



Hitachi Storage Command Suite

Hitachi Storage Command Suite Software

Server Installation Guide

Device Manager

Provisioning Manager

Tiered Storage Manager

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Preface

This manual describes the requirements, pre-installation tasks, the installation procedure, and post-installation tasks for installing Hitachi Device Manager (abbreviated hereafter to Device Manager), Hitachi Provisioning Manager (abbreviated hereafter to Provisioning Manager), Hitachi Tiered Storage Manager (abbreviated hereafter to Tiered Storage Manager), and Hitachi Storage Command Suite Common Component (abbreviated hereafter to Common Component) on a management server.

This preface includes the following information:

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

Notice: The use of Hitachi Device Manager, Hitachi Provisioning Manager, Hitachi Tiered Storage Manager and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

Intended Audience

This manual is intended for administrators who manage and operate Device Manager, Provisioning Manager, and Tiered Storage Manager systems. The manual assumes that readers:

- Have a basic knowledge of TCP/IP networks
- Understand how to operate the OS on the management server
- Have a basic knowledge of the features of Device Manager, Provisioning Manager, and Tiered Storage Manager and their system configurations
- Have a basic knowledge of storage subsystems
- Have a basic knowledge of the relevant software linked with Device Manager, Provisioning Manager, and Tiered Storage Manager
- Understand how to operate cluster software (if you set up a cluster environment)

Software Version

This document revision applies to software version 6.4.

Release Notes

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

Document Revision Level

Revision	Date	Description
MK-98HC150-00	May 2008	Initial Release
MK-98HC150-01	February 2009	Revision 01, supersedes and replaces MK-98HC150-00
MK-98HC150-02	July 2009	Revision 02, supersedes and replaces MK-98HC150-01
MK-98HC150-03	December 2009	Revision 03, supersedes and replaces MK-98HC150-02
MK-98HC150-04	June 2010	Revision 04, supersedes and replaces MK-98HC150-03

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	This chapter describes the tasks to be performed before operating Device Manager, Provisioning Manager, and Tiered Storage Manager, and also gives an overview of the Hitachi Storage Command Suite installer.
Performing a New Installation	This chapter explains how to perform a new installation of Device Manager and Tiered Storage Manager.
Performing an Upgrade or Overwrite Installation	This chapter explains how to perform an upgrade or overwrite installation of Device Manager and Tiered Storage Manager.
Unattended Installation	This chapter explains how to set up and perform an unattended installation.
Uninstallation	This chapter explains how to uninstall Device Manager and Tiered Storage Manager.
Setting Up a Cluster Environment	This chapter explains how to set up a cluster environment when Device Manager and Tiered Storage Manager are used in a cluster environment.
Troubleshooting	This chapter describes how to resolve installation or uninstallation issues. This chapter also describes log information that might be output during installation or uninstallation.
Acronyms and Abbreviations	Defines the acronyms and abbreviations used in this document.
Index	Lists the topics in this document in alphabetical order.

Referenced Documents

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

- Hitachi Storage Command Suite Documents:
 - Hitachi Device Manager Server Configuration and Operation Guide, MK-08HC157
 - Hitachi Device Manager Agent Installation Guide, MK-92HC019
 - Hitachi Device Manager Error Codes, MK-92HC016
 - Hitachi Device Manager Getting Started Guide, MK-98HC149
 - Hitachi Tiered Storage Manager User's Guide, MK-94HC090
 - Hitachi Tiered Storage Manager Server Configuration and Operation Guide, MK-08HC158
 - Hitachi Tuning Manager Installation Guide, MK-96HC141
 - Hitachi Tuning Manager Server Administration Guide, MK-92HC021

Document Conventions

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 .
<i>Italic</i>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: copy <i>source-file</i> <i>target-file</i> Note: Angled brackets (< >) are also used to indicate variables.
screen/code	Indicates text that is displayed on screen or entered by the user. Example: # <code>pairdisplay -g oradb</code>
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: # <code>pairdisplay -g <group></code> 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	Label	Description
	Note	Calls attention to important and/or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (e.g., disruptive operations).
	WARNING	Warns the user of severe conditions and/or consequences (e.g., destructive operations).

Convention for Storage Capacity Values

Physical storage capacity values (e.g., disk drive capacity) are calculated based on the following values:

Physical Capacity Unit	Value
1 KB	1,000 bytes
1 MB	1,000 ² bytes
1 GB	1,000 ³ bytes
1 TB	1,000 ⁴ bytes
1 PB	1,000 ⁵ bytes
1 EB	1,000 ⁶ bytes

Logical storage capacity values (e.g., 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

Getting Help

The Hitachi Data Systems Support Center staff is available 24 hours a day, seven days a week. To reach us, please visit the support Web site for current telephone numbers and other contact information: <http://www.hds.com/services/support/>. If you purchased this product from an authorized HDS reseller, contact that reseller for support.

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

- The circumstances surrounding the error or failure.
- The exact content of any error message(s) displayed on the host system(s).

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title, number, and revision, and refer to specific section(s) and paragraph(s) whenever possible.

Thank you! (All comments become the property of Hitachi Data Systems Corporation.)

Overview

This chapter gives an overview of the Hitachi Storage Command Suite installer, and describes the flow of tasks to be performed before using Device Manager, Provisioning Manager, and Tiered Storage Manager. It also explains Device Manager and Tiered Storage Manager system requirements.

- [Overview of the Hitachi Storage Command Suite Installer](#)
- [Installation Overview](#)
- [System Requirements](#)

Overview of the Hitachi Storage Command Suite Installer

The Hitachi Storage Command Suite installer installs the following Hitachi Storage Command Suite products onto the management server:

- Device Manager
- Provisioning Manager
- Tiered Storage Manager
- Common Component

Versions 6.0 and earlier of Device Manager and Tiered Storage Manager had to be installed from separate installation CDs. The installation programs have now been combined, so you can use the Hitachi Storage Command Suite installer to install Device Manager and Tiered Storage Manager either at the same time or separately.

Note that Provisioning Manager and Device Manager are always installed and uninstalled together. Therefore, although the following explanations refer to "Device Manager," they apply to Provisioning Manager as well. Where necessary, additional information that applies only to Provisioning Manager is provided.

Types of Installation

The Hitachi Storage Command Suite installer provides three types of installation, listed below.

New installation

In this type of installation, Device Manager or Tiered Storage Manager is installed on a computer where no previous installation exists.

Upgrade installation

In this type of installation, the installed version of Device Manager or Tiered Storage Manager is overwritten with a later version or revision.

If you perform an upgrade installation on a computer where Device Manager and Tiered Storage Manager are installed, both are upgraded.



Caution: If Provisioning Manager version 5.9 or earlier is already installed, performing an upgrade installation of the Device Manager server moves the files of the existing Provisioning Manager server to the installation directory of the new Provisioning Manager server. The installation directory of the new Provisioning Manager server will have been created under the installation directory of the Device Manager server. If the installation directory of Provisioning Manager server is moved, log files and property files are inherited as well.

Overwrite installation

In this type of installation, the installed version and revision of Device Manager or Tiered Storage Manager is overwritten with the same version.

You cannot perform a downgrade installation of a version or revision. For example, you cannot install a product whose version is 5.9 or earlier on a computer containing a product whose version is 6.0.

Methods of Installation

The Hitachi Storage Command Suite installer provides two installation methods:

Normal installation

Installation proceeds by the user interactively responding to prompts displayed in windows.

Unattended installation

Installation proceeds according to specified installation settings, and no user responses to displayed prompts are required.

Installation Overview

[Table 1-1](#) describes the flow of installation tasks.

Table 1-1 Installation Task Summary

Item	Task	Details
1	Estimate the system requirements.	To design and estimate resources for the SAN environment to be managed and operated by Device Manager, Provisioning Manager, and Tiered Storage Manager, consider the following items: ▪ The number of storage subsystems ▪ Storage subsystem functions to be used ▪ Which volumes are to be allocated to which hosts ▪ The number of volumes and paths to be monitored ▪ Management and operation systems This manual assumes that you have already estimated the above items. For details about storage subsystem requirements and system configurations, see the <i>Hitachi Device Manager Server Configuration and Operation Guide</i> and the <i>Hitachi Tiered Storage Manager Server Configuration and Operation Guide</i>.
2	Check the system requirements for the management server.	Check the applicable OS, hardware requirements, and prerequisite programs for the management server. For details, see System Requirements.
3	Check the information required for the installation.	In the installation wizard, you need to specify the installation path, the storage location for database files, and the IP address or host name of the management server. For items for which the default value is provided, such as the installation path and the storage location for database files, we recommend that you use the default value. If you want to specify a value other than the default value, determine the value you want to specify in advance. For details, see Review the Required Installation Information.
4	Perform pre-installation tasks.	Before installation, determine the settings that must be specified during installation. Pre-installation tasks differ between a new installation and an upgrade or overwrite installation. For details, see Pre-installation Tasks for a New Installation or Pre-installation Tasks for an Upgrade or Overwrite Installation.
5	Review the checklist.	Review the items to be checked before actually installing the software.
6	Install the software.	Install Device Manager, Provisioning Manager, or Tiered Storage Manager on the management server. For details, see Performing a New Installation or Performing an Upgrade or Overwrite Installation.

Item	Task	Details
7	Perform post-installation tasks.	Perform tasks to enable SANs to be managed and operated by Device Manager, Provisioning Manager, and Tiered Storage Manager. Post-installation tasks differ between a new installation and an upgrade or overwrite installation. For details, see Tasks Required After a New Installation or Tasks Required After an Upgrade or Overwrite Installation.

System Requirements

Before installing Device Manager and Tiered Storage Manager, you must make sure that the management server satisfies the system requirements. For details about other requirements such as storage subsystem requirements or network configuration requirements, see the *Hitachi Device Manager Server Configuration and Operation Guide* or the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

Supported Operating Systems

Make sure that the management server OS is supported by Device Manager and Tiered Storage Manager.

For Windows®

[Table 1-2](#) lists the prerequisite OSs when performing an installation in a Windows environment.

Table 1-2 Prerequisite OSs (Windows)

OS Name	Architecture	Service Pack	Device Manager	Tiered Storage Manager
Windows Server® 2003	x86	SP2	Y	Y
	x64	SP2	Y	Y
Windows Server 2003 R2	x86	SP2	Y	Y
	x64	SP2	Y	Y
Windows Server 2008 [#]	x86	No SP	Y	Y
		SP2	Y	Y
	x64	No SP	Y	Y
		SP2	Y	Y
Windows Server 2008 R2 [#]	x64	No SP	Y	Y
Windows Vista®	x86	No SP	Y	Y
		SP1	Y	Y
		SP2	Y	Y
Windows XP	x86	SP2	Y	Y
		SP3	Y	Y
Windows 7	x86	No SP	Y	Y
	x64	No SP	Y	Y

OS Name	Architecture	Service Pack	Device Manager	Tiered Storage Manager
Legend: Y: Supported Note: Hitachi Storage Command Suite products support the Windows Remote Desktop functionality. Depending on the OS you are using, this functionality is referred to as one of the following: - Terminal Services Remote Administration mode - Remote Desktop for Administration - Remote Desktop Connection When you use the Remote Desktop functionality to operate Hitachi Storage Command Suite products (including installing and uninstalling them), you need to connect to a console session on the connection target server. Note that, if another user connects to the console session while you are connected, the products might not operate properly. # Operation on Server Core is not supported.				

The Device Manager server and the Tiered Storage Manager server also run on the virtual machine OSs shown in the following table.

Table 1-3 Virtual Machine OSs on Which the Device Manager Server and the Tiered Storage Manager Server Can Run (Windows)

Virtual Machine			Virtualization Software	
OS Name	Architecture	Service Pack	VMware® ESX ^{#1}	Hyper-V ^{TM#2}
Windows Server 2003	x86	SP2	Y	Y
	x64	SP2	Y	Y
Windows Server 2003 R2	x86	SP2	Y	Y
	x64	SP2	Y	Y
Windows Server 2008	x86	No SP	Y	Y
		SP2	Y	Y
	x64	No SP	Y	Y
		SP2	Y	Y
Windows Server 2008 R2	x64	No SP	Y	Y
Windows Vista	x86	No SP	Y	N
		SP1	Y	N
		SP2	Y	N
Windows XP	x86	SP2	Y	N
		SP3	Y	N
Windows 7	x86	No SP	Y	N
	x64	No SP	Y	N

Virtual Machine			Virtualization Software	
OS Name	Architecture	Service Pack	VMware® ESX ^{#1}	Hyper-V ^{TM#2}
Legend: Y: Supported N: Not supported Note: To run the Device Manager server and the Tiered Storage Manager server on a virtual machine to satisfy the requirements in Table 1-6. #1 Version 3.x or 4.x can be used. #2 Version 1.0 or 2.0 can be used.				

For Solaris

[Table 1-4](#) lists the prerequisite OSs when performing an installation in a Solaris environment.

Table 1-4 Prerequisite OSs (Solaris)

OS Name	Architecture	Device Manager	Tiered Storage Manager
Solaris 8	SPARC	Y	Y
Solaris 9	SPARC	Y	Y
Solaris 10 ^{#1}	SPARC	Y ^{#2}	Y ^{#2}
	x64	Y ^{#3}	Y ^{#3}
Legend: Y: Supported #1 The Device Manager server and the Tiered Storage Manager server run in the usual global environment (global zone) only. If a non-global zone has been created, install the Device Manager server and the Tiered Storage Manager server in the global zone. #2 The Device Manager server and the Tiered Storage Manager server also run on a guest OS of Logical Domains (LDoms) 1.2 or 1.3. To run the Device Manager server and the Tiered Storage Manager server on a virtual machine to satisfy the requirements in Table 1-8. #3 The Device Manager server runs only in the 64-bit kernel mode on the Sun Fire x64 Servers hardware. Do not change the kernel mode to a mode other than the 64-bit kernel mode after installing the Device Manager server.			

For Linux®

[Table 1-5](#) lists the prerequisite OSs when performing an installation in a Linux environment.

Table 1-5 Prerequisite OSs (Linux)

OS Name	Architecture	Service Pack	Device Manager	Tiered Storage Manager
Red Hat Enterprise Linux AS/ES 4 Update 4	x86	--	Y	N
Red Hat Enterprise Linux AS/ES 4.5	x86	--	Y	N
Red Hat Enterprise Linux AS/ES 4.6	x86	--	Y	N
Red Hat Enterprise Linux AS/ES 4.7	x86	--	Y	N
Red Hat Enterprise Linux 5.2 Red Hat Enterprise Linux 5.2 Advanced Platform	x86	--	Y	Y
Red Hat Enterprise Linux 5.3 Red Hat Enterprise Linux 5.3 Advanced Platform	x86	--	Y	Y
	x64	--	Y	Y
Red Hat Enterprise Linux 5.4 Red Hat Enterprise Linux 5.4 Advanced Platform	x86	--	Y	Y
	x64	--	Y	Y
SUSE Linux Enterprise Server 10	x86	SP2	Y	Y
		SP3	Y	Y
	x64	SP2	Y	Y
		SP3	Y	Y
SUSE Linux Enterprise Server 11	x86	No SP	Y	Y
	x64	No SP	Y	Y
Legend: Y: Supported N: Not supported --: Not applicable				

Hardware Requirements

Make sure that the management server satisfies the hardware requirements for running Device Manager and Tiered Storage Manager. The following sections describe the hardware requirements for each possible management server OS.

For Windows

[Table 1-6](#) describes the hardware requirements when the management server OS is Windows.

Table 1-6 Hardware Requirements for Windows

Item	Requirements	
	Device Manager	Tiered Storage Manager
Processor	Minimum value: 1.0 GHz Recommended value: 2.0 GHz or higher	
Physical memory	Minimum value: 512 MB Recommended value: 1 GB or more	Minimum value: 1 GB Recommended value: 2 GB or more
Disk space ^{#1}	Minimum value: 4 GB Recommended value: 5 GB or more	Minimum value: 1 GB ^{#2} Recommended value: 5 GB or more ^{#2}
Monitor	XGA (1,024 x 768 resolution) or higher	
LAN card	10/100 Ethernet LAN card If the management server and LAN cable are compatible with Gigabit Ethernet, you can use a Gigabit-class card.	
CD-ROM drive	No requirement	

Note: If adequate virtual memory is not allocated on the management server, the Hitachi Storage Command Suite products and any other installed programs might become unstable or might not start. To ensure stable operation of the management server, in addition to the virtual memory required for the OS and other programs, the management server also requires the amount of virtual memory required for both the products shown in [Table 1-7](#) and Common Component.

In addition to the virtual memory required for all the products installed on a management server, be sure to secure enough virtual memory (500MB) for Common Component.

[Table 1-7](#) shows the virtual memory requirements for each product in version 6.4.

#1 This disk space is an approximate value for the entire system. For details about the disk space required for the installation location of each product and database storage location, see [Review the Required Installation Information](#).

#2 To use Tiered Storage Manager, there must also be enough disk space for Device Manager.

Table 1-7 Virtual Memory Requirements for Each Product (Windows)

Product Name	Virtual Memory Requirement (MB)
Device Manager ^{#1}	1,024
Provisioning Manager	(Included in Device Manager)
Tiered Storage Manager	600
Tuning Manager ^{#2}	1,500
Replication Manager ^{#3}	100

Product Name	Virtual Memory Requirement (MB)
Global Link Manager	300
Hitachi NAS Manager ^{#4}	512
Storage Navigator Modular 2 ^{#4}	192
Note: If you plan to install Device Manager, Tiered Storage Manager, and Replication Manager, and if 1,000 MB of virtual memory is already used by the OS and other programs, you must secure more than 3,224 MB of virtual memory. 1,024 (for Device Manager) + 600 (for Tiered Storage Manager) + 100 (for Replication Manager) + 500 (for Common Component) + 1,000 (already used virtual memory) = 3,224 #1 If the Device Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements and allocating virtual memory, see the description of the server.agent.maxMemorySize property in the <i>Hitachi Device Manager Agent Installation Guide</i>. #2 If the Tuning Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements, see the description of memory requirements in the <i>Hitachi Tuning Manager Installation Guide</i>. #3 If Replication Manager Application Agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements, see the <i>Hitachi Replication Manager Installation and Configuration Guide</i>. #4 The virtual memory requirements listed in the table are for Hitachi NAS Manager version 6.3 and Storage Navigator Modular 2 version 9.00. For details on the latest virtual memory requirements, see the documentation for each product.	

For Solaris

[Table 1-8](#) describes hardware requirements when the management server OS is Solaris:

Table 1-8 Hardware Requirements for Solaris

Item	Requirements	
	Device Manager	Tiered Storage Manager
Processor	Solaris (SPARC) Minimum value: 1.0 GHz Recommended value: 1.2 GHz or higher Solaris (x64) Minimum value: 1.8 GHz Recommended value: 2.2 GHz or higher	
Physical memory	Minimum value: 1 GB Recommended value: 2 GB or more	Minimum value: 1 GB Recommended value: 2 GB or more
Disk space ^{#1}	Minimum value: 4 GB Recommended value: 5 GB or more	Minimum value: 1 GB ^{#2} Recommended value: 5 GB or more ^{#2}
Monitor	XGA (1,024 x 768 resolution) or higher	
LAN card	10/100 Ethernet LAN card If the management server and LAN cable are compatible with Gigabit Ethernet, you can use a Gigabit-class card.	
CD-ROM drive	No requirement	

Item	Requirements	
	Device Manager	Tiered Storage Manager
Note: If adequate virtual memory is not allocated on the management server, the Hitachi Storage Command Suite products and any other installed programs might become unstable or might not start. To ensure stable operation of the management server, in addition to the virtual memory required for the OS and other programs, the management server also requires the amount of virtual memory required for both the products shown in Table 1-9 and Common Component. In addition to the virtual memory required for all the products installed on a management server, be sure to secure enough virtual memory (500MB) for Common Component. Table 1-9 shows the virtual memory requirements for each product in version 6.4. #1 This disk space is an approximate value for the entire system. For details about the disk space required for the installation location of each product and database storage location, see Review the Required Installation Information. #2 To use Tiered Storage Manager, there must also be enough disk space for Device Manager.		

Table 1-9 Virtual Memory Requirements for Each Product (Solaris)

Product Name	Virtual Memory Requirement (MB)
Device Manager ^{#1}	1,024
Provisioning Manager	(Included in Device Manager)
Tiered Storage Manager	600
Tuning Manager ^{#2}	1,500
Replication Manager ^{#3}	100
Storage Navigator Modular 2 ^{#4}	192
Note: If you plan to install Device Manager, Tiered Storage Manager, and Replication Manager, and if 1,000 MB of virtual memory is already used by the OS and other programs, you must secure more than 3,224 MB of virtual memory. 1,024 (for Device Manager) + 600 (for Tiered Storage Manager) + 100 (for Replication Manager) + 500 (for Common Component) + 1,000 (already used virtual memory) = 3,224 #1 If the Device Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements and allocating virtual memory, see the description of the <code>server.agent.maxMemorySize</code> property in the <i>Hitachi Device Manager Agent Installation Guide</i>. #2 If the Tuning Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements, see the description of memory requirements in the <i>Hitachi Tuning Manager Software Installation Guide</i>. #3 If Replication Manager Application Agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements, see the <i>Hitachi Replication Manager Installation and Configuration Guide</i>. #4 The virtual memory requirements listed in the table are for Storage Navigator Modular 2 version 9.00. For details on the latest virtual memory requirements, see the documentation for Storage Navigator Modular 2.	

For Linux

[Table 1-10](#) describes hardware requirements when the management server OS is Linux:

Table 1-10 Hardware Requirements for Linux

Item	Requirements	
	Device Manager	Tiered Storage Manager
Processor	Minimum value: 1.0 GHz Recommended value: 2 GHz or higher	
Physical memory	Minimum value: 1 GB Recommended value: 2 GB or more	Minimum value: 1 GB Recommended value: 2 GB or more
Disk space ^{#1}	Minimum value: 4 GB Recommended value: 5 GB or more	Minimum value: 1 GB ^{#2} Recommended value: 5 GB or more ^{#2}
Monitor	XGA (1,024 x 768 resolution) or higher	
LAN card	10/100 Ethernet LAN card If the management server and LAN cable are compatible with Gigabit Ethernet, you can use a Gigabit-class card.	
CD-ROM drive	No requirement	
Note: If adequate virtual memory is not allocated on the management server, the Hitachi Storage Command Suite products and any other installed programs might become unstable or might not start. To ensure stable operation of the management server, in addition to the virtual memory required for the OS and other programs, the management server also requires the amount of virtual memory required for both the products shown in Table 1-11 and Common Component. In addition to the virtual memory required for all the products installed on a management server, be sure to secure enough virtual memory (500MB) for Common Component. Table 1-11 shows the virtual memory requirements for each product in version 6.4. #1 This disk space is an approximate value for the entire system. For details about the disk space required for the installation location of each product and database storage location, see Review the Required Installation Information. #2 To use Tiered Storage Manager, there must also be enough disk space for Device Manager.		

Table 1-11 Virtual Memory Requirements for Each Product (Linux)

Product Name	Virtual Memory Requirement (MB)
Device Manager ^{#1}	1,024
Provisioning Manager	(Included in Device Manager)
Tiered Storage Manager	600
Tuning Manager ^{#2}	--
Storage Navigator Modular 2 ^{#3}	192
Legend: --: The Tuning Manager server is not supported. Note: If you plan to install Device Manager and Tiered Storage Manager, and if 1,000 MB of virtual memory is already used by the OS and other programs, you must secure more than 3,124 MB of virtual memory. 1,024 (for Device Manager) + 600 (for Tiered Storage Manager) + 500 (for Common Component) + 1,000 (already used virtual memory) = 3,124 #1 If the Device Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements and allocating virtual memory, see the description of the <code>server.agent.maxMemorySize</code> property in the <i>Hitachi Device Manager Agent Installation Guide</i>. #2 If the Tuning Manager agent is installed on the management server, you need to allocate additional virtual memory for it. For details on virtual memory requirements, see the description of memory requirements in the <i>Hitachi Tuning Manager Installation Guide</i>. #3 The virtual memory requirements listed in the table are for Storage Navigator Modular 2 version 9.00. For details on the latest virtual memory requirements, see the documentation for Storage Navigator Modular 2.	

Prerequisite Programs

This section describes programs required to use Device Manager and Tiered Storage Manager.

OS Patches

If the management server OS is Solaris, you need to install the following OS patches in advance.

Table 1-12 Patches Required for Solaris

OS	Patches
Solaris 8 (SPARC)	Apply the following patches: ▪ Patch Cluster ▪ 121972-04 ▪ 108652-59 ▪ 108921-15 ▪ 112003-03 ▪ 108773-15 ▪ 111293-04 ▪ 111310-01 ▪ 112472-01 ▪ 109147-20 ▪ 108714-07 ▪ 111111-03 ▪ 112396-02 ▪ 108940-46 ▪ 108987-09 ▪ 108528-17 ▪ 108989-02 ▪ 108827-30
Solaris 9 (SPARC)	Apply the following patch: 118335-08
Solaris 10 (SPARC)	Apply the following patches: ▪ 120664-01 or later ▪ 127127-11 ▪ 138064-03 [#] Do not apply the following patch: 127111-xx (xx is 02 or later)
Solaris 10 (x64)	Apply the following patches: ▪ 120665-01 ▪ 127128-11 ▪ 138065-03 [#] Do not apply the following patch: 127112-xx (xx is 02 or later)

OS	Patches
	# Apply this patch if you use Solaris 10 11/06 (update 3), Solaris 10 8/07 (update 4), or Solaris 10 5/08 (update 5). Check the /etc/release file for the update number. The following shows an example of the /etc/release file for Solaris 10 11/06: Solaris 10 11/06 s10s_u3wos_10 SPARC Copyright 2006 Sun Microsystems, Inc. All Rights Reserved. Use is subject to license terms. Assembled 14 November 2006

Other Prerequisite Programs

In addition to the above, you need to install the following programs before performing an installation:

- If the management server OS is Windows:

Windows Installer 3.1 is required to use the Hitachi Storage Command Suite installer. If you do not have Microsoft® Windows Installer 3.1, then it is automatically installed before the Device and Tiered Storage Manager installation starts. Restart your computer after Microsoft Windows Installer 3.1 is installed. You can use the following procedure to verify your Microsoft Windows Installer version.

 - a. Find `msi.dll`.

It is usually stored in *Windows-system-folder\system32*.
 - b. Right-click `msi.dll`, and then choose **Properties**.
 - c. Select the **Version** tab, and then check the version.
- If the management server OS is Solaris:

For Solaris 10 (x64), J2SE Java™ Runtime Environment 5.0.0 is required to run Device Manager and Tiered Storage Manager. Install JDK™ 1.5.0 provided by Sun Microsystems, Inc.

In addition, SUNWgzip is required to extract the installer.
- If the management server OS is SUSE Linux Enterprise Server 10 SP3 (x64), the `libstdc++33-32bit-3.3.3-7.8.1` library is required.

gzip is required to extract the installer.

Performing a New Installation

This chapter explains how to perform a new installation of Device Manager and Tiered Storage Manager.

- ☐ [Review the Required Installation Information](#)
- ☐ [Pre-installation Tasks for a New Installation](#)
- ☐ [Performing a New Installation](#)
- ☐ [Tasks Required After a New Installation](#)

Review the Required Installation Information

In the installation wizard, you need to specify the installation path, storage location for database files, and the IP address or host name of the management server. Determine the conditions for the new installation in advance.

You need to enter the following information during installation:

- Installation path
- Storage location for database files
- IP address or host name of the management server
- Port number used for the Web service
- License information

For items for which the default value is provided, such as the installation path and database file storage location, we recommend that you use the default value.

Installation Path

This section lists the installation path for each product and the required disk space.

Installation Path for Each Product

For the installation path, specify a valid path to a location that has the required disk capacity. If you want to specify a path other than the default, we recommend that you record the path you want to specify in [Checklist for a New Installation](#).

[Table 2-1](#) lists the default installation locations.

Table 2-1 Default Installation Locations

OS	Default Installation Location
Windows	<i>program-files-folder\HiCommand</i> ^{#1}
Solaris ^{#2} or Linux	/opt/HiCommand

OS	Default Installation Location
#1 <i>program-files-folder</i> indicates the following location: - If the architecture is x86: The folder specified in the Windows system environment variable %ProgramFiles%. By default, this folder is as follows: <i>system-drive\Program Files\</i> - If the architecture is x64: The folder specified in the Windows system environment variable %ProgramFiles(x86)%. By default, this folder is as follows: <i>system-drive\Program Files(x86)\</i> #2 In Solaris 8 (SPARC), Solaris 9 (SPARC), and Solaris 10 (SPARC), you cannot change the installation location.	

The products are installed in the following locations under the installation location you specify during installation. For Solaris and Linux, the path delimiters are forward slashes (/).

Table 2-2 Installation Location for Each Product and Necessary Disk Space

Product	Installation Location	Required Space
Device Manager	Windows: <i>path-specified-during-installation\DeviceManager</i> Solaris or Linux: <i>path-specified-during-installation</i>	Windows: 1.6 GB Solaris or Linux: 1.5 GB
Provisioning Manager	<i>path-specified-during-installation\ProvisioningManager</i>	300 MB
Common Component [#]	<i>path-specified-during-installation\Base</i>	
Tiered Storage Manager	<i>path-specified-during-installation\TieredStorageManager</i>	300 MB
[#] If Common Component has been installed, it will be overwritten.		

If you change the installation location from the default, make sure that the installation location satisfies the following conditions.

Table 2-3 Conditions for Specifying an Absolute Path as the Installation Location

Condition	Description
Length of the absolute path	No more than 64 bytes

Condition	Description
Specifiable characters	Windows: A to Z, a to z, 0 to 9, periods (.), underscores (_), left parentheses ((), right parentheses ()), single byte spaces, backslashes (\), and colons (:) Solaris or Linux: A to Z, a to z, 0 to 9, underscores (_), and forward slashes (/)
Other conditions	Windows: - Do not specify consecutive spaces. - Do not specify a period, space, or path delimiter (\) at the end of a folder name. - Do not use parentheses, except when referring to the Program Files (x86). - Do not specify a symbolic link and junction for the installation folder. - Do not specify a folder directly under a drive (such as D:\). - In Windows (x64), do not specify the following folders because the programs to be installed are 32-bit applications: - The folder that is specified by the environment variable %ProgramFiles%, or a folder under that specified folder - The folder that is specified by the environment variable %CommonProgramFiles%, or a folder under that specified folder - The <i>Windows-system-folder\system32</i> folder or a folder under it Solaris or Linux: - Do not specify a path delimiter (/) at the end of the directory path. - Do not specify the root directory. - We recommend that you do not specify an OS system directory (such as /bin, /etc, /opt, or /usr) as the installation directory. If you specify the OS system directory, it might be deleted during uninstallation. - If Common Component has not been installed, make sure that the installation directory you specify does not contain any files or subdirectories.

Other Required Disk Space

The following table shows the required disk space other than the disk space required for the installation location of each product.

Table 2-4 Other Required Disk Space

Item	Location	Required Space
Installation location of shared libraries ^{#1}	Windows: <i>program-files-folder</i> \Hitachi\HNTRLib2 <i>common-program-files-folder</i> \Hitachi ^{#2} Solaris or Linux: /opt/hitachi	1MB
Output location of common trace logs ^{#1#3}	Windows: <i>program-files-folder</i> \Hitachi\HNTRLib2\spool Solaris or Linux: /var/opt/hitachi/HNTRLib2/spool	1MB
Temporary directories ^{#4}	Windows: Folders indicated by the environment variable TMP Solaris or Linux: /var/tmp	Windows 300 MB Solaris or Linux: 1.5GB
#1 If Common Component has been installed, this item is not required. #2: <i>common-program-files-folder</i> indicates the following location: - If the architecture is x86: The folder specified by the Windows system environment variable %CommonProgramFiles%. By default, this folder is as follows: <i>system-drive</i>\Program Files\Common Files - If the architecture is x64: The folder specified by the Windows system environment variable %CommonProgramFiles(x86)%. By default, this folder is as follows: <i>system-drive</i>\Program Files (x86)\Common Files #3: The number and size of common trace log files can be modified. For details, see the <i>Hitachi Device Manager Server Configuration and Operation Guide</i>. #4: This item is temporarily required during installation.		

Storage Location for Database Files

You can choose to specify a common database file storage location for Device Manager, Common Component, and Tiered Storage Manager, or a separate location for each of the products. In either case, specify a valid path to a location that has the necessary disk space. If you want to specify a path other than the default, we recommend that you record the path you want to specify in [Checklist for a New Installation](#).

[Table 2-5](#) lists the default storage locations for database files.

Table 2-5 Default Storage Locations for Database Files

OS	Default Storage Location
Windows	<i>program-files-folder\HiCommand\database</i>
Solaris or Linux	<i>/var/opt/HiCommand/database</i>

The database files are stored in the following locations under the storage location you specify during installation. For Solaris and Linux, the path delimiters are forward slashes (/).

Table 2-6 Storage Location for Product Database Files and Necessary Disk Space

Product	Installation Location	Required Space
Device Manager	<i>path-specified-during-installation\DeviceManager</i>	0.6 GB
Common Component [#]	<i>path-specified-during-installation\Base</i>	1.2 GB
Tiered Storage Manager	<i>path-specified-during-installation\HTSM</i>	110 MB
[#] If Common Component is already installed, the storage location for Common Component database files will not change.		

If you change the database file storage location from the default, make sure that the storage location satisfies the following conditions.

Table 2-7 Conditions for Specifying an Absolute Path as the Database Storage Location

Condition	Description
Length of the absolute path	No more than 90 bytes
Specifiable characters	Windows: A to Z, a to z, 0 to 9, periods (.), underscores (_), left parentheses ((), right parentheses ()), single byte spaces, backslashes (\), and colons (:) Solaris or Linux: A to Z, a to z, 0 to 9, periods (.), underscores (_), and forward slashes (/)

Condition	Description
Other conditions	Windows: - Do not specify consecutive spaces. - Do not specify a period, space, or path delimiter (\) at the end of a folder name. - Do not use parentheses, except when referring to the Program Files (x86). - Do not specify a symbolic link and junction for the installation folder. - Do not specify a folder directly under a drive (such as D:\). - In Windows (x64), do not specify the following folders because the programs to be installed are 32-bit applications: - The folder that is specified by the environment variable %ProgramFiles%, or a folder under that specified folder - The folder that is specified by the environment variable %CommonProgramFiles%, or a folder under that specified folder - The <i>Windows-system-folder\system32</i> folder or a folder under it Solaris or Linux: - Do not specify a path delimiter (/) at the end of the directory path. - Do not specify the root directory.

IP Address or Host Name of the Management Server

Note the IP address or host name of the management server. We recommend that you record the IP address or host name of the management server in [Checklist for a New Installation](#).

The host name must satisfy the following conditions:

- Host name length: 32 bytes or less
- Available characters: A-Z a-z 0-9 -

No hyphen (-) at the beginning or end of the host name.

If you are installing the Device Manager server in a cluster environment, you will need to specify a logical host name.

In an IPv6 environment, we recommend that you use a host name. If you specify an IPv6 address, Web Client might not work correctly in Internet Explorer® 6. If you do specify an IPv6 address, enclose it in square brackets ([]). For details about the settings required to use Device Manager and Tiered Storage Manager in an IPv6 environment, see the *Hitachi Device Manager Server Configuration and Operation Guide* and the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

If multiple NICs are installed on the management server, specify the IP address of the NIC that connects to the management client.

Port Number for the Web Service

This is the port number for HBase Storage Mgmt Web Service, a service of Common Component, and it is used to access Web Client.

The default port number is 23015. If you want to specify a port number other than the default, we recommend that you record the port number you want to specify in [Checklist for a New Installation](#). If you want to use a port number other than the default, make sure that after the installation you also change the port number assigned to Common Component. For more information on changing Common Component ports, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

License Information

To use Device Manager, Provisioning Manager, and Tiered Storage Manager, you need to prepare a license key applicable to the physical disk capacity of the storage subsystem to be managed. We recommend that you record the license key of the product you use in [Checklist for a New Installation](#).

There are two Device Manager licenses: a full license and a Core license.

Full license:

A full license is required to use all Device Manager functions. The three types of full licenses are *permanent*, *emergency*, and *temporary*.

Core license:

The Core license enables you to use only storage management functions that use SMI-S or Device Manager CLI. With the Core license, you cannot use storage management functions that use the Web Client.

[Table 2-8](#) shows the differences in functions between a full license and a Core license:

Table 2-8 Differences in Functions Between a Full License and a Core License

Item	Functions Available with the Core License
Supported platforms	Same as for a full license
Storage subsystems	Same as for a full license

Item	Functions Available with the Core License
Web Client	Only the functions listed below can be used. The functions that are unavailable with the Core license are not displayed in the Explorer menu. ▪ Displaying and registering licenses ▪ Creating, changing, and deleting users ▪ Assigning resource groups[#] ▪ Setting security (setting password conditions, automatic locking of user accounts, and warning banners) ▪ Downloading Device Manager CLI ▪ Downloading the Device Manager agent ▪ The Dashboard menu
Device Manager CLI	The following logical group commands cannot be used: ▪ AddLogicalGroup ▪ DeleteLogicalGroup ▪ ModifyLogicalGroup ▪ GetLogicalGroup ▪ AddObjectForLogicalGroup ▪ DeleteObjectForLogicalGroup ▪ AddLunScan
Device Manager CLIEX	Unavailable
Device Manager server	The following function cannot be used: ▪ The email notification function
Device Manager agent	Same functions as for a full license
Linkage with other Hitachi Storage Command Suite products that require Device Manager	If the Device Manager license is the Core license, products other than the following cannot be used: ▪ Provisioning Manager ▪ Tuning Manager (version 6.0 or later)
[#] Logical groups cannot be used when using the Core license, so only All Resources can be assigned as a resource group.	



Caution:

- If the license keys registered in Device Manager include one or more full licenses, Device Manager operates in full license mode.
- After starting operations, if the physical disk capacity exceeds the registered license keys (licensed capacity), then you need to register additional license keys.

Pre-installation Tasks for a New Installation

This section describes confirmation and setup tasks required before beginning a new installation of Device Manager and Tiered Storage Manager. These tasks include tasks common to all OSs and OS-specific tasks.

Common Pre-installation Tasks

This section describes the preparations that are common to all management server OSs.

Checking Port Numbers

Using the netstat command, check whether the port numbers required to use Device Manager and Tiered Storage Manager are being used by another product on the management server.

Example: Check whether another program is using the port 162/udp.

Execute the following command:

```
> netstat -anp UDP
```

In the command execution results, if there are no lines in which UDP for Proto, and 162 for Local Address appear, the port is not being used.

The following shows the port numbers required to use Device Manager and Tiered Storage Manager. For details about the port numbers required for encrypted communication or the port numbers required to link with other products, see the *Hitachi Device Manager Server Configuration and Operation Guide* and the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

Table 2-9 Port Numbers Used by Device Manager and Tiered Storage Manager

Port Number	Description	Actions to Take If Another Product is Using The Port Number
162/udp	This port number is used by Device Manager.	A message is displayed that prompts you to disable the SNMP Trap reception during the installation.
2001/tcp		If another product is using this port number, change the settings of that product or the port number that Device Manager uses. Hitachi recommends that you change this port to another number because this port is included with the port numbers temporarily assigned by Windows (1024 to 5000). If another product is using this port number, the following message will be output to the event log file, and Device Manager will not be able to start: KAIC00114-E An attempt to start the HTTP server on port "2001" failed.
5989/tcp		Change the settings of that product or of Device Manager so that they use different port numbers.
20352/tcp	This port number is used by Tiered Storage Manager.	Change the settings of that product or of Tiered Storage Manager so that they use different port numbers.
23015/tcp to 23018/tcp 23032/tcp	This port number is used by Common Component.	Change the settings of that product, or change the settings of Common Component. If, however, Common Component has already been installed and you changed its settings to use different port numbers, you can install the Device Manager server by using those ports. You do not need to reset the values to the default ports.
45001/tcp to 49000/tcp		For these port numbers, the settings of Common Component cannot be changed. Therefore, you need to change the settings of any other products that are using the same ports as Device Manager.

Checking the Computer Time and Time-Adjustment Functionality

If a computer's time is changed while the services of Common Component and Hitachi Storage Command Suite products are running, Device Manager might not operate correctly. If you need to change the time, do so before installation.

If you want to use functionality that automatically adjusts the time by using a protocol such as NTP, use a function that can gradually adjust the computer time without immediately synchronizing the time when the computer time is ahead of the actual time. There are some functions that gradually adjust the time if the difference between the computer time and the actual time is within a certain fixed range, but immediately synchronize the time if the time difference exceeds that range. Set the frequency of the time adjustments for the function that you are using so that the time difference does not exceed the fixed range.

For example, the Windows Time service can gradually adjust the computer time without synchronizing it to the actual time as long as the difference between the computer time and the actual time does not exceed a fixed range. 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 computer time and the actual time does not exceed that range.

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

To manually change the time of a machine:

1. Stop the services of Common Component and all Hitachi Storage Command Suite products.
2. Write down the current time of the machine, and then change the time.
3. If you set the time of the machine back, wait until you reach the time you previously wrote down in step 2.
4. Restart the machine.

When using the Device Manager server in a time zone of the United States or Canada, set the OS of the computer on which the Device Manager server will be installed so that the OS is compatible with the new Daylight Saving Time (DST) rules. If the OS is not compatible with the new DST rules, the Device Manager server will not be compatible with the new rules either.

Checking Other Programs

- During an installation of Common Component version 4.0 or later, HiRDB will be installed as the database management system. However, as a result, Hitachi Storage Command Suite products will not be able to operate together with the HiRDB products listed below. If any of these HiRDB products has been installed on a computer, do not install Hitachi Storage Command Suite products on that computer. Similarly, do not install any of these HiRDB products on a computer on which Hitachi Storage Command Suite products have been installed.
 - HiRDB/Single Server
 - HiRDB/Parallel Server
 - HiRDB/Workgroup Server

- HiRDB/Run Time
- HiRDB/Developer's Kit
- HiRDB SQL Executer
- If the management server OS is Windows, HiRDB/EmbeddedEdition _HD0 must always be running. In the list in the Services window, check whether HiRDB/EmbeddedEdition _HD0 is running. If it is not running, start HiRDB/EmbeddedEdition _HD0.
- If the Tuning Manager server is configured to use a remote connection to connect to the Device Manager server, do not install any of these products on a computer on which Tuning Manager is installed:
 - Device Manager
 - Global Link Manager
 - NAS Manager
 - Storage Navigator Modular 2

If you want to reconfigure the environment to use any of the above products on a computer on which the Tuning Manager server is installed, you must first use Tuning Manager to reconfigure the Device Manager instance to which it is connected, and then install each of the products you want to use.

For details about how to reconfigure an environment in which Tuning Manager is installed, see the *Hitachi Tuning Manager Installation Guide*.

- Device Manager cannot be installed on a server on which Tuning Manager version 5.9 or earlier has been installed in a Large configuration. If you try to install Device Manager in such an environment, the installation will be canceled. If that happens, install Tuning Manager and Device Manager on different servers.
- You cannot install a version of Tuning Manager earlier than 4.0 on a computer on which Device Manager has been installed. The following installation sequences are allowed:
 - Device Manager is installed after a version of Tuning Manager earlier than 4.0 has been installed.
 - Tuning Manager 4.0 or later is installed after a version of Device Manager earlier than 4.0 has been installed.
- If another Hitachi Storage Command Suite product is being used, make sure that you back up the databases for that product. For details about how to back up other Hitachi Storage Command Suite product databases, see the relevant product manuals.
- Some of the firewall functions of the OS might block socket connections on the local host. You cannot install and operate Hitachi Storage Command Suite products in an environment in which socket connections are blocked on the local host. When setting up a firewall in the OS, configure the settings so that socket connections are not blocked on the local host.

Pre-installation Tasks in Windows

In Windows, be aware of the following points before beginning an installation:

- If multi-byte characters are included in a Windows login account name, they will also be included in the path specified in the TMP environment variable, and you cannot install the Device Manager server. Specify a path that does not contain multi-byte characters for the TMP environment variable before performing an installation.
- Make sure that the setting for automatically generating short file and folder names (8.3 format) is enabled. Also make sure that for installation you use a Windows account that was created when the setting was enabled.

If the above conditions are not satisfied, an attempt to install the Device Manager server might fail, or the Device Manager server might not work properly.

Even after installation is complete, do not change the setting for automatically generating short names.

To check whether a user was created while the setting for automatically generating short file and folder names was disabled, execute the following command:

```
dir /x /a- "Windows-system-drive:\Documents and Settings\Windows-account-name" | find /i "Local Settings"
```

The two examples below show the command execution results when the setting for automatically generating short file and folder names was enabled during creation of the user, and the results when the setting was disabled during creation of the user. If LOCALS~1 is displayed, the user was created while this setting was enabled.

If the user was created while the setting was enabled:

```
2008/01/01 18:26      <DIR>          LOCALS~1      Local Settings
```

If the user was created while the setting was disabled:

```
2008/01/01 18:26      <DIR>                      Local Settings
```

- If Windows Firewall is installed on the OS, the Hitachi Storage Command Suite installer will register firewall exceptions during the installation. To automatically register firewall exceptions, make sure that the Windows Firewall service (Windows Firewall/Internet Connection Sharing) is running.

After installing Device Manager and Tiered Storage Manager, if you apply the OS service pack to the management server in order to use the firewall function, you need to manually register firewall exceptions.

For Windows XP, Windows Server 2003, Windows Vista, or Windows Server 2008:

```

> installation-folder-of-Common-Component\bin\hcmdsfcancel.bat
> netsh firewall add allowedprogram
program="installation-folder-of-Common-Component\jdk\jre\bin\java.exe" name="HBase(cmd)"
mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Device-Manager-server\HiCommandServer\HiCommandServ
er.exe" name="Device Manager" mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-Common-Component\jdk\bin\java.exe" name="HBase(cmd)"
mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Tiered-Storage-Manager-server\bin\htsmService.exe"
name="Tiered Storage Manager(htsmService)" mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmHDvMUser.exe
" name="Tiered Storage Manager(htsmHDvMUser)" mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmVersion.exe"
name="Tiered Storage Manager(htsmVersion)" mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaDrop.exe"
name="Tiered Storage Manager(schemaDrop)" mode=ENABLE
> netsh firewall add allowedprogram
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaCreate.exe
" name="Tiered Storage Manager(schemaCreate)" mode=ENABLE

```

For Windows 7 or Windows Server 2008 R2:

```

> installation-folder-of-Common-Component\bin\hcmdsfcancel.bat
> netsh advfirewall firewall add rule name="HBase(cmd)" dir=in action=allow
program="installation-folder-of-Common-Component\jdk\jre\bin\java.exe"
description="installation-folder-of-Common-Component\jdk\jre\bin\java.exe" enable=yes
> netsh advfirewall firewall add rule name="Device Manager" dir=in action=allow
program="installation-folder-of-the-Device-Manager-server\HiCommandServer\HiCommandServ
er.exe"
description="installation-folder-of-the-Device-Manager-server\HiCommandServer\HiCommand
Server.exe" enable=yes
> netsh advfirewall firewall add rule name="HBase(cmd)" dir=in action=allow
program="installation-folder-of-Common-Component\jdk\bin\java.exe"
description="installation-folder-of-Common-Component\jdk\bin\java.exe" enable=yes
> netsh advfirewall firewall add rule name="Tiered Storage Manager(htsmService)" dir=in
action=allow
program="installation-folder-of-the-Tiered-Storage-Manager-server\bin\htsmService.exe"
description="installation-folder-of-the-Tiered-Storage-Manager-server\bin\htsmService.e
xe" enable=yes
> netsh advfirewall firewall add rule name="Tiered Storage Manager(htsmHDvMUser)" dir=in
action=allow
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmHDvMUser.exe
"
description="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmHDvMUser
.exe" enable=yes
> netsh advfirewall firewall add rule name="Tiered Storage Manager(htsmVersion)" dir=in
action=allow
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmVersion.exe"
description="installation-folder-of-the-Tiered-Storage-Manager-server\inst\htsmVersion.
exe" enable=yes
> netsh advfirewall firewall add rule name="Tiered Storage Manager(schemaDrop)" dir=in
action=allow
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaDrop.exe"
description="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaDrop.e
xe" enable=yes

```

```
> netsh advfirewall firewall add rule name="Tiered Storage Manager(schemaCreate)" dir=in
action=allow
program="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaCreate.exe"
description="installation-folder-of-the-Tiered-Storage-Manager-server\inst\schemaCreate.exe" enable=yes
```

- You cannot execute the Hitachi Storage Command Suite installer as a RemoteApp in the terminal service of Windows Server 2008 or Windows Server 2008 R2.

After completing all preparations for a new installation in the Windows environment, proceed to [Performing a New Installation](#).

Pre-installation Tasks in Solaris

In Solaris, complete the following preparations before beginning an installation.

Setting Kernel Parameters (For Solaris 8 or Solaris 9)

Before performing an installation, you need to set kernel parameter values in the `/etc/system` file.

To set kernel parameter values:

1. Back up the kernel parameters.
Create a backup of the `/etc/system` file.
2. Calculate the values to be set in the `/etc/system` file.

Use the formulas given below and the values in [Table 2-10](#) and [Table 2-11](#) to calculate the kernel parameter values. The maximum value of each kernel parameter must not exceed the maximum value allowed by the OS.

The Device Manager server installer checks each kernel parameter value by referring to the *installer check values* listed in [Table 2-10](#). If a specified kernel parameter value is less than the corresponding installer check value, installation will fail.

If you plan to install Tiered Storage Manager, Tuning Manager, and/or Replication Manager on the same computer on which you want to install Device Manager, add *value-for-Tiered-Storage-Manager*, *value-for-Tuning-Manager*, and *value-for-Replication-Manager* accordingly.

For parameters other than `shmsys:shminfo_shmmax`:

```
kernel-parameter-value-to-be-set =
Max {
    value-that-is-enabled-in-the-system
    ,
    initial-value-of-the-OS
```

```

}
+ Max {
    value-for-Common-Component
  + value-for-Device-Manager
  + value-for-Tiered-Storage-Manager
  + value-for-Tuning-Manager
  + value-for-Replication-Manager
,
    value-for-HiRDB
}

```

The formula $\text{Max}\{x, y\}$ means using the larger value of x and y .

For example, if only the Device Manager server and Tuning Manager server are installed on a management server and `semsys:seminfo_semmni` is already set to 128, you need to change the value to the following:

```

Value to set for semsys:seminfo_semmni
=Max{128, 10}+Max{9+9+12, 1024}
=1152

```

For `shmsys:shminfo_shmmax`:

```

kernel-parameter-value-to-be-set =
Max {
    Max {
        value-that-is-enabled-in-the-system
    ,
        initial-value-of-the-OS
    }
,
    value-for-Common-Component
  + value-for-Device-Manager
  + value-for-Tiered-Storage-Manager
  + value-for-Tuning-Manager
  + value-for-Replication-Manager
,
    value-for-HiRDB
}

```

The formula $\text{Max}\{x, y, z\}$ means using the maximum value among x , y , and z .

For example, if only the Device Manager server and Tuning Manager server are installed on a management server and shmsys:shminfo_shmmax is already set to 268435456, you need to change the value to the following:

Value to set for shmsys:shminfo_shmmax

$$= \text{Max}\{\text{Max}\{268435456, 8388608\}, 13100032 + 280100864 + 966656000, 2000000000\}$$

$$= 1259856896$$

3. Set the calculated kernel parameter values in the /etc/system file.
4. Execute the following command to restart the OS:
`shutdown -y -i6 -g0`

[Table 2-10](#) and [Table 2-11](#) list the recommended values for each product in version 6.4.

Table 2-10 Kernel Parameter Values to Set for the /etc/system File(1/2)

Kernel Parameter (Installer Check value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
msgsys:msginfo_msgmni (138)	50	0	44	44	0
msgsys:msginfo_msgtql (91)	40	0	15	36	0
semsys:seminfo_semmni (1034)	10	1024	9	9	1
semsys:seminfo_semmns (7260)	60	7200	80	75	50
semsys:seminfo_semmnu (1054)	30	1024	0	0	0
semsys:seminfo_semume (522)	10	512	0	0	0
semsys:seminfo_semmsl (153)	25	128	0	0	0
semsys:seminfo_semopm (138)	10	128	0	0	0

Kernel Parameter (Installer Check value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
shmsys:shminfo_shmmax (293200896 ^{#1} or 343200896 ^{#2})	8388608	200000000	13100032	280100864	50000000
shmsys:shminfo_shmmni (2100)	100	2000	0	0	0
shmsys:shminfo_shmseg ^{#3} (240)	0	240	0	0	0
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager ^{#1} Use this value if you install Device Manager only. ^{#2} Use this value if you install Device Manager and Tiered Storage Manager. ^{#3} In Solaris 9, you do not need to specify this kernel parameter. This parameter remains only for compatibility with Solaris 8.					

Table 2-11 Kernel Parameter Values to Set for the /etc/system File(2/2)

Kernel Parameter	HTnM	HRpM
msgsys:msginfo_msgmni	12	0
msgsys:msginfo_msgtql	1205	0
semsys:seminfo_semmni	12	1
semsys:seminfo_semmns	0	50
semsys:seminfo_semmnu	0	0
semsys:seminfo_semume	0	0
semsys:seminfo_semmnl	0	0
semsys:seminfo_semopm	246	0
shmsys:shminfo_shmmax	966656000	100000000
shmsys:shminfo_shmmni	0	0
shmsys:shminfo_shmseg [#]	0	0
Legend: HTnM: Hitachi Tuning Manager HRpM: Hitachi Replication Manager [#] : In Solaris 9, you do not need to specify this kernel parameter. This parameter remains only for compatibility with Solaris 8.		

The following examples show how to specify these kernel parameters:

```
set semsys:seminfo_semmni=1152
set shmsys:shminfo_shmmax=1259856896
```

Setting Kernel Parameters (For Solaris 10)

Before performing an installation, you need to set kernel parameter values in the `/etc/project` file and the `/etc/system` file. In the `/etc/project` file, set kernel parameter values for both the `user.root` project and the `system` project.

To set kernel parameter values:

1. Back up the kernel parameters.

Create a backup of the `/etc/system` file. Also, check the values enabled for the `user.root` project and the `system` project in the `/etc/project` file by using a command, such as `prct1`, and then record the values. For details on how to check the values, see the OS documentation.

2. Calculate the kernel parameter values to be set in the `/etc/project` file.

Use the formulas given below and the values in [Table 2-12](#) and [Table 2-13](#) to calculate the kernel parameter values. The maximum value of each kernel parameter must not exceed the maximum value allowed by the OS.

The Device Manager server installer checks each kernel parameter value by referring to the *installer check values* listed in [Table 2-12](#). If a specified kernel parameter value is less than the corresponding installer check value, installation will fail.

If you plan to install Tiered Storage Manager, Tuning Manager, and/or Replication Manager on the same computer on which you want to install Device Manager, add *value-for-Tiered-Storage-Manager*, *value-for-Tuning-Manager*, and *value-for-Replication-Manager* accordingly.

For parameters other than `project.max-shm-memory`:

```
kernel-parameter-value-to-be-set =  
Max {  
    value-that-is-enabled-in-the-system  
    ,  
    initial-value-of-the-OS  
}  
+ Max {  
    value-for-Common-Component  
    + value-for-Device-Manager  
    + value-for-Tiered-Storage-Manager  
    + value-for-Tuning-Manager  
    + value-for-Replication-Manager  
    ,  
    value-for-HiRDB  
}
```

The formula $\text{Max}\{x, y\}$ means using the larger value of x and y .

For example, if only the Device Manager server and Tuning Manager server are installed on a management server and `project.max-sem-ids` is already set to 256, you need to change the value to the following:

Value to set for `project.max-sem-ids`
 $=\text{Max}\{256, 128\} + \text{Max}\{9+9+12, 1024\}$
 $=1280$

For `project.max-shm-memory`:

kernel-parameter-value-to-be-set =
Max {
value-that-is-enabled-in-the-system
,
initial-value-of-the-OS
}
+ value-for-Common-Component
+ value-for-Device-Manager
+ value-for-Tiered-Storage-Manager
+ value-for-Tuning-Manager
+ value-for-Replication-Manager

The formula $\text{Max}\{x, y\}$ means using the larger value of x and y .

For example, if only the Device Manager server and Tuning Manager server are installed on a management server and `project.max-shm-memory` is set to 268435456, you need to change the value to the following:

Value to set for `project.max-shm-memory`
 $=\text{Max}\{268435456, 235436549\} + 26214400 + 392424448 + 966656000$
 $=1653730304$

3. Calculate the kernel parameter values to be set in the `/etc/system` file by using the values calculated in step 2.

The maximum value of each kernel parameter must not exceed the maximum value allowed by the OS.

For `msgsys:msginfo_msgmni`:

kernel-parameter-value-to-be-set =
Max {
value-set-for-"project.max-msg-ids"
,
maximum-value-between-the-valid-values-for
-"project.max-msg-ids"-for-each-project
}

```

For msgsys:msginfo_msgtql:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"process.max-msg-messages"
        ,
        maximum-value-between-the-valid-values-for
        -"process.max-msg-messages"-for-each-project
    }

For semsys:seminfo_semmni:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"project.max-sem-ids"
        ,
        maximum-value-between-the-valid-values-for
        -"project.max-sem-ids"-for-each-project
    }

For semsys:seminfo_semmsl:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"process.max-sem-nsems"
        ,
        maximum-value-between-the-valid-values-for
        -"process.max-sem-nsems"-for-each-project
    }

For semsys:seminfo_semopm:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"process.max-sem-ops"
        ,
        maximum-value-between-the-valid-values-for
        -"process.max-sem-ops"-for-each-project
    }

For shmsys:shminfo_shmmni:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"project.max-shm-ids"
        ,
        maximum-value-between-the-valid-values-for

```

```

        -"project.max-shm-ids"-for-each-project
    }
For shmsys:shminfo_shmmax:
    kernel-parameter-value-to-be-set =
    Max {
        value-set-for-"project.max-shm-memory"
        ,
        maximum-value-between-the-valid-values-for
        -"project.max-shm-memory"-for-each-project
    }
    / value-set-for-"shmsys:shminfo_shmmni"

```



Caution: For shmsys:shminfo_shmmax, specify a value obtained from the calculation result with any fractions rounded up.

The formula Max {x, y} means using the larger value of x and y.

4. Set the calculated kernel parameter values in the /etc/project file and the /etc/system file.
5. Execute the following command to restart the OS:
shutdown -y -i6 -g0

[Table 2-12](#) and [Table 2-13](#) list the recommended values for each product in version 6.4.

Table 2-12 Kernel Parameter Values to Set for the /etc/project File(1/2)

Kernel Parameter (Installer Check value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
process.max-msg-messages (8243)	8192	0	15	36	0
process.max-sem-nsems (640)	512	128	0	0	0
process.max-sem-ops (640)	512	128	0	0	0
project.max-msg-ids (216)	128	0	44	44	0
project.max-sem-ids (1152)	128	1024	9	9	1

Kernel Parameter (Installer Check value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
project.max-shm-ids (2128)	128	2000	0	0	0
project.max-shm-memory (418638848 ^{#1} or 519333888 ^{#2})	One-quarter of the physical memory	0	26214400	392424448	100695040
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager #1 Use this value if you install Device Manager only. #2 Use this value if you install Device Manager and Tiered Storage Manager.					

Table 2-13 Kernel Parameter Values to Set for the /etc/project File(2/2)

Kernel Parameter	HTnM	HRpM
process.max-msg-messages	1205	0
process.max-sem-nsems	0	0
process.max-sem-ops	0	0
project.max-msg-ids	12	0
project.max-sem-ids	12	1
project.max-shm-ids	0	0
project.max-shm-memory	966656000	94457000
Legend: HTnM: Hitachi Tuning Manager HRpM: Hitachi Replication Manager		

The following examples show how to specify these kernel parameters:

project.max-sem-ids examples

```
# projmod -s -K "project.max-sem-ids=(priv,1280,deny)" user.root
# projmod -s -K "project.max-sem-ids=(priv,1280,deny)" system
```

semsys:seminfo_semmni example

```
set semsys:seminfo_semmni=1280
```

Additional Preparations in Solaris

Make sure that the following preparations are completed:

- Grant all users read and execution permissions for the directory to be specified as the installation directory, as well as all directories above it.

- Make sure that the symbolic links indicated in the following table are not set. If any are set, installation might fail.

Table 2-14 Symbolic Links That Must Be Removed (for Solaris)

Symbolic Link Destination	Location
File system for installation	/opt
Log output directory	/var/opt
Temporary directory	/var/tmp
Installation directory for the Device Manager server and any directories under the installation directory	Under /opt/HiCommand [#]
Installation directory for Hitachi Storage Command Suite products and any directories under the installation directory	Under /var/opt/HiCommand [#]
Installation directory for the Common Component database and any directories under the installation directory	▪ Under /var/opt/HiCommand/database[#] ▪ Under /var/opt/HiCommand/database/Base[#]
Installation directory for the Device Manager server database and any directories under the installation directory	Under /var/opt/HiCommand/database/DeviceManager [#]
Installation directory for the Tiered Storage Manager server database and any directories under the installation directory	Under /var/opt/HiCommand/database/HTSM [#]
[#] This is the default installation directory.	

- Write localhost and the host name of the server machine into the /etc/hosts file.
- For the Device Manager server and Tiered Storage Manager server commands to work correctly, the directories for OS basic commands must be specified as the first paths in the PATH environment variable. If an error occurs because an OS basic command was not found or because a utility command has the same name as an OS basic command, edit the PATH environment variable so that the directories for OS basic commands are specified as the first paths.

After completing all preparations for a new installation in the Solaris environment, proceed to [Performing a New Installation](#).

Pre-installation Tasks in Linux

In Linux, complete the following preparations before beginning an installation.

Setting Kernel Parameters and Shell Restrictions

Before performing an installation, you must set kernel parameter values and shell restrictions.



Caution: Set the shell restrictions for both soft and hard. When you do this, make sure that the value for soft does not exceed the value for hard.

To set kernel parameter values and shell restrictions:

1. Back up kernel parameters and shell restrictions.

Back up the `/etc/sysctl.conf` file and `/etc/security/limits.conf` file.

2. Calculate the kernel parameter values and shell restrictions.

Use the formulas given below and the values in [Table 2-15](#) to [Table 2-18](#) to calculate the kernel parameter values and shell restrictions, and then set the values for your OS. The value set for each kernel parameter and shell restriction must not exceed the maximum value allowed by the OS.

The installer of the Device Manager server checks each kernel parameter value and shell restriction based on the installer check values listed in [Table 2-15](#) to [Table 2-18](#). If a specified kernel parameter value is less than the corresponding installer check value, installation will fail.

Add *value-for-Tiered-Storage-Manager* if you install Tiered Storage Manager on the same machine.

For `kernel.shmmax`:

```
kernel-parameter-value-to-be-set =  
Max {  
    Max {  
        value-that-is-enabled-in-the-system  
        ,  
        initial-value-of-the-OS  
    }  
    ,  
    value-for-Common-Component  
    + value-for-Device-Manager  
    + value-for-Tiered-Storage-Manager  
    ,  
    value-for-HiRDB  
}
```

The formula `Max {x, y, z}` means using the maximum value among x, y, and z.

For example, if only the Device Manager server is installed on the management server and kernel.shmmax is set to 33554432, you must change kernel.shmmax to the following value:

Value to set for kernel.shmmax
=Max{Max{33554432, 4294967295}, 13100032+280100864, 200000000}
=4294967295

For kernel.shmall:

kernel-parameter-value-to-be-set =
Max {
 value-that-is-enabled-in-the-system
 ,
 initial-value-of-the-OS
}
+ *value-for-Common-Component*
+ *value-for-Device-Manager*
+ *value-for-Tiered-Storage-Manager*
+ *value-for-HiRDB*

The formula Max {x, y} means using the larger value of x and y.

For example, if only the Device Manager server is installed on the management server and kernel.shmall is set to 2097152, you must change kernel.shmall to the following value:

Value to set for kernel.shmall
=Max{2097152, 268435456}+26214400+386839552+26214400
=707703808

All other kernel parameters and shell restrictions:

shell-restrictions-or-kernel-parameter-values-to-be-set =
Max{
 Max {
 value-that-is-enabled-in-the-system
 ,
 initial-value-of-the-OS
 }
 + *value-for-Common-Component*
 + *value-for-Device-Manager*
 + *value-for-Tiered-Storage-Manager*
 ,
 value-for-HiRDB
}

The formula Max {x, y} means using the larger value of x and y.

For example, if only the Device Manager server is installed on the management server and `kernel.shmmni` is set to 128, you must change `kernel.shmmni` to the following value:

Value to set for `kernel.shmmni`

$$= \text{Max}\{\text{Max}\{128, 4096\} + 0 + 0, 2000\}$$

$$= 4096$$

3. Set the calculated kernel parameter values and shell restrictions in the `/etc/sysctl.conf` file and the `/etc/security/limits.conf` file.
4. Execute the reboot command to restart the OS.

[Table 2-15](#) to [Table 2-18](#) list the recommended values for each product in version 6.4.

Table 2-15 Kernel Parameter Values to Set for the `/etc/sysctl.conf` File (for Red Hat Enterprise Linux)

Kernel Parameter (Installer Check Value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
<code>fs.file-max</code> (168794 ^{#1} or 169306 ^{#2})	50525	53898	53898	64371	512
<code>kernel.thread-s-max</code> (16623 ^{#1} or 16653 ^{#2})	16384	576	184	55	30
<code>kernel.msgmni</code> (104)	16	44	44	44	0
4th parameter of <code>kernel.sem</code> (1024)	16	1024	9	9	1
2nd parameter of <code>kernel.sem</code> (32155 ^{#1} or 32205 ^{#2})	128	7200	80	75	50
<code>kernel.shmmax</code> (293200896 ^{#1} or 343200896 ^{#2})	4294967295	200000000	13100032	280100864	50000000
<code>kernel.shmmni</code> (4096)	4096	2000	0	0	0
<code>kernel.shmall</code> (439268352 ^{#1} or 539963392 ^{#2})	268435456	26214400	26214400	386839552	100695040

Kernel Parameter (Installer Check Value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager #1: Use this value if you install Device Manager only. #2: Use this value if you install Device Manager and Tiered Storage Manager.					

Table 2-16 Kernel Parameter Values to Set for the /etc/sysctl.conf File (for SUSE Linux Enterprise Server)

Kernel Parameter (Installer Check Value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
fs.file-max (168794 ^{#1} or 169306 ^{#2})	50525	53898	53898	64371	512
kernel.thread-s-max (8431 ^{#1} or 8461 ^{#2})	8192	576	184	55	30
kernel.msgmni (104)	16	44	44	44	0
4th parameter of kernel.sem (1042 ^{#1} or 1043 ^{#2})	1024	1024	9	9	1
2nd parameter of kernel.sem (256155 ^{#1} or 256205 ^{#2})	256000	7200	80	75	50
kernel.shmmax (293200896 ^{#1} or 343200896 ^{#2})	4294967295	200000000	13100032	280100864	50000000
kernel.shmmni (4096)	4096	2000	0	0	0
kernel.shmall (439268352 ^{#1} or 539963392 ^{#2})	268435200	26214400	26214400	386839552	100695040
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager #1: Use this value if you install Device Manager only. #2: Use this value if you install Device Manager and Tiered Storage Manager.					

Table 2-17 Shell Restriction Values to Set for the /etc/security/limits.conf File (for Red Hat Enterprise Linux)

Shell Restriction (Installer Check Value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
nofile (soft/hard) (1596)	1024	1344	572	0	0
nproc (soft/hard) (8358)	8192	512	165	1	0
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager					

Table 2-18 Shell Restriction Values to Set for the /etc/security/limits.conf File (for SUSE Linux Enterprise Server)

Shell Restriction (Installer Check Value)	OS Initial Value	HiRDB	Common Component	HDvM	HTSM
nofile (soft/hard) (1596)	1024	1344	572	0	0
nproc (soft/hard) (4262)	4096	512	165	1	0
Legend: HDvM: Hitachi Device Manager HTSM: Hitachi Tiered Storage Manager					

The following examples show how to specify these kernel parameters:

```
kernel.shmmax=4294967295
kernel.shmall=707703808
kernel.sem=250 32205 32 1024
kernel.shmmni=4096
```

Example of setting shell restrictions:

```
#<domain>    <type> <item>      <value>
#
*             soft   nofile      1596
*             hard   nofile      1596
*             soft   nproc       8358
*             hard   nproc       8358
```

Additional Preparations in Linux

Complete the following preparations:

- Grant all users read and execution permissions for the directory to be specified as the installation directory, as well as all directories above it. Note that, in Linux, the directory specified as the installation directory will have its permissions set to 775. Specify an installation directory for which there will be no problems if the permissions are changed to 775.
- Make sure that any of the symbolic links indicated in the following table are not set. If any are set, installation might fail.

Table 2-19 Symbolic Links That Have to Be Removed (for Linux)

Symbolic Link Destination	Location
File system for installation	/opt
Log output directory	/var/opt
Temporary directory	/var/tmp
Installation directory for the Device Manager server and any directories under the installation directory	Under /opt/HiCommand [#]
Installation directory for Hitachi Storage Command Suite products and any directories under the installation directory	Under /var/opt/HiCommand [#]
Installation directory for the Common Component database and any directories under the installation directory	▪ Under /var/opt/HiCommand/database[#] ▪ Under /var/opt/HiCommand/database/Base[#]
Installation directory for the Device Manager server database and any directories under the installation directory	Under /var/opt/HiCommand/database/DeviceManager [#]
Installation directory for the Tiered Storage Manager server database and any directories under the installation directory	Under /var/opt/HiCommand/database/HTSM [#]
[#] This is the default installation directory.	

- Write localhost and the host name of the server machine into the /etc/hosts file.
- For the Device Manager server and Tiered Storage Manager server commands to work correctly, the directories for OS basic commands must be specified as the first paths in the PATH environment variable. If an error occurs because an OS basic command was not found or because a utility command has the same name as an OS basic command, edit the PATH environment variable so that the directories for OS basic commands are specified as the first paths in the PATH environment variable.

After completing all preparations for a new installation in the Linux environment, proceed to [Performing a New Installation](#).

Performing a New Installation

First, you need to check the operating status of the programs that affect the installation process. Refer to [Checklist for a New Installation](#) to check all required items. Then perform [Performing a New Installation in Windows](#) or [Performing a New Installation in Solaris or Linux](#).

Checklist for a New Installation

Check the items listed in the table below.

Table 2-20 Check Tasks before New Installation

Task	Explanation	Check
Stop any security-monitoring programs.	Stop any security-monitoring programs, or change their settings so that Hitachi Storage Command Suite products can be installed normally.	
Stop any virus-detection programs.	We recommend that you stop any virus-detection programs before beginning installation. If a virus-detection program is running during installation, installation might be slowed, installation might fail, or installation might finish in an incorrect state.	
Stop any process-monitoring programs.	Stop any process-monitoring programs, or change their settings so that the programs do not monitor the services or processes of Device Manager, Tiered Storage Manager, or Common Component. If a process-monitoring program starts or stops the above services or processes during installation, installation might fail.	
Stop any event log-monitoring programs. (for Windows)	We recommend that you stop any event log-monitoring programs before beginning an installation. Close the Event Viewer window. Likewise, if you are viewing Event Viewer from the Computer Management window, close it.	

In addition, enter the items you have checked in [Review the Required Installation Information](#) in the following blank spaces:

IP address or host name of the management server

License information

Product name	License Key
Device Manager	
Provisioning Manager	
Tiered Storage Manager	

If you want to specify values other than the default values, enter the values you want to specify in the following blank spaces:

Installation path

Storage location for database files

Port Number for the Web Service

Performing a New Installation in Windows

To start the installer:

1. Log on to the OS as an administrator.
2. Close the Services window.

If you perform an installation with the Services window open, registration of the HiCommandServer service in the Services window might fail.

3. Load the Hitachi Storage Command Suite installation CD.

The installer usually starts automatically. If it does not start automatically, execute setup.exe, which is located in the root folder of the CD-ROM drive.

4. When the Install Complete dialog box appears, click the **Finish** button to finish the installation.

If you have specified that services should start upon completion of installation, the services of Common Component and Hitachi Storage Command Suite products will start automatically. After the services have started, proceed to [Tasks Required After a New Installation](#).

**Caution:**

- If the Program Compatibility Assistant dialog box appears during installation, click the **Cancel** button.
 - Even if you have specified services to start automatically, the services of HiCommand Suite products version 5.7 or earlier will not start automatically. You must manually start these services. For details about how to start these services, see the manuals for your product versions.
-

Performing a New Installation in Solaris or Linux

To start the installer:

1. Log on to the OS as the root user.
2. Insert the Hitachi Storage Command Suite installation CD.
The installation CD is usually mounted automatically. (If it is not mounted automatically, mount it to /mnt/cdrom.)
3. Move the current directory to the directory that stores the installer (install.sh). Then, execute the following command:

```
# ./install.sh
```

When the installation has completed, the following message appears:

```
SUCCESS: Hitachi Storage Command Suite Installation succeeded.
```

If you have specified that services will start upon completion of installation, the services of Common Component and Hitachi Storage Command Suite products start automatically. After the services have started, proceed to [Tasks Required After a New Installation](#).



Caution: Even if you have specified services to start automatically, the services of HiCommand Suite products version 5.7 or earlier will not start automatically. You must manually start these services. For details about how to start these services, see the manuals for your product versions.

Tasks Required After a New Installation

This section describes the tasks required after performing a new installation of Device Manager or Tiered Storage Manager.

Registering Firewall Exceptions in a Linux Environment

In Linux environments, the user must register firewall exceptions manually.

In Red Hat Enterprise Linux

To register a firewall exception by using the text mode setup utility:

1. In a terminal window, execute the setup command.

The Choose a Tool window of the text mode setup utility is displayed.

2. Select **Firewall configuration**, then use the tab key to move to the **Run Tool** button, and then press **Enter**.

The Firewall Configuration window is displayed.

3. Select **Enabled** for **Security Level**, press the space bar to put a check in the checkbox, use the tab key to move to the **Customize** button, and then press **Enter**.

The Firewall Configuration - Customize window is displayed.

4. In **Other ports**, specify the port to be registered as an exception, use the tab key to move to the **OK** button, and then press **Enter**.

Example: **Other ports** 162:udp 2001:tcp 23015:tcp

For details about port numbers that are required for using Device Manager and Tiered Storage Manager, see [Checking Port Numbers](#). For details about other port numbers, see the *Hitachi Device Manager Server Configuration and Operation Guide* and the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.



Note: If a port is already specified, use a space to separate it from the newly added entry.

5. After returning to the Firewall Configuration window, make sure that **Security Level** is **Enabled**, use the tab key to move to the **OK** button, and then press **Enter**.

In SUSE Linux Enterprise Server

To register a firewall exception by using SuSEfirewall2:

1. Edit the /etc/sysconfig/SuSEfirewall2 file to specify the port to be registered as an exception.

Specify the port numbers to be registered as exceptions, in the following format:

- FW_SERVICES_EXT_TCP="TCP-port-number"
- FW_SERVICES_EXT_UDP="UDP-port-number"

Example: In this example, 2001, 23015, 23016, 23017, 23018, 161, and 162 are registered as exceptions.

```
FW_SERVICES_EXT_TCP="2001 23015:23018"  
FW_SERVICES_EXT_UDP="161 162"
```

For the port numbers required to use Device Manager and Tiered Storage Manager, see [Checking Port Numbers](#). For other port numbers, see the *Hitachi Device Manager Server Configuration and Operation Guide* and *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

2. Execute /sbin/SuSEfirewall2.

Accessing Web Client

Verify that you can access Web Client from a Web browser to make sure that the installation has finished successfully.

When you log in to Device Manager for the first time, use the System account, which is common to all Hitachi Storage Command Suite products.



Caution:

- A program that provides a Java Runtime Environment must be installed at the management client. For details about the requirements for the Java Runtime Environment, see the *Device Manager online Help*.
- When the OS is Windows XP (SP2) or Windows Vista and the Classic Start Menu is enabled, if you want to use Web Client by using Internet Explorer 7.0, start Internet Explorer 7.0 from the **Start** menu. If you start Internet Explorer 7.0 from the desktop icon, you cannot run applications that access the Web browser via the Java GUI.
- If you use Internet Explorer 6.0 in an IPv6 environment, you cannot access Web Client by specifying an IPv6 address. Instead, you must first specify the IPv6 address and host name of the management server in the hosts file, and then you must use the host name of the management server to access Web Client.

To log in to Device Manager, Provisioning Manager, or Tiered Storage Manager:

1. Start your Web browser, and then enter the URL for the product you want to use.

```
http://management-server-address:port-number/product-name/
```

management-server-address

Specify the IP address or host name of the management server.

port-number

Specify the port number of HBase Storage Mgmt Web Service (default: 23015).

product-name

Specify the product name.

For Device Manager: DeviceManager

For Provisioning Manager: ProvisioningManager

For Tiered Storage Manager: TieredStorageManager

The Web Client login window is displayed.

Registering a License

To use Device Manager, Provisioning Manager, and Tiered Storage Manager, you need to register a license for each product.

You can register a license in the login window displayed immediately after installation.

To update the license after logging in:

1. In the **Explorer** menu select **Settings** and **License Info**, and then click the **Edit License** button.

Note the following points when you register a license:

- In the license window for a product, you can register that product only.
- You cannot delete a registered license.
- If you have registered a temporary license, you cannot register another temporary license; you can only register a permanent license.
- If you have registered a permanent license, you cannot then register a temporary license.

Changing the Password for the System Account

After registering a license, log in to Web Client, and then change the password for the System account. The System account is a built-in account that has Admin permission for all products. For security reasons, you must change the password for the System account immediately. The user ID and password for the System account are as follows:

- User ID: System
- Password: manager

To change the password for the System account:

1. Click **Administration, Users and Permissions**, and **Users**, and then select the System account and click **Change Password**.

Creating a New User Account

Create a user account for a system administrator. System administrators can use and manage a SAN environment by using Device Manager, Provisioning Manager, and Tiered Storage Manager.

To create a user account that has Admin permission for all products and can manage all resources registered in Device Manager:

1. Click **Administration, Users and Permissions, Users**, and then **Add User**.
2. In the Add User dialog box, specify the information required for creating a user account.
3. Click **Administration, Users and Permissions, Users**, *target-user-ID*, and then **Change Permission**.
4. In the Change Permission - *target-user-ID* dialog box, select the **Admin** check box for **All Applications**, and then click the **OK** button.
5. Click **Administration, Resource Groups**, and then **Users**.
6. In the Resource Group Allocation dialog box, select a user and then click the **CHANGE** button.
7. Click **Resource Group**, select **All Resources**, and then click the **OK** button.

This completes creation of the user account for the system administrator.

Viewing Performance Information from Tiered Storage Manager

By linking Tuning Manager with Tiered Storage Manager, you can view performance information about storage subsystems by using Web Client or the CLI.

Settings for Launching a Tuning Manager Historical Report

From Tiered Storage Manager Web Client, you can launch a historical report of performance information about the LDEV or array group. The following are the prerequisites for launching a historical report:

- The Tuning Manager server has been set up.

You need a Tuning Manager server of version 6.2 or later.

For details about the system requirements and how to set up the Tuning Manager server, see the *Hitachi Tuning Manager Installation Guide* and the *Hitachi Tuning Manager Server Administration Guide*.

If the Tuning Manager server is installed on a different machine from the one on which the Device Manager and Tiered Storage Manager servers are installed, you must specify settings so that the Device Manager server can remotely communicate with the Tuning Manager server.

For details about the settings, see the *Hitachi Tuning Manager Installation Guide* and the *Hitachi Device Manager Server Configuration and Operation Guide*.

- Tuning Manager - Agent for RAID has been set up.
You need Tuning Manager - Agent for RAID version 6.2 or later.
For details about system requirements and how to set up Tuning Manager - Agent for RAID, see the *Hitachi Tuning Manager Installation Guide*.
- The user has Tuning Manager View permissions.
In addition to Tiered Storage Manager user permissions, you need Tuning Manager user permissions.
For details about how to set Tuning Manager user permissions, see the *Hitachi Tuning Manager Server Administration Guide*.



Caution: To install the Tuning Manager server on a different host from the Device Manager server and the Tiered Storage Manager server, the following settings must be identical on both hosts:

- Time
If the system time between the hosts differs by 5 minutes or more, an error will occur when launching historical reports.
 - Time zone
If the hosts are not using the same time zone, the time zone on which the Tuning Manager server is installed will be used when displaying historical reports.
-

Settings for Displaying Performance Information on Web Client or the Command Line Interface

By linking Tiered Storage Manager with Tuning Manager, you can use Tiered Storage Manager to check the average and maximum array group usage rate. The following describes the prerequisites for displaying performance information on Tiered Storage Manager:

- The Tuning Manager server has been set up.
You need a Tuning Manager server of version 5.0 or later.
For details about the system requirements and how to set up the Tuning Manager server, see the *Hitachi Tuning Manager Installation Guide* and the *Hitachi Tuning Manager Server Administration Guide*.
- Tuning Manager - Agent for RAID has been set up.
You need Tuning Manager - Agent for RAID version 4.0 or later.
For details about the system requirements and how to set up Tuning Manager - Agent for RAID, see the *Hitachi Tuning Manager Installation Guide*.
- The property file for the Tiered Storage Manager server has been set.

You must set the `tuningmanager.properties` file for the Tiered Storage Manager server. The `tuningmanager.properties` file is stored at the following location:

In Windows:

installation-folder-of-the-Tiered-Storage-Manager-server\conf

In Solaris or Linux:

installation-directory-of-the-Tiered-Storage-Manager-server/conf

The following table describes the properties that must be specified in the `tuningmanager.properties` file.

Table 2-21 Properties to Specify in the `tuningmanager.properties` File

Properties	Description
<code>htnm.servers</code>	This allows you to specify the number of Tuning Manager servers to connect to (from 0 to 3). Default: 0
<code>htnm.server.n.host</code>	This allows you to specify the host name or IP address of Tuning Manager server that will be connected to. Note that an IPv6 address cannot be used. For <i>n</i> in the property name, specify a value in the range from 0 to <i>value-specified-in-the-htnm.servers-property</i> - 1. Example: <code>htnm.server.0.host=htnm_sv1</code> Default: None
<code>htnm.server.n.port</code>	This allows you to specify the HBase Storage Mgmt Web Service port number for the Tuning Manager server. You can specify any value from 1024 to 65535. For <i>n</i> in the property name, specify a value in the range from 0 to <i>value-specified-in-the-htnm.servers-property</i> - 1. Example: <code>htnm.server.0.port=23015</code> Default: None
<code>htnm.infoAcquirePeriod</code>	This allows you to specify the time interval when performance information is acquired from Tuning Manager. You can specify week or month. Performance information collected from Tuning Manager can only be used in Tiered Storage Manager after the specified interval. If you refresh a storage domain between intervals, performance information for the previous week or month is displayed. However, if performance information for the previous week or month was not acquired, the displayed performance information is for the current week or month. Default: week

Properties	Description
htnm.infoCachePeriodInMinute	Tuning Manager manages the correspondence between the Tuning Manager agent and its monitor-target storage subsystem. Tiered Storage Manager caches this correspondence information to shorten the time it takes to acquire the performance information from Tuning Manager. This property allows you to specify the period of time (in minutes) that information about the correspondence between the Tuning Manager agent and the storage subsystem is retained in the cache. The range of specifiable values is from 5 to 10080 (5 minutes to 7 days). Default: 60

After setting the properties, restart the Tiered Storage Manager service as follows:

In Windows:

Stop Tiered Storage Manager by choosing **Start, All Programs, Hitachi Storage Command Suite, Tiered Storage Manager**, and then **Stop Tiered Storage Manager**.

Start Tiered Storage Manager by choosing **Start, All Programs, Hitachi Storage Command Suite, Tiered Storage Manager**, and then **Start Tiered Storage Manager**.

In Solaris or Linux:

Execute the following command:

```
installation-directory-of-the-Tiered-Storage-Manager-server/bin/hts
mserver stop
installation-directory-of-the-Tiered-Storage-Manager-server/bin/hts
mserver start
```

After a New Installation Has Been Performed

This concludes the new installation procedure.

For guidelines and instructions about what to do next, see the *Hitachi Device Manager Getting Started Guide*.

We recommend that you back up the database periodically after starting to use Device Manager, Provisioning Manager, and Tiered Storage Manager. For details on how to make a backup copy, see the *Hitachi Device Manager Server Configuration and Operation Guide* and *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

Performing an Upgrade or Overwrite Installation

This chapter explains how to perform an upgrade or overwrite installation of Device Manager and Tiered Storage Manager.

- ☐ [Pre-installation Tasks for an Upgrade or Overwrite Installation](#)
- ☐ [Performing an Upgrade or Overwrite Installation](#)
- ☐ [Tasks Required After an Upgrade or Overwrite Installation](#)

Pre-installation Tasks for an Upgrade or Overwrite Installation

The following tasks must be performed before initiating an upgrade or overwrite installation.

Pre-installation Tasks for an Upgrade or Overwrite Installation of Device Manager

This section describes preliminary preparations and notes required to perform an upgrade or overwrite installation of Device Manager.

When Using Tuning Manager

If Tuning Manager has been installed on the management server, first stop the Tuning Manager services, and then perform an upgrade or overwrite installation of Device Manager.

- Tuning Manager - Agent for SAN Switch services

Tuning Manager - Agent for SAN Switch uses Common Component. Therefore, if you want to perform an upgrade or overwrite installation of the Device Manager server on the host where Tuning Manager - Agent for SAN Switch has already been installed, you must stop the services of Tuning Manager - Agent for SAN Switch.

To stop the services, execute the following command:

In Windows:

```
installation-folder-of-Tuning-Manager-Agent-for-SAN-Switch\tools  
\\jpcstop agtw
```

In Solaris:

```
installation-directory-of-Tuning-Manager-Agent-for-SAN-Switch/tools  
ols/jpcstop agtw
```

- Tuning Manager server services

If Tuning Manager is remotely connected, stop the Tuning Manager services on the machine where the Tuning Manager server is installed.

For details about how to stop the Tuning Manager services, see the manual for the installed version of Tuning Manager.

Notes on Performing an Upgrade Installation from a Version Earlier than 5.0

Do not perform an upgrade installation from a Device Manager version earlier than 5.0 without first contacting the Hitachi Data Systems Support Center.

Pre-installation Tasks for an Upgrade or Overwrite Installation of Tiered Storage Manager

The property files for the CLI and for collecting error information are overwritten during installation of Tiered Storage Manager. If you have changed the contents of the property files, back up the following property files to any location before performing an upgrade or overwrite installation:

Property files for the CLI

Back up the following property files. In Solaris or Linux, replace the path delimiter with a forward slash (/).

<i>installation-location-of-the-Tiered-Storage-Manager-CLI\CLI\htsmcli.properties</i> <i>installation-location-of-the-Tiered-Storage-Manager-CLI\CLI\htsmclienv.properties</i>

Property file for collecting error information

Back up the following property file. In Solaris or Linux, replace the path delimiter with a forward slash (/).

<i>installation-location-of-the-Tiered-Storage-Manager-server\SupportTools\CollectTool\HtsmgetTI.properties</i>

Performing an Upgrade or Overwrite Installation

First, check the operation status of the programs that affect the installation process. Refer to [Checklist for an Upgrade or Overwrite Installation](#) to check the required items. Then perform [Performing an Upgrade or Overwrite Installation in Windows](#) or [Performing an Upgrade or Overwrite Installation in Solaris or Linux](#).

When you perform an upgrade or overwrite installation, you can back up or export the existing databases during the installation. We recommend that you follow the installer's instructions to back up or export the database.

Checklist for an Upgrade or Overwrite Installation

Check the items listed in the table below.

Table 3-1 Check Tasks before an Upgrade or Overwrite Installation

Task	Explanation	Check
Stop any security-monitoring programs.	Stop any security-monitoring programs, or change their settings so that Hitachi Storage Command Suite products can be installed normally.	
Stop any virus-detection programs.	We recommend that you stop any virus-detection programs before beginning installation. If a virus-detection program is running during installation, installation might be slowed, installation might fail, or installation might finish in an incorrect state.	
Stop any process-monitoring programs.	Stop any process-monitoring programs, or change their settings so that the programs do not monitor the services or processes of Device Manager, Tiered Storage Manager, or Common Component. If a process-monitoring program starts or stops the above services or processes during installation, installation might fail.	
Stop any event log-monitoring programs. (for Windows)	We recommend that you stop any event log-monitoring programs before beginning an installation. Close the Event Viewer window. Likewise, if you are viewing Event Viewer from the Computer Management window, close it.	

Task	Explanation	Check
Check the disk capacity of either the backup or export destination for the database. [#]	If you back up or export the database during installation, make sure that the backup or export destination for the database has enough free space. In Windows: When the databases are backed up, a folder called <code>olddbbackup_hdb</code> is created, and when the databases are exported, a folder called <code>olddbexported_hdb</code> is created. In both cases, the folder is created on the same tier as the installation location of Common Component, and the backed-up or exported data is stored in the created folder. In Solaris or Linux: When the databases are backed up, a folder called <code>olddbbackup_hdb</code> is created, and when the databases are exported, a folder called <code>olddbexported_hdb</code> is created. In both cases, the folder is created on the same tier as the storage location of Common Component, and the backed-up or exported data is stored in the created folder.	
[#] The following shows the approximate capacity required at the destination: When backing up databases: $(total\text{-}size\text{-}of\text{-}the\text{-}databases \times 2) + 20 \text{ MB}$ <i>total-size-of-the-databases</i> is the total size of the folders storing Hitachi Storage Command Suite product database files that will be backed up. When exporting databases: $((total\text{-}size\text{-}of\text{-}the\text{-}databases) - (size\text{-}of\text{-}system\text{-}data)) \times 2$ <i>total-size-of-the-databases</i> is the total size of the folders storing Hitachi Storage Command Suite product database files that will be exported. <i>size-of-system-data</i> is the total size of the SYS directory and its subdirectories. This SYS directory is in the installation location of Common Component.		

Performing an Upgrade or Overwrite Installation in Windows

To start the installer:

1. Log on to the OS as an administrator.
2. Close the Services window.

If you perform an installation with the Services window open, registration of the HiCommandServer service in the Services window might fail.

3. Load the Hitachi Storage Command Suite installation CD.

The installer usually starts automatically. If it does not start automatically, execute `setup.exe`, which is located in the root folder of the CD-ROM drive.

4. When the Install Complete dialog box appears, click the **Finish** button to finish the installation.

If you have specified that services will start upon completion of installation, the services of Common Component and Hitachi Storage Command Suite products start automatically. After the services have started, proceed to [Tasks Required After an Upgrade or Overwrite Installation](#).



Caution:

- If the Program Compatibility Assistant dialog box appears during installation, click the **Cancel** button.
 - Even if you have specified services to start automatically, the services of HiCommand Suite products version 5.7 or earlier will not start automatically. You must manually start these services. For details about how to start these services, see the manuals for your product versions.
-

Performing an Upgrade or Overwrite Installation in Solaris or Linux

To start the installer:

1. Log on to the OS as the root user.
2. Insert the Hitachi Storage Command Suite installation CD.
The installation CD is usually mounted automatically. (If it is not mounted automatically, mount it to /mnt/cdrom.)
3. Move the current directory to the directory that stores the installer (install.sh). Then, execute the following command:

```
# ./install.sh
```

When the installation has completed, the following message is displayed.

```
SUCCESS: Hitachi Storage Command Suite Installation succeeded.
```

If you have specified that services will start upon completion of installation, the services of Common Component and Hitachi Storage Command Suite products start automatically. After the services have started, proceed to [Tasks Required After an Upgrade or Overwrite Installation](#).



Caution: Even if you have specified services to start automatically, the services of HiCommand Suite products version 5.7 or earlier will not start automatically. You must manually start these. For details about how to start these services, see the manuals for your product versions.

Tasks Required After an Upgrade or Overwrite Installation

This section describes what needs to be done after performing an upgrade or overwrite installation of Device Manager or Tiered Storage Manager.

Backing Up the Server Database

To prepare against failures, back up the database after you have finished installation. To back up the database, the following disk space is required. The backup file storage directory must have the following capacity, which includes temporary files that are created by the backup command:

Required disk space:

$(total-size-of-the-Hitachi-Storage-Command-Suite-product-databases \times 2) + 20 \text{ MB}$

Use the size of the database storage locations as the size of the databases for Device Manager, Tiered Storage Manager, and Common Component. For details about the sizes of other Hitachi Storage Command Suite product databases, see the manuals for those products.

To back up the database:

1. If Tuning Manager is remotely connected, stop the Tuning Manager services on the machine where the Tuning Manager server is installed.

For details about how to stop the Tuning Manager services, see the manual for the installed version of Tuning Manager.

2. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manuals for those product versions.

3. Execute the `hcmdsbackups` command to back up the database.

In Windows:

```
installation-folder-of-Common-Component\bin\hcmdsbackups /dir  
target-folder-for-storing-backup-files /auto
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/bin/hcmdsbacups -dir  
target-directory-for-storing-backup-files -auto
```

The following shows the `hcmdsbackups` command options:

`dir`

Using an absolute path, specify the local disk folder or directory for the database backup files.

Verify that the folder or directory for the `dir` option is empty. If it is not empty, backup processing is interrupted. If this happens, delete any files, subfolders, or subdirectories in the folder or directory, and then re-execute the `hcmdsbackups` command.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service that are on the same machine to the statuses required for backing up the database. After the command completes, the Hitachi Storage Command Suite product services and the HiRDB service are active.



Note: When you execute the `hcmdsbackups` command, a folder named `database` is created in the target folder for storing backup files, and a database backup file is created with the name `backup.hdb`.

4. If HiCommand Suite products of versions earlier than 5.7 have been installed, start their services as required.

For details about how to start these services, see the manuals for your product version.

5. If remote connection is established with Tuning Manager, start the Tuning Manager service on the machine where the Tuning Manager server is installed.

For details about how to start the Tuning Manager services, see the manual for the installed version of Tuning Manager.

When Performing an Upgrade or Overwrite Installation of Device Manager

After performing an upgrade or overwrite installation of Device Manager, perform the following tasks:

Setting the Memory Heap Size

If you performed an upgrade installation from any of the following versions of Device Manager, you must set the memory heap size again. For details about how to set the memory heap size, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Windows: Version 5.8 or earlier

Solaris or Linux: Version 6.0 or earlier

Refresh Storage Subsystems

After performing an upgrade or overwrite installation of Device Manager, refresh all storage subsystems.



Caution: In versions earlier than 6.2, if the serial number of the storage subsystem is changed, such as by maintenance work, an error (KAIC07299-E) might occur when you refresh the storage subsystems after installing version 6.2 or later. If an error occurs, delete the storage subsystem in which an error occurred from Device Manager, and then register the storage subsystem again. After registration is finished, set the following Device Manager information again:

- Storage information that has been added to logical groups
- LDEV information that has been assigned to the resource group
- Information of links to desired URLs (URLLink) set up by using the CLI
- Labels that were set for LDEVs
- Storage subsystem names (if the names have been changed from the default)
- The storage subsystem serial number registered in CLI batch and script files

Note that, if you are using a Hitachi Storage Command Suite product other than Device Manager, review and, if necessary, change the settings of that product.

Delete the Device Manager User Account or Change the Password

If you upgraded Device Manager from any of the following versions, delete the Device Manager user account that you previously used or change the password of the account so that your old user authentication information is no longer used.

- Version 5.00 to 5.10-04
- Version 5.05 to 5.50-02
- Version 5.60

Changing the Settings in the Property File

If you perform an upgrade installation of the Device Manager server, property file settings for the Device Manager server are retained.

The recommended value for the `logger.hicommandbase.MaxFileSize` property in the `logger.properties` file was changed in version 6.1.1. Therefore, if you upgrade Device Manager from version 6.1.0 or earlier, change the value to at least 5 MB, and then restart the Device Manager server.

The property file is stored in the following location:

In Windows:

`installation-folder-of-the-Device-Manager-server\HiCommandServer\config\logger.properties`

In Solaris or Linux:

```
installation-directory-of-the-Device-Manager-server/HiCommandServer/config/logger.properties
```

For details on the `logger.hicommandbase.MaxFileSize` property setting value, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Starting the Tuning Manager Service

If Tuning Manager has been installed on the management server, after the upgrade or overwrite installation completes, you have to start the Tuning Manager services.

- Tuning Manager server services

If Tuning Manager is connected remotely, start the Tuning Manager service on the machine where the Tuning Manager server is installed.

For details about how to start the Tuning Manager services, see the manual for the installed version of Tuning Manager.

- Tuning Manager - Agent for SAN Switch services

If you are using Tuning Manager - Agent for SAN Switch, you need to start the services of Tuning Manager - Agent for SAN Switch.

To start the services, execute the following command:

In Windows:

```
installation-folder-of-Tuning-Manager-Agent-for-SAN-Switch\tools  
\\jpcstart agtw
```

In Solaris:

```
installation-directory-of-Tuning-Manager-Agent-for-SAN-Switch/to  
ols/jpcstart agtw
```

When Performing an Upgrade or Overwrite Installation of Tiered Storage Manager

After performing an upgrade or overwrite installation of Tiered Storage Manager, perform the following tasks:

Update the Property Files for the Tiered Storage Manager Server

Even if you perform an upgrade installation of the Tiered Storage Manager server, the property file will be retained, and the settings that have been added or modified during the upgrade installation will not be reflected in the existing file. Therefore, you must use the sample file to manually specify the settings in the property file.

To update the property file:

1. Stop the Tiered Storage Manager server.

In Windows:

From the **Start** menu, choose **All Programs, Hitachi Storage Command Suite, Tiered Storage Manager**, and then **Stop Tiered Storage Manager**.

In Solaris or Linux:

```
installation-directory-of-the-Tiered-Storage-Manager-server/bin/  
htsmsserver stop
```

2. Verify the settings in the existing property file at the location indicated below.

If the default values changed, note them or save the property file (the file is not overwritten during installation).

In Windows:

```
installation-folder-of-the-Tiered-Storage-Manager-server\conf
```

In Solaris or Linux:

```
installation-directory-of-the-Tiered-Storage-Manager-server/conf
```

3. Copy the sample property file obtained after upgrade installation. The file is stored at the following location:

In Windows:

```
installation-folder-of-the-Tiered-Storage-Manager-server\template
```

In Solaris or Linux:

```
installation-directory-of-the-Tiered-Storage-Manager-server/template
```

4. Change the property values by editing the copied sample file.

You must change the following property values:

- server.migration.dataErase.defaultValue property in the server.properties file

This property was added in version 5.6. If you upgraded a Tiered Storage Manager server version earlier than 5.5, change the value to true in order to operate the Tiered Storage Manager server in the same way as before the upgrade installation.

- server.migrationPlan.candidateVolumeCountLimit property in the server.properties file

This property was added in version 5.6. If you upgraded a Tiered Storage Manager server version earlier than 5.5, change the value to false in order to operate the Tiered Storage Manager server in the same way as before the upgrade installation.

- server.repository.autoRefresh.pollingIntervalInMinute property in the server.properties file

The recommended value was changed in version 6.2. If you upgraded a Tiered Storage Manager server version earlier than 6.1, the pre-upgrade setting (default: 0) must be changed. Verify that the property value is set to 10 or more.

- `server.repository.dvmModifyCheck.pollingIntervalInMinute` property in the `server.properties` file

The recommended value was changed in version 6.2. If you upgraded a Tiered Storage Manager server version earlier than 6.1, ensure that you change the property value to 0.

If there are other properties whose default values have been changed or new properties to be used, specify those values in the copied sample file. For details about the settings, see the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

5. To replace the property file, copy (overwrite) the sample file that was edited in step 4 to the following location.

In Windows:

```
installation-folder-of-the-Tiered-Storage-Manager-server\conf
```

In Solaris or Linux:

```
installation-directory-of-the-Tiered-Storage-Manager-server/conf
```

6. Start the Tiered Storage Manager server.

In Windows:

From the **Start** menu, choose **All Programs, Hitachi Storage Command Suite, Tiered Storage Manager**, and then **Start Tiered Storage Manager**.

In Solaris or Linux:

```
installation-directory-of-the-Tiered-Storage-Manager-server/bin/  
htsmserver start
```

Update the CLI Property Files and Error Collection Tool Property File

The CLI property files and error collection tool property file listed below are overwritten during installation. If these files were modified in a previous installation of Tiered Storage Manager, modify the new files to have the same settings as the old files, using the backed up old files as a guide.

In Solaris or Linux, replace the path delimiter with a forward slash (/).

- `installation-location-of-the-Tiered-Storage-Manager-CLI\CLI\htsmcli.properties`
- `installation-location-of-the-Tiered-Storage-Manager-CLI\CLI\htsmclienv.properties`

- `installation-location-of-the-Tiered-Storage-Manager-server\SupportTools\CollectTool\HtsmgetTI.properties`

Change the Login Information for the User Who Accesses the Device Manager Server

If you have upgraded Tiered Storage Manager from a version earlier than 5.5, change the user ID and password that are used to access the Device Manager server. For details on how to change the user ID and password, see the *Hitachi Tiered Storage Manager User's Guide*.

Re-specify the User ID and Password Used for Accessing the SMTP Server

If you have upgraded Tiered Storage Manager from a version earlier than 5.5, and you want to use the event notification function, change the user ID and password that are used by Tiered Storage Manager to access the SMTP server, and then use the `htsmmodmailuser` command to set the changed information. For details on the `htsmmodmailuser` command, see the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

If you do not change the user ID and password, the old user login information might be used for unauthorized access.

After an Upgrade or Overwrite Installation Has Been Performed

This concludes the upgrade or overwrite installation procedure. You may now resume normal operations.

We recommend that you back up the database periodically after Device Manager, Provisioning Manager, and Tiered Storage Manager operations have resumed. For details on how to make a backup copy, see the *Hitachi Device Manager Server Configuration and Operation Guide* and *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

Unattended Installation

This chapter explains how to set up and perform an unattended installation.

- [Properties to Specify for an Unattended Installation](#)
- [Performing an Unattended Installation](#)

Properties to Specify for an Unattended Installation

This section describes the properties that you can specify when you perform an unattended installation.

If you do not specify a property, the default value is set. To change the property value, specify it during installation.

[Table 4-1](#) lists the property names, setting details, default values, and the types of installations for which each property is used.

Table 4-1 Properties and Settings to Be Specified for an Unattended Installation

Property Name	Setting Details	Default Value	Installation Type for Which the Property Is Enabled
HDVM_INSTDIR ^{#1#2}	Specify the installation directory. Subdirectories under HDVM_INSTDIR are as follows: In Windows: ▪ <i>value-specified-for-HD VM_INSTDIR\DeviceManager</i> ▪ <i>value-specified-for-HD VM_INSTDIR\ProvisioningManager</i> ▪ <i>value-specified-for-HD VM_INSTDIR\TieredStorageManager</i> ▪ <i>value-specified-for-HD VM_INSTDIR\Base</i> In Solaris or Linux: ▪ <i>value-specified-for-HD VM_INSTDIR/ProvisioningManager</i> ▪ <i>value-specified-for-HD VM_INSTDIR/TieredStorageManager</i> ▪ <i>value-specified-for-HD VM_INSTDIR/Base</i>	In Windows: <i>program-files-folder \HiCommand^{#3}</i> In Solaris or Linux: <i>/opt/HiCommand</i>	▪ New installation of Device Manager

Property Name	Setting Details	Default Value	Installation Type for Which the Property Is Enabled
HDVM_DBDIR ^{#4}	Specify the directory for database files. Subdirectories under HDVM_DBDIR are as follows: In Windows: ▪ <i>value-specified-for-HDVM_DBDIR\DeviceManager</i> ▪ <i>value-specified-for-HDVM_DBDIR\HTSM</i> ▪ <i>value-specified-for-HDVM_DBDIR\Base</i> In Solaris or Linux: ▪ <i>value-specified-for-HDVM_DBDIR/DeviceManager</i> ▪ <i>value-specified-for-HDVM_DBDIR/HTSM</i> ▪ <i>value-specified-for-HDVM_DBDIR/Base</i>	In Windows: <i>value-specified-for-HDVM_INSDIR\databases^{#5}</i> In Solaris or Linux: <i>/var/value-specified-for-HDVM_INSDIR/database^{#5}</i>	▪ New installation of Device Manager
HDVM_IPADDRESS	Specify the IP address or host name of the management server. ^{#6}	Host name obtained by the hostname command ^{#5#7}	▪ New installation of Device Manager
HDVM_PORT	Specify the port number of HBase Storage Mgmt Web Service used by Web Client.	23015	▪ New installation of Device Manager
HDVM_DBBACKUP ^{#8#9}	If you are performing an upgrade or overwrite installation, specify whether to back up or export the database of the previous version. TRUE: The database is backed up or exported. FALSE: The database is not backed up or exported.	TRUE	▪ Upgrade installation of Device Manager ▪ Upgrade installation of Tiered Storage Manager ▪ Overwrite installation of Device Manager or Tiered Storage Manager
HDVM_RUNSERVICE ^{#8#10}	Specify whether to start Device Manager and Tiered Storage Manager after the installation. TRUE: Device Manager and Tiered Storage Manager will start. FALSE: Device Manager and Tiered Storage Manager will not start.	TRUE	All

Property Name	Setting Details	Default Value	Installation Type for Which the Property Is Enabled
HDVM_INSTALL	Specify whether to install Device Manager. TRUE: Device Manager will be installed. FALSE: Device Manager will not be installed. Specify FALSE for any of the following cases: - When performing a new installation of Tiered Storage Manager without overwriting Device Manager - When overwriting Tiered Storage Manager only	TRUE	Overwrite installation of Device Manager
HDVM_INSTALL_HTSM	Specify whether to install Tiered Storage Manager. TRUE: Tiered Storage Manager will be installed. FALSE: Tiered Storage Manager will not be installed. Specify FALSE for any of the following cases: - When Tiered Storage Manager will not be used - When overwriting only Device Manager	TRUE	- New installation of Tiered Storage Manager - Overwrite installation of Tiered Storage Manager^{#11}
HDVM_IGNORE_CAPACITY_CHECK	Specify whether to continue an installation even if the installer determines that there is not enough free disk space. TRUE: Continues the installation. FALSE: Stops the installation.	FALSE	All
#1: Specify a value according to the following rules: - Specify an absolute path, using no more than 64 bytes. - You can use the following characters to specify the path: In Windows: A to Z a to z 0 to 9 spaces . _ () \ : In Solaris or Linux: A to Z a to z 0 to 9 _ / - Do not specify two or more consecutive spaces or path delimiters (\ or /). - Do not specify a period, space, or path delimiter (\ or /) at the end of a directory name.			

Property Name	Setting Details	Default Value	Installation Type for Which the Property Is Enabled
	- Do not use parentheses, except when referring to the Program Files (x86) folder. - Do not specify a space at the beginning of a directory name. - Do not specify a symbolic link or junction for the installation directory. - Do not specify the root directory or a directory directly under a drive (such as D:\). - In Windows (x64), do not specify the following folders because the programs to be installed are 32-bit applications: - The folder that is specified by the environment variable %ProgramFiles%, or a folder under that specified folder - The folder that is specified by the environment variable %CommonProgramFiles%, or a folder under that specified folder - The <i>Windows-system-folder\system32</i> folder or a folder under it - If Common Component has not been installed, make sure that the installation directory you specify does not contain any files or subdirectories. #2: You cannot specify this property in Solaris (SPARC). #3: <i>program-files-folder</i> indicates the following location: - If the architecture is x86: The folder specified by the Windows system environment variable %ProgramFiles%. By default, this folder is as follows: <i>system-drive\Program Files\</i> - If the architecture is x64: The folder specified by the Windows system environment variable %ProgramFiles(x86)%. By default, this folder is as follows: <i>system-drive\Program Files (x86)\</i> #4: Specify a value according to the following rules: - Specify an absolute path, using no more than 81 bytes. - You can use the following characters to specify the path: In Windows: A to Z a to z 0 to 9 spaces . _ () \ : In Solaris or Linux: A to Z a to z 0 to 9 . _ / - Do not specify a period or path delimiter (\ or /) at the end of a directory name. - Do not specify two or more consecutive path delimiters (\ or /). - Do not specify the root directory or a directory directly under a drive (such as D:\). - In Windows (x64), do not specify the following folders because the programs to be installed are 32-bit applications: - The folder that is specified by the environment variable %ProgramFiles%, or a folder under that specified folder - The folder that is specified by the environment variable %CommonProgramFiles%, or a folder under that specified folder - The <i>Windows-system-folder\system32</i> folder or a folder under it #5: When installing in a cluster environment, default values will not be specified automatically. You must specify values. #6: Specify a value according to the following rules: - The following characters can be specified for IPv4 addresses or host names: A to Z a to z 0 to 9 . -		

Property Name	Setting Details	Default Value	Installation Type for Which the Property Is Enabled
	The following characters can be specified for IPv6 addresses: A to F a to f 0 to 9 . : In an IPv6 environment, we recommend that you specify a host name for HDVM_IPADDRESS. If you specify an IPv6 address, you might not be able to connect to the Device Manager server or move from window to window in Internet Explorer 6. If you specify an IPv6 address, enclose it in square brackets ([]). #7: If the host name cannot be acquired by using the hostname command, hdvmlocalhost is specified as the host name. #8: If you specify a value other than TRUE or FALSE, an error occurs during installation. #9: If you perform an installation on the standby node in a cluster environment, databases will not be backed up or exported. #10: You cannot specify this property in a cluster environment. #11: You cannot specify FALSE for this property when upgrading Device Manager.		

Performing an Unattended Installation

This section describes how to perform an unattended installation, which eliminates the need for users to respond to displayed prompts during installation.

Before starting installation, check the statuses of port numbers and the installation statuses of other programs. For details about how to check these items, see [Pre-installation Tasks for a New Installation](#) and [Pre-installation Tasks for an Upgrade or Overwrite Installation](#).



Note: The window for agreeing to the license agreement and terms is not displayed in an unattended installation. By performing an unattended installation, you are assumed to agree to the license agreement terms.



Caution: In Windows, if a dialog box that requests a response from the user is displayed, take the following actions:

- If the User Account Control dialog box is displayed:
In a Windows Vista, Windows 7, Windows Server 2008, and Windows Server 2008 R2 environment, start installation from a command prompt that has Administrator permissions.
 - If the Program Compatibility Assistant dialog box is displayed:
Click the **Cancel** button.
 - If an error dialog box is displayed:
Correct any syntax errors in the specified command.
-

To perform an unattended installation:

1. Log on to the OS.
In Windows, log on with a user ID that has Administrator permission.
In Solaris or Linux, log on as the root user.
2. Stop all applications.
In Windows, close the Services window. If you perform an installation with the Services window open, registration of the HiCommandServer and HiCommandTieredStorageManager services in the Services window might fail. For details on what to do if the HiCommandServer service and the HiCommandTieredStorageManager service are not displayed in the Services window after the installation of Device Manager finishes, see [Troubleshooting Examples](#).
3. In Windows, open the command prompt or PowerShell. In Solaris or Linux, open the shell.
In Windows Vista, Windows 7, Windows Server 2008, and Windows Server 2008 R2, open the command prompt or PowerShell as an administrator.

4. Move to the directory in which the installer execution file (setup.exe in Windows and install.sh in Solaris and Linux) is stored.
5. Run the installer execution file as shown below to start installation:

In Windows, if you run the file from the command prompt:

```
>setup.exe /v"/qr property-name=value-to-set"
```

In Windows, if you run the file from PowerShell:

```
>setup.exe /v`"/qr property-name=value-to-set`"
```

In Solaris or Linux:

```
#./install.sh -s property-name=value-to-set
```

Specify a value according to the following rules:

- Be careful to not specify an invalid property for *property-name*. If you specify an invalid property, that property will be ignored when installing in Windows, and in Solaris or Linux, the installation will be canceled.
- If a space is included in *value-to-set*, enclose *value-to-set* in escaped double quotation marks (`\`).



Caution: If you run the installer execution file from PowerShell in Windows, enclose *value-to-set* by using ``\` on the left and ``"` on the right.

- Do not enter a character other than the equal sign (=) between *property-name* and *value-to-set*.
- If you specify multiple properties, delimit each *property-name=value-to-set* with a single-byte space.
- In Windows, do not specify options other than /v and /qr. Do not insert a space after v.
- In Solaris or Linux, do not specify any options other than -s.

The following are examples of how to execute the installer.

In Windows, if you execute the installer from the command prompt:

The following command specifies that the drive letter of the CD-ROM drive is P, the installation folder is C:\Program Files\HiCommand, and the IP address is 1.1.1.1:

```
P:\Server\Windows\setup.exe /v"/qr HDVM_INSTDIR="C:\Program Files\HiCommand\" HDVM_IPADDRESS=1.1.1.1"
```

If you execute the installer from PowerShell, replace `"` by ``"`, and `\` by `\\`"`.

In Solaris or Linux:

The following command specifies that the installation directory is /opt/HiCommand, and the IP address is 1.1.1.1:

```
#./install.sh -s HDVM_INSTDIR=/opt/HiCommand HDVM_IPADDRESS=1.1.1.1
```

After installation finishes, HDvMInstReport.txt is created. This file contains output regarding the items specified in the installation. The file is created on the desktop in Windows and in the /tmp directory in Solaris or Linux.

6. Open HDvMInstReport.txt to check the installation details.

The following table lists the items output to HDvMInstReport.txt. If an error occurs during the installation, an error or warning message will be output to the report file. For details on the meanings of the messages and how to resolve any possible errors, see [Checking Report Files](#).

Table 4-2 Items Output to HDvMInstReport.txt and Corresponding Meanings

Item		Meaning
[Summary]	Product name	Product name
	Version	Version number
	Begin	Time when installation began
	End	Time when installation ended
	Result	Installation result SUCCESS: The installation ended successfully. FAILED: The installation failed.
	ERROR or WARNING	Error message or warning message (Will not be output if the installation ends successfully.)
[Setting] - Hitachi Device Manager	Installation directory	Installation directory for Device Manager and Provisioning Manager
	Installation directory for the database ^{#1#2}	Directory for database files
	SNMP trap receiver function	Setting for the SNMP Trap receiver function Enable: Enabled Disable: Disabled
	SMI-S Provider service	Setting for the CIM/WBEM function Enable: Enabled The CIM/WBEM function is always enabled.

Item		Meaning
[Setting] - Hitachi Tiered Storage Manager	Installation directory	Installation directory for Tiered Storage Manager
	Installation directory for the database ^{#1#3}	Directory for database files
[Setting] - Hitachi Storage Command Suite Common Component	Installation directory	Installation directory for Common Component
	Installation directory for the database	Directory for database files of Common Component
[Setting]- Installation server information	IP address (host name)	IP address or host name
	Port number	Port number of HBase Storage Mgmt Web Service, which is used by Web Client
[Setting]	Back up the database prior to the installation	Whether the database of the previously installed version was backed up or exported. Yes: The database was backed up or exported. No: The database was not backed up or exported.
	Start Hitachi Storage Command Suite services	Whether services have been set to start: Yes: Services have been set to start. No: Services have not been set to start.
#1 If you have newly installed Device Manager and Tiered Storage Manager on the standby node in a cluster environment, this item will not be output. #2 This item will be output if you have upgraded Device Manager in an environment where Common Component of version is 5.0 or later is installed. If you have upgraded Device Manager in an environment where Common Component of a version earlier than 5.0 has been installed, this item might not be output. #3 This item will be output only if Common Component of version 5.0 or later is already installed when installing Device Manager and Tiered Storage Manager.		

Uninstallation

This chapter explains how to uninstall Device Manager and Tiered Storage Manager.

- [Uninstallation Procedure](#)
- [Preparation for Uninstallation](#)
- [Uninstalling Tiered Storage Manager](#)
- [Uninstalling Device Manager](#)

Uninstallation Procedure

Uninstall Device Manager and Tiered Storage Manager in the following order:

1. Preparation for uninstallation

Before uninstalling Device Manager and Tiered Storage Manager, perform the required preparations. For details, see [Preparation for Uninstallation](#).

2. Uninstalling Tiered Storage Manager (if Tiered Storage Manager has been installed)

Uninstall Device Manager and Tiered Storage Manager separately. For details, see [Uninstalling Tiered Storage Manager](#).

3. Uninstalling Hitachi Storage Command Suite products that use Device Manager as a required product

If any products that depend on Device Manager are installed, you cannot uninstall Device Manager. Uninstall any such products by referring to their manuals.

4. Uninstalling Device Manager

For details, see [Uninstalling Device Manager](#).

Preparation for Uninstallation

Before uninstallation, the following tasks are required:

1. Log in to the OS as an administrator user.

To uninstall Device Manager and Tiered Storage Manager, you must log in as a user who has administrator permissions for the OS.

In Windows:

Log in as a user who has Administrator permissions.

In Solaris or Linux:

Log in as the root user.

2. Export the database as necessary.

If you perform a new installation of Hitachi Storage Command Suite products, or if you want to use the system after migrating data to Hitachi Storage Common Suite products that are installed in a different environment, export the database before uninstallation. For details about how to export the database, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

3. Check the status of the following programs.

If any of the programs are running, an error might occur during an uninstallation.

- Security-monitoring programs

Stop any security-monitoring programs, or change their settings so that Hitachi Storage Command Suite products can be uninstalled normally.

- Virus-detection programs

We recommend that you stop any virus-detection programs before beginning uninstallation.

If a virus-detection program is running during uninstallation, uninstallation might be slowed, it might fail, or it might finish in an incorrect state.

- Process-monitoring programs

Stop any process-monitoring programs, or change their settings so that the programs do not monitor the services or processes of any Hitachi Storage Command Suite products or Common Component.

If a program that monitors processes starts or stops the above processes during uninstallation, uninstallation might fail.

- Event log-monitoring programs in Windows

We recommend that you stop any event log-monitoring programs before beginning an uninstallation. Also, make sure you close the Event Viewer window. Likewise, if you are viewing Event Viewer from the Computer Management window, close it.

If you are going to uninstall Device Manager, also perform the following:

- If you are using Windows, before using CIM/WBEM functions, you must unregister the SLP service from the services registered in Windows. For details about how to unregister an SLP service registration, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
- If Tuning Manager 5.9 or an earlier version is set to the Single Sign-On mode, change the setting to the stand-alone mode before uninstalling Device Manager. If you uninstall Device Manager without changing the setting, you will no longer be able to log in to Tuning Manager. For details about how to change the setting, see the Tuning Manager documentation.

Uninstalling Tiered Storage Manager

After you finish the tasks in [Preparation for Uninstallation](#), uninstall Tiered Storage Manager according to the following procedures.

In Windows

To uninstall Tiered Storage Manager:

1. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop the services of those products.
For details about how to stop these services, see the manual for the relevant product version.
2. Close the Services window.
3. In the dialog box that is displayed by choosing **Start, Settings, Control Panel**, and then **Add or Remove Programs**, select **Hitachi Tiered Storage Manager** and click the **Remove** button.



Caution: If the computer from which you are uninstalling the Tiered Storage Manager server is running Windows Vista, Windows 7, Windows Server 2008, or Windows Server 2008 R2, the User Account Control dialog box will be displayed. To continue the uninstallation, click the **Continue** button.

The wizard for uninstalling Hitachi Tiered Storage Manager opens.

4. Click the **Next** button.
 - If you are using a cluster configuration:
If Hitachi Storage Command Suite product services are running, the Stopping the services of Hitachi Storage Command Suite products dialog box is displayed. Click the **Next** button.
 - If you are using a cluster configuration:
If Hitachi Storage Command Suite product services are running, an error message is displayed.
A confirmation dialog box is displayed. It indicates whether the management server is in a non-cluster configuration, on the executing node of a cluster configuration, or on the standby node of a cluster configuration.
5. Click the **Next** button.
The Set Services to Start after Uninstallation dialog box is displayed.
6. Select whether to start the services of the Hitachi Storage Command Suite products when uninstallation finishes, and then click the **Next** button.
The Pre-uninstallation confirmation dialog box is displayed.

7. Check the displayed information about the installed components and the installation folder. Confirm that the setting for whether to start the services of the Hitachi Storage Command Suite products after uninstallation is set as you would like, and then click the **Next** button to start uninstallation.

Once all the files have been uninstalled, the Uninstall Complete dialog box is displayed.

8. Click the **Finish** button to complete the uninstallation.

The message KATS40184-I is displayed in the information window.



Caution:

- If the Program Compatibility Assistant dialog box appears during uninstallation, click the **Cancel** button.
- If an error occurs during the uninstallation processing, the Uninstallation has stopped (Error) dialog box is displayed.

If this window is displayed, the uninstallation is incomplete. When this occurs, even if **Hitachi Tiered Storage Manager** is no longer in the list displayed by choosing **Start, Settings, Control Panel**, and then **Add or Remove Programs**, the Tiered Storage Manager server has not been properly uninstalled. Check the messages that were output when the error occurred, and, after removing the cause of the error, re-install and then uninstall the Tiered Storage Manager server.

If, however, **Hitachi Tiered Storage Manager** is still listed in **Currently installed programs**, simply initiate uninstallation again. If an error occurs during uninstallation, uninstaller trace log data is output. For details on this log data, see [Checking Log Files](#).

In Solaris or Linux

To uninstall the Tiered Storage Manager server:



WARNING: Do not specify the zone settings during uninstallation in Solaris 10 system. If you do specify the settings, uninstallation might end abnormally.

1. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop the services of those products.

For details about how to stop these services, see the manual for the relevant product version.

2. Execute the uninstallation program.

Make the current directory the root (/), and then execute the following command:

```
installation-directory-of-the-Tiered-Storage-Manager-server/inst/uninstall.sh
```

A message indicating that uninstallation will start is displayed.

```
Starting uninstallation of Hitachi Tiered Storage Manager.  
Information about the installed program
```

```
Version: 6.4.0 (06.4.0.0000)
While uninstalling Hitachi Tiered Storage Manager, the uninstaller will start and stop the
HBase Storage Mgmt Web Service, Common Service and HiRDB.
Before proceeding, make sure that all Hitachi Storage Command Suite services have stopped.
Enter y to continue or n to cancel, and then press the Enter key.
>
```

3. Enter y, and then press the **Enter** key.

- If you are using a non-cluster configuration:

If the Common Component services are running, a message indicating that the uninstaller will stop these services is displayed. Enter y, and then press the **Enter** key.

```
The services of Hitachi Storage Command Suite products are running. These services will
be stopped during uninstallation if you choose to continue.
Enter y to continue or n to cancel, and then press the Enter key.
>
```

Also, if other products that use Common Component have been installed, a message will be displayed that asks whether to start the services of the Hitachi Storage Command Suite products after uninstallation finishes. If you want the services of the installed Hitachi Storage Command Suite products to be started after uninstallation of Tiered Storage Manager finishes, enter y, and then press the **Enter** key.

```
Do you want the services of all Hitachi Storage Command Suite products to start after
the uninstallation finished?
Enter y or n, and then press Enter key. [default: y]
>
```

A message appears, prompting you to confirm the uninstallation parameters.

```
Please review the uninstallation information.
Settings for Hitachi Tiered Storage Manager information
Set Services to Start after Uninstallation: Yes
Enter y to continue, n to re-enter information, or q to cancel. Then press the Enter
key.
>
```

- If you are using a cluster configuration:

A message will be displayed that asks you to confirm the uninstallation information.

```
Please review the uninstallation information.
Settings for Hitachi Tiered Storage Manager information
Set Services to Start after Uninstallation: Yes
Enter y to continue, n to re-enter information, or q to cancel. Then press the Enter
key.
>
```

4. Enter y, and then press the **Enter** key.

When the uninstallation finishes, the following message is displayed, indicating that uninstallation has finished:

```
SUCCESS: Uninstallation of Hitachi Tiered Storage Manager was successful.
```



Caution: If an error occurred during uninstallation, a message is displayed, stating that uninstallation is incomplete.

FAILED: An attempt to uninstall Hitachi Tiered Storage Manager has failed.

The uninstallation trace log file for Hitachi Tiered Storage Manager has been created.
(/var/opt/HiCommand/TieredStorageManager/inst/HTSM_TL_Uninstall_YYYY-MM-DD_HH-MM-SS.log)

Check the messages that were output when the error occurred. Then, after removing the cause of the error, execute the following command to obtain package information.

In Solaris:

```
# pkginfo -l HTSM
```

In Linux:

```
# rpm -qi HTSM
```

If the installation package is displayed, attempt to uninstall the Tiered Storage Manager server again. If the installation package is not displayed, manually delete any files and directories that were not uninstalled. Errors that occur during uninstallation create uninstaller trace log data. For details on this log data, see [Checking Log Files](#).

Uninstalling Device Manager

This section describes how to uninstall Device Manager.

Before uninstalling Device Manager, make sure that all Hitachi Storage Command Suite products that require an installation of Device Manager have been uninstalled.

If no Hitachi Storage Command Suite products are using Common Component, it will be uninstalled when you uninstall Device Manager. If, however, another Hitachi Storage Command Suite product is using Common Component, it will not be uninstalled. In this case, be sure you do not delete the remaining files and folders in the Common Component installation location. Also note that you cannot uninstall Common Component by itself.

In Windows

To uninstall the Device Manager server:



Caution: The uninstaller is displayed in the same language as you selected during installation of Device Manager. If you changed the language settings of Windows to another language after installation, the display of the uninstaller might be garbled.

1. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop the services of those products.
For details about how to stop these services, see the manual for the relevant product version.
2. Close the Services window.
3. In the dialog box that can be displayed by choosing **Start, Settings, Control Panel**, and then **Add or Remove Programs**, select **Hitachi Device Manager** and click the **Remove** button.

The wizard for uninstalling Device Manager starts.

4. Confirm the displayed information, and then click the **Next** button.
 - In a non-cluster environment:

If services of Hitachi Storage Command Suite products are running, the Stopping the services of Hitachi Storage Command Suite products dialog box is displayed. Click the **OK** button to continue.

If other products that use Common Component have been installed, the Set Services to Start after Uninstallation dialog box is displayed. If you want the services of Common Component and related Hitachi Storage Command Suite products to be started after uninstallation is complete, select the **Yes** button and then click the **OK** button. If you do not want these services to be started after uninstallation is complete, select the **No** button and then click the **OK** button.

Even if the **Yes** button is selected, services of HiCommand Suite products of versions earlier than 5.7 will not start. After uninstallation finishes, manually start such services as required. For details about how to start these services, see the manual for the relevant product version.

- In a cluster environment:

If services of Hitachi Storage Command Suite products are running, the Notes for a Cluster Configuration dialog box is displayed. If this dialog box is displayed, perform the uninstallation procedure for a cluster environment, and then manually stop the services of Hitachi Storage Command Suite products. After stopping the services, click the **OK** button.

The Pre-Uninstallation Summary dialog box is displayed.

5. After confirming that the displayed product name and the location from which to uninstall are correct, click the **Delete** button to continue.

The Uninstalling Hitachi Device Manager dialog box appears and uninstallation starts. The uninstallation progress is displayed.

If the uninstaller fails to stop all the services of Common Component and Hitachi Storage Command Suite products, the Stop services error dialog box is displayed. If this dialog box appears, click the **Retry** button to close it, and then try again to stop the services. If the uninstaller still fails to stop the services, click the **Cancel** button to cancel the uninstallation, manually stop the services of Common Component and the Hitachi Storage Command Suite products that are still running, and then re-execute the uninstallation.

6. When the Uninstall Complete dialog box appears, click the **Finish** button to close the uninstaller.

If the Windows OS indicates that certain files were not uninstalled, you must manually delete them.

**Caution:**

- If you uninstall Common Component, the Warning Panel might appear, displaying the message below. In this case, you need to restart the system after the uninstallation. If you proceed to install a Hitachi Storage Command Suite product without first restarting the system, when the system is restarted after the installation, files required for Hitachi Storage Command Suite product operations will be deleted.
An attempt to uninstall has failed. An attempt to delete several files has failed. Reboot the system after uninstallation ends.
 - If the following message is displayed, release the SLP service from the Windows services manually. After uninstallation, if folders and files that are related to the SLP remain, delete them manually as necessary. For information on how to release the SLP service, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
An attempt to release the SLP service has failed. After uninstallation, release the SLP service manually.
Uninstallation continues
 - When you uninstall Device Manager, the subfolders and files under the *installation-folder-of-the-Device-Manager-server* will be deleted, but the installation folder for the Device Manager server will remain. In addition, files and subfolders that the user added under the installation folder after installing Device Manager might after uninstallation. If the remaining files and folders are not necessary, delete them manually.
-

In Solaris or Linux

To uninstall the Device Manager server:



WARNING: Do not specify the system's zone settings during uninstallation in a Solaris 10 system. If you do specify the settings, uninstallation might finish abnormally.

1. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop the services of those products.

For details about how to stop these services, see the manual for the relevant product version.

2. Execute the uninstallation program.

Make the current directory the root (/), and then execute the following command:

```
installation-directory-of-the-Device-Manager-server/Uninstall/uninstall.sh
```

A message indicating that uninstallation will start is displayed.

```
This setup program will uninstall the following products:
```

```
Hitachi Device Manager  
Hitachi Provisioning Manager
```

Caution: It is strongly recommended that you quit all programs before starting the setup program. If the following types of programs are running, the setup program might fail:

- Security monitoring programs
- Virus detection programs
- Process monitoring programs

Caution: If you want to restore the current environment settings after uninstallation, before uninstallation you must execute the hcmsdbtrans command to export the database.

Hit Enter Key to Continue.

3. Press the **Enter** key to continue.

A message confirming that you want to delete the Device Manager server and Common Component is displayed.

4. Enter y, and then press the **Enter** key.

- If you are using a non-cluster configuration:

If the Common Component services are running, a message indicating that the uninstaller will stop these services is displayed.

Stopping the services of Hitachi Storage Command Suite products:
The services of Hitachi Storage Command Suite products are running. These services will be stopped during uninstallation if you choose to continue.
Do you want to continue uninstallation? (y/n)

Enter y, and then press the **Enter** key.

Also if other products that use Common Component have been installed, a message asking whether you want the Hitachi Storage Command Suite product services to be started after uninstallation is complete is displayed.

Set Services to Start after Uninstallation:
Do you want the services of all Hitachi Storage Command Suite products to start after the uninstallation finishes? (y/n) [default=y]:

If you enter y, the services of Common Component and the services of Hitachi Storage Command Suite products will then be started after uninstallation is complete.

Even if you select y, the services of HiCommand Suite products of versions earlier than 5.7 will not be started. If you want to start such services after uninstallation is complete, manually start the services as required. For details about how to start these services, see the manual for the relevant product version.

- If you are using a cluster configuration:

If services of Hitachi Storage Command Suite products are running, the message shown below is displayed. If this message is displayed, perform the uninstallation procedure for a cluster environment, and then manually stop the services of Hitachi Storage Command Suite products. After stopping the services, enter **y** and then press the **Enter** key.

WARNING: The Hitachi Storage Command Suite products are running in a cluster configuration. Please see the manual, and then uninstall Device Manager according to the uninstallation procedure.
Do you want to continue uninstallation? (y/n)

5. Enter y, and then press the **Enter** key.

A message indicating that uninstallation has finished is displayed.

Hitachi Device Manager Removal completed.



Caution:

- If the uninstaller cannot stop all the services of Common Component and the Hitachi Storage Command Suite products, a message indicating that the uninstaller failed to stop the services is displayed.
If this message is displayed, enter y to try to stop the services again. If the uninstaller still fails to stop the services, cancel the installation, manually stop the services of Common Component and the Hitachi Storage Command Suite products, and then perform the uninstallation again.
ERROR: An attempt to stop the services of Hitachi Storage Command Suite products has failed.
Please wait a few minutes, and then try again.
 - If the following message is displayed in Red Hat Enterprise Linux, manually release the SLP daemon from the Red Hat Enterprise Linux daemon. After uninstallation, if directories and files related to SLP remain, manually delete them as necessary. For details about how to release the SLP daemon, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
WARNING: An attempt to release the SLP daemon has failed. After uninstallation, release the SLP daemon manually. Uninstallation continues.
 - When you uninstall Device Manager, the subdirectories and files under the *installation-directory-of-the-Device-Manager-server* will be deleted, but the installation directory for the Device Manager server will remain. In addition, files and subdirectories that the user added under the installation directory after installing Device Manager might remain after uninstallation. If the remaining files and directories are not necessary, delete them manually.
-

Setting Up a Cluster Environment

Device Manager and Tiered Storage Manager enable you to use two management servers with an active-standby cluster configuration. By employing a cluster configuration, you can improve the availability of Device Manager and Tiered Storage Manager. This chapter explains how to set up a cluster environment when Device Manager and Tiered Storage Manager are used in a cluster environment.

- ☐ [Supported Cluster Environments](#)
- ☐ [Setup in Windows](#)
- ☐ [Setup in Solaris](#)

Supported Cluster Environments

This section describes the system requirements for using Device Manager and Tiered Storage Manager in a cluster environment.

- Platform: See [Table 6-1](#).

Table 6-1 Supported Cluster Environments

OS	Architecture	Service Pack	Cluster Software
Windows Server 2003	x86	SP2	Microsoft Cluster Service
Windows Server 2003 R2	x86	SP2	
Windows Server 2008	x86	No SP	Microsoft Failover Cluster
		SP2	
	x64	No SP	
		SP2	
Solaris 9	SPARC	--	VERITAS Cluster Server 4.0 or Sun Cluster 3.1
Solaris 10	SPARC	--	VERITAS Cluster Server 4.1 MP2 or Veritas Cluster Server 5.0 MP1
	x64	--	
Legend:			
--: Not applicable			

When setting up cluster environments, re-create and back up the database. Check that the following free space is available on the management servers.

- Free space required for the location in which the database is re-created:
The required space is the combined disk space used by the Common Component database and the databases for all Hitachi Storage Command Suite products (including the Device Manager server) that are installed on a host on which a Device Manager server is installed.
- Free space required to back up the databases:
 $(total-size-of-the-Hitachi-Storage-Command-Suite-product-databases-to-be-backed-up \times 2) + 20 \text{ MB}$

When using the above formula to calculate the free space to prepare for Device Manager, Tiered Storage Manager, and Common Component database backups, use the sizes of those products' database file storage locations as the sizes of the databases. For details about the sizes of other Hitachi Storage Command Suite product databases, see the manuals for those products.

**Caution:**

- On all nodes that make up a cluster, the disk configuration must be the same, and the installation folders for the Device Manager server, the Provisioning Manager server, and the Tiered Storage Manager server must be the same ,including the drive letter and path name.
 - If you change the settings for Device Manager, Provisioning Manager, or Tiered Storage Manager after installation, specify the same settings for all nodes.
-

Setup in Windows

This section describes how to set up a cluster environment by using Microsoft Cluster Service or Microsoft Failover Cluster when the management server OS is Windows.



Note: The cluster management application can be started with the following procedure:

If Microsoft Cluster Service is used:

Select **Start, Settings, Control Panel, Administrative Tools**, and then **Cluster Administrator**.

If Microsoft Failover Cluster is used:

Select **Start, Settings, Control Panel, Administrative Tools**, and then **Failover Cluster Management**.

Checking the Management Server Environment

If Device Manager and Tiered Storage Manager are to be installed in a cluster environment, the installation procedure varies depending on which Hitachi Storage Command Suite products are installed on the management server. See [Table 6-2](#) and start the installation appropriate for your management server environment.

Table 6-2 Installation Methods for Each Management Server Environment (in Windows)

Management Server Environment		See	Cases Where the Environment Exists
The management server is operating in a cluster environment	Device Manager has not been installed.	New Installation	▪ When performing a new installation of Device Manager ▪ When performing a new installation of Device Manager and Tiered Storage Manager
	Device Manager has been installed.	Re-installation or Upgrade Installation	▪ When upgrading or re-installing Device Manager ▪ When upgrading or re-installing Device Manager and performing a new installation of Tiered Storage Manager ▪ When upgrading or re-installing Device Manager and Tiered Storage Manager

Management Server Environment		See	Cases Where the Environment Exists
The management server is operating in a non-cluster environment	Device Manager has not been installed.	Performing a New Installation Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating	▪ When performing a new installation of Device Manager ▪ When performing a new installation of Device Manager and Tiered Storage Manager
	Device Manager has been installed.	Performing an Upgrade or Overwrite Installation Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating	▪ When upgrading or re-installing Device Manager ▪ When upgrading or re-installing Device Manager and performing a new installation of Tiered Storage Manager ▪ When upgrading or re-installing Device Manager and Tiered Storage Manager

New Installation

This section describes how to perform the following installations when the management server OS is Windows:

- A new installation of Device Manager
- A new installation of Device Manager and Tiered Storage Manager

See [Review the Required Installation](#) and [Pre-installation Tasks for a New Installation](#) to prepare the management server environment for a new installation.

After you have completed the new installation, see [Tasks Required After a New Installation](#) and perform the required tasks.



Caution: While specifying cluster settings, do not access Device Manager.

Installing on the Executing Node

To perform a new installation of Device Manager and Tiered Storage Manager on the executing node:

1. Bring the cluster management IP address and the shared disk online.
2. Remove the Hitachi Storage Command Suite product services and resource group from the targets of the cluster management.

For details about the services and resource group that need to be removed from the cluster management, see the manual for each relevant Hitachi Storage Command Suite product.



Caution: Do not remove the following resources from the cluster management:

- Shared disk
- Cluster management IP address
- Logical host name

-
3. Perform a new installation of the Device Manager server and the Tiered Storage Manager server on the executing node.

For details about the installation procedure, see [Performing a New Installation](#).

If any other Hitachi Storage Command Suite products are included in the cluster environment, preparations for installation of the Device Manager server and the Tiered Storage Manager server are as follows:

- Make the shared disk accessible, and then specify a path on the shared disk for the database storage location.
- Specify a logical host name for the management server IP address (host name of the virtual host allocated to the cluster management IP address).

If no other Hitachi Storage Command Suite products are included in the cluster environment, preparations for installation are as follows:

- Specify a path on the local disk for the database storage location.
- For the management server IP address, specify the IP address of the executing node.

4. Enter the license keys from the Web Client window.

Access the IP address of the executing node.

A license key must be entered for each product that is installed.

5. Change the URL for starting Web Client to the logical host name.

Execute the following command to make sure that the correct logical host name is set:

```
installation-folder-of-Common-Component\bin\hcmdschgurl /print
```

If the logical host name is not set, execute the following command to change the URL:

```
installation-folder-of-Common-Component\bin\hcmdschgurl /change  
http://IP-address-or-host-name-of-the-executing-node#:port-number#  
http://logical-host-name:port-number#
```

Specify the value that was specified during installation.

6. Use a text editor to create a cluster-configuration file.

This step is not required if the cluster environment has been configured for other Hitachi Storage Command Suite products.

The items to be specified in the cluster-configuration file are as follows:

mode: Specify online.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows an example of how these items in the cluster-configuration file will look after being specified:

```
mode = online  
virtualhost = hcmdserver  
onlinehost = hcmdserver_1  
standbyhost = hcmdserver_2
```

Save the created file as `cluster.conf` in `installation-folder-of-Common-Component\conf`.



Caution:

- For `virtualhost`, `onlinehost`, and `standbyhost`, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in `virtualhost` must be enabled and accessible.

-
7. Open the `server.properties` file, and make sure that the logical host name is set in the `server.http.host` property.

If the logical host name is not set, change the current value to the logical host name.

The `server.properties` file is located in the following folder:

```
installation-folder-of-the-Device-Manager-server\HiCommandServer\config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

8. Migrate the database to the shared disk.

The procedure is described in steps 9 through 12.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform the procedure for migrating the database to the shared disk. Proceed to step 13.

9. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

10. Execute the following command to back up the database after the new installation.

```
installation-folder-of-Common-Component\bin\hcmdsbackups /dir  
target-folder-for-storing-backup-files /auto
```

The following shows the hcmdsbackups command option:

dir

Using an absolute path, specify the local disk folder for the database backup files.

Verify that the folder for the **dir** option is empty. If it is not empty, backup processing is interrupted. If this happens, delete any files or subfolders in the folder, and then re-execute the hcmdsbackups command.

auto

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to the statuses required for backing up the database. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service become active.



Note: When you execute the hcmdsbackups command, a folder named database is created in the target folder for storing backup files, and a database backup file is created with the name backup.hdb.

11. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

12. Execute the following command.

```
installation-folder-of-Common-Component\bin\hcmdsdbclustersetup /createcluster  
/databasepath target-folder-for-re-creating-database /exportpath  
target-folder-for-storing-data /auto
```

The following describes the options to specify for the `hcmsdbclustersetup` command.

`createcluster`

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

`databasepath`

Specify the folder in which you want to re-create the database. Use an absolute path to a folder on the shared disk. The path name must not exceed 90 bytes.

The characters that can be used to specify the path are shown below. Additionally, backslashes (\), colons (:), or forward slashes (/) can be used as path delimiters.

A to Z a to z 0 to 9 . _

`exportpath`

Specify the folder in which you want to store backup data. Use an absolute path to a folder on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for `databasepath`.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service are stopped.



Caution:

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If *target-folder-for-storing-data* already exists, empty or delete the folder.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the folder used for re-creating the database, increase the amount of free space in the folder, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

13. Execute the following command to verify that Common Component has stopped.

```
installation-folder-of-Common-Component\bin\hcmdssrv /status
```

14. In the Services window, open the properties for the following services, and then change **Startup Type** from **Automatic** to **Manual**:
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiCommand Tiered Storage Manager (if Tiered Storage Manager has been installed)
15. If a cluster environment is configured for another Hitachi Storage Command Suite product, use the cluster management application to move the resource group in which the Hitachi Storage Command Suite product services are registered to the standby node.

If Microsoft Cluster Service is used:

Right-click the resource group, and then select **Move Group**.

If Microsoft Failover Cluster is used:

Right-click the resource group, and then select **Move this service or application to another node**.

Installing on the Standby Node

To perform a new installation of Device Manager and Tiered Storage Manager on the standby node:

1. Perform a new installation of the Device Manager server and the Tiered Storage Manager server on the standby node.

For details about the installation procedure, see [Performing a New Installation](#).

Preparations for installation are as follows:

- Specify the same installation location as the one specified on the executing node.
 - If a cluster environment has been configured for another Hitachi Storage Command Suite product, specify the logical host name for the management server's IP address (the virtual host name assigned to the cluster management IP address). If a cluster environment has not been configured for any other Hitachi Storage Command Suite product, specify the host name IP address of the standby node.
2. Enter license keys from the Web Client window.

Access the IP address of the standby node.

A license key must be entered for each product that is installed.
 3. Use a text editor to create a cluster-configuration file.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform this step.

The items to be specified in the cluster-configuration file are as follows:

mode: Specify standby.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows a sample specification of the cluster-configuration file:

```
mode = standby  
virtualhost = hcmdserver  
onlinehost = hcmdserver_1  
standbyhost = hcmdserver_2
```

Save the created file as `cluster.conf` in
installation-folder-of-Common-Component\conf.



Caution:

- For virtualhost, onlinehost, and standbyhost, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in virtualhost must be enabled and accessible.

-
4. Open the `server.properties` file and make sure that the logical host name is specified in the `server.http.host` property.

If the logical host name is not set, change the current value to the logical host name.

The `server.properties` file is located in the following folder:

```
installation-folder-of-the-Device-Manager-server\HiCommandServer\config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

5. Set the database on the shared disk as the database to be used.

The procedure is described in steps 6 through 8.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform the steps for changing the settings if you want to use the database on the shared disk. Proceed to step 9.

6. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

7. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

8. Execute the following command:

```
installation-folder-of-Common-Component\bin\hcmsdbclustersetup /createcluster  
/databasepath target-folder-for-re-creating-database /exportpath  
target-folder-for-storing-data /auto
```

The following describes the options to specify for the hcmsdbclustersetup command.

createcluster

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

databasepath

Specify the folder in which you want to re-create the database. Specify the absolute path to the same folder as the one being used by the executing node to re-create its database.

The characters that can be used to specify the path are shown below. Additionally, backslashes (\), colons (:), or forward slashes (/) can be used as path delimiters.

A to Z a to z 0 to 9 . _

exportpath

Specify the folder in which you want to store backup data. Use an absolute path to a folder on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for databasepath.

auto

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service are stopped.

**Caution:**

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If *target-folder-for-storing-data* already exists, empty or delete the folder.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the folder used for re-creating the database, increase the amount of free space in the folder, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

9. Execute the following command to verify that Common Component has stopped.

```
installation-folder-of-Common-Component\bin\hcmdssrv /status
```

10. In the Services window, open the properties for the following services, and then change **Startup Type** from **Automatic** to **Manual**:
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiCommand Tiered Storage Manager (if Tiered Storage Manager has been installed)

Setting Up Microsoft Cluster Service

Before setting up Microsoft Cluster Service, perform the following tasks:

- Provide a cluster group (resource group), which is a group of services to be clustered (units of service failover).
- Configure a resource group that includes the shared disks and cluster management IP addresses that can be inherited by the executing and standby nodes.
- Make sure that Microsoft Cluster Service can successfully control resource allocation, resource removal, and operation monitoring.
- If there is a resource group in which another Hitachi Storage Command Suite product has been registered, use that resource group.

Make sure that the resource group consists of only those resources that are related to Hitachi Storage Command Suite products.

To set up Microsoft Cluster Service:

1. Add the Device Manager resource to the resource group. If you installed Tiered Storage Manager, then also add the Tiered Storage Manager resource.

Select **New**, and then **Resource**. In each dialog box, specify the settings as shown in [Table 6-3](#) to [Table 6-7](#), and then select **Finish**.

Table 6-3 Settings for Registering HiRDB as a Resource (for Microsoft Cluster Service)

Dialog Box Name	Setting
New Resource	Name: HiRDB/ClusterService _HD0 (optional) Resource type: Generic Service.
Possible Owners	Make sure that the executing and standby nodes have been added.
Dependencies	Register the drive letter and network name of the shared disk.
Generic Service Parameters	Service name: HiRDBClusterService_HD0 Start parameters: Specify nothing.
Registry Replication	Specify nothing.

Table 6-4 Settings for Registering the HBase Storage Mgmt Common Service as a Resource (for Microsoft Cluster Service)

Dialog Box Name	Setting
New Resource	Name: HBase Storage Mgmt Common Service (optional) Resource type: Generic Service.
Possible Owners	Make sure that the executing and standby nodes have been added.
Dependencies	Register HiRDB/ClusterService _HD0.
Generic Service Parameters	Service name: HBaseStgMgmtComService Start parameters: Specify nothing.
Registry Replication	Specify nothing.

Table 6-5 Settings for Registering the HBase Storage Mgmt Web Service as a Resource (for Microsoft Cluster Service)

Dialog Box Name	Setting
New Resource	Name: HBase Storage Mgmt Web Service (optional) Resource type: Generic Service.
Possible Owners	Make sure that the executing and standby nodes have been added.

Dialog Box Name	Setting
Dependencies	Register HBase Storage Mgmt Common Service.
Generic Service Parameters	Service name: HBaseStgMgmtWebService Start parameters: Specify nothing.
Registry Replication	Specify nothing.

Table 6-6 Settings for Registering the HiCommandServer as a Resource (for Microsoft Cluster Service)

Dialog Box Name	Setting
New Resource	Name: HiCommandServer (optional) Resource type: Generic Service.
Possible Owners	Make sure that the executing and standby nodes have been added.
Dependencies	Register the HBase Storage Mgmt Web Service.
Generic Service Parameters	Service name: HiCommandServer Start parameters: Specify nothing.
Registry Replication	Specify nothing.

Table 6-7 Settings for Registering the Tiered Storage Manager Server as a Resource (for Microsoft Cluster Service)

Dialog Box Name	Setting
New Resource	Name: HiCommand Tiered Storage Manager (optional) Resource type: Generic Service.
Possible Owners	Make sure that the executing and standby nodes have been added.
Dependencies	Register HiCommandServer.
Generic Service Parameters	Service name: HiCommandTieredStorageManager Start parameters: Specify nothing.
Registry Replication	Specify nothing.

2. In the cluster management application, bring online the resource group to which the resources have been added.

Setting Up Microsoft Failover Cluster

Before setting up Microsoft Failover Cluster, perform the following tasks:

- Provide a cluster group (resource group), which is a group of services to be clustered (units of service failover).
- Configure a resource group that includes the shared disks and cluster management IP addresses that can be inherited by the executing and standby nodes.

- Make sure that Microsoft Failover Cluster can successfully control resource allocation, resource removal, and operation monitoring.
- If there is a resource group in which another Hitachi Storage Command Suite product has been registered, use that resource group.

Make sure that the resource group consists of only those resources that are related to Hitachi Storage Command Suite products.

To set up Microsoft Failover Cluster:

1. Add the Device Manager resource to the resource group. If you installed Tiered Storage Manager, then also add the Tiered Storage Manager resource.
2. Right-click the name of the created resource group, and choose **Add a resource**, then **Generic service**. In the Select Services window, select the Device Manager and Tiered Storage Manager services.

The Device Manager and Tiered Storage Manager services are registered as resources.

3. Click the resource name, and then choose **Properties**.

Specify the settings shown in [Table 6-8](#) through [Table 6-12](#).

Table 6-8 HiRDB/ClusterService _HD0 Property Settings (for Microsoft Failover Cluster)

Tab name	Setting
General	Setup parameters: Specify nothing (if a value is specified, delete it).
Dependencies	Register the shared disk and network name.
Advanced Policies	Possible Owners: Make sure that the executing and standby nodes have been added.
Registry Replication	Specify nothing.

Table 6-9 HBase Storage Mgmt Common Service Property Settings (for Microsoft Failover Cluster)

Tab name	Setting
General	Setup parameters: Specify nothing (if a value is specified, delete it).
Dependencies	Register HiRDB/ClusterService _HD0.
Advanced Policies	Possible Owners: Make sure that the executing and standby nodes have been added.
Registry Replication	Specify nothing.

Table 6-10 HBase Storage Mgmt Web Service Property Settings (for Microsoft Failover Cluster)

Tab name	Setting
General	Setup parameters: Specify nothing (if a value is specified, delete it).
Dependencies	Register HBase Storage Mgmt Common Service.
Advanced Policies	Possible Owners: Make sure that the executing and standby nodes have been added.
Registry Replication	Specify nothing.

Table 6-11 HiCommandServer Property Settings (for Microsoft Failover Cluster)

Tab name	Setting
General	Setup parameters: Specify nothing (if a value is specified, delete it).
Dependencies	Register the HBase Storage Mgmt Web Service.
Advanced Policies	Possible Owners: Make sure that the executing and standby nodes have been added.
Registry Replication	Specify nothing.

Table 6-12 HiCommand Tiered Storage Manager Property Settings (for Microsoft Failover Cluster)

Tab name	Setting
General	Setup parameters: Specify nothing (if a value is specified, delete it).
Dependencies	Register HiCommandServer.
Advanced Policies	Possible Owners: Make sure that the executing and standby nodes have been added.
Registry Replication	Specify nothing.

4. In the cluster management application, bring online the resource group to which the resources have been added.

Re-installation or Upgrade Installation

This section describes how to perform the following installations when the management server OS is Windows:

- An upgrade installation or re-installation of Device Manager
- An upgrade installation or re-installation of Device Manager, and then a new installation of Tiered Storage Manager
- An upgrade installation or re-installation of Device Manager and Tiered Storage Manager

See [Pre-installation Tasks for an Upgrade or Overwrite Installation](#) to prepare the management server environment for upgrade installation.

After you have finished the update installation, see [Tasks Required After an Upgrade or Overwrite Installation](#) and perform the required tasks.

Preparations

Execute the following operations:

1. On the executing node, bring the resource group in which the Hitachi Storage Command Suite product services have been registered online.
2. Use the cluster management application on the executing node to take the following services offline:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommandServer
 - HBase Storage Mgmt Web Service
 - HBase Storage Mgmt Common Service
 - HiCommand Tiered Storage Manager (if you upgrade or re-install Tiered Storage Manager)
 - Hitachi Storage Command Suite product resources other than the above
3. On the executing node, stop the Hitachi Storage Command Suite product services.

For details about how to stop these services, see the manual for the relevant product version.

4. On the executing node, stop Common Component.

Select **Start, All Programs, Hitachi Storage Command Suite, Device Manager**, and then **Stop Server with Common Services**.

5. Use the cluster management application on the executing node to take the following service offline:

- HiRDB/ClusterService _HD0

This service will be displayed by the resource name specified when the service was registered as a resource.

6. On the standby node, perform the same operations described in steps 1 to 5.

7. Use the cluster management application to suppress failover of the resource group.

On the executing or standby node, change the settings of the resources listed below. The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HBase Storage Mgmt Common Service

- HBase Storage Mgmt Web Service
- HiCommandServer
- HiRDB/ClusterService_HD0
- HiCommand Tiered Storage Manager (if you are going to upgrade or re-install Tiered Storage Manager)
- Services that you took offline in step 2, other than those listed above

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Do not restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, and then **If resource fails, do not restart**.

Installing on the Executing Node

To upgrade or re-install a Device Manager installation and a Tiered Storage Manager installation that are located on the executing node:

1. Make sure that you can access the shared disk from the executing and standby nodes.
2. Perform an upgrade or overwrite installation of the Device Manager server and the Tiered Storage Manager server.

For details about the installation procedure, see [Performing an Upgrade or Overwrite Installation](#).

Back up or export the current database according to the installer's instructions.

3. Back up the database after the upgrade or overwrite installation is completed.

For details about how to acquire a backup, see [Backing Up the Server Database](#).

4. If Common Component is running, stop it as follows:

Select **Start, All Programs, Hitachi Storage Command Suite, Device Manager**, and then **Stop Server with Common Services**.

5. In the Services window, open the properties for the following services, and then change **Startup Type** from **Automatic** to **Manual**:
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiCommand Tiered Storage Manager (if you have upgraded or re-installed Tiered Storage Manager)

6. Use the cluster management application to move the resource group, in which the Hitachi Storage Command Suite product services are registered, to the standby node.

Installing on the Standby Node

To upgrade or re-install a Device Manager installation and a Tiered Storage Manager installation that are located on the standby node:

1. Stop the Hitachi Storage Command Suite product services.
For details about how to stop these services, see the manual for the relevant product version.
2. Stop Common Component
Select **Start, All Programs, Hitachi Storage Command Suite, Device Manager**, and then **Stop Server with Common Services**.
3. Perform an upgrade or overwrite installation of the Device Manager server and the Tiered Storage Manager server.
For details about the installation procedure, see [Performing an Upgrade or Overwrite Installation](#).
4. If Common Component is running, stop it as follows:
Select **Start, All Programs, Hitachi Storage Command Suite, Device Manager**, and then **Stop Server with Common Services**.
5. In the Services window, open the properties for the following services, and then change **Startup Type** from **Automatic** to **Manual**:
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiCommand Tiered Storage Manager (if you have installed Tiered Storage Manager)
6. Use the cluster management application to enable failover of the resource group.
Change the settings of the resources listed below. The following services will be displayed with the resource names that were specified for them when they were registered as resources:
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiRDB/ClusterService _HD0
 - Resources of Hitachi Storage Command Suite products other than the above products

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, then **If resource fails. Attempt restart on current node** and **If restart is unsuccessful, fail over all resources in this service or application**.

7. If you performed a new installation of the Tiered Storage Manager server, use the cluster management application to register the Tiered Storage Manager resource to the resource group in which the Hitachi Storage Command Suite product services are registered.

For details about the Tiered Storage Manager resources to be registered, see [Table 6-7](#) or [Table 6-12](#).

8. In the cluster management application, bring online the resource group in which the Hitachi Storage Command Suite product services are registered.

Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating

After starting the operation of the Device Manager and Tiered Storage Manager system in a non-cluster configuration, if you want to change the system to a cluster configuration, follow the procedure below. This procedure assumes that the computer with the installations of the Device Manager server and the Tiered Storage Manager server that are already operating in a non-cluster configuration will be the executing node after the system is converted to a cluster configuration.

Prepare the management server environment so that you can perform an installation on the standby node. For details about how to do this, see [Review the Required Installation](#) and [Pre-installation Tasks for a New Installation](#).

To convert from a non-cluster configuration to a cluster configuration when the management server OS is Windows:

1. If Tuning Manager is remotely connected, stop the Tuning Manager services on the machine where the Tuning Manager server is installed.

For details about how to stop the Tuning Manager services, see the manual for the installed version of Tuning Manager.

2. Install the Device Manager server on the machine to be used as the standby node.

For details about the installation procedure, see [Performing a New Installation](#).

If Tiered Storage Manager has been installed on the executing node, also install Tiered Storage Manager.

3. On the standby node, open the Web Client login window and then enter license keys.

A license key must be entered for each product that is installed.

4. Use a text editor to create a cluster-configuration file on the executing node and a cluster configuration file on the standby node.

The items to be specified in a cluster-configuration file are as follows:

mode: Specify online for the executing node, and standby for the standby node.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows a sample specification of the cluster-configuration file on the executing node:

```
mode = online
virtualhost = hcmdserver
onlinehost = hcmdserver_1
standbyhost = hcmdserver_2
```

Save each created file on its node as `cluster.conf` in *installation-folder-of-Common-Component\conf*.



Caution:

- For virtualhost, onlinehost, and standbyhost, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in virtualhost must be enabled and accessible.

-
5. Open the `server.properties` file, and then specify a logical host name for the `server.http.host` property.

The `server.properties` file is located in the following folder:

```
installation-folder-of-the-Device-Manager-server\HiCommandServer\config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

6. On the executing or standby node, if HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

7. Execute the following command to back up the database at the executing node.

```
installation-folder-of-Common-Component\bin\hcmsbackups /dir  
target-folder-for-storing-backup-files /auto
```

The following shows the hcmsbackups command options:

dir

Using an absolute path, specify the local disk folder for the database backup files.

Verify that the folder for the dir option is empty. If it is not empty, backup processing is interrupted. If this happens, delete any files or subfolders in the folder, and then re-execute the hcmsbackups command.

auto

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service that are on the same machine to the statuses required for backing up the database. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service become active.



Note: When you execute the hcmsbackups command, a folder named database is created in the target folder for storing backup files, and a database backup file is created with the name backup.hdb.

8. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

9. From the executing node, migrate the database to the shared disk.

Execute the following command:

```
installation-folder-of-Common-Component\bin\hcmsdbclustersetup /createcluster  
/databasepath target-folder-for-re-creating-database /exportpath  
target-folder-for-storing-data /auto
```

The following describes the options to specify for the hcmsdbclustersetup command.

createcluster

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

databasepath

Specify the folder in which you want to re-create the database. Use an absolute path to a folder on a shared disk. The path name must not exceed 63 bytes.

The characters that can be used to specify the path are shown below. Additionally, backslashes (\), colons (:), or forward slashes (/) can be used as path delimiters.

A to Z a to z 0 to 9 . _

exportpath

Specify the folder in which you want to store backup data. Use an absolute path to a folder on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for databasepath.

auto

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service on the same machine to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service are stopped.



Caution:

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If you execute the `hcmsdbclustersetup` command, the settings for remote connection with Tuning Manager are initialized.
- If *target-folder-for-storing-data* already exists, empty or delete the folder.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the folder used for re-creating the database, increase the amount of free space in the folder, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

-
10. On the standby node, set the database on the shared disk as the database to be used.

Execute the following command:

```
installation-folder-of-Common-Component\bin\hcmsdbclustersetup /createcluster  
/databasepath target-folder-for-re-creating-database /exportpath  
target-folder-for-storing-data /auto
```

For details about the options that can be specified for the `hcmsdbclustersetup` command, see step 9. For `databasepath`, specify the same folder as the one being used by the executing node to re-create the database.



Caution:

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If you execute the `hcmsdbclustersetup` command, the settings for remote connection with Tuning Manager are initialized.
- If *target-folder-for-storing-data* already exists, empty or delete the folder.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the folder used for re-creating the database, increase the amount of free space in the folder, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

11. On both the executing and standby nodes, execute the following command to verify that Common Component has stopped.

```
installation-folder-of-Common-Component\bin\hcmdssrv /status
```

12. On both the executing node and standby node, change settings so that the following services start manually.
 - HBase Storage Mgmt Common Service
 - HBase Storage Mgmt Web Service
 - HiCommandServer
 - HiCommand Tiered Storage Manager (if Tiered Storage Manager has been installed)

In the Services panel, open the properties of each service, and then change **Automatic** to **Manual** in **Startup Type**.

13. Using the cluster software, register resources.

For details about how to register cluster resources, see [Setting Up Microsoft Cluster Service](#) or [Setting Up Microsoft Failover Cluster](#).

14. If Tuning Manager was remotely connected while Device Manager and Tiered Storage Manager were being used in a non-cluster environment, if necessary, start the Tuning Manager service and then re-specify the settings for linking with Tuning Manager.

For details about how to start the Tuning Manager services, see the manual for the installed version of Tuning Manager.

For details about the settings required to link with Tuning Manager in a cluster environment, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Uninstallation

This section describes how to uninstall Tiered Storage Manager and Device Manager when the management server OS is Windows and the server is configured in a cluster environment.

Uninstalling Tiered Storage Manager

To uninstall the Tiered Storage Manager server on the executing node:

1. Bring services online at the executing node.
2. Use the cluster management application to take the following services offline:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommand Tiered Storage Manager
- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service

Do not take the following resources offline:

- Shared disk
- Cluster management IP address
- Logical host name
- HiRDB/ClusterService _HD0

3. Execute the following command to stop the Common Component:

```
installation-folder-of-Common-Component-installation-folder\bin\hcmdssrv /stop
```

4. Use the cluster management application to take the following service offline:
 - HiRDB/ClusterService _HD0

This service will be displayed with the resource name that was specified for it when it was registered as a resource.

5. Use the cluster management application to suppress failover of the resource group.

Change the settings of the resources listed below. The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommand Tiered Storage Manager
- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiRDB/ClusterService _HD0

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Do not restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, then **If resource fails, do not restart**.

6. Back up the Tiered Storage Manager server database.

For details about how to acquire a backup, see the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

7. Execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-folder-of-Common-Component\bin\hcmdssrv /stop
```

8. Uninstall the Tiered Storage Manager server.

For details about how to uninstall the Tiered Storage Manager server, see [Uninstallation Procedure](#).

9. Use the cluster management application to move the resource group, in which the HiCommand Storage Command Suite product services are registered, to the standby node.

To uninstall the Tiered Storage Manager server on the standby node:

1. Execute the following command to verify that Common Component has stopped:

```
installation-folder-of-Common-Component-installation-folder\bin\hcmdssrv /status
```

2. Uninstall the Tiered Storage Manager server.

For details about how to uninstall the Tiered Storage Manager server, see [Uninstallation Procedure](#).

3. In the cluster management application, delete the following resources from the resource group in which the Hitachi Storage Command Suite product services are not registered:
 - HiCommand Tiered Storage Manager

4. Use the cluster management application to enable failover of the resource group.
 - HiCommandServer
 - HBase Storage Mgmt Web Service
 - HBase Storage Mgmt Common Service
 - HiRDB/ClusterService _HD0

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, then **If resource fails. Attempt restart on current node and If restart is unsuccessful, fail over all resources in this service or application**.

Uninstalling Device Manager

To uninstall the Device Manager server:

1. Bring services online at the executing node.
2. Move the owner of the resource group in which the Hitachi Storage Command Suite product is registered from the standby node to the executing node.
3. In the cluster management application, take the following services offline:
The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service

4. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

5. Stop the Hitachi Storage Command Suite product services and Common Component as follows:

Select **Start, All Programs, Hitachi Storage Command Suite, Device Manager**, and then **Stop Server with Common Services**.

6. In the cluster management application, take the following services offline:
 - HiRDB/ClusterService _HD0

This service will be displayed by the resource name specified when the service was registered as a resource.

7. If the services listed below are not being used by another application, delete the services using the cluster management application.

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HBase Storage Mgmt Common Service
- HBase Storage Mgmt Web Service
- HiCommandServer
- HiRDB/ClusterService _HD0

8. Use the cluster management application to suppress failover of the resource group.

Perform the following operation on the services listed in step 7 that you do not want to delete:

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Do not restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, and then **If resource fails, do not restart**.

9. Back up the Device Manager server database.

For details about how to acquire a backup, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

10. Execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-folder-of-Common-Component\bin\hcmdssrv /stop
```

11. Uninstall the Device Manager server from the executing node.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

12. On the executing node, delete any files and folders that are no longer necessary, such as those created during installation in the cluster environment.

13. Use the cluster management application to move the resource group, in which the Hitachi Storage Command Suite product services are registered, to the standby node.

14. Uninstall the Device Manager server from the standby node.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

15. On the standby node, delete any files and folders that are no longer necessary, such as those created during installation in the cluster environment.

16. If any of the following resources are not being used by another application, use the cluster management application to first take those unused resources offline, and then to delete them:

- IP address
- Shared disk

17. If the resource group in which the Hitachi Storage Command Suite product services are registered is no longer necessary, then delete it.

18. To continue using the remaining resource group, enable failover.

Specify the following settings for the resources whose failover was suppressed in step 8:

If Microsoft Cluster Service is used:

Right-click the resource name, and choose **Properties**, the **Advanced** tab, and then **Restart**.

If Microsoft Failover Cluster is used:

Right-click the resource name, and choose **Properties**, the **Policies** tab, then **If resource fails. Attempt restart on current node** and **If restart is unsuccessful, fail over all resources in this service or application**.

Setup in Solaris

This section describes how to set up a cluster environment by using Veritas Cluster Server and Sun Cluster when the management server OS is Solaris.

Checking the Management Server Environment

The procedure for installing Device Manager and Tiered Storage Manager in a cluster environment varies depending on which Hitachi Storage Command Suite products are installed on the management server. See [Table 6-13](#) and start the installation appropriate for your management server environment.

Table 6-13 Installation Methods for Each Management Server Environment (in Solaris)

Management Server Environment		See	Cases Where the Environment Exists
The management server is operating in a cluster environment	Device Manager has not been installed.	New Installation	▪ When performing a new installation of Device Manager ▪ When performing a new installation of Device Manager and Tiered Storage Manager
	Device Manager has been installed.	Re-installation or Upgrade Installation	▪ When upgrading or re-installing Device Manager ▪ When upgrading or re-installing Device Manager and performing a new installation of Tiered Storage Manager ▪ When upgrading or re-installing Device Manager and Tiered Storage Manager

Management Server Environment		See	Cases Where the Environment Exists
The management server is operating in a non-cluster environment	Device Manager has not been installed.	Performing an Upgrade or Overwrite Installation Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating	▪ When performing a new installation of Device Manager ▪ When performing a new installation of Device Manager and Tiered Storage Manager
	Device Manager has been installed.	Performing an Upgrade or Overwrite Installation Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating	▪ When upgrading or re-installing Device Manager ▪ When upgrading or re-installing Device Manager and performing a new installation of Tiered Storage Manager ▪ When upgrading or re-installing Device Manager and Tiered Storage Manager

New Installation

This section describes how to perform the following installations when the management server OS is Solaris:

- A new installation of Device Manager
- A new installation of Device Manager and Tiered Storage Manager

See [Review the Required Installation](#) and [Pre-installation Tasks for a New Installation](#) to prepare the management server environment for a new installation.

After you have finished the new installation, see [Tasks Required After a New Installation](#) and perform the required tasks.



Caution: Do not access Device Manager while setting up a cluster configuration.

Installing on the Executing Node

To perform a new installation of Device Manager and Tiered Storage Manager on the executing node:

1. Bring the cluster management IP address and the shared disk online.
2. Remove the Hitachi Storage Command Suite product services and resource group from the targets of the cluster management.

For details about the services and resource group that need to be removed from the cluster management, see the manual for each relevant Hitachi Storage Command Suite product.



Caution: Do not remove the following resources from the cluster management:

- Shared disk
- Cluster management IP address
- Logical host name

-
3. Perform a new installation of the Device Manager server and the Tiered Storage Manager server on the executing node.

For details about the installation procedure, see [Performing a New Installation](#).

If any other Hitachi Storage Command Suite products are included in the cluster environment, preparations for installation are as follows:

- Make the shared disk accessible, and then specify a path on the shared disk for the database storage location.
- Specify a logical host name for the management server IP address (host name of the virtual host allocated to the cluster management IP address).

If no other Hitachi Storage Command Suite products are included in the cluster environment, preparations for installation are as follows:

- Specify a path on the local disk for the database storage location.
- Specify the IP address of the executing node for the management server IP address.

4. Enter the license keys from the Web Client window.

Access the IP address of the executing node.

A license key must be entered for each product that is installed.

5. Change the URL for starting Web Client to the logical host name.

Execute the following command to check whether the URL has changed to the logical host name:

```
installation-directory-of-Common-Component/bin/hcmdschgurl -print
```

If a logical host name has not been set, execute the following command to change the URL:

```
# /opt/HiCommand/Base/bin/hcmdschgurl -change  
http://IP-address-or-host-name-of-the-executing-node:port-number  
http://logical-host-name:port-number
```

Specify the value you specified during installation.

6. Use a text editor to create a cluster-configuration file.

If a cluster-configuration file was already created when another Hitachi Storage Command Suite product (version 04-00 or later) was installed, there is no need to perform this step.

The items to be specified in the cluster-configuration file are as follows:

mode: Specify online.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows a sample specification of the cluster-configuration file:

```
mode = online  
virtualhost = hcmdserver  
onlinehost = hcmdserver_1  
standbyhost = hcmdserver_2
```

Save the created file as `cluster.conf` in
installation-directory-of-Common-Component/conf.



Caution:

- For virtualhost, onlinehost, and standbyhost, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in virtualhost must be enabled and accessible.

7. Open the `server.properties` file and make sure that the logical host name is specified in the `server.http.host` property.

If the logical host name is not specified, change the current value to the logical host name.

The `server.properties` file is located in the following directory:

```
installation-directory-of-the-Device-Manager-server/HiCommandServer/config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

8. Migrate the database to the shared disk.

The procedure is described in steps 9 through 12.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform the procedure for migrating the database to the shared disk. Proceed to step 13.

9. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

10. Execute the following command to back up the database after the new installation.

```
installation-directory-of-Common-Component/bin/hcmdsbackups -dir  
target-directory-for-storing-backup-files -auto
```

The following shows the hcmdsbackups command options:

dir

Using an absolute path, specify the local disk directory for the database backup files.

Verify that the directory for the **dir** option is empty. If it is not empty, backup processing is interrupted. If this happens, delete any files or subdirectories in the directory, and then re-execute the hcmdsbackups command.

auto

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to the statuses required for backing up the database. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service become active.



Note: When you execute the hcmdsbackups command, a directory named database is created in the target directory for storing backup files, and a database backup file is created with the name backup.hdb.

11. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

12. Execute the following command.

```
installation-directory-of-Common-Component/bin/hcmdsdbclustersetup -createcluster  
-databasepath target-directory-for-re-creating-database -exportpath  
target-directory-for-storing-data -auto
```

The following describes the options to specify for the `hcmdsdbclustersetup` command.

`createcluster`

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

`databasepath`

Specify the directory in which you want to re-create the database. Specify the absolute path of a directory on the shared disk. The path name must not exceed 90 bytes.

The characters that can be used to specify the path are shown below. Additionally, forward slashes (/) can be used as path delimiters. You cannot use a space in the path.

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`exportpath`

Specify the directory in which you want to store backup data. Specify the absolute path of a directory on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for `databasepath`.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service are stopped.

**Caution:**

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If *target-directory-for-storing-data* already exists, empty or delete the directory.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsdgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the directory used for re-creating the database, increase the amount of free space in the directory, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

13. Execute the following command to verify that Common Component has stopped.

```
installation-directory-of-Common-Component/bin/hcmdssrv -status
```

14. Specify that the Common Component services are not to start automatically when the computer starts.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -starttype manual -all
```

15. Specify that the Device Manager server and the Tiered Storage Manager server are not to start automatically when the computer starts. Move the following file to another directory, or change the file name. If you change the file name, do not name the new file with a name that begins with a K or S.

```
/etc/rc3.d/S99hicommand (for Device Manager)  
/etc/rc3.d/S99htmsserver (for Tiered Storage Manager)
```

16. If a cluster environment has been configured for another Hitachi Storage Command Suite product, move the resource group in which the Hitachi Storage Command Suite product services are registered to the standby node.

If you are using Veritas Cluster Server:

In the Cluster Explorer window, select the **Service Groups** tab.

Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, then from the displayed context menu, perform the following steps in order:

Select **Unfreeze**.

Select **Switch To**, and then select the host name of the standby node.

Select **Freeze**, and then **Temporary**.

If you are using Sun Cluster:

Execute the following command:

```
/usr/cluster/bin/scswitch -z -g resource-group-name -h host-name
```

Installing on the Standby Node

To perform a new installation of Device Manager and Tiered Storage Manager on the standby node:

1. Perform a new installation of the Device Manager server and the Tiered Storage Manager server on the standby node.

For details about the installation procedure, see [Performing a New Installation](#).

Preparations for installation are as follows:

- Specify the same installation location as the one specified on the executing node.
- If a cluster environment has been configured for another Hitachi Storage Command Suite product, specify the logical host name for the management server's IP address (virtual host name assigned to the cluster management IP address). If a cluster environment has not been configured for any other Hitachi Storage Command Suite product, specify the IP address or the host name of the standby node.

2. Enter license keys from the Web Client window.

Access the IP address of the standby node.

A license key must be entered for each product that is installed.

3. Use a text editor to create a cluster-configuration file.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform this step.

The items to be specified in the cluster-configuration file are as follows:

mode: Specify standby.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows a sample specification of the cluster-configuration file:

```
mode = standby
virtualhost = hcmdserver
onlinehost = hcmdserver_1
standbyhost = hcmdserver_2
```

Save the created file as `cluster.conf` in
installation-directory-of-Common-Component/conf.



Caution:

- For `virtualhost`, `onlinehost`, and `standbyhost`, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in `virtualhost` must be enabled and accessible.

4. Open the `server.properties` file and make sure that the logical host name is specified in the `server.http.host` property.

If the logical host name is not specified, change the current value to the logical host name.

The `server.properties` file is located in the following directory:

```
installation-directory-of-the-Device-Manager-server/HiCommandServer/config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

5. Modify settings so that Device Manager and Tiered Storage Manager reference the database system on the shared disk.

The procedure is described in steps 6 through 8.

If a cluster environment has been configured for another Hitachi Storage Command Suite product, there is no need to perform the steps for changing the settings to use the database on the shared disk. Proceed to step 9.

6. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

7. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

8. Execute the following command.

```
installation-directory-of-Common-Component/bin/hcmdsdbclustersetup -createcluster  
-databasepath target-directory-for-re-creating-database -exportpath  
target-directory-for-storing-data -auto
```

The following describes the options to specify for the `hcmdsdbclustersetup` command.

`createcluster`

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

`databasepath`

Specify the directory in which you want to re-create the database. After this option name, specify the absolute path of the same directory as *target-directory-for-re-creating-database* specified for the executing node.

The characters that can be used to specify the path are shown below. Additionally, forward slashes (/) can be used as path delimiters. You cannot use a space in the path.

A to Z a to z 0 to 9 . _

`exportpath`

Specify the directory in which you want to store backup data. Specify the absolute path of a directory on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for `databasepath`.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service are stopped.

**Caution:**

- If you execute the `hcmdsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If *target-directory-for-storing-data* already exists, empty or delete the directory.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmdsgetlogs` command concurrently.
- If the `hcmdsdbclustersetup` command fails due to insufficient free space in the directory used for re-creating the database, increase the amount of free space in the directory, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmdsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmdsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

9. Execute the following command to verify that Common Component has stopped.

```
installation-directory-of-Common-Component/bin/hcmdssrv -status
```

10. Specify that the Common Component services are not to start automatically when the computer starts.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -starttype manual -all
```

11. Specify that the Device Manager server and the Tiered Storage Manager server are not to start automatically when the computer starts. Move the following file to another directory, or change the file name. If you change the file name, do not name the new file with a name that begins with a K or S.

```
/etc/rc3.d/S99hicommand (for Device Manager)  
/etc/rc3.d/S99htsmsserver (for Tiered Storage Manager)
```

Creating Scripts (for Veritas Cluster Server)

After installing and setting up Device Manager on the executing node and standby node, on both nodes you must create scripts for use with HiRDB.

To create the scripts:

1. Create a dummy file for monitoring the HiRDB service from Veritas Cluster Server.

Create the following file:

File name: *installation-directory-of-Common-Component/HDB/.pdveritas*

Details: This is an empty file.

2. Create a script that defines the resource types for the HiRDB service.

Create the following file:

File name: */etc/VRTSvcs/conf/config/HiRDB_STypes.cf*

Details: Create a file containing the following:

```
type HiRDB_S (  
  static str ArgList[] = { PdDir, PdConfPath, Ld_Library_Path, DummyFilePath }  
  str PdDir  
  str PdConfPath  
  str Ld_Library_Path  
  str DummyFilePath  
)
```

3. Define an agent for HiRDB.

Execute the following command:

```
# mkdir /opt/VRTSvcs/bin/HiRDB_S  
# cp /opt/VRTSvcs/bin/ScriptAgent /opt/VRTSvcs/bin/HiRDB_S/HiRDB_SAgent
```

4. Create a script that is used to put the HiRDB service online.

Create the following file:

File name: */opt/VRTSvcs/bin/HiRDB_S/online*

Details: Create a file containing the following:

```
#!/bin/sh  
PATH=/sbin:/usr/bin:/usr/sbin:/etc:/bin:/opt/VRTSvcs/bin:"$2"/bin  
export PATH  
PDDIR="$2"  
PDCONFPATH="$3"  
LD_LIBRARY_PATH="$4"  
export PDDIR PDCONFPATH LD_LIBRARY_PATH  
$PDDIR/bin/pdstart  
/bin/touch "$5"  
/bin/chmod 0400 "$5"
```

5. Create a script that is used to take the HiRDB service offline.

Create the following file:

File name: */opt/VRTSvcs/bin/HiRDB_S/offline*

Details: Create a file containing the following:

```
#!/bin/sh  
PATH=/sbin:/usr/bin:/usr/sbin:/etc:/bin:/opt/VRTSvcs/bin:"$2"/bin  
export PATH  
PDDIR="$2"  
PDCONFPATH="$3"  
LD_LIBRARY_PATH="$4"  
export PDDIR PDCONFPATH LD_LIBRARY_PATH  
$PDDIR/bin/pdstop -f -q  
/bin/rm -f "$5"
```

6. Create a script that is used to monitor the HiRDB service.

Create the following file:

File name: /opt/VRTSvcs/bin/HiRDB_S/monitor

Details: Create a file containing the following:

```
#!/bin/sh
if /bin/test -f "$5"
then
    exit 110
else
    exit 100
fi
```

7. Assign execution permissions to the created scripts.

Execute the following commands:

```
# chmod u+x /opt/VRTSvcs/bin/HiRDB_S/online
# chmod u+x /opt/VRTSvcs/bin/HiRDB_S/offline
# chmod u+x /opt/VRTSvcs/bin/HiRDB_S/monitor
```

Creating Scripts (for Sun Cluster)

After installing and setting up Device Manager on the executing node and standby node, on both nodes you must create scripts for registering the Common Component services in the cluster.

Create the following six script files:

Script for HBase Storage Mgmt Web Service

Create the following file:

File name: /etc/init.d/sc_hicommand-CWS

Details: Create a file containing the following:

```
#!/bin/sh
#
# Sample sc_hicommand-CWS
#
# Usage: sc_hicommand-CWS [start|stop|status]
#
# This Script executes /etc/init.d/hicommand-CWS internally.
ALIVE_VALUE=0
DOWN_VALUE=1
exec_cmd() {
    echo `date "+%y/%m/%d %H:%M:%S" ` "exec : $"
    # Execute Command with operand
    $*
    # Set return value to RC
    RC=$?
    echo `date "+%y/%m/%d %H:%M:%S" ` "exec-end: $* (RC=$RC)"
    if [ $RC -ne 0 ]; then
        if [ $RC -ne 1 ]; then
            exit $RC
        fi
    fi
}
```

```

}

# Switch operation according to the first operand of this shell.
case $1 in
start)
    exec_cmd "/etc/init.d/hicommand-CWS start"
    ;;
stop)
    exec_cmd "/etc/init.d/hicommand-CWS stop"
    ;;
status)
    /etc/init.d/hicommand-CWS status
    # The result is equal to 1
    if [ $? -eq 1 ]; then
        # running
        RET_CODE=$ALIVE_VALUE
    else
        # not running
        RET_CODE=$DOWN_VALUE
    fi
    exit $RET_CODE
    ;;
*)
    echo "Invalid argument"
    exit 1
esac

exit 0

```

Script for HBase Storage Mgmt Common Service

Create the following file:

File name: /etc/init.d/sc_hicommand-SSOS

Details: Create a file containing the following:

```

#!/bin/sh
#
# Sample sc_hicommand-SSOS
#
# Usage: sc_hicommand-SSOS [start|stop|status]
#
# This Script executes /etc/init.d/hicommand-SSOS internally.
ALIVE_VALUE=0
DOWN_VALUE=1

exec_cmd() {
    echo `date "+%y/%m/%d %H:%M:%S" ` "exec    : $"
    # Execute Command with operand
    $*
    # Set return value to RC
    RC=$?
    echo `date "+%y/%m/%d %H:%M:%S" ` "exec-end: $* (RC=$RC)"
    if [ $RC -ne 0 ]; then
        if [ $RC -ne 1 ]; then
            exit $RC
        fi
    fi
}

# Switch operation according to the first operand of this shell.
case $1 in
start)
    exec_cmd "/etc/init.d/hicommand-SSOS start"
    ;;

```

```

stop)
    exec_cmd "/etc/init.d/hicommand-SSOS stop"
    ;;
status)
    /etc/init.d/hicommand-SSOS status
    # The result is equal to 1
    if [ $? -eq 1 ]; then
        # running
        RET_CODE=$ALIVE_VALUE
    else
        # not running
        RET_CODE=$DOWN_VALUE
    fi
    exit $RET_CODE
    ;;
*)
    echo "Invalid argument"
    exit 1
esac

exit 0

```

Script for starting HiRDB:

Create the following file:

File name: /etc/init.d/hirdb_start

Details: Create a file containing the following:

```

#!/bin/sh

PATH=/usr/sbin:/usr/bin:$PDDIR/bin:./usr/cluster/bin
export PATH
PDDIR=installation-directory-of-Common-Component/HDB
PDCONFPATH=$PDDIR/conf
LD_LIBRARY_PATH=$PDDIR/lib
PDHOST=logical-host-name
export PDDIR PDCONFPATH LD_LIBRARY_PATH PDHOST

$PDDIR/bin/pdstart

/etc/init.d/hirdb_monitor

```

Script for stopping HiRDB:

Create the following file:

File name: /etc/init.d/hirdb_stop

Details: Create a file containing the following:

```
#!/bin/sh

PATH=/usr/sbin:/usr/bin:$PDDIR/bin:./usr/cluster/bin
export PATH
PDDIR=installation-directory-of-Common-Component/HDB
PDCONFPATH=$PDDIR/conf
LD_LIBRARY_PATH=$PDDIR/lib
PDHOST=logical-host-name
export PDDIR PDCONFPATH LD_LIBRARY_PATH PDHOST

$PDDIR/bin/pdstop -f -q
```

Script for monitoring HiRDB:

Create the following file:

File name: /etc/init.d/hirdb_probe

Details: Create a file containing the following:

```
#!/bin/sh

ps -ef | grep root | grep pdprcd | awk -F' ' '{print $8}' | grep pdprcd
if [ $? = 0 ];then
    echo "exit 0"
    exit 0
else
    echo "exit 1"
    exit 1
fi
```

HiRDB resident script:

Create the following file:

File name: /etc/init.d/hirdb_monitor

Details: Create a file containing the following:

```
#!/bin/sh

trap exit 5
while true
do
    sleep 5
done
exit
```

After creating the scripts, assign execution permissions to the scripts by executing the following command:

```
# chmod u+x script-file-name
```

Setting Up the Cluster Resource (for Veritas Cluster Server)

Before setting up Veritas Cluster Server, perform the following tasks:

- Provide a cluster group (resource group), which is a group of services to be clustered (units of service failover).
- Configure a resource group that includes the shared disks and cluster management IP addresses that can be inherited by the executing and standby nodes.
- Make sure that Veritas Cluster Server can successfully control resource allocation, resource removal, and operation monitoring.
- If there is a resource group in which another Hitachi Storage Command Suite product has been registered, use that resource group.

Make sure that the resource group consists of only those resources that are related to Hitachi Storage Command Suite products.

To set up the cluster resources using Veritas Cluster Server as the cluster:

1. In Java Console, start Cluster Manager.
2. Open the Veritas Cluster Server configuration file so that you can edit the file. From the **File** menu, select **Open Configuration**.
3. Import the file you created in [Creating Scripts \(for Veritas Cluster Server\)](#). From the **File** menu, select **Import Types**.
4. Select the following file, and then select **Import**.
/etc/VRTSvcS/conf/config/HiRDB_STypes.cf
5. Register Common Component and the Device Manager server services as resources. If you installed Tiered Storage Manager, also register the Tiered Storage Manager server as a resource.

In the **Edit** menu, select **Add** and then **Resource** to display the Add Resource panel. Specify the settings as shown in [Table 6-14](#) to [Table 6-18](#), and then select **OK**.

Table 6-14 Settings for Registering HiRDB as a Resource

Setting Item	Value
Resource Name	HiRDB (optional)
Resource Type	HiRDB_S
PdDir	<i>installation-directory-of-Common-Component/HDB</i>
PdConfPath	<i>installation-directory-of-Common-Component/HDB/conf</i>
Ld_Library_Path	<i>installation-directory-of-Common-Component/HDB/lib</i>
DummyFilePath	<i>installation-directory-of-Common-Component/HDB/.pdveritas</i>
Critical	False

Table 6-15 Settings for Registering HBase Storage Mgmt Common Service as a Resource

Setting Item	Value
Resource Name	SingleSignOnService (optional)

Setting Item	Value
Resource Type	Application
Start Program Attribute	Scalar Values:/etc/init.d/hicommand-SSOS start
Stop Program Attribute	Scalar Values:/etc/init.d/hicommand-SSOS stop
PidFiles Attribute	<i>/var/installation-directory-of-Common-Component/tmp/HiCommand.pid</i>

Table 6-16 Settings for Registering HBase Storage Mgmt Web Service as a Resource

Setting Item	Value
Resource Name	CommonWebService (optional)
Resource Type	Application
Start Program Attribute	Scalar Values:/etc/init.d/hicommand-CWS start
Stop Program Attribute	Scalar Values:/etc/init.d/hicommand-CWS stop
PidFiles Attribute	<i>/var/installation-directory-of-Common-Component/httpsd/logs/httpd.pid</i>

Table 6-17 Settings for Registering HiCommandServer as a Resource

Setting Item	Value
Resource Name	HiCommandServer (optional)
Resource Type	Application
Start Program Attribute	Scalar Values:/etc/init.d/hicommand start
Stop Program Attribute	Scalar Values:/etc/init.d/hicommand stop
Monitor Processes Attribute	Vector Values:/bin/sh <i>installation-directory-of-the-Device-Manager-server/HiCommandServer/hicmdserver</i>

Table 6-18 Settings for Registering the Tiered Storage Manager Server as a Resource

Setting Item	Value
Resource Name	TieredStorageManager (optional)
Resource Type	Application
Start Program Attribute	Scalar Values:/etc/init.d/htsmserver start
Stop Program Attribute	Scalar Values:/etc/init.d/htsmserver stop
Monitor Processes Attribute	Vector Values:/bin/sh <i>installation-directory-of-the-Tiered-Storage-Manager-server/htsmserver/htsmserver</i>



Caution: If Common Component is forcibly stopped for any reason, some temporary files will be left undeleted. If these files are on the standby node, even if Common Component has stopped, a message indicating that Common Component cannot be taken offline is output to the Veritas Cluster Server log. Even though this error message is output, there is no problem with the operation of the Device Manager server. To prevent the error message from being output, perform the following procedure:

- Make sure that Common Component is not running by executing the following command:
`installation-directory-of-Common-Component/bin/hcmdssrv -status`
 - Delete HiCommand.pid from the
`/var/installation-directory-of-Common-Component/tmp` directory.
 - Delete httpd.pid from the
`/var/installation-directory-of-Common-Component/httpsd/logs` directory.
-

6. Set up the resource dependency.

Set up the dependency among resources in the resource group in which the Hitachi Storage Command Suite product is registered. A resource in this list depends on the resources above it.

- Device files on the shared disk
- Mount point on the shared disk and IP address
- HiRDB
- HBase Storage Mgmt Common Service
- HBase Storage Mgmt Web Service
- HiCommandServer
- Tiered Storage Manager

The above resource names are represented by the resource names registered in step 5.

7. Save the changes in the Veritas Cluster Server configuration file. From the **File** menu, select **Save Configuration**.
8. Close the Veritas Cluster Server configuration file. From the **File** menu, select **Close Configuration**.
9. Activate the resources, and then end Cluster Manager.

Setting Up the Cluster Resource (for Sun Cluster)

Before you set up Sun Cluster, perform the following tasks:

- Provide a cluster group (resource group), which is a group of services to be clustered (units of service failover).

- Configure a resource group that includes the shared disks and cluster management IP addresses that can be inherited by the executing and standby nodes.
- Make sure that Sun Cluster can successfully control resource allocation, resource removal, and operation monitoring.
- If there is a resource group in which another Hitachi Storage Command Suite product has been registered, use that resource group.

Make sure that the resource group consists of only those resources that are related to Hitachi Storage Command Suite products.

To register resources for Sun Cluster, use the `scrgadm` command provided by Sun Cluster. For details about the format and usage of the `scrgadm` command, see the Sun Cluster documentation.

To set up the cluster resources using Sun Cluster as the cluster:

1. Register HiRDB as a resource.

Specify the values in the [Table 6-19](#) for the parameters of the `scrgadm` command.

Table 6-19 Parameters and Setting Values for Registering HiRDB as a Resource

Setting Item	Value
Resource type	SUNW.gds
Resource name	HiRDB (optional)
Related network	hdvm_ip
Resources on which HiRDB depends	SharedDisk
Start command for the service	/etc/init.d/hirdb_start [#]
Stop command for the service	/etc/init.d/hirdb_stop [#]
Monitoring command for the service	/etc/init.d/hirdb_probe [#]
Port number to be used	23032/tcp
[#] For service start, stop, and monitoring commands, register the scripts you created in Creating Scripts (for Sun Cluster) .	

The following shows an example of the command execution:

```
# /usr/cluster/bin/scrgadm -a -j HiRDB -g HiCommand -t SUNW.gds
-y Network_resources_used=hdvm_ip
-y Resource_dependencies=SharedDisk
-x Start_command="/etc/init.d/hirdb_start"
-x Stop_command="/etc/init.d/hirdb_stop"
-x Probe_command="/etc/init.d/hirdb_probe"
-y Port_list="23032/tcp"
```

2. Register HBase Storage Mgmt Common Service as a resource. Specify the values in the [Table 6-20](#) for the parameters of the scrgadm command.

Table 6-20 Parameters and Setting Values for Registering HBase Storage Mgmt Common Service as a Resource

Setting Item	Value
Resource type	SUNW.gds
Resource name	SingleSignOnService (optional)
Related network	None
Resources on which HBase Storage Mgmt Common Service depends	HiRDB
Start command for the service	/etc/init.d/sc_hicommand-SSOS start [#]
Stop command for the service	/etc/init.d/sc_hicommand-SSOS stop [#]
Monitoring command for the service	/etc/init.d/sc_hicommand-SSOS status [#]
Port number to be used	23017/tcp
[#] Create /etc/init.d/sc_hicommand-SSOS before you register the HBase Storage Mgmt Common Service as a resource. For details about how to create this script, see Creating Scripts (for Sun Cluster) .	

The following shows an example of the command execution:

```
# /usr/cluster/bin/scrgadm -a -j SingleSignOnService -g HiCommand
-t SUNW.gds
-y Resource_dependencies=HiRDB
-x Start_command="/etc/init.d/sc_hicommand-SSOS start"
-x Stop_command="/etc/init.d/sc_hicommand-SSOS stop"
-x Probe_command="/etc/init.d/sc_hicommand-SSOS status"
-y Port_list="23017/tcp"
```

3. Register HBase Storage Mgmt Web Service as a resource. Specify the values in the [Table 6-21](#) for the parameters of the scrgadm command.

Table 6-21 Parameters and Setting Values for Registering HBase Storage Mgmt Web Service as a Resource

Setting Item	Value
Resource type	SUNW.gds
Resource name	CommonWebService (optional)
Related network	hdvm_ip
Resources on which HBase Storage Mgmt Web Service depends	SingleSignOnService
Start command for the service	/etc/init.d/sc_hicommand-CWS start [#]
Stop command for the service	/etc/init.d/sc_hicommand-CWS stop [#]
Monitoring command for the service	/etc/init.d/sc_hicommand-CWS status [#]

Setting Item	Value
Port number to be used	Other than SSL: 23015/tcp For SSL: 23016/tcp
# Create /etc/init.d/sc_hicommand-CwS before you register the HBase Storage Mgmt Web Service as a resource. For details about how to create this script, see Creating Scripts (for Sun Cluster) .	

The following shows an example of the command execution:

```
# /usr/cluster/bin/scrgadm -a -j CommonWebService -g HiCommand -t SUNW.gds
-y Network_resources_used=hdvm_ip
-y Resource_dependencies= SingleSignOnService
-x Start_command="/etc/init.d/sc_hicommand-CwS start"
-x Stop_command="/etc/init.d/sc_hicommand-CwS stop"
-x Probe_command="/etc/init.d/sc_hicommand-CwS status"
-y Port_list="23015/tcp"
```

4. Register HiCommandServer as a resource. Specify the values in the [Table 6-22](#) for the parameters of the scrgadm command.

Table 6-22 Parameters and Setting Values for Registering HiCommandServer as a Resource

Setting Item	Value
Resource type	SUNW.gds
Resource name	HiCommandServer (optional)
Related network	hdvm_ip
Resources on which HiCommandServer depends	CommonWebService
Start command for the service	/etc/init.d/hicommand start
Stop command for the service	/etc/init.d/hicommand stop
Monitoring command for the service	/etc/init.d/hicommand status2
Port number to be used	Not for SSL: 2001/tcp For SSL: 2443/tcp

The following shows an example of the command execution:

```
# /usr/cluster/bin/scrgadm -a -j HiCommandServer -g HiCommand -t SUNW.gds
-y Network_resources_used=hdvm_ip
-y Resource_dependencies=CommonWebService
-x Start_command="/etc/init.d/hicommand start"
-x Stop_command="/etc/init.d/hicommand stop"
-x Probe_command="/etc/init.d/hicommand status2"
-y Port_list=2001/tcp
```

5. If you installed Tiered Storage Manager, register the Tiered Storage Manager server as a resource. Specify the following values for the scrgadm command parameters.

Table 6-23 Parameters and Setting Values for Registering the Tiered Storage Manager Server as a Resource

Setting Item	Value
Resource type	SUNW.gds
Resource name	TieredStorageManager (optional)
Related network	hdvm_ip
Resources on which the Tiered Storage Manager server depends	HiCommandServer
Start command for the service	<i>installation-directory-of-the-Tiered-Storage-Manager-server/bin/htmsserver start</i>
Stop command for the service	<i>installation-directory-of-the-Tiered-Storage-Manager-server/bin/htmsserver stop</i>
Monitoring command for the service	/usr/bin/pgrep htmservice
Port number to be used	20352/tcp

The following shows an example of command execution:

```
# /usr/cluster/bin/scrgadm -a -j TieredStorageManager -g HiCommand -t SUNW.gds
-y Network_resources_used=hdvm_ip
-y Resource_dependencies=HiCommandServer
-x Start_command="/opt/HiCommand/TieredStorageManager/bin/htmsserver start"
-x Stop_command="/opt/HiCommand/TieredStorageManager/bin/htmsserver stop"
-x Probe_command="/usr/bin/pgrep htmservice"
-y Port_list=20352/tcp
```

Re-installation or Upgrade Installation

This section describes how to perform the following installations when the management server OS is Solaris:

- An upgrade installation or re-installation of Device Manager
- An upgrade installation or re-installation of Device Manager, and then a new installation of Tiered Storage Manager
- An upgrade installation or re-installation of Device Manager and Tiered Storage Manager

See [Pre-installation Tasks for an Upgrade or Overwrite Installation](#) to prepare the management server environment for upgrade installation.

After you have finished the update installation, see [Tasks Required After an Upgrade or Overwrite Installation](#) and perform the required tasks.

Preparations in Veritas Cluster Server

Execute the following operations:

1. On the executing node, bring the resource group in which the Hitachi Storage Command Suite product services are registered online.
2. On the executing node, take the following services offline:
 - HiCommandServer
 - HBase Storage Mgmt Web Service
 - HBase Storage Mgmt Common Service
 - Tiered Storage Manager (if you upgrade or re-install Tiered Storage Manager)
 - Resources of the Hitachi Storage Command Suite products other than the above

The services listed above will be displayed by the resource names specified when the services were registered as resources.

3. On the executing node, stop the Hitachi Storage Command Suite product services.

For details about how to stop these services, see the manual for the relevant product version.

4. On the executing node, stop Common Component.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

5. On the executing node, take the HiRDB service offline.
6. On the standby node, perform the same operations described in steps 1 to 5.
7. In Veritas Cluster Server, right-click the displayed services listed below, and then clear the **Enabled** checkbox from the displayed context menu.

Perform this step on the executing or standby node.

- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiRDB
- Tiered Storage Manager (if you upgrade or re-install Tiered Storage Manager)
- Services that you took offline in step 2, other than those listed above

The services listed above will be displayed by the resource names specified when the services were registered as resources.

8. In Veritas Cluster Server on the executing node, select the **Service Groups** tab in the Cluster Explorer window. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, select **Freeze** and then **Temporary**.

Preparation in Sun Cluster

Execute the following operations on the executing and standby nodes:

1. Bring online the resource group in which the Hitachi Storage Command Suite product services are registered.
2. Execute the following commands to disable monitoring of the Common Component (except HiRDB), Device Manager, and Tiered Storage Manager resources:

```
# /usr/cluster/bin/scswitch -n -M -j CommonWebService
# /usr/cluster/bin/scswitch -n -M -j HiCommandServer
# /usr/cluster/bin/scswitch -n -M -j SingleSignOnService
# /usr/cluster/bin/scswitch -n -M -j TieredStorageManager (if you upgrade or re-install Tiered Storage Manager)
```

If there are any resources related to Hitachi Storage Command Suite products other than the above, disable monitoring of them as well.

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

3. Execute the following commands to disable the Common Component (except HiRDB), Device Manager, and Tiered Storage Manager resources:

```
# /usr/cluster/bin/scswitch -n -j CommonWebService
# /usr/cluster/bin/scswitch -n -j HiCommandServer
# /usr/cluster/bin/scswitch -n -j SingleSignOnService
# /usr/cluster/bin/scswitch -n -j TieredStorageManager (if you upgrade or re-install Tiered Storage Manager)
```

If there are any resources related to Hitachi Storage Command Suite products other than the above, disable them as well.

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

4. Stop the Hitachi Storage Command Suite product services.

For details about how to stop these services, see the manual for the relevant product version.

5. Stop Common Component.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

6. Execute the following command to disable monitoring of the HiRDB resource:

```
# /usr/cluster/bin/scswitch -n -M -j HiRDB
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

7. Execute the following command to disable the HiRDB resource:

```
# /usr/cluster/bin/scswitch -n -j HiRDB
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

Installing on the Executing Node (Re-installation or Upgrade Installation in Solaris)

To upgrade or re-install Device Manager and Tiered Storage Manager already installed on the executing node:

1. Make sure that you can access the shared disk from the executing and standby nodes.
2. Perform an upgrade or overwrite installation of the Device Manager server and the Tiered Storage Manager server.

For details about the installation procedure, see [Performing an Upgrade or Overwrite Installation](#).

Back up or export the current database according to the installer's instructions.

3. Back up the database after the upgrade or overwrite installation is completed.

For details about how to acquire a backup, see [Backing Up the Server Database](#).

If Common Component is running, execute the following command to stop Common Component and the services of all Hitachi Storage Command Suite products:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

4. Specify that the Common Component services are not to start automatically when the computer starts.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -starttype manual -all
```

5. Specify that the Device Manager server and the Tiered Storage Manager server are not to start automatically when the computer starts. Move the following file to another directory, or change the file name. If you change the file name, do not name the new file with a name that begins with a K or S.

```
/etc/rc3.d/S99hicommand (for Device Manager)
/etc/rc3.d/S99htsmsrver (for Tiered Storage Manager)
```

6. Move the resource group in which the Hitachi Storage Command Suite product services are registered, to the standby node.

If you are using Veritas Cluster Server:

In the Cluster Explorer window, select the **Service Groups** tab. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, perform the following three steps in order:

Select **Unfreeze**.

Select **Switch To**, and then select the host name of the standby node.

Select **Freeze**, and then **Temporary**.

If you are using Sun Cluster:

Execute the following command:

```
/usr/cluster/bin/scswitch -z -g resource-group-name -h host-name
```

Installing on the Standby Node

To upgrade or re-install Device Manager and Tiered Storage Manager installed on the standby node:

1. Stop the Hitachi Storage Command Suite product services.

For details about how to stop these services, see the manual for the relevant product version.

2. Stop Common Component.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

3. Perform an upgrade or overwrite installation of the Device Manager server and the Tiered Storage Manager server.

For details about the installation procedure, see [Performing an Upgrade or Overwrite Installation](#).

4. If Common Component is running, execute the following command to stop Common Component and the services of all Hitachi Storage Command Suite products:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

5. Specify that the Common Component services are not to start automatically when the computer starts.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -starttype manual -all
```

6. Specify that the Device Manager server and the Tiered Storage Manager server are not to start automatically when the computer starts. Move the following file to another directory, or change the file name. If you change the file name, do not name the new file with a name that begins with a K or S.

```
/etc/rc3.d/S99hicommand (for Device Manager)
/etc/rc3.d/S99htmsserver (for Tiered Storage Manager)
```

Configuration in Veritas Cluster Server

To specify the settings in Veritas Cluster Server:

1. In Java Console, start Cluster Manager.
2. In the Cluster Explorer panel, select the **Service Groups** tab. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then select **Unfreeze** from the displayed context menu.
3. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, select **Enable Resources**.
4. Save the changes in the Veritas Cluster Server configuration file. From the **File** menu, select **Save Configuration**.
5. Close the Veritas Cluster Server configuration file. From the **File** menu, select **Close Configuration**.
6. On the executing node, bring online the resource group in which the Hitachi Storage Command Suite product services are registered.

Configuration in Sun Cluster

To specify the settings in Sun Cluster:

1. Execute the following commands to enable Common Component, Device Manager service, and Tiered Storage Manager service:

```
# /usr/cluster/bin/scswitch -e -j HiRDB
# /usr/cluster/bin/scswitch -e -j SingleSignOnService
# /usr/cluster/bin/scswitch -e -j CommonWebService
# /usr/cluster/bin/scswitch -e -j HiCommandServer
# /usr/cluster/bin/scswitch -e -j TieredStorageManager (if you upgrade or re-install Tiered
Storage Manager)
```

If there are any resources related to Hitachi Storage Command Suite products other than the above, enable them as well.

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

2. Execute the following commands to enable monitoring of Common Component, Device Manager service, and Tiered Storage Manager service:

```
# /usr/cluster/bin/scswitch -e -M -j HiRDB
# /usr/cluster/bin/scswitch -e -M -j SingleSignOnService
# /usr/cluster/bin/scswitch -e -M -j CommonWebService
# /usr/cluster/bin/scswitch -e -M -j HiCommandServer
# /usr/cluster/bin/scswitch -e -M -j TieredStorageManager (if you upgrade or re-install Tiered
Storage Manager)
```

If there are any resources related to Hitachi Storage Command Suite products other than the above, enable monitoring of them as well.

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

3. In Java Console, start Cluster Manager.
4. On the executing node, bring online the resource group in which the Hitachi Storage Command Suite product services are registered.

Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating

After starting the operation of the Device Manager and Tiered Storage Manager system in a non-cluster configuration, if you want to change the system to a cluster configuration, follow the procedure below. This procedure assumes that the computer with the installations of the Device Manager server and the Tiered Storage Manager server that are already operating in a non-cluster configuration will be the executing node after the system is converted to a cluster configuration.

Prepare the management server environment so that you can perform an installation on the standby node. For details about how to do this, see [Review the Required Installation](#) and [Pre-installation Tasks for a New Installation](#).

To convert a non-cluster configuration to a cluster configuration when the management server OS is Solaris:

1. If Tuning Manager is remotely connected, stop the Tuning Manager services on the machine where the Tuning Manager server is installed.

For details about how to stop the Tuning Manager services, see the manual for the installed version of Tuning Manager.

2. Install the Device Manager server on the machine to be used as the standby node.

For details about the installation procedure, see [Performing a New Installation](#).

If Tiered Storage Manager has been installed on the executing node, also install Tiered Storage Manager.

3. On the standby node, open the Web Client logon window, and then enter license keys.

A license key must be entered for each product that is installed.

4. Create a cluster-configuration file on the executing node and a cluster configuration file on the standby node.

In the cluster configuration file, specify the mode, logical host name, host name of the executing node, and host name of the standby node by using the following format:

mode: Specify online for the executing node, and standby for the standby node.

virtualhost: Specify the logical host name.

onlinehost: Specify the host name of the executing node.

standbyhost: Specify the host name of the standby node.

The following shows a sample specification of the cluster-configuration file on the executing node:

```
mode = online
virtualhost = hcmdserver
onlinehost = hcmdserver_1
standbyhost = hcmdserver_2
```

Save the created file as `cluster.conf` in *installation-directory-of-Common-Component/conf*.



Caution:

- For virtualhost, onlinehost, and standbyhost, an IP address cannot be specified. Also make sure that an IP address can be resolved from the host name.
- The IP address that is assigned to the logical host name specified in virtualhost must be enabled and accessible.

-
5. Open the `server.properties` file, and then specify a logical host name for the `server.http.host` property.

The `server.properties` file is located in the following directory:

```
installation-directory-of-the-Device-Manager-server/HiCommandServer/config
```

The following shows a sample specification of the `server.http.host` property:

```
server.http.host = hcmdserver
```

6. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

7. Execute the following command to back up the database at the executing node.

```
installation-directory-of-Common-Component/bin/hcmdsbackups -dir
target-directory-for-storing-backup-files -auto
```

The following shows the `hcmdsbackups` command options:

dir

Using an absolute path, specify the local disk directory for the database backup files.

Verify that the directory for the `dir` option is empty. If it is not empty, backup processing is interrupted. If this happens, delete any files or subdirectories in the directory, and then re-execute the `hcmsdbbacks` command.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service that are on the same machine to the statuses required for backing up the database. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service become active.



Note: When you execute the `hcmsdbbacks` command, a directory named `database` is created in the target directory for storing backup files, and a database backup file is created with the name `backup.hdb`.

8. If HiRDB is currently using a different port number than the default, keep a note of the current port number.

For details about how to check whether the port used by HiRDB has been changed from the default, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

9. In the executing node, migrate the database to the shared disk.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmsdbclustersetup -createcluster  
-databasepath target-directory-for-re-creating-database -exportpath  
target-directory-for-storing-data -auto
```

The following describes the options to specify for the `hcmsdbclustersetup` command.

`createcluster`

This option changes the Hitachi Storage Command Suite product in a non-cluster configuration to a cluster configuration.

`databasepath`

Specify the directory in which you want to re-create the database. After this option name, specify the absolute path of a directory on a shared disk. The path name must not exceed 63 bytes.

The characters that can be used to specify the path are shown below. Additionally, forward slashes (/) can be used as path delimiters. You cannot use a space in the path.

A to Z a to z 0 to 9 . _

`exportpath`

Specify the directory in which you want to store backup data. Specify the absolute path of a directory on a local disk. The path name must not exceed 85 bytes. The characters that can be used to specify the path are the same as for `databasepath`.

`auto`

This option automatically changes the Hitachi Storage Command Suite product services and the HiRDB service on the same machine to statuses appropriate for changing the database settings. After the command is completed, the Hitachi Storage Command Suite product services and the HiRDB service become remain stopped.



Caution:

- If you execute the `hcmdsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If you execute the `hcmdsdbclustersetup` command, the settings for remote connection with Tuning Manager are initialized.
- If *target-directory-for-storing-data* already exists, empty or delete the directory.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmdsgetlogs` command concurrently.
- If the `hcmdsdbclustersetup` command fails due to insufficient free space in the directory used for re-creating the database, increase the amount of free space in the directory, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmdsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmdsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

10. On the standby node, change the settings so that a database on the shared disk is used.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdsdclustersetup -createcluster  
-databasepath target-directory-for-re-creating-database -exportpath  
target-directory-for-storing-data -auto
```

For details about the options to specify for the `hcmdsdclustersetup` command, see step 9. For `databasepath`, specify the same directory as *target-directory-for-re-creating-database* specified for the executing node.

**Caution:**

- If you execute the `hcmsdbclustersetup` command, the setting of the port number used by HiRDB is changed back to the default (23032).
- If you execute the `hcmsdbclustersetup` command, the settings for remote connection with Tuning Manager are initialized.
- If *target-directory-for-storing-data* already exists, empty or delete the directory.
- You must not execute multiple instances of this command concurrently. Also, you must not execute this command and the `hcmsgetlogs` command concurrently.
- If the `hcmsdbclustersetup` command fails due to insufficient free space in the directory used for re-creating the database, increase the amount of free space in the directory, and then execute the command again.
- Do not disconnect the shared disk from the executing node until the `hcmsdbclustersetup` command finishes successfully.
- If you restart the server after the `hcmsdbclustersetup` command has finished abnormally, the node to which the shared disk connects might switch to the standby node.

11. On both the executing and standby nodes, execute the following command to verify that Common Component has stopped.

```
installation-directory-of-Common-Component/bin/hcmdssrv -status
```

12. Specify that the Common Component services are not to start automatically when the computer starts.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -starttype manual -all
```

13. Specify that the Device Manager server and the Tiered Storage Manager server are not to start automatically when the computer starts. Move the following file to another directory, or change the file name. If you change the file name, do not name the new file with a name that begins with a K or S.

```
/etc/rc3.d/S99hicommand (for Device Manager)
/etc/rc3.d/S99htsmsserver (for Tiered Storage Manager)
```

14. Carry out the required setup for a cluster environment.

For details about how to register cluster resources, see [Setting Up the Cluster Resource \(for Veritas Cluster Server\)](#) or [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

15. If Tuning Manager was remotely connected while Device Manager and Tiered Storage Manager were being used in a non-cluster environment, if necessary, start the Tuning Manager service and then re-specify the settings for linking with Tuning Manager.

For details about how to start the Tuning Manager services, see the manual for the installed version of Tuning Manager.

For details about the settings required to link with Tuning Manager in a cluster environment, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Uninstallation

This section describes how to uninstall Tiered Storage Manager and Device Manager when the management server OS is Solaris and the server is configured in a cluster environment.

Uninstalling Tiered Storage Manager (for Veritas Cluster Server)

First, execute the following operations in Veritas Cluster Server:

1. Bring services online at the executing node.
2. On the executing node, start Cluster Manager (Java Console).
3. Take the following resources offline:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- Tiered Storage Manager
- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service

Do not take the following resources offline:

- Shared disk
- Cluster management IP address
- Logical host name
- HiRDB

4. Stop the Common Component services.

Enter the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

5. Take the following resource offline:

The following service will be displayed with the resource name that was specified for it when it was registered as a resource:

- HiRDB

6. Delete the following resource:

The following service will be displayed with the resource name that was specified for it when it was registered as a resource:

- Tiered Storage Manager

7. Disable monitoring of the following resources:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiRDB

Right-click the resource name, and clear the **Enabled** check box.

8. In the Cluster Explorer window, select the **Service Groups** tab.
9. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, select **Freeze** and then **Temporary**.

Next, uninstall Tiered Storage Manager from the executing and standby nodes:

1. On the executing node, back up the Tiered Storage Manager server database.

For details about how to acquire a backup, see the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

2. On the executing node, execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

3. Uninstall Tiered Storage Manager from the executing node.

For details about how to uninstall Tiered Storage Manager, see [Uninstallation Procedure](#).



Caution: If the /etc/rc3.d/S99htsmsserver file has been renamed or moved to another directory, manually delete the file.

4. In Veritas Cluster Server on the executing node, move the resource group in which the Hitachi Storage Command Suite product services are registered from the executing node to the standby node.

In the Cluster Explorer window, select the **Service Groups** tab. Right-click the group in which the Hitachi Storage Command Suite product services are registered, and perform the following actions in order:

- Select **Unfreeze**.
- Select **Switch To**, and then the host name of the standby node.

- Select **Freeze**, and then **Temporary**.
5. Uninstall Tiered Storage Manager from the standby node.
For details about how to uninstall Tiered Storage Manager, see [Uninstallation Procedure](#).



Caution: If the /etc/rc3.d/S99htsmserver file has been renamed or moved to another directory, manually delete the file.

After uninstalling Tiered Storage Manager, execute the following operations in Veritas Cluster Server.

1. In the Cluster Explorer window, select the **Service Groups** tab, right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then select **Unfreeze**.
2. Enable monitoring of the following resources:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HiCommandServer
- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiRDB

Right-click the resource, and then select **Enabled**.

3. Switch from the standby node to the executing node.

In the Cluster Explorer window, select the **Service Groups** tab. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and perform the following actions in order:

- Select **Switch To**, and then the host name of the executing node.
- Select **Online**, and then the host name of the executing node.

Uninstalling Tiered Storage Manager (for Sun Cluster)

First, execute the following operations in Sun Cluster:

1. Bring services online at the executing node.
2. On the executing node, disable monitoring of Tiered Storage Manager, Device Manager, and Common Component resources.

Enter the following commands:

```
# /usr/cluster/bin/scswitch -n -M -j TieredStorageManager
# /usr/cluster/bin/scswitch -n -M -j HiCommandServer
# /usr/cluster/bin/scswitch -n -M -j CommonWebService
# /usr/cluster/bin/scswitch -n -M -j SingleSignOnService
# /usr/cluster/bin/scswitch -n -M -j HiRDB
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

3. Disable the Tiered Storage Manager, Device Manager, and Common Component (except HiRDB) resources.

Enter the following commands:

```
# /usr/cluster/bin/scswitch -n -j TieredStorageManager
# /usr/cluster/bin/scswitch -n -j HiCommandServer
# /usr/cluster/bin/scswitch -n -j CommonWebService
# /usr/cluster/bin/scswitch -n -j SingleSignOnService
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

4. Stop the Common Component services.

Enter the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

5. Disable HiRDB resources.

Enter the following command:

```
# /usr/cluster/bin/scswitch -n -j HiRDB
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

6. Delete the Tiered Storage Manager resource.

Enter the following command:

```
# /usr/cluster/bin/scrgadm -r -j TieredStorageManager
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

Next, uninstall Tiered Storage Manager from the executing and standby nodes:

1. On the executing node, back up the Tiered Storage Manager server database.

For details about how to acquire a backup, see the *Hitachi Tiered Storage Manager Server Configuration and Operation Guide*.

2. On the executing node, execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

3. Uninstall Tiered Storage Manager from the executing node.

For details about how to uninstall Tiered Storage Manager, see [Uninstallation Procedure](#).



Caution: If the `/etc/rc3.d/S99htsmsserver` file has been renamed or moved to another directory, manually delete the file.

4. In Sun Cluster on the executing node, move the resource group in which the Hitachi Storage Command Suite product services are registered from the executing node to the standby node.

Enter the following command:

```
/usr/cluster/bin/scswitch -z -g resource-group-name -h host-name-of-the-standby-node
```

5. Uninstall Tiered Storage Manager from the standby node.

For details about how to uninstall Tiered Storage Manager, see [Uninstallation Procedure](#).



Caution: If the `/etc/rc3.d/S99htsmsserver` file has been renamed or moved to another directory, manually delete the file.

After uninstalling Tiered Storage Manager, execute the following operations in Sun Cluster.

1. Move the resource group in which the Hitachi Storage Command Suite product services are registered from the standby node to the executing node.

Enter the following command:

```
/usr/cluster/bin/scswitch -z -g resource-group-name -h  
host-name-of-the-executing-node
```

2. Enable the resources of Common Component and Device Manager.

Enter the following commands:

```
# /usr/cluster/bin/scswitch -e -j HiRDB  
# /usr/cluster/bin/scswitch -e -j SingleSignOnService  
# /usr/cluster/bin/scswitch -e -j CommonWebService  
# /usr/cluster/bin/scswitch -e -j HiCommandServer
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

3. Enable monitoring of Common Component and Device Manager resources.

Enter the following commands:

```
# /usr/cluster/bin/scswitch -e -M -j HiRDB  
# /usr/cluster/bin/scswitch -e -M -j SingleSignOnService  
# /usr/cluster/bin/scswitch -e -M -j CommonWebService  
# /usr/cluster/bin/scswitch -e -M -j HiCommandServer
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

Uninstalling Device Manager (for Veritas Cluster Server)

To uninstall Device Manager:

1. Bring services online at the executing node.
2. Start Cluster Manager (Java Console).
3. Move the resource group in which a Hitachi Storage Command Suite product service was registered over to the executing node.

In the Cluster Explorer panel, select **Service Groups**. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, perform the following steps in order:

- Select **Unfreeze**.
 - Select **Switch To**, and then select the host name of the executing node.
4. Take the following services offline:
The following services will be displayed with the resource names that were specified for them when they were registered as resources:
 - HiCommandServer
 - HBase Storage Mgmt Web Service
 - HBase Storage Mgmt Common Service
 5. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

6. Stop Hitachi Storage Command Suite product services and Common Component.

Execute the following command:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

7. Take the HiRDB service offline.
8. Delete the following resources, provided that no other applications are using them:

The following services will be displayed with the resource names that were specified for them when they were registered as resources:

- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiCommandServer
- HiRDB



Caution: In this procedure, do not delete the IP address and shared disk resources.

9. For resources that you will not be deleting, right-click to display a menu, and then deselect **Enabled**.
10. In the Cluster Explorer window, select the **Service Groups** tab.
11. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, select **Freeze** and then **Temporary**.
12. Back up the Device Manager server database.
For details about how to acquire a backup, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
13. Execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

14. Uninstall the Device Manager server from the executing node.
For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).



Caution: Manually delete the unnecessary files and directories that were created during installation in the cluster environment.

15. Move the resource group in which a Hitachi Storage Command Suite product service was registered over to the standby node.
In the Cluster Explorer panel, select **Service Groups**. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then from the displayed context menu, perform the following steps in order:
 - Select **Unfreeze**.
 - Select **Switch To**, and then select the host name of the standby node.
 - Select **Freeze**, and then **Temporary**.
16. Uninstall Device Manager from the standby node.
For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).



Caution: Manually delete the unnecessary files and directories that were created during installation in the cluster environment.

17. If the following resources are no longer used, delete them:
 - IP address
 - Shared disk

18. If the resource group in which the Hitachi Storage Command Suite product services are registered is no longer necessary, delete it.
19. If you still require the resource group, in the Cluster Explorer window, select the **Service Groups** tab. Right-click the resource group in which the Hitachi Storage Command Suite product services are registered, and then select **Unfreeze** from the displayed context menu.
20. Enable the resources that you disabled in step 9.

Uninstalling Device Manager (for Sun Cluster)

To uninstall Device Manager:

1. Bring services online at the executing node.
2. Execute the following command to move the resource group in which the Hitachi Storage Command Suite product services are registered, to the executing node.

```
# /usr/cluster/bin/scswitch -z -g resource-group-name -h host-name
```

3. Execute the following commands to disable monitoring of the resources of Common Component and Device Manager.

```
# /usr/cluster/bin/scswitch -n -M -j HiCommandServer
# /usr/cluster/bin/scswitch -n -M -j CommonWebService
# /usr/cluster/bin/scswitch -n -M -j SingleSignOnService
# /usr/cluster/bin/scswitch -n -M -j HiRDB
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

4. Execute the following commands to disable the resources of Common Component (except HiRDB) and Device Manager.

```
# /usr/cluster/bin/scswitch -n -j HiCommandServer
# /usr/cluster/bin/scswitch -n -j CommonWebService
# /usr/cluster/bin/scswitch -n -j SingleSignOnService
```

For the resource name to be specified here, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

5. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

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

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

7. Execute the command below to disable the resources of HiRDB.

As the HiRDB resource name, use the resource name you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).

```
# /usr/cluster/bin/scswitch -n -j HiRDB
```

8. If the following resources are not being used by other applications, delete them:

- HBase Storage Mgmt Web Service
- HBase Storage Mgmt Common Service
- HiCommandServer
- HiRDB

These resources will be displayed as the resource names you registered in [Setting Up the Cluster Resource \(for Sun Cluster\)](#).



Caution: In this procedure, do not delete the IP address resource or the shared disk resource.

-
9. Back up the Device Manager server database.

For details about how to acquire a backup, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

10. Execute the following command to stop the services of Common Component and all Hitachi Storage Command Suite products.

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```

11. Uninstall the Device Manager server from the executing node.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).



Caution: Manually delete the unnecessary files and directories that were created during installation in the cluster environment.

-
12. Execute the following command to move the resource group in which the Hitachi Storage Command Suite product services are registered to the standby node:

```
# /usr/cluster/bin/scswitch -z -g resource-group-name -h host-name
```

13. Uninstall Device Manager from the standby node.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).



Caution: Manually delete the unnecessary files and directories that were created during installation in the cluster environment.

-
14. If no other applications are using the following resources, delete them:

- IP address
 - Shared disk
15. If the resource group in which the Hitachi Storage Command Suite product services are registered is no longer necessary, delete it.
16. If you still require the resource group, execute the following commands for the services that you did not delete:

```
# /usr/cluster/bin/scswitch -e -j service-name  
# /usr/cluster/bin/scswitch -e -M -j service-name
```


Troubleshooting

This chapter describes how to resolve installation or uninstallation issues. This chapter also describes log information that might be output during installation or uninstallation.

- [Troubleshooting Common Problems](#)
- [Checking Log Files](#)

Troubleshooting Common Problems

This section describes installation or uninstallation issues.

Troubleshooting Examples

The following table lists examples of problems that can occur during the installation or uninstallation of Device Manager, Provisioning Manager, or Tiered Storage Manager.

For details about the cause of and solution for any particular problem, see the explanation in the subsection referenced in the *No.* column.

For an explanation of messages that are displayed during installation and uninstallation, see the *Hitachi Device Manager Error Codes*.

Table 7-1 Examples of Problems That Might Occur During Installation or Uninstallation

No.	Task	Problem Example
(1)	Installation	An error message was displayed during Device Manager server installation in a Linux environment.
(2)		Installation or uninstallation of the Device Manager server failed, and an error message was output to the log files.
(3)		An error occurred during Device Manager server installation, and the installation was interrupted.
(4)		Migration of the databases to a shared disk failed while the Device Manager server was being installed in a Windows cluster environment.
(5)		Migration of the databases to a shared disk failed while the Device Manager server was being installed in a Solaris cluster environment.
(6)		Backup or export of the database failed during installation, and the installation was interrupted.
(7)		SSL communication with the CIM client cannot be performed because configuration of SSL settings for the CIM/WBEM function failed during installation of the Device Manager server.
(8)		An error message was displayed, and the setup for linking with Tuning Manager failed.
(9)		Installation was interrupted because Ctrl+C was pressed.

No.	Task	Problem Example
(10)	Startup of the management server	HBase Storage Mgmt Common Service or HBase Storage Mgmt Web Service is not displayed in the Services panel.
(11)		HiCommandServer is not displayed in the Services panel.
(12)		An error message was displayed, and Device Manager server could not start.
(13)		After installation, the Device Manager server did not start, or it is unable to communicate with the CIM client.
(14)		In a Solaris 10 (x64) environment, an error message was output to the Device Manager trace log file, and Device Manager server could not start.
(15)		Common Component will not start.
(16)		The service discovery feature is not available, because the SLP service failed to start after installation.
(17)	Access from Web Client	Internal Server Error is displayed in the Web Client.
(18)		The GO menu item for starting Device Manager, Provisioning Manager, and Tiered Storage Manager still remains in the Dashboard menu.
(19)	Uninstallation	Cancellation of the SLP service (or the SLP daemon) failed during Device Manager server uninstallation.
(20)		An error occurred and uninstallation was interrupted.
(21)		Although uninstallation finished normally, the Device Manager service (HiCommandServer) and Device Manager-related files remain.

The following sections describe the causes of the problems and corrective actions to take.

An error message was displayed during Device Manager server installation in a Linux environment.

The following is an example of what the error message looks like if the Device Manager server is using the default installation directory:

```
[yyyy/mm/dd hh:mm:ss] main() Invoke: /opt/HiCommand/HiCommandServer/inst/GetDBInfo.sh
:
An error occurred during loading of a library.
:
```

CAUSE:

The libstdc++33-32bit-3.3.3-7.8.1 library required for SUSE Linux Enterprise Server 10 SP3 (x64) is not installed.

SOLUTION:

Perform the following operations:

1. Install libstdc++33-32bit-3.3.3-7.8.1.
2. Uninstall the Device Manager server.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

3. Perform a new installation of the Device Manager server.

For details about the installation procedure, see [Performing a New Installation](#).

Installation or uninstallation of the Device Manager server failed, and an error message was output to the log files.

The message KAPM04156-E Service is running. service=*service-name* was output to the log files.

CAUSE:

Security-related programs are running.

SOLUTION:

Check whether the following programs are installed and running. If they are, stop them or revise their settings.

- Programs that monitor security
- Programs that detect viruses
- Programs that monitor processes

If none of the above types of programs are installed, or if you cannot resolve the problem even after taking the above action, obtain log information in a batch, and then contact maintenance personnel. For details about collecting maintenance information, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

An error occurred during Device Manager server installation, and the installation was interrupted.

CAUSE:

There might be a problem with the environment or settings of the computer on which the server was being installed.

SOLUTION:

If an error occurs during the Device Manager server installation, take one or more of the following actions. If you cannot resolve the problem, contact maintenance personnel.

1. Use the `hcmdsget logs` command to collect maintenance information.

2. Back up the database and property files if they have not been backed up already. If other Hitachi Storage Command Suite products are installed, refer to the documentation of the appropriate product when performing a backup.

3. Restart the computer.

4. In Windows, delete the following folders if they exist:

The folder set to the TEMP environment variable for the user who performed the installation:

{1345FCD1-713E-4449-8F76-3F6503941040}

Example: C:\Documents and Settings\Administrator\Local Settings\Temp\{1345FCD1-713E-4449-8F76-3F6503941040}

The following folder directly under the system drive:

_HDBInstallerTemp

Example: C:_HDBInstallerTemp

Folders within the installation folder of the Device Manager server:

installation-folder-of-the-Device-Manager-server_InstallerFiles
Temp

5. Perform one of the following, based on the type of installation:

See [System Requirements](#), [Review the Required Installation](#), and [Pre-installation Tasks for a New Installation](#), and prepare the management server environment for new installation

When an attempt to perform a new installation fails:

Perform uninstallation. Restart the computer, and then perform a new installation again.

When an attempt to perform an upgrade installation fails:

Perform uninstallation. Restart the computer, and perform a new installation. Then, restore any backed-up databases.



Note: For details about collecting maintenance information, backing up a database, and restoring a database, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Migration of the databases to a shared disk failed while the Device Manager server was being installed in a Windows cluster environment.

CAUSE:

Database import processing failed (the return code of the hcmdsdbclustersetup command is 250).

SOLUTION:

To restore the system, perform a following procedure.

If the database has been backed up:

1. Perform recovery from the database backup. For details, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
2. If Tuning Manager is connected remotely, make sure that the Tuning Manager service has stopped on the machine where the Tuning Manager server is installed.

For details about how to check the operating status of the Tuning Manager service, see the manual for the installed Tuning Manager version.

3. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

4. If you want to continue setting up the cluster environment, you must first follow the procedure for using the `hcmdsdbclustersetup` command to migrate the database to the shared disk.

If you want to perform a new installation, start from step 11 in [Installing on the Executing Node](#).

If you want to migrate to a cluster environment when Device Manager and Tiered Storage Manager are already operating, start from step 8 in [Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating](#).

If the database has not been backed up:

1. Execute the following two commands to restore the state of Device Manager.

```
installation-folder-of-Common-Component\HDB\BIN\pdntcmd.bat  
installation-folder-of-Common-Component\HDB\BIN\pdrels -r HDVM_RD
```

The following shows examples of executing the commands:

```
C:\Program Files\HiCommand\Base\HDB\BIN\pdntcmd.bat  
C:\Program Files\HiCommand\Base\HDB\BIN\pdrels -r HDVM_RD
```

2. Uninstall the Device Manager server.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

3. Install the Device Manager server.

For details about the installation procedure, see [Performing a New Installation](#).

4. If Tuning Manager is connected remotely, make sure that the Tuning Manager service has stopped on the machine where the Tuning Manager server is installed.

For details about how to check the operating status of the Tuning Manager service, see the manual for the installed Tuning Manager version.

5. To continue setting up the cluster environment, continue from the appropriate step listed below:

If you want to perform a new installation, continue from step 4, in [Installing on the Executing Node](#).

If you want to set up a cluster environment when Device Manager and Tiered Storage Manager are already operating, continue from step 4 in [Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating](#).

Migration of the databases to a shared disk failed while the Device Manager server was being installed in a Solaris cluster environment.

CAUSE:

Database import processing failed (the return code of the `hcmsdbclustersetup` command is 250).

SOLUTION:

To restore the system, perform a following procedure.

If the database has been backed up:

1. Perform recovery from the database backup. For details, see the *Hitachi Device Manager Server Configuration and Operation Guide*.
2. If Tuning Manager is connected remotely, make sure that the Tuning Manager service has stopped on the machine where the Tuning Manager server is installed.

For details about how to check the operating status of the Tuning Manager service, see the manual for the installed Tuning Manager version.

3. If HiCommand Suite products of versions earlier than 5.7 have been installed, stop their services.

For details about how to stop these services, see the manual for the relevant product version.

4. To continue setting up the cluster environment, first perform the procedure for using the `hcmsdbclustersetup` command to migrate the database to the shared disk.

If you want to perform a new installation, start from step 11 in [Installing on the Executing Node](#).

If you want to migrate to the cluster environment when Device Manager and Tiered Storage Manager are already operating, start from step 8 in [Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating](#).

If the database has not been backed up:

1. Execute the following two commands to restore the state of Device Manager.

```
installation-directory-of-Common-Component/HDB/bin/pduxenv  
installation-directory-of-Common-Component/HDB/bin/pdrels -r HDVM_RD
```

The following shows an example of executing the commands:

```
# /opt/HiCommand/Base/HDB/bin/pduxenv  
# /opt/HiCommand/Base/HDB/bin/pdrels -r HDVM_RD
```

2. Uninstall the Device Manager server.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

3. Install the Device Manager server.

For details about the installation procedure, see [Performing a New Installation](#).

4. If Tuning Manager is connected remotely, make sure that the Tuning Manager service has stopped on the machine where the Tuning Manager server is installed.

For details about how to check the operating status of the Tuning Manager service, see the manual for the installed Tuning Manager version.

5. To continue setting up the cluster environment, start from the appropriate step listed below:

If you want to perform a new installation, perform the operations, starting from step 4, in [Installing on the Executing Node](#).

If you want to set up a cluster environment when Device Manager and Tiered Storage Manager are already operating, perform the operations, starting from step 4, in [Setting Up a Cluster Environment When the Device Manager Server and the Tiered Storage Manager Server Are Already Operating](#).

Backup or export of the database failed during installation, and the installation was interrupted.

CAUSE:

A space shortage may have occurred at the database backup or export destination.

SOLUTION:

1. Specify a disk with sufficient free space and manually back up or export the pre-upgrade database.

For details about each procedure, see the manual for the applicable version.

If manual database backup or export fails, contact maintenance personnel.

2. Re-install the Device Manager server.

During installation, there is no need to back up or export the pre-upgrade database again.

SSL communication with the CIM client cannot be performed because configuration of SSL settings for the CIM/WBEM function failed during installation of the Device Manager server.

CAUSE:

An unexpected error occurred during configuration of SSL settings for the CIM/WBEM function.

SOLUTION:

Use the HiKeytool to configure the communication settings between the management server and the CIM client. For details about how to do this, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

An error message was displayed, and the setup for linking with Tuning Manager failed.

The following error message was displayed:

Inquiring the linkage configuration with Tuning Manager has failed, however, installation will continue.

CAUSE:

An unexpected error occurred during an attempt to acquire information required for linking with Tuning Manager.

SOLUTION:

After installation finishes, use the htmsetup command to set up the settings for linking with Tuning Manager. For details about how to do this, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Installation was interrupted because Ctrl+C was pressed.

SOLUTION:

If you pressed Ctrl+C and the installation was interrupted, execute the following commands to check the status of the installation:

In Solaris:

```
# pkginfo -l HDVM (for Device Manager)
# pkginfo -l HPVM (for Provisioning Manager)
```

```
# pkginfo -l HTSM (for Tiered Storage Manager)
```

In Linux:

```
# rpm -qi HDVM (for Device Manager)
# rpm -qi HPVM (for Provisioning Manager)
# rpm -qi HTSM (for Tiered Storage Manager)
```

If information about Device Manager, Provisioning Manager, or Tiered Storage Manager is displayed, uninstall the Device Manager or Tiered Storage Manager server by referring to [Uninstallation Procedure](#). After that, restart the system, and then install the Device Manager or Tiered Storage Manager server again.

HBase Storage Mgmt Common Service or HBase Storage Mgmt Web Service is not displayed in the Services panel.

CAUSE:

Installation of Common Component might have failed.

SOLUTION:

Check the installation log in the installation folder. If you find an error in the log, follow the instructions in the error message. If problems still exist, refer to [Uninstallation Procedure](#), and uninstall the Device Manager server. After that, restart the system, and then install the Device Manager server again.

HiCommandServer is not displayed in the Services panel.

CAUSE:

Installation of Device Manager server might have failed.

SOLUTION:

To perform installation again:

1. Uninstall the Device Manager server.

For details about how to uninstall the Device Manager server, see [Uninstallation Procedure](#).

2. Restart the system.
3. Install the Device Manager server again.

Prepare the management server environment for new installation by referencing [System Requirements](#), [Review the Required Installation](#), and [Pre-installation Tasks for a New Installation](#).

An error message was displayed, and Device Manager server could not start.

The following messages were in the event log file in Windows, or in the syslog file in Solaris or Linux.

KAIC00114-E An attempt to start the HTTP server on port "2001" failed. KAIC00115-E An attempt to start the HTTPS server on port "2443" failed.

CAUSE:

The port number is already being used by another program.

SOLUTION:

Change the port (2001) used by the Device Manager server to communicate with the management client and host or the port (2443) used by the Device Manager server to communicate with the management client using SSL, and then restart the Device Manager server.

For details on how to change a port number, see the *Hitachi Device Manager Server Configuration and Operation Guide*. When changing a port number, do not change it to a port number already being used by the Device Manager server, Tiered Storage Manager server, or Common Component.

After installation, the Device Manager server did not start, or it is unable to communicate with the CIM client.

CAUSE:

Another application might be using the CIM client port (5989).

SOLUTION:

Change the port number used by the CIM/WBEM features, and then restart the Device Manager server.

For details on how to change a port number, see the *Hitachi Device Manager Server Configuration and Operation Guide*. When changing a port number, do not change it to a port number already being used by the Device Manager server, Tiered Storage Manager server, or Common Component.

In a Solaris 10 (x64) environment, an error message was output to the Device Manager trace log file, and Device Manager server could not start.

The error message below was displayed.

KAIC03100-E An error occurred during the connecting to the Device Manager database.

CAUSE:

The kernel might be running in 32-bit mode.

SOLUTION:

Check the kernel mode in which the OS is running. If the OS is running in 32-bit mode, switch the kernel mode to 64-bit, restart the OS, and then start the Device Manager server. If you cannot start Device Manager server even after taking the above action, contact maintenance personnel.

Common Component will not start.

CAUSE:

- The Common Component port number might already be in use.
- The amount of installed memory might be insufficient.
- If a Solaris or Linux environment is being used, the process IDs of Common Component service processes might be overlapping.

SOLUTION:

- Change the port number by referring to the *Hitachi Device Manager Server Configuration and Operation Guide*.
- If necessary, increase the amount of available memory by referring to [Hardware Requirements](#).
- If process IDs overlapping in a Solaris or Linux environment, perform the following operations:
 1. Stop Common Component and the services of all Hitachi Storage Command Suite products:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```
 2. Start Common Component:

```
installation-directory-of-Common-Component/bin/hcmdssrv -start
```
 3. If Common Component still does not start, stop Common Component and the services of all Hitachi Storage Command Suite products again:

```
installation-directory-of-Common-Component/bin/hcmdssrv -stop
```
 4. Delete the following files:

```
# /usr/bin/rm -rf /var/installation-directory-of-Common-Component/tmp/*.pid
```
 5. Start Common Component:

```
installation-directory-of-Common-Component/bin/hcmdssrv -start
```

If you perform the above operations but still encounter problems, collect the log information in a batch, and contact maintenance personnel. For details about collecting troubleshooting information, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

The service discovery feature is not available, because the SLP service failed to start after installation.

CAUSE:

The SLP service might have failed to start during installation, or an upgrade might have been performed without the SLP service registration being released.

SOLUTION:

If the SLP service failed to start during installation, set up the service discovery feature. For details about how to set up this feature, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

If you performed an upgrade installation before releasing the registration of the SLP service, perform the following operations to register the SLP service again:

1. In the Windows Services panel, disable the Service Location Protocol service.
2. Restart Windows.
3. Release the SLP service registration.
4. Register the SLP service again.

Internal Server Error is displayed in the Web Client, and neither logon nor any operations can be performed.

CAUSE:

Either HBase Storage Mgmt Common Service is stopped or the Web container of Device Manager that runs on HBase Storage Mgmt Common Service is stopped.

SOLUTION:

First, use the following command to make sure that the Common Component services are running:

In Windows:

```
installation-folder-of-Common-Component\bin\hcmdssrv /status
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/bin/hcmdssrv -status
```

If the following message is displayed, the services are running:

```
KAPM06440-I The HiRDB service has already started.  
KAPM05007-I Already started service. service-name=HBase Storage Mgmt Web Service
```

KAPM05007-I Already started service. service-name=HBase Storage Mgmt Common Service

If any Common Component services are not running, use the command below to start the Common Component services, and then log on again. If there are any Common Component services that cannot be started, contact maintenance personnel.

In Windows:

```
installation-folder-of-Common-Component\bin\hcmdssrv /start
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/bin/hcmdssrv -start
```

If you cannot log on even though all the Common Component services are running, wait a while, and then attempt log on again.

If you cannot resolve the problem even after performing the above, check whether the memory heap size is sufficient. If the memory heap size is insufficient, see the *Hitachi Device Manager Server Configuration and Operation Guide* for how to change the memory heap size of HBase Storage Mgmt Web Service. However if the memory heap size is sufficient, contact maintenance personnel.

To check whether the memory heap size is sufficient:

1. Check whether `javacoreprocess-ID.occurrence-date-(YYMMDD)occurrence-time-(HHMMSS).txt` files have been output to the directory below. If no such files have been output, the cause of the error might be something other than insufficient memory heap size. In this case, contact maintenance personnel.

In Windows:

```
installation-folder-of-Common-Component\CC\web\containers\HiCommand
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/CC/web/containers/HiCommand
```

2. Find the newest `javacoreprocess-ID.occurrence-date-(YYMMDD)occurrence-time-(HHMMSS).txt` file.
3. From the `hs_err_pidprocess-ID.log` files in the directory below, find a file whose process ID matches that of the file that you found in step 2.

In Windows:

```
installation-folder-of-Common-Component\CC\web\containers\HiCommand
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/CC/web/containers/HiCommand
```

4. Open the `hs_err_pidprocess-ID.log` file that you found in step 3.

The procedure to follow in response to the error depends on the type of error output to the `hs_err_pidprocess-ID.log` file.

When `java.lang.OutOfMemoryError` occurred. is displayed:

Perform steps 5 and 6.

When An unexpected exception has been detected in native code outside the VM. is displayed:

Perform steps 7 through 10.

5. Open the newest `javacoreprocess-ID.occurrence-date-(YYMMDD)occurrence-time-(HHMMSS).txt` file that you found in step 2.

In the file, find the text Heap Status. In the Heap Status section, each heap area is recorded as follows:

DefNew: :Eden:60979K/69952K(87.2%) Max:69952K(87.2%)
DefNew: :Survivor:0K/8704K(0.0%) Max:8704K(0.0%)
Tenured:174784K/174784K(100.0%) Max:174784K(100.0%)
Perm:13706K/65536K(20.9%) Max:65536K(20.9%)

6. Find the total of the Max values.

Make sure that the total value is almost the same as the memory heap size set as the maximum value of HBase Storage Mgmt Web Service (256 MB is set as the initial value in a new installation). If the total value is smaller than that memory heap size, the physical memory might be insufficient. In such a case, either decrease the number of processes concurrently executed or increase the physical memory of the computer. If the error occurs even after you increase the physical memory, contact maintenance personnel.

7. Check whether the `javaLog01.log` file was output to the directory below. If the file was not output, the cause of the error might be something other than insufficient memory heap size. In such a case, contact maintenance personnel.

In Windows:

<code>installation-folder-of-Common-Component\CC\web\containers\HiCommand\logs</code>

In Solaris or Linux:

<code>installation-directory-of-Common-Component/CC/web/containers/HiCommand/logs</code>
--

8. Open the `javaLog01.log` file.
9. Check whether the occurrence time written in the `javaLog01.log` file matches that of the `javacoreprocess-ID.occurrence-date-(YYMMDD)occurrence-time-(HHMMSS).txt` file that you found in step 2.

If the occurrence times do not match, the cause of the error might be something other than an insufficient memory heap size. In such a case, contact maintenance personnel.

10. Check whether the message `java.lang.OutOfMemoryError` occurred. is in the `javaLog01.log` file.

If the message is not in the file, the cause of the error might be something other than an insufficient memory heap size. In such a case, contact maintenance personnel.

The GO menu item for starting Device Manager, Provisioning Manager, and Tiered Storage Manager still remains in the Dashboard menu.

CAUSE:

Deletion of authentication data may have failed due to a temporary communication failure.

SOLUTION:

A user with the Admin (User Management) permission must execute the procedure below.

1. If Common Component service is not running, start it using the following method:

In Windows:

```
installation-folder-of-Common-Component\bin\hcmdssrv /start
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/bin/hcmdssrv -start
```

2. Execute the following command to delete the authentication data:

In Windows:

```
installation-folder-of-Common-Component\bin\hcmdsintg /delete /type  
{DeviceManager|ProvisioningManager|TieredStorageManager} /user user-ID  
/pass password
```

The following shows an example of executing the command:

```
C:\Program Files\HiCommand\Base\bin\hcmdsintg /delete /type  
DeviceManager /user dvmuser1 /pass sys0305
```

In Solaris or Linux:

```
installation-directory-of-Common-Component/bin/hcmdsintg -delete -type  
{DeviceManager|ProvisioningManager|TieredStorageManager} -user user-ID  
-pass password
```

The following shows an example of executing the command:

```
# /opt/HiCommand/Base/bin/hcmdsintg -delete -type DeviceManager -user  
dvmuser1 -pass sys0305
```

If **GO** still remains after the above action, contact maintenance personnel.

Cancellation of the SLP service (or the SLP daemon) failed during Device Manager server uninstallation.

CAUSE:

This problem is caused by one of the following:

- When performing uninstallation while the SLP service (or the SLP daemon) is running
- When performing uninstallation while the SLP service is stopped but registered as a Windows service.

SOLUTION:

Stop or clear the SLP service (or the SLP daemon). For details about how to do this, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

If you use Windows, the OpenSLP file might have been deleted during uninstallation. In that case, perform the following operations in order, and then clear the SLP service:

1. In the Services panel, disable the Service Location Protocol service.
2. Restart Windows.

An error occurred and uninstallation was interrupted.

SOLUTION:

Use the `hcmdsgetlogs` command to collect maintenance information, and then contact maintenance personnel. For details about the `hcmdsgetlogs` command, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Although uninstallation finished normally, the Device Manager service (HiCommandServer) and Device Manager-related files remain.

CAUSE:

The Device Manager service and Device Manager-related files were not deleted because uninstallation failed.

SOLUTION:

Perform the following operations:

1. Delete the *Device-Manager-server-installation-directory*\UninstallerData folder.
2. Perform an overwrite installation of the Device Manager server.

3. Uninstall the Device Manager server again.

Checking Report Files

If an error occurs while an unattended installation is being performed, a message is output to the report file. If an unattended installation terminates in an error, check the report file, and eliminate the cause of the error. [Table 7-2](#) lists the messages that are output to the report file.

If an operational error occurs or the OS is heavily loaded, there is a chance that no message will be output to the report file. For details about the solution for this problem, see [Table 7-3](#).

Table 7-2 Messages Output to the Report File

No.	Errors and Installer Responses	Troubleshooting Solutions
1	MESSAGE: The value for property (<i>property-name-specified-during-the-installation</i>) is invalid. Specify TRUE or FALSE. CAUSE: A value other than TRUE or FALSE has been specified. INSTALLER RESPONSE: Cancels the installation.	Specify TRUE or FALSE.
2	MESSAGE: The value of the specified property(<i>property-name-specified-during-the-installation</i>) is invalid. The specified directory cannot be used. CAUSE: The properties (HDVM_INSTDIR, HDVM_DBDIR, and HDVM_SYSDBDIR) specified during the unattended installation cannot be accessed, or a path for a non-existing drive has been specified. INSTALLER RESPONSE: Cancels the installation.	Specify a valid drive path.
3	MESSAGE: Processing to set up linkage with Tuning Manager has failed, however, installation will continue. After installation, use the htmsetup command to set up linkage. CAUSE: An unexpected error occurred while setting up linkage with Tuning Manager. INSTALLER RESPONSE: Continues the installation, while displaying the warning message.	After the installation completes, use the setting tool (the htmsetup command) to set up linkage.
4	MESSAGE: Hitachi Storage Command Suite installation has interrupted. (The installation was stopped by an error.)Please see the installation log for details. CAUSE: An unexpected internal error occurred. INSTALLER RESPONSE: Cancels the installation.	Check the installation log.

No.	Errors and Installer Responses	Troubleshooting Solutions
5	Only in Solaris and Linux MESSAGE: The directory you specified contains directories or files. Specify an empty directory as the installation destination. INSTALLER RESPONSE: Cancels the installation.	Specify an empty directory for the installation directory. If you cannot resolve the problem, obtain log information, and then contact maintenance personnel.
6	MESSAGE: One of the following errors might have occurred: - A user operational error (for example, another application or installer is running) - The disk cannot be read or written to normally (such as an OS problem or system overload) INSTALLER RESPONSE: Cancels the installation.	Make sure the following, and then perform an unattended installation again: - No other application or installer is running. - The system load is not heavy. If you cannot resolve the problem, contact maintenance personnel.
7	MESSAGE: The property (<i>property-name</i>) cannot be omitted. CAUSE: The HDVM_DBDIR or HDVM_IPADDRESS property was not specified before attempting to install in a cluster environment. INSTALLER RESPONSE: Cancels the installation.	Specify the HDVM_DBDIR or HDVM_IPADDRESS property.
8	For Windows (x64) only MESSAGE: Hitachi Storage Command Suite cannot be installed in a folder that is for 64-bit applications (<i>name-of-the-folder-for-64-bit-applications</i>). CAUSE: - If you attempted a new installation, a folder under a folder for 64-bit applications was specified as the installation location or database file storage location. - If you attempted an upgrade installation, Device Manager has been installed in a folder under a folder for 64-bit applications. INSTALLER RESPONSE: Cancels the installation.	If you attempted a new installation: Specify a valid path for HDVM_INSTDIR or HDVM_DBDIR. If you attempted an upgrade installation: Uninstall Device Manager and then re-install it in another location.

Table 7-3 Solution When No Message Is Output to the Report File

No.	Problems	Troubleshooting solutions
1	DESCRIPTION: An unattended installation has ended abnormally and the report file was not output. CAUSE: One of the following errors might have occurred in an internal command that analyzes parameters: - An internal error of the command itself - An error caused by external factors during execution (such as an OS problem or system overload)	Make sure of the following, and then perform the unattended installation again: - The values of parameters that are specified for the installer at execution are correct. - The system load is not heavy.

Checking Log Files

This section describes log files that are output by Device Manager and Tiered Storage Manager during installation and uninstallation.

If an error occurs during installation or uninstallation, you can use the log files listed in [Table 7-4](#) to [Table 7-7](#) to troubleshoot the error.

Table 7-4 Log Files Output by Device Manager (in Windows)

Log Type	Output Folder	Log File Name
Installation log (if installation succeeded)	<i>installation-folder-of-the-Device-Manager-server\HiCommandServer\logs</i>	<i>HiCommand_Device_Manager_version.revision_yyyy-mm-dd-hh-mm-ss_InstallLog.log^{#1}</i>
Installation log when installation failed	<i>application-data-folder^{#2}</i>	
Uninstallation log	Directly under the system drive	<i>HiCommand_Device_Manager_UninstallLog.log</i>
^{#1} <i>yyyy-mm-dd</i> indicates year, month, and day. <i>hh-mm-ss</i> indicates hour, minute, and second. ^{#2} <i>application-data-folder</i> indicates the folder that is set for the Windows system environment variable %APPDATA%. The default folder is as follows: <i>system-drive:\Documents and Settings\name-of-the-user-who-performed-the-installation\Application Data</i>		

Table 7-5 Log Files Output by Device Manager (in Solaris or Linux)

Log Type	Output Directory	Log File Name
Installation log (if installation succeeded)	<i>installation-directory-of-the-Device-Manager-server/HiCommandServer/logs</i>	<i>HiCommand_Device_Manager_version.revision_yyyy-mm-dd-hh-mm-ss_InstallLog.log[#]</i>
Installation log when installation failed	<i>/tmp</i>	
Uninstallation log	<i>/tmp</i>	<i>HiCommand_Device_Manager_UninstallLog.log</i>
[#] <i>yyyy-mm-dd</i> indicates year, month, and day. <i>hh-mm-ss</i> indicates hour, minute, and second.		

Table 7-6 Log Files Output by Tiered Storage Manager (in Windows)

Log Type	Output Folder	Log File Name
Installation log (if the output folder was created)	<i>installation-folder-of-the-Tiered-Storage-Manager-server\inst</i>	HTSM_TL_Install_YYYY-MM-DD_hh-mm-ss.log [#]
Installation log (if the output folder was not created)	For a new installation, logs will be output to the Windows system drive. For other installations, logs will be output to the installation folder of Tiered Storage Manager.	
Uninstallation log (if the output folder remains after uninstallation)	<i>installation-folder-of-the-Tiered-Storage-Manager-server\inst</i>	HTSM_TL_Uninstall_YYYY-MM-DD_hh-mm-ss.log [#]
Uninstallation log (if the output folder does not remain after uninstallation)	For a new installation, logs will be output to the Windows system drive. For other installations, logs will be output to the installation folder of Tiered Storage Manager.	
# YYYY-MM-DD indicates year, month, and day. hh-mm-ss indicates hour, minute, and second.		

Table 7-7 Log Files Output by Tiered Storage Manager (in Solaris or Linux)

Log Type	Output Directory	Log File Name
Installation log (if the output directory can be created)	<i>/var/installation-directory-of-the-Tiered-Storage-Manager-server/inst^{#1}</i>	HTSM_TL_Install_yyyy-mm-dd_hh-mm-ss.log ^{#2}
Installation log (if the output directory could not be created)	/tmp	
Uninstallation log (if the output directory remains after uninstallation)	<i>/var/installation-directory-of-the-Tiered-Storage-Manager-server/inst^{#1}</i>	HTSM_TL_Uninstall_yyyy-mm-dd_hh-mm-ss.log ^{#2}
Uninstallation log (if the output directory does not remain after uninstallation)	/tmp	
#1 In Solaris (SPARC), log files are output to the following directory: /var/opt/HiCommand/TieredStorageManager/inst #2 yyyy-mm-dd indicates years, month, and day, and hh-mm-ss indicates hour, minute, and second.		



Acronyms and Abbreviations

CD-ROM	Compact Disk - Read-Only Memory
CIM	Common Information Model
CLI	Command Line Interface
CPU	Central Processing Unit
DBMS	Database Management System
DST	Daylight Saving Time
GUI	Graphical User Interface
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
ID	IDentifier
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
LAN	Local Area Network
LDEV	Logical DEvice
NIC	Network Interface Card
NTP	Network Time Protocol
OS	Operating System
RAID	Redundant Array of Independent Disks
SAN	Storage Area Network
SLP	Service Location Protocol
SMI-S	Storage Management Initiative - Specification
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

URL	Uniform Resource Locator
WBEM	Web-Based Enterprise Management
XGA	eXtended Graphics Array



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