chart objects appear clearer and sharper. But anti-aliasing can degrade the chart performance and cause a slight delay in loading the charts. You can specify the following values: • `true`: The graphs are anti-aliased. • `false`: The graphs are not anti-aliased. The default value is `true`. If you omit this setting or specify an invalid value, the default value is used.
noUseCircleColor	Specify the numbers corresponding to the colors (`color1` to `color16`) that you do not want to use for the pie graphs. • Value range: 0 to 16 • Default value:0 (If you specify 0, you can use all the colors for pie graphs.) In the following cases, the system assumes the default value (0), and you can specify any of the colors from `color1` to `color16` for the pie graphs: • This parameter is not specified. • At least one specified value is outside the specifiable range or invalid. • At least one 0 is specified. In the following cases, the default values for `color1` to `color12` are applied for the pie graphs: • All color numbers are specified. • None of the parameters from `color1` to `color16` is specified.

Item	Description
color1 to color16	Specify the colors for the series groups in a graph. The series groups are colored in ascending order starting from `color1` to `color16`. You can also use `color1` for series 17. Note that the order in which the colors are used is not related to the order in which they are specified in the `config.xml` file. The value of each parameter consists of three comma-delimited elements corresponding to R, G, and B values. • Value range: 0 to 255 • You can specify `color1` to `color16`. See Table 5-2 Default RGB values for color1 to color12 (V7.3 or later) on page 5-20 for the default values. If you specify a value consisting of four or more elements, the system assumes that a value outside the range is specified. For `color1` to `color12`: If the R, G, and B values that you specify are outside the range, the system uses the default values. For `color13` to `color16`: If the R, G, and B values that you specify are outside the range, the system assumes that the color is not specified. Only the colors specified by this property are applied to the series groups. If you do not specify a color, it is not used. For example, if you do not specify `color3`, the series groups are colored starting from `color1`, `color2`, `color4` and so on. `color3` is skipped. If at least one of the colors from color1 to color16 is valid, then it is used. For example, if three color parameters are valid, then only those three colors are used. In addition, the color settings used for v7.2.1 or earlier are specified as comment lines in the config.xml file. You can restore the colors used in v7.2.1 or earlier by editing the config.xml file. For information about customizing the colors for graphs using config.xml, see the *Tuning Manager User Guide*
memoryReduction Mode	Specify whether to enable the memory reduction mode. If you specify `true`, the functions that reduce the memory usage are enabled. When you enable this property, the report series paging function, separate-and-send mode, and report cache file function are enabled. You can specify any of the following values: • `true`: The property is enabled. • `false`: The property is disabled. The default value is `false`. The values are not case-sensitive. If you omit the setting, or specify an invalid value, the system uses the default value.

Item	Description
reportCacheFileDir	Specify an absolute path to store the report cache files. When you enable the `memoryReductionMode` property, the report series paging function is enabled. • Value range: A character string with a maximum path length of 150 characters • Default path Default path for the GUI reports ○ Windows: *Tuning-Manager-server-installation-folder*\PerformanceReporter\reportcache\serv ○ Linux: *Tuning-Manager-server-installation-folder*/PerformanceReporter/reportcache/serv Default path for the CLI reports ○ Windows: *Tuning-Manager-server-installation-folder*\PerformanceReporter\reportcache\cmd ○ Linux: *Tuning-Manager-server-installation-folder*/PerformanceReporter/reportcache/cmd Do not save the cache files on a network drive. If you save the cache files on a network drive, it might take a long time to execute the commands and perform GUI operations. If you omit the setting, the default path is used. If the specified directory does not exist, the directory is created when you start the Performance Reporter service. If the specified directory cannot be created, or if the specified directory does not exist, a message is output to the log and the startup of the service is halted.
displayLegendCount	When you enable the `memoryReductionMode` property, the report series paging function is enabled. The report series paging functions divides a report with large amount of data into multiple pages. You can specify the number of series groups to be displayed on the graphs in a single report page. You can specify an integer within the following range: • Value range: 1 to 43 • Default value: 14 If you omit the setting, or specify an incorrect value, the default value is used
printCacheSize	Specify the maximum number of data items to be cached for printing in the print window. • Value range: 5 to 20. • Default value in the config.xml: 10
printTableMaxRowSize	Specify the maximum number of table rows to be output to a print window. • Value range: 0 to 15000. • Default value: 10 The program only outputs the specified number of rows. The remaining rows are truncated. If you specify `0`, the rows are not truncated.

Note 1:

Decide the necessary number of log files and their size based on the size of the log file output when the `jpcrpt` command is executed once, the number of times the `jpcrpt` command is executed per day, and the number of days that pass from when the `jpcrpt` command is executed until you check the command execution result.

Note 2:

In the default initialization settings file, these items are commented out. If you want to change the default values, delete the comment characters, and then specify valid values.

Note 3:

For information about the repository, see Working with the repository for storing bookmark definition data on page 5-26

Note 4:

Main Console, Performance Reporter, and Collection Manager use TCP/IP for communication. For this reason, an accessible host name or IP address must be set for each service (If host names are used, the system uses the IP addresses that were first resolved from the host name of Main Console and Performance Reporter, and the host name of Collection Manager).

For example, IP addresses must be set in the following situations:

- The Tuning Manager server host connects to a business LAN and a monitoring LAN, and the Tuning Manager server communicates with other hosts in the monitoring LAN.
- The LAN cable is temporarily unplugged from the NIC during host maintenance (this can cause the IP address assigned to the NIC to no longer be valid).

Note 5:

The status of this node do not change regardless of whether you define the node name or not.

Note 6:

This node name is added to the information tree of the agent that uses the Store database and for which the API is enabled.

Note 7:

This node name is added to the information tree of the agent that uses the Hybrid Store database.

Table 5-2 Default RGB values for `color1` to `color12` (V7.3 or later)

Parameter	Color	Default RGB values
color1	Dark orange( )	235,143,21
color2	Dark red ( )	204,0,0
color3	Dark green ( )	102,153,0

Parameter	Color	Default RGB values
color4	Dark blue ( )	0,102,255
color5	Dark violet ( )	102,0,255
color6	Dark pink ( )	255,51,153
color7	Light orange ( )	255,185,0
color8	Light red ( )	255,17,17
color9	Light green ( )	136,204,0
color10	Light blue ( )	71,145,255
color11	Light violet ( )	134,51,255
color12	Light pink ( )	255,149,246

Date format specified in the initialization settings file (config.xml)

For the display format for date, the default date format is set by the locale setting of the browser or the language and locale setting of the server OS.

Table 5-3 Date display format for each locale (default display in Performance Reporter) on page 5-21 lists the default date display format for each locale setting in Performance Reporter.

Table 5-3 Date display format for each locale (default display in Performance Reporter)

Locale settings	Display format for date in Performance Reporter
`en_US`	*MM*△*dd*△*yyyy*
`en`	*dd*△*MM*△*yyyy*
`ja` or `ja_JP`	*yyyy*△*MM*△*dd*
other than the above	*dd*△*MM*△*yyyy*

Legend:

dd: date

MM: month

yyyy: year

△ separator string. This indicates the default value, a space.

You can change the date display format (display of date, month, year, and separator string) by editing the initialization settings file (`config.xml`). By doing this, you can specify a display format that is independent from the locale setting, or change the display format for a special locale setting as desired.

You can change the display format by specifying the `pattern` (display of date, month, and year), `separator` (separator string), and `locale` parameters in the `format` tag of the initialization settings file (`config.xml`).

Display format for date tag specifications

To set the display format of the date in the initialization settings file, `config.xml`, use the tag specifications in Table 5-4 Tags of the display format for date on page 5-22.

Table 5-4 Tags of the display format for date

Tag	Attribute	Contents
`format`	Not applicable	Indicates the route tags specifying the display format for the date.
`locale-format`		Defines the locale, the pattern and the separator corresponding to the locale. The following tags are valid in the `locale-format` tag. • `date-format` • `locale` • `locale-format` If the `locale` tag is omitted, the `locale-format` tag will be invalid.
`modify-format`		Specifies a change in the pattern and separator corresponding to the locale. The following tags are valid in the `modify-format` tag. • `date-format` • `locale`

Tag	Attribute	Contents
date-format	Not applicable	Specifies the pattern and separator. Priority is given to the date-format tag when both the date-format tag and the selectFormat tag are specified directly under the format tag.
	pattern	The specification values are as follows: • pattern-MMddyyyy • pattern-ddMMyyyy • pattern-yyyyMMdd
	separator	The specification values are as follows: • space • slash • hyphen • period If no value is specified, the following default values will be used: • Directly under the format tag: space • Directly under the locale-format tag: the separator for the base format pattern of the locale-format tag • Directly under the modify-format tag: none
	export-separator	The same specification value as the separator.
locale	Not applicable	Specifies the locale.

Legend:

dd: date

MM: month

yyyy: year

Example of specifying the date format

This section shows examples of config.xml coding using each tag.

Changing the date format defined as default

Example 1 shows how to change the date format that applies when the locale is other than en_US, en, ja, or ja_JP.

Example 1: In the example below, pattern-MMddyyyy is specified as the pattern for the date format. When the locale is other than en_US, en, ja, or ja_JP, dates will be displayed as *MMddyyyy*.

```
<format>
    <param name="selectFormat" value="pattern-MMddyyyy"/>
</format>
```

Changing the date format for the locale

Examples 1 and 2 show how to define the date format that is applied to a locale.

Example 1: In the example below, the display format for the locale `en_US`, `en`, `jp`, or `ja_JP` is defined with `pattern-MMddyyyy` specified as the pattern for the date format, and a slash specified as the separator. Also, the display format for the locale `en_ZA` is defined with `pattern-yyyyMMdd` specified as the pattern for the date format.

When the locale is `en_US`, `en`, `jp`, or `ja_JP`, dates for the locale will be displayed as *MM/dd/yyyy*.

When the locale is `en_ZA`, dates for the locale will be displayed as *yyyy/MM/dd*. A slash, which is the separator applied for the locales `en_US`, `en`, `jp`, and `ja_JP`, is applied as the separator for this locale, because the separator has not been defined for this locale.

```
<format>
    <data-format pattern="pattern-MMddyyyy" separator="slash"/>
    <locale-format>
         <date-format pattern="pattern-yyyyMMdd" />
         <locale>en_ZA</locale>
    </locale-format>
</format>
```

Example 2: In the example below, the display format for the locale `en_US`, `en`, `jp`, or `ja_JP` is defined with `pattern-MMddyyyy` specified as the pattern for the date format. Also, the display format for the locale `en_ZA` is defined with `pattern-yyyyMMdd` specified as the pattern for the date format, a hyphen specified as the separator, and a slash specified as the separator for the CSV output. In addition, `ja` is defined in this definition. When the locale is `en_US`, `en`, or `ja_JP`, dates for the locale will be displayed as *MMddyyyy*.

When the locale is `en_ZA`, dates for the locale will be displayed as *yyyy-MM-dd*. Also, dates for the CSV output will be displayed as *yyyy/MM/dd*.

When the locale is `ja`, the date format will be the same as the one for the locale `en_ZA`, which is the parent locale of `ja`.

```
<format>
    <date-format pattern="pattern-MMddyyyy"/>
    <locale-format>
         <date-format pattern="pattern-yyyyMMdd"/>
         <locale>en_ZA</locale>
         <locale-format>
              <date-format separator="hyphen"
                           export-separator="slash"/>
              <locale>ja</locale>
         </locale-format>
```

```
    </locale-format>
</format>
```

Operation when the locale definition is duplicated

If the locale definition is duplicated, the last definition will be enabled, as demonstrated in Example 1.

Example 1: In the following example, the last definition is enabled. When the locale is `en_ZA`, dates for the locale will be displayed as *MM/dd/yyyy*.

```
<format>
  <date-format pattern="pattern-MMddyyyy"
export-separator="slash"/>
    <locale-format>
      <date-format pattern="pattern-yyyyMMdd"/>
      <locale>en_ZA</locale>
      <locale-format>
        <date-format separator="hyphen" />
        <locale>en_ZA</locale>
      </locale-format>
    </locale-format>
    <locale-format>
      <date-format separator="slash"/>
      <locale>en_ZA</locale>
    </locale-format>
</format>
```

Changing the difference from the pattern of the defined date format

You can change the difference from the pattern of the already defined date format, by specifying the `modify-format` tag. The following examples show how to define the date format.

Example 1: In the following example, a slash is specified as the separator for the CSV output when the locale is `en_US`, `en`, `jp`, or `ja_JP`.

When the locale is `en_US`, `en`, `jp`, or `ja_JP`, the date format for each locale will be displayed in the defined format (see Table 5-3 Date display format for each locale (default display in Performance Reporter) on page 5-21), except that the separator for the CSV output will be unified and displayed as a slash (`/`).

```
<format>
      <modify-format>
             <date-format export-separator="slash"/>
      </modify-format>
```

```
</format>
```

Example 2: In the following example, a slash is defined as the separator for the CSV output when the locale is `en`, `jp`, or `de`.

When the locale is `en` or `jp`, the definition will be enabled. However, when the locale is `de`, the definition will be ignored because the locale `de` is not defined.

```
<format>
      <modify-format>
             <date-format export-separator="slash"/>
             <locale>ja</locale>
             <locale>en</locale>
             <locale>de</locale>
      </modify-format>
</format>
```

Example 3: In the following example, a slash is defined as the separator for the CSV output when the locale is `en`, `jp`, or `de`. Also, a hyphen is defined as the separator when the locale is `jp`.

In this case, the definition is overwritten in order. When the locale is `ja`, dates for the locale will be displayed as *yyyy-MM-dd*. Also, dates for the CSV output will be displayed as *yyyy/MM/dd*. When the locale is `en`, dates for the locale will be displayed as *dd MM yyyy* as listed in Table 5-3 Date display format for each locale (default display in Performance Reporter) on page 5-21. Also, dates for the CSV output will be displayed as *dd/MM/yyyy* as defined. When the locale is `de`, the definition will be ignored because the locale `de` is not defined.

```
<format>
      <modify-format>
             <date-format export-separator="hyphen"/>
             <locale>ja</locale>
             <locale>en</locale>
             <locale>de</locale>
      </modify-format>
</format>
```

Working with the repository for storing bookmark definition data

The configuration information of bookmarks and bookmark folders is stored in the file system of the OS as a flat file. This is called the *repository*. The storage location of the default repository created when installing is as follows:

Windows: *One-byte space*

`PerformanceReporter#\bookmarks`

Note: If Performance Reporter is operated on a logical host in a cluster environment, this is an environment directory. An environment directory is a directory that is created on a shared drive when setting up the logical host environment on the Tuning Manager server.

Changing the repository storage location

The directory that stores the bookmark repository can be changed by using `bookmarkRepository` in the initialization settings file (`config.xml`). You need to reboot the Performance Reporter service to apply the changed value.

For details on the parameters in the initialization settings file, see Table 5-1 Initialization settings files (config.xml) on page 5-9. For details on how to edit the initialization settings file, see Editing the initialization settings file (Windows) on page 5-44.

If the directory specified in the initialization settings file (`config.xml`) does not exist when you start the Performance Reporter service, the directory will be created automatically.

Note: If Performance Reporter is operated on a logical host, you must specify the same storage directory for the active node and standby node.

About corrupted repository files

The bookmark repository consists of multiple files. If an error occurs during creation, update, or deletion of the repository information and processing cannot be continued, the consistency of the repository files will be lost. In this case, the corrupted information is repaired or discarded, log data is output, and the system is rebooted.

Part of the bookmark information may be lost during repair or discarding. In this case, restore the bookmark repository information from a backup. The status of information will be the same as when the backup was made.

Backing up and restoring repository files

Because part of the bookmark information might be lost if the repository file is corrupted during operation, we recommend that you back up the bookmark repository information each time you modify the bookmark information. If you restore the backed-up bookmark repository information, you can return the system to the state it was in when you backed up the information.

To back up or restore the bookmark repository information, you must first stop the Performance Reporter service, and then copy and save the files and directories manually to a location of your choice. You must back up (or restore) the entire repository installation directory at one time because the repository recognizes the directory format also as part of the information.

Also, if the repository installation directory was changed during bookmark operation, to pass on the repository information from the directory used before the change to the directory used after the change, you must first stop the Performance Reporter service, and then copy the repository files manually.

Note: The bookmark repository information consists of multiple files. Therefore, if an error occurs during creation, update, or deletion of the repository information and processing cannot be continued, the consistency of the repository information files might be lost. In this case, repair or discard the corrupted information and check the output log data.

Managing repository files before removing Tuning Manager server

If you did not change the installation directory of the repository from the default directory, the installation directory and the repository files are deleted automatically during removal of Tuning Manager server. If you changed the installation directory, the installation directory and the repository files are not deleted automatically, therefore, delete them manually if necessary.

Caching of data used when displaying a real-time report

The following provides notes on setting the items that affect the caching of data used when displaying a real-time report.

- The maximum interval for issuing a request to automatically update each real-time report is set using `realtimeCacheInterval` in the `config.xml` file.

  If a new request cannot be issued within the maximum interval, processing on the server and agents may terminate. If a request to update a real-time report is issued after such processing has terminated, an error occurs. If the number of records to be collected has increased because there are many Agent instances, the error message (`KAVJS4012-E`) appears in the window that displays a real-time report. If such an error occurs frequently, you can lower the frequency by increasing the `realtimeCacheInterval` value. However, if the value is too large, the processing on the server and agents remain for a longer time. As a result, the server and agents are busier, and the overall speed of report drawing is reduced.

- The maximum number of records that can be cached for each real-time report is set using `maxRealtimeCache` in the `config.xml` file.

  The `maxRealtimeCache` value specifies the number of records to be collected for displaying one real-time report. You can set an integer from 1 to 360 for `maxRealtimeCache`. If the number of records automatically sent from an agent exceeds the `maxRealtimeCache` value, the oldest record in the cache is deleted and the newest one is cached.

Memory reduction mode

A large amount of memory might be required by Performance Reporter to display reports with a large amount of data. In Tuning Manager v7.5 or later, you can improve the Performance Reporter memory usage by enabling the `memoryreduction mode` property. This property collectively enables the following memory reducing functions:

- Report series paging function
- Separate-and-send mode
- Report cache filing function

You can configure the settings for the `memoryreduction mode` property in the `config.xml` properties file.

Report series paging

The report series paging function divides the report with a large amount of data into multiple pages. You can navigate from one page to another using the navigation buttons. The report pagination improves the performance for displaying large reports.

If a graph displays a large amount of data on a single report page, the system might become too slow and cause delay in loading the data, or become unstable. Report series paging function allows you to limit the number of fields displayed on the graphs per report page, thereby reducing the amount of memory used for drawing the graphs.

You can specify the number fields displayed on the graphs in a single report page by editing the `displayLegendCount` property in the `config.xml` file. For example, if you specify `displayLegendCount = 14` for a multiple series graph, you can display a maximum of 14 series groups on the graphs per report page, you must navigate to another page to view the graph for the remaining series groups.

In Tuning Manager v7.5 or later, the report series paging function supports only GUI based history reports and real-time reports. The CLI based history reports and real-time reports are not supported.

Separate-and-send mode

The separate-and-send mode splits the report data into chunks and temporarily stores in the report cache file. Separate-and-send mode is a prerequisite for using the report cache filing function. When you enable the separate-and-send mode, you can display a report with large amount of data, without experiencing memory errors. You can configure the settings for the separate-and-send mode in the `config.xml` file.

Report cache filing

Report cache filing function reduces the Performance Reporter memory usage by temporarily storing the report data in a report cache file on your local drive.

Performance Reporter uses the separate-and-send mode to obtain data from ViewServer. The record row data kept in the memory is output to a report cache file and then deleted from the memory. The report cache files are stored at a specified directory in the file system. The record row data stored in the report cache file is used to generate reports, thereby reducing the amount of memory used by Performance Reporter and ViewServer.

Data other than the record row data (report definition information, display conditions information, metric information, etc.) is still stored in the memory.

Types of report cache files

The report cache files are output to a specified storage directory. In the `config.xml` file, edit the `reportCacheFileDir` property to specify the storage directory for the report cache files.

Following table lists the types of report cache files

Table 5-5 Types of report cache files

File Name	Output content
Row data file	Outputs the report data for all the records. This file is used for obtaining the actual field values in a report.
Row data file pointer list file	Outputs the file pointers for the row data file. The information about the row data start position is output to the row data file. This file is used for the direct access to the specified rows in the row data file.
Time position information file	Outputs information about when the row records were originally created. This file is used to obtain the axis time position and the corresponding time for each record in the row data file.
Temporary file (when outputting a history report (multiple agents))	The content is the same as the row data file. This is a temporary file that is used to sort the row data obtained from View Server based on the time

Estimating the disk space requirements for report cache files

The amount of disk space used increases when you enable the report cache file function. You need to re-estimate the memory and disk space requirements, and then decide whether to enable the function.

Following is the formula for calculating the disk space requirements for report cache files when displaying a report:

Disk space requirements for report cache files = (Row-data-file -capacity) + (Time-position-information-file-capacity) + (Row-data-file-pointer-list-file-capacity)

Estimating the row data file capacity

The field (column) data format for each record (row) might differ for each and every report.

Following is the formula for calculating the row data file capacity for a report:

Row data file capacity = (Number-of-fields-for-all-records * Output-data-type-identification-value) + (Number-of-record-rows * *Number-of-row-termination-values)*) + (*Number-of-fields-for-all-records* * *Number-of-bytes-for-all-columns*)

Table 5-6 Identifiers for column data

Output data type	Output field values (bytes)	Output data type identification value(bytes)
Integer	4	0
Long	8	1
Date	8 (output as long type)	2
Float	4	3
Double	8	4
Short	2	5
Byte	1	6
Character	2	7
String	4+M*	8
Null	0	9

* where M is the number of bytes for the string (UTF format), and not the character length of the string. When a string is output, the byte length of the string is first output in 4-byte integer format, and then the character string is converted to a byte array output.

Estimating the time position information file capacity

The size of the time position information file is directly proportional to the number of output data times.

Time position information file capacity = (Number-of-output-data-times) * 12 bytes

For example, if no records are missing during the report generation period, and if the reports are for a one-hour period with one-minute intervals, the value will be 60 (hour/minute).

Estimating the row data file pointer list file capacity

The size of the row data file pointer list file is directly proportional to the number of row data records in the output data.

Row data file pointer file capacity = (Total-number-of-row-data-records) * 8 bytes

Reviewing a sample initialization settings file

The following shows an example of an initialization settings file (`config.xml`).

Sample initialization settings file (config.xml)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>

<!DOCTYPE application SYSTEM "config.dtd">

<!--

* Title: Performance Reporter Configuration File

* Copyright: Copyright (c) 2003, 2013, Hitachi, Ltd.

* Licensed Material of Hitachi, Ltd. Reproduction, use,
modification or disclosure otherwise than permitted in the
License Agreement is strictly prohibited.

* Note: Original

* Version: 7.5.0

* $Revision: 1 $

* $Modtime: 13/03/14 14:30 $

-->

<application name="PerformanceReporter">

<logging>

<!-- Path of log files directory -->

<param name="logDir" value=""/>

<!-- Maximum number of log files

Specifiable values: 1 to 16

Default           : 10

-->

<param name="logFileNumber" value="10"/>

<!-- Size of a log file (unit: MB=1024x1024byte)

Specifiable values: 1 to 100

Default           : 4

-->

<param name="logFileSize" value="4"/>
```

```
<!-- Maximum number of log files
This parameter affects only jpcrpt command log.
Specifiable values: 1 to 64
Default           : 10
-->
<param name=”logFileNumberMulti” value=”10”/>
<!--Size of a log file (unit: MB=1024*1024byte)
Specifiable values: 1 to 16
Default           : 4
-->
<param name=”logFileSizeMulti” value=”4”/>
<!-- Logging level of a log file
Specifiable values: FATAL/WARN/DEBUG/TRACE
Default           : WARN
-->
<param name="logLevel" value="WARN"/>
<!--Retention period of a log file
Specifiable values: 1 to 30
Default           : 30
-->
<param name="logFileRetention" value="30"/>
</logging>
<export>
<!-- lineSeparator
Specifiable values: CRLF,LF
Default           : CRLF
-->
<param name="lineSeparator" value="CRLF"/>
<!-- characterCode
Specifiable values: US-ASCII,windows-1252,ISO-8859-1,
UTF-8,UTF-16,UTF-16BE,UTF-16LE,Shift_JIS,EUC-JP,
EUC-JP-LINUX,MS932
```

```
-->
<param name="characterCode" value=""/>
<!-- Export filename -->
<param name="csvFileName" value="Export.csv"/>
</export>
<vsa>
<vserver-connection>
<!-- The host computer name to which PFM View Server operates.
-->
<param name="host" value="localhost"/>
-->
<!-- The port number which PFM View Server uses.
Specifiable values: 1024 to 65535
Default           : 22286
-->
<param name="port" value="22286"/>
<param name="ownPort" value="22222"/>
<param name="ownCmdPort" value="22223"/>
<param name="ownHost" value="host1"/>
</vserver-connection>
<!-- The maximum limits of the records.
Specifiable values: 1 to 2,147,483,647
Default           : 1,440
-->
<param name="maxFetchCount" value="1440"/>
<!-- The maximum caches of the print windows.
Specifiable values: 5 to 20
Default           : 20
-->
<param name="printCacheSize" value="10"/>
  <!-- The maximum print window output table rows.
Specifiable values: 0 to 15,000
 Default           : 0
```

```
-->
<param name="printTableMaxRowSize" value="15000"/>
<!-- Reduce amount of virtual memory used when displaying
reports.
Specifiable values: true,false
 Default           : false
   -->
<param name="memoryReductionMode" value="false"/>
<!-- The display count per a page.
Specifiable values: 1 to 2,147,483,647
Default           : 20
-->
<param name="displayCountPerPage" value="20"/>
<!-- Maximum data receiving count per report.
Specifiable values: 1 to 360
Default           : 30
-->
<param name="maxRealtimeCache" value="30"/>
<!-- Maximum data receiving interval per report. (unit: ms)
 Specifiable values: 60000 to 3600000
Default           : 600000
 -->
 <!--
 <param name="realtimeCacheInterval" value="600000"/>
   -->
<!-- The auto refresh interval.
Specifiable values: 10 to 3600
Default           : 60
-->
<param name="updateInterval" value="60"/>
<!-- The login session timeout which Performance
Reporter service
uses (unit: s)
```

```
Specifiable values: 0 to 86400
Default           :4000
-->
<param name="sessionTimeout" value="4000"/>
<!-- The range extension for condition expression
definitions using ulong fields.
Specifiable values: true,false
Default           : false
-->
<param name="condExpValueUlongExtension" value="false"/>
<!-- Maximum series label length.
Specifiable values: 1 to 1024
Default           : 30
-->
<param name="maxSeriesLabelLength" value="30"/>
<!-- The Switch of the divided data receivable.
Specifiable values: true or false
Default           : true
-->
<param name="blockTransferMode" value="true"/>
<!--
<param name="realtimeCacheInterval" value="600000"/>
-->
<!-- Exponential display for scales of graph.
Specifiable values: true,false
Default            : true
-->
< param name="exponentialDisplayMode" value="true"/>
<report-cachefile-mode>
<!-- The directory that stores the reportCache files.
Default : <install directory>\reportcache -->
<!--<param name="reportCacheFileDir" value=""/> -->
```

```
<!-- graph Report Max ReportDataSize.
Specifiable values:  1 to 2,000,000-->
<param name="graphMaxReportData" value="2000000">
</report-cachefile-mode>
<format>
<!-- Format set is specified.
Specifiable values : pattern-ddMMyyyy,pattern-MMddyyyy,pattern-
yyyyMMdd
-->
<param name="selectFormat" value=""/>
</format>
<service-agent-collector-node>
<!-- Service tree node -->
<param name="Detail Records" value="true"/>
<param name="Interval Records" value="true"/>
<param name="Log Records" value="true"/>
<param name="API Data Management" value="true"/>
<param name="DB Data Management" value="true"/>
 </service-agent-collector-node>
<bookmark>
<!-- The directory where bookmark repository is stored.
Default           : <install directory>\bookmarks
-->
<param name="bookmarkRepository"
value="c:\Program Files\Hitachi\jp1webopt\bookmarks"/>
</bookmark>
<health-check>
<!-- Priority of health check.
Specifiable values: HOST or AGENT
Default           : HOST
-->
<param name="priority" value="HOST"/>
</health-check>
```

```
<graph-collection-points>
 <!—Display legend count
Specifiable values: 1 to 43
 Default           :14
 -->
 <param name="displayLegendCount" value="14">
</ graph-collection-points>
</vsa>
<command>
<export>
<!-- The maximum limits of the records.
Specifiable values: 1 to 2,147,483,647
Default         : The value of maxFetchCount of the <vsa> tag is
applied.
-->
<param name="maxFetchCount" value="1440"/>
</export>
<draw>
<chart-symbol color for graph.
Possible to set, color1 to color16.
Set RGB color, R, G, and B can be set delimits by comma.
Specifiable values: 0 to 255
-->
<!-- dark orange -->
<param name=”color1” value=”235,143,21”/>
<!-- dark red -->
<param name=”color2” value=”204,0,0”/>
<!-- dark green -->
<param name=”color3” value=”102,153,0”/>
<!-- dark blue -->
<param name=”color4” value=”0,102,255”/>
<!-- dark violet -->
```

```
<param name="color5" value="102,0,255"/>
<!-- dark pink -->
<param name="color6" value="255,51,153"/>
<!-- light orange -->
<param name="color7" value="255,185,0"/>
<!-- light red -->
<param name="color8" value="255,17,17"/>
<!-- light green -->
<param name="color9" value="136,204,0"/>
<!-- light blue -->
<param name="color10" value="71,145,255"/>
<!-- light violet -->
<param name="color11" value="134,51,255"/>
<!-- light pink -->
<param name="color12" value="255,149,246"/>
<!-- Not use Color Number at Graph type Circle.
Possible multiple number, set delimits by comma.
Specifiable values: 0 to 16
Default           : 0
-->
<!--
<param name="noUseCircleColor" value=""/>
-->
<!--
sample setting pattern,
colors are used before Performance Reporter 07-21.
color1 : red
color2 : orange
color3 : blue
color4 : light gray
color5 : magenta
color6 : yellow
```

```
color7 : gray
color8 : lime
color9 : dark gray
color10 : cyan
color11 : black
color12 : pink
Do not use color Number at Graph type Circle.: color1
-->
<!--
<param name="color1" value="255,0,0"/>
<param name="color2" value="255,200,0"/>
<param name="color3" value="0,0,255"/>
<param name="color4" value="192,192,192"/>
<param name="color5" value="255,0,255"/>
<param name="color6" value="255,255,0"/>
<param name="color7" value="128,128,128"/>
<param name="color8" value="0,255,0"/>
<param name="color9" value="64,64,64"/>
<param name="color10" value="0,255,255"/>
<param name="color11" value="0,0,0"/>
<param name="color12" value="255,175,175"/>
<param name="noUseCircleColor" value="1"/>
-->
</chart-symbolColors>
<!--Symbol Size of line graph.
Specifiable values: LARGE, MEDIUM, SMALL, AUTO
Default           : MEDIUM
-->
<param name="lineSymbolSize" value="MEDIUM"/>
<!--legend Series Order or Horizontal Bar.
Specifiable values: FORWARD, REVERSE
Default           : REVERSE
```

```
-->
<param name="legendSeriesOrderForHBar" value="REVERSE"/>
<!--Using enable auto label in default graph option settings.
Specifiable values: true or false
Default           : false
-->
<param name="enableAutoLabelAtDefaultDisp" value="false"/>
<!-- Maximum Integer Digits for auto label.
Specifiable values: 1 to 14
Default           : 7
-->
<param name="autoLabelMaxIntegerDigits" value="7"/>
<!-- Maximum Fraction Digits for auto label.
Specifiable values: 1 to 6
Default           : 3
-->
<!--Maximum Truncate Length for auto label.
Specifiable values: 0 to 2,147,483,647
Default           : 0
-->
<param name="autoLabelTruncateLength" value="0"/>
<!-- Maximum plot data for auto label.
Specifiable values: 1 to 2000
Default           : 1440
-->
<param name="maxAutoLabelPoints" value="1440"/>
<!--Displayed on the foreground for combination Graph.
Specifiable values: 3DBAR, LINE
Default           : 3DBAR
-->
<param name="foregroundCombinationGraph" value="3DBAR"/>
<!--Displayed maximum fraction digits for data label.
```

```
Specifiable values: 0 to 15

Default           : 0

-->

<param name="precision" value="3"/>

<!--displayed append comma in Number for data label.

Specifiable values: true or false

Default           : false

-->

<param name="appendCommaDisplayedForNum" value="false"/>

<!Use anti-aliasing to generate a graph of an area does not
contain.

Specifiable values: true or false

Default           : true

-->

<param name="enableAntiAliasForNonAreaGraph" value="true"/>

</draw>

<command>

<export>

<!-- The maximum limits of the records.

Specifiable values: 1 to 2,147,483,647

Default           : The value of maxFetchCount of the <vsa> tag
is applied.

-->

<param name="maxFetchCount" value="1440"/>

</export>

</command>

</application>
```

The following shows a sample DTD file (`config.dtd`).

Sample DTD file (config.dtd) file defining parameter entries

```
<!--

* Title: Performance Reporter Configuration File DTD

* Copyright: Copyright (c) 2003, 2013, Hitachi, Ltd.
```

```
* Licensed Material of Hitachi, Ltd. Reproduction,
use,modification or disclosure otherwise than permitted in the
License Agreement is strictly prohibited.

* Note:

* Version: 7.5.0

* $Revision: 1 $

* $Modtime: 13/03/14 16:03 $

-->

<!ELEMENT application
(logging,export,vsa,draw?,command?,common?)>

<!ATTLIST application name ID #REQUIRED>

<!ELEMENT param (#PCDATA)>

<!ATTLIST param name CDATA #REQUIRED>

<!ATTLIST param value CDATA #REQUIRED>

<!-- common parameters -->

<!ELEMENT common (param*)>

<!-- logging parameters -->

<!ELEMENT logging (param+|separately?)* >

<!ELEMENT separately (param*)>

<!-- export parameters -->

<!ELEMENT export (param*)>

<!-- vsa parameters -->

<!ELEMENT vsa (vserver-connection,param*,vsa-factory?,report-
cachefile-mode?,format,bookmark?,service-agent-collector-
node?,service-agent-store-node?,health-check?, function-
switch?,graph-collection-points?)>

<!ELEMENT vserver-connection (param*)>

<!ELEMENT vsa-factory (param*)>

<!-- report-Cachefile-mode -->

<!ELEMENT format (param?,date-format?,locale-format*,modify-
format*)>

<!ELEMENT date-format (#PCDATA)>

<!ATTLIST date-format

pattern   (pattern-yyyyMMdd |pattern-ddMMyyyy |pattern-MMddyyyy
)

#IMPLIED
```

```
separator (space |slash |hyphen |period )
#IMPLIED
export-separator (space |slash |hyphen |period )
 #IMPLIED>
<!ELEMENT locale-format (date-format?,locale*,locale-format*)>
<!ELEMENT locale (#PCDATA)>
<!ELEMENT modify-format (date-format?,locale*)>
<!--bookmark parameters -->
<!ELEMENT bookmark (param*)>
<!--service agent node -->
<!ELEMENT service-agent-collector-node (param*)>
<!ELEMENT service-agent-store-node (param*)>
<!--health check-->
<!ELEMENT health-check (param*)>
<!--function-switch-->
<!ELEMENT function-switch (agent-icon?)>
<!ELEMENT agent-icon (param*)>
<!-- collection-points -->
<!ELEMENT graph-collection-points (param*?)>
<!-- command parameters -->
<!ELEMENT command (export?)>
<!-- draw parameters -->
<!ELEMENT draw (chart-symbolColors|chart-style|error-
image|param)*>
<!ELEMENT chart-symbolColors (param*)>
<!ELEMENT chart-style (param*)>
<!ATTLIST chart-style id CDATA #REQUIRED>
<!ELEMENT error-image (param*)>
<!ATTLIST error-image id CDATA #REQUIRED>
```

Editing the initialization settings file (Windows)

The initialization settings file (`config.xml`) contains configuration settings for Performance Reporter.

Procedure notes

Review the following notes before performing the procedure that follows.

Changing a setting value in the initialization settings file (`config.xml`) other than the items indicated in Table 5-1 Initialization settings files (config.xml) on page 5-9 might cause a problem with Performance Reporter.

When a cluster system is used, restart the Performance Reporter service from the cluster software.

Upgrading may change the structure of the initialization settings file. To apply the edits of the initialization settings file (`config.xml`) to the new initialization settings file after upgrading:

- Compare the edits in the *Tuning-Manager-server-installation-folder*`\PerformanceReporter\conf\config.xml` file with those in Configuring initial settings for Performance Reporter on page 5-8 to confirm that the edited file is correct.
- Back up the *Tuning-Manager-server-installation-folder*`\PerformanceReporter\conf\config.xml` file.
- In the installation folder, replace the *Tuning-Manager-server-installation-folder*`\PerformanceReporter\conf\config.xml` file with the *Tuning-Manager-server-installation-folder*`\PerformanceReporter\sample\conf\config.xml` file.
- Apply the edits you confirmed in step 1 to the new *Tuning-Manager-server-installation-folder*`\PerformanceReporter\conf\config.xml` file.

In the `config.xml` file, the XML tags for each parameter is commented out using bracket delimiters <!-- -->. When you edit the initialization settings file, make sure to uncomment each set of tags for which you specify a value.

To edit the initialization settings file on Windows:

1. Edit the initialization settings file.

   The folder that contains the initialization settings file (`config.xml`) is *Tuning-Manager-server-installation-folder*`\PerformanceReporter\conf\`.
2. Close the Performance Reporter window if it is open.
3. Stop the Performance Reporter service by using the **`hcmds64srv`** command.
4. Start the Performance Reporter service by using the **`hcmds64srv`** command.
5. Log in to the Tuning Manager server.

   The main window of Main Console is displayed.
6. In the global tasks bar area, click **Go**, and then **Performance Reporter**.

   The initialization settings file (`config.xml`) is read from the initialization module when Performance Reporter starts, and the new settings take effect.

For details on the setup items in the initialization settings file (`config.xml`) and an example, see Reviewing a sample initialization settings file on page 5-32.

For details on the **`hcmds64srv`** command, see *Tuning Manager CLI Reference Guide*.

Editing the initialization settings file (Linux)

The initialization settings file (`config.xml`) contains configuration settings for Performance Reporter.

Procedure notes

Review the following notes before performing the procedure that follows.

Changing a setting value in the initialization settings file (`config.xml`) other than the items indicated in Table 5-1 Initialization settings files (config.xml) on page 5-9 might cause a problem with Performance Reporter.

When a cluster system is used, restart the Performance Reporter service from the cluster software.

Upgrading may change the structure of the initialization settings file. To apply the edits of the initialization settings file (`config.xml`) to the new initialization settings file after upgrading:

- Compare the edits in the *Tuning-Manager-server-installation-directory*/`PerformanceReporter/conf/config.xml` file with those in Configuring initial settings for Performance Reporter on page 5-8 to confirm that the edited file is correct.
- Back up the *Tuning-Manager-server-installation-directory*/`PerformanceReporter/conf/config.xml` file.
- In the installation folder, replace the *Tuning-Manager-server-installation-directory*/`PerformanceReporter/conf/config.xml` file with the *Tuning-Manager-server-installation-directory*/`PerformanceReporter/sample/conf/config.xml` file.
- Apply the edits you confirmed in step 1 to the new *Tuning-Manager-server-installation-directory*/`PerformanceReporter/conf/config.xml` file.

In the `config.xml` file, the XML tags for each parameter is commented out using bracket delimiters <!-- -->. When you edit the initialization settings file, make sure to uncomment each set of tags for which you specify a value.

To edit the initialization settings file on Linux:

1. Edit the initialization settings file.

   The folder that contains the initialization settings file (`config.xml`) is*Tuning-Manager-server-installation-directory/*`PerformanceReporter/conf/`.
2. Close the Performance Reporter window if it is open.
3. Stop the Performance Reporter service by using the **`hcmds64srv`** command.

4. Start the Performance Reporter service by using the **hcmds64srv** command.
5. Log in to the Tuning Manager server.

   The main window of Main Console is displayed.
6. In the global tasks bar area, click **Go**, and then**Performance Reporter**.

   The initialization settings file (`config.xml`) is read from the initialization module when Performance Reporter starts, and the new settings take effect.

For details on the setup items in the initialization settings file (`config.xml`) and an example, see Reviewing a sample initialization settings file on page 5-32.

For details on the **hcmds64srv** command, see *Tuning Manager CLI Reference Guide*.

Changing the default window for Performance Reporter

You can start Performance Reporter by using either of the following methods:

- By choosing Start in the global menu with no Agent specified.
- From the information area with an Agent specified.

  When you start Performance Reporter from the information area by specifying an Agent, you can select whether you want to display the Performance Reporter main window or Report Tree Selection window. The default setting displays the Report Tree Selection window as shown in the following figures.

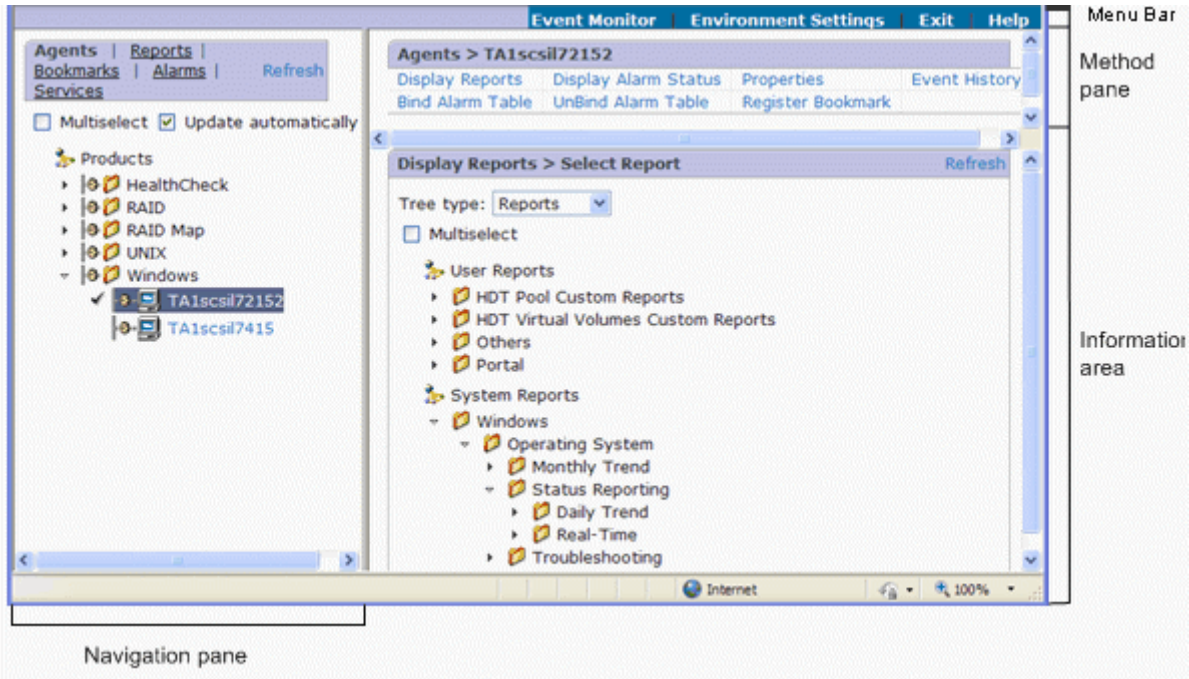

Figure 5-1 Displaying the main window for Performance Reporter

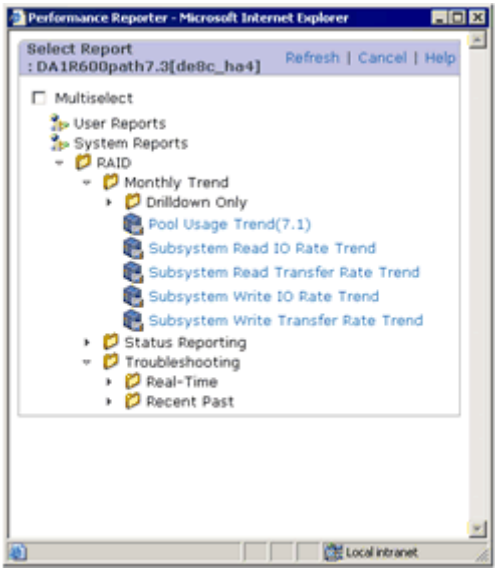

Figure 5-2 Displaying the report tree selection window for Performance Reporter

For details on Performance Reporter, see the *Tuning Manager User Guide*.

To change the starting window:

1. Stop the Tuning Manager server. For details, see Stopping services on page 1-23.
2. Use a text editor to open the `user.properties` file. The following shows where the `user.properties` file is stored.

   Windows: *`Tuning-Manager-server-installation-folder`*`\conf\user.properties`

   Linux: *`Tuning-Manager-server-installation-directory`*`/conf/user.properties`
3. Add the `pr.incontextlaunch.mode` item to the`user.properties` file.

   If you want to specify the Performance Reporter main window for the starting window, specify as follows:

   ```
   Pr.incontextlaunch.mode=main
   ```

   For details on the `user.properties` file, see Setting up the user property file on page 1-25.
4. Restart the Tuning Manager server. For details, see Starting services on page 1-21.

Preparing to use the Device Manager CLI

You must set up a Java environment to use the Device Manager CLI on a machine on which the Device Manager server is installed. Also, check information such as the installation folder and login ID before executing commands.

Java environment settings

To use the JRE used by the Device Manager server for the Device Manager CLI, specify the path of that JRE to the environment variable `HDVM_CLI_JRE_PATH`. The path of the JRE is as follows:

Windows: *Common-Component-installation-folder*\jdk\jre\bin

Linux: *Common-Component-installation-directory*/jdk/jre/bin

Requirements for using the Device Manager CLI

You need to check the items in Table 5-7 Items required to execute the Device Manager CLI on page 5-49 to execute commands in the Device Manager CLI.

Table 5-7 Items required to execute the Device Manager CLI

Item	Description
Installation directory for the Device Manager CLI	The installation directory for the Device Manager CLI is as follows: Windows: *installation-directory-for-Device-Manager*\DeviceManager\HiCommandCLI Linux: *installation-directory-for-Device-Manager*/DeviceManager/HiCommandCLI
URL of the Device Manager server	The default URL is `http://localhost:2001/service`.
User ID and password	The user ID and password used to operate Device Manager software are required. You can use the user ID and password of the built-in account (user ID: `System`) that is registered when Device Manager software is installed.
Command format	See the command format described in the following sections.

When using the Device Manager CLI, change the current directory to the installation directory for the Device Manager CLI, and then execute the following command:

`HiCommandCLI` *Device-Manager-server-URL* `-u` *user-ID* `-p` *password command-format*

Note: Subsequent command execution examples shown in this topic omit the following portion of the command:

Device-Manager-server-URL `-u` *user-ID* `-p` *password*

Acquiring a list of array families

Execute the **`GetServerInfo`** command to acquire a list of array families. You can use the array family information acquired by using this command to add storage systems.

Command format:

`GetServerInfo -o` *file-path*

With the `-o` option, you can output the command execution result to a file. Specify the absolute or relative path of the file. Add storage systems based on the information output to the file.

Command execution result:

The following shows an output example of the command. Use the values for `arrayFamily`, and `displayArrayFamily` to add storage systems.

```
RESPONSE:
An instance of ServerInfo
  serverVersion=HiCommand Device Manager Server
v5.9 Build 0590-00 (Jan 16, 2008)
  serverURL=http://localhost:2001
  upTime=7 minutes 55 seconds
  upSince=Wed, 23 Jan 2008 06:07:01 GMT
  currentApiVersion=5.9
  license=1
  List of 11 StorageArray elements:
    An instance of StorageArray
arrayFamily=Hitachi USP
displayArrayFamily=Hitachi USP
    An instance of StorageArray
      arrayFamily=Hitachi USP
      displayArrayFamily=Hitachi USP
:
```

Registering storage system information

Execute the **`AddStorageArray`** command to register storage system information in the Device Manager server database. Table 5-8 AddStorageArray command parameters on page 5-51 shows the command parameters for the **`AddStorageArray`** command.

Command format:

`AddStorageArray ipaddress=`*IP-address*

`family=`*array-family* `displayfamily=`*array-family-to-be-displayed*

`userid=`*user-ID*

`arraypasswd=`*user-password*

Table 5-8 AddStorageArray command parameters

Parameter name	Description
ipaddress	IP address of the storage system For the Universal Storage Platform V/VM series, this parameter can be specified by using an IPv6 address.
family	Array family of the storage system Enter the value of `arrayFamily` shown in the execution result of the **`GetServerInfo`** command.
displayfamily	Display name of array family for the storage system Enter the value of `displayArrayFamily` shown in the execution result of the **`GetServerInfo`** command.
userid[1]	User ID for accessing the storage system
arraypasswd[1]	User password for accessing the storage system

Note 1:

For the Hitachi USP series, specify `searchcommunity` (the SNMP community name of the storage system) instead of `userid` and `arraypasswd`. The default is `public`.

Command execution example:

The following example shows how to register the storage system of an array family (family: Hitachi USP, IP address: 172.16.45.1). The user ID and password are assumed to be `root` and `rootpass`, respectively.

```
HiCommandCLI AddStorageArray -o "D:\logs\9980V
AddStorageArray.log"
ipaddress=172.16.45.1 family=Hitachi USP userid=root
arraypasswd=rootpass
displayfamily=Hitachi USP
```

Command execution result:

The following example shows the result of executing the command. Check the values for `arrayFamily`, `displayArrayFamily`, `userID`, and `ipAddress` to make sure that the storage system registered correctly.

```
RESPONSE:
An instance of StorageArray
          :
          :
  arrayFamily=Hitachi USP
          :
          :
  displayArrayFamily=Hitachi USP
          :
```

```
        :
List of 1 CommParameters elements:
  An instance of CommParameters
    userID=root
    ipAddress=172.16.45.1
        :
        :
```

Overview of Oracle Java support

Tuning Manager server supports Oracle Java v7.0. By default, the Tuning Manager server employs the Java Development Kit (JDK) that comes along with the Hitachi Command Suite products. You can switch to Oracle JDK and vice versa by executing the `hcmds64chgjdk` command.

Executing the `hcmds64chgjdk` command to switch Java versions

To switch from the bundled JDK to Oracle JDK and vice versa, perform the following steps:

1. Stop all Hitachi Command Suite product services.

   For details about stopping services, see Stopping services on page 1-23

2. Check the service status of all the products. For details about the checking services, see Checking service statuses (at service startup) on page 1-22

3. Execute the following command:

   In Windows:

   ```
   hcmds64chgjdk [/jdkpath JDK-installation-path]
   ```

   In UNIX:

   ```
   hcmds64chgjdk [-jdkpath JDK-installation-path]
   ```

   The command displays a list of JDKs.

4. Select the JDK version from the JDK list.

   To select a JDK version or to execute an option in the JDK list, input a number representing the option. For example, input `2` to select Java Development Kit 1.7.0.

   The existing Oracle JDK is overwritten.

   The following is an example of the JDK list shown in the command window:

   ```
   Enter the number of the JDK to use.
   JDK currently being used: Java Development Kit bundled with the product
   0) Exit
   1) Use the Java development kit bundled with the product
   2) Use Java Development Kit 1.7.0
   3) Use Java Development Kit 1.8.0
   4) Set the installation path to a Java Development Kit
   >2
   ```

Note: Use Oracle JDK x64 version.

5. To specify an installation path for the updated JDK, perform the following steps:
   a. In the command window, input a corresponding number to display the JDK installation path input screen.
   b. Enter the installation path. You can specify a value up to 1000 bytes.

      The following shows an example of entering the JDK installation path in a command window.

```
Enter the JDK installation path.
To maintain the current settings, do not enter anything, and
then press [Enter].
> C:\Program Files\Java\jdk1.6.0_21
```

6. Edit the `javavm.ini` file (see Note).
   a. Open the following file using a text editor.

      In Windows:

      Tuning-Manager-server-installation-folder`\jp1pc\mgr\viewsvr\javavm.ini`

      In Linux:

      Tuning-Manager-server-installation-folder`/jp1pc/mgr/viewsvr/javavm.ini`
   b. Specify the installation path name of JDK you want to use for the JREPATH parameter as follows.

      You can specify the installation path name up to 259 characters.

      `JRE_PATH=`*`JDK-installation-full-path-name`*

      Following is an example:

      In Windows:

      `JDKPATH=C:\Program Files (x86)\Java\jdk1.7.0`

      In Linux:

```
JDKPATH=/usr/java/jdk1.7.0
```

Note:

- Use an x86 version of Oracle JDK.
- If an inaccurate path name is specified for the `JRE_PATH` parameter, Collection Manager and Agents do not work and as a result you cannot acquire performance information.
- The installation path name of JDK you specify for the `JRE_PATH` parameter cannot end with a slash or backslash ("/" or "\")
- In Linux, parameter names in the `javavm.ini` file are case-sensitive.
- Use the OS specific line feed code in the `javavm.ini` file.
- After you perform overwrite installation of Tuning Manager server, edit the `javavm.ini` file again since the file is initialized.
- If you press Enter without entering any text or if you enter an invalid value, the command terminates with an error message. If the command terminates, check the error message and take appropriate measures to fix the error. For details, see the *Tuning Manager CLI Reference Guide*.
- When you specify an installation path, the command attempts to obtain the version information for the JDK used at the specified path. If the command fails to obtain the required information, it terminates with an error message. If the command terminates, check the error message and take appropriate measures to fix the error. For details, see the *Tuning Manager CLI Reference Guide*.
- The JDK list displays a warning message, if the original bundled JDK is the only available JDK.
- For information about the messages output by the **`hcmds64chgjdk`** command, see Table 5-9 Messages output by the hcmds64chgjdk command on page 5-55.

Notes on executing the `hcmds64chgjdk` command

- In Windows, install the JDK in the New Technology File System (NTFS). In UNIX, install the JDK in the default installation directory.
- The JDK list in UNIX displays only the Oracle JDK versions installed in the default installation directory.
- The JDK list displays only the version numbers of the installed JDKs and not the update numbers. If there are multiple updates for the selected version, select the latest update.
- To remove the Oracle JDK, you must switch the Oracle JDK back to the original bundled JDK. If you remove the Oracle JDK without switching, you cannot remove the Hitachi Command Suite products.
- You can import the certificates and other files managed for the new JDK after you switch.
- The JDK installation directory changes after you switch JDK versions, requiring re-execution of the command.

- Ensure that the new program products that you install on a server that contains Hitachi Command Suite products support the JDK switch over functionality.

Output messages from the `hcmds64chgjdk` command

The following table provides information about the messages that are output by the **`hcmds64chgjdk`** command.

Table 5-9 Messages output by the `hcmds64chgjdk` command

Message code	Message
0	The JDK being used was changed.
1	The JDK being used was not changed.
248	The file system at the installation destination is not NTFS.
249	The specified value was invalid.
250	The specified JDK cannot be used.
251	The platform is not supported.
252	Creation of a symbolic link failed.
255	A fatal error occurred.

Setting the display language in Windows

When you execute the Main Console commands in Windows environment, the language used by Windows OS to display the messages in Main Console and in the log output files might vary depending on the system locale settings and the JDK version you use.

You can change the display language by using the OS locale settings. If you set the OS locale setting to Japanese, the messages are output in Japanese. In other cases, the messages are output in English.

Windows Server 2008

- If you are using the JDK that comes along with the Hitachi Command Suite products in a Windows Server 2008 environment, perform the following steps to change the language:
  a. Go to **Start > Control Panel > Regional and Language** and click the **Formats tab**.
  b. In the **Formats** list, select the language and click **Ok**.
- If you are using Oracle JDK 7 or 8 in a Windows Server 2008 environment, perform the following steps to change the language:
  a. Go to **Start > Control Panel > Regional and Language** and click **Keyboards and Languages**.

b. Under **Display language**, select a language from the list, and click **Ok**.

Note: If you don't see a list of display languages, you must install additional language files. For more information, see the Windows Help documentation.

Windows Server 2012

- If you are using the JDK that comes along with the Hitachi Command Suite products in a Windows Server 2012 environment, perform the following steps to change the language:
  a. Go to **Control Panel > Clock, Language, and Region > Region** and click the **Formats** tab.
  b. In the **Formats** list, select the language and click **Ok**.
- If you are using Oracle JDK 7 or 8 in a Windows Server 2012 environment, perform the following steps to change the language:
  a. Go to **Control Panel > Clock, Language, and Region > Language** and click the **Advanced settings** tab.
  b. Under **Override for Windows display language**, from the **Use language list**, select the display language, and click **Save**.

Note: If you don't see a list of display languages, you must install additional language files. For more information, see the Windows Help documentation.

6

Specifying settings for data acquisition from Agents and Device Manager

This chapter describes the functions for acquiring data from Agents and Device Manager and how to specify the settings for data acquisition. To specify the settings for data acquisition, you must log in as a user with Admin permissions when specifying the settings for data acquisition.

This chapter includes the following topics:

- ☐ Using a Tuning Manager server to acquire data (polling)
- ☐ Data collected from an information source
- ☐ Information resources for the monitoring host
- ☐ Refreshing configuration information retained in Device Manager
- ☐ Preparation for performing polling
- ☐ Supported Agents
- ☐ Time required for initial data collection
- ☐ Monitoring virtualization environments
- ☐ Monitoring Agentless hosts
- ☐ Configuring the polling settings
- ☐ Checking the polling settings
- ☐ Editing the polling settings

- ☐ Operating polling manually
- ☐ About polling during Daylight Saving Time changes
- ☐ Data retention periods
- ☐ System reports

Using a Tuning Manager server to acquire data (polling)

A Tuning Manager server collects data from Agents and Device Manager, and stores it in the Tuning Manager server database. This function is called *polling*.

Polling can be performed automatically by specifying a polling schedule or manually at a desired point of time. When polling is performed, a series of operations are performed, such as aggregating collected data, deleting data that is older than the data retention periods from the database, and then issuing system alerts.

This section describes data that is collected from Agents or Device Manager when polling is performed. In this manual, Agents and Device Manager for which polling is performed are called *information sources*.

Data collected from an information source

When polling is performed, data stored in an information source is collected and then stored in the Tuning Manager server database. The system configuration data and capacity data is collected when polling is performed.

The following notes apply to polling:

- A storage system from which data is collected must be monitored by an Agent and managed by Device Manager.
- Performance information is not collected during polling. It is collected from Agents when the performance information report is displayed.
- The Tuning Manager server monitors all the virtualization servers that are configured in Device Manager except for those that are manually registered from the Device Manager GUI or CLI. To check information about virtualization servers, display the host list in the host management window of Device Manager. Note that the Tuning Manager server can only monitor the virtualization servers that are configured in Device Manager. It is not possible to add, or remove virtualization servers as monitoring targets on the Tuning Manager server side.
- When you set the polling schedule or perform manual polling of Tuning Manager server, make sure that the connection target Device Manager has completely collected the data. If you perform polling when Device Manager is collecting the data, polling of Tuning Manager server may fail.
- The Tuning Manager server cannot display information about a datastore in a virtualization environment that has been created on NFS connected via an IP network, because Device Manager is unable to acquire information about it.
- Capacity information for a hypervisor is displayed only when the datastore type is Datastore (VMFS).
- To monitor capacity information of datastores on free VMware ESXi, you must have a valid VMware license.
- To acquire mapping information for a file system of a guest OS and a logical device, configure the settings for accessing the logical device from the guest OS via a path through the connection of RAW Device

Mapping of VMware and Hyper V. For more information about the settings, refer to the administration software documentation for each virtualization environment.

- If the Tuning Manager server software collects information for monitoring hosts from Device Manager, the Tuning Manager server software operating as a stand-alone program cannot add or remove specific hosts as monitored hosts.

The following table lists information sources from which data about system configuration and data capacity is collected. The table also lists resources monitored by each information source.

Table 6-1 Relationships between information sources and monitored resources

Monitored resource		Information source for configuration information	Information source for capacity information
Storage system	CLPR or SLPR	Agent for RAID	Agent for RAID
	Processor	Agent for RAID	None
	Dynamic Provisioning pool and Dynamic Provisioning volume	Device Manager	Agent for RAID
	Other	Device Manager	Device Manager
Hypervisor	Virtualization environment	Device Manager	Device Manager
Host (Agent mode)*	OS	Agent for Platform	Agent for Platform
	File system Device file	Agent for RAID Map	Agent for Platform
Host (Agentless mode)*	OS	Device Manager	None
	File system Device file	Device Manager	None
Fabric	Switch	Agent for SAN Switch	None
Application	Oracle	Agent for Oracle	Agent for Oracle
NAS and others		Other Agents	Other Agents

* If the monitoring resource is a host, you can select an information source from the following: (a) Agent for Raid Map and Agent for Platform or (b) Device Manager.

For details, see Selecting a host's information source (Agentless host mode) on page 6-5.

Information resources for the monitoring host

The mode in which information is obtained from Agent for Raid Map and Agent for Platform is called *Agent mode*. The mode in which information is obtained from Device Manager is called *Agentless mode*. A host that is managed by Tuning Manager server in the Agentless mode is called an *Agentless host*. A host that is managed by Tuning Manager server in the Agent mode is called an *Agent host*.

When you monitor hosts using Tuning Manager server, you can select an information resource from the following options:

- Agent mode: Agent for RAID Map and Agent for Platform
- Agentless mode: Device Manager

Agent mode takes effect when both the following conditions are met:

- Agent for RAID Map and Agent for Platform have been set up.
- Agent for RAID Map and Agent for Platform are running and recognized by Collection Manager.

Selecting a host's information source (Agentless host mode)

The following table describes the differences between using Agent for RAID Map and Agent for Platform, or Device Manager as a monitoring host.

Table 6-2 Host monitoring mode

Host monitoring mode	Description
Agent	• The information resources used for the Agent mode are Agent for RAID Map and Agent for Platform. • Configuration, performance, and capacity information is acquired. • Agent for RAID Map and Agent for Platform must be installed on each host. • The relationship between hosts and storage system is more apparent. • Performance information of hosts and capacity information trends can be tracked, and alarms can be set.

Host monitoring mode	Description
Agentless	• The information resources used for the Agentless mode are Device Manager or Device Manager Agent. Note: If the Device Manager Host Data Collector is used, Device Manager Agent is not required. • Information about the configuration of monitored hosts is acquired. • Neither Agent for RAID Map nor Agent for Platform is required to be installed on each host. • Relationships between hosts and storage systems are more apparent.

Required conditions for enabling each host monitoring mode

The following conditions are required for enabling the Agent mode or Agentless mode:

- Agent mode

  Both Agent for RAID Map and Agent for Platform have been set up on each host.

- Agentless mode

  Information from each Agentless host has been refreshed. For details, see Monitoring Agentless hosts on page 6-16.

Note: If the conditions for enabling Agent mode and Agentless mode are both satisfied, the monitoring mode is set to Agent mode. When an alias name is set to a host, both Agent mode and Agentless mode are applied. As a result, Tuning Manager server GUI displays both the host's real name and its alias name as the monitoring target host. To ensure that only the alias name of the host is used for Tuning Manager reports, you must disable Agentless mode.

For details about disabling Agentless mode, see Monitoring a host that uses an alias on page 6-20.

For details about disabling Agentless mode, see the *Tuning Manager Server Administration Guide*.

Switching monitoring mode

After operation starts, you can switch to Agent mode or Agentless mode. For details, see Monitoring Agentless hosts on page 6-16.

Differences in collected information by monitoring mode

Some collected information might differ depending on whether the host is monitored in Agent mode or in Agentless mode. The following table shows cases in which the information that is collected differs by monitoring mode.

Note: When you use the AIX VIOS functionality to deploy a VSCSI device on a VIOC-zoned host, the file system associated with the device file of the VSCSI device is displayed in Agent mode, but not in Agentless mode.

Table 6-3 Differences in collected information by monitoring mode

Cases in which different information is collected in each monitoring mode	Information that is collected for		Display specification for Agentless monitoring mode
	Agent monitoring mode	Agentless monitoring mode	
Creating a file system on a logical volume created using VERITAS Volume Manager (VxVM) on a Solaris host	• For Tuning Manager Agents v5.9 and later: The relationship with the device files comprising the logical volume under the corresponding file system is collected as the relationship between the file system and device files. • For Tuning Manager Agents earlier than v5.9: The relationship with the device files comprising the drive group under the corresponding file system is collected as the relationship between the file system and device files.	The relationship with the device files comprising the drive group under the corresponding file system is collected as the relationship between the file system and device files.	For host monitoring by Hitachi Command Suite Agent:
Collecting device file names on a Solaris host	The device file name is the instance name (kernel compression name).	For host monitoring by Host Data Collector: The device file name is the instance name (kernel compression name).	The device file name is the logical drive device name
		For host monitoring by Hitachi Command Suite Agent: The device file name is the logical drive device name.	LU information is collected and treated as a resource.

Cases in which different information is collected in each monitoring mode	Information that is collected for		Display specification for Agentless monitoring mode
	Agent monitoring mode	Agentless monitoring mode	
Collecting device files	The following types of information are collected and treated as resources: • Local drives • LUs	The following types of information are collected and treated as resources • LUs Local drive information cannot be collected.	

Refreshing configuration information retained in Device Manager

The configuration information retained in Device Manager must always be the latest. If the configuration of a storage system, host (only when agentless mode is used), or virtualization environment managed by Device Manager is changed, you need to manually refresh the storage system, host, or virtualization environment in Device Manager. For details on refreshing a storage system, host, or virtualization environment, see the *Hitachi Command Suite Help*.

If the following operations have been performed, you need to refresh the storage system or virtualization environment in Device Manager:

- When a storage system configuration has been changed on Storage Navigator.

  Refresh the storage system.
- When capacity has been allocated to the server by using the volume capacity virtualization function of Dynamic Provisioning.

  Refresh the storage system.
- When the system configuration of the virtualization environment managed by Device Manager has been changed.

  Refresh the configuration information of the virtualization server to which a change has been made.
- When a performance bottleneck has been detected in the storage system or virtualization server.

  Immediately refresh the resource in which the performance bottleneck has been detected.
- When you want to update the capacity information of datastores on a virtualization environment

Refresh the capacity information of datastores only. The frequency of updating the capacity information using Device Manager should be one time a day.

If the Device Manager license is Core License, you cannot refresh storage systems or virtualization environments by using the Web Client. In this case, use the Device Manager CLI for refreshing. To refresh storage systems, use the **`RefreshStorageArrays`** command. To refresh virtualization environments, use the **`RefreshVirtualizationServer`** command. For details on the commands, see the *Hitachi Command Suite CLI Reference Guide*.

For details about the procedure for monitoring a virtualization environment, see Monitoring virtualization environments on page 6-11.

Preparation for performing polling

Before performing polling, the procedures described in the following subsections must be completed.

Device Manager settings

To collect data from Device Manager, make sure that the Device Manager connection settings have been specified. For details about the settings, see Configuring connection and initial settings on page 5-1.

Agent settings

To collect data from Agents that are subject to polling, set the `Log` property value to `Yes` for the records shown in the following table.

Table 6-4 Records for which settings need to be specified at Agents that are subject to polling

Agents that are subject to polling	Records
Agent for RAID	PI, PI_LDS, PI_LDS1, PI_LDS2, PI_LDS3, PI_LDA, PI_PTS, PI_RGS, PI_CLPS, PI_PRCS, PI_CLCS, PI_PDOS, PI_LDE,PI_LDE1,PI_LDE2,PI_LDE3, PD, PD_LDC, PD_PTC, PD_LSEC, PD_RGC, PD_ELC, PD_CLPC, PD_VVC, PD_PLC
Agent for RAID Map	PD, PD_FSC, PD_IAC
Agent for Platform (Windows)	PI, PI_LOGD, PI_PHYD
Agent for Platform (UNIX)	PI, PI_DEVD, PD_FSL, PD_FSR
Agent for SAN Switch	PI, PD, PD_PTD, PI_SWS, PI_PTS,PD_CPTD,PD_DEVD,PI_PTES,PI_SWES
Agent for Oracle	PI,PI_PITS, PI_PIDF, PI_PIDB, PD_PDTS, PD_PDI

Note: For records whose record type is PI or PD, set the `CollectionInterval` property value to `3600` or lower. However, for Agent for RAID PD_VVC records or PD_PLC records, specify a value of `21600` or lower.

For records whose record type is PI or PD, set the `CollectionOffset` property value to `3600` or lower.

Do not set the `LOGIF` property.

Note: Regarding resources to be monitored by Agents, for storage systems, servers, SAN switches, and Oracle resources that are monitored by Agents, specify settings so that a single resource is monitored by a single Agent. If you specify the settings so that a single resource is monitored by multiple Agents, the Agents for which those settings are specified will not be polled.

Polling offset settings

When you change the `CollectionOffset` value of an Agent from the default, set the polling offset value to *Collection-Offset-value-of-Agent* + five minutes. If an Agent monitors many targets, and data collection at the Agent does not finish within five minutes, set the polling offset value of the Tuning Manager server to a value of *time-to-finish-collection-at-Agent* + five minutes. For details about how to set the polling offset value, see Setting up the user property file on page 1-25.

Supported Agents

Tuning Manager server recognizes and monitors Agent for Platform (UNIX), Agent for Platform (Windows), Agent for RAID Map, Agent for RAID, Agent for SAN Switch, and Agent for Oracle. Other Agents appear in the subresource section under **NASs/Others Apps**.

Tuning Manager server does not collect data from the Agents that appear under **NASs/Others Apps**. To monitor the Agents that appear under **NASs/Others Apps**, launch Performance Reporter from the Tuning Manager server.

Time required for initial data collection

The Tuning Manager server displays records collected from Agents by polling. Perform polling after Agents have created the records listed in Table 6-4 Records for which settings need to be specified at Agents that are subject to polling on page 6-9.

The following table lists the estimated time required to create records that are subject to polling.

Table 6-5 Estimated time required to create records that are subject to polling

Agents that are subject to polling	Estimated time required to create records
Agent for RAID	A maximum of one hour after the Agent services start[1]
Agent for RAID Map	
Agent for Platform (Windows)	
Agent for Platform (UNIX)	
Agent for SAN Switch	
Agent for Oracle	A maximum of two hours after the Agent services start[2]

Note 1:

If Collection Interval for a record has been set to 3,600 seconds, the record will be created on the 00 minute of every hour. Therefore, it will take a maximum of one hour to create the record after the Agent services start.

Note 2:

If Collection Interval for a record has been set to 3,600 seconds and the delta has been set to Yes, the record will be created based on 2 data collections on the 00 minute of every hour. Therefore, it will take a maximum of two hours to create the record after the Agent services start.

If the system time for the Agent host is later than the system time for the Tuning Manager host for more than the polling offset value of the Tuning Manager server, it will take longer to acquire the initial data because the Agent has not finished creating the record at the polling time specified by the Tuning Manager server.

Therefore, the system time for the Agent hosts and the Tuning Manager host must match. For details on how to adjust the system time for hosts, see the section About machine time differences on page 1-39.

Monitoring virtualization environments

This section describes how to monitor virtualization environments managed by Device Manager by using the Tuning Manager server. For details on Device Manager operations and the Device Manager CLI, see the Device Manager manuals.

Note: When you monitor the capacity information of a datastore using the free version of VMware ESXi, you must introduce the purchased VMware license separately.

Installing the Tuning Manager server for use with virtualization environments

To install Device Manager and the Tuning Manager server on a host that connects to a virtualization environment:

1. Install and set up Device Manager.

   For information on installing and configuring Device Manager, see the *Hitachi Command Suite Installation and Configuration Guide*.

2. Install and set up the Tuning Manager server. In the connection settings for Device Manager, specify the Device Manager host. Alternatively, install the Tuning Manager server on the same host as Device Manager.

   For information on installing and configuring the Tuning Manager server, see the *Tuning Manager Installation Guide*

3. Use the Device Manager GUI or the **`AddVirtualizationServer`** command to register virtualization servers to be monitored by Device Manager.

4. Use the Device Manager GUI or the **`AddStorageArrays`** command to register with Device Manager the storage system associated with the newly-registered virtualization server.

5. Use the Tuning Manager server to manually perform polling.

   In the Data Polling window of the Tuning Manager server, make sure that Device Manager is shown as a polling target, and then manually perform polling.

6. In the Tuning Manager server window, make sure that the virtualization servers to be monitored are shown as monitoring targets of the Tuning Manager server.

   Under **Hypervisors** in **Resource Tree** of the Tuning Manager server, check whether the virtualization servers that you added are displayed properly.

Operation during troubleshooting and configuration changes in production

When a performance problem occurs during monitoring system operations, if you want to identify which storage system (that is the base for a specific datastore) where the problem occurred, or if the configuration of the monitored virtualization servers has been changed, refresh the configuration information retained in Device Manager and the Tuning Manager server as follows:

1. If a performance problem has occurred in the storage system, use the Device Manager GUI or the **`RefreshStorageArrays`** command to refresh the configuration information. If the configuration of the virtualization servers has been changed, use the Device Manager GUI or the **`RefreshVirtualizationServer`** command to refresh the configuration information.

2. If you refreshed the virtualization server in step 1, use the Device Manager GUI or CLI to refresh the storage system associated with the refreshed virtualization server.

3. Use the Tuning Manager server to manually perform polling.

   In the **Data Polling** window of the Tuning Manager server, make sure that Device Manager is shown as a polling target, and then manually perform polling. However, note that you must wait at least one hour from the last polling to perform another polling.

4. In the Tuning Manager server window, make sure that the virtualization servers to be monitored are shown as monitoring targets of the Tuning Manager server.

   Under **Hypervisors** in **Resource Tree** of the Tuning Manager server, make sure that the storage system where the performance problem occurred or the virtualization server whose configuration has been changed is displayed properly.

Monitoring capacity information

When performing threshold monitoring for capacity information on virtualization environments in a production environment, perform the following steps to update and obtain the capacity information kept by Device Manager and the Tuning Manager server:

1. Use the **`RefreshVirtualizationServer`** command with the `mode=Datastore` option specified for virtualization server refreshing provided by Device Manager to update only datastore capacity information for virtualization servers managed by Device Manager.

   Before you can use the CLI, you might have to refresh the capacity information by using virtual-environment management software so that the latest information can be acquired from the virtual environment. When you monitor the capacity information of a datastore using the free version of VMware ESXi, you must introduce the purchased VMware license separately. For details about the requirements and procedure for refreshing the capacity information by using the virtual-environment management software, see the documentation for the virtual-environment management software you use. To perform periodic monitoring, you can create and run scripts to periodically execute the **`RefreshVirtualizationServer`** command for virtualization server refreshing.

   Updating of the datastore capacity information in Device Manager is performed daily.

2. In the Data Polling window for the Tuning Manager, make sure that Device Manager is a polling target, and then perform manual polling.

Note: You must wait at least one hour from the last polling to perform another polling.

3. Use Tuning Manager CLI or GUI to perform threshold monitoring for capacity information:

   a. From the command line: You can use the Tuning Manager **`htm-datastores`** command to periodically obtain datastore capacity information monitored by Tuning Manager. Users can use user-created tools to detect datastores for which capacity thresholds have been exceeded from the obtained data. To periodically obtain monitoring information, users can create and run scripts that periodically execute the Tuning Manager **`htm-datastores`** command.

   b. From the Tuning Manager GUI: In the navigation tree, browse the virtualization server, VM, or datastore folder to display a list of datastore capacities.

Performance management considerations

When monitoring VMware ESX 4.0 or later with Tuning Manager, some considerations are required for the following cases:

- Device Manager Host Data Collector is used for monitoring
- Monitoring an NPIV environment
- Changing pair volume configuration
- Migrating LDEVs

Prerequisites

To monitor VMware ESX 4.0 or later, one of the following versions of Device Manager must be installed:

- Device Manager v6.4.0-06 or later
- Device Manager v7.0.1-00 or later

Device Manager Host Data Collector is used for monitoring

If VMware vSphere client is used to disconnect a RAW Device Mapping volume from a virtual machine, the information about the volume is no longer displayed in Main Console.

Main Console does not display information about any virtual machine that is orphaned as a result of the following procedure:

1. VMware vCenter Server and a virtualization server (host OS) are disconnected.
2. A virtual machine is removed from the virtualization server (host OS).
3. VMware vCenter Server and the virtualization server (host OS) are connected again.

Monitoring an NPIV environment

When monitoring NPIV environment provided by VMware ESX 4.0 or later, note the following:

- A physical WWN is displayed as a port WWN of HBA.

  In Main Console, when a WWN is associated to the host, the GUI displays the physical WWN assigned to the HBA.

  To display the physical WWN assigned to the HBA:

  a. Select **Hosts** on the explorer menu.
  b. Select an instance of guest OS.
  c. Select an instance of device file from the **Device Files** of the guest OS.
  d. Select the **Detail** tab for the instance of the device file.

     The Host Port Node WWN and Host Port WWN fields displayed on the **Report** area indicates the physical WWN of the HBA.
- WWN information displayed in the Performance Reporter GUI/CLI.

When exporting the following WWN information provided by Hitachi Tuning Manager Agent for Server System, each WWN indicates the physical WWN of HBA.

Record	File system configuration (PD_FSC)
Field	Node WWN (NODE_WWN)
	Port WWN (PORT_WWN)

To confirm the virtual WWN of HBA Port, perform these steps in the Device Manager host view:

a. Select **Hosts** on the explorer menu.
b. Select the target host from the host instance list.
c. Confirm World Wide Names on the summary area of the host instance.

Changing pair volume configuration

When exporting the following pair volume information provided by Hitachi Tuning Manager Agent for Server System, information is kept regardless of configuration change. The information is updated when the virtualization server is rebooted.

Record	File system configuration (PD_FSC)
Field	P/S Volume (P_PAR_S_VOLUME)

To confirm the latest pair volume information without rebooting the virtual server, perform these steps in the Device Manager All Storage view:

1. Select **All Storage** on the explorer menu.
2. Select the storage target from the storage instance list.
3. Select **Open-Allocated** for the storage instance.
4. Confirm the **Copy Type** of the LDEV list.

Migrating LDEVs

When exporting the following LDEV parity group information provided by Hitachi Tuning Manager Agent for Server System, information is kept regardless of volume migrations. The information is updated when the virtualization server is rebooted.

Record	File System Configuration (PD_FSC)
Field	RAID Group Number (RAID_GROUP_NUMBER)
	RAID Level (RAID_LEVEL)

To verify the latest parity group information without rebooting the virtual server, view the information from one of the following resources in Main Console:

- LDEV list for the LDEV folder

- Summary information for the LDEV instance

Removing a virtualization server

To remove monitored virtualization servers from the system, perform the following procedure to update the configuration information in Device Manager and the Tuning Manager server:

1. Use the Device Manager GUI or the `DeleteHost` command to exclude the virtualization servers to be removed from the management targets of the Device Manager.
2. Use the Tuning Manager server to manually perform polling.

   In the **Data Polling** window of the Tuning Manager server, make sure that Device Manager is shown as a polling target, and then manually perform polling.

Note: You must wait at least one hour from the last polling to perform another polling.

3. In the Tuning Manager server window, make sure that the virtualization servers that you do not want to monitor are not shown as monitoring targets of the Tuning Manager server.

   Under **Hypervisors** in **Resource Tree** of the Tuning Manager server, make sure that the virtualization servers that have been removed from the monitoring target do not appear.

Monitoring Agentless hosts

The addition and deletion of monitoring targets is determined by Agent for RAID Map, Agent for Platform, and Device Manager monitoring status. A host can be switched between Agent mode and Agentless mode. Host information is automatically carried over when this happens. The *polling history* and *schedule information* are not carried over.

Note: *Polling history* indicates whether host information was successfully obtained during the previous polling. *Schedule information* refers to the times set for each Agent to perform polling.

Agent hosts and Agentless hosts can both exist within the same system. Because there is relatively no difference between the OS type of a storage management server running Tuning Manager server and Device Manager server and the OS type of a host that can be monitored by using Tuning Manager server and Device Manager server, hosts of any platform can be monitored.

The following topics describe how to add, delete, and refresh monitoring of Agentless hosts from Device Manager GUI. For information about administering Device Manager, see *Hitachi Command Suite Administrator Guide*.

Note: In addition to the GUI, you can interact with the Tuning Manager server with a command line interface (CLI). This comprehensive text-based command interface can accomplish all the tasks performed by the GUI. For details on using the CLI, see the *Tuning Manager CLI Reference Guide*.

Adding an Agentless host as a monitoring target

Because the Tuning Manager obtains information about Agentless hosts from all Hitachi Command Suite instances, once discovery is performed in Hitachi Command Suite, only Tuning Manager Main Console polling is needed. However, to display the relationship between Agentless hosts and storage resources, you first need to add the agentless hosts to discover Agentless hosts and storage systems in Hitachi Command Suite.

Adding an agentless host

1. Register with Hitachi Command Suite any storage systems related to the monitored host.
2. Perform discovery in the Hitachi Command Suite GUI or CLI, and register the monitored host.
3. Perform Tuning Manager Main Console manual polling.

   In the Tuning Manager Main Console Data Polling window, make sure that Hitachi Command Suite is a polling target, and perform manual polling.
4. Make sure that the monitored hosts are displayed in the Tuning Manager Main Console window under **Hosts** in the Tuning Manager Main Console navigation tree, make sure that the host added as a monitoring target is displayed.

Note: The Tuning Manager server cannot monitor any hosts that are manually registered in Device Manager from the Device Manager GUI or CLI. To check the host information, display the host list in the host management window of Device Manager.

If the Agentless host cannot be added with the above procedures, an incompatibility with the Hitachi Command Suite specification exists.

Refreshing Agentless host information

You should periodically refresh the Agentless host information.

To refresh agentless host information

1. Refresh any storage systems related to the monitored host, in Hitachi Command Suite.

   Use the Hitachi Command Suite GUI or CLI to perform a refresh operation, and then update the information about storage systems related to the monitored host.
2. Refresh the host in Hitachi Command Suite.

   Perform a refresh operation by using the Hitachi Command Suite GUI or CLI, and update information about monitored hosts.
3. Perform Tuning Manager server manual polling.

   In the Tuning Manager server Data Polling window, make sure that Hitachi Command Suite is a polling target, and perform manual polling.
4. Make sure that the monitored host is displayed in the Tuning Manager Main Console window.

Under **Hosts** in the Tuning Manager Main Console navigation tree, make sure that the refreshed host is displayed.

Updating configuration information

Before performing troubleshooting using Hitachi Command Suite for a production system, or to change the configuration of a host that is being monitored in Agentless mode, update the configuration information retained by Device Manager and Tuning Manager server as follows.

1. Refresh the host and storage system for which troubleshooting or configuration changes are to be performed.
2. In the Tuning Manager Main Console Data Polling window, make sure that Device Manager is a polling target, and perform manual polling.
3. Under **Hosts** in the Tuning Manager Main Console navigation tree, make sure that the corresponding host is displayed.

Determining the current monitoring mode

Use the `jpcctrl list` command to check whether a host Agent exists on the host for which the monitoring mode is to be determined.

If the return from the `jpcctrl list` command shows that a host Agent exists, the monitoring mode for the host is Agent mode, otherwise the monitoring mode is Agentless mode.

Switching the host monitoring mode from Agent to Agentless

When the host monitoring mode is switched from Agent mode to Agentless mode, a host Agent needs to be removed from the host to be switched. The previous configuration information and capacity information collected and stored in the database by the Tuning Manager server will be carried over after the switch is completed. However, past collected performance information that is displayed on demand for the reports obtained from the Agent, and past capacity information collected and stored in the Tuning Manager database will no longer be accessible after the host Agent is removed.

To switch the host monitoring mode from Agent to Agentless:

1. Back up the instance of the host Agent installed on the corresponding host, before removing the agent.
2. On the Tuning Manager server, delete the configuration information related to the host Agent on the corresponding host.
   a. To delete the service information, use the `jpcctrl delete` command. For details about the `jpcctrl delete` command, see the *Tuning Manager CLI Reference Guide*.
   b. Restart Collection Manager to complete the deletion of the service information.
   c. Restart Performance Reporter.
3. Add the corresponding host as a Tuning Manager monitoring target.

4. Refresh the agent information in the Tuning Manager Main Console Data Polling window, and make sure that the host Agent for the corresponding host is displayed in the list.

Switching the host monitoring mode from Agentless to Agent

To switch the host monitoring mode from Agentless mode to Agent mode, use the following procedure.

Note: The corresponding host does not need to be deleted from Device Manager. The host can be deleted only when it is no longer needed as a Device Manager management target.

1. Install a host Agent on the host for which the monitoring mode is to be switched, and add it as a Tuning Manager monitoring target.
2. In the Tuning Manager Main Console Data Polling window, refresh the Agent information.
3. Make sure that the instance of the host Agent for the corresponding host is displayed in the list, then set the corresponding host Agent as a polling target.
4. Perform manual polling.
5. Under **Hosts** in the Tuning Manager Main Console navigation tree, make sure that the corresponding host is displayed.

Deleting an Agentless host as a Tuning Manager monitoring target

This topic describes how to delete an Agentless host from the Hitachi Command Suite management target list and the Tuning Manager server.

To delete an Agentless host

1. Delete the monitored Agentless host from the Hitachi Command Suite management target list.

   Perform the deletion operation from the Hitachi Command Suite GUI or CLI, and delete the monitored host from the Hitachi Command Suite management target list.
2. Perform Tuning Manager server manual polling.

   In the Tuning Manager server Data Polling window, make sure that Hitachi Command Suite is a polling target, and perform manual polling.
3. Make sure that the deleted host is not displayed in the Tuning Manager server Main Console window.

   Under **Hosts** in the Tuning Manager Main Console navigation tree, make sure that the host deleted from the Hitachi Command Suite management target list is not displayed.

Monitoring a host that uses an alias

The Tuning Manager server identifies a host through its host name and type of operating system. Main Console displays both the host's real name and its alias name when the alias is set to a host in which Agent for RAID Map and Agent for Platform are installed. Device Manager also uses both the real name and alias name information to discover the host.

To ensure that only the alias name of the host is used for Tuning Manager reports:

1. Stop the Tuning Manager server service. For details, see Stopping services on page 1-23.
2. Create a text file named `exhosts.txt` (see Notes about the exhosts.txt file on page 6-20 for information about the format and content of the file). Be sure to specify the real name of the host that is monitored by Agent for RAID Map and Agent for Platform, then save the `exhosts.txt` file to the following location:
   - In Windows:

     Tuning-Manager-server-installation-folder\conf\
   - In Linux:

     Tuning-Manager-server-installation-directory/conf/

Note: You can include multiple host name entries in the `exhosts.txt` file.

3. Start the Tuning Manager server service. For details, see Starting services on page 1-21.

   When Tuning Manager server starts, it will read the `exhosts.txt` file and will use the real name of the host for Tuning Manager reports.

Notes about the `exhosts.txt` file

The `exhosts.txt` file must have entries in the following format:

```
host-name1
host-name2
...
```

For example:

```
AgentlessHost001
AgentlessHost002
AgentlessHost003
```

The following notes apply to the `exhosts.txt` file:

- An alias name can be used for a host in which Agent for RAID Map and Agent for Platform are installed. However, a real host name must be specified for its entry in the `exhosts.txt` file.

  Real host name refers to the name that the Windows **`hostname`** command or UNIX **`uname -n`** command displays.

- Host names that are not registered to Device Manager are ignored.
- The host names specified in the `exhosts.txt` file are not case sensitive.
- The host names entered in the `exhosts.txt` file are not checked for unsupported characters until the Tuning Manager server is restarted. performed.
- If a host name entry in the contains tab or space characters, it is treated as a part of the real host name.
- You can enter up to 1000 real host names in the `exhosts.txt` file.

Configuring the polling settings

In a Tuning Manager server, you can specify the following polling settings:

Polling schedule

A Tuning Manager server performs polling according to a set schedule, and collects hourly data from the data retained in information sources. Polling processing involves the collection of resource data collected by information sources after the last time polling processing was performed. The Tuning Manager server collects data from the information sources and performs time-axis aggregation for the collected capacity information. We recommend that you perform polling once a day (at 0:00).

If Daylight Saving Time is in effect, the values for all check boxes are treated as Daylight Saving Time values.

Backdate offset periods

Even if the polling schedule has been set, polling of Agents might fail. Possible causes are as follows:

- The Agents to be polled have stopped.
- Communication with the Agents to be polled has failed.

In either of these cases, by setting a backdate offset period, you can specify that the data that could not be acquired from the Agents be acquired during the next polling.

For example, assume that the polling schedule has been set to perform polling every hour on the hour, and that polling failed during the period from 12:00 to 16:00. In this case, you need to specify 4 hours for the backdate offset period to collect the past data that you failed to collect. By specifying 4 hours for the backdate offset period, the polling at 17:00 acquires not only the data for 17:00, but also the data not acquired at 13:00, 14:00, 15:00, and 16:00.

The point at which data acquisition starts the next polling is dependent on whichever of the following times is nearer the current system time:

- *current-record-time* + 1 hour
- *current-record-time -backdate-offset-period*

For example, if the current time is 1 pm, the backdate offset value is 2 hours, and the most recent record was collected at 12 pm, the value of when the most recent record was collected plus 1 hour(1 pm) is used for the start time.

Note: Specify an appropriate time at which polling processing is performed in the polling schedule so that the polling interval is equal to or shorter than the backdate offset period.

The backdate offset period must be equal to or shorter than the data retention period. If you set a backdate offset value that is longer than the data retention period, the backdate offset value will automatically become the same as the data retention period.

Setting polling retry options

A Tuning Manager server can retry polling when an initial polling attempt for an Agent fails. You can specify the retry interval and the number of retries. By default, polling is not retried. Although the Tuning Manager server can retry polling when a polling attempt for an Agent fails, use the default setting unless the Technical Support Center recommends otherwise.

When specifying the retry interval and the number of retries, you need to consider a polling schedule and time it takes to complete polling. For example, if polling is set to be performed 4 times a day (every 6 hours) and single polling takes 15 minutes to complete, the retry interval and the number of retries must satisfy the following equation:

15 minutes + (*retry-interval* + 15 minutes) ×*number-of-retries* ≤ 6 hours

If you want to change the polling schedule, you need to estimate the time to complete the new polling, and then decide the appropriate retry interval and number of retries.

If a subsequent polling start time occurs during a retry attempt, that polling is not performed.

Checking the polling settings

To check the polling settings:

1. Click **Administration** in the explorer area.
2. Click **Data Polling** in the submenu.

   The Data Polling window appears. The following tables describe the contents of each column in the Data Polling window.

Table 6-6 Information displayed in the window for checking the polling settings

Displayed information		Description
General Polling Settings	**Default Polling Schedule**	Indicates the default polling schedule of an information source. If a new Agent is recognized, the default setting applies. If a new installation of the Tuning Manager server is performed, the default setting is 00:00. If the settings specify that polling is not to be performed, nothing is displayed.
	Backdate Offset	Indicates how far the polling processing goes back to acquire past data. The unit is hour(s). If this value is `0`, the polling processing does not acquire past data. The default is `24`.
	Retry Settings	Indicates the settings about retries when polling processing fails. The retry interval and the number of retries are displayed. If the retry interval is `0`, a retry occurs immediately after polling processing fails. If the number of retries is `0`, no retry occurs. If the retry setting is not specified, **Disabled** is displayed.
Agents	**Name**	Indicates the service ID of the Agent (Agent for SAN Switch, Agent for Oracle, or Agent for RAID Map) or **HDvM**.[1]
	Type	Indicates the type of the Agent or Device Manager.[1]
	Polling Schedule	Indicates the polling schedule for each Agent. The specified polling times are displayed with each polling time separated by a comma (,). If the default setting is used, **Default** is displayed. If the settings specify that polling is not to be performed, nothing is displayed.
	Last Polling Time	Indicates the time at which the last polling processing was performed. If no polling processing has been performed or **Status** is **Available**, **n/a** is displayed.
	Related Agent	The related Agent is displayed.[1]

Note 1:

The displayed items vary depending on the combination of Agents. The following table lists the displayed items.

Name	Type	Related Agent	Monitoring targets
HDvM	**HDvM**	Service ID of Agent for RAID	Storage system
		Blank	Host (Agentless mode)
			Hypervisor
Service ID of Agent for RAID Map	If Agent for Platform is for Windows, **Windows** is displayed. Otherwise, **Unix** is displayed.	Service ID of Agent for Platform	Host (Agentless mode)
Service ID of Agent for SAN Switch	**Switch**	Blank	Switch
Service ID of Agent for Oracle	**Oracle**	Blank	Oracle

3. If you want to check the current information in the Data Polling window, click **Refresh**.

   The **Data Polling** window is refreshed to display the current information.

While the Tuning Manager server is polling, the system is unable to obtain the latest Agent information. During this time, the Tuning Manager server displays a message that indicates that the Tuning Manager server is currently polling in the message area.

Note: You can estimate how long polling will typically require by examining the system log.

Editing the polling settings

You can edit the polling settings at one time by using a window for editing the polling settings. This section describes how to edit the polling settings.

For details on the valid values for entries, see Data entry guidelines for the Tuning Manager GUI on page 1-6.

For details on the valid values for entries, see the *Server Administration Guide*.

To edit the polling settings:

1. Click **Administration** in the explorer area.
2. Click **Data Polling** in the submenu.

   The Data Polling window appears.
3. Click **Edit General Polling Setting**.

   The Edit Polling Settings dialog box appears.

4. In **Default Polling Schedule**, select the check boxes in the table.
   - To select all the check boxes:

     Click **Select All**.
   - To clear all the check boxes:

     Click **Deselect All**.

     If you clear all the check boxes, polling is not performed.
   - To select the check boxes for odd hours:

     Click **Select Odd Hours**.
   - To select the check boxes for even hours:

     Click **Select Even Hours**.
5. Enter a value in **Data Backdate Offset** of **Edit Polling Schedule**.

Note: For **Default Polling Schedule**, specify an appropriate time at which to perform polling so that the polling interval is equal to or shorter than the value specified for Data Backdate Offset.

Example:

If you specify the following settings, change the settings so that polling processing is performed once between 11:00 and 14:00 because data processed from 5:00 to 10:00 cannot be collected.

Polling times specified in **Default Polling Schedule**: 5:00 and 20:00

Period specified for **Edit Polling Schedule**: 9 hours

6. In **Polling Retry Settings**, enter the retry interval and the number of retries.

Note: Although the Tuning Manager server can retry polling when a polling attempt for an Agent fails, use the default setting unless the Technical Support Center asks.

7. Click **OK** to save the settings. (Click **Cancel** to discard the changes.)

Polling is usually performed by following the default polling schedule. However, you can specify the polling schedule for each information source.

To specify a time to perform polling by information source:

1. Click **Administration** in the explorer area.
2. Click **Data Polling** in the submenu.

   The Data Polling window appears.
3. Select the check box of the information source for which you want to specify the schedule, and then click **Edit Polling Schedule**.

   The Edit Polling Schedule window appears.
4. Select the **Specify polling schedule** radio button, and then select the check boxes in the table.
   - To select all the check boxes:

     Click **Select All**.
   - To clear all the check boxes:

Click **Deselect All**.

If you clear all the check boxes, polling is not performed.

- To select the check boxes for odd hours:

  Click **Select Odd Hours**.

- To select the check boxes for even hours:

  Click **Select Even Hours**.

5. Click **OK** to save the settings. (Click **Cancel** to discard the changes.)

Operating polling manually

This section describes how to operate polling manually.

Starting polling manually

A Tuning Manager server allows you to start polling manually. When you start polling, valid data for the period from the last polling time to the current time is collected from all connected Agents. This has the following benefits:

- Provides users with the most recent data possible for reporting purposes.
- System administrators can start polling manually when activity of the Tuning Manager server host is relatively low.

Once data is collected from information sources, the data will not be collected again. For example, if a polling schedule is set to 10:00, and you perform polling manually at 10:30, you can get data only from the information sources from which data was not collected at 10:00.

To start polling now:

1. Click **Administration** in the explorer area.
2. Click **Data Polling** in the submenu.

   The Data Polling window appears.
3. Click **Start Polling Now**.

   A window showing the progress of the processing appears, and the processing is performed.

Stopping polling manually

Depending on the configuration of the information sources, polling processing performed by a Tuning Manager server might take a long time. For this reason, a function to stop polling is provided in the Tuning Manager server.

This function is available only during active polling sessions. When you have stopped polling, the message area displays a message indicating that polling was stopped before completion. Once this message appears, it continues to be displayed until the Tuning Manager server is restarted.

To stop an active polling session:

1. Click **Administration** in the explorer area.
2. Click **Data Polling** in the submenu.

   The Data Polling window appears.
3. Click **Interrupt Polling**.

   A window showing the progress of the processing appears, and the processing is performed.

About polling during Daylight Saving Time changes

The following sections provide information about polling operations during Daylight Saving Time (DST) changes:

- Polling data recorded during Daylight Saving Time changes on page 6-27
- Polling schedule during Daylight Saving Time changes on page 6-29
- Specifying a time managed by a Tuning Manager server on page 6-30

Polling data recorded during Daylight Saving Time changes

A Tuning Manager server uses the local time rather than Greenwich Mean Time (GMT) to store date-oriented data. If the computer running the Tuning Manager server automatically adjusts its local time to account for Daylight Saving Time changes during the polling schedule, the data collected at the point the time changes might be affected as follows:

Changing from Standard Time to Daylight Saving Time:

- The Report window for the time the change occurred will not be available, since the local time on the computer is automatically advanced by one hour during the collection period.
- If you attempt to display the Report window for the time the change occurred, the Tuning Manager server automatically adjusts to display the next available Report window.
- The data points for the time the change occurred will not appear in any historical or forecast reports.

Figure 6-1 Example of adjustment from Pacific Standard Time to Pacific Daylight Time on page 6-28 provides an example of this behavior:

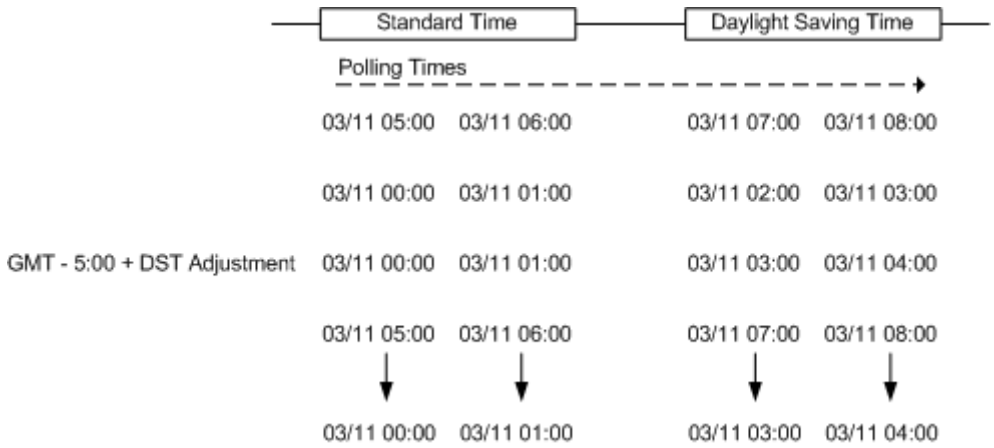

Figure 6-1 Example of adjustment from Pacific Standard Time to Pacific Daylight Time

Note: Data for the time period from the time at which the time is switched to Daylight Saving Time to 02:00 will not exist.

If you set `03/1102:00` in the Report window, the Tuning Manager server will automatically adjust the setting to `03/1103:00`.

The data at `03/1102:00` will not be displayed in historical and forecast reports.

Changing from Daylight Saving Time to Standard Time:

- A duplicate **Report** window is created, since the local time is automatically set back to the previous hour, for which the Tuning Manager server has already collected data.
- The duplicate **Report** window for the time the change occurred is deleted.
- The data points for the next period after the time change occurred will appear twice in reports, but only one instance will display the collected metrics.

The following figure provides an example of this behavior:

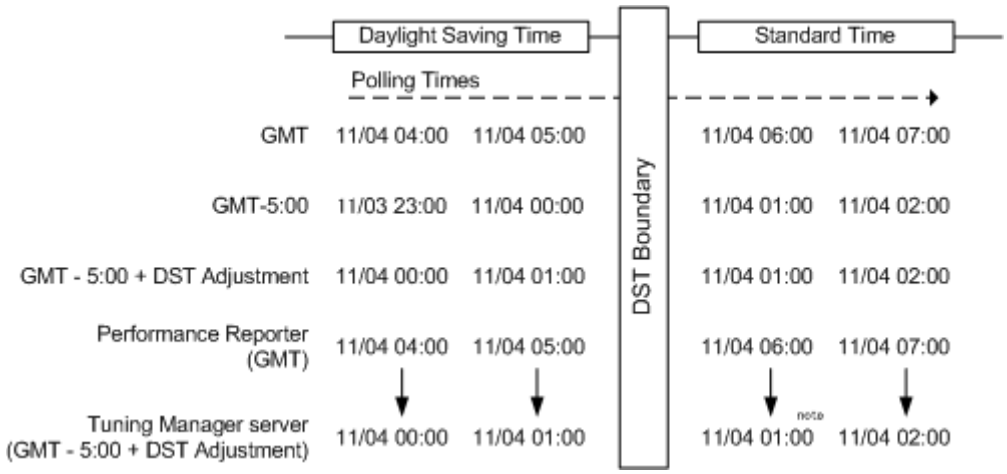

Figure 6-2 Example of adjustment from Pacific Daylight Time to Pacific Standard Time

Note: The Tuning Manager server deletes the duplicated data created when the time is switched from Daylight Saving Time. The data points for this time will appear twice in historical and forecast reports, but only one of the duplicated data points will have metrics displayed.

Polling schedule during Daylight Saving Time changes

The window for setting the polling schedule displays Standard Time even during the period when Daylight Saving Time (DST) is in effect. During this period, if you set a time for polling (e.g., at 12:00 Standard Time), the polling will be executed at the corresponding DST time (e.g., at 13:00 DST).

If polling is scheduled at the point when Daylight Saving Time starts or ends, as specified in the conditions shown in the table below, the polling schedule and data aggregation might not be performed at the specified time. This problem occurs only at the point when Daylight Saving Time starts or ends. Except for this point, the polling schedule is performed normally.

If you take countermeasures to prevent the above problem, do so at least 24 hours before the point when Daylight Saving Time starts or ends. If you cancel the countermeasures, do so at least one hour after the point when Daylight Saving Time starts or ends.

Table 6-7 Polling schedule performed during Daylight Saving Time changes

Daylight Saving Time	Conditions	Countermeasures
Starting time	When either of the following times is selected in the polling schedule: • The time when Daylight Saving Time starts Example: For the year 2007, 03:00 in East Standard Time (US and Canada) • The time that is one hour before Daylight Saving Time starts Example: For the year 2007, 02:00 in East Standard Time (US and Canada)	In the polling schedule, select the time when Daylight Saving Time starts and the time that is one hour before the start of Daylight Saving Time.
Ending time	When either of the following times is selected in the polling schedule: • The time when Daylight Saving Time ends Example: For the year 2007, 02:00 in East Standard Time (US and Canada) • The time that is one hour before Daylight Saving Time ends Example: For the year 2007, 01:00 in East Standard Time (US and Canada)	In the polling schedule, select the time when Daylight Saving Time ends and the time that is one hour before the end of Daylight Saving Time.

Specifying a time managed by a Tuning Manager server

The Tuning Manager server allows you to specify a range of dates and times to be displayed in the report window. This subsection provides notes on specifying a time. Around the time when Daylight Saving Time (DST) goes into effect, if you use the window for setting the polling schedule to specify a time and date that do not exist because of the effect of DST, the Tuning Manager server assumes that the specified time and date are a DST time and date. Also, when DST goes back to Standard Time (e.g., in the U.S., the morning of the first Sunday in November), you cannot specify the time that is duplicated (e.g., 01:00) for the polling date.

The following is an example for Eastern Standard Time (GMT -05:00):

- If 2007/03/11 2:00 is specified in the time entry window

  The Tuning Manager server assumes that 2007/03/11 3:00 EDT (Eastern Daylight Time) is specified.
- If 2007/11/04 1:00 is specified in the time entry window

2007/11/04 1:00 EDT cannot be specified because the Tuning Manager server assumes that 2007/11/04 1:00 EST (Eastern Standard Time) has been specified.

Data retention periods

A Tuning Manager server allows you to set the retention periods of configuration and capacity information stored in the database. Data which is older than the retention period is automatically deleted from the database.

To conserve resources and maximize the performance of the Tuning Manager server, we recommend that you set the data retention periods according to your system environment. For example, if polling is interrupted due to insufficient free capacity in the database, you can shorten the data retention period to lower the database usage rate.

You can also lower database utilization by increasing the total database capacity.

For details on how to increase the total database capacity, see Managing the Tuning Manager server database on page 3-1.

For details on how to increase the total database capacity, see the *Server Administration Guide*.

Checking the data retention period settings

To check the retention periods of configuration and capacity information in the Tuning Manager server database:

1. Click **Administration** in the explorer area.
2. Click **Data Retention** in the submenu.

   A window for checking the data retention periods appears. The following table describes the contents of each column in the window.

Table 6-8 Information displayed in the window for checking the settings for data retention periods

Displayed information		Description
Metrics data	**Hourly**	Indicates the period of time that hourly data is to be retained.
	Daily	Indicates the period of time that daily data is to be retained.
	Weekly	Indicates the period of time that weekly data is to be retained.
	Monthly	Indicates the period of time that monthly data is to be retained.
	Yearly	Indicates the period of time that yearly data is to be retained.

Displayed information		Description
Configuration History	**Host Configuration**	Indicates the period of time that the host and hypervisor configuration history is to be retained.
	Array Configuration	Indicates the period of time that the device configuration history is to be retained.
	Fabric Configuration	Indicates the period of time that the fabric configuration history is to be retained.
	Application Configuration	Indicates the period of time that the application configuration history is to be retained.
System Reports		Indicates the period of time that the polling execution result is to be retained.

Editing the data retention periods

This section describes how to edit the retention periods for configuration and capacity information in the Tuning Manager server database.

For details on the valid values for entries, see Data entry guidelines for the Tuning Manager GUI on page 1-6.

For details on the valid values for entries, see the *Server Administration Guide*.

To edit the retention periods:

1. Click **Administration** in the explorer area.
2. Click **Data Retention** in the submenu.

   A window for checking the data retention periods appears.
3. Click **Edit Data Retention Settings**.

   A dialog box for editing the data retention periods appears.
4. In **Metrics data**, specify the period of time that the capacity data of resources is to be retained.
   - **Hourly**

     Specify a value in the field and select the unit of time. The default is 7 days.
   - **Daily**

     Specify a value in the field and select the unit of time. The default is 3 months.
   - **Weekly**

     Specify a value in the field and select the unit of time. The default is 3 months.
   - **Monthly**

     Specify a value in the field and select the unit of time. The default is 2 years.

- **Yearly**

  Specify a value in the field. The unit of time is years. The default is 5 years.

5. In **Configuration History**, specify the period of time that the configuration history is to be retained.
   - **Host Configuration**

     Specify a value in the field and select the unit of time. The default is 1 year.
   - **Array Configuration**

     Specify a value in the field and select the unit of time. The default is 1 year.
   - **Fabric Configuration**

     Specify a value in the field and select the unit of time. The default is 1 year.
   - **Application Configuration**

     Specify a value in the field and select the unit of time. The default is 1 year.
6. In **System Reports**, specify the period of time that the polling result is to be retained.

   Specify a value in the field and select the unit of time. The default is 3 months.
7. To save the settings, click **OK**. To discard the settings, click **Cancel**.
8. To delete data that is older than the new data retention periods that you have set, click the **Refresh** button in the Data Polling window.

   Information in the Data Polling window is updated, and the Tuning Manager server deletes the data that is older than the data retention periods.

System reports

A Tuning Manager server provides functions for reporting about polling processing and notification of system alerts. The function for notification of system alerts monitors the execution status of polling processing, and send an email to a specified destination.

In the System Report window, you can check or set the following functions:

- Polling status reports

  You can check polling and Agents information.
- System alerts

  You can specify a destination to send an email when an error occurs in the polling execution result. The conditions specified for the system alerts are called the alert definition. In the Tuning Manager server, you can set a single alert definition. System alerts do not support SSL.

Checking polling status reports

In the polling status reports, you can check the entire processing information that includes the execution time and completion time, and the detailed information of each Agent. After polling starts, several minutes might be required before the polling status can be checked.

To check a polling status report:

1. Click **Administration** in the explorer area.
2. Click **System Reports** in the submenu.

   The System Reports window appears.
3. Select the **Polling Status Report** tab.

   A window for checking the polling status appears. Table 6-9 Information displayed in the window for checking the polling status on page 6-34 describes the contents of each column in the Polling Status Report.
4. To check details about the polling, click any time in **Polling Time**.

   A window for checking the detailed polling result appears. Table 6-10 Information displayed in the window for checking the detailed polling result on page 6-35 describes the contents of each column in the window.

Table 6-9 Information displayed in the window for checking the polling status

Displayed information	Description
Polling Time	Displays the time the polling was performed. Click this time to display details. If the status is **In Polling**, nothing is displayed even if you click this time.
Mode	Displays one of the following polling types: **Scheduled** or **Manual**.
Status	Displays one of the following polling statuses: **In Polling**, **Done**, **Interrupted**, **Skipped**, **Error**, **Warning**, or **Fatal**.
Total Time	Displays the total amount of time the entire polling operation took to complete. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
Agents Updated	Displays the number of connected Agents that were updated during the polling period. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
Agents Not Updated	Displays the number of connected Agents that were not updated during the polling period. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
Resources Monitored	Displays the number of resources being monitored by the Tuning Manager server when the polling ended. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.

Table 6-10 Information displayed in the window for checking the detailed polling result

Displayed information		Description
Polling Information	**Mode**	Displays one of the following polling types: **Scheduled** or **Manual**.
	Status	Displays one of the following polling statuses: **In Polling**, **Done**, **Interrupted**, **Skipped**, **Error**, **Warning**, or **Fatal**.
	Agent Updated	Displays the number of connected Agents that were updated during the polling period. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
	Agents Not Updated	Displays the number of connected Agents that were not updated during the polling period. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
	Resources Monitored	Displays the number of resources being monitored by the Tuning Manager server when the polling ended. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
	Total Time	Displays the total amount of time the entire polling operation took to complete. If the status is **Skipped**, **n/a** is displayed. If the status is **In Polling**, the current progress value is displayed.
	Time Consumed in Agent Refresh	Displays the time the Agent takes to refresh.
	Time Consumed in Data Deletion	Displays the time required to delete data. When the status is **Skipped**, **n/a** is displayed.
	Time Consumed in Data Collection	Displays the time required to collect data. When the status is **Skipped**, **n/a** is displayed.
	Time Consumed in Data Aggregation	Displays the time required to aggregate data. When the status is **Skipped**, **n/a** is displayed.

Displayed information		Description
Agents	**Name**	Displays the service ID of the Agent (Agent for SAN Switch, Agent for Oracle, or Agent for RAID Map) or **HDvM**.
	Type	Displays the type of the Agent or Device Manager.
	Polling Time	Displays the time at which the last polling processing was performed for each Agent.
	Record Taken	Displays the data collection period, that is, the start time and end time of the period during which data was collected from the Agent.
	Last Record	Displays the time that the last record whose data was collected from the Agent was collected.
	Time Consumed in Data Collection	Displays the time required to collect data from the Agent.
	Resources Monitored	Displays the number of resources being monitored by the Tuning Manager server when the polling ended.

Checking system alerts

To check the system alert settings and report contents:

1. Click **Administration** in the explorer area.
2. Click **System Reports** in the submenu.

   The System Reports window appears.
3. Select the **System Alerts Settings** tab.

   A window for checking the system alert settings appears. The following table describes the contents of each column in the window.

Table 6-11 Information displayed in the window for checking the system alert settings

Displayed information		Description
Alert Definitions	**Alerts for agent status**	Issues system alerts when data could not be collected from Device Manager and Agents even though the specified time has been exceeded. **Enabled** or **Disabled** is displayed. When **Enabled** is displayed, the monitoring time is displayed.
	Alerts for polling skip	Issues system alerts when the specified polling has been skipped because polling is already being performed. If the previous polling has not completed at the time when the current polling starts, the current polling is skipped. **Enabled** or **Disabled** is displayed.
	Alerts for time consumed in polling	Issues system alerts when the period during which polling is being performed has exceeded the specified period. **Enabled** or **Disabled** is displayed. When Enabled is displayed, the monitoring time is displayed.
	Alerts for error in polling	Issues system alerts when polling is interrupted due to a fatal error. **Enabled** or **Disabled** is displayed.
	Alerts for DB space	Issues system alerts when there is insufficient capacity for the database for polling. **Enabled** or **Disabled** is displayed.
Alert Notification	**Email To**	Indicates the destination email address.
	Mail Server	Indicates the mail server used for sending email. The host name or IP address is displayed.
	SMTP Authentication	Indicates that SMTP authentication is used to send email. **Enabled** or **Disabled** is displayed.
	User Name	Indicates the user name used by SMTP authentication. If SMTP authentication is set to **Disabled**, nothing is displayed.

Specifying Agent polling status alerts

This topic describes how to specify system alerts for Agents. For details on the valid values for entries, see Data entry guidelines for the Tuning Manager GUI on page 1-6.

To specify system alerts for Agents:

1. Click **Administration** in the explorer area.
2. Click **System Reports** in the submenu.

   The System Reports window appears.
3. Select the **System Alerts Settings** tab.

   A window for checking system alerts appears.
4. Click **Edit System Alerts**.

   A dialog box for editing system alerts appears.
5. In **Alert Definitions**, specify the alert definition.

- To monitor the polling status:

  Select the **Alerts for agent status** check box, and specify a time (hour) in the range from 1 to 24. The default is 24.

- To monitor polling skipped:

  Select the **Alerts for polling skip** check box.

- To monitor the polling time:

  Select the **Alerts for time consumed in polling** check box, and specify the time (hour) in the range from 1 to 24. The recommended value is 1. The default is 3.

- To monitor the polling processing:

  Select the **Alerts for error in polling** check box.

- To monitor the database for insufficient capacity:

  Select the **Alerts for DB space** check box.

6. In **Alert Notification**, specify the email server and the destination.

   - **E-mail To**

     Enter the destination email address. You can register only one email address.

   - **Mail Server**

     Enter the host name or IP address of the email server.

7. To perform **SMTP** authentication, select the SMTP check box in **Alert Notification**, and then set the following items:

   - **UserName**

     Set the user name.

   - **Password**

     To set a password, select the **Edit** check box, and then enter the password.

8. If you want to send a test email, click **Send Test E-mail**.

   A test email is sent and a window for checking the result appears. After checking the result, click **Close** to close the window.

9. Click **OK**.

   The settings are saved.

7

Error handling procedures

This chapter explains how to handle any errors that may occur while you are using Main Console and Performance Reporter and includes the following topics:

- Error handling procedures
- Troubleshooting
- Data that must be collected if a problem occurs
- Windows event log
- UNIX syslog
- Main Console logs
- Performance Reporter log
- API log
- Collecting maintenance information
- Calling the Hitachi Data Systems technical support center

Error handling procedures

This section describes the procedures for handling errors that might occur while you are using Main Console and Performance Reporter.

For details on the procedures for handling errors that might occur while you are using Collection Manager and the Agent, see the *Tuning Manager Agent Administration Guide*.

- Check messages:
  - If a problem occurs, check any messages output to the GUI or maintenance information, and then follow the instructions provided. In addition, check the maintenance information to determine the cause of the problem, and then take appropriate action.
  - For details on messages, see the *Tuning Manager Messages*.
  - For details on how to locate and check maintenance information, see Collecting maintenance information on page 7-25.
- Use the troubleshooting steps:
  - If no messages are output when a problem occurs, or if you are unable to correct the problem even after following message instructions, take the actions described in Troubleshooting on page 8-14.
- Collect maintenance information, and then contact the Technical Support Center:
  - If you are unable to correct the problem despite following the instructions in the message and taking the actions described in Troubleshooting on page 8-14, support is available. You can receive technical support by collecting the necessary maintenance information and contacting the Technical Support Center.
  - The command used to collect maintenance information differs depending on which program is installed. Check which program is installed on the host where the problem occurred, and then execute the appropriate command as listed in the following table.

Program installed on host where problem occurred	Command to acquire maintenance information
Tuning Manager server	**hcmds64getlogs**
Agents	**jpcras**
Tuning Manager server and Agents	- **hcmds64getlogs** - **jpcras**

After the **hcmds64getlogs** command has finished collecting maintenance information, send the maintenance information collected by the **hcmds64getlogs** command to the Technical Support Center.

If Tuning Manager server and Agents are installed in the same host, execute the **jpcras** command after executing the **hcmds64getlogs** command as follows:

```
jpcras <directory-name> all all
```

After executing the `jpcras` command, provide the gathered information to the support center.

- For details on how to collect the necessary information, see Data that must be collected if a problem occurs on page 7-12.
- For details on how to call the Technical Support Center, see Calling the Hitachi Data Systems technical support center on page 7-32.

Troubleshooting

This section describes how to determine the cause of and correct a problem when the cause cannot be determined from the messages and logs.

Data update is delayed

Agent operation is based on the clock of the host where the Agent is installed. If the system clock on the Agent host is earlier than the system clock on the Tuning Manager server host, data might be collected from the corresponding Agent for time periods earlier than the specified polling periods. This can occur because the Tuning Manager server cannot collect data from the Agents on a lagging machine, because the Agents do not report data for a time that has not yet occurred.

Example:

The clock on the host running the Tuning Manager server is set to 2:00 pm.

The clock on the host running the Agent is set to 1:50 pm.

The system administrator has set 2:00 pm as a polling time on the Tuning Manager server. When the Tuning Manager server queries the Agent for data, the Agent has nothing to report because the local clock has not yet reached 2:00 pm.

To identify a time lag problem, from the System Report window examine the window for checking the polling status and the window for checking the detailed information about polling processing results. The Agent on a host with a lagging clock will display a clear difference from the Agents on hosts with correct clocks. Compare the **Polling Time** and **Last Record** columns.

If the timestamp in the **Polling Time** column of an Agent is close to the timestamp in the **Polling Times** column of other Agents but the value in the **Last Record** column of the Agent is later than the value in the **Last Record** column of other Agents, the clock on the host running the Agent might be slow.

To display the **Last Record** and **Polling Time** columns:

1. Click **Administration** in the explorer area.
2. Click **Polling Status** in the submenu.

   The System Reports window is displayed.
3. Select the Polling Status Report tab.

   A window for checking the polling status is displayed. Check the **Polling Time** column.

4. Click the time in the **Polling Time** column.

   A window for checking the detailed information about polling processing results is displayed. Check the **Last Record** column.

If the results indicate that the system clock on the Agent host is earlier than the system clock on the Tuning Manager server host, you need to adjust the system clock. For details, see About machine time differences on page 1-39.

Database capacity is insufficient

If there is not enough capacity in the database, you can increase its capacity. For details on how to expand the database, see Expanding the total database capacity on page 3-11.

By setting an alert, you can be notified by email or other means whenever a threshold value has been reached. You can also use the **htm-db-status** command to check the database capacity. For details on how to set alerts, see Specifying Agent polling status alerts on page 6-37. For details on how to check the database capacity, see Displaying the database capacity on page 3-2.

If you cannot expand the database because its capacity has already reached the maximum (32 GB), or if you want to increase the number of databases to reduce the amount of data stored in each database, add another Tuning Manager server host to increase the number of databases. By adding another Tuning Manager server host, you can reduce the amount of data stored in each database.

For details on how to add Tuning Manager server hosts, see Adding an additional Tuning Manager server host on page 7-4.

Number of Agent instances exceeds the maximum number monitored by a single Tuning Manager server

If the number of monitored Agent instances continues to increase, the number of Agent instances might exceed the maximum number of Agents that can be monitored by a single Tuning Manager server. In this case, you need to prepare additional Tuning Manager servers, and then distribute the data collected up to that point over the servers to reduce the number of Agent instances monitored by each Tuning Manager server. For details, see Adding an additional Tuning Manager server host on page 7-4.

Adding an additional Tuning Manager server host

The following example explains how to add an additional Tuning Manager server host by using the information provided in Table 7-1 Example of adding a Tuning Manager server host on page 7-5. For convenience of explanation, this example assumes that there are eight Agent instances.

Table 7-1 Example of adding a Tuning Manager server host

Before adding a Tuning Manager server host			After adding a Tuning Manager server host		
Tuning Manager server host	**Monitored Agents**		**Tuning Manager server host**	**Monitored Agents**	
host_A • Device Manager • Tuning Manager	host_A	Agent_1 Agent_2	host_A • Device Manager • Tuning Manager	host_A	Agent_1 Agent_2
				host_B	Agent_3 Agent_4
	host_B	Agent_3 Agent_4	host_Z • Device Manager • Tuning Manager	host_C	Agent_5 Agent_6 Agent_7 Agent_8
	host_C	Agent_5 Agent_6 Agent_7 Agent_8			

As shown in Table 7-1 Example of adding a Tuning Manager server host on page 7-5, before adding a Tuning Manager server host, the Tuning Manager server installed on the server host_A monitors all Agents (Agent_1 through Agent_8).

In the following procedure, you set up a new server on host_Z, and then have that Tuning Manager server monitor some Agents (Agent_5 through Agent_8) that are currently monitored by host_A. As a result, the configuration changes from the status shown in the Before Adding a Tuning Manager Server Host column to the status shown in the After Adding a Tuning Manager Server Host column in the above table.

To have host_Z monitor Agent_5 through Agent_8:

1. Install Device Manager and a Tuning Manager server on host_Z.

   Install a version of the Tuning Manager server that is the same as or later than the version installed on host_A. You can install Device Manager and the Tuning Manager server on different hosts.

   For details on how to install Device Manager, see the *Hitachi Command Suite Installation and Configuration Guide*. For details on how to install the Tuning Manager server, see the *Tuning Manager Installation Guide*.

2. Set up a connection between Device Manager and the Tuning Manager server installed on host_Z.

   For details on how to set up the connection-target Device Manager, see the information about setting up the connection-target Device Manager.

3. Stop the Agents running on host_C whose connection-target you want to change from host_A to host_Z (Agent_5 through Agent_8).

   For details on how to stop Agents, see the *Tuning Manager Agent Administration Guide*.

4. On host_A, execute the **`jpcctrl delete`** command to delete information registered in Collection Manager for Agent_5 through Agent_8.

   For details on how to use the **`jpcctrl delete`** command to delete Agent information, see the *Tuning Manager CLI Reference Guide*.

5. On host_A, stop the Performance Reporter and Collection Manager services.

   For details on how to stop the Performance Reporter services, see Stopping services on page 1-23.

   For details on how to stop the Collection Manager services, see the *Tuning Manager Agent Administration Guide*.

6. On host_A, start the Performance Reporter and Collection Manager services.

   For details on how to start the Performance Reporter services, see Starting services on page 1-21.

   For details on how to start the Collection Manager services, see the *Tuning Manager Agent Administration Guide*.

7. Make sure that Agent_5 through Agent_8 are no longer displayed in Main Console and Performance Reporter.

   To make sure that the Agents are no longer displayed in Main Console:

   Make sure that the Agents are no longer displayed in **Agents** in the Data Polling window. Before checking information in the Data Polling window, click the **Refresh** button to update the displayed information.

   For details on the information displayed in the Data Polling window, see Checking the polling settings on page 6-22.

   To make sure that the Agents are no longer displayed in Performance Reporter:

   Click **Agents** in the Performance Reporter Navigation frame to display the Agent hierarchy, and then make sure that the Agents whose information has been deleted are no longer displayed.

   For details on how to display the Agent hierarchy in Performance Reporter, see the *Tuning Manager User Guide*.

8. Execute the **`hcmds64dbtrans`** command to migrate the information stored in the host_A database to the host_Z database.

   For details on how to use the **`hcmds64dbtrans`** command, see *Tuning Manager CLI Reference*.

9. Execute the **`jpcnshostname`** command on host_C to specify host_Z as the connection target of Agent_5 through Agent_8.

For details on how to use the **jpcnshostname** command to specify the connection targets for Agents, see the *Tuning Manager Installation Guide*.

Note: You cannot change the connection target of the Agents that belong to host_A (Agent_1 and Agent_2) to host_Z. Also, if you have created multiple instances in the same host, you cannot specify a different connection target for each of those instances. If an Agent whose connection target has been changed is monitoring a storage system, you need to have Device Manager which connects to the Tuning Manager server on host_Z monitor that storage system.

10. On host_A and host_Z, start Device Manager and the Tuning Manager server.
11. Start the Agents whose connection target you changed to host_Z (Agent_5 through Agent_8).
12. Set polling on host_Z.

    For details on how to set polling, see Configuring the polling settings on page 6-21.

Desktop heap is insufficient

In a Windows environment where a Tuning Manager server is operated, the desktop heap might be insufficient and the `KFPS01820-E` message (`endstate=8000`) might be output to the event log file. If this message is output, database processing of the Tuning Manager server is stopped because the desktop heap is insufficient.

If such a problem occurs, see Increasing the desktop heap size on page 7-7 for the steps to resolve this problem.

Increasing the desktop heap size

To increase the desktop heap size:

1. Stop all Hitachi Command Suite product services.

   For details, see Stopping services on page 1-23.
2. Make sure that all Hitachi Command Suite product services are stopped.

   For details, see Checking service statuses (at service startup) on page 1-22.
3. Use the registry editor to change the desktop heap size.
   - Registry key:`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\SubSystems`
   - Registry value: `Windows`
   - Value: `%SystemRoot%\system32\csrss.exe ObjectDirectory=\Windows SharedSection=1024,3072,512 Windows=On SubSystemType=Windows ServerDll=basesrv,1 ServerDll=winsrv:UserServerDllInitialization,3 ServerDll=winsrv:ConServerDllInitialization,2 ProfileControl=Off MaxRequestThreads=16`

You need to change only the third parameter `512` in the `SharedSection=1024,3072,512` part. If there is a fourth parameter, you still need to change only the third parameter. Change the third parameter from `512` to `1024`.

4. Restart Windows.

If the desk heap is still insufficient even after changing the heap size from `512` to `1024`, increase the heap size by 256 KB or 512 KB to make sure that the desktop heap is no longer insufficient.

The amount of desktop heap used depends on services or applications running on the machine. If you increase the heap size, the number of desktops that can be created in the system will decrease because the total amount of desktop heap size is limited. Because the appropriate desktop heap size depends on the system environment, adjust the heap size appropriately for your system.

Agents are not displayed in the data polling window

If no Agents are displayed in the Data Polling window, make sure that installation and setup have been performed correctly.

If no Agents are displayed even after installation and setup have been performed correctly, more than one Agent might be specified to monitor the same resource. Revise the Agent settings to make sure that each resource is monitored by one Agent.

All user accounts are locked

If all user accounts have been locked, use the **`hcmds64unlockaccount`** command, which unlocks the user accounts that have User Management permission.

Note: Execute the **`hcmds64unlockaccount`** command on a host on which Device Manager has been installed.

To execute the **`hcmds64unlockaccount`** command, you must have Administrator or root permissions for the OS.

For details on how to unlock user accounts that do not have User Management permission, see Changing the lock status of a user account on page 4-10.

You cannot use the **`hcmds64unlockaccount`** command to unlock an account for which no password is set. To unlock such an account, set a password for it. For details on how to set a password, see Changing passwords on page 4-9.

The following procedure shows how to use the command to unlock a user account. For details on the Common Component installation folder used in this procedure, see the *Tuning Manager Installation Guide*.

To unlock a user account by using the **`hcmds64unlockaccount`** command:

1. Confirm that the Common Component and HiRDB services have started.

For details on how to check the status of services, see Checking service statuses (at service startup) on page 1-22.

If the Common Component and HiRDB services have not started, start them. For details on how to start the Common Component and HiRDB services, see Starting services on page 1-21.

2. Execute the following command to unlock the target user account:

   Windows:

   ```
   Common-Component-installation-folder\bin\hcmds64unlockaccount /user user-ID /pass password
   ```

   For *user-ID*, specify the user ID of the user account you want to unlock. If you execute the command without the `user` option, you will be prompted to specify a user ID. For *password*, specify the password for the corresponding user account you want to unlock. If you execute the command without the `pass` option, you will be prompted to specify a password.

For details on the **hcmds64unlockaccount** command, see the *Tuning Manager CLI Reference Guide*.

When the hcmds64db and hcmds64dbtrans commands fail to recover the database

If the system area is corrupted, you can neither use **hcmds64db** nor **hcmds64dbtrans** commands to restore the database.

You can use the **hcmds64dbrepair** command to restore the database based on the backup data obtained from the **hcmds64dbtrans** command. The configuration and version information must match for the products backed up by the **hcmds64dbtrans** command.

Executing the hcmds64dbrepair command to restore the database

To restore the database based on the backup data obtained from the **hcmds64dbtrans** command:

1. Execute the following command:

   In Windows:

   ```
   hcmds64dbrepair -trans backup-data
   ```

   In UNIX:

   ```
   hcmds6464dbrepair /trans backup-data
   ```

For the `backup data` option, specify the working directory specified by the `workpath` option, or the absolute path to the archive file specified by the `file` option in the **hcmds64dbtrans** command. For information about **hcmds64dbtrans** command options, see Options for the hcmds64dbtrans command on page 3-14.

In a cluster environment, you can execute the **hcmds64dbrepair** command on active nodes, and not on standby nodes.

Note: You must execute the **hcmds64dbrepair** command as the final step when the database is corrupted and cannot be restored by using the **hcmds64db** or **hcmds64dbtrans** command. For information about executing the **hcmds64db** and **hcmds64dbtrans** commands, see the *Tuning Manager CLI Reference Guide*.

View Server service runs out of memory

The following sections describe how to increase the maximum size of the memory that can be used by the View Server service on both Windows and UNIX when a large number of reports are simultaneously displayed.

Windows

If you use Performance Reporter to collect a large amount of report data, a memory shortage can occur with the View Server service. If this occurs, the KAVJS5001-I or KAVJS3001-E message is output.

By default, the View Server service runs with a fixed maximum memory size of 256 MB. For this reason, a memory shortage can occur with the service according to the amount of data to be processed, regardless of how much memory is available in the system. (If this error occurs, the View Server service might output a KAVE00104-E message.)

You can avoid this problem by shortening the report data collection period or decreasing the number of reports for which data is to be simultaneously collected. Alternatively, you can increase the maximum size of the memory that can be used by the View Server service to increase the amount of report data that can be processed at one time.

To increase the maximum size of the memory that can be used by the View Server service:

1. Stop the Tuning Manager server.
2. Create an empty file with the name of `jvmopt.ini` in *Tuning-Manager-server-installation-folder*`\jp1pc\mgr\viewsvr`.
3. Use a text editor to add the following lines to `jvmopt.ini`:

   -Xmx{*maximum-memory-size-to-be-used-by-the-View-Server-service*}

   -Djava.rmi.dgc.leaseValue=172800000
4. Save `jvmopt.ini`.
5. Restart the Tuning Manager server.

The following example increases the maximum size of the memory that can be used by the View Server service to 384 MB:

```
-Xmx384M
```

```
-Djava.rmi.dgc.leaseValue=172800000
```

Note: The following notes apply to the proceeding procedure:

- The value specified with the `-Xmx` option ({*maximum-memory-size-to-be-used-by-the-View-Server-service*}) indicates the maximum size of the memory that can be used by the View Server service.
- The `-Xmx` option indicates only the maximum size of the memory that can be used by the View Server service. This amount of memory is not always used by the service.
- You cannot specify a value greater than 384 MB as the maximum size of the memory that can be used by the View Server service.
- If the Tuning Manager server is running in a logical host environment, change the `jvmopt.ini` file in the installation directory of both the active node and the standby node.

UNIX

If you use Performance Reporter to collect a large amount of report data, a memory shortage can occur with the View Server service. If this occurs, the KAVJS5001-I or KAVJS3001-E message is output.

By default, the View Server service runs with a fixed maximum memory size of 256 MB. For this reason, a memory shortage can occur with the service according to the amount of data to be processed, regardless of how much memory is available in the system. (If this error occurs, the View Server service might output a KAVE00104-E message.)

You can avoid this problem by shortening the report data collection period or decreasing the number of reports for which data is to be simultaneously collected. Alternatively, you can increase the maximum size of the memory that can be used by the View Server service to increase the amount of report data that can be processed at one time.

To increase the maximum size of the memory that can be used by the View Server service:

1. Stop the Tuning Manager server.
2. Use a text editor to search for and change the following line in `/opt/jp1pc/mgr/viewsvr/jpcvsvr`:

   -Xmx{*maximum-memory-size-to-be-used-by-the-View-Server-service*} \
3. `Save /opt/jp1pc/mgr/viewsvr/jpcvsvr`.
4. Restart the Tuning Manager server.

The following example increases the maximum size of the memory that can be used by the View Server service to 384 MB:

```
-Xmx384m \
```

Note: The following notes apply to the proceeding procedure:

- The value specified with the `-Xmx` option indicates the maximum size of the memory that can be used by the View Server service.
- The `-Xmx` option indicates only the maximum size of the memory that can be used by the View Server service. This amount of memory is not always used by the service.
- When you perform an overwrite installation, the `/opt/jp1pc/mgr/viewsvr/jpcvsvr` file is overwritten. If you increase the maximum size of the memory that can be used by the View Server service, back up the above file before overwriting the installation, and then overwrite the file with the backup.
- You cannot specify a value greater than 384 MB as the maximum size of the memory that can be used by the View Server service.
- If the Tuning Manager server is used in a logical host environment, edit `/opt/jp1pc/mgr/viewsvr/jpcvsvr` for both the active node and the standby node.

An attempt to connect to View Server from Main Console fails (KATN14858-E)

If you change the port number used by Collection Manager View Server using the **`jpcnsconfig port`** command, you cannot poll or display reports because an attempt to connect to View Server from Main Console fails, and the error message KATN14858-E is output. Main Console uses the Performance Reporter API to connect to View Server. Main Console uses 22286 as the default port number to connect View Server. Therefore, if you change the port number on the View Server side, an error occurs because the port numbers do not match, and the connection to View Server fails.

As a corrective measure, you must restart the Main Console after you change the port number in `config.xml` file. When you restart the Main Console, it automatically uses the new port number to connect to View Server.

Data that must be collected if a problem occurs

This section describes the data that must be collected if a problem occurs in a Tuning Manager server.

If a problem occurs in a Tuning Manager server, collect the relevant maintenance information. For details on how to collect the maintenance information, see Collecting maintenance information on page 7-25.

To determine the circumstances in which a problem has occurred, you need to check and record the time when the problem occurred and whether the problem can be replicated. For details on the information that must be checked and recorded, see Information required to determine the circumstances in which a problem has occurred on page 7-28.

The following maintenance information needs to be collected when a problem occurs in a Tuning Manager server.

Maintenance information is kept in the following four logs:

- Windows event log (Windows only)

  This log records status and problems in Windows. For details on the Windows event log, see Windows event log on page 7-13.

- syslog (UNIX only)

  This log records status and problems in UNIX. For details on syslog, see UNIX syslog on page 7-14.

- Main Console logs

  This maintenance information is output by Main Console. For details on the Main Console logs, see Main Console logs on page 7-16.

- Performance Reporter log

  This maintenance information is output by Performance Reporter. For details on the Performance Reporter log, see Performance Reporter log on page 7-20.

- API log

  This maintenance information is output by Tuning Manager API. For details, see Main Console logs on page 7-16.

In addition to the above logs, you also need to collect maintenance information common to Hitachi Command Suite products. For details, see Integrated logging on page 8-3.

If Device Manager and the Tuning Manager server are installed on different hosts, maintenance information for Device Manager is collected. For details about Device Manager maintenance information, see the *Hitachi Command Suite Administrator Guide*.

Windows event log

In the Windows Event Viewer window, the Windows event log data output by a Tuning Manager server can be identified by the term **HiCommand Log** displayed in the **Source** column.

Main Console and Performance Reporter output the Windows event log data in different formats. The following sections describe the two formats.

Main Console information output to the event log

The Main Console information output to the Windows event log is formatted as follows:

`program-id[`*process-id*`]:message`

The following table explains the content of the output information.

Table 7-2 Log file output items (for Main Console)

Item	Output	Length (bytes)
program-id	A program-symbolic name: `HTNM`	1-16
process-id	A process identifier as a decimal number	1-10
message	A message identifier and corresponding message. If an error occurred in Main Console, a message log ID is added to the beginning of the message text.	1-1,023

Following is an example of output information:

```
HTNM [0000038C]: KATN01309-I The database status was displayed.
```

Performance Reporter information output to the event log

The Performance Reporter information output to the Windows event log is formatted as follows:

program-id [*process-id*] : *message*

The following table explains the content of the output information.

Table 7-3 Log file output items (for Performance Reporter)

Item	Output	Length (bytes)
program-id	A program-symbolic name: `HTM-PR`	1-16
process-id	A process identifier as a decimal number	1-10
message	A message identifier and corresponding message. If an error occurred in Performance Reporter, a message log ID is added to the beginning of the message text.	1-1,023

Following is an example of output information:

```
HTM-PR [0000038C]: KAVJA5001-I The activation process will now
start.
```

UNIX syslog

To output information about a Tuning Manager server to syslog, you must edit the OS configuration file. Also, Main Console and Performance Reporter output syslog data in different formats.

The following sections describe how to edit the configuration file and the syslog formats.

Editing the configuration file to direct alert messages to syslog

A Tuning Manager server can permit users to direct alert messages to syslog. But this feature cannot function unless you first enable user logging at the OS level.

To enable user-generated alerts, edit `/etc/syslog.conf` to add the following line:

```
user.info /var/adm/messages
```

After editing and saving `/etc/syslog.conf`, restart `syslogd`.

Main Console information output to syslog

The Main Console information output to syslog is formatted as follows:

date-and-time host-name program-id [*process-id*] :*message*

Table 7-4 Syslog log file output items (for Main Console) on page 7-15 explains the content of the output information.

Table 7-4 Syslog log file output items (for Main Console)

Item	Output	Length (bytes)
date-and-time	The date and time in *monthddhh*:*mm*:*ss* format: *month* indicates the month. *dd* indicates the date. *hh* indicates the hour. *mm* indicates the minute. *ss* indicates the second.	15
host-name	A host name	1-255
program-id	A program-symbolic name: `HTNM`	1-16
process-id	A process identifier as a decimal number	1-10
message	A message identifier and corresponding message	1-1,023

Performance Reporter information output to syslog

The Performance Reporter information output to syslog is formatted as follows:

date-and-time host-name program-id [*process-id*] :*message*

The following table explains the content of the output information.

Table 7-5 Syslog log file output items (for Performance Reporter)

Item	Output	Length (bytes)
date-and-time	The date and time in *monthddhh*:*mm*:*ss* format: *month* indicates the month. *dd* indicates the date. *hh* indicates the hour. *mm* indicates the minute. *ss* indicates the second.	15

Item	Output	Length (bytes)
host-name	A host name	1-255
program-id	A program-symbolic name: `HTM-PR`	1-16
process-id	A process identifier as a decimal number	1-10
message	A message identifier and corresponding message	1-1,023

Main Console logs

This section describes how to configure the message log and trace log output by Main Console and describes the log output formats.

Output destinations of the Main Console log data

This section describes the output destinations of the main console log data.

Trace log

The Main Console trace log is output to the following types of files:

- `htmTrace#.log`

  Stores the trace log that is output by the Tuning Manager server.
- *command-name*`Trace#.log`

  Stores the trace log that is output by operational commands.
- `htmCliTrace#.log`

  Stores the trace log that is output by report commands.
- `htmCli__htmHostGroupsTrace#.log`

  Stores the trace log for the **`htm-hostgroups`** command
- `htmCli_htmCsvConvertTrace#.log`

  Stores the trace log for the **`htm-csv-convert`** command

Note: The hash mark (#) represents a log file number. The system creates a new file for the Main Console trace log whenever the size of the existing log file reaches 5 megabytes by incrementing the log file number that the system adds to the name of the file by 1. When 10 files have been used, the system overwrites the files beginning with the oldest file (round-robin method).

Storage locations of trace log files are as follows:

In Windows:

Tuning-Manager-server-installation-folder`\logs`

In Linux:

Tuning-Manager-server-installation-directory`/logs`

Message log

The Main Console message log is output to the following types of files:

- `htmMessage#.log`

  Stores the messages that are output by the Tuning Manager server.
- *command-name*`Message#.log`

  Stores the messages that are output by operational commands.
- `htmCliMessage#.log`

  Stores the messages that are output by report commands.
- `htmCli__htmHostGroupsMessage#.log`

  Stores the messages that are output by the **htm-hostgroups** command
- `htmCli_htmCsvConvertMessage#.log`

  Stores the messages that are output by the **htm-csv-convert** command

Note: The hash mark (#) represents a log file number. The system creates a new file for the Main Console message log whenever the size of the existing log file reaches the specified size by incrementing the log file number that the system adds to the name of the file by 1. When the specified number of files has been used, the system overwrites the files beginning with the oldest file (round-robin method).

Storage locations of message log files are as follows:

In Windows:

Tuning-Manager-server-installation-folder`\logs`

In Linux:

Tuning-Manager-server-installation-directory`/logs`

Output format for the Main Console message log

The following shows the output format for the Main Console message log (Table 7-6 Log file output format (for Main Console) on page 7-17 describes the output items):

number date time AP-name pid tid message-id type message

Table 7-6 Log file output format (for Main Console)

Item	Settings
number	Log serial number (4 bytes)
date	Log collection date: *yyyy*/*mm*/*dd* (10 bytes)
time	Log collection time: *hh*:*mm*:*ss.sss* Local time (JST) in milliseconds (12 bytes)
AP name	Process name: `HTnM`
pid	Process ID (8 bytes): Process ID assigned by the OS
tid	Thread identifier (8 bytes): Hash value of the `java/lang/Thread` object

Item	Settings
message-id	Message ID (11 bytes)
type	Event type code that determines the log output timing (4 bytes) For details, see Table 7-7 Log file event type codes (for Main Console) on page 7-18.
message	Message text The text is output in the following format: *class-name-with-package#method-name message-text*

Table 7-7 Log file event type codes (for Main Console)

Type code	Description
FB	Start of function
FE	End of function
EC	Occurrence of exception
FR	Error message
" "	Other

Changing the settings of the Main Console logs

To change the settings of the logs output by Main Console, change the settings specified in the logging property file.

The following shows the storage location of the logging property file:

In Windows:

Tuning-Manager-server-installation-folder\conf\logging.properties

In Linux:

Tuning-Manager-server-installation-directory/conf/logging.properties

To change the settings in the logging property file:

1. Stop the HiCommand TuningManager service.

   For details on how to stop the Tuning Manager server, see Tuning Manager server service (HiCommand Suite TuningManager) on page 1-23.

2. Use a text editor to open the logging property file, and then change the applicable values, which are in the following format: [*key*]=[*value*]

Note: If a hash mark (#) appears at the beginning of a line, the line is treated as a comment.

3. Start the Hitachi Command Suite Tuning Manager service.

   For details on how to start the Hitachi Command Suite Tuning Manager service, see Starting services on page 1-21.

Table 7-8 Properties in the logging property file

Key	Log file to edit	Description	Default
`logLevel`	`htmTrace#.log`	Indicates the trace level of the trace log files output by the Tuning Manager server. For details, see Levels of data in the Main Console trace log on page 7-19.	10
`logFileNumber`	`htmMessage#.log`	Indicates the number of message log files output by the Tuning Manager server*. Specify a value from 1 to 16.	10
`logFileSize`	`htmMessage#.log`	Indicates the size of one log file (in megabytes) output by the Tuning Manager server*. Specify a value from 1 to 2048.	1
`cli.logLevel`	• *command-name*`Trace#.log` • `htmCliTrace#.log`	Indicates the trace level of the trace log files output by operational or report commands. For details, see Levels of data in the Main Console trace log on page 7-19.	10
`cli.logFileNumber`	• *command-name*`Message#.log` • `htmCliMessage#.log`	Indicates the number of message log files output by operational or report commands*. Specify the value from 1 to 16.	2
`cli.logFileSize`	• *command-name*`Message#.log` • `htmCliMessage#.log`	Indicates the size of one log file (in megabytes) output by operational or report commands*. Specify the value from 1 to 2048.	1

*Whenever the size of the existing Main Console message log file reaches the specified size, the system creates a new file and increments the log file number that the system adds to the name of the file by 1. When the specified number of files has been used, the system overwrites the files beginning with the oldest file (round-robin method).

Levels of data in the Main Console trace log

The following table describes the trace levels.

Table 7-9 Details of the trace levels (for Main Console)

Trace level	Description
10	Standard setting. This is set during normal operations.
20	Output information that enables you to identify the range of the cause when problems have occurred. The data can be used to replicate the circumstances in which the problem occurred.

Trace level	Description
30	Output information that is necessary to identify the cause of problems. This is set when you cannot identify the cause of the problem by using the trace level`10` or`20`.

Performance Reporter log

This section describes how to configure the Performance Reporter log and describes the log output format.

Output destination of the Performance Reporter log

The Performance Reporter log is output to `prtrace#.log` (where # represents a log file number in the range from 1 to the specified number of files).

Storage locations of `prtrace#.log` are as follows:

In Windows:

Tuning-Manager-server-installation-folder`\PerformanceReporter\log`

In Linux:

`Tuning-Manager-server-installation-directory/`
`PerformanceReporter/log`

Output format for the Performance Reporter log

The following shows the output format for the Performance Reporter log (the following table describes the output items):

`number date time AP-name pid tid message-id type message`

Table 7-10 Log file output format (for Performance Reporter)

Item	Settings
Number	Log serial number (4 bytes)
Date	Log collection date: *yyyy/mm/dd* (10 bytes)
Time	Log collection time: *hh*:*mm*:*ss*.*sss* Local time (JST) in milliseconds (12 bytes)
AP name	Process name: HTM-PR
pid	Process ID (8 bytes): Process ID assigned by the OS
tid	Thread identifier (8 bytes): Hash value of the `java/lang/Thread` object
message-id	Message ID (11 bytes): KAVJ*xmnnn-z* (*x* = package ID, *m* = message type number, *nnn* = message number, *z* = message type)
Type	Event type code that determines the log output timing (4 bytes) For details, see Table 7-11 Log file event type codes (for Performance Reporter) on page 7-21.
message	Message text For details, see Table 7-12 Message log ID format on page 7-21.

Table 7-11 Log file event type codes (for Performance Reporter)

Type code	Description	Notes
OC	Object creation	There are two one-byte space characters after these codes.
OD	Object deletion	
FB	Start of function	
FE	End of function	
EC	Occurrence of exception	
ER	Error message	
PB	Call from another program	
PE	Return to another program	
" "	Other	This consists of four one-byte space characters.

At the beginning of each message, a message log ID is output in the following format:

[PR*NNNN*:*%%%*:*$$*]*&&&&*.

The following table describes the message log ID format.

Table 7-12 Message log ID format

Item	Description	Settings
[	Start of message log ID	Opening bracket
PR	Prefix	Always PR
NNNN	Log output number	Four-digit decimal number indicating the number of log outputs (from 0000 to 9999). Once 9999 is reached, the number is reset to 0000.
:	Separator	Colon (:)
%%%	Performance Reporter event type code	Event type code (see Table 7-13 Performance Reporter event type codes on page 7-22)
:	Separator	Colon (:)
$$	Log level	Two-digit number indicating the trace level of the output message. This number enables you to search for messages in the log file by using the trace level. The following list indicates the relationship between the numbers and the levels. 00: FATAL 10: WARN 20: DEBUG 30: TRACE
]	End of message log ID	Closing bracket

Item	Description	Settings
&&&&	Message text	Message text for the message log ID

Table 7-13 Performance Reporter event type codes

Type code	Description	Notes
EC	Occurrence of exception	There are two one-byte space characters after these codes.
ER	Error message (-E)	
DP	Debugging information	
INF	Information message (-I, -Q, -K)	
CAL	Call to another program	
RET	Return from another program	

Performance Reporter log settings

After you install Performance Reporter, you must specify settings in the initialization settings file (`config.xml`). For information about the `config.xml` file, see Configuring initial settings for Performance Reporter on page 5-8. The following table lists the information related to the Performance Reporter log that may be specified.

Table 7-14 Log initialization settings

Setting	Description	Value range	Default
Destination	Specifies the log's output destination.	Not applicable	For Windows: *Tuning-Manager-server-installation-folder*`\PerformanceReporter\log` For Linux: *Tuning-Manager-server-installation-directory*`/PerformanceReporter/log`
Number of files	Specifies the number of output log files[1]	1-16	10
Size	Specifies the size of one log file (in megabytes).[1]	1-100	10
Trace level	Specifies the output trace level. For details, see Table 7-15 Details of the trace levels (for Performance Reporter) on page 7-23.	Fatal/Warn/Debug/Trace	Warn

Note 1:

Performance Reporter log data are named `prtrace#.log` (where # represents the log file number). When a log file reaches the specified file size, the system creates a new file with the log file number incremented by 1. When the specified number of files has been used, the system overwrites the files beginning with the oldest file.

Levels of data in the Performance Reporter trace log

The following table lists and describes the trace levels.

Table 7-15 Details of the trace levels (for Performance Reporter)

Trace level	Description
Fatal	Always output during system operation. Effects on performance are small enough to be ignored.
Warn	Output information that enables you to get an overview of the processing flow.
Debug	Output information that enables you to understand the processing flow. Effects on performance are small enough to be ignored. Normally, this is set during operation.
Trace	Output all information that may be needed to identify the location of an error.

API log

This section describes the log information you need to collect if a problem occurs while using the Tuning Manager API. To verify the nature of the problem, you need to check and record the time at which the problem occurred, whether the problem is reproducible, and other information.

The following describes the log information you need to collect if a problem occurs while using the Tuning Manager API:

- Windows event log (in Windows)

  The Windows event log contains log information that describes the status of the operating system and that reports errors in the system. For details, see Windows event log on page 7-13.

- API log

  The following sections describes the API logging information in detail.

Output destinations of the API log data

This section describes the output destinations of the API log data.

Trace log

`htmRestTracen.log`: Trace log data output by the Tuning Manager server REST API Component

The trace log files are stored in the following location:

- Windows:

Tuning-Manager-server-installation-folder\logs

- UNIX:

  Tuning-Manager-server-installation-directory/logs

Message log

htmRestMessagen.log: Messages output by the Tuning Manager server REST API Component

The message log files are stored in the following location:

- Windows

  Tuning-Manager-server-installation-folder\logs

- UNIX

  Tuning-Manager-server-installation-directory/logs

Changing the settings of the API logs

To change the settings of the API logs, change the settings in the logging.properties file.

The following shows the storage location of the logging.properties file:

Windows:

Tuning-Manager-server-installation-folder\conf

Linux:

Tuning-Manager-server-installation-directory/conf

To change the settings in the logging.properties file:

1. Stop the HiCommand TuningManager service service.

   For details about how to stop the HiCommand TuningManager service, see Stopping services on page 1-23.

2. Edit the logging.properties file to change the settings.

   The properties are displayed in the following format: [*property*]=[*value*]

Note:

- If a hash mark (#) appears at the beginning of a line, the line is treated as a comment.
- If the same property name is specified more than once, the last specified value takes effect.
- When specifying the installation folder in a Windows environment, use a forward slash (/) as a folder separator, not a backslash (\).

3. Restart the HiCommand TuningManager service.

   For details about how to start the HiCommand TuningManager service, see Starting services on page 1-21.

Table 7-16 Tuning Manager Agent REST API component user settings

Property	Description	Specifiable values	Default
`rest.logLevel`	`htmRestTrace#.log`	Indicates the trace level of the trace logs that are output by the Tuning Manager server REST API component. For details, see Levels of data in the Main Console trace log on page 7-19	10
`rest.logFileNumbe`	Indicates the number of message log files that are output by the Tuning Manager server REST API component. `htmRestMessage#.log`	Specify a value from 1 to 16.	5
`rest.logFileSize`	Indicates the size (in megabytes) of each message log file that is output by the Tuning Manager server REST API component. `htmRestMessage#.log`	Specify a value from 1 to 2048.	1

*When the size of the existing API log file reaches the specified size, the system creates a new file and increments the log file number by 1. When the specified number is reached, the system overwrites the files beginning with the oldest file (round-robin method).

Collecting maintenance information

If a problem occurs during Tuning Manager server operation, collect the maintenance information and contact the Support Center. The Tuning Manager server provides commands for collecting the maintenance information that is necessary for receiving support. If you are unable to use the provided commands, you can collect the required maintenance information manually.

Before you can receive support, you also need to collect other data in addition to the maintenance information. For details on the other data that is required, see Information required to determine the circumstances in which a problem has occurred on page 7-28.

Using commands to collect maintenance information

If a problem occurs when using a Tuning Manager server, before you contact our Support Center, please execute the **`hcmds64getlogs`** command to collect necessary data. This command collects all necessary log information for the Tuning Manager server and log information common to all Hitachi Command Suite products.

You can execute the commands below to individually collect only necessary maintenance information. However, we recommend that you execute the **`hcmds64getlogs`** command because this command collects all necessary data, including the data collected by executing the following commands:

- The **htm-getlogs** command: Collects the maintenance information collected by the **htm-dump**, **jpcprras**, and **jpcras** commands.

Note: Agent Store database information is not acquired. If Tuning Manager server and Agents are installed on the same host, execute the **jpcras** command after executing the **hcmds64getlogs** command.

The **hcmds64getlogs** command can collect maintenance information from the x86 and x64 versions of the common component when they coexist on the same host.

- The **htm-dump** command: Collects only the Main Console log data and the maintenance information output when the Tuning Manager server was installed.
- The **jpcprras** command: Collects only the Performance Reporter log data.
- The **jpcras** command: Collects only the Agent and Collection Manager maintenance information.

Because the **hcmds64getlogs** command collects all maintenance information, a large amount of data is collected. If you want to decrease the amount of data to be collected and identify the location of the problem, you can execute the above commands independently.

When the Tuning Manager server is in a cluster configuration, execute the **hcmds64getlogs** command on both the active and standby nodes.

This section shows the estimated times that the Tuning Manager server needs to collect log entries when individual commands are executed. Table 7-20 Required time to collect maintenance information on page 7-27 shows the estimated times that the Tuning Manager server host needs to collect log entries when the Tuning Manager series is used in the environments described in Table 7-17 Specification of the Tuning Manager server host on page 7-26 through Table 7-19 Resources of the storage system on page 7-27. If no error message is output after executing the command, collection of maintenance information is in progress. Therefore, do not cancel the command execution.

Table 7-17 Specification of the Tuning Manager server host

Specification	
CPU	Intel Core i7-3770 (3.40GHz)
Memory	8 GB
OS	Windows Server 2008 R2 Enterprise Edition SP1
Installed programs	Tuning Manager server v8.0 Device Manager v8.0

Table 7-18 Specification of the Agent host

Specification	
CPU	Intel Xeon CPU E5-2690 (2.9GHz, 2 processors)

Specification	
Memory	256 GB
OS	Windows Server 2012 Datacenter
Installed programs	Agent for RAID v8.0

Table 7-19 Resources of the storage system

storage system	Resource type	Number of resources
Hitachi Universal Storage Platform V	Logical device	45,875
	LUSE	0
	VDEV	40,937
	Parity group	16
	Port	48
	CLPR	3
	Pool	53

Table 7-20 Required time to collect maintenance information

Command	Required time to collect maintenance information (in seconds)
`hcmds64getlogs`	1362
`htm-getlogs`	421
`htm-dump`	10
`jpcprras`	240
`jpcras`	175

For details on each command, see the *Tuning Manager CLI Reference Guide*.

Manually collecting maintenance information

The **`hcmds64getlogs`** command simplifies the log file collection process. However circumstances may require you to collect information manually.

Maintenance information for Main Console and Performance Reporter need to be collected manually from the locations to which each log file is output. For details on the log file locations, see Output destinations of the Main Console log data on page 7-16 and Output destination of the Performance Reporter log on page 7-20.

Perform the steps in the following procedures that pertain to your operating system to manually collect system information.

In Windows

Collect the Windows event log data and Windows service information.

Collecting the Windows event log data in Windows Server 2012

To save event logs:

1. Perform either of the following procedures to launch the Event Viewer:

   GUI: Go to **Start > Control Panel > Administrative Tools > Event Viewer**.

   Command: *Windows-folder*`\system32\eventvwr.msc /s`
2. In the Event Viewer console tree, expand **Windows Logs** folder and select **Application**.
3. From the **Action** menu, select **Save All Events As**.
4. In the **File name** text box, enter the file name.

   Include the log type, your company name, and date.

   Example: `log-system-yourcompany-20030729.evtx`
5. Click **Save All Events As**.
6. Repeat these steps for Security Log and System Log.

Collecting the Windows service information in Windows Server 2012 environment

To collect service information:

1. Perform either of the following procedures to launch the Services window:

   GUI: Go to **Start > Control Panel > Administrative Tools > Services**

   Command: *Windows-folder*`\system32\services.msc /s`
2. From the **Action** menu, select **Export List**.
3. In the **File name** text box, enter the file name.

   Include your company name and date.

   Example: `services-yourcompany-20030729.csv`
4. In the **Save as type** list, select **Text (Comma-Delimited) (*.csv)**.
5. Click **Save**.

In UNIX

Collect the process statuses into one file by executing the **ps** command:

`ps -ef >`*your-home-directory*`/psoutput.txt`

Information required to determine the circumstances in which a problem has occurred

To receive support, in addition to providing maintenance information, you must record and collect information that can be used to determine the circumstances in which the problem occurred. The following describes the information that must be collected.

Details about the operation and the environment at the time the problem occurred

Collect detailed information about the operation that was being performed when the problem occurred and the environment in which the operation was being performed. You must collect the following information:

- Details of the operation in progress when the error occurred
- Time the error occurred
- Machine configuration (type and version of the OS on the machine, and the host name)
- Whether the error is replicable
- User name logged in to the Main Console

Error information on the screen

Collect the information displayed on the screen when the problem occur. You must collect the following information:

- Printout of the Web browser
- Printout of the error message dialog box, including any detailed information
- Information displayed on the window where the command was executed

  In Windows Server 2012:

  Obtain a printout of the Windows PowerShell window.

  In UNIX:

  Collect the messages that were output to the console.

Other information

When a problem occurs, collect the following information in addition to the information already described.

Windows

- Collect the **System** and **Application** logs from the Event Viewer window. For information about how to collect event logs, see Manually collecting maintenance information on page 7-27.
- In Windows Server 2012, collect contents of **System Information** by selecting **Start > Control Panel > System and Security > Administrative Tools > System Information**.
- Command arguments specified, if an error occurs during command execution
- JavaVM thread dumps for each server (or service) when you use the web container server environment provided for HBase v7.0 or later systems.

The JavaVM thread dump file is overwritten each time a thread dump is captured. You must back up any necessary previous versions of the file before saving another dump. After you capture a thread dump, you must always restart the Java service, otherwise the system might become unstable.

a. Create a file named `dump` in the folder: *Common-Component-installation-folder*`\uCPSB\CC\web\containers\container-name\`
b. Stop the HiCommand Suite Tuning Manager service.

   For details about stopping services, see Stopping services on page 1-23.
c. JavaVM thread dumps file is output to the folder *Common-Component-Installation-folder*`\uCPSB\CC\web\containers\container-name`.

   If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

   If you are using Oracle JDK, `container-name.log` file is output.

Following is an example of acquiring thread dump of the Device Manager Web Service

a. Create a file named `dump` in the folder: *Common-Component-Installation-folder*`\uCPSB\CC\web\containers\DeviceManagerWebService`
b. Stop the Device Manager Web Service service.

   For details about stopping services, see Stopping services on page 1-23.
c. JavaVM thread dumps file is output to the folder *Common-Component-Installation-folder*`\uCPSB\CC\web\containers\DeviceManagerWebService .`

   If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

   If you are using Oracle JDK, `DeviceManagerWebService.log` file is output.

- If you are using a servlet-engine-mode container that supports variable services in HBase64 v8.0 or later, you can acquire a thread dump for each server (or service) as follows:

  a. Create a file named `dump` in the folder: *Common-Component-installation-folder*`\uCPSB\CC\web\containers\container-name\`
  b. Stop the HiCommand Suite Tuning Manager service.

     For details about stopping services, see Stopping services on page 1-23.
  c. JavaVM thread dumps file is output to the folder *Common-Component-Installation-folder*`\uCPSB\CC\web\containers\container-name`.

     If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

     If you are using Oracle JDK, `container-name.log` file is output.

- JavaVM thread dumps for HiCommand Suite TuningManager and HCS TuningManager REST Application Service
  a. Create a file named `dump` in the following folder:

     Common-Component-installation-folder`\uCPSB\CC\web\containers\TuningManager`

     Common-Component-installation-folder`\uCPSB\CC\server\public\ejb\TuningManagerRESTService`
  b. Stop the HiCommand Suite Tuning Manager service.

     For details about stopping services, see Stopping services on page 1-23.
  c. JavaVM thread dumps file is output to the folders

     Common-Component-Installation-folder`\uCPSB\CC\web\containers\TuningManager`.

     Common-Component-Installation-folder`\uCPSB\CC\server\public\ejb\TuningManagerRESTService`.

     If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

     If you are using Oracle JDK, `TuningManager.log` and `TuningManagerRESTService.log` files are created each time the service is restarted. Therefore, it is recommended that you rename these files before the service starts.

Linux

- The command arguments specified, if an error occurs during command execution.
- JavaVM thread dumps for each server (or service) when you use the web container server environment provided for HBase v7.0 or later systems.

  The JavaVM thread dump file is overwritten each time a thread dump is captured. You must back up any necessary previous versions of the file before saving another dump. After you capture a thread dump, you must always restart the Java service, otherwise the system might become unstable.

  Execute `kill -3 PID` as a root user. (`PID` is the process ID that is stored in the *`Common-Component-installation-directory`*`/uCPSB/CC/web/containers/container-name/logs/cjstdout.log` file.)

  The JavaVM thread dump file is output to the folder: *`Common-Component-installation-directory`*`/uCPSB/CC/web/containers/container-name/`

  - If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

    The number of digits and value of # is arbitrary.
  - If you are using Oracle JDK, `container-name.log` file is output.
- Following is an example of acquiring thread dump of the Device Manager Web Service:

Execute `kill -3 PID` as a root user. (`PID` is the Device Manager Web service process ID that is stored in the *Common-Component-installation-directory*/uCPSB/CC/web/containers/DeviceManagerWebService/logs/cjstdout.log file.)

The JavaVM thread dump file is output to the folder: *Common-Component-installation-directory*/uCPSB/CC/web/containers/DeviceManagerWebService/

- If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

  The number of digits and value of # is arbitrary.
- If you are using Oracle JDK, `DeviceManagerWebService.log` file is output.

- If you are using a servlet-engine-mode container that supports variable services in HBase64 v8.0 or later, you can acquire a thread dump for each server (or service) as follows:

  Execute `kill -3 PID` as a root user. (`PID` is the process ID that is stored in the *Common-Component-installation-directory*/uCPSB/CC/web/containers/container-name/logs/cjstdout.log file.)

  The JavaVM thread dump file is output to the folder: *Common-Component-installation-directory*/uCPSB/CC/web/containers/container-name/

  - If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

    The number of digits and value of # is arbitrary.
  - If you are using Oracle JDK, `container-name.log` file is output.
- JavaVM thread dumps for HiCommand Suite TuningManager and HCS TuningManager REST Application Service

  Execute `kill -3 PID` as a root user. (`PID` is the process ID that is stored in the *Common-Component-installation-directory*/uCPSB/CC/web/containers/container-name/logs/cjstdout.log file.)

  The JavaVM thread dump file is output to the folder: *Common-Component-installation-directory*/uCPSB/CC/server/public/ejb/TuningManagerRESTService

  - If you are using the bundled Hitachi JDK, `javacore###.####.txt` file is output.

    The number of digits and value of # is arbitrary.
  - If you are using Oracle JDK, `container-name.log` file is output.

Calling the Hitachi Data Systems technical support center

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

- The circumstances surrounding the error or failure.
- The exact content of any error message(s) displayed on the host system(s).

- Any troubleshooting data you have collected.

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, please call:

- United States: (800) 446-0744
- Outside the United States: (858) 547-4526

8

Working with Common Component

Common Component provides general functionality that is used by Hitachi Command Suite products. To use such functionality, each Hitachi Command Suite product bundles Common Component. The Tuning Manager server also bundles Common Component, which is installed when the Tuning Manager server is installed.

This chapter includes the following topics:

- ☐ Common Component functions
- ☐ Installing and removing Common Component
- ☐ Integrated logging
- ☐ Managing ports used by Common Component
- ☐ Manually adding an exception to Windows firewall
- ☐ Troubleshooting
- ☐ Changing the host name or IP address of a management server
- ☐ Setup for starting a Web application from Web Client
- ☐ Security settings for user accounts
- ☐ Generating audit logs

Common Component functions

Common Component provides functions that are used by all Hitachi Command Suite products. This section describes the following functions:

- Integrated logging on page 8-3
- Managing ports used by Common Component on page 8-5
- Setup for starting a Web application from Web Client on page 8-19
- Security settings for user accounts on page 8-20
- Generating audit logs on page 8-22

This chapter also describes the Common Component settings that are required for performing maintenance (see Changing the host name or IP address of a management server on page 8-15). For details on changing the network setting, see Changing the network settings of the management server on page 1-37.

Installing and removing Common Component

Common Component must be installed or removed as part of the installation or removal of another Hitachi Command Suite product, for example, Device Manager or a Tuning Manager server. You cannot install or remove just Common Component.

The Hitachi Network Objectplaza trace common library is also installed during installation of Common Component.

Whether Common Component is installed or upgraded during Tuning Manager server installation is determined by the following factors:

- If Common Component has not previously been installed on the system, it will be installed.
- If the previously installed Common Component version is earlier than or the same as the Common Component version to be installed, the installer will upgrade Common Component by overwriting the previous version.
- If the previously installed Common Component version is newer than the Common Component version to be installed, the previously installed version is left as is.

Whether Common Component is removed or left as is during Tuning Manager server removal is determined by the following factors:

- If any other Hitachi Command Suite products are using Common Component, Common Component will not be removed. Common Component will not be removed until the last Hitachi Command Suite product that uses Common Component is removed.
- If Common Component is only being used by the Tuning Manager server, it will be removed as part of the Tuning Manager server removal process.

Integrated logging

Common Component provides the Hitachi Command Suite products with a common library and common log files for logging. The Tuning Manager server uses this information to show log file details.

This section describes the log files and how to change the number and size of trace log files output by Common Component.

In addition to the logs output by Common Component that are described in this section, logs specific to the Tuning Manager server include logs output by Main Console and Performance Reporter. For details on these logs, see Main Console logs on page 7-16 or Performance Reporter log on page 7-20.

Integrated log output

The following table lists and describes the log files output by the Tuning Manager server and Common Component.

Table 8-1 Integrated log output (Windows)

Log type	Log name	Description	Location (Windows)
Hitachi Command Suite common trace log file	hntr2*.log	Integrated trace log information produced by Common Component. The asterisk (*) in the file name indicates a file number. For details on specifying the number and size of files, see Common Component trace log properties on page 8-4. If messages whose error code is in the range from KAIC00000 to KAIC09999 contain the following characters, they will be converted as indicated when they are output: • Line feed character: Converted to an at mark (@). • At mark (@): Converted to \@.	C:\Program Files\Hitachi\HNTRLib2\spool
Event log file	Event log	Windows event log (including the audit log). For details on the audit logs, see Generating audit logs on page 8-22.	Event viewer

Table 8-2 Integrated log output (Linux)

Log type	Log name	Description	Location (Linux)
Hitachi Command Suite common trace log file	hntr2*.log	Integrated trace log information produced by Common Component. The asterisk (*) in the file name indicates a file number. For details on specifying the number and size of files, see Common Component trace log properties on page 8-4. If messages whose error code is in the range from KAIC00000 to KAIC09999 contain the following characters, they will be converted as indicated when they are output: • Line feed character: Converted to an at mark (@). • At mark (@): Converted to \@.	/var/*Tuning-Manager-server-installation-directory*/hitachi/HNTRLib2/spool
Syslog file	syslog	Linux system log (including the audit log). For details on the audit logs, see Generating audit logs on page 8-22.	Defined by /etc/syslog.conf

Common Component trace log properties

The following sections describe the properties of the Common Component trace log files.

Setting the trace log properties for Common Component (Windows)

To specify the trace log properties for common component:

1. Log on to the system as a user with Administrator permissions.
2. Execute `hntr2util.exe`.

   The Windows HNTRLib2 utility is stored in the folder:`C:\Program Files\Hitachi\HNTRLib2\bin\hntr2util.exe`
3. In the **Hitachi Network Objectplaza Trace Utility 2** dialog box, you can specify the following trace log properties:
   - **Number of files**

     You can specify a maximum of 16 for the number of trace log files. The default value is 4. Large number of trace log files can make it difficult to find specific information.
   - **File Size (KB)**

     You can specify the size of each Common Component trace log file from 8 KB to 4 MB (4096 KB). The Common Component trace log monitoring program switches output from the current file to the next file when the current output file reaches the specified size. Make sure that you specify a value larger than the **Buffer (KB)** value.
   - **Buffer (KB)**
   - **Watch Dog (Sec)**

4. Click **Ok**.
5. Restart the OS to apply the changes.

Note: Changing the common trace log settings affects other program products that use the common trace log.

Managing ports used by Common Component

The following table lists the ports used by Common Component.

Table 8-3 Ports used by Common Component

Default port number	Purpose
22015	Access port of HBase 64 Storage Mgmt Web Service (non-SSL)
22016	Access port of HBase 64 Storage Mgmt Web Service (SSL)
22017	AJP port of HBase 64 Storage Mgmt Common Service This service is used only when Tuning Manager and Device Manager are installed on the same host.
22018	Stop request reception port of HBase 64 Storage Mgmt Common Service This service is used only when Tuning Manager and Device Manager are installed on the same host.
22019	AJP port of HiCommand Suite TuningManager
22020	Stop request reception port of HiCommand Suite TuningManager
22023	AJP port of HiCommand Performance Reporter
22024	Stop request reception port of HiCommand Performance Reporter. You can change this default port.
22025	AJP port of HCS Device Manager Web Service. This port is used only when Tuning Manager and Device Manager are installed on the same host.
22026	Stop request reception port of HCS Device Manager Web Service. This port is used only when Tuning Manager and Device Manager are installed on the same host.
22031	Ports used to access HBase 64 Storage Mgmt Web SSO Service. These ports are used only when Tuning Manager and Device Manager are installed on the same host. This port is supported in Windows only.
22032	Access port for HiRDB. You can change this default port.
22033	AJP port of HBase 64 Storage Mgmt SSO Service.
22034	Stop request reception port of HBase 64 Storage Mgmt SSO Service.
22286*	Port used by the Collection Manager to track login attempts from other components (Tuning Manager - Main Console, Tuning Manager - Performance Reporter, Device Manager).
24234	AJP port of HCS TuningManager REST Application Service

Default port number	Purpose
24231	RMI registry port number that HCS TuningManager REST Application Service uses
24232	Port number that server management commands use to communicate with HCS TuningManager REST Application Service
24233	Port number of the stripped-down Web server that HCS TuningManager REST Application Service uses
Any unused port number*	Port used to callback Tuning Manager - Performance reporter (GUI) from Collection Manager.
Any unused port number*	Port used to callback Tuning Manager - Performance Reporter (command) from Collection Manager.

* Set to a fixed arbitrary port by making an entry in the Performance Reporter config.xml file and configuring the Collection Manager settings.

Changing a Common Component port in Windows

To change the default port of a Common Component service:

1. Stop the Common Component service and HiCommand Suite TuningManager services.
2. Change the port number.

   For details about changing a Common Component port, see table Table 8-4 Changing Common Component ports (Windows) on page 8-7.
3. If you are operating Device Manager by connecting to the Tuning Manager server remotely, and you have changed the port number of a Common Component service which is installed on the Device Manager host, execute the **`hcmds64prmset`** command to re-register the port number of the server that manages the user accounts. If Tuning Manager and Device Manager have been installed on the same server:
   - Specify `setprimary` option instead of the `host` option.
   - For the `port` or `sslport` command options, use the port number specified in the user_httpsd.conf file.

   For details about the **`hcmds64prmset`** command, see the *Tuning Manager CLI Reference Guide*.
4. Execute the **`hcmds64chgurl`** command to change the access information used when the application starts.

   For details about the **`hcmds64chgurl`** command, see the *Tuning Manager CLI Reference Guide*.
5. Restart the Common Component service, and HiCommand Suite TuningManager services.
6. Open the Tuning Manager server URL with the new port value. For example:

http://*htm-hostname*:*new-port-number*/TuningManager/

Note: If you change the port to the one on which SSL is enabled and then execute commands, specify the options as follows:

`--port port-number`

Example: `htm-storage -u user-ID -w password --port port-number`

Following table lists the Common Component ports and the procedure for changing the ports:

Table 8-4 Changing Common Component ports (Windows)

Port	Procedure for changing the port
22015 Access port for HBase 64 Storage Mgmt Web Service (non-SSL)	Change the `Listen` directive in the following file: *Common-component-installation-folder*\uCPSB\httpsd\conf\user_httpsd.conf
22016 Access port for HBase 64 Storage Mgmt Web Service (SSL)	Change the `Listen` directive in the following file: *Common-component-installation-folder*\uCPSB\httpsd\conf\user_httpsd.conf
22017 AJP port of HBase 64 Storage Mgmt Common Service	Change the values of the following properties. Make sure that you specify the same value for both of these properties: • The `worker.HiCommand64.port` property in the *Common-Component-installation-directory*\uCPSB\CC\web\redirector\workers.properties file • The `webserver.connector.ajp13.port` property in the *Common-Component-installation-directory*\uCPSB\CC\web\containers\HiCommand64\usrconf\usrconf.properties file
22018 Stop request reception port of HBase 64 Storage Mgmt Common Service	Change the value of the following property: The `webserver.shutdown.port` property in the *Common-Component-installation-folder*\uCPSB\CC\web\containers\HiCommand64\usrconf\usrconf.properties file
22019 AJP port of HiCommand Suite Tuning Manager	The same port number should be set for the `worker.TuningManager.port` value in the following file: *Common-Component-installation-folder*\uCPSB\CC\web\redirector\workers.properties and for the `webserver.connector.ajp13.port` value in the following file: *Common-Component-installation-folder*\uCPSB\CC\web\containers\TuningManager\usrconf\usrconf.properties

Port	Procedure for changing the port
22020 Stop request reception port of HiCommand Suite Tuning Manager	Change the value for `webserver.shutdown.port` in the following file: *Common-Component-installation-folder*`\CC\web\containers\TuningManager\usrconf\usrconf.properties`
22023 AJP port of HiCommand Performance Reporter	The same port number should be set for the following properties: • The `worker.PerformanceReporter.port` property in the *common-component-installation-folder*`\uCPSB\CC\web\redirector\workers.properties` • The `webserver.connector.ajp13.port` property in the *common-component-installation-folder*`\uCPSB\CC\web\containers\PerformanceReporter\usrconf\usrconf.properties` file
22024 Stop the request reception port of HiCommand Performance Reporter	Change the value specified for the `webserver.shutdown.port` property in the *common-component-installation-folder*`\CC\web\containers\PerformanceReporter\usrconf\usrconf.properties` file
22031 Port used to access HBase 64 Storage Mgmt Web SSO Service	Change the `Listen` directive in the following file: *Common-Component-installation-folder*`\uCPSB\httpsd\conf\user_hsso_httpsd.conf` Specify a port number as follows: `Listen 127.0.0.1:`*`port-number`*
22032 Access port for HiRDB	Change the values of the following properties. Make sure that you specify the same value for all these properties: • The `PDNAMEPORT` property in the *Common-Component-installation-folder*`\HDB\CONF\emb\HiRDB.ini` file • The `pd_name_port` property in the *Common-Component-installation-folder*`\HDB\CONF\pdsys` file • The `pd_name_port` property in the *Common-Component-installation-folder*`\database\work\def_pdsys` file
22033 HBase 64 Storage Mgmt SSO Service	Change the values of the following properties. Make sure that you specify the same value for all these properties: • The `worker.HBase64StgMgmtSSOService.port` property in the *common-component-installation-folder*`\uCPSB\CC\web\redirector\workers.properties` • The `webserver.connector.ajp13.port` property in the *common-component-installation-folder*`\uCPSB\CC\web\containers\HBase64StgMgmtSSOService\usrconf\usrconf.properties` file
22034 Stop request reception port of HBase 64 Storage Mgmt SSO Service	Change the values of the following properties. The `webserver.shutdown.port` property in the *Common-Component-installation-folder*`\uCPSB\CC\web\containers\HBase64StgMgmtSSOService\usrconf\usrconf.properties` file.

Port	Procedure for changing the port
24234 AJP port of HCS TuningManager REST Application Service	Change the value of the following property: • The `worker.TuningManagerRESTService.port` property in *Common-Component-installation-folder*`\uCPSB\CC\web\redirector\workers.properties` • The webserver.connector.ajp13.port property in *Common-Component-installation-folder*`\uCPSB\CC\server\usrconf\ejb\TuningManagerRESTService\usrconf.properties`
24231 RMI registry port number that HCS TuningManager REST Application Service uses	Change the value of the following property: The `ejbserver.rmi.naming.port` property in *Common-Component-installation-folder*`\uCPSB\CC\server\usrconf\ejb\TuningManagerRESTService\usrconf.properties`
24232 Port number that server management commands use to communicate with HCS TuningManager REST Application Service	Change the value of the following property: The `ejbserver.rmi.remote.listener.port` property in *Common-Component-installation-folder*`\uCPSB\CC\server\usrconf\ejb\TuningManagerRESTService\usrconf.properties`
24233 Port number of the stripped-down Web server that HCS TuningManager REST Application Service uses	Change the value of the following property: The `ejbserver.http.port` property in *Common-Component-installation-folder*`\uCPSB\CC\server\usrconf\ejb\TuningManagerRESTService\usrconf.properties`

Changing a Common Component port in Linux

To change the default port of a Common Component service:

1. Stop the Common Component service, and HiCommand Suite TuningManager services.
2. Change the port number.

   For details about changing a Common Component port, see table Table 8-5 Changing Common Component ports (Linux) on page 8-10.

3. If you are operating Device Manager by connecting to the Tuning Manager server remotely, and you have changed the port number of a Common Component service which is installed on the Device Manager host, execute the **`hcmds64prmset`** command to re-register the port number of the server that manages the user accounts.

   If Tuning Manager and Device Manager have been installed on the same server:

   - Specify `setprimary` option instead of the `host` option.
   - For the `port` or `sslport` command options, use the port number specified in the user_httpsd.conf file.

   For details about the **`hcmds64prmset`** command, see the *Tuning Manager CLI Reference Guide*.

4. Execute the **`hcmds64chgurl`** command to change the access information used when the application starts.

   For details about the **`hcmds64chgurl`** command, see the *Tuning Manager CLI Reference Guide*.

5. Restart the Common Component service, and HiCommand Suite TuningManager services.
6. Open the Tuning Manager server URL with the new port value. For example:

   `http://`*htm-hostname*`:`*new-port-number*`/TuningManager/`

Note: If you change the port to the one on which SSL is enabled and then execute commands, specify the options as follows:

`--port` *port-number*

Example: `htm-storage -u` *user-ID* `-w` *password* `--port` *port-number*

Following table lists the Common Component ports and the procedure for changing the ports:

Table 8-5 Changing Common Component ports (Linux)

Port	Procedure for changing the port
22015 Access port for HBase 64 Storage Mgmt Web Service (non-SSL)	Change the `Listen` directive in the following file: *`Common-component-installation-directory`*`/uCPSB/httpsd/conf/user_httpsd.conf`
22016 Access port for HBase 64 Storage Mgmt Web Service (SSL)	Change the `Listen` directive in the following file: *`Common-component-installation-directory`*`/uCPSB/httpsd/conf/user_httpsd.conf`

Port	Procedure for changing the port
22017 AJP port of HBase 64 Storage Mgmt Common Service	Change the values of the following properties. Make sure that you specify the same value for both of these properties: • The `worker.HiCommand64.port` property in the *Common-Component-installation-directory*`/uCPSB/CC/web/redirector/workers.properties` file • The `webserver.connector.ajp13.port` property in the*Common-Component-installation-directory*`/uCPSB/CC/web/containers/HiCommand64/usrconf/usrconf.properties` file
22018 Stop request reception port of HBase 64 Storage Mgmt Common Service	Change the value of the following property: The `webserver.shutdown.port` property in the *Common-Component-installation-directory*`/uCPSB/CC/web/containers/HiCommand64/usrconf/usrconf.properties` file
22019 AJP port of HiCommand Tuning Manager	The same port number should be set for the `worker.TuningManager.port` value in the following file: *Common-Component-installation-directory*`/uCPSB/CC/web/redirector/workers.properties` and for the `webserver.connector.ajp13.port` value in the following file: *Common-Component-installation-directory*`/uCPSB/CC/web/containers/TuningManager/usrconf/usrconf.properties`
22020 Stop request reception port of HiCommand Suite Tuning Manager	Change the value for `webserver.shutdown.port` in the following file: *Common-Component-installation-directory*`/uCPSB/CC/web/containers/TuningManager/usrconf/usrconf.properties`
22023 AJP port of HiCommand Performance Reporter	The same port number should be set for the following properties: • The `worker.PerformanceReporter.port` property in the *common-component-installation-directory*`/uCPSB/CC/web/redirector/workers.properties` • The `webserver.connector.ajp13.port` property in the *common-component-installation-directory*`/uCPSB/CC/web/containers/PerformanceReporter/usrconf/usrconf.properties` file
22024 Stop the request reception port of HiCommand Performance Reporter	Change the value specified for the `webserver.shutdown.port` property in the *common-component-installation-directory*`/uCPSB/CC/web/containers/PerformanceReporter/usrconf/usrconf.properties` file
22031 Port used to access HBase 64 Storage Mgmt Web SSO Service	Change the `Listen` directive in the following file: *Common-Component-installation-directory*`/uCPSB/httpsd/conf/user_hsso_httpsd.conf` Specify a port number as follows: `Listen 127.0.0.1:`*port-number*

Port	Procedure for changing the port
22032 Access port for HiRDB	Change the values of the following properties. Make sure that you specify the same value for all of these properties: • The `PDNAMEPORT` property in the *`Common-Component-installation-directory`*`/HDB/CONF/emb/HiRDB.ini` file • The `pd_name_port` property in the *`Common-Component-installation-directory`*`/HDB/CONF/pdsys` file • The `pd_name_port` property in the *`Common-Component-installation-directory`*`/database/work/def_pdsys` file
22033 AJP port of HBase 64 Storage Mgmt SSO Service	Change the values of the following properties. Make sure that you specify the same value for all these properties: • The `worker.HBase64StgMgmtSSOService.port` property in the *common-component-installation-directory*`/uCPSB/CC/web/redirector/workers.properties` • The `webserver.connector.ajp13.port` property in the *common-component-installation-directory*`/uCPSB/CC/web/containers/HBase64StgMgmtSSOService/usrconf/usrconf.properties` file
22034 Stop request reception port of HBase 64 Storage Mgmt SSO Service	Change the values of the following properties. The webserver.shutdown.port property in the *Common-Component-installation-directory*`/uCPSB/CC/web/containers/HBase64StgMgmtSSOService/usrconf/usrconf.properties`
24231 RMI registry port number that HCS TuningManager REST Application Serviceuses	Change the value of the following property: The `ejbserver.rmi.naming.port` property in *Common-Component-installation-directory*`/uCPSB/CC/server/usrconf/ejb/TuningManagerRESTService/usrconf.properties`
24232 Port number that server management commands use to communicate with HCS TuningManager REST Application Service	Change the value of the following property: The `ejbserver.rmi.remote.listener.port` property in *Common-Component-installation-directory*`/uCPSB/CC/server/usrconf/ejb/TuningManagerRESTService/usrconf.properties`
24233 Port number of the stripped-down Web server that HCS TuningManager REST Application Service uses	Change the value of the following property: The `ejbserver.http.port` property in *Common-Component-installation-directory*`/uCPSB/CC/server/usrconf/ejb/TuningManagerRESTService/usrconf.properties`

Port	Procedure for changing the port
24234 AJP port of HCS TuningManager REST Application Service	Change the value of the following property: • The `worker.TuningManagerRESTService.port` property in *Common-Component-installation-directory*`/uCPSB/CC/web/redirector/workers.properties` • The `webserver.connector.ajp13.port` property in *Common-Component-installation-directory*`/uCPSB/CC/server/usrconf/ejb/TuningManagerRESTService/usrconf.properties`

Manually adding an exception to Windows firewall

Following procedures describe how to manually add exceptions to Windows firewall:

Manually adding an exception (Tuning Manager server)

To manually add an exception (HTnM Server) from the GUI:

1. Select **Control Panel**, and then **Windows Firewall**.
2. Select the **Exceptions tab**, click **Add Program**, and then specify the following file:

   Common-Component-installation-folder`\Base64\uCPSB\CC\web\bin\cjstartweb.exe`
3. To confirm that the service is added to the exception list using GUI:
   a. Select **Control Panel**, and then **Windows Firewall**.
   b. Select the **Exceptions tab**, and confirm the following.

      Make sure `cjstartweb.exe` file is displayed in the **Programs and Services** list, and the check box on the left is selected:

To add an exception by using a command:

1. Execute the following command to add an exception:

   ```
   netsh advfirewall firewall add rule
   name="HBase64(cjstartweb)" dir=in action=allow
   program="<HB_INSTALL>\Base64\uCPSB\CC\web\bin\cjstartweb.exe
   " enable=yes
   ```
2. To confirm that the service is added as an exception, execute the following command:

   ```
   > netsh advfirewall firewall show rule
   name="HBase64(cjstartweb)" verbose
   ```
3. Confirm the following from the command execution results:

   The rule HBase64(cjstartweb) appears.

   Enable is set to`Yes`.

   The path to `cjstartweb.exe` is correct.

   After adding an exception, restart the HiCommand service to enable the settings.
4. To remove an exception, execute the following command:

```
>netsh advfirewall firewall delete rule
name="HBase64(cjstartweb)" dir=in
program="<HB_INSTALL>\Base64\uCPSB\CC\web\bin\cjstartweb.exe
"
```

Manually adding an exception (HBase64)

To add an exception by using a command:

1. Execute the following command to add an exception:

   Common-Component-installation-folder\Base64\bin\hcmds64fwcancel.exe

2. Confirming that the service is added as an exception by using the following command:

   ```
   > netsh advfirewall firewall show rule name="HBase(Web)"
   verbose
   ```

3. Confirm the following in the command execution results:

   The rule HBase(Web) appears.

   Enable is set to `Yes`.

   The path to `httpsd.exe` is correct.

   After adding an exception, restart the HiCommand service to enable the settings.

4. To remove an exception, execute the following command:

   ```
   > netsh advfirewall firewall delete rule name="HBase(Web)"
   dir=in program="<HB_INSTALL>\Base64\uCPSB\httpsd\httpsd.exe"
   ```

Troubleshooting

This section explains causes and countermeasures when both the HBase 64 Storage Mgmt Web Service and HBase 64 Storage Mgmt Common Service services are unable to start.

If the problem might be due to a cause not listed in the following table, use the **`hcmds64getlogs`** command to collect maintenance information, and then contact the Support Center.

Table 8-6 Causes and countermeasures

Cause	Countermeasure
The port number used by the service is already being used.	Change the port number of HBase 64 Storage Mgmt Web Service or HBase 64 Storage Mgmt Common Service. For more information, see Managing ports used by Common Component on page 8-5.
System resources are insufficient.	Increase the memory swap area or the amount of available memory.

If you need to call the Hitachi Data Systems Support Center, make sure to provide as much information about the problem as possible, including the circumstances surrounding the error or failure, the exact content of any error messages displayed, and any troubleshooting data collected.

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, please call:

- United States: (800) 446-0744
- Outside the United States: (858) 547-4526

Changing the host name or IP address of a management server

Note the following points when you change the host name or IP address of a host (management server) on which the Tuning Manager server or Device Manager is installed.

Steps required after changing the host name or IP address of the Device Manager host

After changing the host name or IP address of the Device Manager host, complete the steps below. For details on changing the host name or IP address of the Device Manager host, see the *Hitachi Command Suite Administrator Guide*.

Perform the following steps on the host where the Tuning Manager server is installed. However, if the Tuning Manager server and Device Manager are installed on the same host, you do not need to perform these steps.

For details about the default Common Component installation directory, see the *Tuning Manager Installation Guide*.

1. Stop the Tuning Manager server services.

   For details on how to do this, see Stopping services on page 1-23.

2. Make sure that the following services have stopped or started.

   Services that must be started:

   - HBase 64 Storage Mgmt Common Service
   - HBase 64 Storage Mgmt Web Service

   Service that must be stopped:

   - HiCommand Suite TuningManager

3. Execute the following command to re-register the information that is used to connect to the server that manages the user accounts:

   User accounts are managed by Common Component and are stored on the connected host in which Device Manager has been installed.

   Windows:

   If SSL is not set for HBase 64 Storage Mgmt Web Service of Device Manager:

   ```
   Common-Component-installation-folder\bin\hcmds64prmset /
   host host-name-or-IP-address-of-Device-Manager / port port-
   number-of-HBase-64-Storage-Mgmt- Web-Service-of-Device-
   Manager-(non-SSL)
   ```

   If SSL is set for HBase 64 Storage Mgmt Web Service of Device Manager:

Common-Component-installation-folder\bin\hcmds64prmset /host *host-name-of-Device-Manager* /sslport *port-number-of-HBase-64-Storage-Mgmt- Web-Service-of-Device-Manager-(SSL)*

Linux:

If SSL is not set for HBase 64 Storage Mgmt Web Service of Device Manager:

Common-Component-installation-directory/bin/hcmds64prmset -host *host-name-or-IP-address-of-Device-Manager* -port *port-number-of-HBase-64-Storage-Mgmt-Web-Service-of-Device-Manager-(non-SSL)*

If SSL is set for HBase 64 Storage Mgmt Web Service of Device Manager:

Common-Component-installation-directory/bin/hcmds64prmset -host *host-name-of-Device-Manager* -sslport *port-number-of-HBase-64-Storage-Mgmt-Web- Service-of-Device-Manager-(SSL)*

For details about the **hcmds64prmset** command, see the *Tuning Manager CLI Reference Guide*

4. Restart the Hitachi Command Suite-related services.

   For details on how to do this, see Starting services on page 1-21.

5. Specify the settings for connecting the Tuning Manager server and Device Manager.

   For details on how to do this, see the *Tuning Manager Installation Guide*.

Changing the host name of the Tuning Manager server host

To change the host name:

1. Change the settings of the Hitachi Command Suite Common Component database. To do this, complete the procedure described in Changing the settings of the Hitachi Command Suite Common Component database on page 8-16.
2. Change the settings of the Tuning Manager server host and Agent host.

   For details about how to change the settings of the Tuning Manager Server host and Agent host, see the *Tuning Manager Installation Guide*.

3. Change the startup URL for the Tuning Manager server.

   For the procedure, see Changing the startup URL for a Tuning Manager server on page 8-18.

Changing the settings of the Hitachi Command Suite Common Component database

To change the settings:

1. Stop all services of Hitachi Command Suite products.

   For details on how to do this, see the manual for each Hitachi Command Suite product.

2. If the SSL settings have been configured, configure them again.

Use the new host name to configure the SSL settings. For details about the SSL settings, see the section describing the security settings for Common Component in the *Hitachi Command Suite Administrator Guide*.

3. In the following configuration files, change the part specifying the management server's host name to the new host name.

   For details about the default installation directory, see the *Tuning Manager Installation Guide*.

   - `user_httpsd.conf` file

     File location:

     In Windows:

     Common-Component-installation-folder`\uCPSB\httpsd\conf\user_httpsd.conf`

     In Linux:

     Common-Component-installation-directory`/uCPSB/httpsd/conf/user_httpsd.conf`

     Part to change:

     Change the value of the `ServerName` parameter to the new host name.

     If SSL is set, you must also do the following:

     Change the host name specified for the `<VirtualHost>` tag to the new host name.

     Change the value for the `ServerName` parameter in the `<VirtualHost>` tag to the new host name.

   - `cluster.conf` file (only in a cluster configuration)

     File location:

     In Windows: *Common-Component-installation-folder*`\conf\cluster.conf`

     Part to change:

     Change the relevant host name to the new host name.

4. Restart all services of Hitachi Command Suite products.

   For details on how to do this, see the manual for each Hitachi Command Suite product.

5. Make sure that all Hitachi Command Suite products-related services have started.

   For details on how to make sure that the services have started, see Checking service statuses (at service startup) on page 1-22.

Changing the IP address of the Tuning Manager server host

To change the IP address:

1. Change the settings of the Hitachi Command Suite Common Component database.

To do this, complete the procedure described in Changing the settings of the Hitachi Command Suite Common Component database on page 8-16.

2. Stop all the Tuning Manager server and agent services running on the Tuning Manager server host.
   - To stop the Collection Manager and Agent services, use the **jpcstop** command. For information about how to stop the Collection Manager and Agent services, see the *Tuning Manager Agent Administration Guide*.
   - To stop the Tuning Manager server services, use the **hcmds64srv** command. For more information, see Stopping services on page 1-23.
   - If the Tuning Manager server host is set up as a cluster system, you must stop the services from the cluster software. For information about how to stop the services in a cluster system, see the *Tuning Manager Installation Guide*.
3. Change the IP address of the Tuning Manager server host.
4. Specify the necessary network settings.

   Ensure that all the agent hosts and Tuning Manager server hosts can communicate with the target Tuning Manager server host.
5. Restart the services of the Tuning Manager series programs.
   - To start the Collection Manager and Agent services, use the **jpcstart** command. For information about how to start the Collection Manager and Agent services, see the *Tuning Manager Agent Administration Guide*.
   - To start the Tuning Manager server services, use the **hcmds64srv** command. For more information, see Starting services on page 1-21.
   - If the Tuning Manager server host is set up as a cluster system, you must start the services from the cluster software. For information about how to start the services in a cluster system, see the *Tuning Manager Installation Guide*.
6. Change the startup URL for the Tuning Manager server.

   For the procedure, see Changing the startup URL for a Tuning Manager server on page 8-18.

Changing the startup URL for a Tuning Manager server

If you have changed the host name or IP address of the Tuning Manager server host, you also need to update the URL to access other Hitachi Command Suite products.

To update the URL by using the **hcmds64chgurl** command:

1. Stop the Tuning Manager server.

   For details on how to do this, see Stopping services on page 1-23.
2. Make sure that statuses of the following services are as indicated:
   - Services that must be started:

HBase 64 Storage Mgmt Common Service

HBase 64 Storage Mgmt Web Service

HiCommand Server

- Services that must be stopped: HiCommand Suite TuningManager

3. Run the following command to change the URL for starting the Tuning Manager server.

   For details about the default installation directory, see the *Tuning Manager Installation Guide*.

   In Windows:

   Common-Component-installation-folder`\bin\hcmds64chgurl /change "http://`*old-host-name-or-IP-address-of-the-Tuning-Manager-server-host*`:`*old-Tuning-Manager-server-port-number*`" "http://`*new-host-name-or-IP-address-of-the-Tuning-Manager-server-host*`:`*new-Tuning-Manager-server-port-number*`"`

   In Linux:

   Common-Component-installation-directory`/bin/hcmds64chgurl -change "http://`*old-host-name-or-IP-address-of-the-Tuning-Manager-server-host* `:` *old-Tuning-Manager-server-port-number*`" "http://`*new-host-name-or-IP-address-of-the-Tuning-Manager-server-host*`:`*new-Tuning-Manager-server-port-number*`"`

   For details on the **`hcmds64chgurl`** command, see the *Tuning Manager CLI Reference Guide*.

Setup for starting a Web application from Web Client

This section describes how to change access information that is required to startWeb Client, and how to register Web applications that can be started from Web Client.

Using `hcmds64link` to register an application

When you choose **Go** and then **Links** in the global tasks bar area of Web Client, a dialog box is displayed with links for starting applications registered by the user. By registering the web applications that you often use or the information that you want to reference (such as a device installation chart) to this window, you can easily call a desired application from Web Client. To register or unregister an application, use the **`hcmds64link`** command. This subsection describes how to use the **`hcmds64link`** command. For details about each command, see the *Tuning Manager CLI Reference Guide*.

Modifying the URL information for starting Web Client

Once you begin to operate a Tuning Manager server, if any of the following changes are made, you need to modify the access information (URL information) used to start Web Client:

- Change to the IP address of the host on which the Tuning Manager server is installed

- Change to a port used by HBase 64 Storage Mgmt Web Service
- Change to the settings of the Tuning Manager server system in order to use or stop using SSL

The access information is stored in the database of Common Component.

To change the information stored in the database, use the **`hcmds64chgurl`** command. For details about each command, see the *Tuning Manager CLI Reference Guide*.

Security settings for user accounts

To prevent users' passwords from being easily guessed by a third party, the Tuning Manager server allows password conditions (the minimum number of characters and the combination of characters that can be used) to be specified. You can also have user accounts locked automatically if the wrong password is repeatedly entered for a specific user ID.

Security settings can also be specified from Web Client. However, if the system is in a cluster configuration, the settings from Web Client are only applied to the active node. To apply the settings to the standby node, switch the nodes, and then specify the same settings. For details on how to operate Web Client, see Setting security options at login on page 4-12.

- When user authentication is performed using an external authentication server, the password conditions set for the external authentication server are applied. However, when a new user is registered for a Hitachi Command Suite product, the password conditions set for the Hitachi Command Suite product are applied.
- When user authentication is performed using an external authentication server, the settings on the external authentication server are applied for auto-lock control.

Note: When you install v5.1 or later of Hitachi Command Suite products, the user account lock function and password complexity check function will be usable. These functions are enabled for users of all Hitachi Command Suite products, so the following problems might occur in operations of Hitachi Command Suite products that are v5.0 or earlier.

- A user is unable to log on even with a correct user ID and password.

  The user account might be locked. Take appropriate action such as unlocking the relevant account or registering a new user account.
- A password cannot be changed, or a user account cannot be added.

  The specified password might not follow the password-entry rules. Specify an appropriate password based on the output message.

The password conditions and settings related to account locking are implemented from the `security.conf` file.

The `security.conf` file is stored in the following location:

In Windows:

`Common-Component-installation-folder``\conf\sec`

In Linux:

Common-Component-installation-directory/conf/sec

The password conditions that you set in the security.conf file are applied when a user account is created or when a password is changed, and are not applied to passwords of existing user accounts. As a result, even if an existing password does not satisfy the password conditions, a user can use the password to log on to the system.

When you change a setting in the security.conf file, the change takes effect immediately. The specified values in the security.conf file are described in the following topics.

- password.min.length on page 8-21
- password.min.uppercase on page 8-21
- password.min.lowercase on page 8-21
- password.min.numeric on page 8-21
- password.min.symbol on page 8-22
- password.check.userID on page 8-22
- account.lock.num on page 8-22

password.min.length

Specifies the minimum number of characters that can be set as a password. Specify a value in the range from 1 to 256.

Default: 4

password.min.uppercase

Specifies the minimum number of uppercase letters the password must contain. Specify a value in the range from 0 to 256. If you specify 0, no restriction applies.

Default: 0 (no restriction)

password.min.lowercase

Specifies the minimum number of lowercase letters the password must contain. Specify a value in the range from 0 to 256. If you specify 0, no restriction applies.

Default: 0 (no restriction)

password.min.numeric

Specifies the minimum number of numeric characters the password must contain. Specify a value in the range from 0 to 256. If you specify 0, no restriction applies.

Default: 0 (no restriction)

password.min.symbol

Specifies the minimum number of symbols the password must contain. Specify a value in the range from `0` to `256`. If you specify `0`, no restriction applies.

Default: `0` (no restriction)

password.check.userID

Specifies whether the password can be the same as the user ID. Specify `true` or `false`. If `true` is specified, passwords cannot be the same as the corresponding user ID. If `false` is specified, passwords can be the same as the corresponding user ID.

Default: `false` (passwords can be the same as user IDs)

account.lock.num

Specifies the number of unsuccessful login attempts to allow before a user account is automatically locked. If a user makes the specified number of unsuccessful logon attempts, his or her user account will be locked. (However, the `System` account is not locked in the initial settings. If you want to allow the `System` account to be locked, see Settings for locking the system account on page 4-11.) Specify a value in the range from `0` to `10`. If you specify `0`, any number of unsuccessful logon attempts is allowed.

Default: `0` (user accounts will not be locked)

Unsuccessful attempts to logon to other Hitachi Command Suite products that use the Single Sign-On function count towards the number of unsuccessful logon attempts. For example, if the number of unsuccessful attempts is set to `3`, and a user fails to logon to Device Manager once, and then fails to logon to Global Link Availability Manager once, his or her account will be automatically locked.

If the number of unsuccessful logon attempts is changed, the new number will be applied the next time an attempt to logon fails.

If a user is currently logged on and you attempt to logon using his or her account, but you fail the specified number of times, his or her user account will be locked. However, the user can continue to perform operations while still logged on.

You can unlock user accounts from Web Client. You must have the User Management permission to unlock a user account. For details about unlocking user accounts, see Changing the lock status of a user account on page 4-10.

Generating audit logs

User operations can be recorded to an audit log for Tuning Manager server and all other Hitachi storage-related products to certify compliance with laws, security standards, and various industry standards with an auditor or assessor. In order to collect audit logs, the `auditlog.conf` environment

settings file needs to be modified. For details about this environment settings file, see Editing the audit log environment settings file on page 8-31. Audit logs are output to event log files (application log files).

The following table lists and describes the categories of audit log data that can be generated from Hitachi storage-related products.

Table 8-7 Categories and descriptions

Category	Description
`StartStop`	Events indicating starting or stopping of hardware or software: • Starting or shutting down the OS • Starting or stopping a hardware component (including micro components) • Starting or stopping software on a storage system or SVP, and Hitachi Command Suite products
`Failure`	Events indicating hardware or software failures: • Hardware failures • Software failures (memory error, etc.)
`LinkStatus`	Events indicating link status among devices: • Whether a link is up or down
`ExternalService`	Events indicating communication results between Hitachi storage-related products and external services: • Communication with a RADIUS, LDAP, NTP, and DNS server • Communication with a management server (SNMP)
`Authentication`	Events indicating that connection or authentication for a device, administrator, or end user succeeded or failed: • FC login • Device authentication (FC-SP authentication, iSCSI login authentication, SSL server/client authentication) • Administrator or end user authentication
`AccessControl`	Events indicating that a device, administrator, or end user succeeded or failed in gaining access to resources: • Access control for devices • Access control for the administrator or end users
`ContentAccess`	Events indicating that attempts to access important data (such as accessing a system where access log files are audited) succeeded or failed: • Access to contents when HTTP is supported • Access to audit log files
`ConfigurationAccess`	Events indicating that the administrator succeeded or failed in performing an allowed operation: • Reference or update of the configuration information • Update of account settings including addition or deletion of accounts • Security configuration • Reference or update of audit log settings

Category	Description
Maintenance	Events indicating that a performed maintenance operation succeeded or failed: • Addition or deletion of hardware components • Addition or deletion of software components
AnomalyEvent	Events indicating that anomalies such as a threshold excess occurred: • Excess over network traffic threshold • Excess over CPU load threshold • Over-limit pre-notification or wraparound of audit log data temporarily saved internally
	Events indicating that abnormal communication occurred: • SYN flood attacks to a regularly used port, or protocol violations • Access to an unused port (for example, port scanning)

Different products generate different types of audit log data. The following subsections describe the audit log data that can be generated by using the Tuning Manager server. For details on the audit log data generated by other products, see the manual for the corresponding product.

Categories of information output to audit logs on a Tuning Manager server

The following table lists the categories of information output to audit logs on a Tuning Manager server and the audit events. Each audit event is assigned a severity level. You can filter audit log data to be output according to the severity levels of events.

Table 8-8 Categories of information output to audit logs, and audit events

Category	Type description	Audit event	Severity	Message ID
StartStop	Start and stop of software	Successful SSO server start	6	KAPM00090-I
		Failed SSO server start	3	KAPM00091-E
		SSO server stop	6	KAPM00092-I

Category	Type description	Audit event	Severity	Message ID
Authentication	Administrator or end user authentication	Successful login	6	KAPM01124-I
		Successful login (log into an external authentication server)	6	KAPM02450-I
		Failed login (wrong user ID or password)	4	KAPM02291-W
		Failed login (attempt to log in as a locked user)	4	KAPM02291-W
		Failed login (attempt to log in as a non-existing user)	4	KAPM02291-W
		Failed login (no permission)	4	KAPM01095-E
		Failed login (authentication failure)	4	KAPM01125-E
		Failed login (authentication failure by an external authentication server)	4	KAPM02451-W
		Successful logout	6	KAPM08009-I
		Failed login	4	KAPM01126-W
	Automatic account lock	Automatic account lock (repeated authentication failure or expiration of account)	4	KAPM02292-W
ConfigurationAccess	User registration through the GUI	Successful user registration	6	KAPM07230-I
		Failed user registration	3	KAPM07240-E
	User deletion through the GUI	Successful single user deletion	6	KAPM07231-I
		Failed single user deletion	3	KAPM07240-E
		Successful multiple user deletion	6	KAPM07231-I
		Failed multiple user deletion	3	KAPM07240-E

Category	Type description	Audit event	Severity	Message ID
ConfigurationAccess	Password change (from the administrator panel)	Successful password change by the administrator	6	KAPM07232-I
		Failed password change by the administrator	3	KAPM07240-E
	Password change (from the user's own panel)	Failed in authentication processing for verifying old password	3	KAPM07239-E
		Successful change of login user's own password (from the user's own panel)	6	KAPM07232-I
		Failed change of login user's own password (from the user's own panel window)	3	KAPM07240-E
ConfigurationAccess	Profile change	Successful profile change	6	KAPM07233-I
		Failed profile change	3	KAPM07240-E
	Permission change	Successful permission change	6	KAPM02280-I
		Failed permission change	3	KAPM07240-E
	Account lock	Successful account lock[1]	6	KAPM07235-I
		Failed account lock	3	KAPM07240-E
	Account lock release	Successful account lock release[2]	6	KAPM07236-I
		Failed account lock release	3	KAPM07240-E
	Authentication method change	Successful authentication method change	6	KAPM02452-I
		Failed authentication method change	3	KAPM02453-E

Category	Type description	Audit event	Severity	Message ID
ConfigurationAccess	External authentication group is added (from the GUI)	External authentication group is successfully added	6	KAPM07247-I
		Attempt to add an external authentication group fails	3	KAPM07248-E
	External authentication group is deleted (from the GUI)	Single external authentication group is successfully deleted	6	KAPM07249-I
		Attempt to delete a single external authentication group fails	3	KAPM07248-E
		Multiple external authentication groups are successfully deleted	6	KAPM07249-I
		Attempt to delete multiple external authentication groups fails	3	KAPM07248-E
ConfigurationAccess	Permissions are changed for an external authentication group (from the GUI)	Permissions are successfully changed for an external authentication group	6	KAPM07250-I
		Attempt to change permissions for an external authentication group fails	3	KAPM07248-E
	User is registered (from the GUI or CLI)	User is successfully registered	6	KAPM07241-I
		Attempt to register a user fails	3	KAPM07242-E
	User information is updated (from the GUI or CLI)	User information is successfully updated	6	KAPM07243-I
		Attempt to update user information fails	3	KAPM07244-E
	User is deleted (from the GUI or CLI)	User is successfully deleted	6	KAPM07245-I
		Attempt to delete a user fails	3	KAPM07246-E

Category	Type description	Audit event	Severity	Message ID
ConfigurationAccess	External authentication group is registered (from the GUI or CLI)	External authentication group is successfully registered	6	KAPM07251-I
		Attempt to register an external authentication group fails	3	KAPM07252-E
	External authentication group is deleted (from the GUI or CLI)	External authentication group is successfully deleted	6	KAPM07253-I
		Attempt to delete an external authentication group fails	3	KAPM07254-E
	Permissions are changed for an external authentication group (from the GUI or CLI)	Permissions are successfully changed for an external authentication group	6	KAPM07255-I
		Attempt to change permissions for an external authentication group fails	3	KAPM07256-E

Category	Type description	Audit event	Severity	Message ID
ConfigurationAccess	Database backup or restore	Successful backup using the **hcmds64backups** command	6	KAPM05561-I
		Failed backup using the **hcmds64backups** command	3	KAPM05562-E
		Successful full restore using the **hcmds64db** command	6	KAPM05563-I
		Failed full restore using the **hcmds64db** command	3	KAPM05564-E
		Successful partial rest ore using the **hcmds64db** command	6	KAPM05565-I
		Failed partial restore using the **hcmds64db** command	3	KAPM05566-E

Category	Type description	Audit event	Severity	Message ID
ConfigurationAccess	Database area creation or deletion	Successful database area creation using the **hcmds64dbsetup** command	6	KAPM06348-I
		Failed database area creation using the **hcmds64dbsetup** command	3	KAPM06349-E
		Successful database area deletion using the **hcmds64dbsetup** command	6	KAPM06350-I
		Failed database area deletion using the **hcmds64dbsetup** command	3	KAPM06351-E
	Authentication data input/output	Successful data output using the **hcmds64authmove** command[3]	6	KAPM05832-I
		Failed data output using the **hcmds64authmove** command[3]	3	KAPM05833-E
		Successful data input using the **hcmds64authmove** command[3]	6	KAPM05834-I
		Failed data input using the **hcmds64authmove** command[3]	3	KAPM05835-E

Note 1:

If an account is locked because the authentication method was changed for a user whose password is not set, this information is not recorded in the audit log.

Note 2:

If an account is unlocked because a password was set for a user, this information is not recorded in the audit log.

Note 3:

The Tuning Manager server does not use this command.

Editing the audit log environment settings file

To generate Tuning Manager server audit log data, you must edit the environment settings file `auditlog.conf`. The audit log data can be generated by setting audit event categories, in `Log.Event.Category` of the environment settings file.

To apply the changes in the environment settings file for the audit log, you need to restart the Tuning Manager server and Common Component.

For Windows, the audit log data is output to the event log files (application log files).

Note: A large volume of audit log data might be output. Change the log size and back up or archive the generated logs accordingly.

The `auditlog.conf` file is stored in the following locations:

In Windows:

Common-Component-installation-folder\conf\sec\auditlog.conf

In Linux:

Common-Component-installation-directory/conf/sec/auditlog.conf

The following table lists and describes the items that are set for the `auditlog.conf` file.

Table 8-9 Items set for auditlog.conf

Item	Description
`Log.Facility`	Specify (by using a number) the facility to be used when the audit log messages are output to the `syslog` file. `Log.Facility` is used, in combination with the severity levels set for each audit event (see Table 8-8 Categories of information output to audit logs, and audit events on page 8-24), for filtering the output to the `syslog` file. For details about the values that can be specified for `Log.FacilContentsity`, see Table 8-10 Log.Facility values and the corresponding values in syslog.conf on page 8-32. For details about the correspondence between the severity levels set for audit events and those set in the `syslContentsog.conf` file, see Table 8-11 Correspondence between the severity levels of audit events, the severity levels in syslog.conf, and the types of event log data on page 8-33. `Log.Facility` has an effect in UNIX only. `Log.Facility` is ignored in Windows, even if it is specified. Also, if an invalid value or a non-numeric character is specified, the default value is used. Default value: `1`

Item	Description
Log.Event.Category	Specify the audit event categories to be generated. When specifying multiple categories, use commas (,) to separate them. Do not insert spaces between categories and commands. If Log.Event.Category is not specified, audit log data is not output. For information about the available categories, see Table 8-8 Categories of information output to audit logs, and audit events on page 8-24. Log.Event.Category is not case-sensitive. If an invalid category name is specified, the specified file name is ignored. Default value: (not specified)
Log.Level	Specify the severity level of audit events to be generated. Events with the specified severity level or lower will be output to the event log file. For information about the audit events that are output from the Tuning Manager server and their severity levels, see Table 8-8 Categories of information output to audit logs, and audit events on page 8-24. For details about the correspondence between the severity levels of audit events and the types of event log data, see Table 8-11 Correspondence between the severity levels of audit events, the severity levels in syslog.conf, and the types of event log data on page 8-33. Log.Level has an effect in Windows only. Log.Level is ignored in UNIX, even if it is specified. Also, if an invalid value or a non-numeric character is specified, the default value is used. Specifiable values: 0 to 7 (severity level) Default value: 6

The following table lists the values that can be set for Log.Facility and the corresponding values specified in the syslog.conf file.

Table 8-10 Log.Facility values and the corresponding values in syslog.conf

Facility	Corresponding values in syslog.conf
1	user
2	mail[1]
3	daemon
4	auth[1]
6	lpr[1]
16	local0
17	local1
18	local2
19	local3
20	local4
21	local5
22	local6
23	local7

Note 1:

We recommend not specifying this value.

The following table lists the correspondence between the severity levels of audit events, the values indicating severity that are specified in the `syslog.conf` file, and the types of event log data.

Table 8-11 Correspondence between the severity levels of audit events, the severity levels in syslog.conf, and the types of event log data

Severity of audit events	Severity in syslog.conf	Type of event log data
0	`emerg`	Error
1	`alert`	
2	`crit`	
3	`err`	
4	`warning`	Warning
5	`notice`	Information
6	`info`	
7	`debug`	

The following shows an example of the `auditlog.conf` file:

```
# Specify an integer for Facility. (specifiable range: 1-23)
Log.Facility 1
# Specify the event category.
# You can specify any of the following:
# StartStop, Failure, LinkStatus, ExternalService,
# Authentication, AccessControl, ContentAccess,
# ConfigurationAccess, Maintenance, or AnomalyEvent.
Log.Event.Category
# Specify an integer for Severity. (specifiable range: 0-7)
Log.Level 6
```

In the example above, the audit events related to `Authentication` and `ConfigurationAccess` are output. For Windows, `Log.Level6` outputs audit log data corresponding to the Error, Warning, and Information levels.

Format of output audit log data

This subsection describes the format of output audit log data.

- In Windows Server 2008 and Windows Server 2012:

  When you open an event by choosing **Event Viewer**, **Windows Logs**, and then **Application**, the following is displayed in the **General** tab in the **Event Properties**.

```
program-name [process-ID]:message-portion
```

- In UNIX:

  The contents of a `syslog` file

date-timeserver-name (or *IP-address*)*program-name* [*process-ID*] : *message-portion*

The format and contents of *message-portion* are described in the following example and in Table 8-12 Information output to message-portion on page 8-34.

In *message-portion*, a maximum of 953 single-byte characters are displayed.

The output format of message-portion:

uniform-identifier, *unified-specification-revision-number*,
serial-number, *message-ID*, *date-and-time*, *detected-entity*, *detected-location*, *audit-event-type*,
audit-event-result, *audit-event-result-subject-identification-information*,
hardware-identification-information, *location-information*, *location-identification-information*,
FQDN, *redundancy-identification-information*, *Agent-information*, *request-source-host*,
request-source-port-number, *request-destination-host*, *request-destination-port-number*,
batch-operation-identifier, *log-data-type-information*, *application-identification-information*,
reserved-area, *message-text*

Table 8-12 Information output to message-portion

Item[1]	Description
uniform-identifier	Fixed to `CELFSS`
unified-specification-revision-number	Fixed to `1.1`
serial-number	Serial number of audit log messages
message-ID	Message ID For details, see the *Tuning Manager Messages.*
date-and-time	The date and time when the message was output. This item is output in the format *yyyy*-*mm*-*dd*T*hh*:*mm*:*ss*.*stime-zone*.
detected-entity	Component or process name
detected-location	Host name
audit-event-type	Event type
audit-event-result	Event result
audit-event-result-subject-identification-information	Account ID, process ID, or IP address corresponding to the event
hardware-identification-information	Hardware model or serial number
location-information	Identification information for the hardware component
location-identification-information	Location identification information

Item[1]	Description
FQDN	Fully qualified domain name
redundancy-identification-information	Redundancy identification information
Agent-information	Agent information
request-source-host	Host name of the request sender
request-source-port-number	Port number of the request sender
request-destination-host	Host name of the request destination
request-destination-port-number	Port number of the request destination
batch-operation-identifier	Serial number of operations through the program
log-data-type-information	Fixed to `BasicLog`
application-identification-information	Program identification information
reserved-area	No output.
message-text	The contents vary depending on the audit events. Characters that cannot be displayed are output as asterisks (`*`).

Note 1:

Some items are not output for some audit events.

Example of message-portion output for the Login audit event:

```
CELFSS,1.1,0,KAPM01124-I,2014-07-22T14:08:23.1+09:00,HBase-
SSO,management-host,Authentication,Success,uid=hoge,,,,,,,,,,,BasicLog,,," The
login was successful. (session ID = session ID)"
```

A

Default installation directories for the Tuning Manager series programs

This appendix describes the default installation directories for the Tuning Manager series programs.

This appendix covers the following topics:

☐ Default installation directories for the Tuning Manager series programs

Default installation directories for the Tuning Manager series programs

The following tables show the default installation directories for the Tuning Manager series programs.

Table A-1 Windows Server (x86) default installation folders

System component	Default installation folder
Collection Manager	`%SystemDrive%\Program Files\HiCommand\TuningManager\jp1pc`
Agents	`%SystemDrive%\Program Files\HiCommand\TuningManager\jp1pc`

Table A-2 Windows Server (x64) default installation folders

System component	Default installation folder
Tuning Manager server	`%SystemDrive%\Program Files\HiCommand\TuningManager`
Common Component	`%SystemDrive%\Program Files\HiCommand\Base64`
Performance Reporter	`%SystemDrive%\Program Files\HiCommand\TuningManager\PerformanceReporter`
Collection Manager	`%SystemDrive%\Program Files(x86)\HiCommand\TuningManager\jp1pc`
Agents	`%SystemDrive%\Program Files(x86)\HiCommand\TuningManager\jp1pc`

Table A-3 Solaris, AIX, and HP-UX default installation directories

System component	Default installation directory
Collection Manager	`/opt/jp1pc`
Agents	`/opt/jp1pc`

Table A-4 Linux default installation directories

System component	Default installation directory
Tuning Manager server	`/opt/HiCommand/TuningManager`
Common Component	`/opt/HiCommand/Base64`
Performance Reporter	`/opt/HiCommand/TuningManager/PerformanceReporter`
Collection Manager	`/opt/jp1pc`
Agents	`/opt/jp1pc`

Glossary

The following acronyms and abbreviations are used in this document.

A

Active node

A logical node that is actively performing tasks in the server systems that make up an active-standby cluster configuration.

Agent host

A host that is managed by Tuning Manager server in the Agent host monitoring mode.

Agentless host

A host that is managed by Tuning Manager server in the Agentless host monitoring mode.

Agent host monitoring mode

A mode where Agent for RAID Map and Agent for Platform are used to obtain host configuration information and capacity/performance information.

Agentless host monitoring mode

A mode where the host that is managed by a Tuning Manager server that is in the Agent mode

API

Application Programming Interface

ASCII

American Standard Code for Information Interchange

C

CLPR

Cache Logical Partition

D

Data point

Individual values that are plotted in a graph. Data point is a geometrical point represented by an ordered pair (x-coordinate, y-coordinate) of numbers. Related data points make up a series group.

DKA

Disk Adapter

DTD

Document Type Definition

F

FQDN

Fully Qualified Domain Name

G

GUI

Graphical User Interface

H

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

I

ID

IDentifier, identification

IP

Internet Protocol

IPv4

Internet Protocol v4

IPv6

Internet Protocol v6

L

LDEV

Logical Device Unit

LU

Logical Unit

N

NAS

Network Attached Storage

O

OS

Operating System

R

RAID

Redundant Array of Inexpensive Disks

S

series group

In a graph, related data points constitute a series group. For a combination report, a group of objects are registered using the combination bookmark. Each object represents a series group.

SAN

Storage Area Network

SLPR

Storage Logical Partition

SMTP

Simple Mail Transfer Protocol

SSO

Single sign-on

Standby node

A node associated with each server system that makes up an active-standby cluster configuration that stands by to take over tasks if a failure occurs in the active node.

SVP

Service Processor

T

Tooltip

In a report, a box containing informational text that is displayed when hovering over an item with the cursor.

TCP

Transmission Control Protocol

X

XML

Extensible Markup Language

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