

# ETERNUS SF Storage Cruiser 13.3



## User's Guide for Virtual Storage Conductor

Windows/Solaris/Linux

J2X1-4350-04ENZ0(00)  
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# Preface

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## Purpose

This manual explains the functions and usage of Virtual Storage Conductor, which is one of components of ETERNUS SF Storage Cruiser (hereinafter "ESC").

ETERNUS SF is an integrated storage system management software series provided by Fujitsu.

## Target readers

This manual is intended for system administrators who install, set up, operate, and maintain Virtual Storage Conductor of ETERNUS SF Storage Cruiser.

It is assumed that readers of this manual will have a basic understanding of how to set up the servers and storage being installed, and of the network that is required to configure the system.

## Organization

This manual is composed as follows.

### [Chapter 1 Overview of Virtual Storage Conductor](#)

Explains the virtual storage function provided by Virtual Storage Conductor.

### [Chapter 2 Operation Design](#)

Explains how to design Virtual Storage Conductor for operation.

### [Chapter 3 Building an Environment](#)

Explains how to set up the environment for operating Virtual Storage Conductor.

### [Chapter 4 Startup and Settings](#)

Explains how to start up Virtual Storage Conductor.

### [Chapter 5 Operations](#)

Explains how to operate Virtual Storage Conductor using GUI.

### [Chapter 6 Maintenance](#)

Explains how to maintain Virtual Storage Conductor.

### [Appendix A Window Explanation and Menu List](#)

Describes the windows of GUI and its display content.

### [Appendix B Admin Server Commands](#)

Describes the operation commands of Virtual Storage Conductor that can be entered from the admin server.

### [Appendix C Commands for Virtualization Switch](#)

Describes the commands that can be entered from a virtualization switch.

### [Appendix D Limit Values](#)

Describes the limit values of Virtual Storage Conductor.

### [Appendix E Error Messages](#)

Explains the meaning of each message output by Virtual Storage Conductor and the action to be taken.

### [Appendix F Single-Switch Operation of Virtualization Switch](#)

Explains how to perform virtual storage operations with a single virtualization switch.

## Glossary

Defines the terms associated with Virtual Storage Conductor.

### Notational conventions

- This manual omits trademarks and registered trademarks of the following product name.

Solaris(TM) 2.6 Operating System

Solaris(TM) 7 Operating System

Solaris(TM) 8 Operating System

Solaris(TM) 9 Operating System

Solaris(TM) 10 Operating System

Red Hat(R) Enterprise Linux(R) AS v.3, Red Hat(R) Enterprise Linux(R) ES v.3

Red Hat(R) Enterprise Linux(R) AS 3.9, Red Hat(R) Enterprise Linux(R) ES 3.9

Red Hat(R) Enterprise Linux(R) AS v.4, Red Hat(R) Enterprise Linux(R) ES v.4

Red Hat(R) Enterprise Linux(R) AS 4.5, Red Hat(R) Enterprise Linux(R) ES 4.5

Red Hat(R) Enterprise Linux(R) AS 4.6, Red Hat(R) Enterprise Linux(R) ES 4.6

Red Hat(R) Enterprise Linux(R) 5

Red Hat(R) Enterprise Linux(R) 5.1

Microsoft(R) Windows(R) 2000 Server

Microsoft(R) Windows(R) 2000 Advanced Server

Microsoft(R) Windows(R) 2000 Professional

Microsoft(R) Windows(R) XP Professional

Microsoft(R) Windows(R) XP Home Edition

Microsoft(R) Windows Vista(R) Home Basic

Microsoft(R) Windows Vista(R) Home Premium

Microsoft(R) Windows Vista(R) Business

Microsoft(R) Windows Vista(R) Enterprise

Microsoft(R) Windows Vista(R) Ultimate

Microsoft(R) Windows Server(R) 2003, Standard Edition

Microsoft(R) Windows Server(R) 2003, Standard x64 Edition

Microsoft(R) Windows Server(R) 2003, Enterprise Edition

Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition

Microsoft(R) Windows Server(R) 2003, Enterprise Edition for Itanium-based Systems

Microsoft(R) Windows Server(R) 2003, Datacenter Edition for Itanium-based Systems

Microsoft(R) Windows Server(R) 2003 R2, Standard Edition

Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition

Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition

Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition

Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM)

Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM)

Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM)

- The Solaris(TM) Operating System is described as "Solaris OS".
- The Manager and Agent of Virtual Storage Conductor are described as follows.

Type	Platform	Notation
Manager	Solaris OS	"[Solaris OS] Manager"
	Linux	"[Linux OS] Manager"
	Windows operating system	"[Windows] Manager"
Agent	Solaris OS	"[Solaris OS] Agent"
	Linux	"[Linux OS] Agent"
	Windows operating system	"[Windows] Agent"

- Referenced items, menu names, button names, etc. are described as follows.

Type	Notation
Referenced items in this manual	Its title is enclosed in " ".
Referenced items in other manual	Its title is enclosed in " ".
Menu names	Its name is enclosed in [ ]. The order in which menu items are selected is indicated in the form [ ] - [ ]. The ellipses ("...") in menu names, indicating settings and operation window startup, are not displayed.
Tab names	Its name is enclosed in " ".
Button names	Its name is enclosed in <>.
Character strings and values that need to be emphasized	Its strings are enclosed in " ".
Variable parts	It is indicated by using <i>italic</i> text.

## Abbreviations

A product or products might be described by the abbreviation as follows.

Product name	Notation
Solaris 2.6 Operating System	Solaris 2.6 OS
Solaris 7 Operating System	Solaris 7 OS
Solaris 8 Operating System	Solaris 8 OS
Solaris 9 Operating System	Solaris 9 OS
Solaris 10 Operating System	Solaris 10 OS
Red Hat Enterprise Linux AS (v.3 for x86) Red Hat Enterprise Linux ES (v.3 for x86)	When referring to these products as a group, "Linux V3.0" will be indicated.
Windows 2000 Server Windows 2000 Advanced Server Windows 2000 Professional	When referring to these products as a group, "Windows 2000" will be indicated.
Windows XP Professional Windows XP Home Edition	When referring to these products as a group, "Windows XP" will be indicated.
Windows Vista Home Basic Windows Vista Home Premium Windows Vista Business Windows Vista Enterprise Windows Vista Ultimate	When referring to these products as a group, "Windows Vista" will be indicated.
Windows Server 2003, Standard Edition Windows Server 2003, Enterprise Edition	When referring to these products as a group, "Windows Server 2003" will be indicated.
Softek Storage Cruiser	SSC
ETERNUS SF AdvancedCopy Manager	ACM
Systemwalker Resource Coordinator	Resource Coordinator

## Description of this software and notation of this manual

This software and its manual have been developed based on Softek Storage Cruiser (SSC) and Systemwalker Resource Coordinator Storage manager. Output messages or windows may therefore contain references to "Softek Storage Cruiser" or "SSC", "Systemwalker Resource Coordinator" or "Resource Coordinator" accordingly.

## Related manuals

The following manuals are provided with ESC. Please refer to these manuals as required.

- ETERNUS SF Storage Cruiser Installation Guide  
Explains the configuration procedure.
- ETERNUS SF Storage Cruiser User's Guide  
Contains a product description, explanations of functions, and methods of operation and maintenance.
- ETERNUS SF Storage Cruiser Message Guide  
Explains the messages displayed by storage resource manager.
- ETERNUS SF Storage Cruiser Event Guide  
Explains the messages displayed by storage resource manager regarding hardware status.
- ETERNUS SF Storage Cruiser User's Guide for Virtual Storage Conductor (This manual)  
Explains the functions and methods of operating Virtual Storage Conductor.

## ETERNUS SF homepage

The latest technical information can be seen on the ETERNUS SF homepage (<http://www.fujitsu.com/global/services/computing/storage/software/>).

At first, reference to the ETERNUS SF homepage is recommended.

## eclipse.org homepage

Technical information for Eclipse and FAQ are given out on the eclipse.org homepage (<http://www.eclipse.org/>).  
For Eclipse, first of all, it is recommended to refer to the eclipse.org homepage.

## Related documentation

Please refer to the following documentation as required.

- ETERNUS VS900 Model 200 Virtualization Switch User's Guide  
Explains how to install and set up the virtualization switch.
- ETERNUS VS900 Model 200 Virtualization Switch XPath OS Reference Manual  
Explains all commands provided for the virtualization switch.
- ETERNUS VS900 Model 200 System Build Procedure  
Explains the various setting processes of the virtualization switch when building a system.
- ETERNUS VS900 Model 200 Virtualization Switch Zoning User's Guide  
Explains the setup process of zoning for the virtualization switch.
- ETERNUSmgr User Guide Settings/Maintenance  
Explains the setup process of the ETERNUS series disk array unit.
- GRmgr User Guide Settings/Maintenance  
Explains the setup process of the GR series disk array unit.

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# Chapter 1 Overview of Virtual Storage Conductor

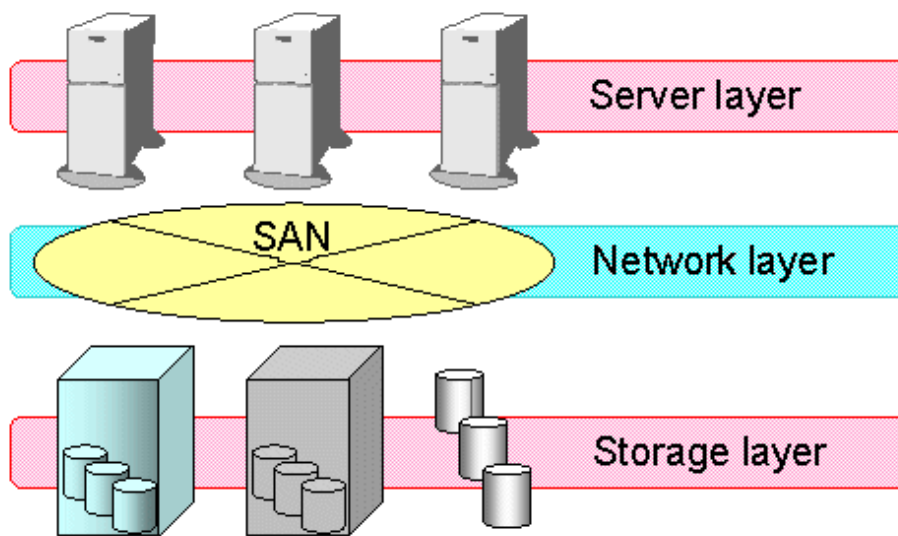
## 1.1 Virtual Storage

There must be a volume to store data that the applications read for processing. To allocate a volume to a transaction server, it is necessary to create the required disk space from a disk unit. Therefore, a storage administrator estimates the disk size required for each transaction server and creates a logical unit according to the estimation.

Virtual Storage is a function that enables the creation of a volume with any disk size, independently of the attributes (e.g., size, RAID group) of logical units created on a disk unit.

In a Storage Area Network (SAN) environment, the Virtual Storage function is provided through the following three layers.

Figure 1.1 Layers in which Virtual Storage is realized



### Server layer

The server layer provides an application with virtual storage by operating virtual storage software on the transaction server where the application runs.

### Network layer

The network layer places a special server dedicated for the virtual storage function between the transaction server where an application runs and a disk unit. This special server provides a logical unit allocated from the disk unit to the transaction server as virtual storage.

### Storage layer

The storage layer provides a disk unit as a logical unit that does not depend on the RAID group function or the hard disk drive size.

## 1.2 Virtual Storage Conductor

Virtual Storage Conductor (hereinafter called "VSC") is basic volume management software that provides the virtual storage function on a Fibre Channel switch located in the network layer.

### 1.2.1 Purpose of providing VSC

In the current storage system, a Fibre Channel switch is an essential element in the SAN configuration.

VSC provides the Fibre Channel switch located at the center of a storage system with the virtual storage function that covers the entire storage system.

## 1.2.2 Objectives of VSC

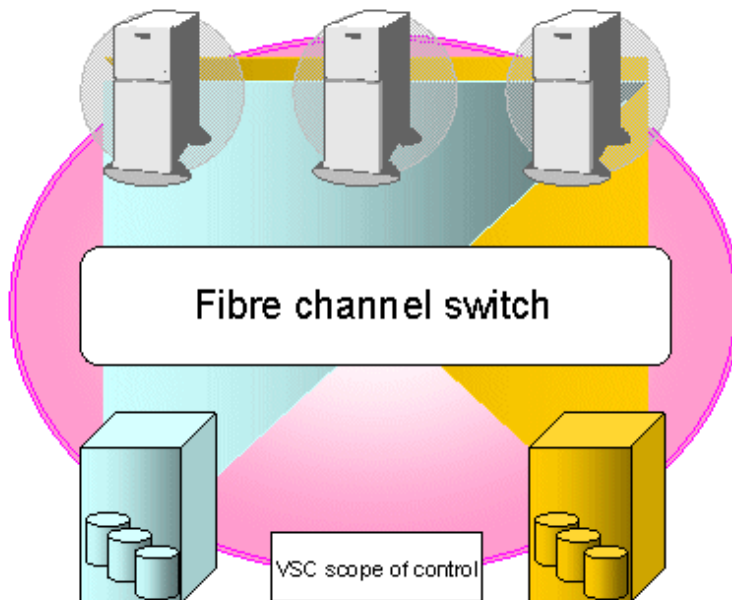
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Many customers now use products that realize some kind of a virtual storage function, mainly in the server and storage layers. However, operating such a virtual storage function poses the problems described below. VSC is intended to solve these problems and facilitate storage operation for customers.

- Extensive storage resources management

The server layer can only be used to manage disks (connected to a transaction server) that represent only a small percentage of all storage resources. The storage layer can also be used to manage only its own internal enclosure. Conversely, a Fibre Channel switch can be used for a larger scope of management than the server and storage layers because the entire storage system (fabric) can be placed under control.

Figure 1.2 Comparison of scopes of storage resources management



- Reducing the burden of storage operation

To use the virtual storage function of the server layer, a special software product must be installed on the transaction server, followed by various settings being made. Naturally, this procedure must be repeated for every transaction server, thus requiring considerable total work time. Moreover, the procedure for allocating a volume to a transaction server takes a workload to manipulate the relationship between the storage and multiple transaction servers, because the storage accepts requests initiated by transaction servers.

With VSC, the logical units allocated from a disk unit may be uniform in terms of size. Since VSC manages all such units, you only need to set all the destinations to the Fibre Channel switch.

## 1.3 VSC Configuration

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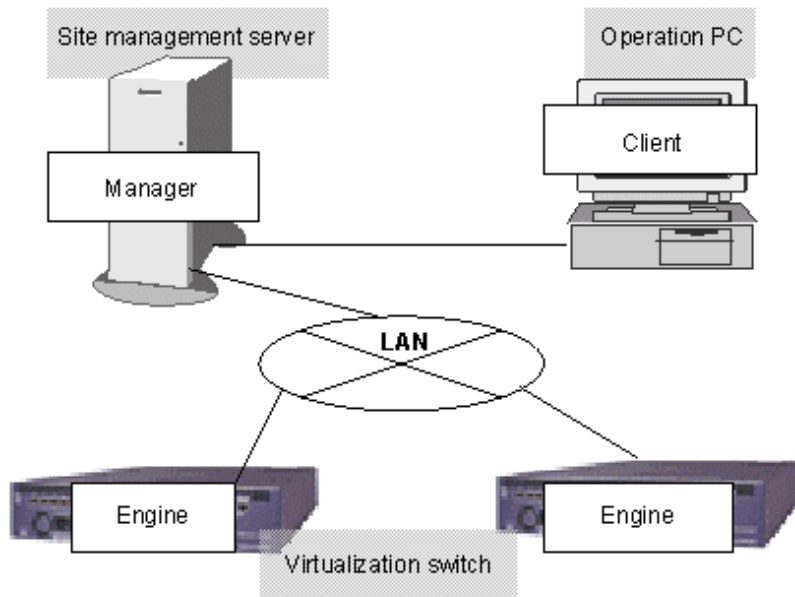
A Fibre Channel switch with the storage virtualization function (hereinafter called "virtualization switch") is required for using VSC. ESC provides the storage virtualization function by controlling the storage virtualization function engine (hereinafter called "engine") that runs on the virtualization switch.

VSC Manager performs configuration management to form the foundation of the virtual storage function, and handles and supplies processing requests made on the client (GUI) to the engine that runs on the target virtualization switch.

VSC admin client runs on the admin client unit to provide an operation interface related to virtual storage.

The engine, running on a virtualization switch, processes various requests for the virtual disk according to instructions from the Manager. It also controls server access of the virtual disk. However, engine operation has no impact on performance, because it does not interfere with regular read/write data streams.

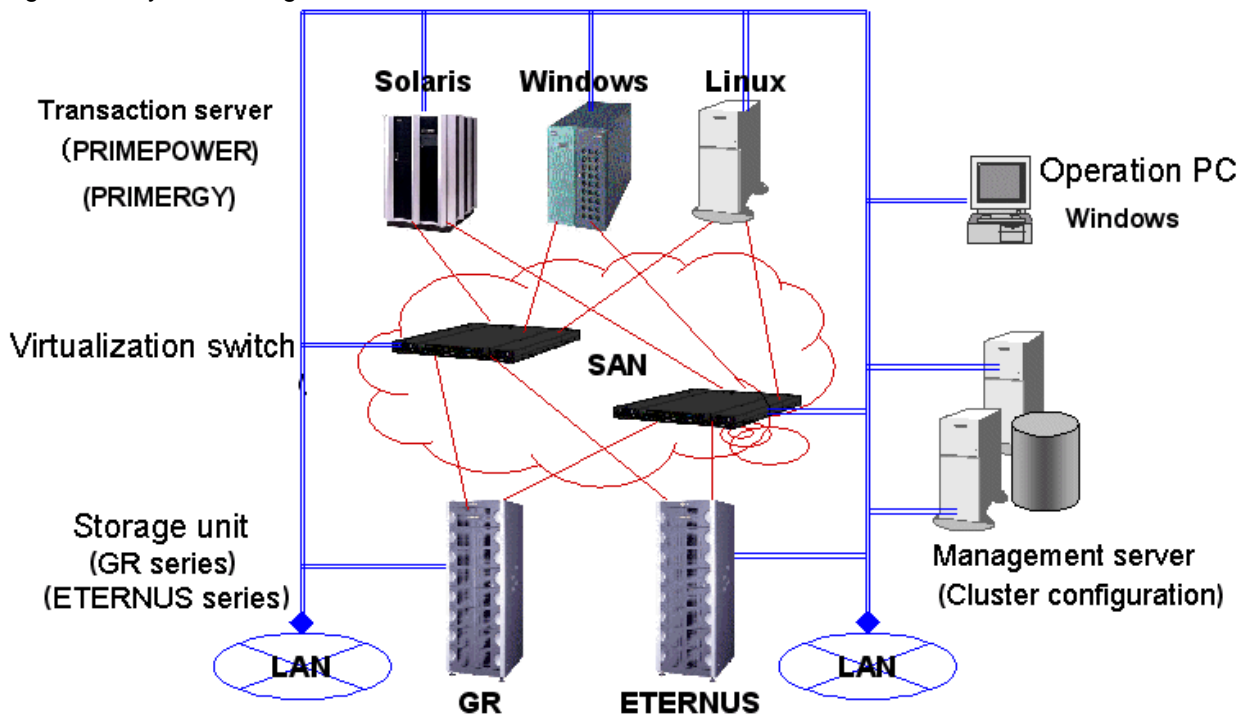
Figure 1.3 VSC configuration



## 1.4 Supported Environments

This section describes the hardware and software environments required to use VSC, as well as the environments supported.

Figure 1.4 System configuration



## 1.4.1 Supported hardware

Table 1.1 Required hardware

Type	VSC-related program	Product name	Required quantity	Other
Virtualization switch	Engine	VS900 Model 200	2 units (redundant configuration) x n sets	-
Admin server	Storage Resource Manager (Manager)	PRIMEPOWER/Fujitsu S series	1 or 2 units	Refer to the ETERNUS SF Storage Cruiser Installation Guide, for the unit requirements.
		PRIMERGY		
		PRIMEQUEST		
Admin client	Storage Resource Manager (Client)	FM-V, other company's product	1 unit	

Table 1.2 Supported server node HBA

Product name	HBA	Revision number
Solaris OS machine PRIMEPOWER/Fujitsu S series/GP-S family	GP7B8FC1	Driver: FUJITSU PCI Fibre Channel 2.0 or later
	PW008FC2	Driver: FUJITSU PCI Fibre Channel 2.2.1 Update2 or later
	PW008FC3	
Solaris OS machine SPARC Enterprise	SE0X7F11F	Driver: FUJITSU PCI Fibre Channel 4.0 or later
	SE0X7F12F	Driver: FUJITSU PCI Fibre Channel 4.0 or later
Windows 2000 machine PRIMERGY	PG-FC106	PG-FC106 Driver V5.20a8
	PG-FC107	PG-FC107 Driver V5.20a8
	PG-FC201	PG-FC201 Driver V5.20a8
Windows Server 2003 machine PRIMERGY	PG-FC106	PG-FC106 Driver V5.20a8
	PG-FC107	PG-FC107 Driver V5.20a8
	PG-FC201	PG-FC201 Driver V5.20a8
Linux V3.0 machine 2.4.21-20.EL(Update 3) PRIMERGY	PG-FC106	PG-FC106 Driver V2.01g-1
	PG-FC107	PG-FC107 Driver V2.01g-1
	PG-FC201	PG-FC201 Driver 7.1.14
Linux V3.0 machine 2.4.21-32.0.1EL(Update 5)	PG-FC106	PG-FC106 Driver 7.1.14

Product name	HBA	Revision number
PRIMERGY	PG-FC107	PG-FC107 Driver 7.1.14
	PG-FC201	PG-FC201 Driver 7.03.00

Table 1.3 Supported disk storage systems

Model name	Revision number	Remarks
ETERNUS8000 (all models)	All revision numbers	-
ETERNUS4000 (all models)	All revision numbers	-
ETERNUS2000 (all models)	V10L11-0000 later	-
ETERNUS6000 (all models)	V20L57 or later	-
ETERNUS3000 model 50	All revision numbers	Dual-controller type
ETERNUS3000 models 300, 500 and 700	V10L24 or later	-
ETERNUS3000 models 80, 100, 200, 400 and 600	V10L66 or later	-
ETERNUS GR710	V10L22 or later	Additional controller required
ETERNUS GR720	V11L31 or later	Two or more host interfaces required
ETERNUS GR730	V11L31 or later	-
ETERNUS GR740, GR820, GR840	V03L83 or later	-

## 1.4.2 Supported software

Table 1.4 Supported OS of admin servers

Platform	Product name	Remarks
Solaris OS	Solaris 8 OS	-
	Solaris 9 OS	
	Solaris 10 OS (global zone only)	
Linux	Red Hat Enterprise Linux 5 (for x86)	-
	Red Hat Enterprise Linux 5 (for Intel64)	
	Red Hat Enterprise Linux 5 (for Intel Itanium)	Operation server is only PRIMEQUEST.
	Red Hat Enterprise Linux 5.1 (for x86) Red Hat Enterprise Linux 5.1 (for Intel64)	-
Windows	Red Hat Enterprise Linux 5.1 (for Intel Itanium)	Operation server is only PRIMEQUEST.
	Windows Server 2008 Standard without Hyper-V (x86) Windows Server 2008 Enterprise without Hyper-V (x86) Windows Server 2008 Datacenter without Hyper-V (x86)	The 64-bit version is not supported. The Hyper-V is not supported. The Server Core installation option is not supported.
	Windows Server 2003 R2, Standard Edition Windows Server 2003 R2, Enterprise Edition	includes SP2
	Windows Server 2003, Standard Edition Windows Server 2003, Enterprise Edition	includes SP1, SP2

Platform	Product name	Remarks
	Windows 2000 Server (SP1 or later version) Windows 2000 Advanced Server (SP1 or later version) Windows 2000 Professional (SP1 or later version)	-

Table 1.5 Supported OS of server nodes (transaction servers that use the virtual storage function)

Platform	Product name	Remarks
Solaris OS	Solaris 2.6 OS Solaris 7 OS Solaris 8 OS Solaris 9 OS Solaris 10 OS (global zone only)	-
Windows	Windows 2000 Server Windows 2000 Advanced Server Windows 2000 Professional (SP4 or later version) Windows Server 2003, Standard Edition Windows Server 2003, Enterprise Edition	Itanium Architecture is not supported.
Linux	Red Hat Enterprise Linux AS (v.3 for x86) Red Hat Enterprise Linux ES (v.3 for x86)	Itanium Architecture is not supported.

Table 1.6 Server node middleware

Platform	Product name	Version
Solaris OS	GR Multipath Driver for Solaris OE	1.0.6 + patch 912651-13 or later
	ETERNUS SF AdvancedCopy Manager	13.0 or later
Windows	ETERNUS Multipath Driver for Windows (for use with Windows Server 2003)	V2.0L11 or later
	GR Multipath Driver for Windows (for use with Windows 2000)	V1.0L14 or later
	ETERNUS SF AdvancedCopy Manager	13.0 or later
Linux	GR Multipath Driver for Linux	V1.0L04 + T00704-04 (patch07) or later
	ETERNUS SF AdvancedCopy Manager	13.0 or later

## 1.5 Outline of VSC Functions

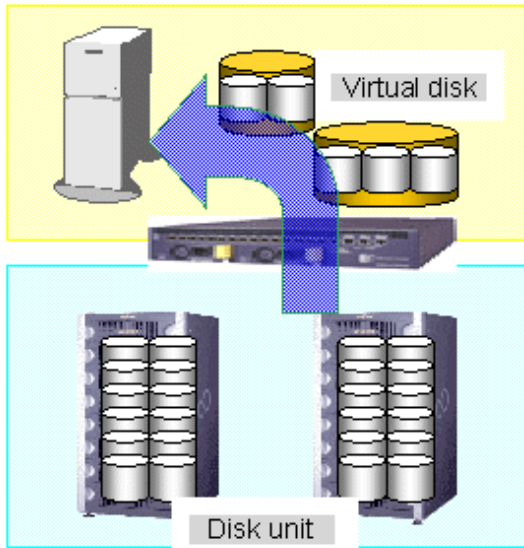
VSC provides flexible storage operations and comprehensive data service in a SAN environment through the following functions:

- Virtual disk function
- Server-free data service function

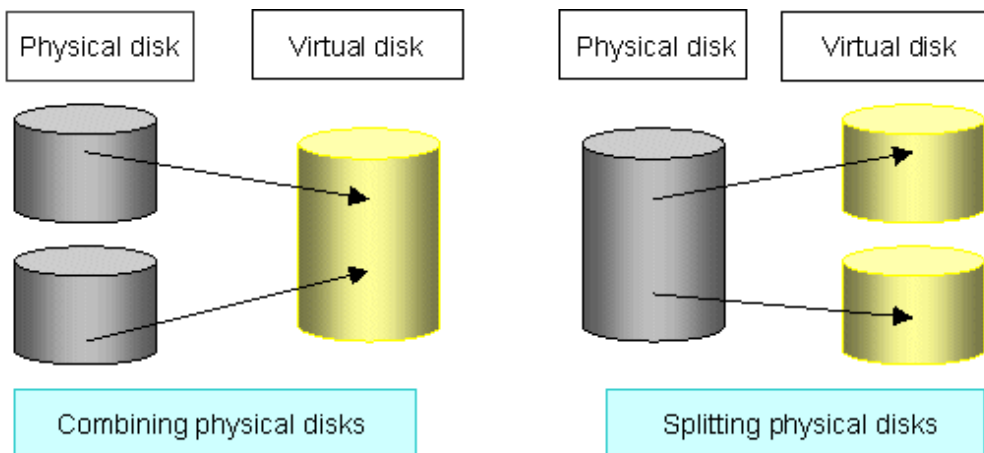
### 1.5.1 Virtual disk function

It is now common practice to estimate the data size recognized by the transaction server to recognize, use, and create its volume, and accordingly allocate a logical unit (LUN) from the disk unit. VSC provides a virtual disk function that allows you to create a volume of a size independent of the logical unit (LUN) size. In other words, this function weakens the physical relationship between a transaction server and disk unit, and makes it possible to provide a volume of the desired size at the desired time for the transaction server.





- You can combine more than one physical disk to create one virtual disk.
- You can split one physical disk to create more than one virtual disk.



You can also expand the size of a virtual disk itself.

You can create virtual disks in batch processing while retaining existing data required by users. For more information, refer to "[5.1.8 Batch conversion](#)".

## 1.5.2 Server-free data service function

VSC provides the server-free data service function, which copies data using the resources of the virtualization switch without using the resources (CPU and memory) of the transaction server. Originally, the resources of a transaction server should be consumed by an application that processes data, but not by such secondary tasks as backup and maintenance. The use of this function allows you to use transaction server capabilities more effectively.

This service provides the following functions:

- Migration function
- Replication function

### 1.5.2.1 Migration function

The migration function moves data in a physical disk to another physical disk or virtual disk. This function can be used to migrate data to a new disk unit or remove a physical disk that is causing a performance bottleneck.

You do not need to change the disk information (WWNs and disk numbers) recognized by the transaction server. Instead, VSC automatically changes the information of physical disks that make up a virtual disk(s).

After copying data to a destination physical disk, there are two options: allowing VSC to automatically switch the physical disks or having the user manually switch the disks. When migration is activated in a mode that retains no backup disk, VSC automatically switches the physical disks (using an automatic switching function). When migration is activated in a mode that retains a backup disk, the user must manually switch the physical disks.

When choosing not to use the automatic switching function, the user must issue an instruction to switch the physical disks. This instruction, to switch the physical disks, is called a migration completion instruction. Upon receiving a migration completion instruction from the user, VSC writes the data passed from an application to both the migration source and destination physical disks in order to maintain synchronization between both disks. Therefore, be sure to issue a migration completion instruction at the appropriate time to avoid adversely affecting virtualization switch capability.

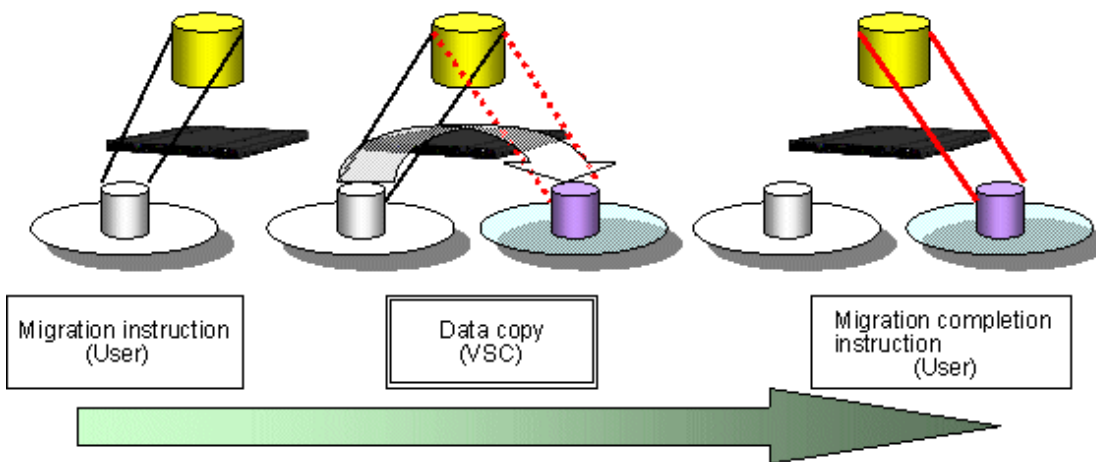


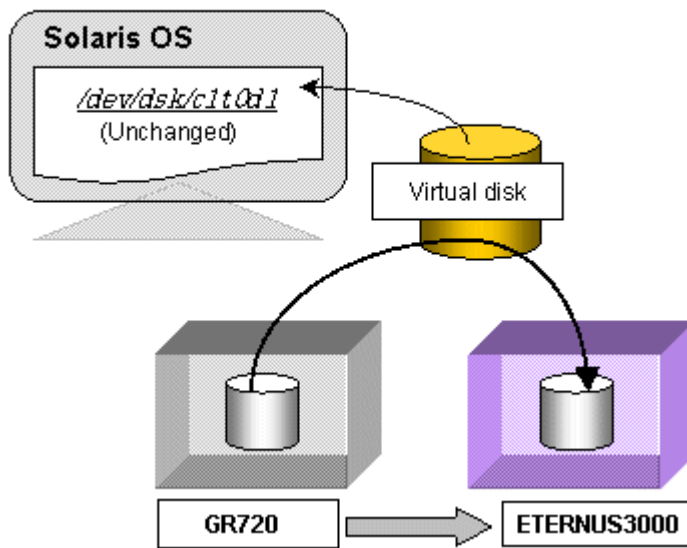
Table 1.7 Access to virtual disks during migration

Target	Status	Access enabled?	Remarks
Source physical disk	Copying	Yes	-
	Synchronization maintained	Yes	-
	Switching complete	-	-
Destination physical disk	Copying	-	-
	Synchronization maintained	-	Execute a write request on the virtualization switch to maintain synchronization.
	Switching complete	Yes	-

VSC provides migration operation with the following characteristics:

- Migration with non-stop server operation

Generally, an application or the system must be restarted when a transaction server uses the destination disk. With a virtual disk, however, the transaction server only recognizes the information on the virtual configuration, while VSC keeps track of all information on the physical configuration of the virtual disk (such as physical disk information). Therefore, the transaction server need not recognize any change made to the connected disk. Even if a change is made to the migration destination physical disk, you can continue using the disk without having to stop the system or application.



- Saving the data of the migration source

Migration is generally intended to upgrade a disk unit (or renew a device for storing data) so that you will no longer need the physical disk that was used before migration. Once migration is performed, significant changes are made to the system environment, such as installation of a new disk unit that may possibly cause unexpected trouble. Therefore, you must save the information before migration and keep it ready for reuse in order to prepare for quick recovery.

Since VSC continues to retain the backup disk until the user issues an instruction to delete it, promptly delete the disk after issuing a migration completion instruction.

### Note

In migration to hold migration backup disk (hereinafter called "backup disk"), if you want to ensure data consistency stored on backup disks, it is required to write data cached on the application server to the backup disks before migration cutover to ensure the consistency.

Note that if you do not directly specify a destination physical disk, VSC automatically chooses a physical disk for you. Therefore, you must manually create a virtual storage pool using only the destination physical disk.

Moreover, the virtualization switch that performs copy processing must retain access paths to both the migration source and destination physical disks.

When VSC accepts a migration instruction, it returns a session ID to you. Use the session ID for a migration completion instruction or migration cancellation instruction.

## 1.5.2.2 Replication function

The replication function creates a copy of a virtual disk. This function can be used to build a new transaction or make a backup copy of a virtual disk.

You must issue instructions to start and end a replication process. VSC writes data passed from an application to both the migration source and destination virtual disks in order to maintain synchronization between both disks.

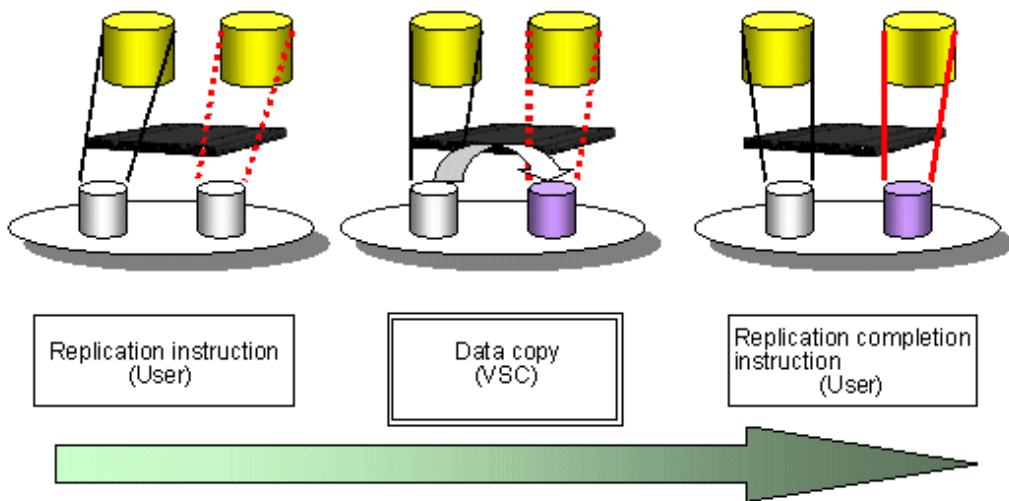


Table 1.8 Access to virtual disks during replication

Target	Status	Access enabled?	Remarks
Source virtual disk	Copying	Yes	-
	Synchronization maintained	Yes	-
	Switching complete	Yes	-
Destination virtual disk	Copying	No	An access error occurs.
	Synchronization maintained	No	An access error occurs. Execute a write request on the virtualization switch to maintain synchronization.
	Switching complete	Yes	-

Replication is executable by the startrep command from the operations management server or using the ETERNUS SF AdvancedCopy Manager.

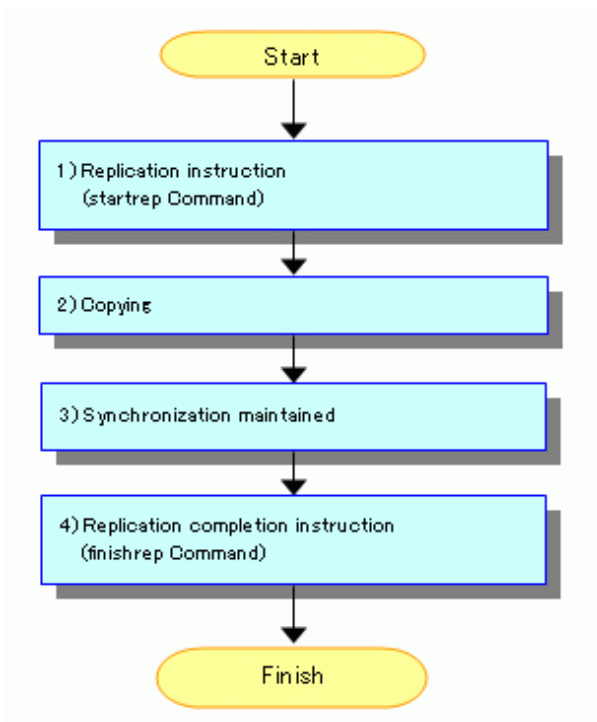
The replication executed with the ETERNUS SF AdvancedCopy Manager includes a function to suspend and resume copy. However, note that the replication executed by the commands from the operations management server does not include the function to suspend and resume copy.



See

- For replications using the ETERNUS SF AdvancedCopy Manager, refer to "ETERNUS SF AdvancedCopy Manager Operator's Guide".
- For details of commands from the operations management server, refer to "[Appendix B Admin Server Commands](#)".

The following are descriptions of a flow of replications from start through end using the commands from the operations management server.



1. Replication start directions (startrep command)

Use the startrep command from the operations management server to start replication.

 **Information**

Information required for replication directions includes the name of a replication-source virtual disk and the name of a replication-destination virtual disk.

2. During copy

Data on its source virtual disk is being copied to its destination virtual disk. If you want to abort replication, use the cancelrep command from the operations management server.

3. Equivalency maintain status

This is a status that the same data is written on its source virtual disk and on its destination virtual disk. If you want to abort replication, use the cancelrep command from the operations management server.

4. Replication finish directions (finishrep command)

Using the finishrep command from the operations management server, cancel the equivalency maintain status of the source virtual disk and the destination virtual disk to finish replication.

 **Note**

An access error occurs if the destination virtual disk is accessed during replication. Make sure that the transaction server does not access the virtual disk during use of the replication function.

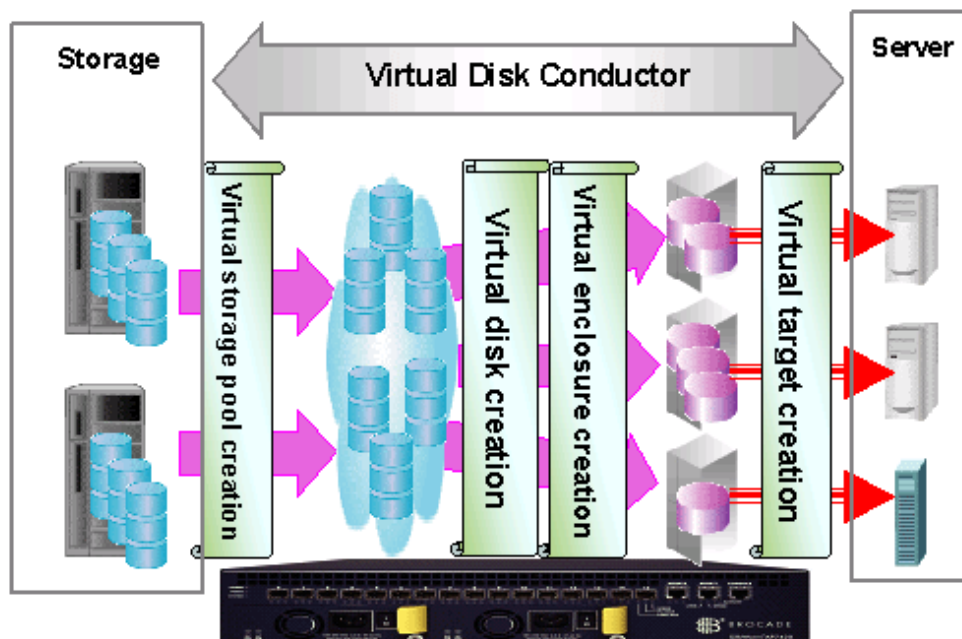
## Chapter 2 Operation Design

This chapter describes the operation design for Virtual Storage Conductor.

### 2.1 Resources for Configuring Virtual Disks

This section describes the Virtual Storage Conductor resources required to create and use a virtual disk.

Figure 2.1 Relationship between virtual disk resources



#### 2.1.1 Virtual storage pool

The virtual storage pool serves as a container in which required resources (physical disks) for creating a virtual disk are collected. Creating a virtual storage pool enables a clear separation between physical disks for the virtual world and those for conventional operation in the real world.

The virtual storage pool is one of the most important components of virtual storage operation.

Virtual Storage Conductor (VSC) determines the appropriate range of control regarding the virtual storage pool for each virtualization switch. Therefore, when creating a virtual storage pool, it is necessary to clearly define the relationship between the virtual storage pool and its controlling virtualization switch.

The virtualization switch for controlling a virtual storage pool must have a redundant configuration.

Figure 2.2 Range of virtual storage pool control



A virtual disk is created from physical disks that are registered in the virtual storage pool. Thus, we recommend that you create a virtual storage pool that is appropriate for each arbitrary purpose. Examples of such purpose types are as follows:

- For each storage
- For each RAID group
- For each transaction group

You can delete any virtual storage pool that will no longer be used. However, you cannot delete a virtual storage pool that has a physical disk in it. You must release all registered physical disks from the virtual storage pool before deleting the virtual storage pool itself.

## 2.1.2 Physical disk

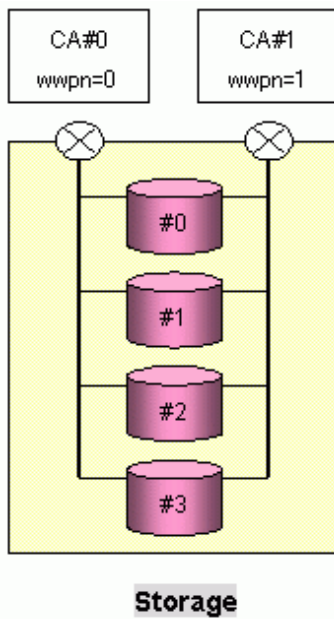
The physical disk is a logical unit (LUN) that is assigned by storage unit. LUN is a storage medium that actually stores data and is one of the components of a virtual disk.

The physical disk must be registered in an arbitrary virtual storage pool.

Before registering a physical disk with the virtual storage pool, check whether any transaction server is using the physical disk for any other purpose. Once a physical disk is registered, it remains available only as a virtual disk.

If a physical disk is accessible from multiple channel adapters (CA), WWPNs assigned to all accessible CAs along with a logical unit number (host LUN) are required for registering it.

Figure 2.3 Registration information of the physical disk



For the storage shown above, two CAs can access each physical disk. Thus, when you register one physical disk, you will need two items of CA (WWPN) information and the corresponding host LUN information.

You can release any physical disk that will no longer be used from the virtual storage pool. However, if a physical disk is a component of a virtual disk, you cannot release that physical disk from the virtual storage pool. A physical disk released from the virtual storage pool can be connected to the transaction server and can be used as before.

## 2.1.3 Virtual enclosure

Physical disks, that do not configure a virtual disk, are enclosed by a physical enclosure such as the ETERNUS6000 or ETERNUS3000. As same as those disks, setting up a framework to integrate virtual disks into logical groups enables easier virtual disk operation.

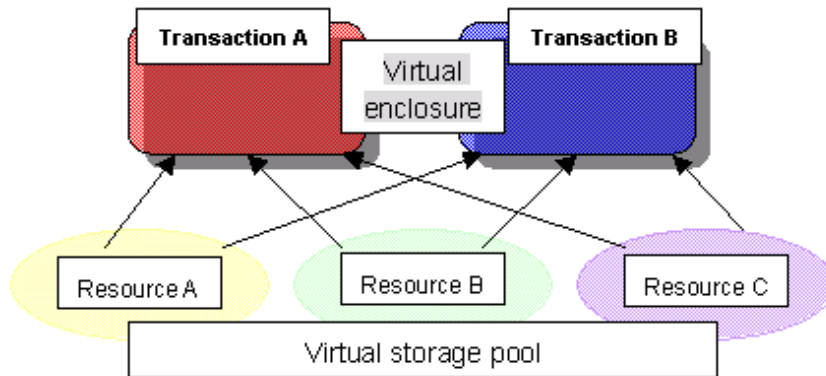
The virtual enclosure is a logical framework to integrate virtual disks.

You can register virtual disks created from different virtual storage pools to the virtual enclosure.

You can also create multiple virtual enclosures according to the operational purposes of each system.

While the virtual storage pool is grouped by resource (physical disks), the virtual enclosure is grouped by transaction.

Figure 2.4 Concept of virtual enclosure classification



You will need information about the virtualization switch for controlling the virtual disks to be enclosed when creating the virtual enclosure. If you need a multi-path configuration for the virtual disks, specify as many virtualization switches as required by the paths.

You can delete any virtual enclosure that will no longer be used. However, you cannot delete the virtual enclosure while it has a registered virtual target. You must delete all virtual disks and virtual targets before deleting the virtual enclosure.

## 2.1.4 Virtual target

You should use WWPN to connect the storage and transaction server via the FC interface. Since the virtual disk may consist of multiple storages, you cannot use the WWPN that is actually retained by the CA.

Therefore, you can use the corresponding virtual target for such a WWPN to connect the virtual disk and transaction server under the VSC system.

The virtual target is information independent of the WWPN in storage. Therefore, it does not affect the transaction server once it is connected to the transaction server with a virtual target, even when new storage is added. As long as you do not delete the virtual target, you can use the same virtual target to continue virtual disk operation.

You can use the virtual target attached to a virtual enclosure as an access path to the virtual disk.

Although the virtual target is actually a WWPN, you need not specify a complex number for the WWPN when creating a virtual target. You may specify any name that is easy to manage. VSC automatically generates and manages FC protocol-based WWPNs with the virtual target names.

The WWPN assigned from VSC to the virtual target name becomes necessary information when the transaction server connects to a virtual disk.

### Information

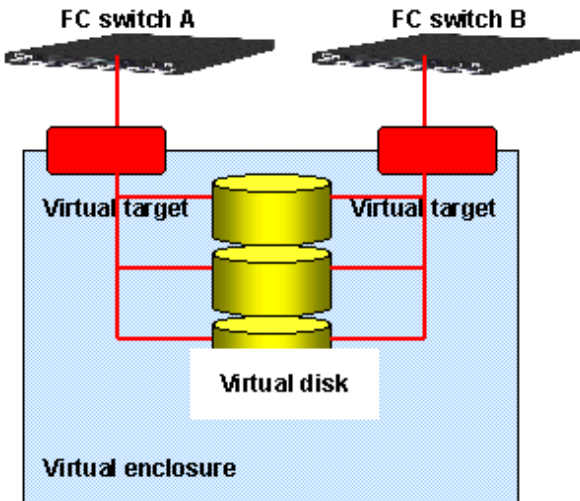
When creating virtual targets, you need the names of the virtual enclosure (for registering virtual targets) and the virtualization switch for connecting the virtual targets and access path. The name of the virtualization switch that you specify at this time will be the same as that already registered to the virtual enclosure.

### Note

Since a virtual target is not allowed to have multiple access paths, the virtualization switch specified can only have one name. Note that when you use a multi-path configuration for the virtual disk, you need multiple virtual targets as well.



Figure 2.5 Relationship between virtual targets and resources



You can delete any virtual target that will no longer be used. However, you cannot delete the virtual target that has an attached virtual disk. Therefore, you must remove all virtual disks from the virtual target before deleting the virtual target.

I\_T\_L nexus (path to LUN) with respect to one virtual target being 256, if multiple hosts are allocated to one virtual target, the other host could fail in login due to insufficient I\_T\_L nexus. When using multiple hosts, it is recommended to allocate a virtual target to each host.

## 2.1.5 Virtual disk

The virtual disk is an independent logical volume containing physical attributes and information about physical disks. In other words, users can always create a disk with any desired capacity to be assigned to the transaction server without having to consider the capacity and device type of the physical disks.

You do not need any specific transaction for connecting a virtual disk to the transaction server. You can connect a physical disk and the transaction server using the same procedure as for connecting a virtual disk and the transaction server.

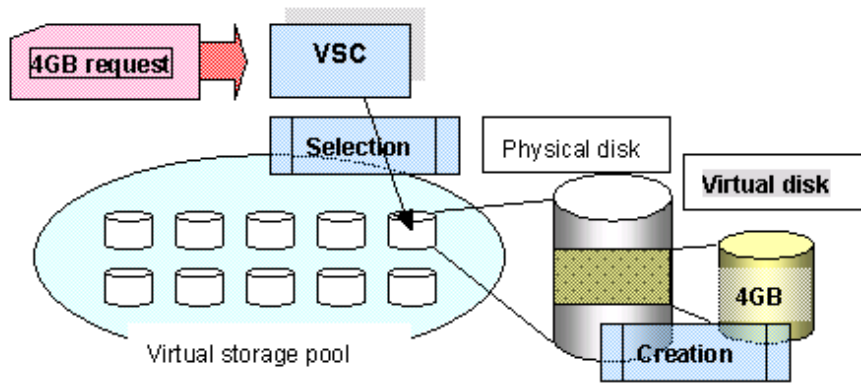
You can create a virtual disk from the physical disks registered in one virtual storage pool, which is the same as creating a physical disk (logical unit) from storage. However, you cannot create a virtual disk across multiple virtual storage pools.

There are two methods of creating a virtual disk: allowing VSC to automatically select the physical disk that constitutes a virtual disk or having the user manually select the physical disk.

### Automatic selection of the physical disk

When you choose to allow VSC to automatically select the physical disk, specify the virtual storage pool name and virtual disk capacity. Then, VSC automatically selects the appropriate physical disk for the required capacity from the specified virtual storage pool to create a virtual disk.

Figure 2.6 VSC-Automatic selection of physical disks

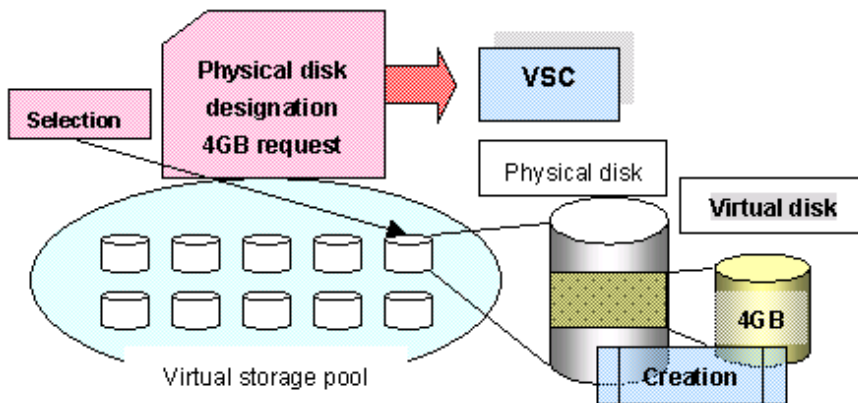


### Designation of the physical disk

When the user creates the physical disk, specify the virtual storage pool name, physical disk name, and virtual disk capacity.

Then, VSC checks whether the target physical disk exists in the specified virtual storage pool and whether there is sufficient space for the required capacity before creating a virtual disk. Since the user can only specify one physical disk, a virtual disk whose capacity exceeds that of the physical disk cannot be created.

Figure 2.7 Designation of the physical disk



### Information

When assigning the physical area for the virtual disk from the physical disk, consider and create a physically contiguous area as one extension for the virtual disk. If VSC cannot assign a contiguous area for the requested capacity, divide the physical area into multiple extents to create a virtual disk.

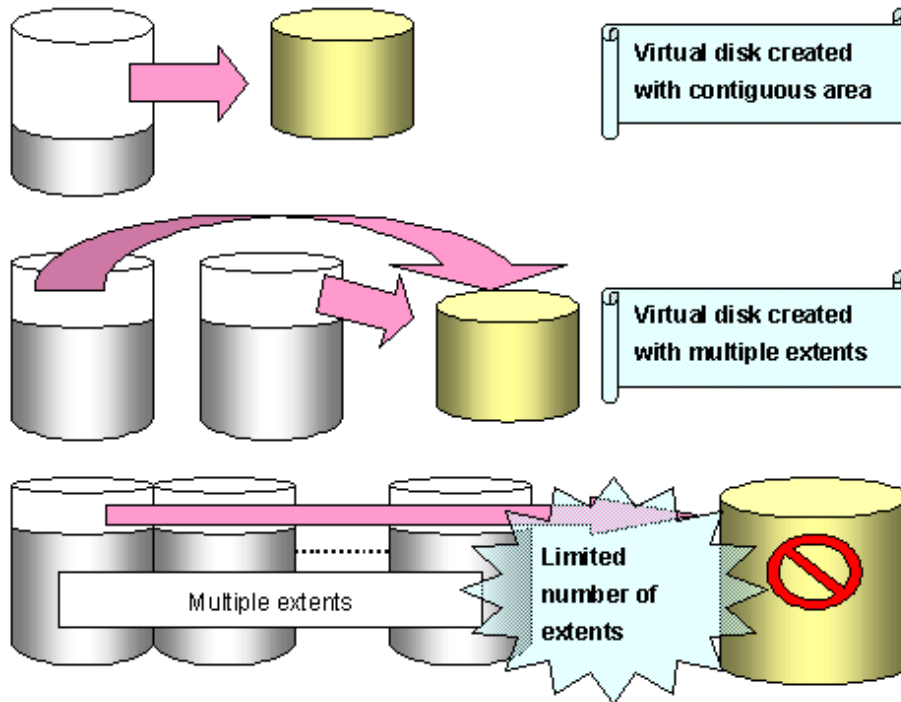
You can delete any virtual disk that will no longer be used and save the physical space used by the virtual disk as free space for a new virtual disk.

VSC integrates and manages any unused space before or after the space to be freed as one extent.

### Note

Note that there is a maximum limited number of extents that VSC can control for one virtual disk. If the physical area is fragmented by repeatedly creating and deleting virtual disks with various capacities during long-term system operation, creating a virtual disk with a required capacity may not be possible even when overall free space in the virtual storage pool is sufficient. In such case, register a new physical disk in the virtual storage pool in a way that the free space will not be fragmented.

Figure 2.8 Permissible extents of a virtual disk



Any error that occurs during virtual disk access is reported to the transaction server as a common I/O error. Thus, no special action is required for virtual disk access.

You can create a virtual disk across multiple physical disks and storages. However, since the reliability of such a virtual disk depends on that of said physical devices, we recommend that you use physical disks of the same device type or RAID group.

The encryption attribute of the virtual disk created with both encrypted and non-encrypted physical disks is non-encryption.

## 2.2 Designing Storage

This section describes how to design storage when operating Virtual Storage Conductor.

### 2.2.1 Guidelines for physical disk capacities

In Virtual Storage Conductor, the unit that divides one RAID group into arbitrary capacities is called a "physical disk". When the system does not use Virtual Storage Conductor, the physical disk becomes the corresponding logical unit (LUN) recognized by the transaction server.

Administrators can freely set the physical disk capacity when using Virtual Storage Conductor. However, we recommend that you determine the physical disk capacity according to the following guidelines:

- For a relatively large-capacity volume (virtual disk)

When the transaction server uses relatively large-capacity volumes (virtual disks), be sure to increase the physical disk capacity (such as using one physical disk as one RAID group) as well.

Although it is possible to create a large-capacity virtual disk by combining multiple physical disks, increased physical disk capacity reduces the number of physical disks and enables easier management.

- For a relatively small-capacity volume (virtual disk)

When the transaction server uses many small-capacity volumes (virtual disks), be sure to decrease the physical disk capacity as well.

Although it is possible to create a small-capacity virtual disk from part of one physical disk, decreased physical disk capacity results in simpler correspondence between the virtual disk and physical disk, and enables easier management.

## 2.2.2 RAID group of physical disks

---

When physical disks are configured as the virtual disk, RAID group attributes assigned to the physical disks remain valid. In other words, the related attributes regarding virtual disk reliability and performance largely depend on the RAID group. Thus, it is necessary to plan how to use the virtual disk in advance.

Setting up a virtual storage pool for each RAID group makes it easier to recognize virtual disks when creating the disks for each purpose of use.

Guidelines for the RAID group for each purpose of virtual disk use are as follows:

- Virtual disk for files or databases directly used by the transaction server  
RAID1+0 (with value placed on reliability and performance)
- Virtual disk for log files used indirectly  
RAID1 (with value placed on reliability)
- Virtual disk for backup or temporary use  
RAID5 (with value placed on access load balancing)

### 2.2.2.1 Notes on assigned CM

When storage has an assigned a controller module (CM), you must determine the CM as the access path for each RAID group in order to balance the controller load. You can also consider the access path from the transaction server to determine the assigned CM. However, the copy function of the virtualization switch performs data copy processing between the connected ports of the switch and storage. Thus, if the CM in the storage connected to the virtualization switch does not assigned, the access performance of the transaction server via the assigned CM may be adversely affected.

## 2.2.3 Physical disks you want to virtualize

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It is necessary to set zoning between the virtualization switch and storage for physical disks you want to have virtualized.

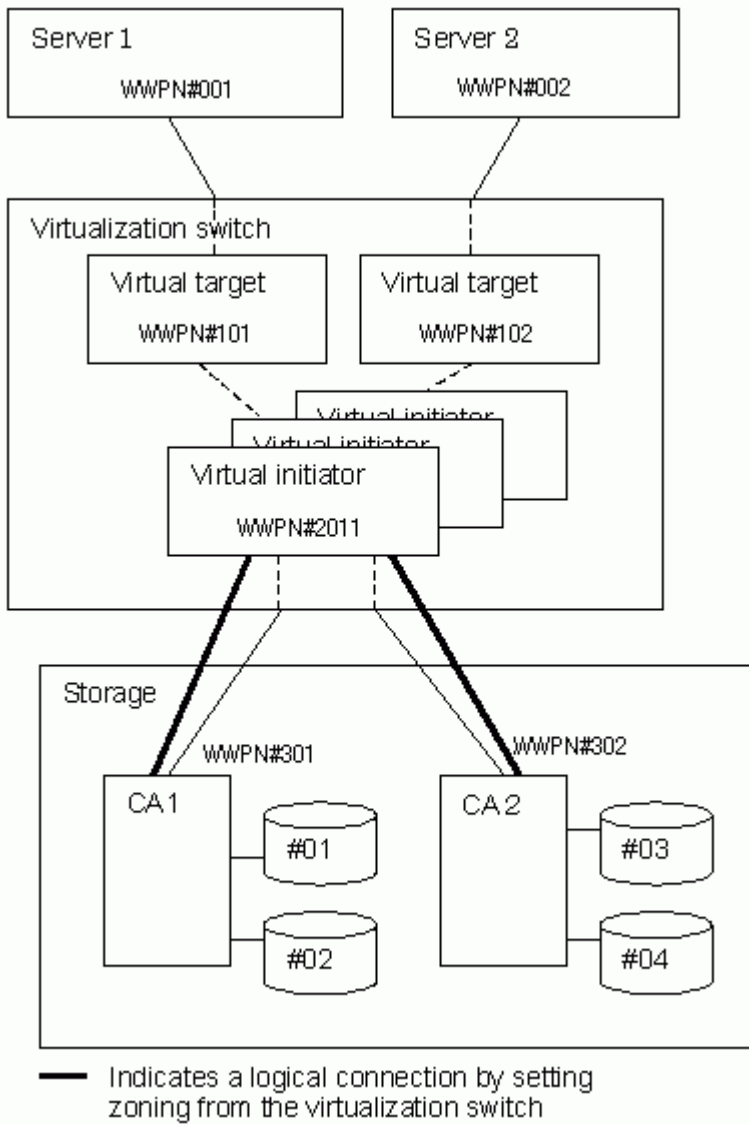
### Setting zoning between the virtualization switch and storage

It is necessary to protect physical disks you want to have virtualized by making them only accessible from Virtual Storage Conductor, so that the transaction server cannot directly access the disks. Thus, you should set zoning between the virtualization switch and storage (channel adapter).

Each virtualization switch has multiple mechanisms (called virtual initiators) used to exchange data with the storage. The virtual initiator logically corresponds to the host bus adapter (HBA) of the transaction server with WWPN attached. You may use the WWPN of the virtual initiator to set zoning between the virtualization switch and storage.

- To have all physical disks virtualized under one channel adapter (CA):

Use the virtualization switch function to set zoning between the virtualization switch and the channel adapter (CA) concerned.

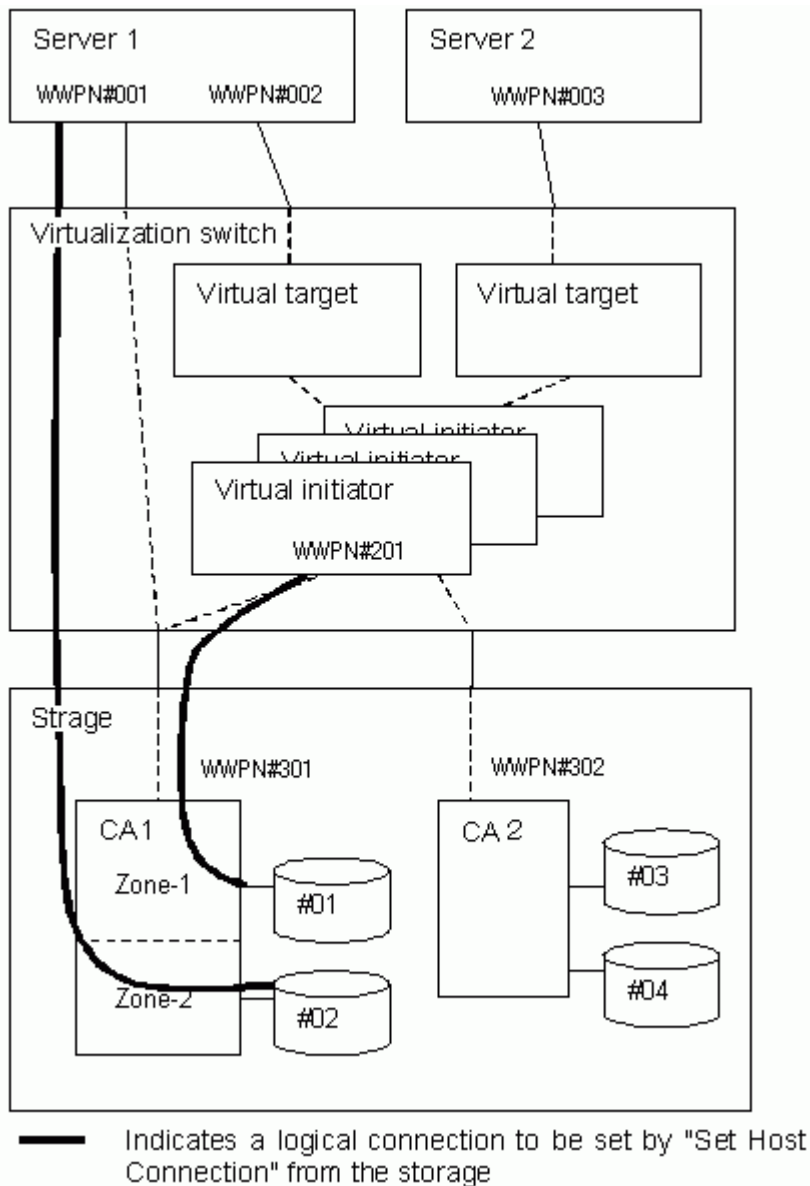


- To virtualize certain physical disks but not others under one channel adapter (CA):

Consider the virtualization switch as one server for the sake of convenience.

Classify the physical disks into groups for virtualizing and assigning to each transaction server. Then, assign each classified group of physical disks to each transaction server using "Set Host Connection" of the storage.

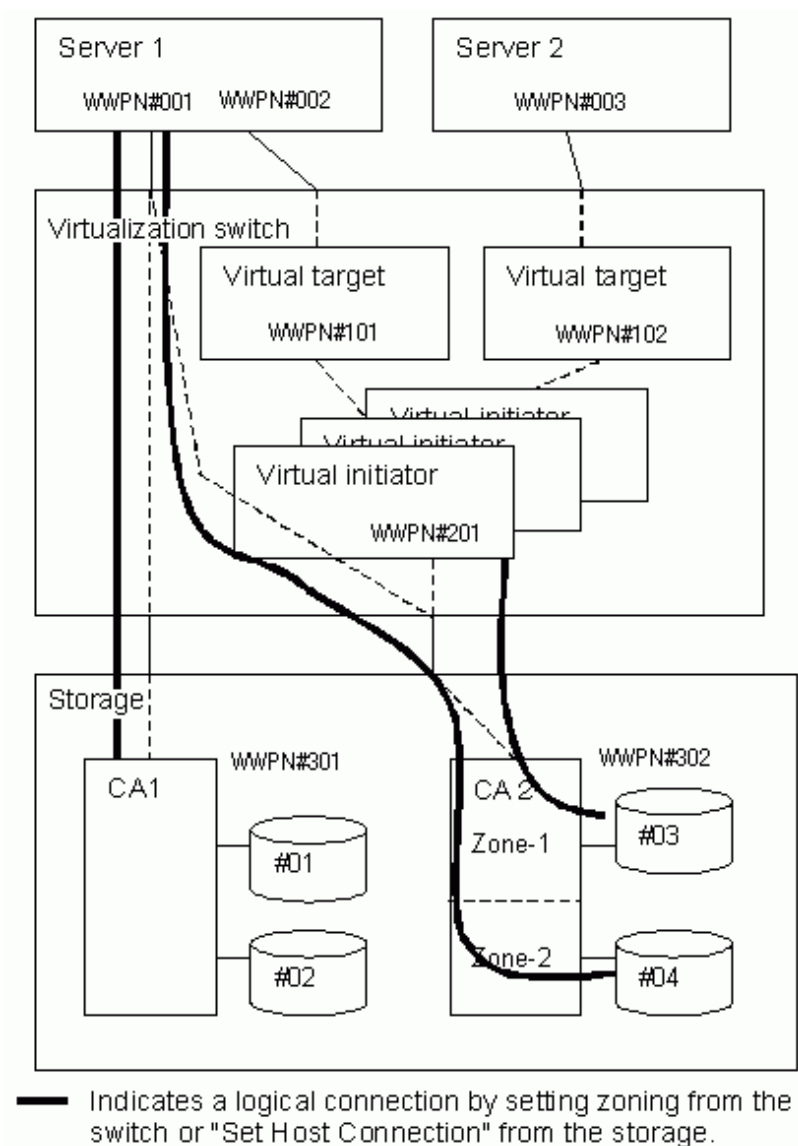
Since it is not possible to set all virtual initiators in "Set Host Connection" of storage in the ETERNUS3000 M50 and GR710, set the physical disks to be virtualized and those not to be virtualized separately under each channel adapter (CA).



## 2.2.4 Physical disks you do not want to virtualize

When you do not want to have the physical disks under one channel adapter (CA) virtualized, assign the disks to the normal transaction servers.

When there are physical disks you want to virtualize and some that you don't want to virtualize less than one channel adapter (CA), perform "Set Host Connection" according to the procedure shown above.



## 2.2.5 Physical disks that you cannot virtualize

You cannot virtualize the types of physical disks described below.

Thus, set these disks according to the same procedure as previously described in "Physical disks you do not want to virtualize".

- Storage destination disk for the composition data file of Virtual Storage Conductor

The admin server holds composition data for Virtual Storage Conductor. Should the composition data for virtual storage in a virtualization switch be lost due to replacement or virtualization switch failure, the composition data of virtual storage in the virtualization switch is restored from the composition data on the admin server.

Note that should the admin server become disabled due to failure, for example, the composition data on the server will also be lost. Thus, Fujitsu recommends that you save the composition data in storage other than the admin server. Keep in mind that the composition data cannot be stored on the disk you want to virtualize.

- System disk for the transaction server

You cannot virtualize the system disk for the transaction server.

- Logical unit pool for direct backup

You cannot use a virtual disk as the logical unit pool for direct backup of the ETERNUS SP series.

## 2.3 Designing Virtualization Switches

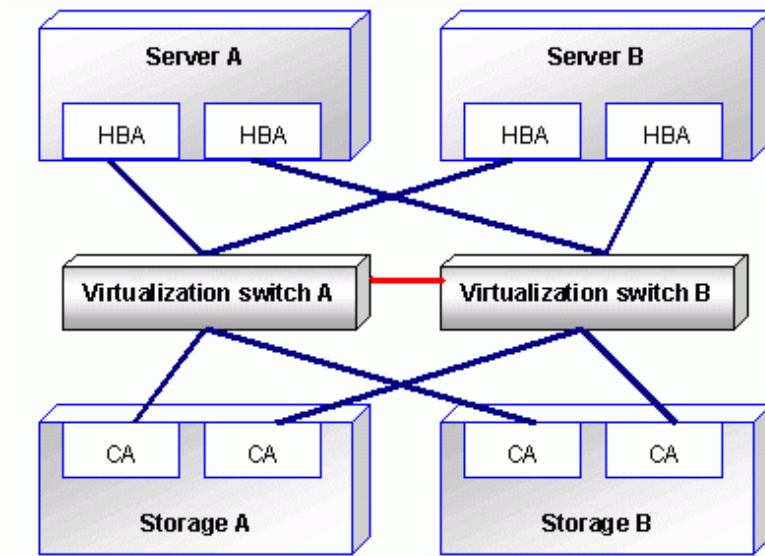
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This section describes the installation configuration of virtualization switches and how to design these switches when using virtual disks.

### 2.3.1 Configuration of connections to storages and servers

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You should design the virtualization switch for connecting storages and transaction servers with a redundant configuration to enable more reliable access paths. Note that a cascade connection must be used for virtualization switches with a redundant configuration.



For details of the cascade connection for virtualization switches, refer to the "ETERNUS VS900 Model 200 System Build Procedure".

### 2.3.2 Multi-path configuration of virtual disks

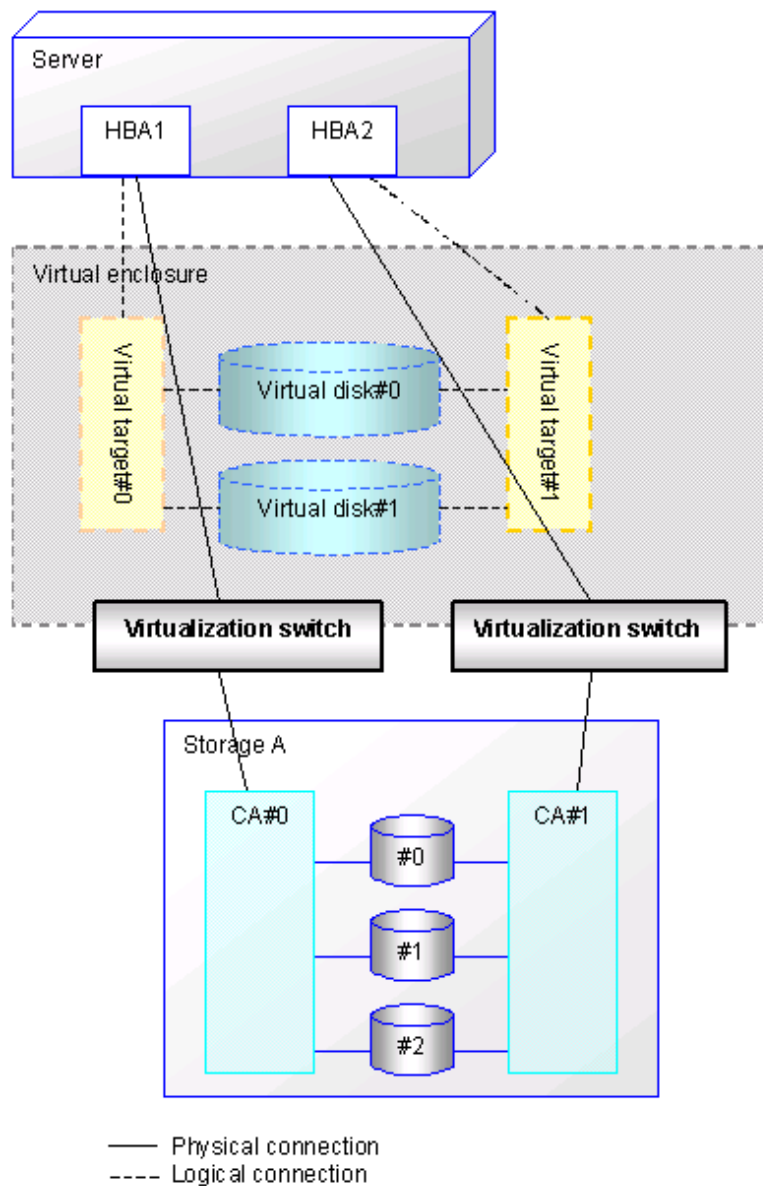
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Accessing a virtual disk enables physical disk access via the physical connection route.

Should such physical connection routes fail, access to the physical disk is disabled and results in a virtual disk access error.

Thus, you may add a physical connection route to continue access to the physical disk by using another normal connection route, even if one connection route fails.





## 2.4 Designing Physical Resources

Virtualization switches and storages connected to the virtualization switches are managed as physical resources of ESC.

## Chapter 3 Building an Environment

This chapter describes how to build an environment required for starting virtual storage operation.

### 3.1 [Solaris OS/Linux OS]Setting Up the Operation Admin Server

This section describes how to build a cluster environment, modify system configuration files for nodes, and create a configuration data file.

#### 3.1.1 Building a cluster environment for the admin server

When you want to incorporate the admin server into a cluster configuration, build a cluster environment as described in "Appendix A High-availability admin servers" in the ETERNUS SF Storage Cruiser Installation Guide.

This step is not required, however, when the admin server is in a single-node configuration. Follow the procedure described in "3.1.2 Environmental settings for each node" below.

#### 3.1.2 Environmental settings for each node

This section describes the environmental settings required for each admin server.

##### 3.1.2.1 Modifying system configuration files

Communication between an admin server and a virtualization switch is performed using the Transmission Control Protocol (TCP) of Internet Protocol (IP). Therefore, you must modify the following system configuration files:

- /etc/hosts
- /etc/services

##### **/etc/hosts file**

Register the host name and IP address of a virtualization switch in the /etc/hosts file.

A virtualization switch must have a host name beginning with "vsce" as the first four characters. This character string should be followed by a number from 1 to 128 in ascending order.

For a virtualization switch in a redundant LAN configuration, enter a representative IP address specified for the virtualization switch.



##### **Example**

##### **Example of coding in the /etc/hosts file**

The following shows an example of coding in the /etc/hosts file for virtualization switches with IP addresses 192.168.1.2 and 192.168.1.3.

```
192.168.1.2 vsce1 # VS900 Model 200 No.1
192.168.1.3 vsce2 # VS900 Model 200 No.2
```

## /etc/services file

In the /etc/services file, register a service name and a port number.

Register the following two services:

Service name	Port number	protocol
ssvscme	7420	tcp udp

The service name cannot be changed.

Port number 7420 can be changed if already used for another service. When doing so, change the port number specified in "VSCE\_PORT" in the configuration data file and that for the virtualization switch. Specify a unique port number in the entire system of servers and peripheral devices.



### Example

#### Example of coding in the /etc/services file

The following shows an example of coding in the /etc/services file.

```
ssvscme      7420/tcp      # VSC Manager - VSC Engine(TCP)
ssvscme      7420/udp      # VSC Manager - VSC Engine(UDP)
```

## 3.1.2.2 Creating a configuration data file

Note that "/etc/opt/FJSVssmgr/current/FJSVssvsc.ini" is the configuration data file.

Also note that "/opt/FJSVssmgr/lib/sample/vsc/FJSVssvsc.ini.sample" contains samples of configuration data files.

```
#
# All Rights Reserved, Copyright (c) Fujitsu Ltd. 2004
#
# Storage Software Virtual Storage Conductor
#
# FJSVssvsc.ini: configuration file
#
#####

LOG_LEVEL=4

COPY_HISTORY_ROTATE_NUMBER=2
```

If no configuration data file is created, the default values are assumed specified for all settings in the system.

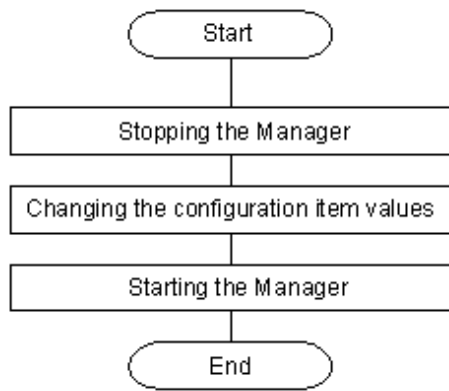


### Note

#### Modifying a configuration data file

A configuration data file cannot be modified while the Manager is running. Be sure to stop the Manager before modifying the configuration data file.

You can modify a configuration data file as follows:



## Coding format

Coding of a configuration data file is shown as follows:

- Enter one item per line. You cannot enter one item extending beyond one line or place more than one item on a line.
- A line that begins with "#" in the first column is handled as a comment line.
- Do not insert any character (such as a blank) between an item name and "=", or between "=" and a setting value.

## Configuration items

The following table indicates the configuration item in a configuration data file.

Table 3.1 List of configuration items

Item	Item name	Outline of setting this item	Omission of item
LOG_LEVEL	Log level	Specifies the output level of a message.	Possible
COPY_HISTORY_ROTATE_NUMBER	Number of generations in the copy history	Specifies the number of generations retained in the copy history log file.	Possible

### LOG\_LEVEL

Specify the error type of messages to be output.

Messages are output via syslogd(1M). Therefore, the settings in /etc/syslog.conf determine whether messages are actually output and to what file messages are output. For information on how to make settings in /etc/syslog.conf, see syslog.conf(4).

If this item is omitted, messages with error type "ERR" are output.

Format

```
LOG_LEVEL={1 | 2 | 3 | 4}
```

Description of operands

- 1: Outputs messages for error type "ERR".
- 2: Outputs messages for error types "ERR" and "WARNING".
- 3: Outputs messages for error types "ERR", "WARNING", "NOTICE" and "INFO".
- 4: Outputs messages for error types "ERR", "WARNING", "NOTICE", "INFO" and "DEBUG".

## COPY\_HISTORY\_ROTATE\_NUMBER

Specifies the number of generations retained in the copy history log file.

The default number of generations is 2.

Format

```
COPY_HISTORY_ROTATE_NUMBER={2|3|4|5}
```

Description of operands

Specify a value ranging from 2 to 5.

### 3.1.2.3 Creating a commit script

When you perform an operation on VSC Manager to modify the configuration information of virtual storage, VSC Manager executes a program or script to create a backup or copy of the virtual storage configuration information. This program or script is called a "Commit Script".

If the virtual storage configuration information is lost due for some reason, no virtual disk can be supplied to a transaction server. Even in case of such unexpected trouble, you must restore the virtual storage configuration information to resume operation. A commit script is intended to create a backup or copy of the virtual storage configuration information in case of any unexpected trouble.

Create a commit script in `"/etc/opt/FJSVssmgr/current/VscCommitScript"` and give it an execution right.

Note that `"/opt/FJSVssmgr/lib/sample/vsc/VscCommitScript.sample"` contains samples of commit scripts.

#### Commit script sample

```
#!/bin/sh
#
# All Rights Reserved, Copyright (c) Fujitsu Ltd. 2004
#
# Storage Software Virtual Storage Conductor
#
# CommitScript Sample
#
#####
CURRENT_DIR=/var/opt/FJSVssmgr/current
BKUP_DIR=/var/opt/FJSVssmgr/current/vsclog/VSCCOMPOSE_BAK
COMPOSE_DIR=vsccompose

if [ ! -d $BKUP_DIR ]; then
    mkdir -p $BKUP_DIR
fi
if [ $? -eq 0 ]; then
    cd $CURRENT_DIR
    tar cf $BKUP_DIR/compose.BAK.tar ./COMPOSE_DIR
    if [ $? -eq 0 ]; then
        echo "Backup Complete."
        exit 0
    fi
fi
echo "Backup failed."
exit 1
```

#### Notes

- The configuration information of VSC Manager is stored in the `"/var/opt/FJSVssmgr/current/vsccompose/"` directory. Backup all directories and files in this directory. When you restore the configuration information, restore directories and files in the same configuration as when backed up.

- Note that a commit script may cause a delay in the processing time of VSC Manager depending on its coding, because the script always starts up whenever the resource status of virtual storage changes.
- Do not change the coding in "/opt/FJSSVssmgr/lib/sample/vsc/VscCommitScript.sample".

### Precautions on use

- If you do not make a commit script, message "ssvsc0906" is output and no commit script is executed. Therefore, no backup or copy of the virtual storage configuration information is created. Moreover, the virtual storage configuration information cannot be restored if lost for some reason.
- If a commit script terminates abnormally for some reason, message "ssvsc0905", "ssvsc0907", or "ssvsc0908" is output. Take action as instructed by these messages and re-execute the commit script.

## 3.2 [Windows]Setting Up the Operation Admin Server

---

This section describes how to build a cluster environment, modify system configuration files for nodes, and create a configuration data file.

### 3.2.1 Building a cluster environment for the admin server

---

When you want to incorporate the admin server into a cluster configuration, build a cluster environment as described in "Appendix A High-availability admin servers" in the ETERNUS SF Storage Cruiser Installation Guide.

This step is not required, however, when the admin server is in a single-node configuration. Follow the procedure described in "3.2.2 Environmental settings for each node" below.

### 3.2.2 Environmental settings for each node

---

This section describes the environmental settings required for each admin server.

#### 3.2.2.1 Modifying system configuration files

Communication between an admin server and a virtualization switch is performed using the Transmission Control Protocol (TCP) of Internet Protocol (IP). Therefore, you must modify the following system configuration files:

- %SystemRoot%\system32\drivers\etc\hosts
- %SystemRoot%\system32\drivers\etc\services

#### %SystemRoot%\system32\drivers\etc\hosts file

Register the host name and IP address of a virtualization switch in the %SystemRoot%\system32\drivers\etc\hosts file.

A virtualization switch must have a host name beginning with "vsce" as the first four characters. This character string should be followed by a number from 1 to 128 in ascending order.

For a virtualization switch in a redundant LAN configuration, enter a representative IP address specified for the virtualization switch.



#### Example

Example of coding in the %SystemRoot%\system32\drivers\etc\hosts file

The following shows an example of coding in the %SystemRoot%\system32\drivers\etc\hosts file for virtualization switches with IP addresses 192.168.1.2 and 192.168.1.3.

```
192.168.1.2 vsce1 # VS900 Model 200 No.1
192.168.1.3 vsce2 # VS900 Model 200 No.2
```

### %SystemRoot%\system32\drivers\etc\services file

In the %SystemRoot%\system32\drivers\etc\services file, register a service name and a port number.

Register the following two services:

Service name	Port number	protocol
ssvscme	7420	tcp udp

The service name cannot be changed.

Port number 7420 can be changed if already used for another service. When doing so, change the port number specified in "VSCE\_PORT" in the configuration data file and that for the virtualization switch. Specify a unique port number in the entire system of servers and peripheral devices.

### Example

#### Example of coding in the %SystemRoot%\system32\drivers\etc\services file

The following shows an example of coding in the %SystemRoot%\system32\drivers\etc\services file.

```
ssvscme 7420/tcp # VSC Manager - VSC Engine(TCP)
ssvscme 7420/udp # VSC Manager - VSC Engine(UDP)
```

## 3.2.2.2 Creating a configuration data file

Note that "\$ENV\_DIR\Manager\opt\FJSSmgr\current\FJSS\ssvsc.ini" is the configuration data file. (\$ENV\_DIR means "Environment Directory" specified at the Manager installation.)

Also note that "\$ENV\_DIR\Manager\opt\FJSSmgr\lib\sample\vsc\FJSS\ssvsc.ini.sample" contains samples of configuration data files.

```
#
# All Rights Reserved, Copyright (c) Fujitsu Ltd. 2004
#
# Storage Software Virtual Storage Conductor
#
# FJSS\ssvsc.ini: configuration file
#
#####

LOG_LEVEL=4

COPY_HISTORY_ROTATE_NUMBER=2
```

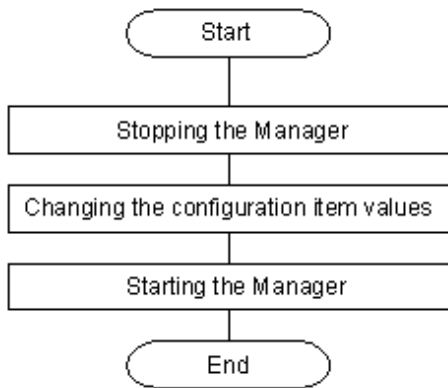
If no configuration data file is created, the default values are assumed specified for all settings in the system.

### Note

#### Modifying a configuration data file

A configuration data file cannot be modified while the Manager is running. Be sure to stop the Manager before modifying the configuration data file.

You can modify a configuration data file as follows:



### Coding format

Coding of a configuration data file is shown as follows:

- Enter one item per line. You cannot enter one item extending beyond one line or place more than one item on a line.
- A line that begins with "#" in the first column is handled as a comment line.
- Do not insert any character (such as a blank) between an item name and "=", or between "=" and a setting value.

### Configuration items

The following table indicates the configuration item in a configuration data file.

Table 3.2 List of configuration items

Item	Item name	Outline of setting this item	Omission of item
LOG_LEVEL	Log level	Specifies the output level of a message.	Possible
COPY_HISTORY_ROTATE_NUMBER	Number of generations in the copy history	Specifies the number of generations retained in the copy history log file.	Possible

#### LOG\_LEVEL

Specify the error type of messages to be output.

Messages are output via syslogd(1M). Therefore, the settings in eventlog determine whether messages are actually output and to what file messages are output. For information on how to make settings in eventlog, see syslog.conf(4).

If this item is omitted, messages with error type "ERR" are output.

Format

LOG\_LEVEL={1 | 2 | 3 | 4}

Description of operands

- 1: Outputs messages for error type "ERR".
- 2: Outputs messages for error types "ERR" and "WARNING".
- 3: Outputs messages for error types "ERR", "WARNING", "NOTICE" and "INFO".



4: Outputs messages for error types "ERR", "WARNING", "NOTICE", "INFO" and "DEBUG".

### COPY\_HISTORY\_ROTATE\_NUMBER

Specifies the number of generations retained in the copy history log file.

The default number of generations is 2.

Format

COPY\_HISTORY\_ROTATE\_NUMBER={2|3|4|5}

Description of operands

Specify a value ranging from 2 to 5.

## 3.2.2.3 Creating a commit script

When you perform an operation on VSC Manager to modify the configuration information of virtual storage, VSC Manager executes a program or script to create a backup or copy of the virtual storage configuration information. This program or script is called a "Commit Script".

If the virtual storage configuration information is lost due for some reason, no virtual disk can be supplied to a transaction server. Even in case of such unexpected trouble, you must restore the virtual storage configuration information to resume operation. A commit script is intended to create a backup or copy of the virtual storage configuration information in case of any unexpected trouble.

Create a commit script in "\$ENV\_DIR¥Manager¥etc¥opt¥FJSSsmgr¥current¥VscCommitScript.bat" and give it an execution right.

Note that "\$ENV\_DIR¥Manager¥opt¥FJSSsmgr¥lib¥sample¥vsc¥VscCommitScript.bat.sample" contains samples of commit scripts.

### Information

- \$INS\_DIR means "Program Directory" specified at the Manager installation.
- \$ENV\_DIR means "Environment Directory" specified at the Manager installation.
- \$TMP\_DIR means "Work Directory" specified at the Manager installation.

### Commit script sample

```
@echo off
rem #
rem # All Rights Reserved, Copyright (c) Fujitsu Ltd. 2006
rem #
rem # Storage Software Virtual Storage Conductor
rem #
rem # CommitScript Sample
rem #
rem #####
setlocal

set OPTDIR=$INS_DIR¥Manager
set VARDIR=$TMP_DIR¥Manager
set JREDIR=$INS_DIR¥Manager

if not exist "%OPTDIR%" goto fail
if not exist "%VARDIR%" goto fail
if not exist "%JREDIR%" goto fail

set CURRENT_DIR=%VARDIR%¥var¥opt¥FJSSsmgr¥current

set BKUP_DIR=%CURRENT_DIR%¥vsclog¥VSCCOMPOSE_BAK
set COMPOSE_DIR=vsccompose
```

```

cd "%CURRENT_DIR%"

:: backup
if not exist "%BKUP_DIR%" mkdir "%BKUP_DIR%"
if errorlevel 1 goto fail

"%JREDIR%\bin\java.exe" -classpath "%OPTDIR%\opt\FJSVssmgr\java\archive\vscm.jar"
com.fujitsu.storagesoft.sahandle.common.Zip "%BKUP_DIR%\compose.BAK.zip" %COMPOSE_DIR%/*.repository
if errorlevel 1 goto fail

:success
echo "Backup Complete."
exit 0

:fail
echo "Backup failed."
exit 1

```

## Notes

- The configuration information of VSC Manager is stored in the "\$TMP\_DIR\Manager\var\opt\FJSVssmgr\current\vscompose" directory. Backup all directories and files in this directory. When you restore the configuration information, restore directories and files in the same configuration as when backed up.
- Note that a commit script may cause a delay in the processing time of VSC Manager depending on its coding, because the script always starts up whenever the resource status of virtual storage changes.
- Do not change the coding in "\$INS\_DIR\Manager\opt\FJSVssmgr\lib\sample\vsc\VscCommitScript.bat.sample".

## Precautions on use

- If you do not make a commit script, message "ssvsc0906" is output and no commit script is executed. Therefore, no backup or copy of the virtual storage configuration information is created. Moreover, the virtual storage configuration information cannot be restored if lost for some reason.
- If a commit script terminates abnormally for some reason, message "ssvsc0905", "ssvsc0907", or "ssvsc0908" is output. Take action as instructed by these messages and re-execute the commit script.

## 3.3 Setting Up a Virtualization Switch

---

You need not install any software on a virtualization switch because the engine program that controls the virtual storage function on the virtualization switch is already updated at shipment. However, you must setup the information used for communication between admin servers and virtualization switches.

### 3.3.1 Setting the IP address of a virtualization switch

---

Login to a virtualization switch and issue the ipaddrset command to set the IP address of the virtualization switch. The LAN can be placed in a redundant configuration because a virtualization switch has two management ports to set an IP address.

Set an IP address for Management Port 1 when using only one management port.

Set the IP address of Management Port 1 as a representative IP address when using two management ports. A communication request to the virtualization switch is issued to the representative IP address.

You can use the ipaddrshow command to view the IP address specified for each management port of a virtualization switch.

You can view the representative IP address specified for a virtualization switch in the Virtual Storage Window or use the `svipaddrshow` command to view the address.



See

For a detailed explanation of setting the IP address of a virtualization switch and the commands to be used, refer to the "ETERNUS VS900 Model 200 Virtualization Switch User's Manual" and the "ETERNUS VS900 Model 200 Virtualization Switch XPath OS Reference Manual".

### 3.3.2 Setting the management information of a virtualization switch

Set the information required by the admin server to manage a virtualization switch and the information of a remote virtualization switch in a redundant configuration. Use the `vscefieldset` command to set this information.

This section describes the items of information to be set.

- Virtualization switch number

Enter the virtualization switch number of a virtualization switch that is managed by the admin server. This must be a unique number in the admin server's range of management.

The numeric value (1 to 128) entered and prefixed with "vsce" forms the communication host name to be used. For example, enter "1" to establish a communication host name of "vsce1".

- Shared ID of a virtualization switch

Assuming virtualization switches in a redundant configuration as one group, assign an identifier for the entire group.

For example, when placing two virtualization switches in a redundant configuration, set 1 for the local virtualization switch and 2 for the remote virtualization switch.

- IP address of a virtualization switch

This is an IP address for communication with the admin server or between virtualization switches in a redundant configuration. Set a representative IP address for the virtualization switch.

- Number of remote virtualization switches in a redundant configuration

Enter the number of virtualization switches in a redundant configuration minus one, which accounts for the local virtualization switch.

When two virtualization switches are in a redundant configuration, enter 1 because there is only one remote virtualization switch.

- Number of admin servers

Enter the number of admin servers that manage virtualization switches.

However, enter 1 for admin servers in a cluster configuration.

- IP address of an admin server

Set the IP address of an admin server that manages a virtualization switch.

When admin servers are in a cluster configuration, set the take-over IP address.



See

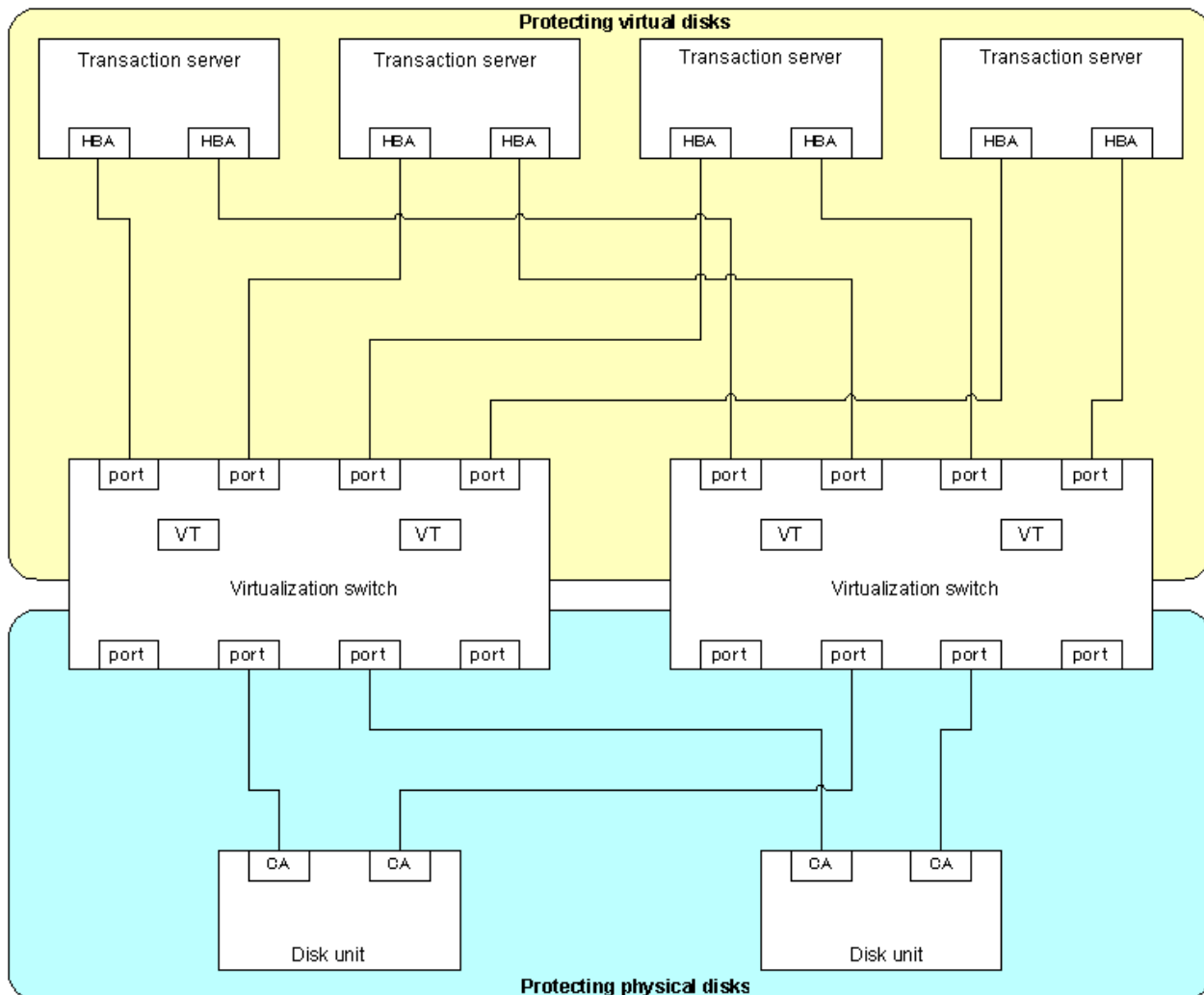
For a detailed explanation of setting the management information of a virtualization switch and the commands to be used, refer to the "ETERNUS VS900 Model 200 System Construction Procedure".

## 3.4 Security Settings

Place the physical disks in the storage device under the control of a virtualization switch to ensure safe virtual storage operations.

In a virtual storage environment, you must make security settings for both the physical and virtual disks.

Figure 3.1 Disk protection in a virtual storage environment



### 3.4.1 Protecting physical disks

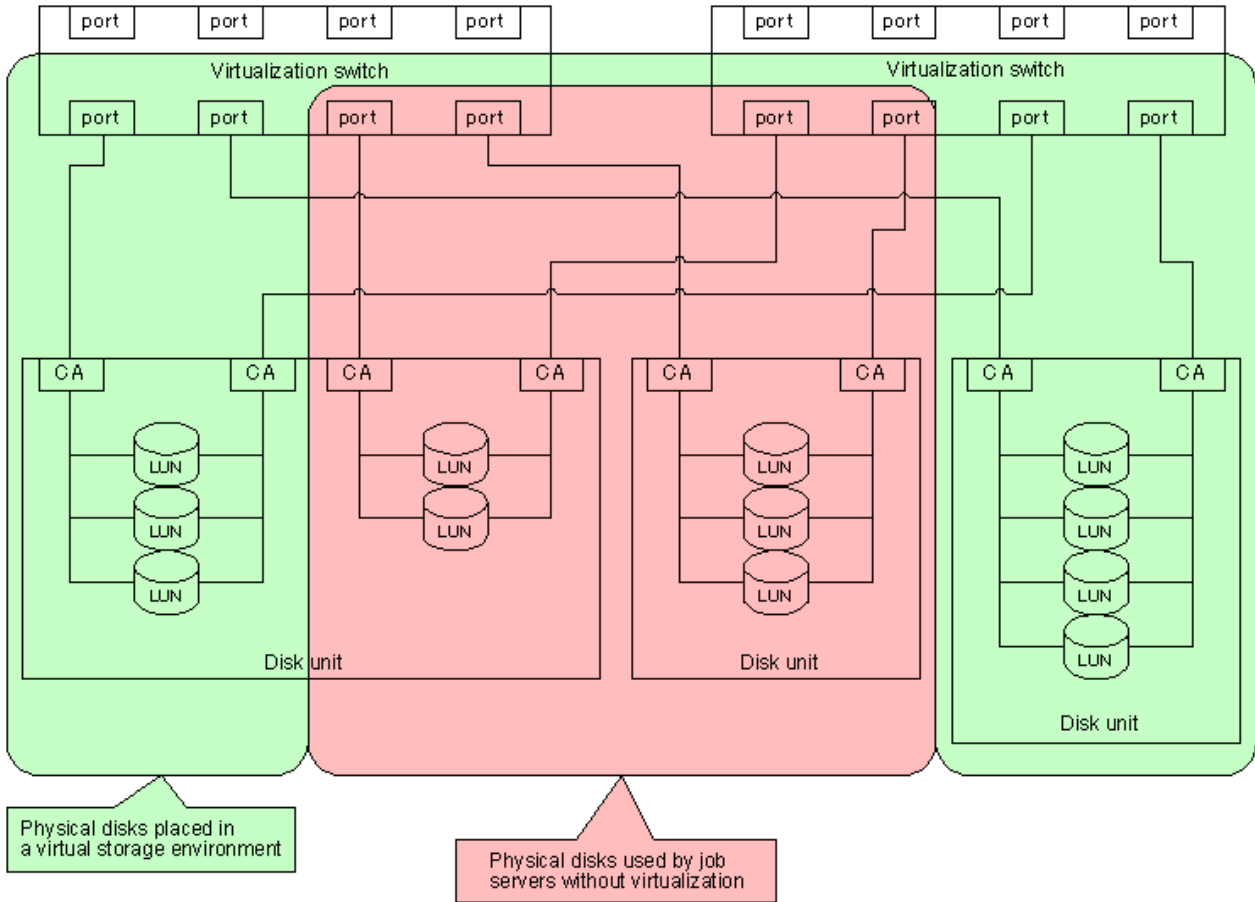
As shown in "Figure 3.2 Protecting physical disks" protect the physical disks that constitute virtual disks against direct access by transaction servers by mistake.

This section describes the protection procedure using ETERNUSmgr of the "ETERNUS3000 model 500". Depending on your model, the screens and operation procedures for ETERNUSmgr or GRmgr may vary. Refer to the "ETERNUSmgr User Guide -Settings/Maintenance-" and "GRmgr User Guide -Settings/Maintenance-" of your model.

 See

- "ETERNUSmgr User Guide -Settings/Maintenance-"
- "GRmgr User Guide -Settings/Maintenance-"

Figure 3.2 Protecting physical disks



You can protect physical disks in the following two ways:

- [3.4.1.1 Using the zoning function of a virtualization switch](#)
- [3.4.1.2 Using the host table settings mode of ETERNUS and GR](#)

### 3.4.1.1 Using the zoning function of a virtualization switch

Use the zoning function of a virtualization switch to protect physical disks in a virtual storage environment against access from transaction servers.

In the zone, register the WWPNs of disk units placed in a virtual storage environment and the virtual initiators of all ports of the virtualization switches. In other words, register virtual initiators for Ports 0 through 15 of the virtualization switches.



See

For information on creating zones, refer to the "ETERNUS VS900 Model 200 Virtualization Switch Zoning User's Guide".

#### Finding the virtual initiator of each port of a virtualization switch

You can find the virtual initiator (World Wide Name) of each port of a virtualization switch by using the Maintenance Menu of the Virtual Storage Window or a command for a virtualization switch.

#### Finding the virtual initiator in the Virtual Storage Window

Select a virtualization switch shown in the window and click the <Detailed Information> button of the "Initiator" table.

### Finding the virtual initiator using a command for a virtualization switch

Login to a virtualization switch and issue the portshow command for all ports to find the WWNs of all ports.

To find the virtual initiator of each port, use the portshow command, and change the second character of the obtained port number to "2".



For more information on the portshow command, refer to the "ETERNUS VS900 Model 200 Virtualization Switch XPath OS Reference Manual."

```
Fabric AP:admin> portshow 0
      port 0 info
      Configuration Current
Name :      port 0
.
.
.
WWN:      20:00:00:05:1e:15:f2:00
.
.
.

Fabric AP:admin> portshow 15
      port 15 info
      Configuration Current
Name :      port 15
.
.
.
WWN:      20:0f:00:05:1e:15:f2:00
.
.
.

Fabric AP:admin>
```

Change the second character to "2."  
Port 0 of the virtualization switch has a WWN of "22:00:00:05:1e:15:f2:00."

Change the second character to "2."  
Port 15 of the virtualization switch has a WWN of "22:0f:00:05:1e:15:f2:00."

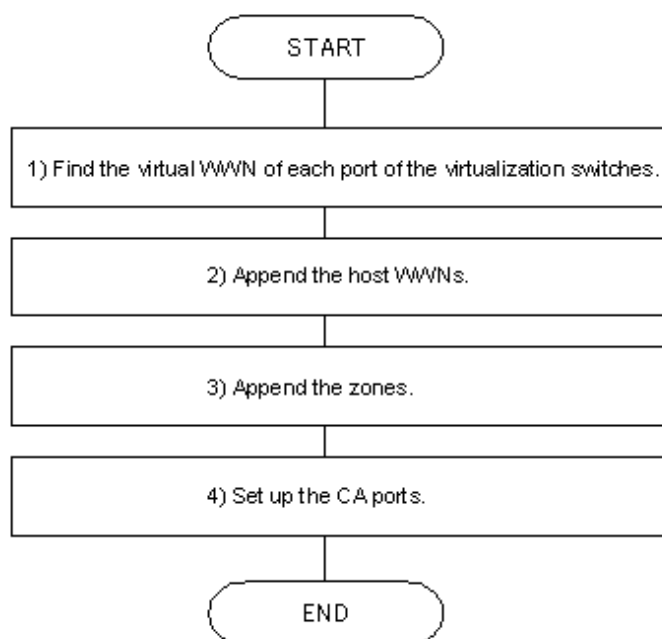
### 3.4.1.2 Using the host table settings mode of ETERNUS and GR

Use "Host Table Settings Mode" of "Host Interface Management" of ETERNUS and GR to protect physical disks in a virtual storage environment against access from transaction servers.



There are some devices (such as ETERNUS3000 model 50 and GR710) for which the WWPNs of servers that can be registered using "Set hosts for which to permit connection" are not sufficient for the ports of virtualization switches. This procedure cannot be used for such devices. In such cases, use the procedure described in "3.4.1.1 Using the zoning function of a virtualization switch".

You can make the setting using "host table settings mode" as follows:



### **Finding the virtual initiator of each port of a virtualization switch**

You can find the virtual initiator (World Wide Name) of each port of a virtualization switch by using the Maintenance Menu of the Virtual Storage Window or a command for a virtualization switch.

#### **Finding the virtual initiator in the Virtual Storage Window**

Select a virtualization switch shown in the window and click the <Detailed Information> button of the "Initiator" table.

#### **Finding the virtual initiator using a command for a virtualization switch**

Login to a virtualization switch and issue the portshow command for all ports to find the WWNs of all ports.

To find the virtual initiator of each port, use the portshow command, and change the second character of the obtained port number to "2".

```

Fabric AP:admin> portshow 0
      port 0 info
      Configuration Current
Name :      port 0
.
.
.
WWN:      20:00:00:05:1e:15:f2:00
.
.
.

Fabric AP:admin> portshow 15
      port 15 info
      Configuration Current
Name :      port 15
.
.
.
WWN:      20:0f:00:05:1e:15:f2:00
.
.
.

Fabric AP:admin>

```

Change the second character to "2."  
Port 0 of the virtualization switch has a WWN of "22:00:00:05:1e:15:f2:00."

Change the second character to "2."  
Port 15 of the virtualization switch has a WWN of "22:0f:00:05:1e:15:f2:00."

### Appending a host world wide name

On ETERNUSmgr, select "Setting RAID/Setting Host Menu" - "Host Interface Management" - "Append/Delete Host WorldWide Name(s)" to open the [Append/Delete Host WorldWide Name(s)] window.

Append the virtual initiator of each port of a virtualization switch that has been found (as described in " Finding the virtual initiator of each port of a virtualization switch") as the World Wide Name of a server that can be connected to the CA.

Append the virtual initiators of all ports (i.e., virtual initiators from Ports 0 to 15).

### Appending zones

On ETERNUSmgr, select "Setting RAID/Setting Host Menu" - "Host Interface Management" - "Append/Delete Zone(s)" to open the [Append/Delete Zone(s)] window.

You can create zones for a virtual storage environment.

### Setting the CA port

On ETERNUSmgr, select "Setting RAID/Setting Host Menu" - "Host Interface Management" - "Set CA Port" to open the [Set CA Port] window.

The connection to a virtualization switch is always a fabric connection. Therefore, set the CA port to FC-CA mode.

Open the [Set FC-CA Details] window and click [Fabric Connection] - [Host Table Settings Mode].

Click [Append/Delete Authorized Host(s)] to open the "Append/Delete Authorized Host(s)" window.

In the [Append/Delete Host WorldWide Name(s)] window, select the virtual initiator of each port of the appended virtualization switch, and then click the <Append> button.



## 3.4.2 Protecting virtual disks

---

Protect the virtual disks created against direct access from irrelevant transaction servers.

Use the zoning function of a virtualization switch to protect virtual disks.

### Using the zoning function of a virtualization switch

Use the zoning function of a virtualization switch to protect virtual disks against direct access from irrelevant transaction servers.

Create a zone between the WWNs of a virtual target and host bus adapter (HBA) installed on a transaction server.

To find the WWN of a virtual target, select "Configuration Information Tree (Virtual Enclosure)" - "Virtual Target".

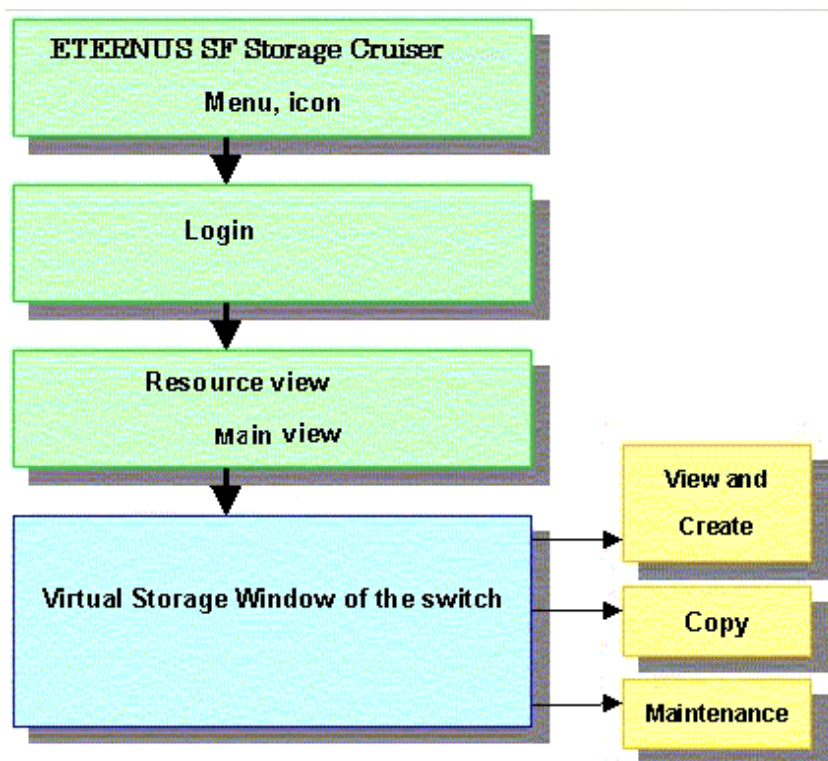
## Chapter 4 Startup and Settings

This chapter describes how to start up the Virtual Storage Window and register virtualization switches.

### 4.1 Starting and Closing the Virtual Storage Window

#### 4.1.1 Starting the Virtual Storage Window

The starting procedure for the Virtual Storage Window has the following transition:



 See

See "A.2 Explanation of the Windows under "View and Create"" for an explanation of the "View and Create" window.

See "A.3 Explanation of Windows under "Copy"" for an explanation of the "Copy" window.

See "A.4 Explanation of Windows under "Maintenance"" for an explanation of the "Maintenance" window.

#### 4.1.2 Closing the Virtual Storage Window

Select [File] - [Exit] in the Virtual Storage Window to close the Virtual Storage Window.

### 4.2 Setting and Starting the SMI Agent

You must start up the SMI agent before registering a virtualization switch as a resource for ESC.

## Note

If the configuration (RAID group, capacity, etc.) of a physical disk on the disk device has been changed after starting the SMI Agent, the SMI Agent should be re-started.

## See

For details on how to install and start up the SMI agent, refer to "4.2 Fibre Channel Switch" in the ETENUS SF Storage Cruiser User's Guide.

## 4.3 Registering Virtualization Switches

This section describes how to register virtualization switches as resources for ESC.

You can register a virtualization switch as a storage node with the base domain of the resource view.

Start the "Storage Search" dialog in the resource view of ESC.

Enter the following information in the "Storage Search" dialog.

Item name	Input value
IP address	Enter the IP address of the server on which the SMI agent is active.
Search type	Select "SMIS switch".
NameSpace	Enter "root/brocade1".
Login account	Enter the login account name of the server on which the SMI agent is active.
Login password	Enter the password of the login account.
Port Number	Enter the number of the port connected with the SMI agent.

## See

For details on how to register virtualization switches, refer to "5.2 Creating/Registering device" in the ETERNUS SF Storage Cruiser User's Guide.

## 4.4 Registering a Storage Device

Register the storage device used for the virtual storage function as an ESC resource.

Register a storage device in the basic domain on the resource management screen as follows:

1. Detect a storage device as follows.
  - Select [File] - [Detect SAN devices] - [Detect devices in subnet], or
  - Select [File] - [Detect SAN devices] - [Detect single unit].
2. Select a storage device from those detected, then select [File] - [Register] - [Register SAN devices] to register the storage device.

## See

For details of the storage device registration procedure, refer to "5.2 Creating/Registering device" in the ETERNUS SF Storage Cruiser User's Guide.

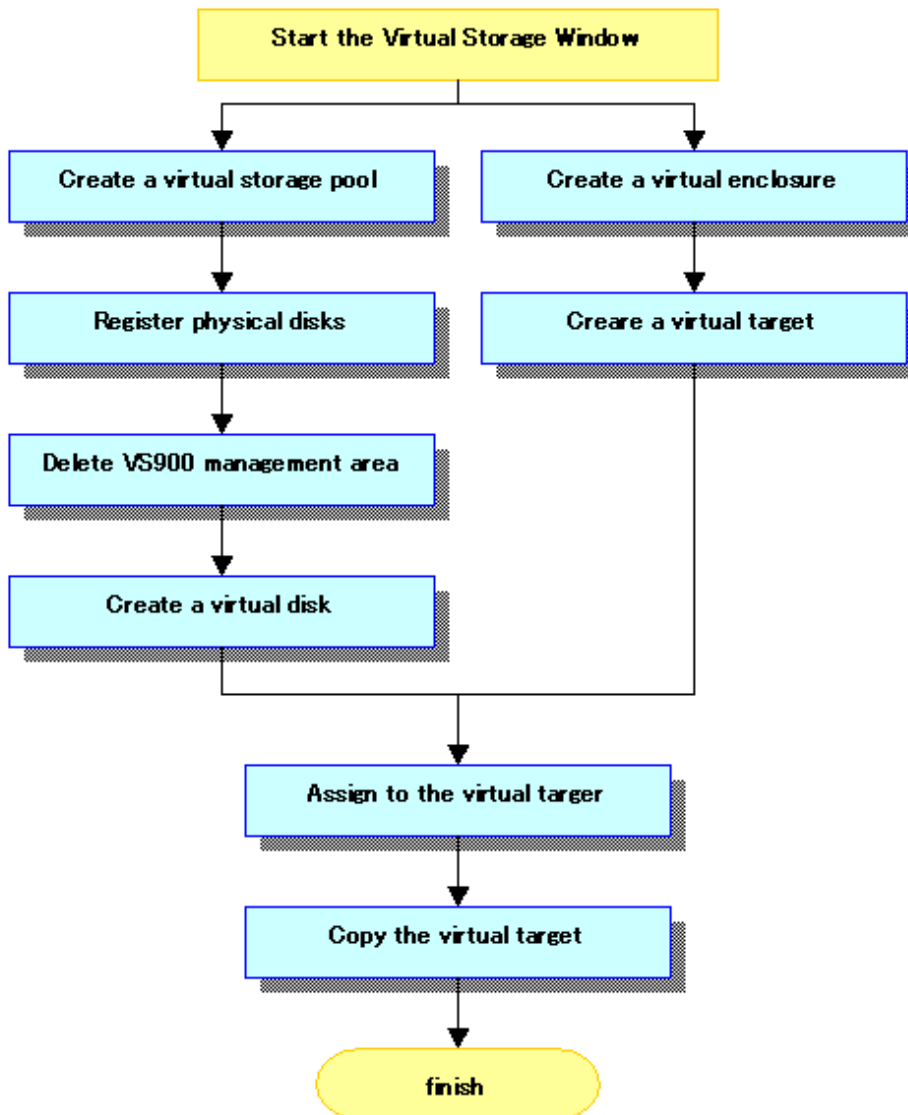
# Chapter 5 Operations

This chapter describes how to operate the Virtual Storage Window.

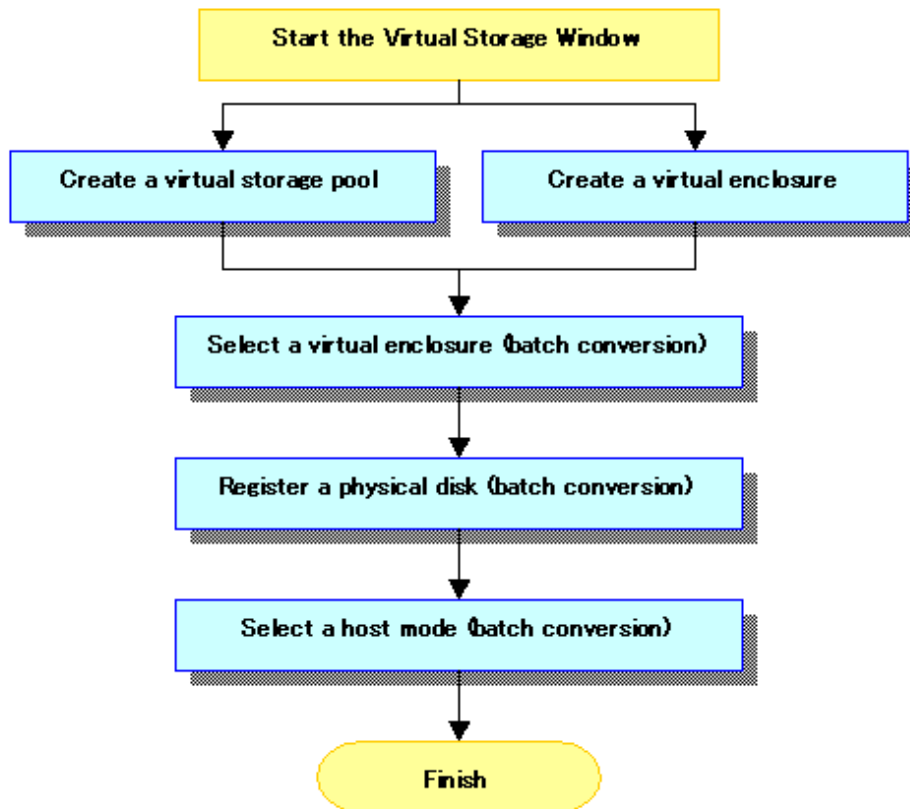
## 5.1 Creating a Virtual Disk

This section describes the procedure for setting up an environment to use virtual disks from the transaction server.

The overall flow for creating a virtual disk is as follows:



The general flow of creating a virtual disk in batch conversion is as follows:



 See

Refer to "A.2 Explanation of the Windows under "View and Create"" for details of each window of the Virtual Storage Window.

 Note

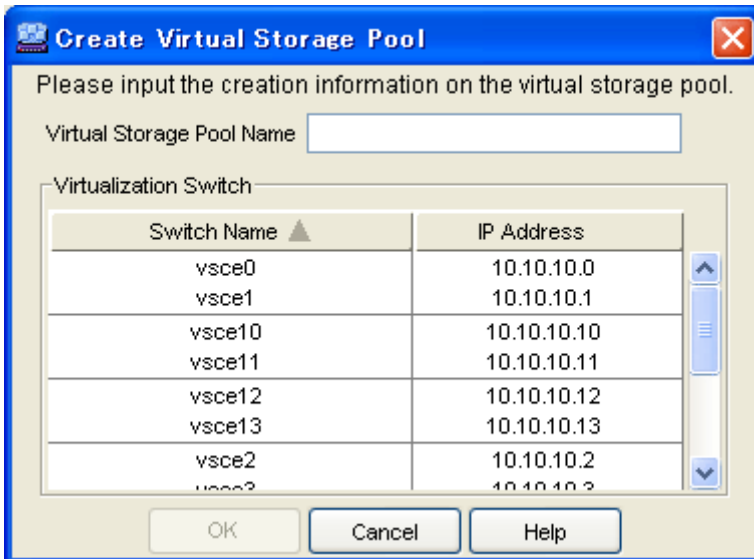
To create virtual disks while retaining existing data required by users, be sure to use batch conversion. For more information, refer to "5.1.8 Batch conversion".

Existing data may be damaged by creating a virtual disk without using batch conversion.

## 5.1.1 Creating a virtual storage pool

Create the necessary virtual storage pool for storing resources and creating a virtual disk as described below.

1. Start up the "Create Virtual Storage Pool" dialog box as follows:
  - Select "Virtual Storage Pool" in the Composition Data tree area and click the <Create Virtual Storage Pool> button, or
  - Select "Virtual Storage Pool" in the Composition Data tree area and then [Operations] - [Virtual Storage Pool] - [Create], or
  - Right-click on "Virtual Storage Pool" in the Composition Data tree area and select [Create Virtual Storage Pool].
2. The "Create Virtual Storage Pool" dialog box then appears.



3. Enter the following information on the "Create Virtual Storage Pool" dialog box:

Virtual Storage Pool Name (required)

Enter a string consisting of 1 to 26 alphanumeric characters.

Virtualization Switch group (selection required)

The dialog box shows each pair of virtualization switches in a redundant configuration as a virtualization switch group. Select the virtualization switch group that you want to associate with the virtual storage pool. Physical disks under the virtualization switch group selected are recognized as physical disks that can be registered in the virtual storage pool.

You can only select one virtualization switch group.

4. Click the <OK> button.

5. After a virtual storage pool is created, the "Create Virtual Storage Pool" message dialog box shows the results. Click the <Close> button.

6. Check the "View and Create" window and confirm that the virtual storage pool was created.

A virtual storage pool is now successfully created.

## 5.1.2 Registering physical disks

You can register physical disks in the virtual storage pool in any of the following ranges:

- Register all physical disks under a given storage.
- Register physical disks in the range of AffinityGroup (Zoning).
- Register individual physical disks.

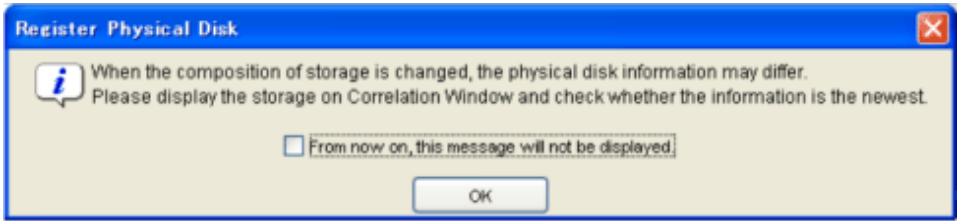


### Note

If the disk configuration has been modified, the physical disk information may be different.

Before registering physical disks, look at the disk device information in the window used for relationship management and confirm that the latest device information is displayed.

The following confirmation dialog box opens when [Register Physical Disk] is selected.



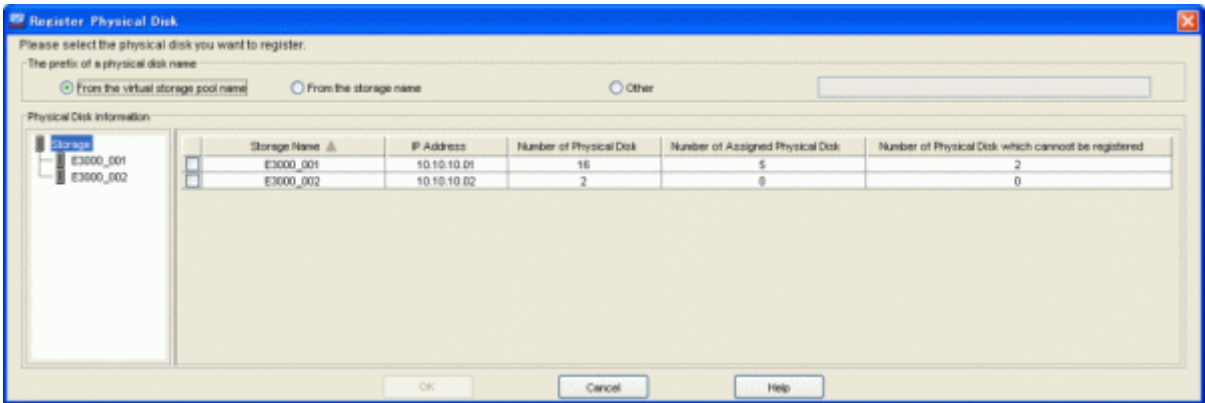
To hide this message, select the appropriate check box and click the <OK> button.

 **Information**

The user cannot assign a name to a physical disk. A name is automatically assigned to a physical disk when it is registered.

### 5.1.2.1 Registering all physical disks under a storage

1. Start up the "Register Physical Disk" dialog box as follows:
  - Select the virtual storage pool to register physical disks from the Composition Data tree area and click the <Register Physical Disk> button, or
  - Select the virtual storage pool to register physical disks and then [Operations] - [Physical Disk] - [Register], or
  - Right-click on the virtual storage pool to register physical disks and select [Register Physical Disk].
2. The "Register Physical Disk" dialog box then appears.
3. Select a prefix for the physical disk name. The created physical disk name is as follows:
  - If you select "From the virtual storage pool name", the physical disk name will be virtual-storage-pool-name + R + additional-number.
  - If you select "From the storage name", the physical disk name will be storage-name + R + additional-number.
  - If you select "Other", the physical disk name will be entered-characters (any string consisting of 1 to 26 single-byte alphanumeric characters) + R + additional-number.
4. The physical disk selection table lists the names of storage.



The information displayed is as follows:

**Storage Name**

Name of the disk device where physical disks are located

**IP Address**

IP address for the disk device name

#### Number of Physical Disk

The number of physical disks that can be registered + number of physical disks registered + number of physical disks that cannot be registered

#### Number of Assigned Physical Disk

Number of physical disks registered for the virtual storage pool

#### Number of Physical Disk which cannot be registered

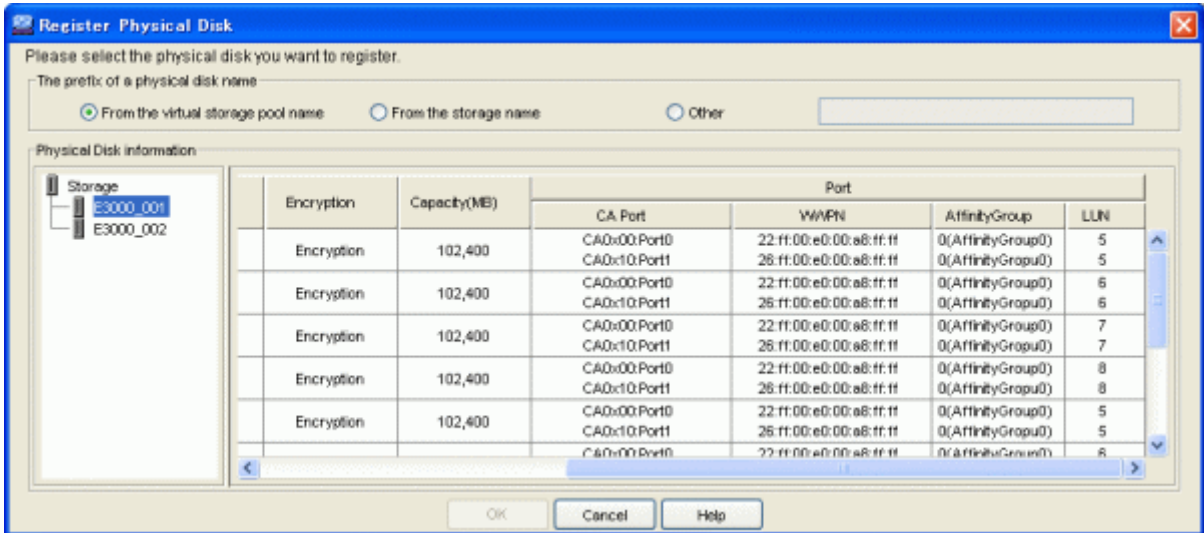
Number of physical disks that cannot be registered for the virtual storage pool (displayed only when there are physical disks that cannot be registered for the storage device)

5. Select a storage name (or storage names) from the table and click the <OK> button. You cannot select a storage name if none of the physical disks in the storage device can be registered.
6. After the physical disks are registered, the "Register Physical Disk" message dialog box shows the results. Confirm that the physical disks have been successfully registered, then click the <Close> button.
7. Check the "View and Create" window and confirm that the physical disks are registered in the virtual storage pool.  
All physical disks under the storage are now successfully registered in the virtual storage pool.

### 5.1.2.2 Registering the physical disks in the range of AffinityGroup (Zoning)

1. Start up the "Register Physical Disk" dialog box as follows:
  - Select the virtual storage pool to register physical disks from the Composition Data tree area and click the <Register Physical Disk> button, or
  - Select the virtual storage pool to register physical disks and then [Operations] - [Physical Disk] - [Register], or
  - Right-click on the virtual storage pool to register physical disks and select [Register Physical Disk].
2. The "Register Physical Disk" dialog box then appears.
3. Select a prefix for the physical disk name. The created physical disk name is as follows:
  - If you select "From the virtual storage pool name", the physical disk name will be virtual-storage-pool-name + R + additional-number.
  - If you select "From the storage name", the physical disk name will be storage-name + R + additional-number.
  - If you select "Other", the physical disk name will be entered-characters (any string consisting of 1 to 26 single-byte alphanumeric characters) + R + additional-number.
4. Select a storage name from the physical disk composition data tree area.
5. The physical disk selection table lists the physical disks set for said storage. Sort the physical disks by AffinityGroup. Select all physical disks of AffinityGroup and click the <OK> button.

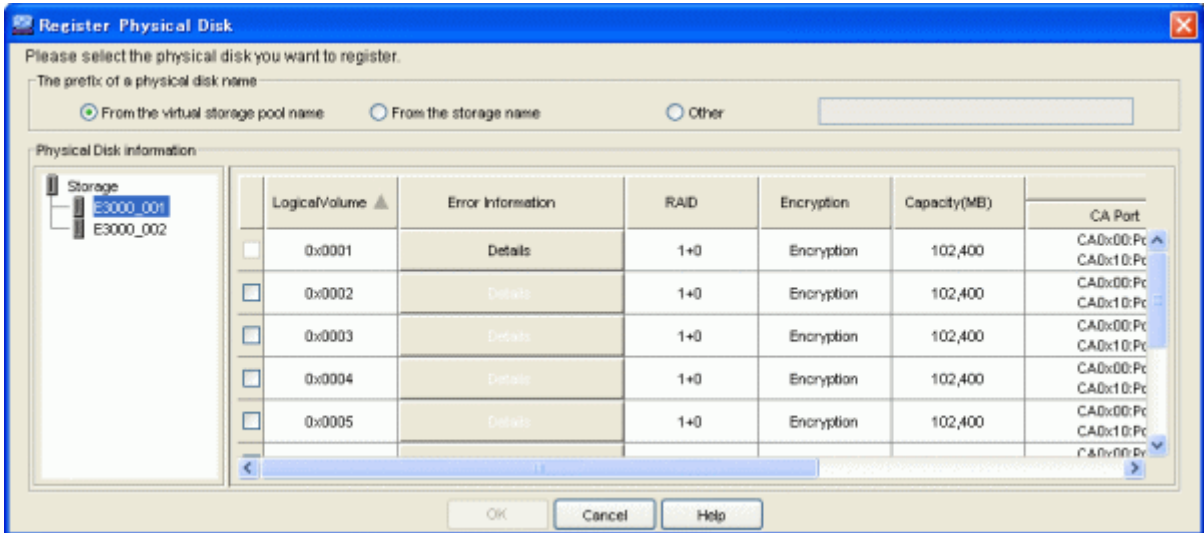




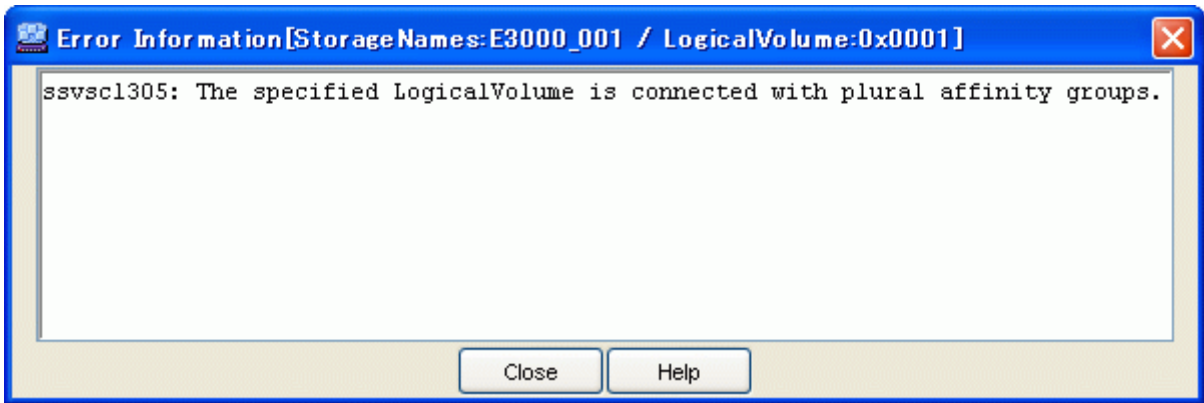
6. After the physical disks are registered, the "Register Physical Disk" message dialog box shows the results. Click the <Close> button.
7. Check the "View and Create" window, then confirm that the physical disks are registered in the virtual storage pool.  
All physical disks in the range of AffinityGroup (Zoning) are now successfully registered in the virtual storage pool.

### 5.1.2.3 Registering individual physical disks

1. Start up the "Register Physical Disk" dialog box as follows:
  - Select the virtual storage pool to register physical disks from the Composition Data tree area and click the <Register Physical Disk> button, or
  - Select the virtual storage pool to register physical disks and then [Operations] - [Physical Disk] - [Register], or
  - Right-click on the virtual storage pool to register physical disks and select [Register Physical Disk].
2. The "Register Physical Disk" dialog box then appears.
3. Select a prefix for the physical disk name. The created physical disk name is as follows:
  - If you select "From the virtual storage pool name", the physical disk name will be virtual-storage-pool-name + R + additional-number.
  - If you select "From the storage name", the physical disk name will be storage-name + R + additional-number.
  - If you select "Other", the physical disk name will be entered-characters (any string consisting of 1 to 26 single-byte alphanumeric characters) + R + additional-number.
4. Select a storage name from the physical disk composition data tree area.
5. The physical disk selection table lists the physical disks set for said storage.



You cannot select physical disks that cannot be registered. Click on the <Details Information> button and check the message ID displayed in the error details information dialog box to identify why the disk cannot be registered. For details, refer to "[Appendix E Error Messages](#)".



6. Select a physical disk (or physical disks) and click the <OK> button.
  7. After the physical disks are registered, the "Register Physical Disk" message dialog box shows the results. Click the <Close> button.
  8. Check the "View and Create" window, then confirm that the physical disks are registered in the virtual storage pool.
- All physical disks are now successfully registered in the virtual storage pool.

### 5.1.3 Creating a virtual disk

You can create a virtual disk in the virtual storage pool as follows:

When a virtual disk is created, the VTOC of the physical disks that configure the virtual disk must be initialized.

- Create a virtual disk automatically, or
- Create a virtual disk while checking the physical disks that configure the virtual disk, or
- Select (manually) the physical disks that configure the virtual disk.

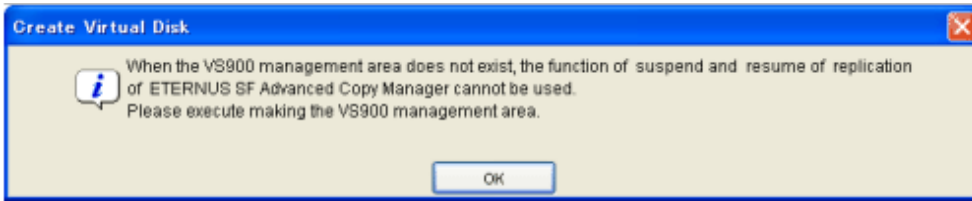


If there is no VS900 management area, the replication suspend/resume function of ETERNUS SF AdvancedCopy Manager cannot be used.

Before creating a virtual disk, check the "VS900 Management Area (Create)" dialog box and confirm that a VS900 management area has been allocated.

If there is no VS900 management area, the following confirmation dialog box appears.

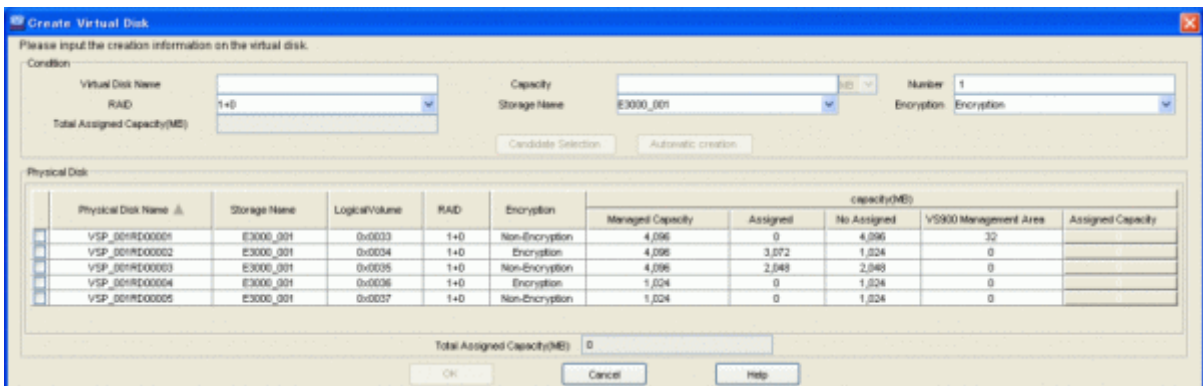
For details of VS900 management areas, refer to "5.1.9 VS900 management area".



### 5.1.3.1 Creating the virtual disk automatically

A virtual disk can be created automatically based on the status information you have entered as described below.

1. Start up the "Create Virtual Disk" dialog box as follows:
  - Select the virtual storage pool to create a virtual disk from the Composition Data tree area and click the <Create Virtual Disk> button, or
  - Select the virtual storage pool to create a virtual disk and then [Operations] - [Virtual Disk] - [Create], or
  - Right-click on the virtual storage pool to create a virtual disk and select [Create Virtual Disk].
2. The "Create Virtual Disk" dialog box then appears.



3. Enter the status information necessary to create a virtual disk.

#### Virtual Disk Name (required)

Enter a string consisting of 1 to 32 alphanumeric characters.

However, if 2 or a greater number is entered for the quantity, no virtual disk name needs to be specified. In this instance, the name of the virtual disk created automatically will be "virtual storage pool name + V + an additional number".

#### Capacity (required)

Enter the capacity (numeric value) of the virtual disk you want to create.

Select the unit from the [MB] (default)/[GB] pull-down menu.

#### Number (required)

Specify a number ranging from 1 to 4096 as the number of virtual disks to be created.

However, if 2 or a greater number is entered for the quantity, no virtual disk name needs to be specified.

#### RAID (selective)

Select the RAID level of the physical disk that constitutes the virtual disk from the pull-down menu.

The pull-down menu lists [No specification](default)/[1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

#### Storage Name (selective)

When multiple physical disks constitute the virtual disk, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed.

#### Encryption (selective)

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but the encryption attribute that cannot be selected for the physical disk is not displayed.

4. Click the <Automatic creation> button.
5. After a virtual disk is created, the "Create Virtual Disk" message dialog box shows the results. Click the <Close> button.
6. Check the "View and Create" window, then confirm that the virtual disk was created.

All virtual disks are now successfully created.

### 5.1.3.2 Creating a virtual disk while checking the physical disk constituting the virtual disk

The user can create a virtual disk while checking information of the physical disk selected automatically based on the status information entered as described below.

1. Start up the "Create Virtual Disk" dialog box as follows:
  - Select the virtual storage pool to create a virtual disk from the Composition Data tree area and click the <Create Virtual Disk> button, or
  - Select the virtual storage pool to create a virtual disk and then [Operations] - [Virtual Disk] - [Create], or
  - Right-click on the virtual storage pool to create a virtual disk and select [Create Virtual Disk].
2. The "Create Virtual Disk" dialog box then appears.
3. Enter the following status information necessary for creating a virtual disk.

#### Virtual Disk Name (required)

Enter a string consisting of 1 to 32 alphanumeric characters.

#### Capacity (required)

Enter the capacity (numeric value) of the virtual disk you want to create.

Select the unit from the [MB] (default)/[GB] pull-down menu.

#### Number (required)

Enter the number of virtual disks to be created. "Candidate Selection" is fixed to 1.

#### RAID (selective)

Select the RAID level of the physical disk that constitutes the virtual disk from the pull-down menu.

The pull-down menu lists [No specification](default)/ [1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

### Storage Name (selective)

When multiple physical disks constitute the virtual disk, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

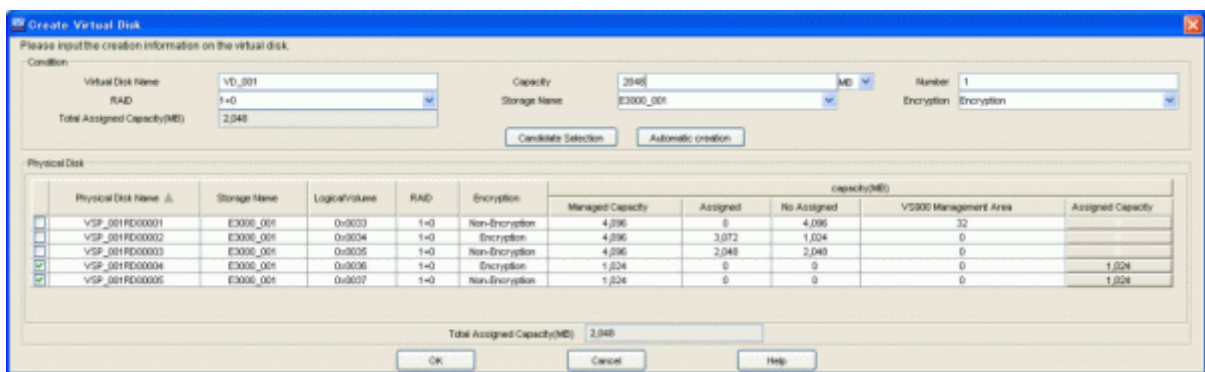
The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed. Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

### Encryption (selective)

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu. Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but an encryption attribute that cannot be selected for the physical disk is not displayed.

4. Click the <Candidate Selection> button.
5. The "Create Virtual Disk" dialog shows the automatically selected physical disks with their checkboxes checked.



If you want to create a virtual disk with the automatically selected physical disk:

1. Click the <OK> button.

If you want to create a virtual disk with physical disks other than the automatically selected one:

1. Remove the check mark from the automatically selected physical disk.
2. Select and check the physical disk you want to constitute the virtual disk.
3. Click the <OK> button.

If you want to change the assigned capacity of the automatically selected physical disk:

1. Click the <Assigned Capacity> button for the physical disk whose quota capacity you want to change.
2. The "Assigned Capacity" dialog box then appears.
3. Enter the changed quota capacity.

### Assigned Capacity (required)

Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB].

1. Click the <OK> button in the "Assigned Capacity" dialog box.
2. Click the <OK> button in the "Create Virtual Disk" dialog box.

6. After a virtual disk is created, the "Create Virtual Disk" message dialog box shows the results. Click the <Close> button.
7. Check the "View and Create" window, then confirm that the virtual disk was created

All virtual disks are now successfully created.

### 5.1.3.3 When the user selects the physical disks to constitute a virtual disk

The user selects and creates all physical disks to constitute a virtual disk as described below.

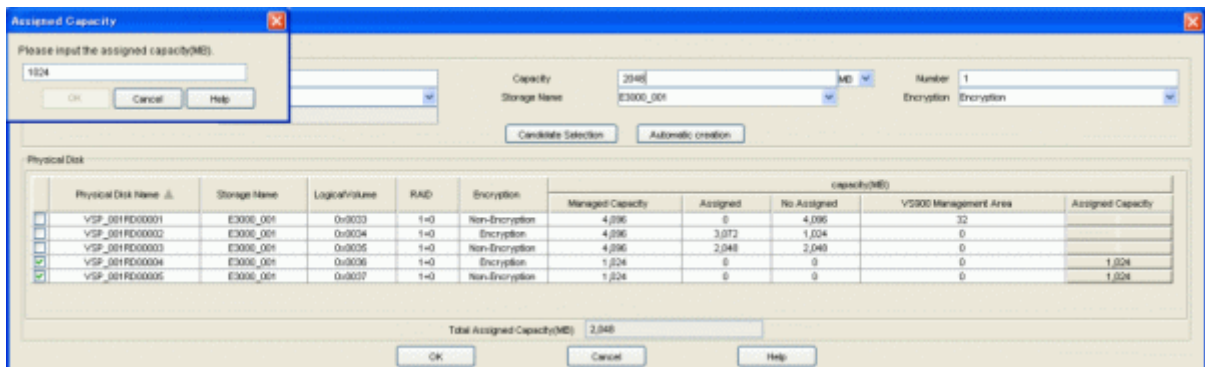
#### Note

The number of virtual disks that can be created from the physical disks selected by the user is fixed at 1.

1. Start up the "Create Virtual Disk" dialog box as follows:
  - Select the virtual storage pool to create a virtual disk from the Composition Data tree area and click the <Create Virtual Disk> button, or
  - Select the virtual storage pool to create a virtual disk and then [Operations] - [Virtual Disk] - [Create], or
  - Right-click on the virtual storage pool to create a virtual disk and select [Create Virtual Disk].
2. The "Create Virtual Disk" dialog box then appears.
3. Enter the following status information necessary for creating a virtual disk.

**Virtual Disk Name (required)**  
Enter a string consisting of 1 to 32 alphanumeric characters.

**Number (required)**  
Enter the number of virtual disks to be created. In this case, it is always 1.
4. Select and check the physical disk in which you want to constitute the virtual disk.
5. Click the <Assigned Capacity> button for the physical disk selected.
6. The "Assigned Capacity" dialog box then appears.
7. Enter the capacity assigned to the virtual disk.



#### Assigned Capacity (required)

Enter the capacity assigned from the physical disk selected to the virtual disk in [MB]. Note that checking the physical disk sets non-assigned capacity as the quota capacity. Removing the check mark from the physical disk sets the quota capacity to 0.

8. Click the <OK> button in the "Assigned Capacity" dialog box.
9. Click the <OK> button in the "Create Virtual Disk" dialog box.
10. After a virtual disk is created, the "Create Virtual Disk" message dialog box shows the results. Click the <Close> button.
11. Check the "View and Create" window and confirm that the virtual disk was created.

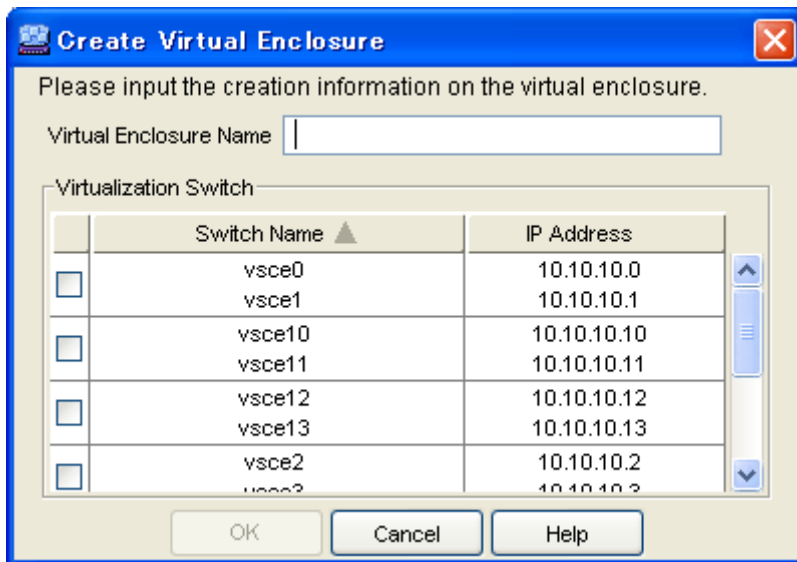
All virtual disks are now successfully created.

## 5.1.4 Creating a virtual enclosure

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You can create a virtual enclosure in which to register virtual disks as described below.

1. Start up the "Create Virtual Enclosure" dialog box as follows:
  - Select "Virtual Enclosure" in the Composition Data tree area and click the <Create Virtual Enclosure> button, or
  - Select "Virtual Enclosure" in the Composition Data tree area and then [Operations] - [Virtual Enclosure] - [Create], or
  - Right-click on "Virtual Enclosure" in the Composition Data tree area and select [Create Virtual Enclosure].
2. The "Create Virtual Enclosure" dialog box then appears.



3. Enter the following status information in the "Create Virtual Enclosure" dialog box.

Virtual Enclosure Name (required)

Enter a string consisting of 1 to 32 alphanumeric characters.

Virtualization Switch group (selection required)

Each pair of virtualization switches constituting a redundant configuration is displayed as a virtualization switch group. Select the virtualization switch group to be associated with the virtual enclosure.

You can select multiple virtualization switch groups.

4. Click the <OK> button.
5. After a virtual enclosure is created, the "Create Virtual Enclosure" message dialog box shows the results. Click the <Close> button.
6. Check the "View and Create" window and confirm that the virtual enclosure was created.

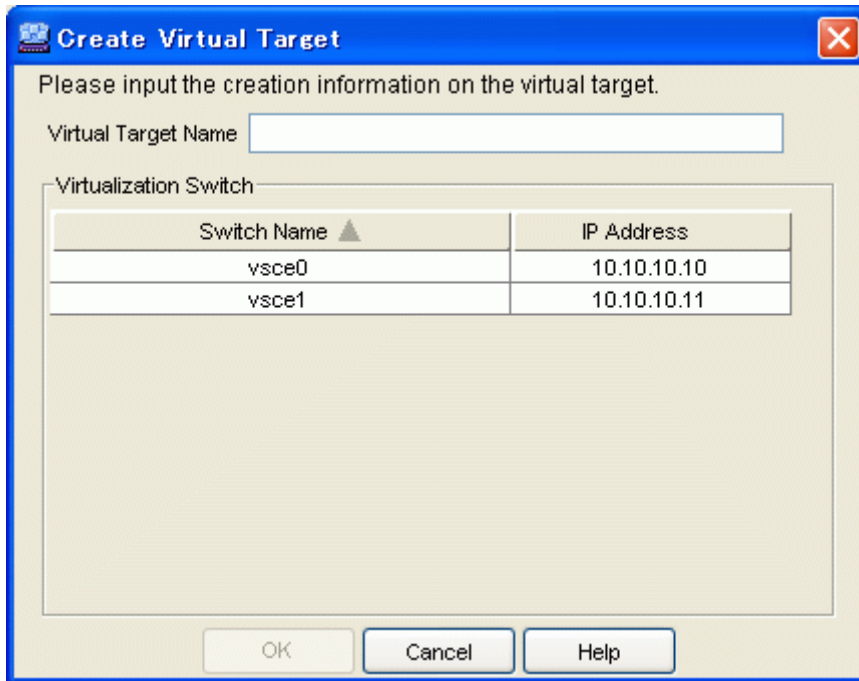
All virtual enclosures are now successfully created.

## 5.1.5 Creating a virtual target

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You can create a virtual target as an access path that connects the transaction server and virtual disk as described below.

1. Start up the "Create Virtual Target" dialog box as follows:
  - Select "Virtual Enclosure" in the Composition Data tree area and click the <Create Virtual Target> button, or
  - Select "Virtual Enclosure" in the Composition Data tree area and then [Operations] - [Virtual Target] - [Create], or
  - Right-click on "Virtual Enclosure" in the Composition Data tree area and select [Create Virtual Target].
2. The "Create Virtual Target" dialog box then appears.



3. Enter the following status information in the "Create Virtual Target" dialog box.

**Virtual Target Name (required)**

Enter a string consisting of 1 to 32 alphanumeric characters.

The virtual target name entered in this dialog box is necessary for Virtual Storage Conductor management, and the dialog box is not meant for entering the WWPN. The WWPN required for virtual disk access by the transaction server is automatically assigned when a virtual target is created.

**Virtualization Switch (selection required)**

Select the virtualization switch (you can only select one) as an access path to the virtual disk.

Only one virtualization switch is assigned to the virtual target.

4. Create as many virtual targets as there are virtualization switches associated with the virtual enclosure. Click the <OK> button.
5. After a virtual target is created, the "Create Virtual Target" message dialog box shows the results. Click the <Close> button.
6. Check the "View and Create" window and confirm that the virtual target was created.

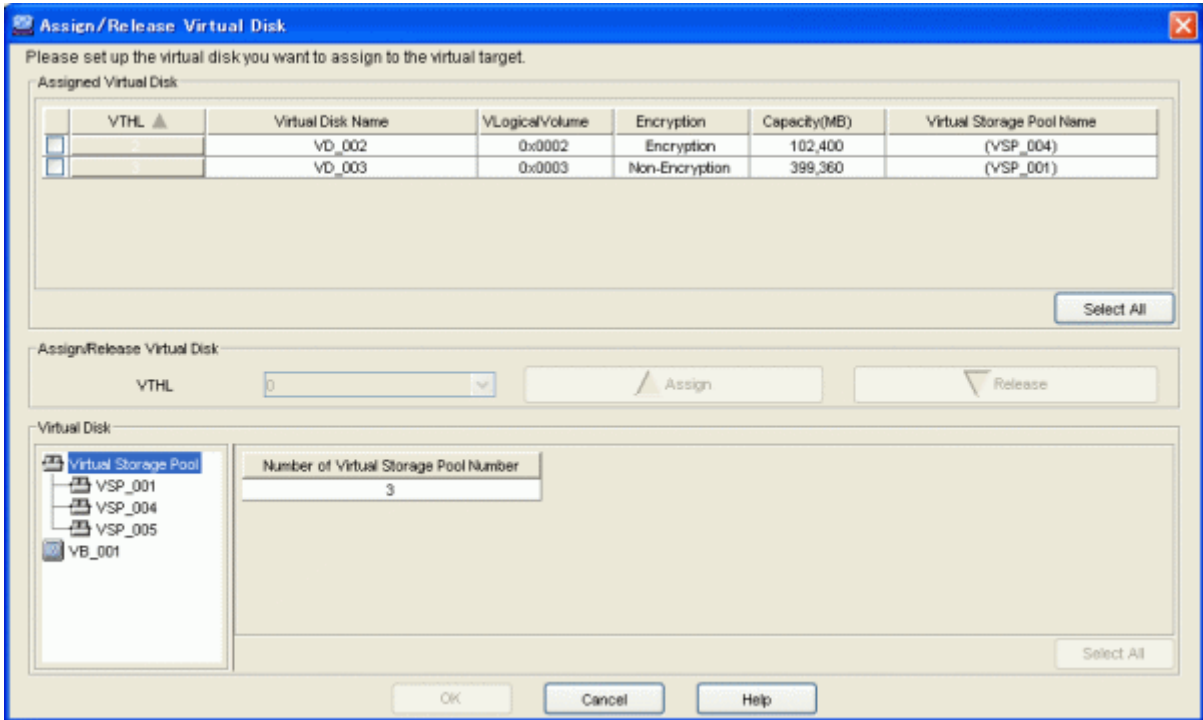
All virtual targets are now successfully created.

## 5.1.6 Assigning virtual disks to the virtual target

A virtual disk is assigned under the virtual target as described below. This enables the transaction server to access the virtual disk.

1. Open the "Assign/Release Virtual Disk" dialog box in one of the following methods:
  - From the Composition Data tree area, select the virtual target to which you want to assign a virtual disk and click the <Assign/Release Virtual Disk> button, or
  - Select the virtual target to which you want to assign a virtual disk, then select [Operation] - [Virtual Disk] - [Assign/Release], or
  - Right-click the virtual target to which you want to assign a virtual disk, then select [Assign/Release Virtual Disk].
2. The "Assign/Release Virtual Disk" dialog box then appears.





3. Do the following in the "Assign/Release Virtual Disk" dialog box.
  1. Select the virtual storage pool where the virtual disk you want to assign to the virtual target is registered from the "Virtual Disk" table.
  2. The "Virtual Disk" table lists the virtual disks registered in the selected virtual storage pool.
  3. Select a virtual disk (or virtual disks) you want to assign to the virtual target.
  4. Select the number you want to assign the virtual disk from the "VTHL" pull-down menu of the "Virtual Disk" table.
  5. Click the <△Assign> button.
  6. The "Assigned Virtual Disk" table lists information of the assigned virtual disk.
 

You can select all virtual disks by clicking the <Select All> button.

If all virtual disks are selected, you can clear the selections of all virtual disks using the <Clear> button.
  7. Click the <OK> button in the "Assign/Release Virtual Disk" dialog box.
4. The "Assign Virtual Disk" confirmation dialog then appears. Click the <OK> button.
5. The "Assign /Release Virtual Disk" dialog displays the result of assigning a virtual disk to the virtual target. Click the <Close> button.
6. Confirm on the display and the creation screen that the virtual disk has been assigned to the virtual target.

 **Note**

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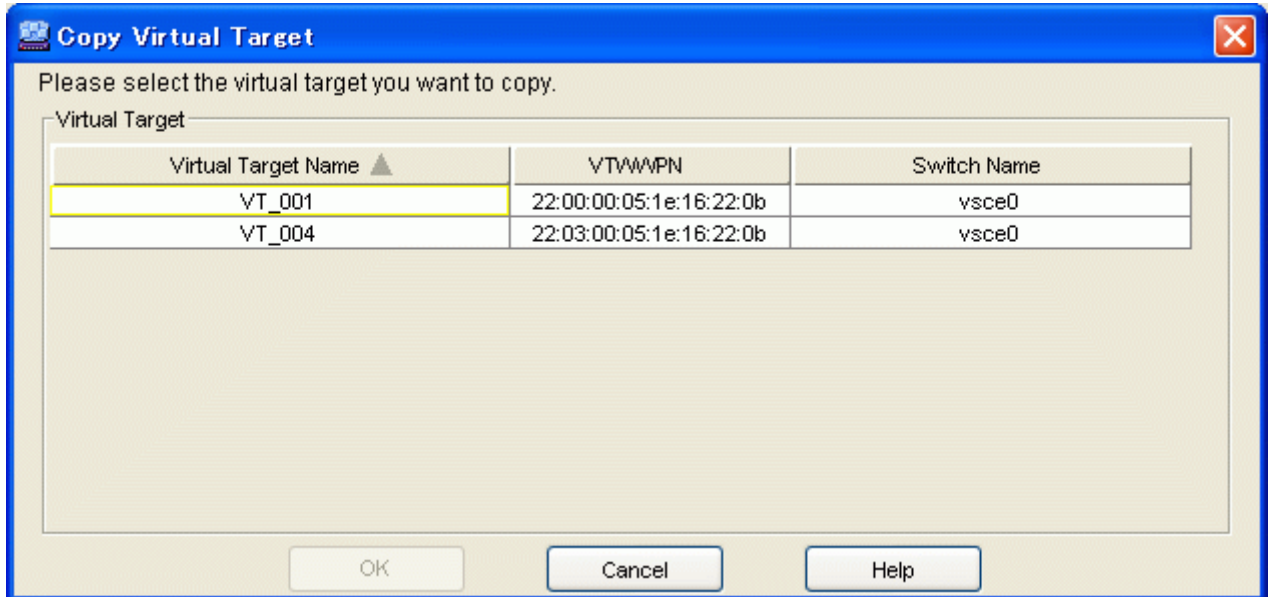
If the number of SCSI command queues of the virtual target exceeds the number of SCSI command queues of a single CA, a confirmation dialog box appears with the message "sogui4414: The number of virtual targets of SCSI command cues exceeds the limitation value of CA. Is processing continued?". If you click the <OK> button, disk read or write performance may deteriorate.

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## 5.1.7 Copying a virtual target

The access path to a virtual disk must be in a multi-path configuration. Thus, you must copy information from a virtual target (to which a virtual disk is already assigned) to any other virtual target and add the same information to both virtual targets.

1. Start up the "Copy Virtual Target" dialog box as follows:
  - Select from the Composition Data tree area the copy source virtual target and then [Operations] - [Virtual Target] - [Copy], or
  - Right-click on the copy source virtual target and select [Copy Virtual Target].
2. The "Copy Virtual Target" dialog box then appears.



3. Select the following status information from the "Copy Virtual Target" dialog box.
  - Virtual Target Name (selection required)
    - Select a copy destination virtual target (you can only select one).
4. Click the <OK> button in the "Copy Virtual Target" dialog box.
5. The "Copy Virtual Target" confirmation dialog then appears. Click the <OK> button.
6. The "Copy Virtual Target" dialog displays the virtual target copy result. Click the <Close> button.
7. Confirm on the display and the creation screen that the virtual target has been copied to the virtual target.
  - The virtual target will now be copied.

 **Note**

- No virtual disk shall be assigned to the copy destination virtual target.
- If the number of SCSI command queues of the virtual target exceeds the number of SCSI command queues of a single CA, a confirmation dialog box appears with the message "[ssgui4414](#): The number of virtual targets of SCSI command cues exceeds the limitation value of CA. Is processing continued?". If you click the <OK> button, disk read or write performance may deteriorate.

## 5.1.8 Batch conversion

Batch conversion is a function that enables a transition from a physical environment to a virtual environment in a procedure with fewer steps.

The following operations must be performed prior to batch conversion:

- Creating a virtual storage pool
- Creating a virtual enclosure

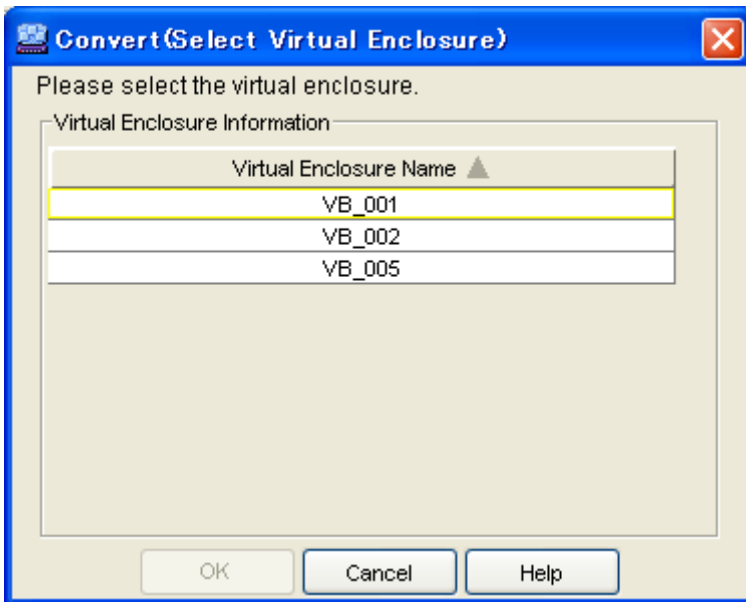
The following operations are automatically executed:

- Registering a physical disk
- Creating virtual disks
- Creating a virtual target
- Assigning the virtual disks to the virtual target

1. Open the "Convert" dialog box using one of the following methods:

- From the Composition Data tree area, select the virtual storage pool in which you want to register a physical disk and click the <Convert> button, or
- Select the virtual storage pool in which you want to register a physical disk, then select [Operation] - [Convert], or
- Right-click the virtual storage pool in which you want to register a physical disk and select [Convert].

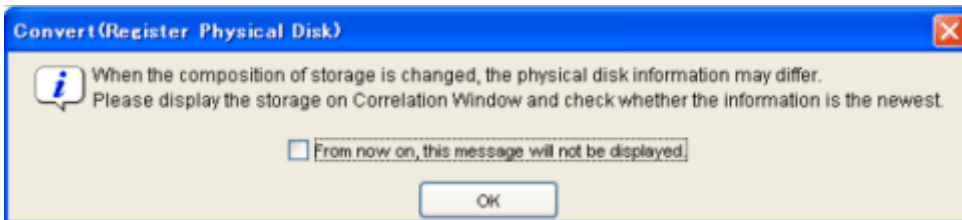
2. The "Convert (Select Virtual Enclosure)" dialog box appears.



3. Select the virtual enclosure in which you want to create a virtual target.

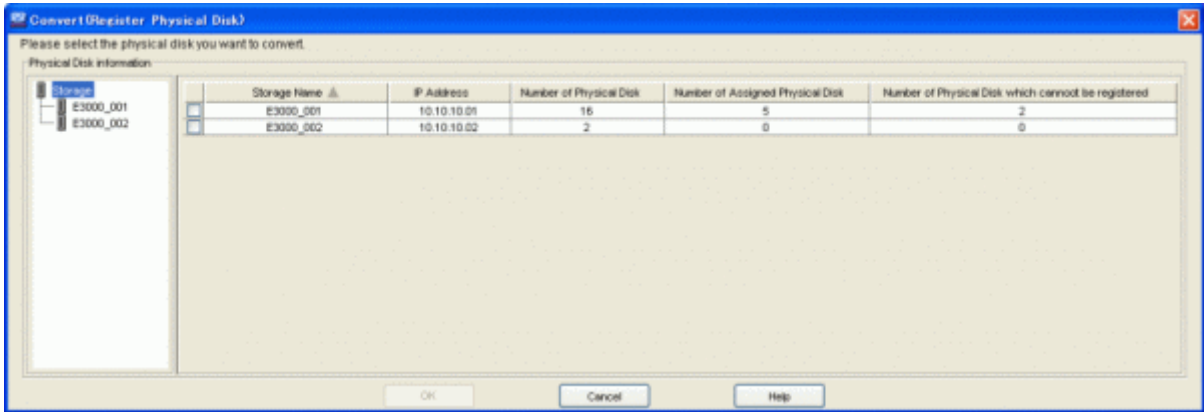
4. Click the <OK> button in the "Convert(Select Virtual Enclosure)" dialog box.

5. Before registering the disk, display the related management window of the disk unit and confirm that the disk unit information has been updated. Select physical disk registration. The following confirmation dialog box appears.



If you do not want this message to be displayed again, select the check box and click the <OK> button.

6. The "Convert (Register Physical Disk)" dialog box appears. For details of the settings, refer to "5.1.2 Registering physical disks".



7. The "Batch Conversion" confirmation dialog box appears. Click the <OK> button.
8. The "Batch Conversion" dialog box shows the batch conversion results. Click the <Close> button and confirm that the disk has been successfully registered.

The above operations create virtual disks from the physical disk registered in the specified virtual storage pool, create a virtual target in the specified virtual enclosure, and assign the virtual disks to the virtual target.

- "Virtual-storage-pool-name + R + sequence-number" is the name assigned to the created physical disk.
- "Virtual-storage-pool-name + V + sequence-number" is the name assigned to each created virtual disk.
- "CA + CA-port-WWPN (16 digits) + sequence-number-of-virtual-enclosure (4 digits) + sequence-number (5 digits)" is the name assigned to the created virtual target.



### Note

If one CA of a storage unit has multiple Affinity groups, only the physical disks in one of the Affinity groups can be subject to batch conversion.

If you have performed batch conversion in an incorrect host mode, contact your Fujitsu systems engineer (SE) and perform batch conversion again as follows:

1. Unassign virtual disks from the virtual target.
2. Delete the virtual target.
3. Delete the unassigned virtual disks.
4. Release the physical disk that constitutes the virtual disk from the virtual storage pool.
5. Perform batch conversion again.

## 5.1.9 VS900 management area

To use the replication suspend/resume function of ETERNUS SF AdvancedCopy Manager, a VS900 management area must be created in advance.

At least one VS900 management area must be created for each switch group.

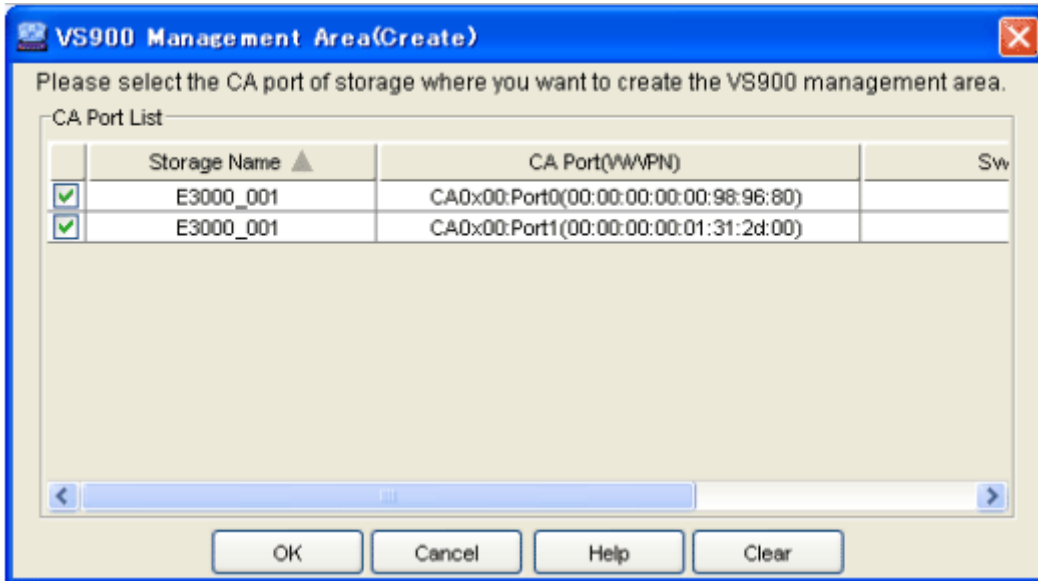
This section explains how to create a VS900 management area and how to display VS900 management area information.

### 5.1.9.1 Creating a VS900 management area

1. Open the "VS900 Management Area(Create)" dialog box.

- Select "Virtual Storage Pool" from the Composition Data tree area and then select [Operation] - [VS900 Management Area] - [Create].

2. The "VS900 Management Area (Create)" dialog box appears.

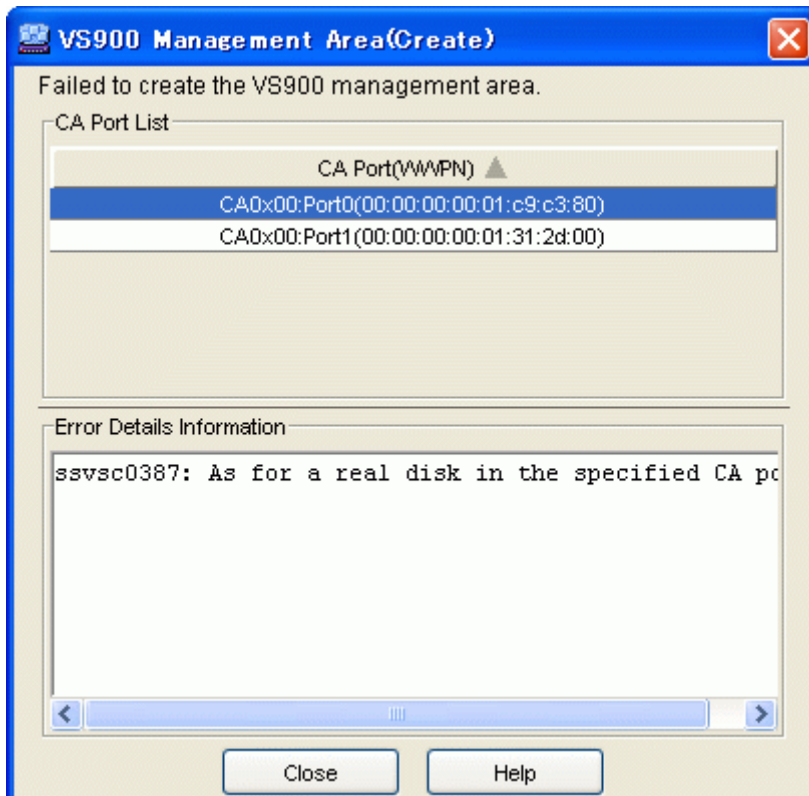


3. CA ports are listed. Select one or more CA ports for which you want to create a VS900 management area, then click the <OK> button.

- You can select all CA ports by clicking the <Select All> button. If all CA ports are selected, you can clear the selections of all CA ports by clicking the <Clear> button.

4. When a VS900 management area has been successfully created, the "VS900 Management Area (Create)" dialog box appears.

If a VS900 management area has not been successfully created, the "VS900 Management Area (Create)" error dialog box appears. Select the displayed CA port to see detailed error information for that VS900 management area. Check the cause of the failure in creating the VS900 management area and click the <Close> button.



A VS900 management area has now been created.

### 5.1.9.2 Displaying a VS900 management area

1. Open the "Display VS900 Management Area" dialog box.
  - Select "Virtual Storage Pool" from the Composition Data tree area and then select [Operation] - [VS900 Management Area] - [Display].
2. The "VS900 Management Area (View)" dialog box appears, listing VS900 management areas.

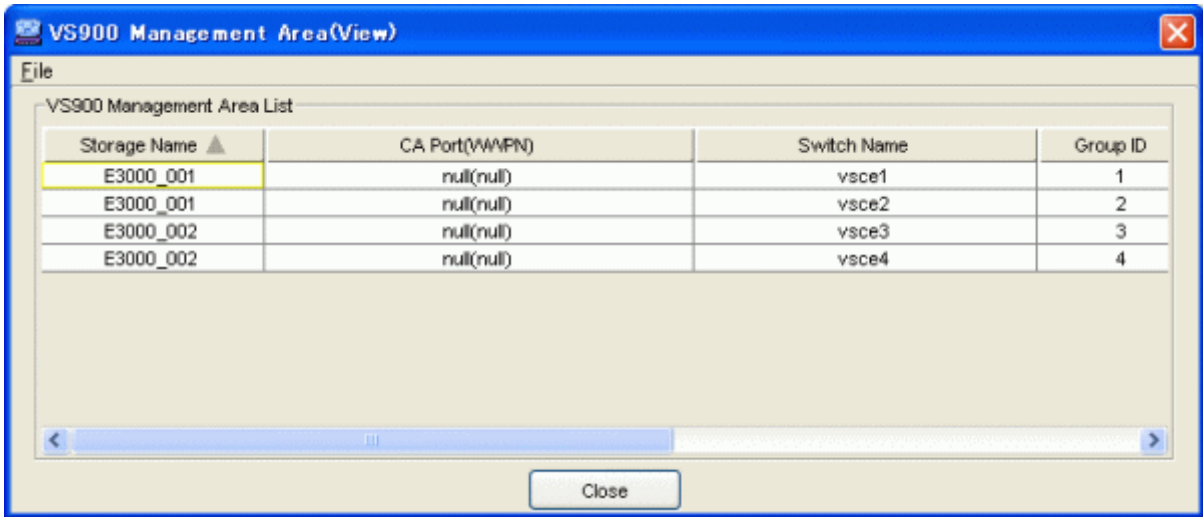


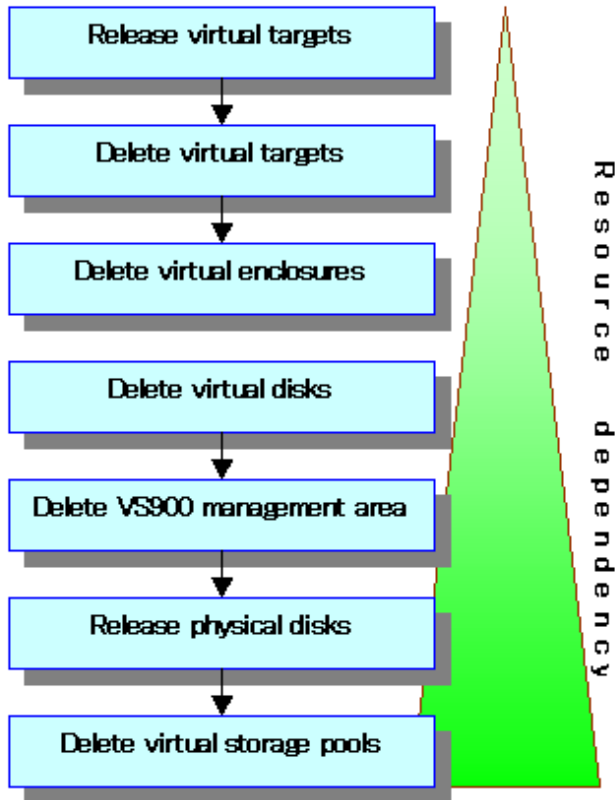
Table 5.1 Information displayed in the "VS900 Management Area (View)" dialog box

Item	Description	Remarks
Storage Name	Name of a storage unit	
Product ID	Product ID of a disk unit	Hidden by default
Serial Number	Serial number of a disk unit	Hidden by default
CA Port (WWPN)	CA port of a storage unit (WWPN)	
Switch Name	Name of the virtualization switch connected to the CA port of a storage unit	
Group ID	Group ID of the virtualization switch connected to the CA port of a storage unit	
Logical Volume	Internal disk unit number of a physical disk on which a VS900 management area has been created	
Physical Disk Name	Name of a physical disk on which a VS900 management area has been created	
Capacity (MB)	Capacity of a VS900 management area	

## 5.2 Deleting Resources

Each resource created is managed as composition data. You need the gradual elimination of dependencies managed by the composition data to delete a resource.

The following shows the procedure for deleting each resource. You must delete prerequisite resources before deleting a target resource.



**P Point**

Confirm that the transaction server is not using the target resources before deleting said resources.

## 5.2.1 Releasing virtual targets

You must release the assigned physical disks from the virtual target as described below.

1. Activate the "Assign/Release Virtual Disk" dialog using one of the following methods:
  - Select the virtual target assigned with the virtual disk from the Composition Data tree area, then click the <Assign/Release Virtual Disk> button, or
  - Select the virtual target assigned with the virtual disk, then click [Operations] - [Virtual Disk] - [Assign/Release], or
  - Right-click the virtual target assigned with the virtual disk, then click "Assign/Release Virtual Disk".
2. The "Assign/Release Virtual Disk" dialog box then appears.
3. Perform the following in the "Assign/Release Virtual Disk" dialog box.
  1. Select the virtual disk(s) that you want to release from the selection in the "Virtual Disk Assignment Information" table.
  2. Select the <▽Release> button.
    - All virtual disks can be selected by clicking the <Select All> button.  
When all the virtual disks are selected, they can be released by clicking the <Clear> button.
  3. The "Virtual Disk Information" table then displays the list of virtual disks released.
  4. Click the <OK> button on the "Assign/Release Virtual Disk" dialog box.

4. The "Assign/Release Virtual Disk" confirmation dialog then appears. Click the <OK> button.
5. The "Assign/Release Virtual Disk" dialog displays the result of releasing the virtual disks from the virtual target. Click the <Close> button.
6. Confirm on the display and the creation screen that the virtual disks have been released from the virtual target.  
All virtual disks are now successfully released from the virtual target.

## 5.2.2 Deleting virtual targets

---

This section explains how to delete virtual targets.

### 5.2.2.1 Deleting virtual targets individually

Select and delete a virtual target.



#### Point

Delete all virtual targets registered to a virtual enclosure before deleting its virtual enclosure.

1. Start up the "Delete Virtual Target" dialog box as follows:
  - Select from the Composition Data tree area the virtual target you want to delete and then [Operations] - [Virtual Target] - [Delete], or
  - Right-click on a virtual target to which no virtual disk is assigned and select [Delete Virtual Target].



#### Information

When any virtual disk is assigned to the virtual target, you cannot select [Delete] on the [Operations] - [Virtual Target] menu or right-click on [Delete Virtual Target].

2. The "Delete Virtual Target" confirmation dialog box then appears. Click the <OK> button.
3. The "Delete Virtual Target" message dialog displays the virtual target deletion result. Click the <Close> button.
4. Confirm on the display and the creation screen that the virtual target has been deleted.  
All virtual targets are now successfully deleted.

### 5.2.2.2 Deleting multiple virtual targets simultaneously

Proceed as follows to delete multiple virtual targets simultaneously.

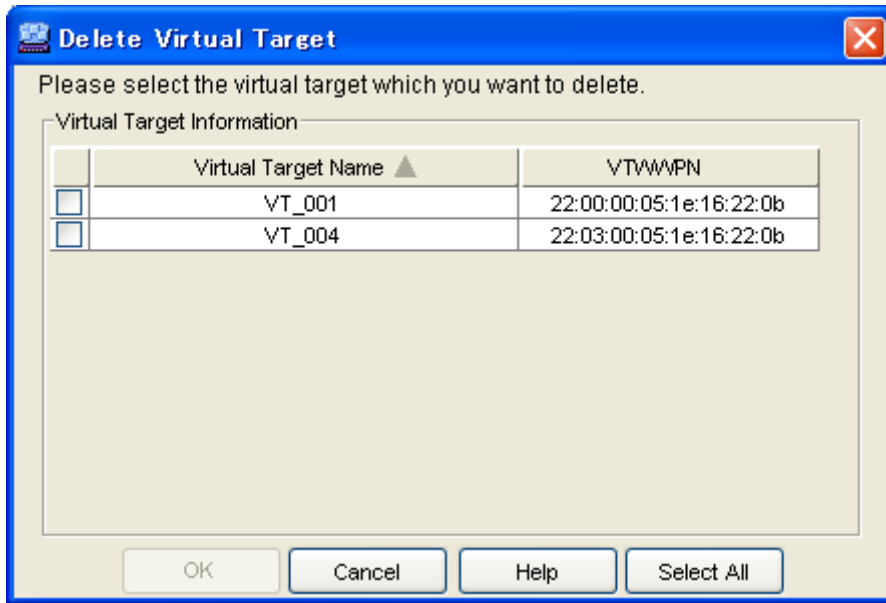


#### Point

To delete a virtual enclosure, delete in advance all virtual targets registered in the virtual enclosure.

1. Open the "Delete Virtual Target" dialog box by using one of the following methods:
  - Select the virtual enclosure containing the virtual targets you want to delete, then select [Operate] - [Virtual Target] - [Delete], or
  - Right-click on the virtual enclosure containing the virtual targets you want to delete, then select [Delete Virtual Target].
2. The "Delete Virtual Target" dialog box is displayed.





### Information

.....  
 If any virtual disk is allocated on the virtual target, the virtual target is not displayed in the "Delete Virtual Target" dialog box.  
 .....

3. Select the virtual target or targets you want to delete, and click the <OK> button.
  - You can select all virtual targets by clicking the <Select All> button. If all virtual targets are selected, you can deselect all virtual targets by clicking the <Clear> button.
4. The "Delete Virtual Target" confirmation dialog box is displayed. Click the <OK> button.
5. The "Delete Virtual Target" message dialog displays the virtual target deletion result. Click the <Close> button.
6. Confirm on the display and the creation screen that the virtual target has been deleted.  
 All virtual targets are now successfully deleted.

## 5.2.3 Deleting virtual enclosures

---

This section explains how to delete a virtual enclosure.

### 5.2.3.1 Deleting virtual enclosures individually

Select and delete virtual enclosures as described below.

1. Start up the "Delete Virtual Enclosure" dialog box as follows:
  - Select from the Composition Data tree area the virtual enclosure you want to delete and then [Operations] - [Virtual Enclosure] - [Delete], or
  - Right-click on a virtual enclosure to which no virtual target is assigned and select [Delete Virtual Enclosure].

### Information

.....  
 When any virtual target is registered to the virtual enclosure, you cannot select [Delete] on the [Operations] - [Virtual Enclosure] menu or right-click on [Delete Virtual Enclosure].  
 .....

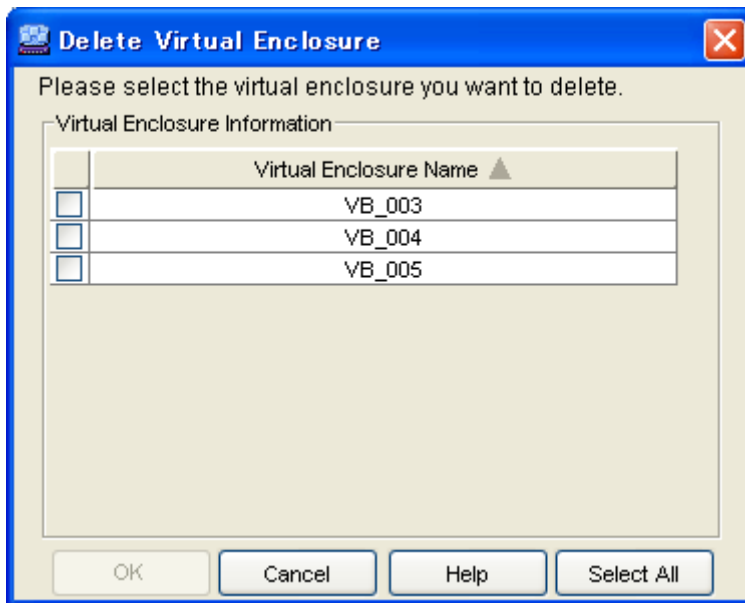
2. The "Delete Virtual Enclosure" confirmation dialog then appears. Click the <OK> button.

3. The "Delete Virtual Enclosure" message dialog displays the virtual enclosure deletion result. Click the <Close> button.
4. Confirm on the display and the creation screen that the virtual enclosure has been deleted.  
All virtual enclosures are now successfully deleted.

### 5.2.3.2 Deleting multiple virtual enclosures simultaneously

To delete multiple virtual enclosures, take action as described below.

1. Open the "Delete Virtual Enclosure" dialog box by using one of the following methods:
  - Select "Virtual Enclosure" in the Composition Data tree area, then select [Operation] - [Virtual Enclosure] - [Delete], or
  - Right-click on "Virtual Enclosure" in the Composition Data tree area, then select [Delete Virtual Enclosure].
2. The "Delete Virtual Enclosure" dialog box is displayed.



#### Information

If any virtual target is registered in the virtual enclosure, the virtual enclosure is not displayed in the "Delete Virtual Enclosure" dialog box.

3. Select the virtual enclosure or enclosures you want to delete, and click the <OK> button.
  - You can select all virtual enclosures by clicking the <Select All> button. If all virtual enclosures are selected, you can deselect all virtual enclosures by clicking the <Clear> button.
4. The "Delete Virtual Enclosure" confirmation dialog box is displayed. Click the <OK> button.
5. The "Delete Virtual Enclosure" message dialog displays the virtual enclosure deletion result. Click the <Close> button.
6. Confirm on the display and the creation screen that the virtual enclosure has been deleted.  
All virtual enclosures have now been successfully deleted.

### 5.2.4 Deleting virtual disks

This section explains how to delete virtual disks.

### 5.2.4.1 Deleting virtual disks individually

Select and delete a virtual disk as described below. You can use any physical disk constituting a virtual disk for another virtual disk or release it from the virtual storage pool.

#### Note

You cannot delete virtual disks displayed under a virtual enclosure in the Composition Data tree area.

1. Start up the "Delete Virtual Disk" dialog box as follows:
  - Select from the Composition Data tree area the virtual disk you want to delete in the virtual storage pool and then [Operations] - [Virtual Disk] - [Delete], or
  - Right-click on a virtual disk you want to delete in the virtual storage pool and select [Delete Virtual Disk].
2. The "Delete Virtual Disk" confirmation dialog then appears. Click the <OK> button.
3. The "Delete Virtual Disk" message dialog displays the virtual disk deletion result. Click the <Close> button.
4. Confirm on the display and the creation screen that the virtual disk has been deleted.  
All virtual disks are now successfully deleted.

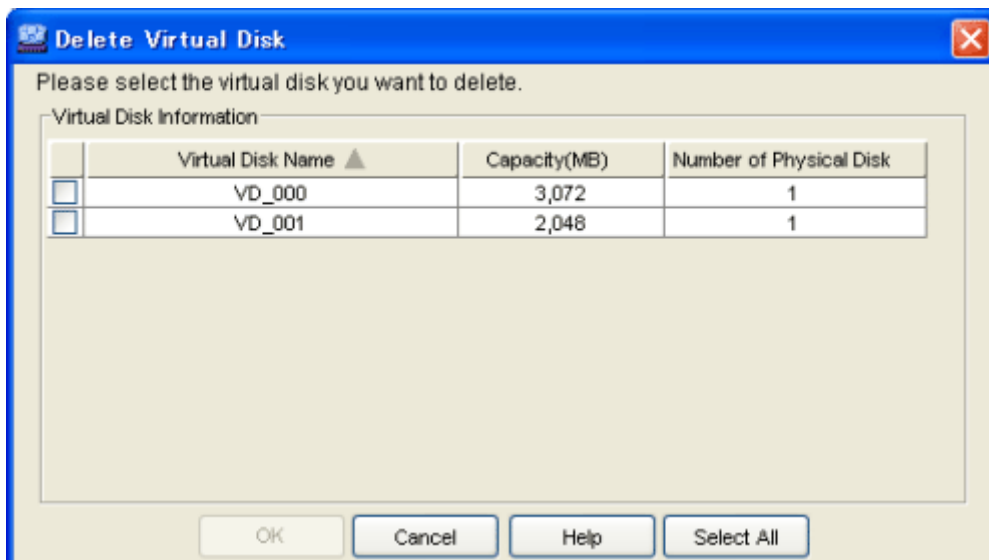
### 5.2.4.2 Deleting multiple virtual disks simultaneously

Proceed as follows to delete multiple virtual disks simultaneously. The physical disks constituting virtual disks can be used for other virtual disks or can be released from the virtual storage pool.

#### Note

You cannot delete virtual disks displayed under a virtual enclosure in the Composition Data tree area.

1. Open the "Delete Virtual Disk" dialog box by using one of the following methods:
  - Select from the Composition Data tree area the virtual storage pool, then select [Operate] - [Virtual Disk] - [Delete], or
  - Right-click on the virtual storage pool that contains the virtual disks you want to delete, then select [Delete Virtual Disk].
2. The "Delete Virtual Disk" dialog box appears.



3. Select the virtual disk or disks you want to delete, and click the <OK> button.

- You can select all virtual disks by clicking the <Select All> button. If all virtual disks are selected, you can deselect all virtual disks by clicking the <Clear> button.
4. The "Delete Virtual Disk" confirmation dialog box is displayed. Click the <OK> button.
  5. The "Delete Virtual Disk" message dialog displays the virtual disk deletion result. Click the <Close> button.
  6. Confirm on the display and the creation screen that the virtual disk has been deleted.
- All virtual disks have now been successfully deleted.

## 5.2.5 Releasing physical disks

This section explains how to release physical disks.

### 5.2.5.1 Releasing physical disks in units of storage devices

You can release physical disks from the virtual storage pool is as described below.



#### Point

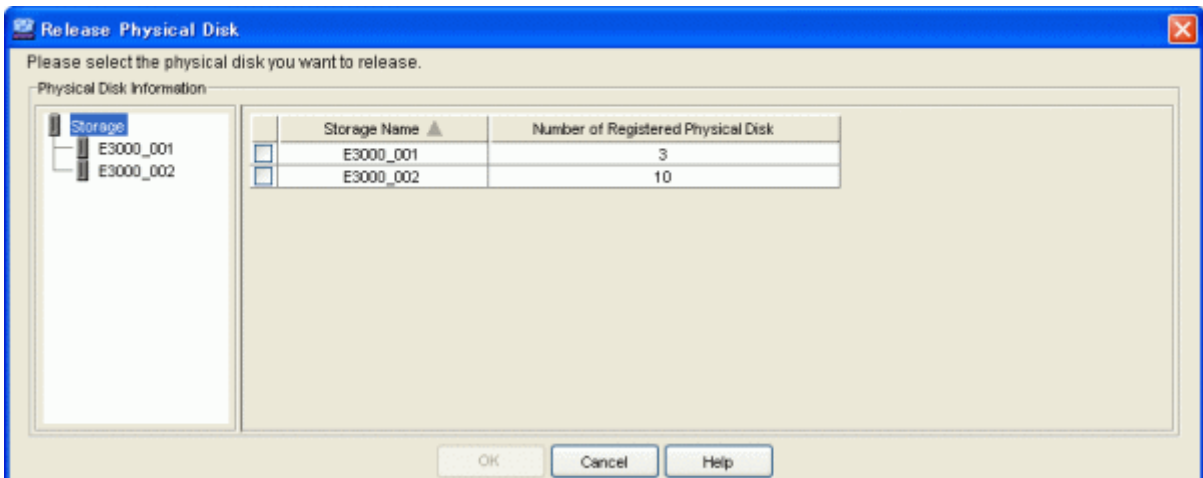
Release all physical disks registered to a virtual storage pool before deleting a virtual storage pool.



#### Note

The physical disk cannot be released if the VS900 management area has been created on it. To release the physical disk, delete the VS900 management area first.

1. Start up the "Release Physical Disk" dialog box as follows:
  - Select from the Composition Data tree area the virtual storage pool in which the physical disk to be released is registered and then [Operations] - [Physical Disk] - [Release], or
  - Right-click on the virtual storage pool and select [Release Physical Disk].
2. The "Release Physical Disk" dialog box then appears.
3. The storage devices that can be deleted are listed in the physical disk selection table.



4. Select a physical disk (or physical disks) to be released and click the <OK> button.
5. The "Release Physical Disk" confirmation dialog then appears. Click the <OK> button.

6. The "Release Physical Disk" message dialog displays the result of releasing the physical disk. Click the <Close> button.
7. Confirm on the display and the creation screen that the physical disk has been released.  
All physical disks are now successfully released from the virtual storage pool.

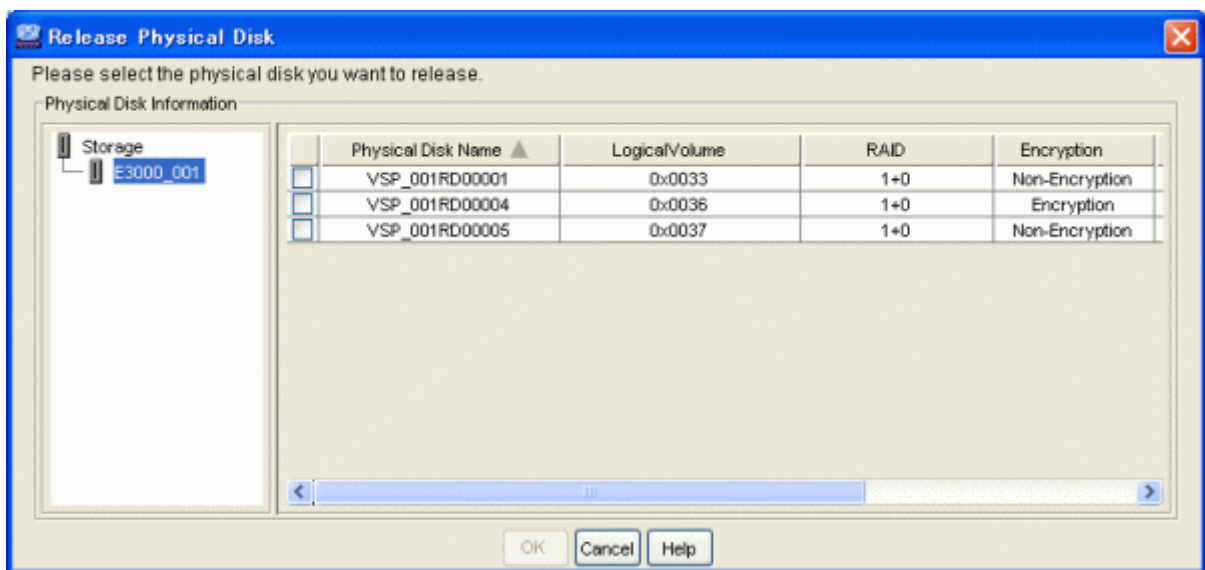
### 5.2.5.2 Releasing physical disks individually

Proceed as follows to release physical disks from the virtual storage pool.

#### Point

To delete a virtual storage pool, delete in advance all physical disks registered in the virtual storage pool.

1. Open the "Release Physical Disk" dialog box by using one of the following methods:
  - Select from the Composition Data tree area the virtual storage pool in which the physical disk you want to release is registered, then select [Operate] - [Physical Disk] - [Release], or
  - Right-click on the virtual storage pool, then select [Release Physical Disk].
2. The "Release Physical Disk" dialog box is displayed.
3. The storage devices that can be deleted are listed in the physical disk selection table.
4. Select the storage device from which you want to delete a physical disk.



5. Select the physical disk (or disks) you want to release, and click the <OK> button.
6. The "Release Physical Disk" confirmation dialog box is displayed. Click the <OK> button.
7. The "Release Physical Disk" message dialog displays the result of releasing the physical disk. Click the <Close> button.
8. Confirm on the display and the creation screen that the physical disk has been released.  
The physical disk is now successfully released from the virtual storage pool.

## 5.2.6 Deleting virtual storage pools

This section explains how to delete a virtual storage pool.

## 5.2.6.1 Deleting virtual storage pools individually

Select and delete virtual storage pools as described below.

1. Start up the "Delete Virtual Storage Pool" dialog box as follows:
  - Select from the Composition Data tree area the virtual storage pool you want to delete and then [Operations] - [Virtual Storage Pool] - [Delete], or
  - Right-click on the virtual storage pool and select [Delete Virtual Storage Pool].

### Information

When any resource is registered in the virtual storage pool, you cannot select [Delete] on the [Operations] - [Virtual Storage Pool] menu or right-click on [Delete Virtual Storage Pool].

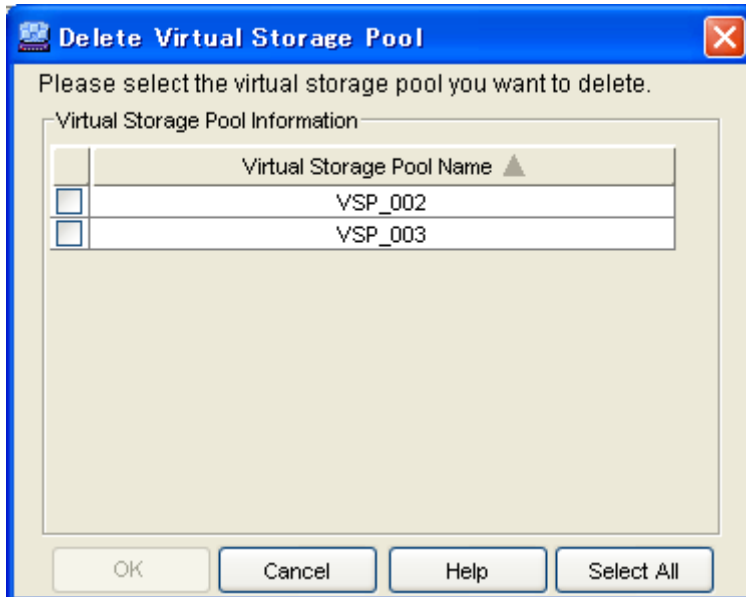
2. The "Delete Virtual Storage Pool" confirmation dialog then appears. Click the <OK> button.
3. The "Delete Virtual Storage Pool" message dialog displays the result of deleting the virtual storage pool. Click the <Close> button.
4. Confirm on the display and the creation screen that the virtual storage pool has been deleted.

All virtual storage pools are now successfully deleted.

## 5.2.6.2 Deleting multiple virtual storage pools simultaneously

Proceed as follows to delete multiple virtual storage pools simultaneously.

1. Open the "Delete Virtual Storage Pool" dialog box by using one of the following methods:
  - Select "Virtual Storage Pool" in the Composition Data tree area, then select [Operation] - [Virtual Storage Pool] - [Delete], or
  - Right-click on "Virtual Storage Pool" in the Composition Data tree area, then select [Delete Virtual Storage Pool].
2. The "Delete Virtual Storage Pool" dialog box is displayed.



### Information

If any resource is registered in the virtual storage pool, the virtual storage pool is not displayed in the "Delete Virtual Storage Pool" dialog box.

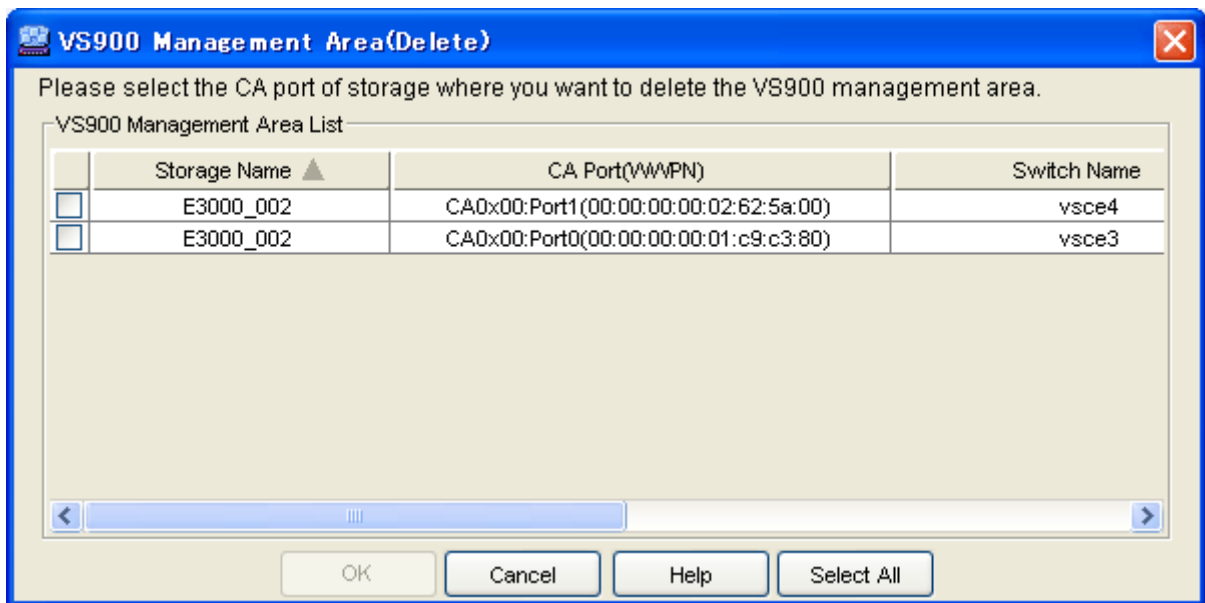
3. Select the virtual storage pool or pools you want to delete, and click the <OK> button.
  - You can select all virtual storage pools by clicking the <Select All> button. If all virtual storage pools are selected, you can deselect all virtual storage pools by clicking the <Clear> button.
4. The "Delete Virtual Storage Pool" confirmation dialog box is displayed. Click the <OK> button.
5. The "Delete Virtual Storage Pool" message dialog displays the result of deleting the virtual storage pool. Click the <Close> button.
6. Confirm on the display and the creation screen that the virtual storage pool has been deleted.
 

All virtual storage pools have now been successfully deleted.

## 5.2.7 Deleting VS900 management area

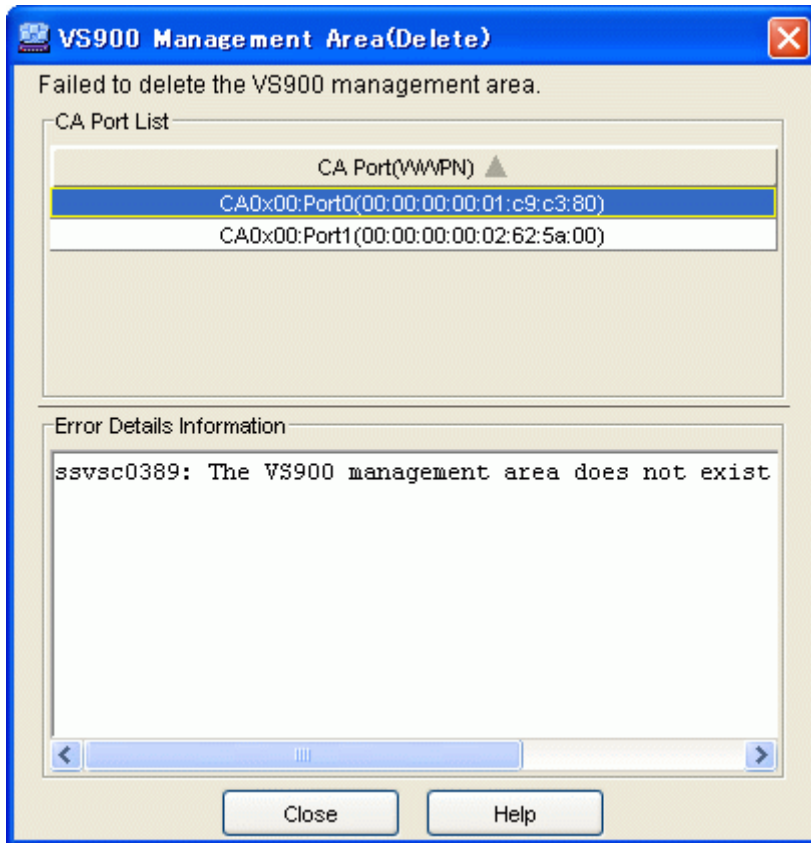
This section explains how to delete the VS900 management area.

1. Start the "VS900 Management Area (Delete)" dialog box.
  - Click the "Virtual Storage Pool" in the Composition Data tree area, and click [Operations] - [VS900 management area] - [Delete].
2. The "VS900 Management Area (Delete)" dialog box then appears.



3. The VS900 management area list then appears. Select the VS900 management area (or management areas) you want to delete and click the <OK> button.
  - All VS900 management areas are selected by clicking the <Select All> button. When all the VS900 management areas are selected, the selection can be cancelled by clicking the <Clear> button.
4. When the VS900 management areas are deleted successfully, the "VS900 Management Area (Delete)" message dialog is displayed.
 

When the VS900 management areas were not deleted successfully, the "VS900 Management Area (Delete)" error dialog box is displayed. The detailed error information for the VS900 management area that failed to be deleted can be referenced by selecting the CA port displayed. Confirm the cause of the failure to delete the VS900 management area, then click the <Close> button.



The VS900 management areas are now deleted.

## 5.3 Changing the Resource Status

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This section describes how to change the status of a created resource.

### 5.3.1 Adding capacity to the virtual disk

---

You can add capacity to the virtual disk used on the transaction server as described below.

You can add capacity to the virtual disk as follows:

- Add capacity automatically to the virtual disk, or
- Add capacity while checking the physical disk from which to slice capacity, or
- Select (manually) the physical disk from which to slice capacity.



#### Note

If the number of SCSI command queues of the virtual target exceeds the number of SCSI command queues of a single CA, a confirmation dialog box appears with the message "[ssgui4414](#): The number of virtual targets of SCSI command cues exceeds the limitation value of CA. Is processing continued?". If you click the <OK> button, disk read or write performance may deteriorate.

#### 5.3.1.1 Adding capacity automatically to the virtual disk

The physical disk on which you want to slice capacity can be selected automatically to expand virtual disk capacity as described below.



1. Start up the "Add Capacity" dialog box as follows:
  - Select from the Composition Data tree area the virtual disk to which you want to add capacity and click the <Add Capacity> button, or
  - Select the virtual disk and then [Operations] - [Virtual Disk] - [Add Capacity], or
  - Right-click on a virtual disk under the virtual enclosure and select [Add Capacity].
2. The "Add Capacity" dialog box then appears.
3. Enter the status information for the physical disk on which you want to slice capacity.
 

**Capacity (required)**

Enter the capacity (numeric value) you want to add to the virtual disk.

Select the unit from the [MB] (default)/[GB] pull-down menu.

**RAID (selective)**

Select the RAID level of the physical disk on which you want to slice capacity from the pull-down menu.

The pull-down menu lists [No specification](default)/ [1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

**Storage Name (selective)**

When there are multiple physical disks on which you want to slice capacity, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed.

**Encryption (selective)**

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but an encryption attribute that cannot be selected for the physical disk is not displayed.
4. Select the <Automatic creation> button.
5. The "Add Capacity" confirmation dialog then appears. Click the <OK> button.
6. The "Add Capacity" dialog displays the result of adding capacity to the virtual disk. Select the <Close> button.
7. Confirm on the display and the creation screen that capacity has been added to the virtual disk.
 

Capacity is now successfully added to the virtual disk.

### 5.3.1.2 Adding capacity while checking the physical disk on which you want to slice capacity

The user can add capacity to the virtual disk while checking information of the physical disk selected automatically based on the information entered.

1. Start up the "Add Capacity" dialog box is as follows:
  - Select from the Composition Data tree area the virtual disk to which you want to add capacity and click the <Add Capacity> button, or
  - Select the virtual disk and then [Operations] - [Virtual Disk] - [Add Capacity], or
  - Right-click on a virtual disk under the virtual enclosure and select [Add Capacity].
2. The "Add Capacity" dialog box then appears.
3. Enter the following status information necessary for the physical disk on which you want to slice capacity.

#### Capacity (required)

Enter the capacity (numeric value) you want to add to the virtual disk.

Select the unit from the [MB] (default)/[GB] pull-down menu.

#### RAID (selective)

Select the RAID level of the physical disk on which you want to slice from the pull-down menu.

The pull-down menu lists [No specification](default)/ [1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

#### Storage Name (selective)

When there are multiple physical disks on which you want to slice capacity, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed.

#### Encryption (selective)

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but an encryption attribute that cannot be selected for the physical disk is not displayed.

4. Click the <Candidate Selection> button.
5. The "Add Capacity" dialog box shows the automatically selected physical disk with its checkbox checked.

If you want to add capacity using the automatically selected physical disk:

1. Click the <OK> button.

If you want to add capacity using physical disks other than the automatically selected one:

1. Remove the check mark from the automatically selected physical disk.
2. Select and check the physical disk on which you want to slice capacity.
3. Click the <Assigned Capacity> button.
4. The "Assigned Capacity" dialog box then appears.
5. Enter the changed quota capacity.

#### Assigned Capacity (required)

Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB].

1. Click the <OK> button in the "Assigned Capacity" dialog box.
2. Click the <OK> button in the "Add Capacity" dialog box.

If you want to change the assigned capacity of the automatically selected physical disk:

1. Click the <Assigned Capacity> button for the physical disk whose quota capacity you want to change.
2. The "Assigned Capacity" dialog box then appears.
3. Enter the changed quota capacity.

#### Assigned Capacity (required)

Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB].

1. Click the <OK> button in the "Assigned Capacity" dialog box.
2. Click the <OK> button in the "Add Capacity" dialog box.

6. The "Add Capacity" confirmation dialog box then appears. Click the <OK> button.

7. The "Add Capacity" message dialog displays the result of adding capacity to the virtual disk. Select the <Close> button.
8. Confirm on the display and the creation screen that capacity has been added to the virtual disk.  
Capacity is now successfully added to the virtual disk.

### 5.3.1.3 When the user selects the physical disk to slice capacity

The user can select all physical disks on which to slice capacity for adding capacity to the virtual disk.



#### Note

You cannot add capacity while the virtual disk is in migration or replication.

Moreover, you cannot add capacity to any virtual disk displayed under a virtual storage pool in the Composition Data tree area.

1. Start up the "Add Capacity" dialog box as follows:
  - Select from the Composition Data tree area the virtual disk to which you want to add capacity and click the <Add Capacity> button, or
  - Select the virtual disk and then [Operations] - [Virtual Disk] - [Add Capacity], or
  - Right-click on a virtual disk under the virtual enclosure and select [Add Capacity].
2. The "Add Capacity" dialog box then appears.
3. Select and check the physical disk on which you want to slice capacity.
4. Click the <Assigned Capacity> button for the physical disk selected.
5. The "Assigned Capacity" dialog box then appears.
6. Enter the capacity you want to add to the virtual disk.  
**Assigned Capacity (required)**  
Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB]. Note that checking the physical disk sets non-assigned capacity as the quota capacity. Removing the physical disk sets the quota capacity to 0.
7. Click the <OK> button in the "Assigned Capacity" dialog box.
8. Click the <OK> button in the "Add Capacity" dialog box.
9. The "Add Capacity" confirmation dialog box then appears. Click the <OK> button.
10. The "Add Capacity" dialog displays the result of adding capacity to the virtual disk. Select the <Close> button.
11. Confirm on the display and the creation screen that capacity has been added to the virtual disk.  
Capacity is now successfully added to the virtual disk.

## 5.3.2 Changing VTHL

The user can select and change VTHL of the assignment information for a virtual disk as follows:

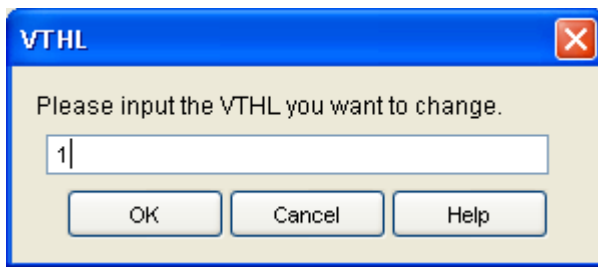


#### Note

You cannot change VTHL while assigning a virtual disk to multiple virtual targets. Release the virtual disk from all virtual targets before assigning it to a virtual target.

1. Click the check box to select the virtual disk of VTHL to be changed in the "Virtual Disk Assignment Information" table in the "Assign/Release Virtual Disk" dialog box. Click the <VTHL> button.

2. The "VTHL" dialog box then appears.



3. Enter the VTHL you want to change as follows:

VTHL (required)

Enter the VTHL you want to assign to the virtual disk selected.

4. Click the <OK> button in the "VTHL" dialog box.
5. Click the <OK> button of the "Assign/Release Virtual Disk" dialog box.
6. The "Assign/Release Virtual Disk" confirmation dialog then appears. Click the <OK> button.
7. The "Assign/Release Virtual Disk" message dialog displays the result of assigning the virtual disks. Click the <Close> button.
8. Confirm on the display and the creation screen that the virtual disks have been assigned.

VTHL is now successfully changed.

### 5.3.3 Changing the resource name

---

You must carefully enter the name when creating a resource because you cannot change it in virtual storage.

To change the name, first delete the resource you created, and then create a new one with the new desired name.

## 5.4 Migration

---

You can move physical disks constituting a virtual disk to other physical disks. This section describes the procedure for selecting the migration destination physical disk and starting migration processing. Refer to "[A.3 Explanation of Windows under "Copy"](#)" for details of migration processing.

You can select the migration destination physical disk during virtual disk migration as follows:

- Select the migration destination physical disk automatically, or
- Select the migration destination physical disk while checking the physical disk, or
- Select (manually) the migration destination physical disk.



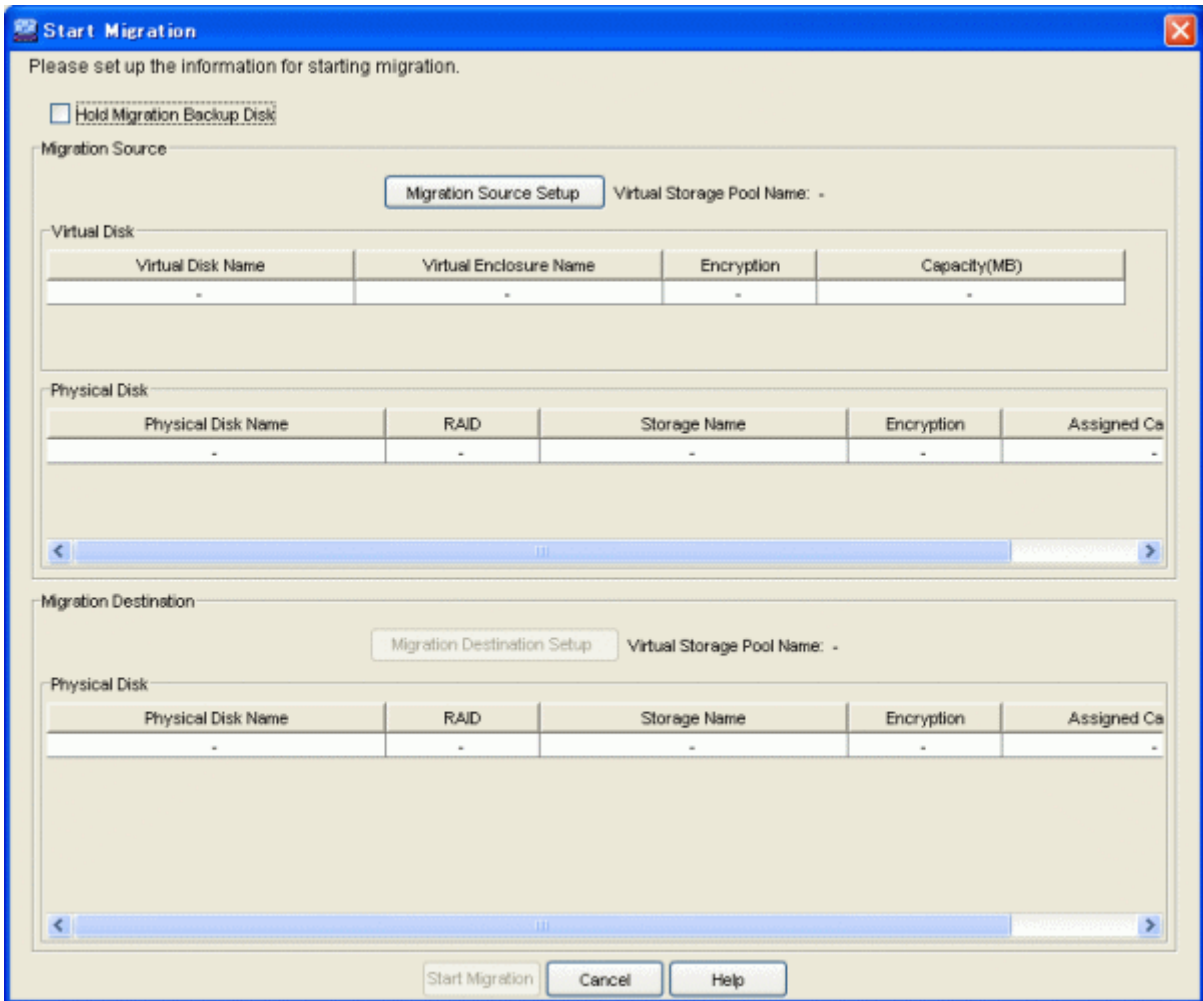
.....  
If the number of SCSI command queues of the virtual target exceeds the number of SCSI command queues of a single CA, a confirmation dialog box appears with the message "ssgui4414: The number of virtual targets of SCSI command cues exceeds the limitation value of CA. Is processing continued?". If you click the <OK> button, disk read or write performance may deteriorate.  
.....

### 5.4.1 Selecting the migration destination physical disk automatically

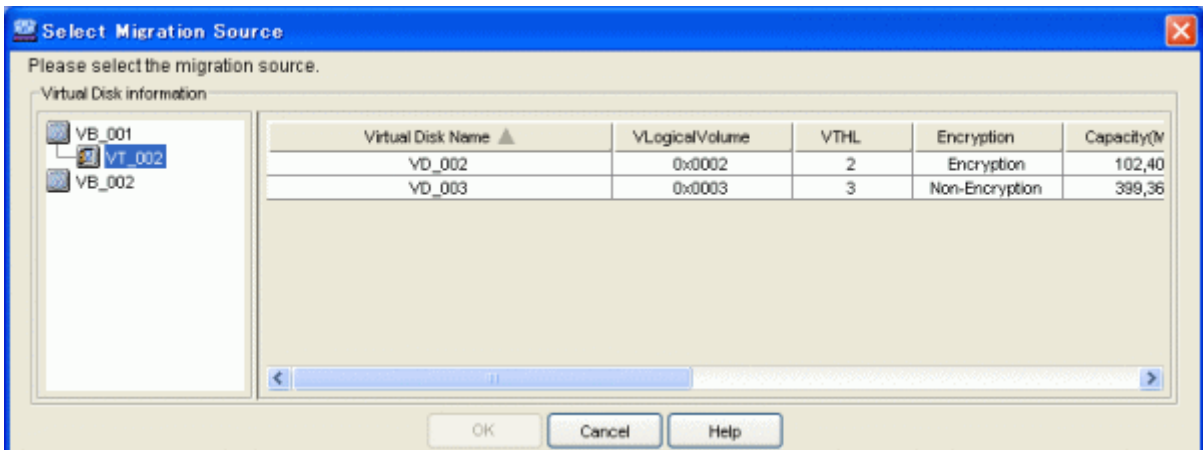
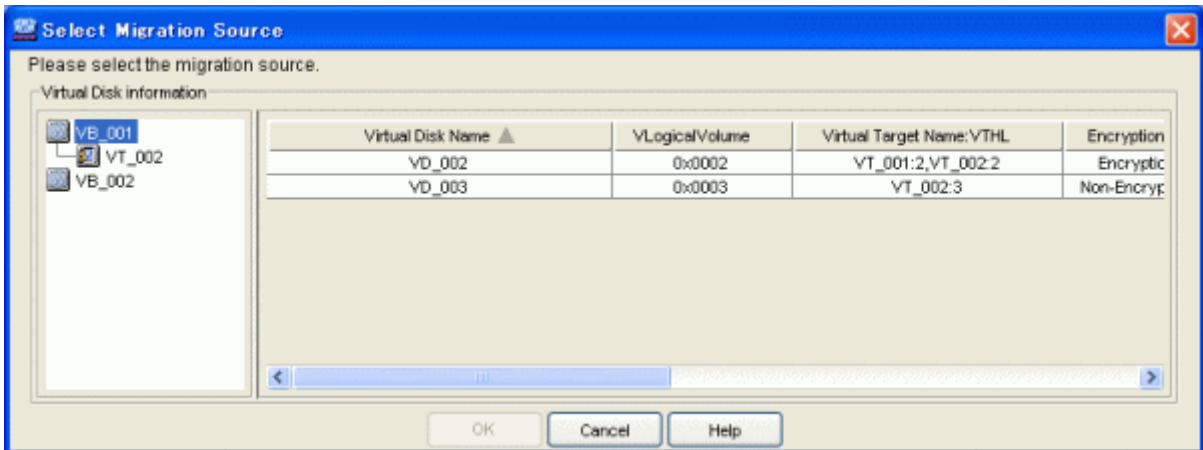
---

The migration destination physical disk can be selected automatically to perform migration as follows:

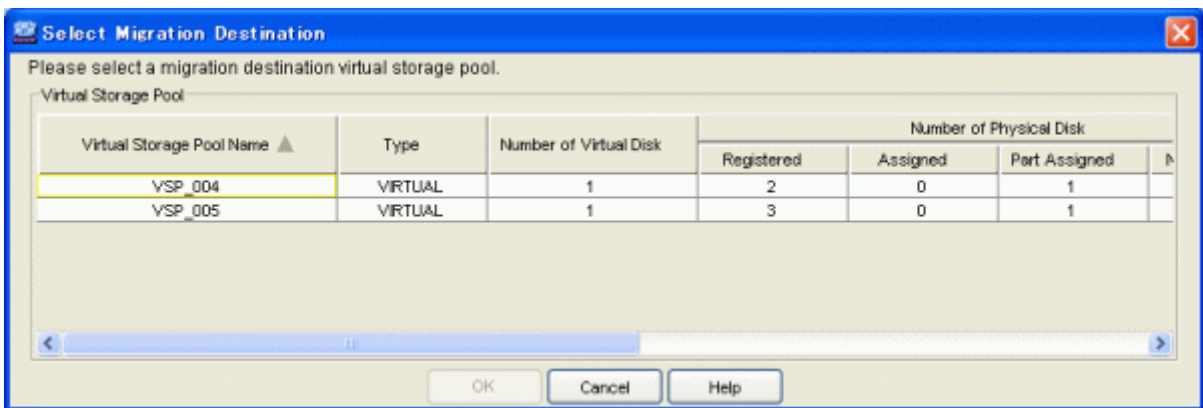
1. Click the <Start Migration> button in the copy window. Otherwise, select [Operations] - [Start Migration].
2. The "Start Migration" dialog box then appears.



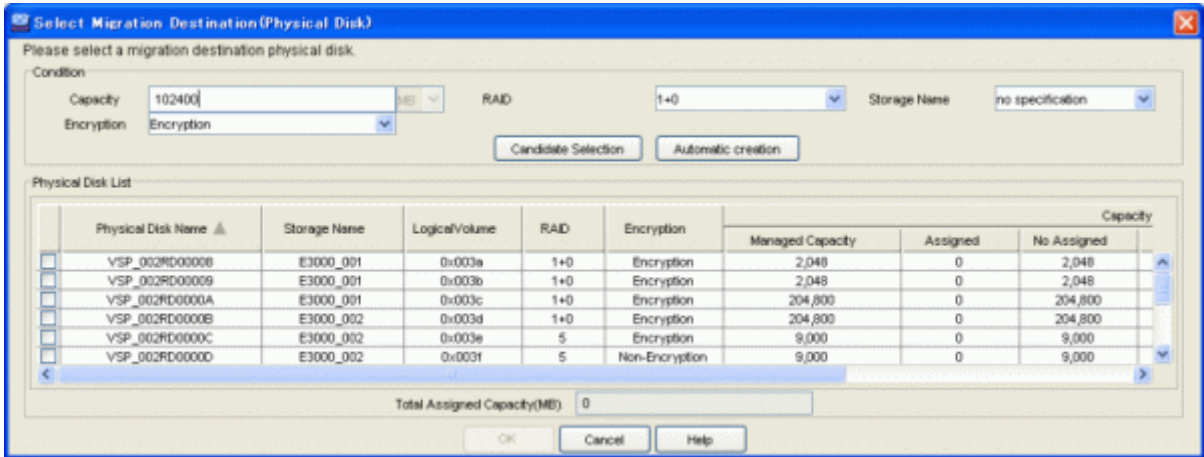
3. When you want to disable the automatic switch from the migration source to the migration destination physical disk, check the [Hold Migration Backup Disk] box (which is not checked at this time by default).
4. Click the <Migration Source Setup> button.
5. The "Select Migration Source" dialog box then appears.
6. Select from the migration source tree area the virtual enclosure that stores the virtual disk you want to migrate.
7. The "Select Migration Source" table lists the virtual disks in the virtual enclosure.
8. Select the virtual disk you want to migrate and click the <OK> button.



9. The "Start Migration" dialog box shows information of the virtual disk selected.
10. Click the <Migration Destination Setup> button.
11. The "Select Migration Destination" dialog box then appears.



12. Select the virtual storage pool in which the migration destination physical disk is registered and click the <OK> button.
13. The "Select Migration Destination (Physical Disk)" dialog box then appears.



- Enter the following status information necessary for selecting the migration destination physical disk.

#### Capacity (selective)

The virtual disk capacity is displayed by default. If more capacity is required, enter the appropriate capacity (numeric value) required for the migration destination physical disk.

Note that the capacity can be specified only if "Hold Migration Backup Disk" has a check mark.

The unit is fixed at MB and cannot be changed.

#### RAID (selective)

Select the RAID level of the migration destination physical disk from the pull-down menu.

The pull-down menu lists [No specification](default)/ [1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

#### Storage Name (selective)

When there are multiple migration destination physical disks, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed.

#### Encryption (selective)

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but an encryption attribute that cannot be selected for the physical disk is not displayed.

- Click the <Automatic creation> button.
- The "Start Migration" confirmation dialog then appears. Click the <OK> button.
- The "Start Migration" message dialog displays the migration activation result. Click the <Close> button.
- Confirm on the copy status reference display screen that migration has been activated.

The migration processing of the virtual disks will be executed.

## 5.4.2 Selecting the migration destination physical disk while checking the physical disk

The user can perform migration while checking information of the migration destination physical disk selected automatically based on the information entered.

1. Click the <Start Migration> button in the copy window. Otherwise, select [Operations] - [Start Migration].
2. The "Start Migration" dialog box then appears.
3. When you want to disable the automatic switch from the migration source to the migration destination physical disk, check the [Hold Migration Backup Disk] box (which at this time is not yet checked by default).
4. Click the <Migration Source Setup> button.
5. The "Select Migration Source" dialog box then appears.
6. Select from the migration source tree area the virtual enclosure that stores the virtual disk to be migrated.
7. The "Select Migration Source" table lists the virtual disks in the virtual enclosure.
8. Select the virtual disk to be migrated and click the <OK> button.
9. The "Start Migration" dialog box shows information of the virtual disk selected.
10. Click the <Migration Destination Setup> button.
11. The "Select Migration Destination" dialog box then appears.
12. Select the virtual storage pool in which the migration destination physical disk is registered and click the <OK> button.
13. The "Select Migration Destination (Physical Disk)" dialog box then appears.
14. Enter the following status information necessary for selecting the migration destination physical disk.

#### Capacity (selective)

The virtual disk capacity is displayed by default. If more capacity than displayed is required, enter the appropriate capacity (numeric value) required for the migration destination physical disk.

The unit is fixed at [MB].

#### RAID (selective)

Select the RAID level of the migration destination physical disk from the pull-down menu.

The pull-down menu lists [No specification](default)/ [1+0], [1], [5], [6] and [0] but the RAID levels that cannot be selected for the physical disks are not displayed.

#### Storage Name (selective)

When there are multiple migration destination physical disks, use the physical disks in the same storage or select from the pull-down menu.

Only the storage devices registered in the virtual storage pool are displayed in [Storage name].

The pull-down menu lists [No specification] (default)/[Storage name] but the storage names that cannot be selected for the physical disks are not displayed.

#### Encryption (selective)

Select the encryption attribute of a physical disk that configures the virtual disk from the pull-down menu.

The pull-down menu lists [Encryption] and [Non-encryption] but an encryption attribute that cannot be selected for the physical disk is not displayed.

15. Click the <Candidate Selection> button.
16. The "Select Migration Destination (Physical Disk)" dialog box shows the automatically selected physical disk with its checkbox checked.

If you want to migrate to the automatically selected physical disk:

1. Click the <OK> button.

If you want to migrate to physical disks other than the automatically selected physical disk:

1. Remove the check mark from the automatically selected physical disk.
2. Select and check the physical disk that you want as the migration destination.



3. Click the <OK> button.

If you want to change the assigned capacity of the automatically selected physical disk:

1. Click the <Assigned Capacity> button for the physical disk whose quota capacity you want to change.
2. The "Assigned Capacity" dialog box then appears.
3. Enter the changed quota capacity.

#### Assigned Capacity (required)

Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB].

1. Click the <OK> button in the "Assigned Capacity" dialog box.
  2. Click the <OK> button in the "Select Migration Destination (Physical Disk)" dialog box.
  17. Click the <Start Migration> button in the "Start Migration" dialog box.
  18. The "Start Migration" confirmation dialog then appears. Click the <Close> button.
  19. The "Start Migration" dialog displays the migration activation result. Click the <Close> button.
  20. Confirm on the copy status reference display screen that migration has been activated.
- The migration processing of the virtual disks will be executed.

### **5.4.3 When the user selects the migration destination physical disk**

---

The user can select all migration destination physical disks for performing migration as follows:

1. Select the <Start Migration> button in the copy window. Otherwise, select [Operations] - [Start Migration].
2. The "Start Migration" dialog box then appears.
3. If you want to disable the automatic switch from the migration source to the migration destination physical disk, check the [Hold Migration Backup Disk] box (which at this time is not yet checked by default).
4. Click the <Migration Source Setup> button.
5. The "Select Migration Source" dialog box then appears.
6. Select from the migration source tree area the virtual enclosure that stores the virtual disk you want to migrate.
7. The "Select Migration Source" table lists the virtual disks in the virtual enclosure.
8. Select the virtual disk you want to migrate and click the <OK> button.
9. The "Start Migration" dialog box shows information of the virtual disk selected.
10. Click the <Migration Destination Setup> button.
11. The "Select Migration Destination" dialog box then appears.
12. Select the virtual storage pool in which the migration destination physical disk is registered and click the <OK> button.
13. The "Select Migration Destination (Physical Disk)" dialog box then appears.
14. Check the migration destination physical disk.

If you want to change the assigned capacity of the physical disk selected:

1. Click the <Assigned Capacity> button for the physical disk whose quota capacity you want to change.
2. The "Assigned Capacity" dialog box then appears.
3. Enter the changed quota capacity.

#### Assigned Capacity (required)

Enter the capacity you want to assign from the physical disk selected to the virtual disk in [MB].

1. Click the <OK> button in the "Assigned Capacity" dialog box.
2. Click the <OK> button in the "Select Migration Destination (Physical Disk)" dialog box.
15. Click the <Start Migration> button in the "Start Migration" dialog box.
16. The "Start Migration" confirmation dialog then appears. Click the <OK> button.
17. The "Start Migration" dialog displays the migration activation result. Click the <Close> button.
18. Confirm on the copy status reference display screen that migration has been activated.  
The migration processing of the virtual disks will be executed.

## 5.4.4 Precautions on using migration

---

This section describes some precautions on using migration as described below.

### Information displayed in the "View and Create" window

Information displayed in "View and Create" is not automatically updated. Select the [View] - [Update] menu in the [View and Create] window to update the information during or after migration.

### Information displayed in the "Copy Status Inquiry" window

When automatic-switch migration is started, the status may be "Automatic change(standby)" before completing the change of physical disks even when data copying to the migration destination physical disk is completed. Since the copy information is deleted immediately after completing the physical disk switch, update the information in "Copy Status Inquiry" after waiting a while.

### Migration source and migration destination physical disk capacities

The capacity of the migration destination physical disk must be equal to or greater than that of the migration source physical disk. If the migration destination physical disk has greater capacity, a task is required to enable the server operating system and file system to recognize the difference in space. Therefore, the migration source physical disk and migration destination physical disk should have equal capacities.

If migration source physical disk and migration destination physical disk have unequal capacities, an error message is output to stop migration processing when automatic switching migration is performed.

### Data consistency

In migration to hold migration backup disk (hereinafter called "backup disk"), if you want to ensure data consistency stored on backup disks, it is required to write data cached on the application server to the backup disks before migration cutover to ensure the consistency.

### Copying encrypted volumes

When non-encrypted volumes are copied from the encrypted volumes, the level of security deteriorates.

## 5.5 Checking the Copy Status

---

The status of copying a virtual disk can be obtained by checking the "Copy Status Inquiry" window. This section describes how to operate the "Copy Status Inquiry" window. In the "Copy Status Inquiry" window, the operations below can be performed.

- Stop copying
- Change migration

- Operate the backup disk



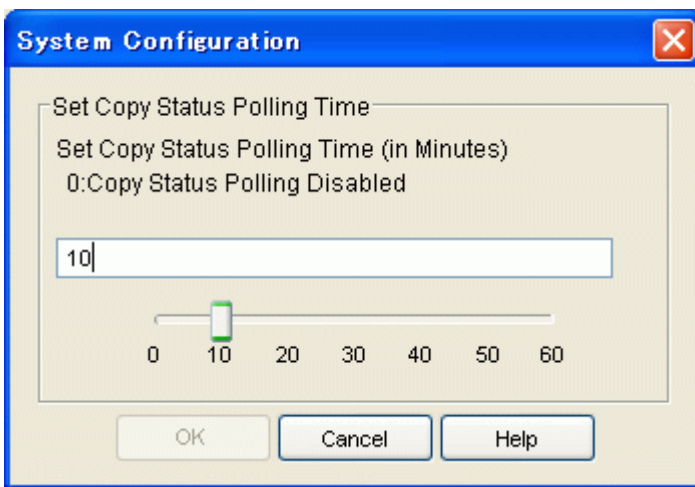
For an explanation of each window of "Copy Status Inquiry," refer to "A.3 Explanation of Windows under "Copy"".

## 5.5.1 Polling interval of copying

---

The polling interval of copying can be changed as follows:

1. Select [View] - [Options] - [Option Setting Frame].
2. The "System Configuration" dialog box below then appears.
3. Enter the polling interval to be set and click the <OK> button. Note that 10 min. is set by default.



4. The polling interval of copying is set and information will be updated at the interval set in the "Copy Status Inquiry" window.

## 5.5.2 Stopping copying

---

Migration processing, replication processing, and ACM processing can be stopped as follows:

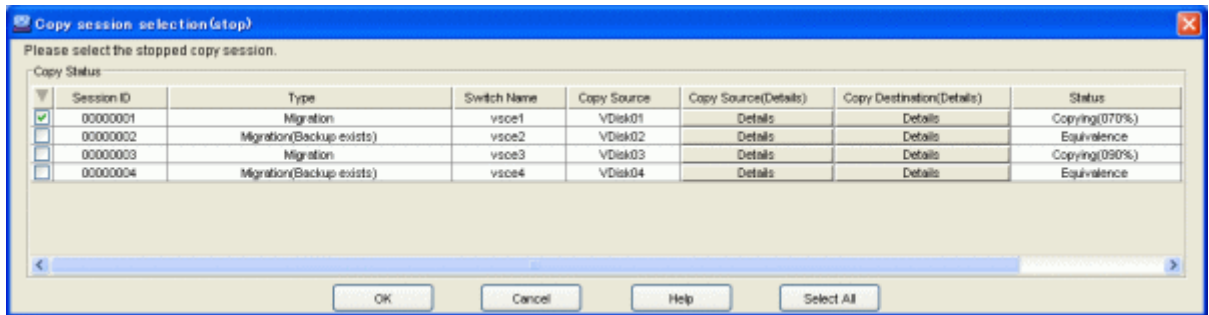
1. Select the session to be stopped.
2. Click the <Stop> button.

When there are many sessions of the same type (migration, replication, or ACM) as the selected session and they can be stopped, the "Copy session selection (stop)" dialog box appears.

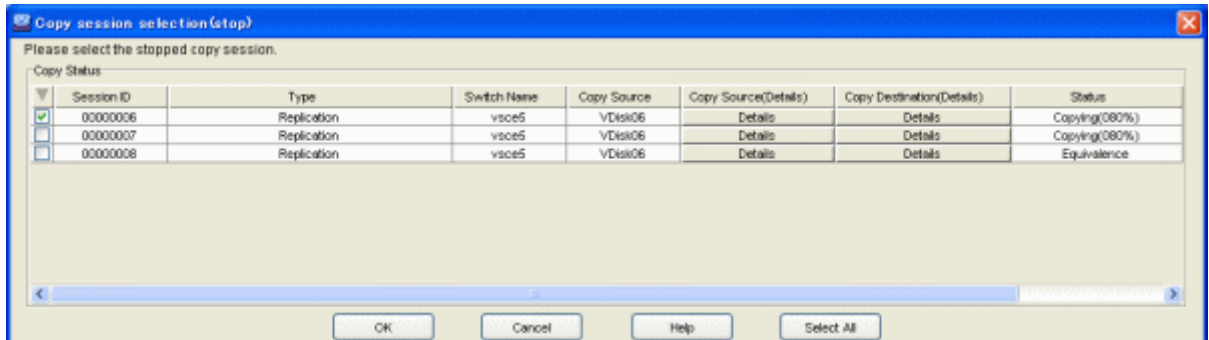
The selected session is checked by default.

To stop any of the additional sessions, select the appropriate check boxes and click the <OK> button.

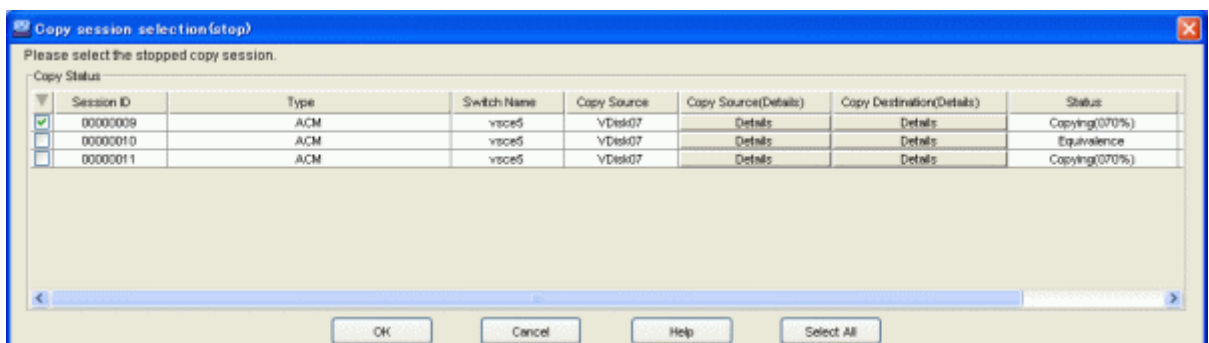
- For Migration



- For Replication



- For ACM



3. The "Stop" confirmation dialog box then appears. Click the <OK> button.
4. The status display is then deleted from the "Copy Status Inquiry" window.

### 5.5.3 Deleting display if a copy error occurs

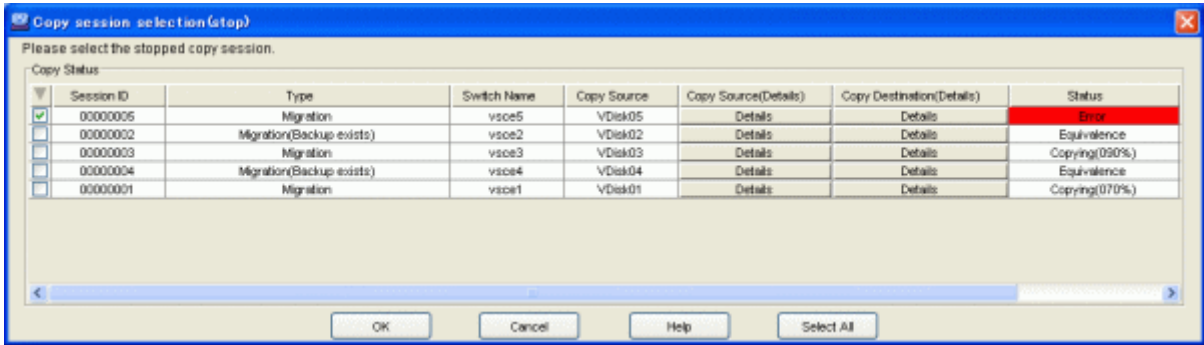
If migration or replication processing fails, "Error" is displayed in the status field. You can delete the display of the migration or replication processing that ended abnormally.

1. Select the session whose status is "Abnormal end".
2. Click the <Stop> button.

When there are many sessions of the same type (migration, replication, or ACM) as the selected session and they can be stopped, the "Copy session selection (stop)" dialog box appears.

The selected session is checked by default.

To stop any of the additional sessions, select the appropriate check boxes and click the <OK> button.



3. The "Stop" confirmation dialog box then appears. Click the <OK> button.
4. The status display is then deleted from the "Copy Status Inquiry" window.

## 5.5.4 Changing migration

The physical disks constituting a virtual disk are changed from the migration source physical disks to the migration destination physical disks as follows:



### Note

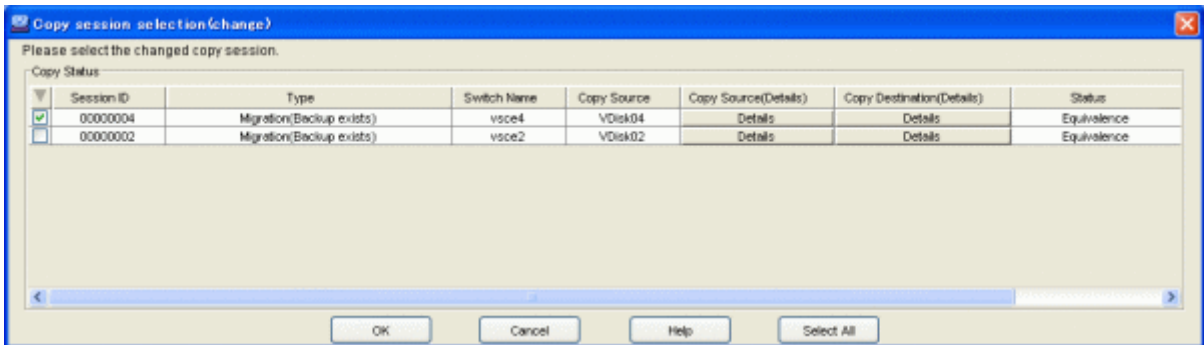
Note that a migration change can only be made when a backup disk is held when starting migration. If no backup disk is held, migration is changed automatically.

If migration cutover is automatically performed, it may take a maximum of 30 minutes for cutover time.

1. Select the session whose migration status is "Equivalence".
2. Click the <Change> button.

When there are many sessions that can be switched, the "Copy session selection (change)" dialog box then appears. The selected session is checked by default.

To switch any of the additional sessions, select the appropriate check boxes and click the <OK> button.



3. The "Change Migration" confirmation dialog box then appears. Click the <OK> button.
4. The physical disks constituting a virtual disk are then changed to the migration destination physical disks.

## 5.5.5 Operating the backup disk

When a backup disk is held, when migration is started, operations involving the backup disk must be performed when migration is terminated.

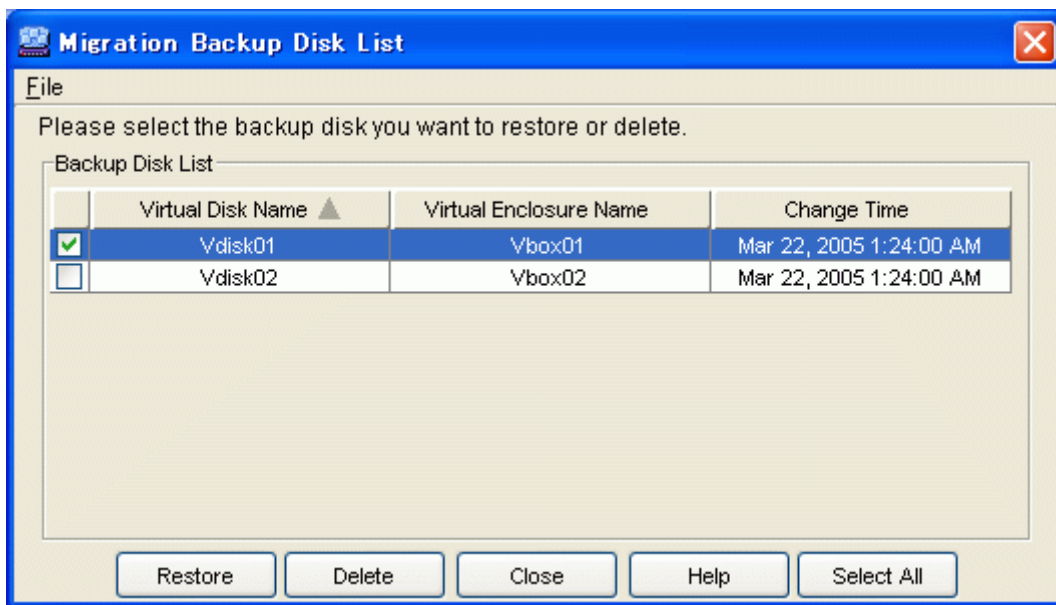
The following operations can be performed for the backup disk:

- Delete backup disks
- Restore from the backup disk

### 5.5.5.1 Deleting backup disks

The backup disk held for migration processing is deleted as follows:

1. Start up the "Migration Backup Disk List" dialog box as follows:
  - Click the <Migration Backup Disk List> button in the window, or
  - Click the [Operations] - [Migration Backup Disk] in the window.
2. The "Migration Backup Disk List" dialog box then appears.



3. Select the backup disk(s) to be deleted and click the <Delete> button.
 

You can select all backup disks by clicking the <Select All> button.  
If all backup disks are selected, you can use the <Clear> button to remove the selection.
4. The "Delete Migration Backup Disk" confirmation dialog box then appears. Click the <OK> button.
5. The backup disk is deleted.

#### Point

.....

Note that once the migration change is completed and virtual disk operation starts using the migration destination physical disks, no backup disk will be needed. Therefore, be sure to promptly delete the backup disk.

.....

### 5.5.5.2 Restoring from the backup disk

Restore processing is performed from the backup disk held for migration processing as follows:

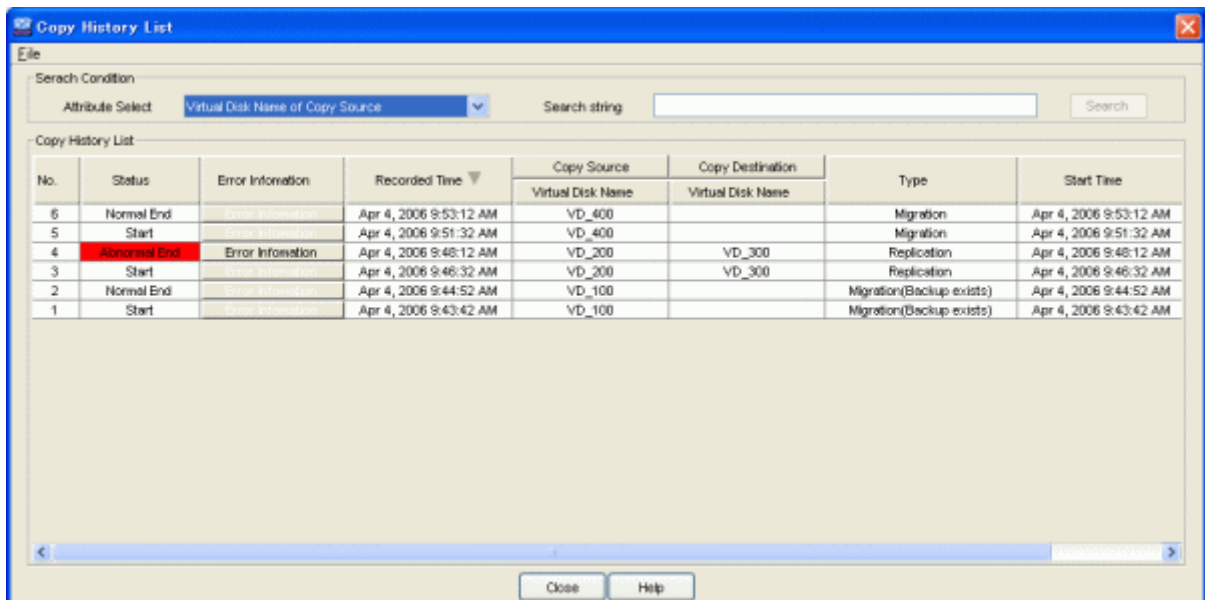
1. Start up the "Migration Backup Disk List" dialog box as follows:
  - Click the <Migration Backup Disk List> button in the window, or
  - Click the [Operations] - [Migration Backup Disk] in the window.
2. The "Migration Backup Disk List" dialog box then appears.

3. Select the backup disk(s) to be restored and click the <Restore> button.  
You can select all backup disks by clicking the <Select All> button.  
If all backup disks are selected, you can use the <Clear> button to remove the selection.
4. The "Restore Migration Backup Disk" confirmation dialog box then appears. Click the <OK> button.
5. Restore processing is performed from the backup disk.

## 5.6 Copy History List

The copy history list shows migration and replication start/stop history information.

1. Open the "Copy History List" dialog box using one of the following methods:
  - Click the <Copy History List> button, or
  - Select [Operation] - [Copy History List].
2. The "Copy History List" dialog box appears.



3. To perform a search using a keyword, enter search conditions:
  - Attribute Select (selective)**  
Select the attribute that is the search target from the pull-down menu.  
The pull-down menu lists [Virtual Disk Name of Copy Source] / [Virtual Disk Name of Copy Destination] / [Session ID].
  - Search string (required)**  
Enter a character string that is the search target together with the selected attribute.  
If [Virtual Disk Name of Copy Source] or [Virtual Disk Name of Copy Destination] is the selected attribute, a character string consisting of up to 32 characters can be input.  
If [Session ID] is the selected attribute, a character string consisting of up to 8 characters can be input.
4. Click the <Search> button.
5. A line containing a matching character string with the selected attribute is selected. If no matching character string is found, no line is selected.

# Chapter 6 Maintenance

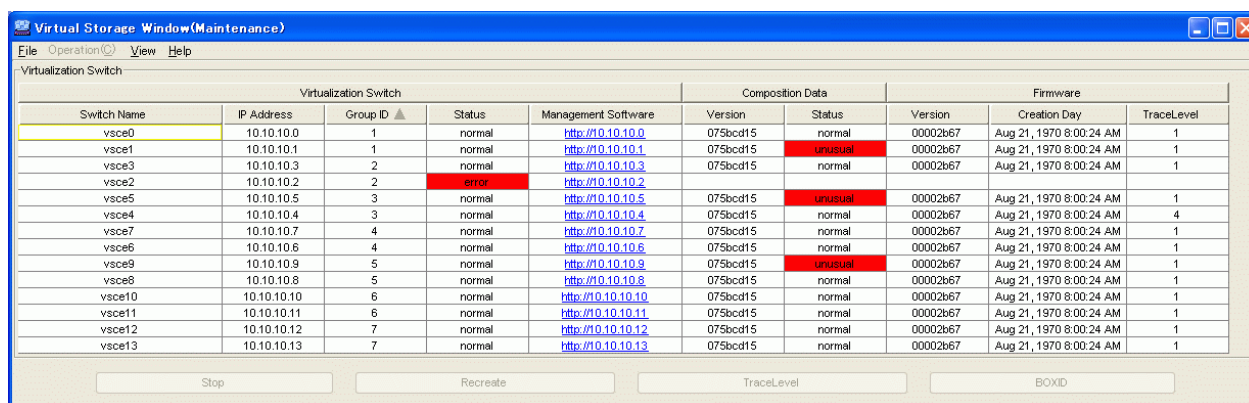
This chapter describes how to perform maintenance on VSC.

## 6.1 Maintenance Menu of Virtual Storage Window

This section describes how to use the Maintenance menu of the Virtual Storage Window.

You can use the Maintenance menu for the following operations:

- Stopping VSC Engine
- Re-creating configuration information
- Setting a trace level
- Editing a BOX-ID
- Displaying the initiator information of a virtualization switch



Virtualization Switch									
Switch Name	IP Address	Group ID ▲	Status	Management Software	Version	Status	Version	Creation Day	TraceLevel
vsce0	10.10.10.0	1	normal	<a href="http://10.10.10.0">http://10.10.10.0</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce1	10.10.10.1	1	normal	<a href="http://10.10.10.1">http://10.10.10.1</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce2	10.10.10.3	2	normal	<a href="http://10.10.10.3">http://10.10.10.3</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce3	10.10.10.2	2	error	<a href="http://10.10.10.2">http://10.10.10.2</a>					
vsce5	10.10.10.5	3	normal	<a href="http://10.10.10.5">http://10.10.10.5</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce4	10.10.10.4	3	normal	<a href="http://10.10.10.4">http://10.10.10.4</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	4
vsce7	10.10.10.7	4	normal	<a href="http://10.10.10.7">http://10.10.10.7</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce6	10.10.10.6	4	normal	<a href="http://10.10.10.6">http://10.10.10.6</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce9	10.10.10.9	5	normal	<a href="http://10.10.10.9">http://10.10.10.9</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce8	10.10.10.8	5	normal	<a href="http://10.10.10.8">http://10.10.10.8</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce10	10.10.10.10	6	normal	<a href="http://10.10.10.10">http://10.10.10.10</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce11	10.10.10.11	6	normal	<a href="http://10.10.10.11">http://10.10.10.11</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce12	10.10.10.12	7	normal	<a href="http://10.10.10.12">http://10.10.10.12</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce13	10.10.10.13	7	normal	<a href="http://10.10.10.13">http://10.10.10.13</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1

### 6.1.1 Stopping VSC Engine

This section describes how to stop VSC Engine that runs on a virtualization switch.

1. In the Maintenance window, select either of the listed virtualization switches and click the <Stop> button. Alternatively, select a virtualization switch and select [Operation] - [Stop].
2. The "Stop VSC-Engine" confirmation dialog box then appears. Click the <OK> button.
3. The "Stop VSC-Engine" message dialog box then appears. Click the <Close> button.
4. In the Maintenance window, confirm that the virtualization switch is in "Stop" status.



Note that VSC Engine cannot be started up in the Virtual Storage Window. To start up VSC Engine, power off the virtualization switch and then turn it power on, or issue the reboot command.

### 6.1.2 Re-creating configuration information

This function matches VSC Manager configuration information with configuration information in a virtualization switch.



If "mismatch" is the status displayed for "Composition Data" in the Maintenance window, the configuration information must be re-created.

1. Select a virtualization switch displayed in the Maintenance window, then click the <Recreate> button. Alternatively, select a virtualization switch and then select [Operation] - [Recreate].
2. The "Re-create VSC-Engine" confirmation dialog box appears. Click the <OK> button.
3. The "Re-create VSC-Engine" message dialog box appears. Click the <Close> button.
4. Check the Maintenance window and confirm that the status of composition data in the virtualization switch is "Normal".

### 6.1.3 Setting a trace level

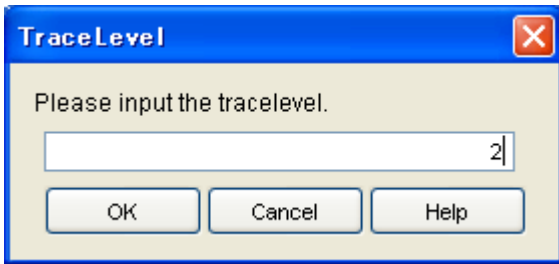
This section describes how to set the level at which trace information is collected on a virtualization switch.



#### Note

You cannot set a trace level when the virtualization switch is in "stop" status or "error" status.

1. In the Maintenance window, select either of the listed virtualization switches and click the <TraceLevel> button. Alternatively, select a virtualization switch and select [Operation] - [TraceLevel].
2. The "TraceLevel" dialog box then appears.



3. In the "TraceLevel" dialog box, enter one of the following trace levels:

#### Trace level

Enter numeric characters.

Trace level	Information to collect
0	Error information
1	Error, warning, and notification information
2	Error, warning, notification, and program information



#### Point

You should set to "0" during normal operation because it takes time to collect level-1 or level-2 information on a virtualization switch.



#### Information

Note that the maximum trace level is assumed specified when a value greater than the valid value is entered to specify the trace level.

4. In the "TraceLevel" dialog box, click the <OK> button.
5. The "TraceLevel" confirmation dialog box then appears. Click the <OK> button.

- The "TraceLevel" message dialog box then appears. Click the <Close> button.
- In the Maintenance window, confirm that the "trace level" has been changed to the specified value.

## 6.1.4 Editing a BOX-ID

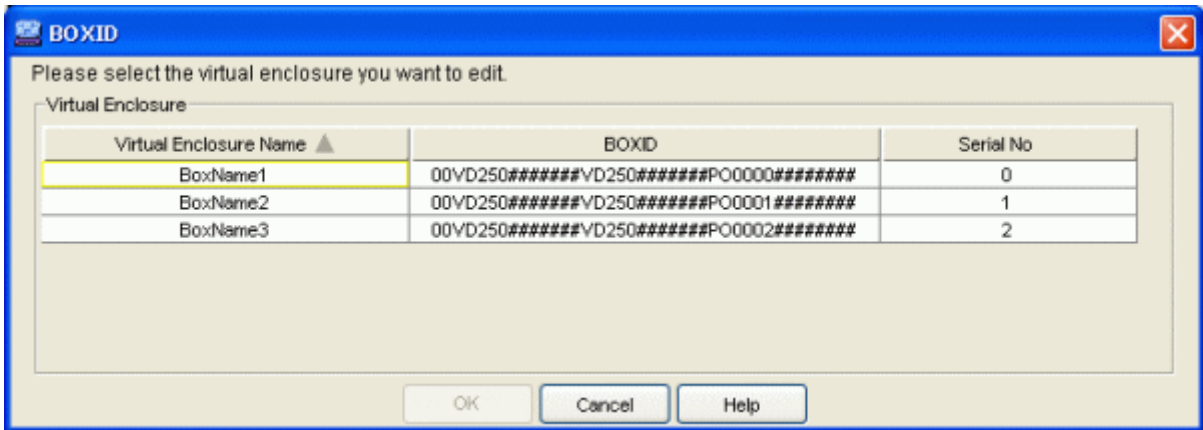
This section describes how to edit a BOX-ID assigned to a virtual enclosure.

### Note

You cannot edit a BOX-ID when the virtualization switch is in the "stop" status or "error" status or when the configuration information is the "unmatched" status.

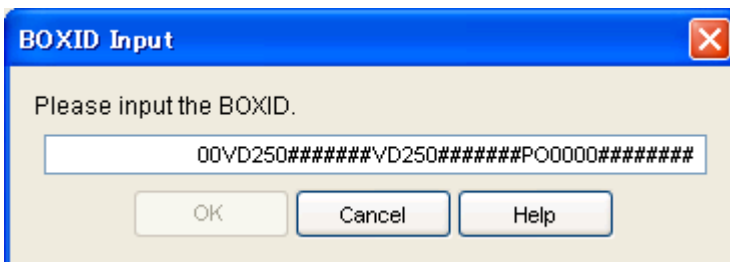
- In the Maintenance window, select either of the virtualization switches listed and select the <BOXID> button. Alternatively, select a virtualization switch and select [Operation] - [BOXID].

A list of virtual enclosures controlled by the selected virtualization switch is displayed.



- Select a virtual enclosure with the BOX-ID that you want to edit and click the <OK> button.

The "BOXID Input" dialog box then appears.



- In the "BOXID Input" dialog box, enter a BOX-ID.

BOX-ID

Enter a character string consisting of 40 alphanumeric characters (fixed). Alphabetical characters must be uppercase.

- In the "BOXID Input" dialog box, click the <OK> button.
- The "BOXID" confirmation dialog box then appears. Click the <OK> button.
- The "BOXID" message dialog box then appears. Click the <Close> button.
- In the Maintenance window, confirm that the BOX-ID has been changed to the specified value.

## 6.1.5 Displaying the initiator information of a virtualization switch

---

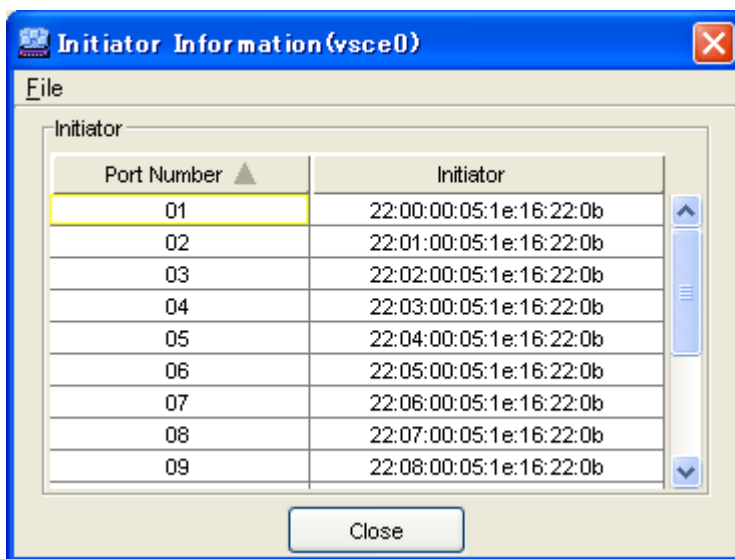
This section describes how to display the initiator information of each port of a virtualization switch.

### Point

The <Details> buttons for the virtualization switches displayed in the Maintenance window are hidden by default.

To display the <Details> buttons in the Maintenance window, follow the procedure described in "Items for display/non-display" in Section "A.1.2 Common operations in the window", and then display the initiator information.

1. In the Maintenance window, select either of the <Details> buttons for the virtualization switches listed.
2. The "Initiator Information" dialog box shows the "Port Number" corresponding to the "Initiator".



## 6.2 Saving and Restoring the Configuration Information

---

This section describes how to save and restore the configuration information.

The configuration information is a management table that retains the virtualization storage environment, statuses of physical disks that constitute virtual disks, etc.

### 6.2.1 Configuration information types

---

VSC Manager retains the original copy of the configuration information. Each virtualization switch retains some of the related configuration information.

If the configuration information is lost for some reason, no virtual disk can be supplied to a transaction server.

### 6.2.2 Saving the configuration information

---

## 6.2.2.1 [Solaris OS/Linux OS]Saving the configuration information

A commit script is used to save configuration information. VSC Manager automatically executes the commit script whenever configuration information is changed. Create a commit script in "/etc/opt/FJSVssmgr/current/VscCommitScript". Note that "/opt/FJSVssmgr/lib/sample/vsc/VscCommitScript.sample" contains samples of commit scripts.

You can invoke the commit script to save configuration information as required.

The configuration information of VSC Manager is stored in the "/var/opt/FJSVssmgr/current/vscompose/" directory. Therefore, save all directories and files in this directory. Save the directories and files so that when you restore the configuration information, the directories and files in the "/var/opt/FJSVssmgr/current/vscompose/" directory are restored in the same directory and file configuration as when saved.



### Example

#### Example of commit script:

```
#!/bin/sh
#
# All Rights Reserved, Copyright (c) Fujitsu Ltd. 2004
#
# Storage Software Virtual Storage Conductor
#
# CommitScript Sample
#
#####

ROOT_DIR=$PWD
BKUP_DIR=/var/opt/FJSVssmgr/current/vsclog/VSCCOMPOSE_BAK
BKUP_TMP_DIR=/var/opt/FJSVssmgr/current/vsclog/VSCCOMPOSE_BAK/tmp
COMPOSE_DIR=/var/opt/FJSVssmgr/current/vscompose

if [ ! -d $BKUP_DIR ]; then
    mkdir -p $BKUP_DIR
fi
if [ ! -d $BKUP_TMP_DIR ]; then
    mkdir -p $BKUP_TMP_DIR
fi

cp -p $COMPOSE_DIR/* $BKUP_TMP_DIR

if [ $? -eq 0 ]; then
    cd $BKUP_DIR
    tar cf compose.BAK.tar ./tmp
    if [ $? -eq 0 ]; then
        echo "Backup Complete."
        rm -rf $BKUP_TMP_DIR
        cd $ROOT_DIR
        exit 0
    fi
fi
echo "Backup failed."
exit 1
```



### Note

Note that a commit script may cause a delay depending on its coding in VSC Manager processing time because it always starts up whenever there is a change in the resource status of virtual storage.

## 6.2.2.2 [Windows] Saving the configuration information

A commit script is used to save configuration information. VSC Manager automatically executes the commit script whenever configuration information is changed. Create a commit script in "\$ENV\_DIR%Manager%etc%opt%FJSSVssmgr%current%VscCommitScript.bat".

Note that "\$INS\_DIR%Manager%opt%FJSSVssmgr%lib%sample%vsc%VscCommitScript.bat.sample" contains samples of commit scripts.

You can invoke the commit script to save configuration information as required.

The configuration information of VSC Manager is stored in the "\$TMP\_DIR%Manager%var%opt%FJSSVssmgr%current%vscompose" directory.

Therefore, save all directories and files in this directory. Save the directories and files so that when you restore the configuration information, the directories and files in the "\$TMP\_DIR%Manager%var%opt%FJSSVssmgr%current%vscompose" directory are restored in the same directory and file configuration as when saved.



### Example

#### Example of commit script

```
@echo off
rem #
rem # All Rights Reserved, Copyright (c) Fujitsu Ltd. 2006
rem #
rem # Storage Software Virtual Storage Conductor
rem #
rem # CommitScript Sample
rem #
rem #####
setlocal

set OPTDIR=%INS_DIR%Manager
set VARDIR=%TMP_DIR%Manager
set JREDIR=%INS_DIR%Manager

if not exist "%OPTDIR%" goto fail
if not exist "%VARDIR%" goto fail
if not exist "%JREDIR%" goto fail

set CURRENT_DIR=%VARDIR%var%opt%FJSSVssmgr%current

set BKUP_DIR=%CURRENT_DIR%vsclog%VSCCOMPOSE_BAK
set COMPOSE_DIR=vscompose

cd "%CURRENT_DIR%"

:: backup
if not exist "%BKUP_DIR%" mkdir "%BKUP_DIR%"
if errorlevel 1 goto fail

"%JREDIR%bin%java.exe" -classpath "%OPTDIR%opt%FJSSVssmgr%java%archive%vscm.jar"
com.fujitsu.storagesoft.sahandle.common.Zip "%BKUP_DIR%compose.BAK.zip" %COMPOSE_DIR%/*.repository
if errorlevel 1 goto fail

:success
echo "Backup Complete."
exit 0

:fail
echo "Backup failed."
exit 1
```

## Note

Note that a commit script may cause a delay depending on its coding in VSC Manager processing time because it always starts up whenever there is a change in the resource status of virtual storage.

## Information

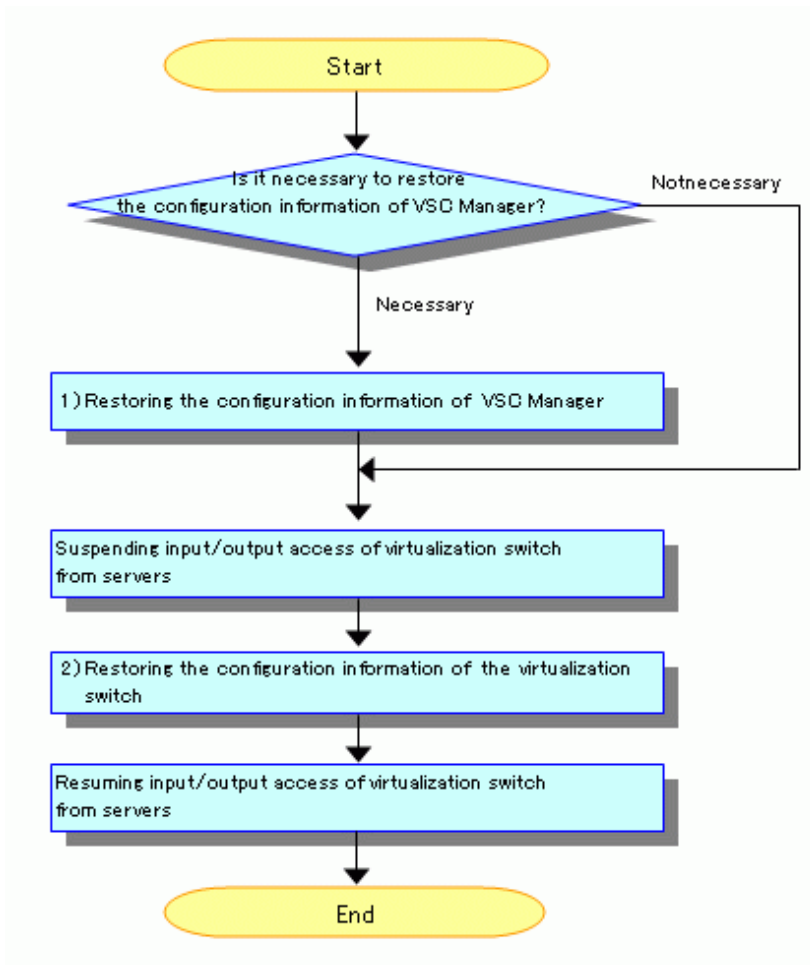
- \$INS\_DIR means "Program Directory" specified at the Manager installation.
- \$ENV\_DIR means "Environment Directory" specified at the Manager installation.
- \$TMP\_DIR means "Work Directory" specified at the Manager installation.

### 6.2.3 Restoring the configuration information

Restore the configuration information as shown in "Figure 6.1 Restoring the configuration information" in the following cases:

- When the configuration information is lost for some reason, or
- When there is a conflict between the configuration information retained by VSC Manager and the configuration information retained by a virtualization switch

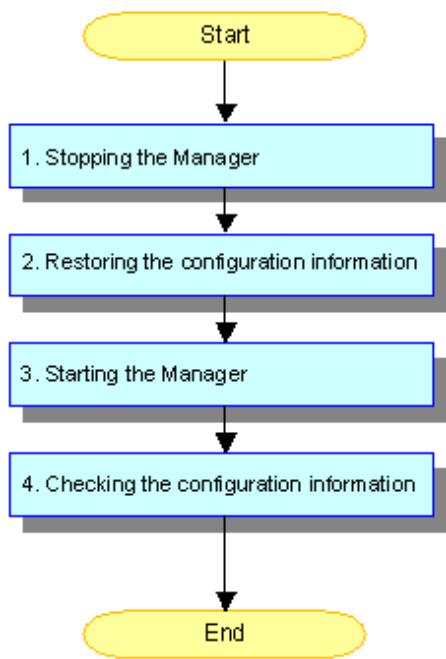
Figure 6.1 Restoring the configuration information



As shown in the procedures for "Figure 6.1 Restoring the configuration information", stop the input/output access from the server with respect to a virtualization switch that is restoring the configuration information.

## 6.2.3.1 [Solaris OS/Linux OS] Restoring the configuration information of VSC Manager

Restore the configuration information of VSC Manager by following the procedure shown below. To restore the configuration information of VSC Manager, you must stop and then restart the system resource manager that runs on the admin server.



### 1. Stopping the Manager

Before restoring the configuration information, be sure to stop the Manager by issuing the `/opt/FJSVrcxmr/sbin/rcxmgrctl` command with the stop option specified.

When using the admin server in a cluster configuration, access the Operation Management View of PRIMECLUSTER and operate the system resource manager to stop cluster service.

### 2. Restoring the configuration information

The directory in which the configuration information file of the Manager is stored is `"/var/opt/FJSVssmgr/current/vscompose/."`

Before restoring configuration information, the current configuration information files must be saved.

### Example

Save the current configuration information and restore the configuration information stored on tape `"/dev/rmt/0."`

```
# setenv BKUPDATE `date '+%y%m%d'`
# cd /var/opt/FJSVssmgr/current
# tar -cf compose.$BKUPDATE.tar vscompose/
# rm -r vscompose
# cd ..
# tar -xf /dev/rmt/0
#
```

### 3. Starting the Manager

Start up the Manager by issuing the `/opt/FJSVrcxmr/sbin/rcxmgrctl` command with the start option specified.

When using the admin server in a cluster configuration, access the Operation Management View of PRIMECLUSTER and operate the system resource manager to start cluster service.

#### 4. Checking the configuration information

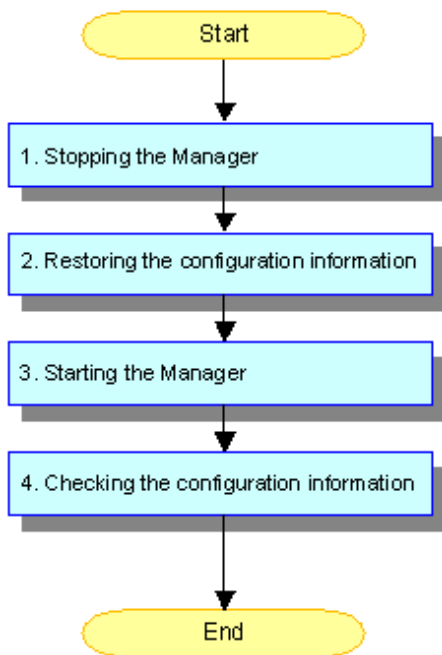
Open the "Virtual Storage Window of the Switch" and check the configuration information.

When no problem is found, the configuration information of the Manager is now restored.

If a problem is found, stop the Manager and restore the configuration information that has been saved as described in step 2. Then, start up the Manager.

### 6.2.3.2 [Windows] Restoring the configuration information of VSC Manager

Restore the configuration information of VSC Manager by following the procedure shown below. To restore the configuration information of VSC Manager, you must stop and then restart the system resource manager that runs on the admin server.



#### Information

##### About notation in the following procedures:

- \$INS\_DIR means "Program Directory" specified at the Manager installation.
- \$TMP\_DIR means "Work Directory" specified at the Manager installation.

#### 1. Stopping the Manager

Before restoring the configuration information, be sure to stop the Manager by issuing the `$INS_DIR¥Manager¥opt¥FJSVrcxmr¥sbin¥rcxmgrctl.exe` command with the stop option specified.

When using the admin server in a cluster configuration, access the Operation Management View of PRIMECLUSTER and operate the system resource manager to stop cluster service.

#### 2. Restoring the configuration information

The directory in which the configuration information file of the Manager is stored is "`$TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current¥vscompose¥`".





## Example

Before restoring configuration information, the current configuration information files must be saved.

```
cd $TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current¥
```

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥j2rel.5.0_11¥bin¥java -classpath $INS_DIR¥Manager¥opt¥FJSVssmgr
¥java¥archive¥vscm.jar com.fujitsu.storagesoft.sahandle.common.Zip compose.zip vsccompose/
*.repository
```

```
rmdir /s /q vsccompose
```

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥j2rel.5.0_11¥bin¥java -classpath $INS_DIR¥Manager¥opt¥FJSVssmgr
¥java¥archive¥vscm.jar com.fujitsu.storagesoft.sahandle.common.Unzip compose.BAK.zip
```

### 3. Starting the Manager

Start up the Manager by issuing the `$INS_DIR¥Manager¥opt¥FJSVrcxmr¥sbin¥rcxmgrctl.exe` command with the start option specified.

When using the admin server in a cluster configuration, access the Operation Management View of PRIMECLUSTER and operate the system resource manager to start cluster service.

### 4. Checking the configuration information

Open the "Virtual Storage Window of the Switch" and check the configuration information.

When no problem is found, the configuration information of the Manager is now restored.

If a problem is found, stop the Manager and restore the configuration information that has been saved as described in step 2. Then, start up the Manager.

## 6.2.3.3 Restoring the configuration information of a virtualization switch

Two types of restore operations can be performed. To prevent operational errors, Fujitsu recommends that the user perform the restore [Operations using windows \(GUI\)](#) so that the operations can be visually confirmed.

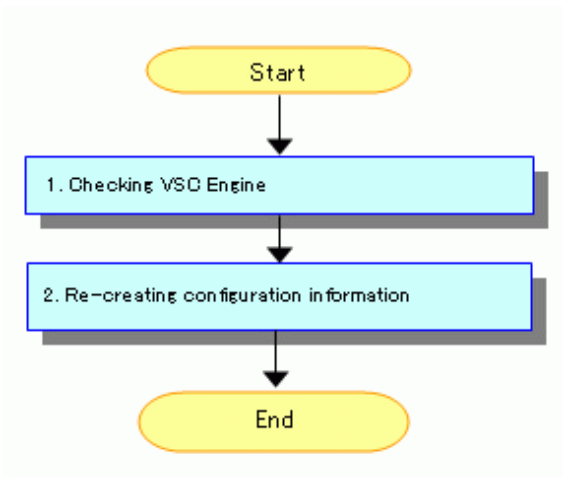
- [Operations using windows \(GUI\)](#)
- [Operations using commands \(CLI\)](#)

If configuration information must be restored for multiple virtualization switches, follow the procedure shown below for each virtualization switch to restore the configuration information.

### Operations using windows (GUI)

Restore the configuration information of a virtualization switch as follows:

Steps 1 to 2 can be performed at one time in the window displayed by selecting [Operation] - [Recreate] (or by clicking the <Recreate> button in the Maintenance window).

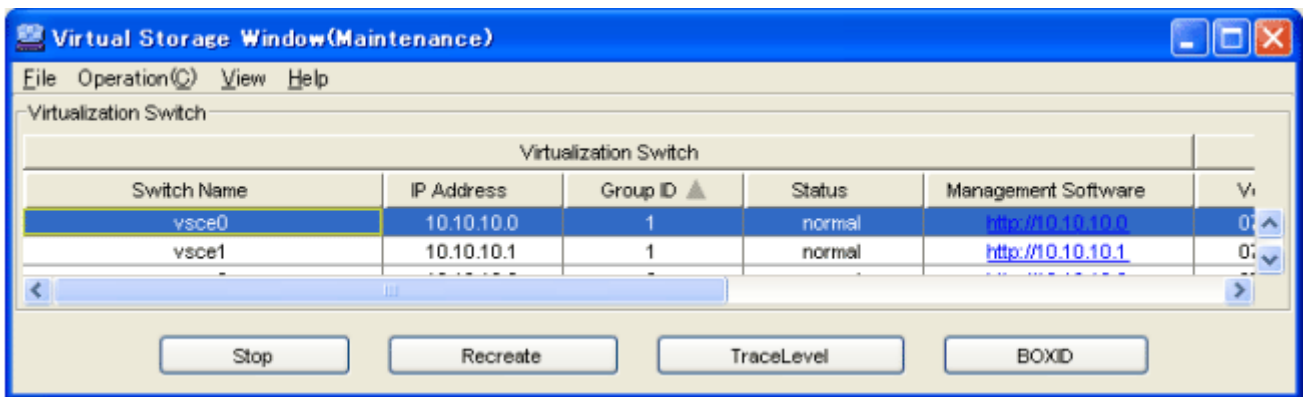


1. Checking VSC Engine

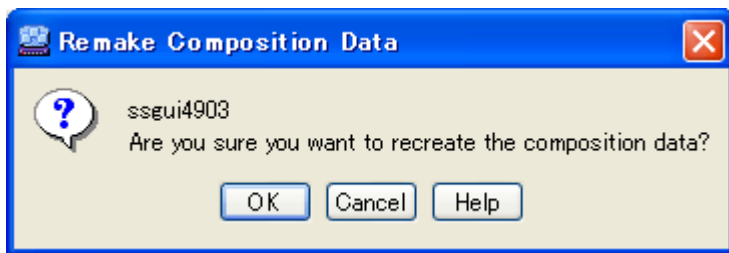
Check whether VSC Engine is running or stopped on a virtualization switch.

Start the Virtual Storage Window, then display the Maintenance window. To check whether VSC Engine is running or stopped on the virtualization switch whose configuration information is to be restored, check the status displayed for the switch.

2. Re-creating configuration information



Select "Switch Name" and click the <Recreate> button.



A dialog box appears. Click the <OK> button.

The following types of processing are performed:

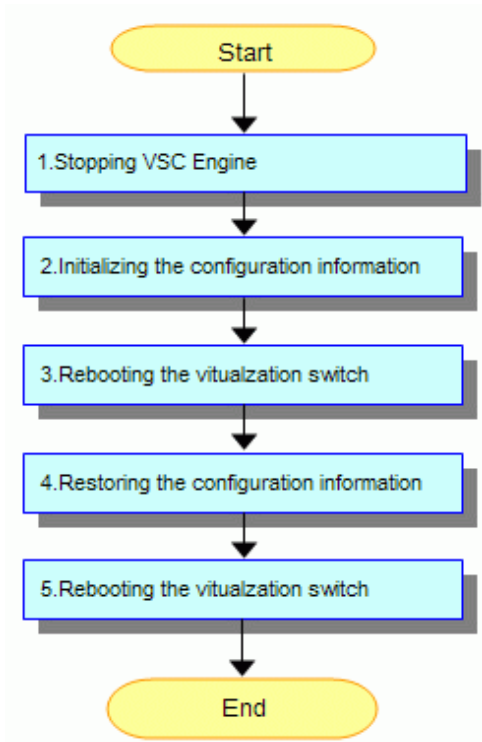
1. Initializing configuration information
  - The configuration information retained by the virtualization switch is initialized.
2. Rebooting the virtualization switch
  - The virtualization switch is rebooted.
3. Restoring the configuration information
  - The configuration information of the virtualization switch is restored.

#### 4. Rebooting the virtualization switch

The virtualization switch is rebooted.

### Operations using commands (CLI)

Restore the configuration information in a virtualization switch as follows:



#### 1. Stopping VSC Engine

Stop VSC Engine running on the virtualization switch as follows.

Start the Virtual Storage Window and display the Maintenance window. Stop VSC Engine by clicking the <Stop> button of the virtualization switch whose configuration information you want restored.

#### 2. Initialize the configuration information retained by the virtualization switch as follows.

Log in, with the user name "admin", to the virtualization switch whose configuration information you want restored, then enter the `vsccreateconfigfile` command to initialize the configuration information.

#### 3. Rebooting the virtualization switch

Reboot the virtualization switch as follows.

Log in, with the user name "admin", to the virtualization switch whose configuration information you want restored, then enter the `reboot` command to reboot the virtualization switch.

#### 4. Restoring the configuration information

The configuration information in the virtualization switch is restored.

Enter the `remakeconf` of admin server command, composition information in the virtualization switch is restored.

#### 5. Rebooting the virtualization switch

Reboot the virtualization switch as follows.

Log in, with the user name "admin", to the virtualization switch that was in a redundant configuration and the virtualization switch whose configuration information you want restored, then enter the `reboot` command to reboot the virtualization switch.

## 6.3 Collecting Data

---

This section describes how to collect data for troubleshooting.

### 6.3.1 Troubleshooting data for VSC Engine

---

Contact your Fujitsu customer engineer (CE) before collecting troubleshooting data for VSC Engine.

### 6.3.2 [Solaris OS/Linux OS] Troubleshooting data for VSC Manager

---

Use the `/opt/FJSVssmgr/sbin/managersnap` command to collect troubleshooting data for VSC Manager.

Collect the files shown below to collect individual items of troubleshooting data for VSC Manager. Save copies of these files to removable media on the admin server and give it to your Fujitsu service engineer (SE). Before you save the files to removable media, you can use `tar(1)` and `compress(1)` to compress and combine these files into one or more files.

- Configuration data file: `/etc/opt/FJSVssmgr/current/*`
- Log file: `/var/opt/FJSVssmgr/current/vsclog/*`
- Configuration information file: `/var/opt/FJSVssmgr/current/vscompose/*`

### 6.3.3 [Windows] Troubleshooting data for VSC Manager

---

Collect the files shown below individually to collect the troubleshooting data for the VSC Manager.

Save copies of these files on the admin server to removable media and give it to your Fujitsu service engineer (SE).

Before you save the files to removable media, you can compress and combine the files into one or more files in zip format or lzh format.

- Configuration data file: `$ENV_DIR¥Manager¥etc¥opt¥FJSVssmgr¥current¥*`
- Log file: `$TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current¥vsclog¥*`
- Configuration information file: `$TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current¥vscompose¥*`

#### Information

---

- `$ENV_DIR` means "Environment Directory" specified at the Manager installation.
  - `$TMP_DIR` means "Work Directory" specified at the Manager installation.
- 

### 6.3.4 Troubleshooting data for an admin client

---

The troubleshooting data for an admin client is shown below. Save copies of these files to removable media and give it to your Fujitsu service engineer (SE).

- Configuration data file: `$INS_DIR¥Client¥workspace¥.metadata¥.plugins¥com.fujitsu.systemwalker.rcnr.client¥etc¥san¥gui¥VSCCGui.cfg`
- Log file: `$INS_DIR¥Client¥workspace¥.metadata¥.plugins¥com.fujitsu.systemwalker.rcnr.client¥var¥san¥gui¥vsc`

#### Information

---

- `$INS_DIR` means "Destination Folder" specified at the Client installation.
-

## 6.4 Viewing Logs

---

This section describes how to view logs.

### 6.4.1 Logs of VSC Manager

---

VSC Manager outputs the following two types of logs:

- System log
- Copy log

#### 6.4.1.1 [Solaris OS/Linux OS]System log

VSC Manager outputs messages via syslogd(1M).

The settings in `/etc/syslog.conf` determine whether messages are actually output and to what file. For information on how to make settings in `/etc/syslog.conf`, see the `syslog.conf(4)`.

#### 6.4.1.2 [Windows]System log

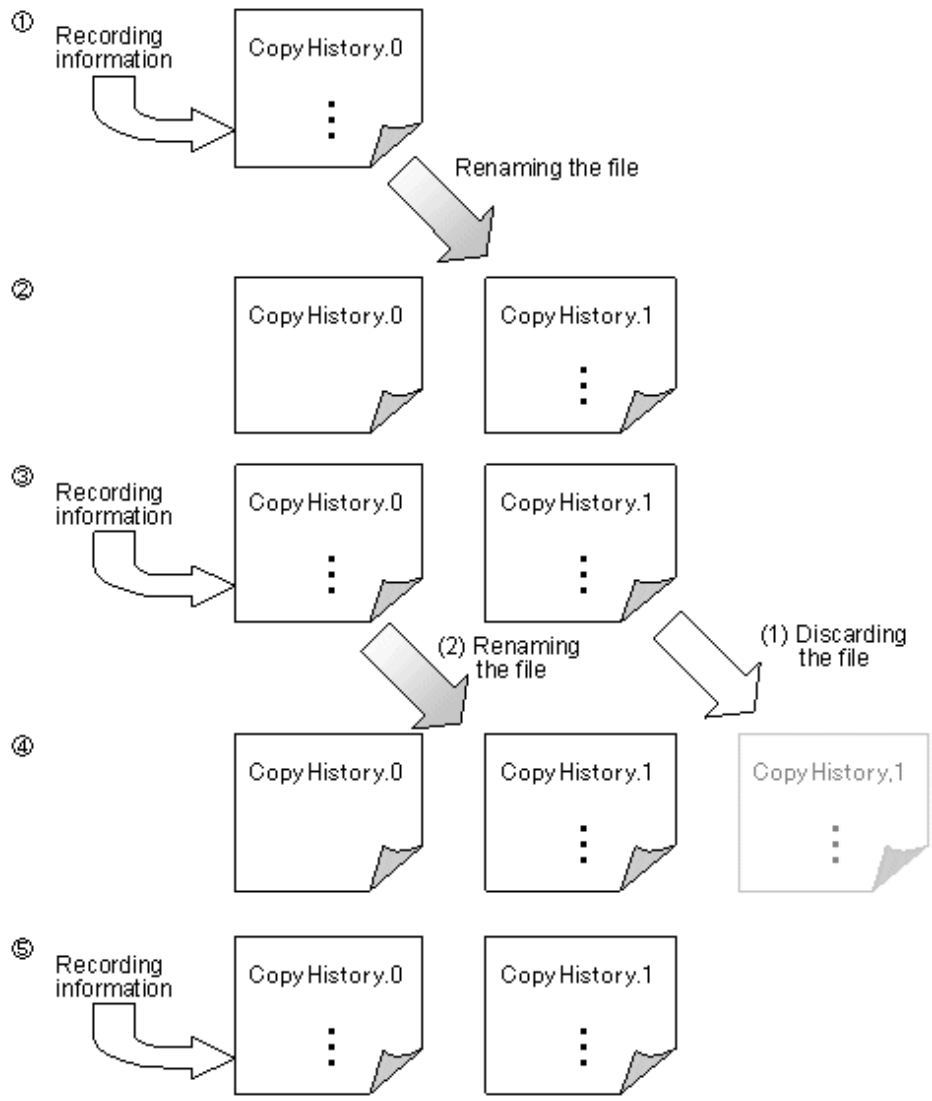
VSC Manager outputs messages via syslog service.

#### 6.4.1.3 [Solaris OS/Linux OS]Copy log

This section describes information (called a "copy log") about the starting and stopping of migration and replication. A copy log is written to a "copy log file".

Two copy log files are retained: The current-generation file (to which information is being written) and the previous-generation file. Both files can be distinguished by the suffix. Suffix ".0" denotes the copy log file to which a copy log is written. When the file size of the current copy log file exceeds the limit value, the file is switched to a new copy log file. The "[Figure 6.2 Switching copy log files](#)" shows how copy log files are switched.

Figure 6.2 Switching copy log files



**File name**

Note that "/var/opt/FJSVssmgr/current/vsclog/VscmCopyHistory.0" and "/var/opt/FJSVssmgr/current/vsclog/VscmCopyHistory.1" are the file names of copy log files. Copy log files have file names with suffixes that denote the generation as follows:

Suffix number	Meaning
.0	A copy log file to which information is currently being recorded
.1	A copy log file of a previous generation

**Record format**

A copy log has the following five types of records:

- Start record  
Output at the start of migration or replication.
- Normal end record  
Output at migration switching or replication detaching.

- Abnormal end record

Output when the migration, replication, or EC (ACM) operation terminated the processing abnormally.

- Cancellation record

Output when migration, replication, or EC (ACM) is terminated, while copying, in the standing by for automatic switch status or the equivalency maintain status.

- Processing failure

In the event of a processing failure or an operation (start, switch, or cancel) failure, the results of record output may not be known and "-" will be displayed.

Each record consists of a common section and a data section.

### Common section

A common section consists of five items. The items are delimited with a blank.

Table 6.1 Structure of the common section

No.	Name	Description
1	Date	Indicates the date on which the record was written in "Mon dd, yyyy" format. <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> </ul>
2	Time	Indicates the time at which the record was written in "hh:mm:ss XM" format. <ul style="list-style-type: none"> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM:AM or PM</li> </ul>
3	Label	Indicates "FSP_FJSVssvsc_Copy:" as a character string.
4	Type	Indicates "INFO:", "WARNING:", or "ERROR:" as a character string.
5	Identifier	Indicates one of the following identifiers that distinguish a data section: <ul style="list-style-type: none"> <li>• 90451: Copy start processing</li> <li>• 90452: Switchover/isolation processing</li> <li>• 90453: Cancel processing for an abnormal session</li> <li>• 90454: Cancel processing for a normal session</li> <li>• 90455: Abnormal end of processing</li> </ul>

### Data section

The data section starts one blank after an "identifier" in the common section. The items in the data section are delimited with a blank.

#### Start record

Table 6.2 Data section (Start record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user: <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> </ul>
2	Record type	Indicates "STARTED" as a character string.

No.	Name	Description
3	Session ID "SID="	Indicates the session ID (eight-digit number). "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk from which data is replicated.</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual disk from which data is replicated.</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk to which data is replicated.</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual disk to which data is replicated.</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication: Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	• Indicates the name of the virtualization switch that performs migration or replication.
10	Execution type "AP="	• Indicates "VSC" as a character string.
11	Execution priority "Priority="	• Indicates the execution priority of migration or replication.
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the size of the virtual disk from which data is replicated.</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> </ul>



No.	Name	Description
		<ul style="list-style-type: none"> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	Indicates the cause of an abnormal end of a unit. This is the same as an error message. "- " is displayed.
15	ABEND cause information "Abend="	Outputs the cause of the copy status error. <ul style="list-style-type: none"> <li>• "- " is displayed.</li> </ul>

Normal end record

Table 6.3 Data section (Normal end record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user: <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>replication: Replication</li> </ul>
2	Record type	Indicates "NORMALEND" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number). "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk from which data is replicated.</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual disk from which data is replicated.</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "- " as a string.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk to which data is replicated.</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "- " as a string.</li> <li>• During replication: Indicates the name of the virtual disk to which data is replicated.</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>During replication: Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>Indicates the name of the virtualization switch that performs migration or replication.</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>Indicates "VSC" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>Indicates the execution priority of migration or replication.</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>During replication: Indicates the size of the virtual disk from which data is replicated.</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>Mon: Month (three-digit character)</li> <li>dd: Day (two-digit number)</li> <li>yyyy: Year (four-digit number)</li> <li>hh: Hour (on a 12-hour clock, two-digit number)</li> <li>mm: Minute (two-digit number)</li> <li>ss: Second (two-digit number)</li> <li>XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information "Abend="	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>"-" is displayed.</li> </ul>

#### Abnormal end record

Table 6.4 Data section (Abnormal end record)

No.	Name	Description
1	Processing type	<p>Indicates the copy type selected by the user:</p> <ul style="list-style-type: none"> <li>migration: Migration</li> <li>replication: Replication</li> <li>EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "ABNORMALEND" as a character string.
3	Session ID "SID="	<p>Indicates the session ID (eight-digit number).</p> <p>"SID=xxxxxxx"</p>
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication or EC (ACM): Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>• Indicates the name of the virtualization switch used for migration, replication or EC (ACM).</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM)</li> <li>• Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>• Indicates the execution priority of migration, replication or EC (ACM).</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	Indicates the cause of an abnormal end of a unit.  This is the same as an error message.  "-" is displayed.
15	ABEND cause information "Abend="	Outputs the cause of the copy status error. <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

If the cause of the abnormal end cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

#### Cancellation record

Table 6.5 Data section (Cancellation record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user: <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "CANCELED" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number).  "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> </ul>

No.	Name	Description
	"ToVB="	<ul style="list-style-type: none"> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication or EC (ACM): Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>• Indicates the name of the virtualization switch used for migration, replication, or EC (ACM).</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM)</li> <li>• Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>• Indicates the execution priority of migration, replication, or EC (ACM).</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> </ul>

No.	Name	Description
	"Abend="	<ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

If the cause of the cancellation cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

#### Processing failure record

Table 6.6 Data section (processing failure record)

No.	Name	Description
1	Processing type	<p>Indicates the copy type selected by the user.</p> <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "FAILED" as a character string.
3	Session ID "SID="	<p>Indicates the session ID (eight-digit number):</p> <p>"SID=xxxxxxx"</p>
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration Indicates the name of the virtual enclosure containing the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration Indicates "-" as a character string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration Indicates "-" as a character string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>

No.	Name	Description
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration Indicates whether the physical disk that constituted the migration source virtual disks is to be retained as a backup disk at the normal end of migration</li> <li>• YES: Retain it as a backup disk.</li> <li>• NO: Do not retain it as a backup disk.</li> <li>• During replication or EC (ACM) Indicates "-" as a character string.</li> </ul>
9	Virtualization switch name "VSW="	Indicates the name of the virtualization switch used for migration, replication or EC (ACM).
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM) Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	Indicates the execution priority of migration, replication or EC (ACM).
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information "Abend="	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

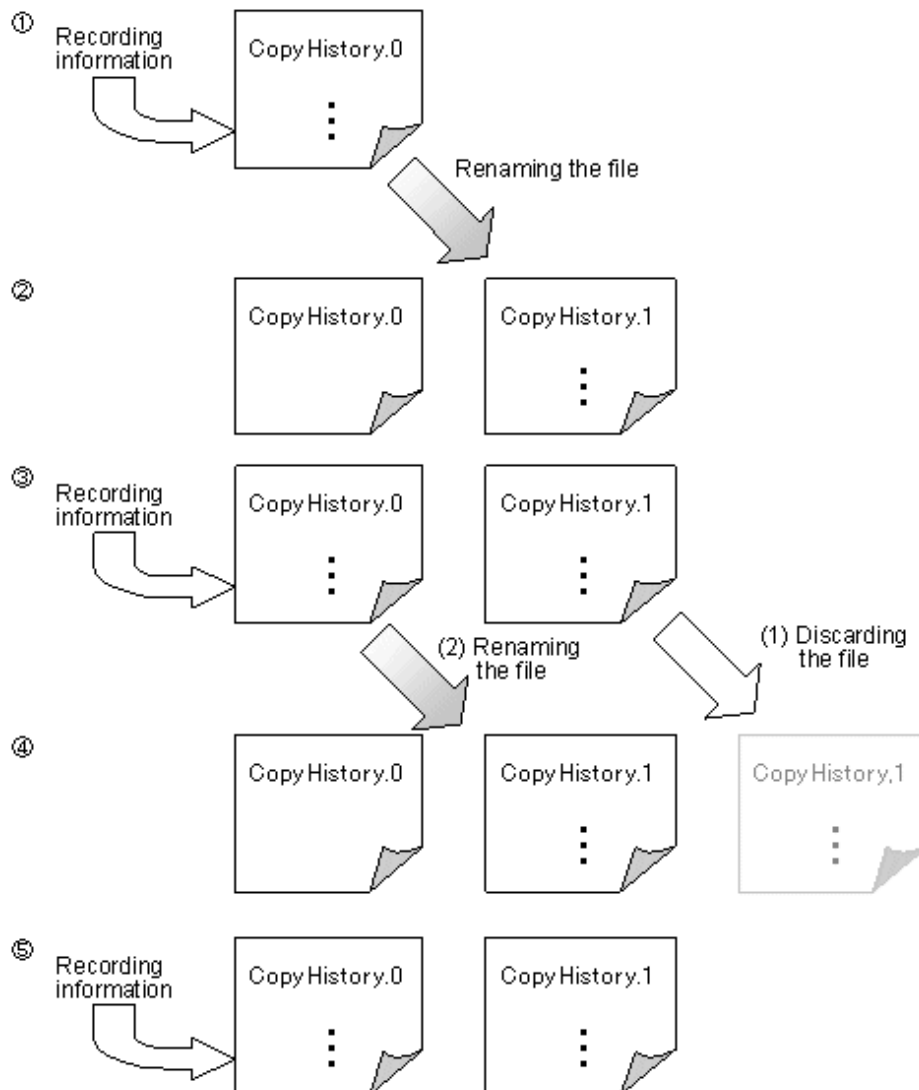
If the cause of the processing failure cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

#### 6.4.1.4 [Windows]Copy log

This section describes information (called a "copy log") about the starting and stopping of migration and replication. A copy log is written to a "copy log file."

Two copy log files are retained: The current-generation file (to which information is being written) and the previous-generation file. Both files can be distinguished by the suffix. Suffix ".0" denotes the copy log file to which a copy log is written. When the file size of the current copy log file exceeds the limit value, the file is switched to a new copy log file. The "Figure 6.3 Switching copy log files" shows how copy log files are switched.

Figure 6.3 Switching copy log files





## File name

Note that "\$TMP\_DIR\FJSSVssmgr\current\vslog\scmCopyHistory.0" and "\$TMP\_DIR\FJSSVssmgr\current\vslog\scmCopyHistory.1" are the file names of copy log files. Copy log files have file names with suffixes that denote the generation as follows.

(\$TMP\_DIR means "Work Directory" specified at the Manager installation.)

Suffix number	Meaning
.0	A copy log file to which information is currently being recorded
.1	A copy log file of a previous generation

## Record format

A copy log has the following five types of records:

- Start record  
Output at the start of migration or replication.
- Normal end record  
Output at migration switching or replication detaching.
- Abnormal end record  
Output when the migration, replication, or EC (ACM) operation terminated the processing abnormally.
- Cancellation record  
Output when migration, replication, or EC (ACM) is terminated, while copying, in the standing by for automatic switch status or the equivalency maintain status.
- Processing failure  
In the event of a processing failure or an operation (start, switch, or cancel) failure, the results of record output may not be known and "-" will be displayed.

Each record consists of a common section and a data section.

### Common section

A common section consists of five items. The items are delimited with a blank.

Table 6.7 Structure of the common section

No.	Name	Description
1	Date	Indicates the date on which the record was written in "Mon dd, yyyy" format. <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> </ul>
2	Time	Indicates the time at which the record was written in "hh:mm:ss XM" format. <ul style="list-style-type: none"> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
3	Label	Indicates "FSP_FJSSVssc_Copy:" as a character string.
4	Type	Indicates "INFO:", "WARNING:" or "ERROR:" as a character string.
5	Identifier	Indicates one of the following identifiers that distinguish a data section:

No.	Name	Description
		<ul style="list-style-type: none"> <li>• 90451: Copy start processing</li> <li>• 90452: Switchover/isolation processing</li> <li>• 90453: Cancel processing for an abnormal session</li> <li>• 90454: Cancel processing for a normal session</li> <li>• 90455: Abnormal end of processing</li> </ul>

### Data section

The data section starts one blank after an "identifier" in the common section. The items in the data section are delimited with a blank.

Start record

Table 6.8 Data section (Start record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user: <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> </ul>
2	Record type	Indicates "STARTED" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number). "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk from which data is replicated.</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual disk from which data is replicated.</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk to which data is replicated.</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual disk to which data is replicated.</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration.               <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication: Indicates "-" as a string.</li> </ul>

No.	Name	Description
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>Indicates the name of the virtualization switch that performs migration or replication.</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>Indicates "VSC" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>Indicates the execution priority of migration or replication.</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>During replication: Indicates the size of the virtual disk from which data is replicated.</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>Mon: Month (three-digit character)</li> <li>dd: Day (two-digit number)</li> <li>yyyy: Year (four-digit number)</li> <li>hh: Hour (on a 12-hour clock, two-digit number)</li> <li>mm: Minute (two-digit number)</li> <li>ss: Second (two-digit number)</li> <li>XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information "Abend="	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>"-" is displayed.</li> </ul>

Normal end record

Table 6.9 Data section (Normal end record)

No.	Name	Description
1	Processing type	<p>Indicates the copy type selected by the user:</p> <ul style="list-style-type: none"> <li>migration: Migration</li> <li>replication: Replication</li> </ul>
2	Record type	Indicates "NORMALEND" as a character string.
3	Session ID "SID="	<p>Indicates the session ID (eight-digit number).</p> <p>"SID=xxxxxxx"</p>
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>During replication: Indicates the name of the virtual enclosure that contains the virtual disk from which data is replicated.</li> </ul>

No.	Name	Description
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the name of the virtual disk from which data is replicated.</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual enclosure that contains the virtual disk to which data is replicated.</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication: Indicates the name of the virtual disk to which data is replicated.</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication: Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>• Indicates the name of the virtualization switch that performs migration or replication.</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• Indicates "VSC" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>• Indicates the execution priority of migration or replication.</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication: Indicates the size of the virtual disk from which data is replicated.</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>

No.	Name	Description
15	ABEND cause information "Abend="	Outputs the cause of the copy status error. <ul style="list-style-type: none"> <li>• "-" is displayed.</li> </ul>

Abnormal end record

Table 6.10 Data section (Abnormal end record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user: <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "ABNORMALEND" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number). "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration.  <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication or EC (ACM): Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>• Indicates the name of the virtualization switch used for migration, replication or EC (ACM).</li> </ul>

No.	Name	Description
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM)</li> <li>• Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>• Indicates the execution priority of migration, replication or EC (ACM).</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information "Abend="	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

If the cause of the abnormal end cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

#### Cancellation record

Table 6.11 Data section (Cancellation record)

No.	Name	Description
1	Processing type	<p>Indicates the copy type selected by the user:</p> <ul style="list-style-type: none"> <li>• migration: Migration</li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>• replication: Replication</li> <li>• EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "CANCELED" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number). "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual enclosure that contains the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration: Indicates "-" as a string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration: Indicates whether the physical disk that constituted the source virtual disks is to be retained as a backup disk at the normal end of migration. <ul style="list-style-type: none"> <li>- YES: Retain a backup disk.</li> <li>- No: Do not retain a backup disk.</li> </ul> </li> <li>• During replication or EC (ACM) Indicates "-" as a string.</li> </ul>
9	Virtualization switch name "VSW="	<ul style="list-style-type: none"> <li>• Indicates the name of the virtualization switch used for migration, replication or EC (ACM).</li> </ul>
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM)</li> <li>• Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	<ul style="list-style-type: none"> <li>• Indicates the execution priority of migration, replication or EC (ACM).</li> </ul>
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration: Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>

No.	Name	Description
13	Execution start date and time "StartDate="	Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format. <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	Indicates the cause of an abnormal end of a unit. This is the same as an error message. "- " is displayed.
15	ABEND cause information "Abend="	Outputs the cause of the copy status error. <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

If the cause of the cancellation cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

#### Processing failure record

Table 6.12 Data section (processing failure record)

No.	Name	Description
1	Processing type	Indicates the copy type selected by the user. <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC (ACM): ACM copy</li> </ul>
2	Record type	Indicates "FAILED" as a character string.
3	Session ID "SID="	Indicates the session ID (eight-digit number): "SID=xxxxxxx"
4	Virtual enclosure name "FromVB="	<ul style="list-style-type: none"> <li>• During migration</li> </ul> Indicates the name of the virtual enclosure containing the virtual disk from which data is migrated.



No.	Name	Description
		<ul style="list-style-type: none"> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
5	Virtual disk name "FromVD="	<ul style="list-style-type: none"> <li>• During migration Indicates the name of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
6	Virtual enclosure name "ToVB="	<ul style="list-style-type: none"> <li>• During migration Indicates "-" as a character string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual enclosure containing the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
7	Virtual disk name "ToVD="	<ul style="list-style-type: none"> <li>• During migration Indicates "-" as a character string.</li> <li>• During replication or EC (ACM) Indicates the name of the virtual disk to which data is replicated or copied (EC [ACM]).</li> </ul>
8	Backup indication "BackUp="	<ul style="list-style-type: none"> <li>• During migration Indicates whether the physical disk that constituted the migration source virtual disks is to be retained as a backup disk at the normal end of migration</li> <li>• YES: Retain it as a backup disk.</li> <li>• NO: Do not retain it as a backup disk.</li> <li>• During replication or EC (ACM) Indicates "-" as a character string.</li> </ul>
9	Virtualization switch name "VSW="	Indicates the name of the virtualization switch used for migration, replication or EC (ACM).
10	Execution type "AP="	<ul style="list-style-type: none"> <li>• During migration or replication Indicates "VSC" as a character string.</li> <li>• During EC (ACM) Indicates "other" as a character string.</li> </ul>
11	Execution priority "Priority="	Indicates the execution priority of migration, replication or EC (ACM).
12	Virtual disk capacity "Capacity="	<ul style="list-style-type: none"> <li>• During migration Indicates the size of the virtual disk from which data is migrated.</li> <li>• During replication or EC (ACM) Indicates the size of the virtual disk from which data is replicated or copied (EC [ACM]).</li> </ul>
13	Execution start date and time "StartDate="	<p>Indicates the date and time when to start migration or replication or EC (ACM) in "Mon dd, yyyy hh:mm:ss XM" format.</p> <ul style="list-style-type: none"> <li>• Mon: Month (three-digit character)</li> <li>• dd: Day (two-digit number)</li> <li>• yyyy: Year (four-digit number)</li> <li>• hh: Hour (on a 12-hour clock, two-digit number)</li> </ul>

No.	Name	Description
		<ul style="list-style-type: none"> <li>• mm: Minute (two-digit number)</li> <li>• ss: Second (two-digit number)</li> <li>• XM: AM or PM</li> </ul>
14	Message "Message="	<p>Indicates the cause of an abnormal end of a unit.</p> <p>This is the same as an error message.</p> <p>"-" is displayed.</p>
15	ABEND cause information "Abend="	<p>Outputs the cause of the copy status error.</p> <ul style="list-style-type: none"> <li>• COPY_ABEND_CAUSE_OK: Normal ending</li> <li>• COPY_ABEND_CAUSE_MIRROR: Mirror volume error</li> <li>• COPY_ABEND_CAUSE_SRC: Copy source volume error</li> <li>• COPY_ABEND_CAUSE_DST: Copy destination volume error</li> <li>• COPY_ABEND_CAUSE_MANAGEMENT_AREA: VS900 management area error</li> <li>• COPY_ABEND_CAUSE_ENGINE_UNSUPPORTED: Engine not supported</li> <li>• -unknown-: Unknown</li> <li>• COPY_ABEND_CAUSE_OTHER: Other</li> </ul>

If the cause of the processing failure cannot be determined or data cannot be obtained, refer to "6.3 Collecting Data" collect the necessary data for troubleshooting, then contact your Fujitsu systems engineer (SE).

## 6.4.2 Logs of Virtual Storage Window

Logs collected through the Virtual Storage window are stored in the following folder of the Admin Client.

### For Windows Vista

¥¥client-installation-destination¥Client¥workspace¥.metadata¥.plugins¥com.fujitsu.systemwalker.rcnr.client¥var¥san¥gui¥vsc

### Other than Windows Vista

¥¥user-specified-folder¥Client¥workspace¥.metadata¥.plugins¥com.fujitsu.systemwalker.rcnr.client¥var¥san¥gui¥vsc

## 6.5 Functional Restrictions

This section explains restrictions on functions during replacement of a virtualization switch or firmware upgrading.

### 6.5.1 Restrictions during replacement of a virtualization switch

"During replacement of a virtualization switch" means the state in which a virtualization switch is disabled in Resource Coordinator.

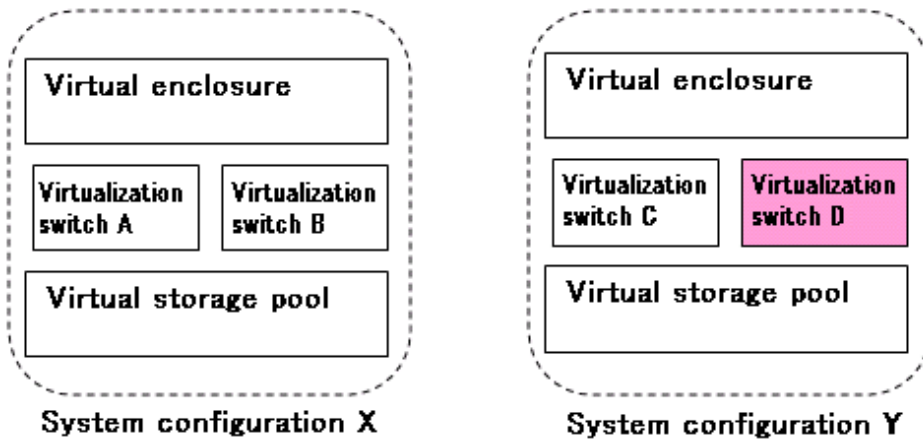
VSC manager functions are restricted during replacement of a virtualization switch.

The scope of functional restrictions during replacement of a virtualization switch includes the virtual storage pool and virtual enclosure that manage the virtualization switch being replaced.

## Example

Restrictions during replacement of virtualization switch D in the system configuration shown in the figure below:

- VSC manager functions are not restricted in system configuration X using virtualization switches A and B.
- VSC manager functions are restricted in system configuration Y using virtualization switches C and D.



The VSC manager functions that are restricted and unrestricted during replacement of a virtualization switch are listed below.

### VSC manager functions that are restricted

#### Virtual disk functions

- Creating and deleting a virtual storage pool
- Registering and releasing a physical disk
- Creating and deleting a virtual enclosure
- Creating and deleting a virtual target
- Creating and deleting a virtual disk and increasing the size of a virtual disk
- Assigning a virtual disk to a virtual target and unassigning one from a virtual target
- Batch conversion of physical disks from a physical to virtual environment

#### Copy functions

- Starting, canceling, and switching migration
- Restoring and deleting a migration backup
- Canceling replication

#### Maintenance function

- Changing the BoxID of a virtual enclosure

### VSC manager functions that are not restricted (\*1)

#### Copy functions

- Copy status inquiry
- Referencing a copy log

### **Maintenance functions**

- Displaying the VSC Engine status
- Stopping VSC Engine
- Setting the trace level of VSC Engine
- Re-creating VSC Engine configuration information
- Displaying the initiator information in a virtualization switch

\*1: The functions are restricted only if the processing of these functions is executed for the virtualization switch being replaced.

## **6.5.2 Restrictions during upgrading of virtualization switch firmware**

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Upgrading the Engine program firmware on a virtualization switch in a redundant configuration may create an inconsistency in versions between the virtualization switches in the redundant configuration. In this event, VSC manager functions are restricted.

The VSC manager functions that are restricted or un-restricted during updating of virtualization switch firmware are listed below.

### **VSC manager functions that are restricted**

#### **Virtual disk functions**

- Registering a physical disk
- Creating a virtual enclosure
- Creating and deleting a virtual target
- Creating and deleting a virtual disk or increasing the size of a virtual disk
- Assigning a virtual disk to a virtual target and unassigning one from a virtual target
- Batch conversion of physical disks from a physical to virtual environment

#### **Copy functions**

- Starting and switching migration
- Restoring and deleting a migration backup

#### **Maintenance function**

- Changing the BoxID of a virtual enclosure

### **VSC manager functions that are not restricted**

#### **Virtual disk functions**

- Creating and deleting a virtual storage pool
- Releasing a physical disk
- Deleting a virtual enclosure

#### **Copy functions**

- Copy status inquiry
- Canceling migration
- Canceling replication
- Referencing a copy log

**Maintenance functions**

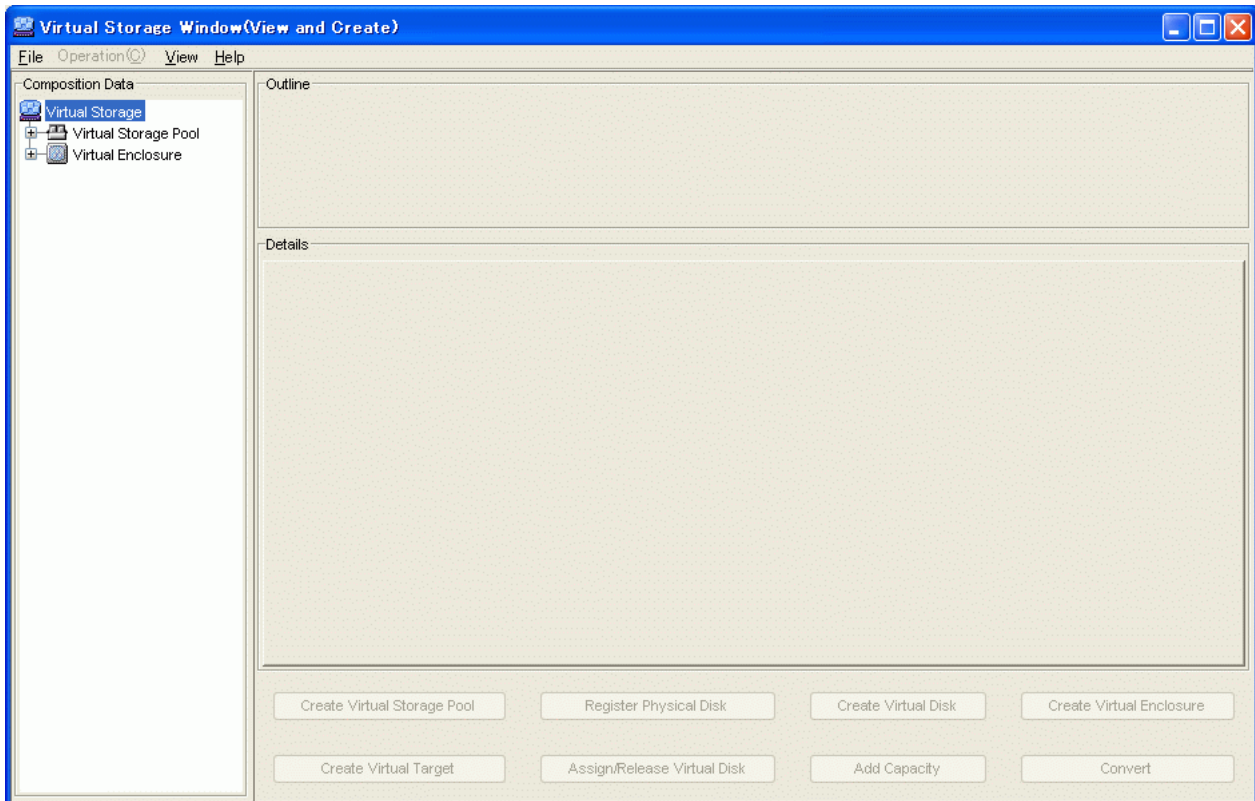
- Obtaining VSC Engine status information
- Stopping VSC Engine
- Setting the trace level of VSC Engine
- Re-creating VSC Engine configuration information
- Displaying the initiator information in a virtualization switch

# Appendix A Window Explanation and Menu List

This appendix describes the virtual storage window and its display content.

## A.1 Window Configuration

This section describes the window configuration of the virtual storage window.



### Menu bar

Selection buttons perform each of the following functions:

<File>, <Operation>, <View>, and <Help>

### Composition Data tree area

Displays the composition data of the virtual disks in a tree structure.

### Outline area

Displays an outline of the node selected in "Composition Data" tree.

### Details area

Displays details of the node selected in "Composition Data" tree.

### Details dialog

Displayed when you click the <Details> button in "Details area".

### Button area

Selection button to move to the window for performing each function.

## A.1.1 Configuration and functions of the menu bar

Each menu button has a pull-down menu. The following describes the configuration of each menu and its functions.

Menu	Pull-down menu	Description of pull-down menu
File	Page Setup (F)	Sets the page format you want to print.
	Print (P)	Prints all tabs currently displayed in the Outline area and Details area of the virtual storage window.
	Exit (X)	Exits the virtual storage window (View and Create, Copy, Maintenance).
Operation (C)	Virtual storage pool (P)	Performs "Create" and "Delete" for the virtual storage pool.
	Physical disk (R)	Performs "Register" and "Release" for the physical disk.
	Virtual disk (V)	Performs "Create", "Delete", "Add capacity", and "Assign/Release" for the virtual disk.
	Virtual enclosure (B)	Performs "Create" and "Delete" for the virtual enclosure.
	Virtual target (T)	Performs "Create", "Delete", and "Copy" for the virtual target.
	Convert (C)	Performs "Convert", beginning from registration of a physical disk to assignment of virtual disks.
	VS900 Management Area (M)	Performs "Create", "Delete", and "View" for the VS900 management area.
View	Options (O)	Changes the operating environment of the virtual storage window. This is valid only in the copy window.
	Refresh (R) or [F5]	Displays the latest configuration information of virtual storage resources. However, information cannot be refreshed while the "Details dialog" is displayed. Press the <Details> button again to refresh the Details dialog.
Help	Help (E) or [F1]	Displays the user's guide.
	Version Information (A)	Displays the version number of the virtual storage window.

## A.1.2 Common operations in the window

The user can customize display of the virtual storage window.

### Items for display/non-display

You can select the items you want to display as follows:

1. Select and right-click the header of the desired item to display the <Display/Non-display> button. Then, click the <Display/Non-display> button.
2. The "Display/Non-display" dialog box appears, with the display item being checked.
3. Check the items you want to display or remove the checkmark from items you do not want to display, and then click the <OK> button.

You cannot save this information in this window. When restarted, the "Virtual storage window" displays items in default order.

### Item sorting

You can change the order of information displayed under an item in ascending or descending order.

Click the header of the item under which you want to sort information.

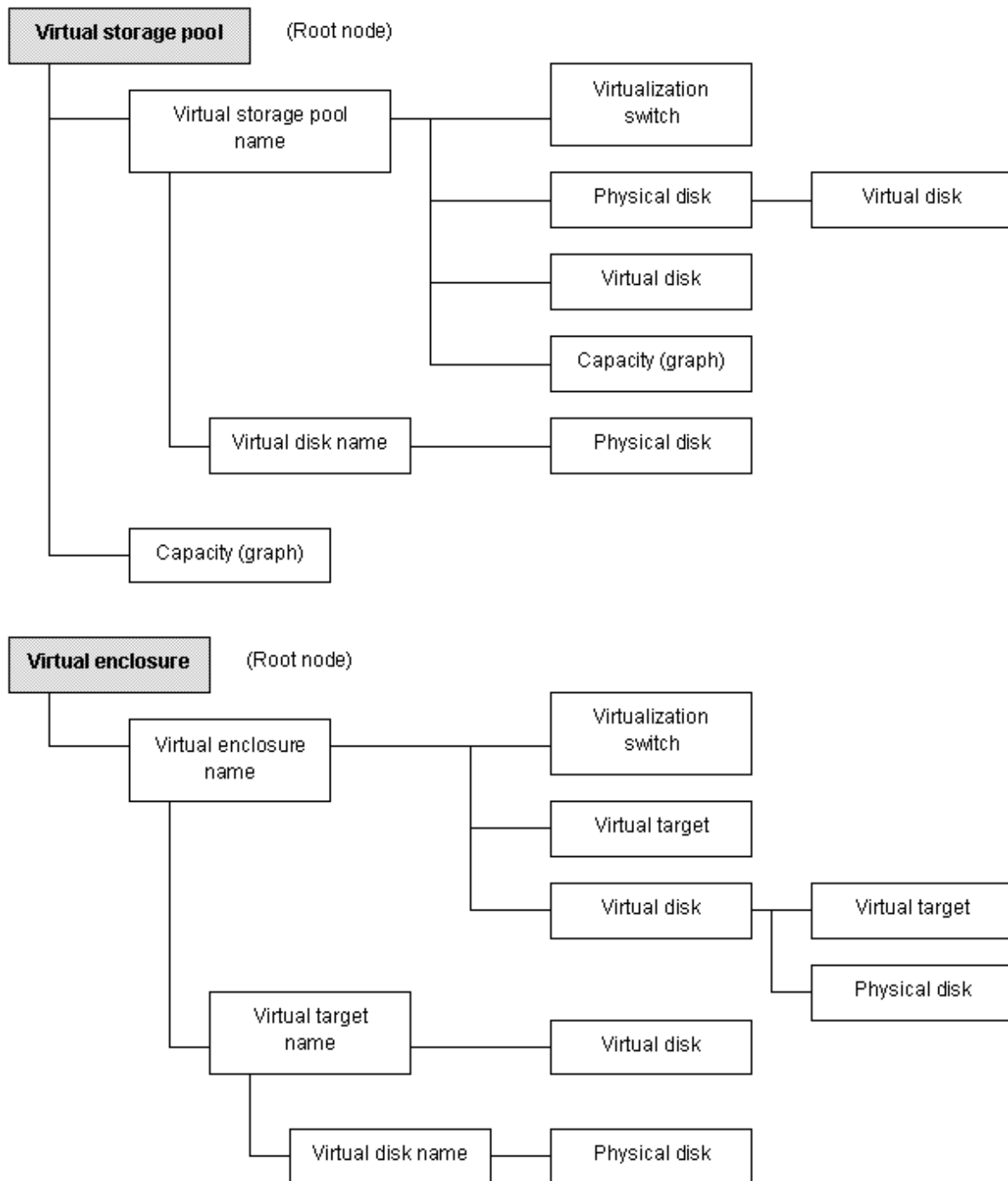
You cannot save the window status. When restarted, the "Virtual storage window" displays items in default order.

## A.2 Explanation of the Windows under "View and Create"

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This section describes the window content and items displayed under "View and Create".

Figure A.1 Overall structure of "View and Create"



### A.2.1 Displaying the virtual storage pool (root node)

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The following describes the window displayed when you select the virtual storage pool (root).



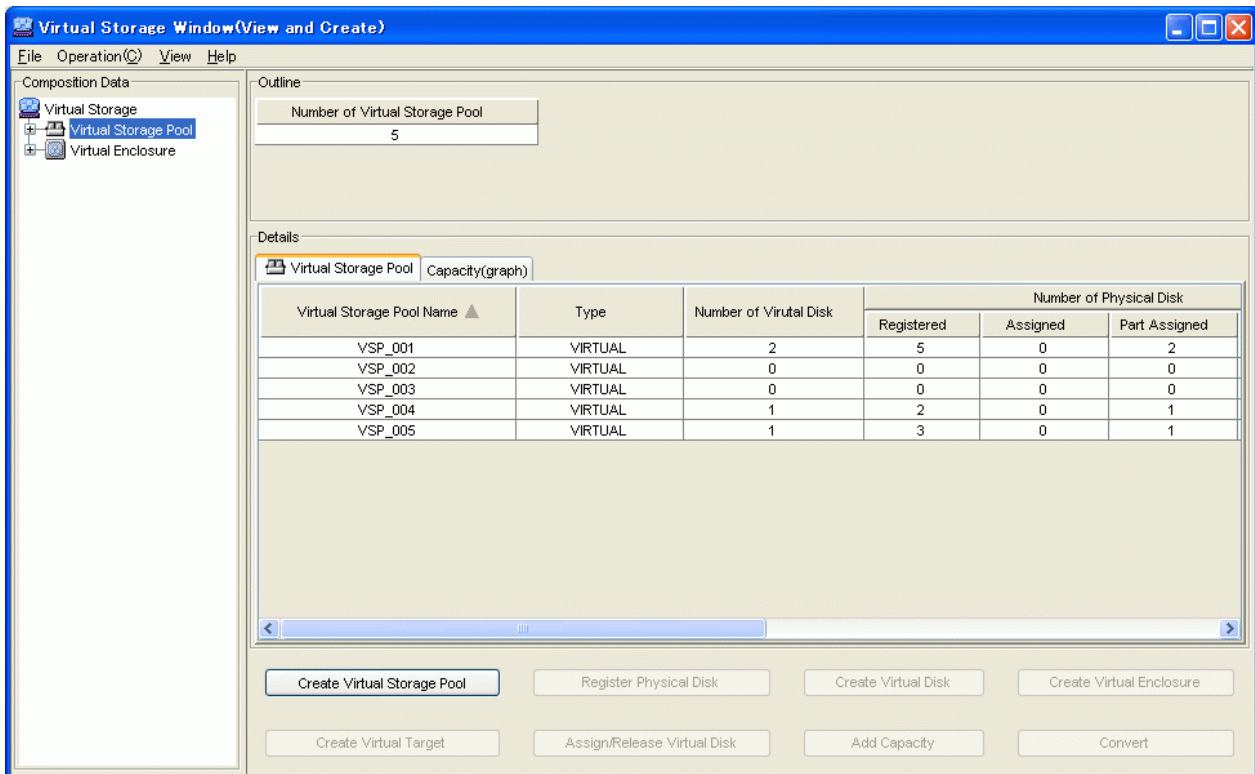


Table A.1 Display information of "Outline area (Virtual Storage Pool [root])"

Item	Description
Number of Virtual Storage Pool	Total number of virtual storage pools created

Table A.2 Display information of "Details area (Virtual Storage Pool [root])"

Item	Description	
Virtual Storage Pool Name	Name of the virtual storage pool created	
Type	Displays 'VIRTUAL'	
Number of Virtual Disk	Number of virtual disks created from the virtual storage pool concerned	
Number of Physical Disk	Registered	Total number of physical disks registered in the virtual storage pool
	Assigned	Total number of physical disks whose physical space has been assigned to a virtual disk
	Part Assigned	Total number of physical disks whose physical space has partially been assigned to a virtual disk
	No Assigned	Total number of physical disks whose physical space has not been assigned to a virtual disk
Capacity (MB)	Capacity	Total physical space capacity of physical disks registered in the virtual storage pool
	Assigned	Total capacity of physical space assigned to a virtual disk
	No Assigned	Total capacity of physical space that has not been assigned to a virtual disk
	VS900 Management Area	Total capacity of the VS900 management area for the physical disks registered in a virtual storage pool

## A.2.2 Displaying the capacity (graph)

The following describes the capacity (graph) window displayed when you select the Virtual Storage Pool (root).

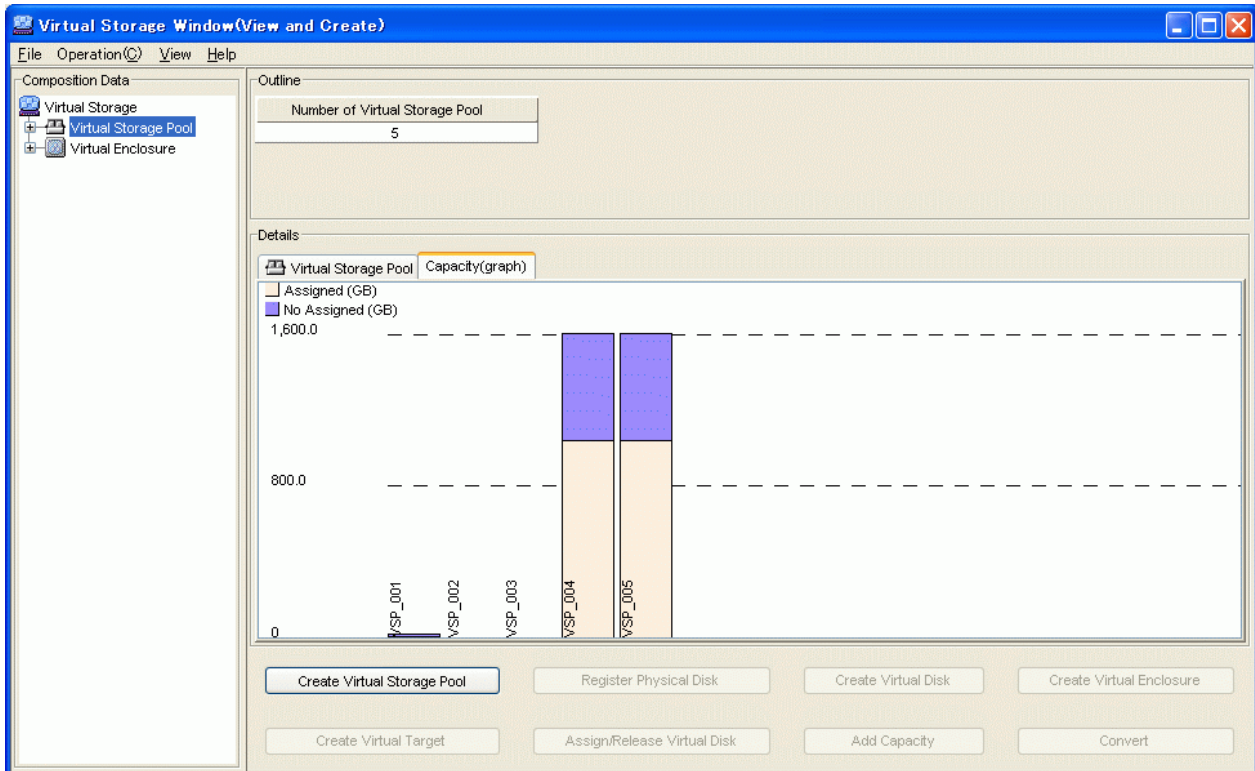


Table A.3 Display information of "Details area (Capacity [graph])"

Item	Description
Capacity (graph)	Capacities of assigned and non-assigned parts of a VS900 management area

## A.2.3 Displaying the virtual storage pool

The following describes the window displayed when you select the desired virtual storage pool name in the Composition Data tree.

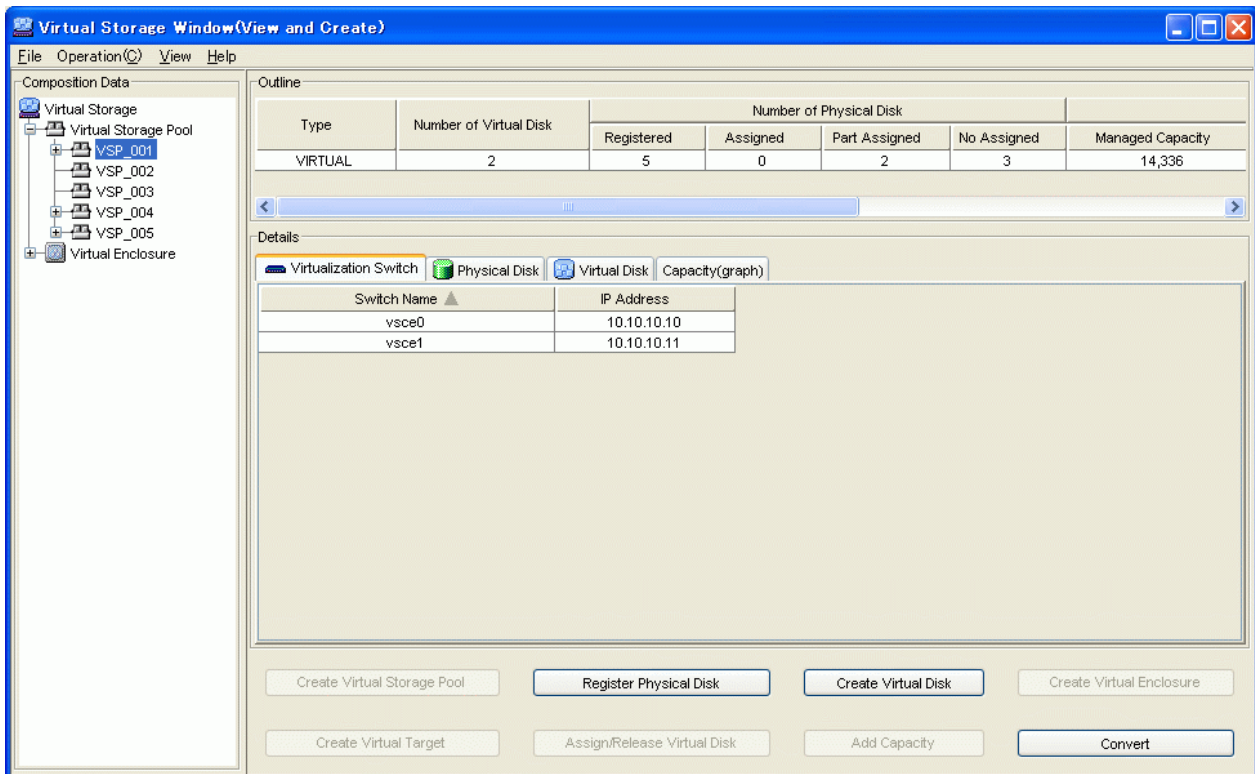


Table A.4 Display information for "Outline area (Virtual Storage Pool)"

Item		Description
Type		Displays 'VIRTUAL'
Number of Virtual Disk		Number of virtual disks created from the virtual storage pool
Number of Physical Disk	Registered	Total number of physical disks registered in the virtual storage pool
	Assigned	Total number of physical disks whose physical space has been assigned to a virtual disk
	Part Assigned	Total number of physical disks whose physical space has partially been assigned to a virtual disk
	No Assigned	Total number of physical disks whose physical space has not been assigned to a virtual disk
Capacity (MB)	Managed Capacity	Total physical space capacity of physical disk registered in the virtual storage pool
	Assigned	Total capacity of physical space assigned to a virtual disk
	No Assigned	Total capacity of physical space that has not been assigned to a virtual disk
	VS900 Management Area	Total capacity of the VS900 management area for the physical disks registered in a virtual storage pool

Table A.5 Display information of "Details area (Virtualization Switch)"

Item	Description
Switch Name	Name of the virtualization switch registered when creating the virtual storage pool
IP Address	IP address of the virtualization switch

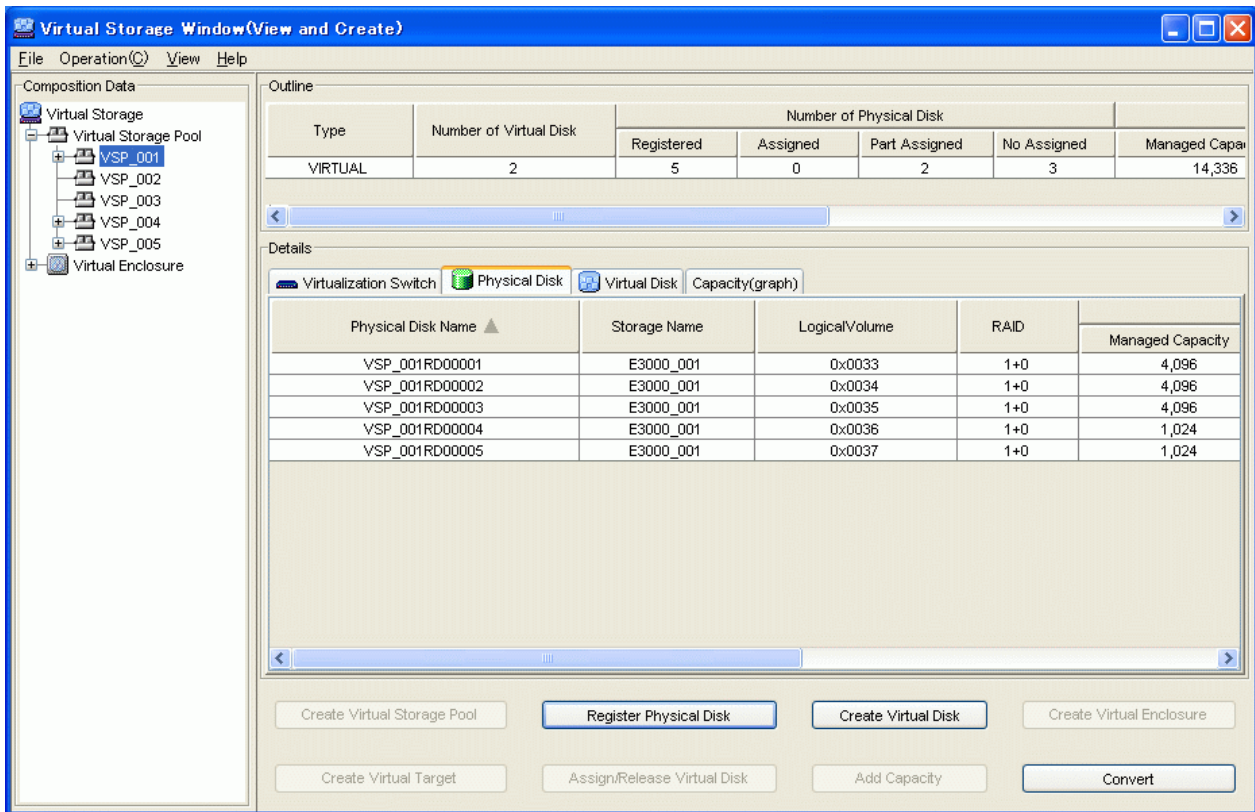


Table A.6 Display information of "Details area (Physical Disk)"

Item		Description	Remarks
Physical Disk Name		Name of the physical disk name registered in the virtual storage pool	
Storage Name		Name of the physical disk storage	
Product ID		Product ID of the storage	Hidden by default
Serial Number		Serial number of the storage	Hidden by default
AffinityGroup:LUN		Affinity group number, logical unit number	Hidden by default
Logical Volume		Storage internal number of the physical disk	
RAID		RAID level of the physical disk (1+0,1,5,6,0)	
Encryption		Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Managed Capacity	Physical disk capacity	
	Assigned	Physical space assigned to a virtual disk	
	Assigned Details	Details button for the assigned area	
	No Assigned	Physical space that is not assigned to a virtual disk	
	VS900 Management Area	Physical disk capacity of a VS900 management area	
Number of Non-assigned Extent		Total number of extents available on the physical disk	Hidden by default

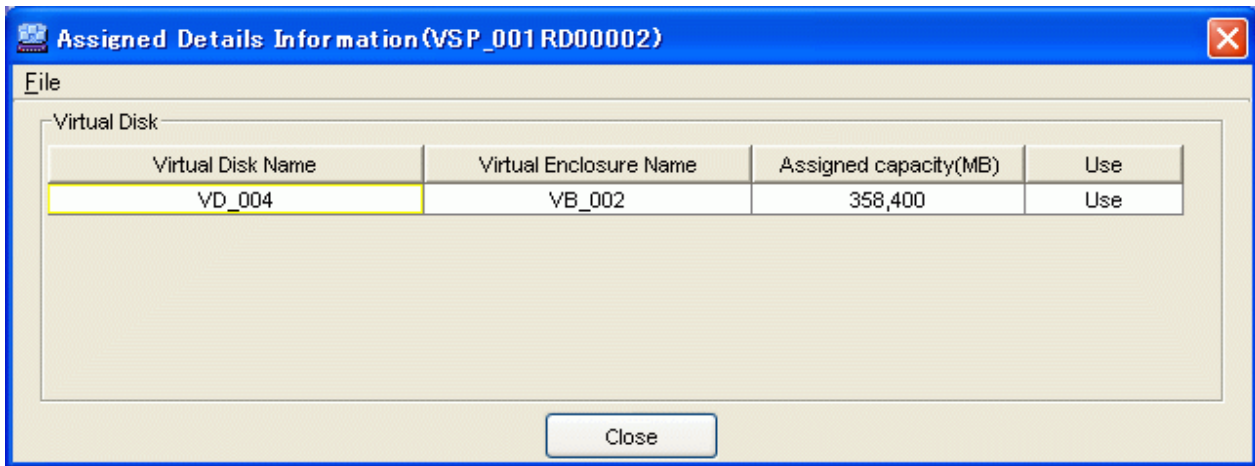


Table A.7 Display information of "Assigned Details Information" dialog

Item	Description	Remarks
Virtual Disk Name	Name of the virtual disk to which a physical disk has been assigned	
Encryption attribute	Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Virtual Enclosure Name	Name of the virtual enclosure in which the virtual disk is registered	
Assigned capacity (MB)	Physical space capacity used by the virtual disk	
Use	Displays "Backup" when the physical disk is a backup disk for the virtual disk. Otherwise, displays "Operation".	

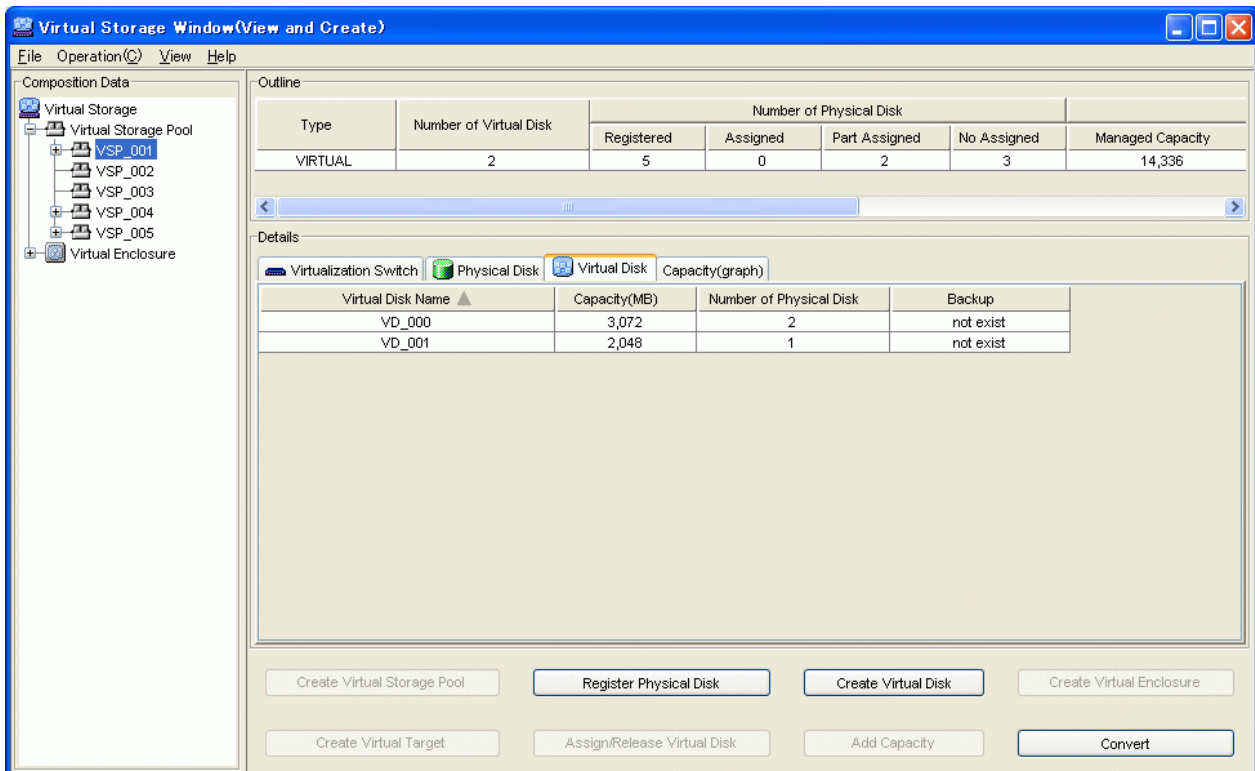


Table A.8 Display information of "Details area (Virtual Disk)"

Item	Description	Remarks
Virtual Disk Name	Name of the virtual disk	
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default

Item	Description	Remarks
Capacity (MB)	Virtual disk capacity	
Number of Physical Disk	Number of physical disks constituting the virtual disk	
Backup	Whether backup disks are available	

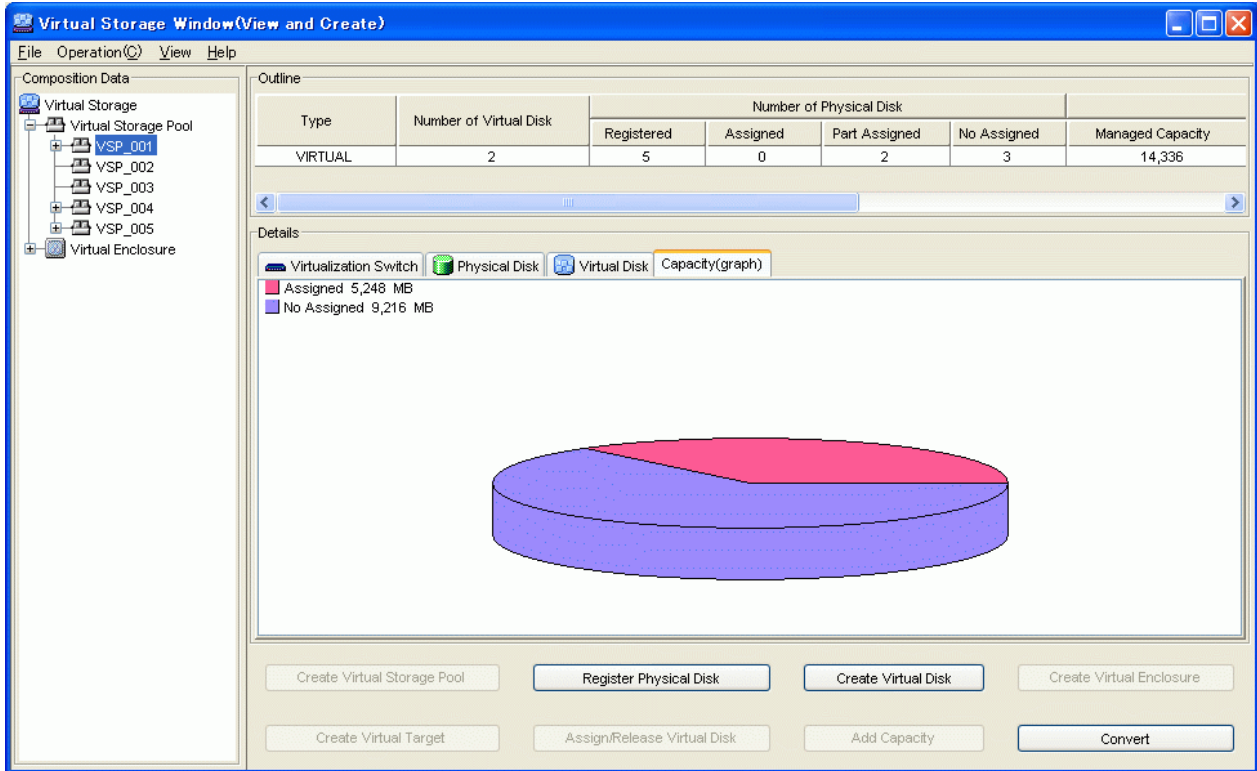


Table A.9 Display information of "Details area (Capacity [graph])"

Item	Description
Capacity (graph)	Capacities of assigned and non-assigned parts of a VS900 management area

## A.2.4 Displaying the virtual disk

The following describes the window displayed when you select the virtual disk name under the Virtual Storage Pool in the Composition Data tree.

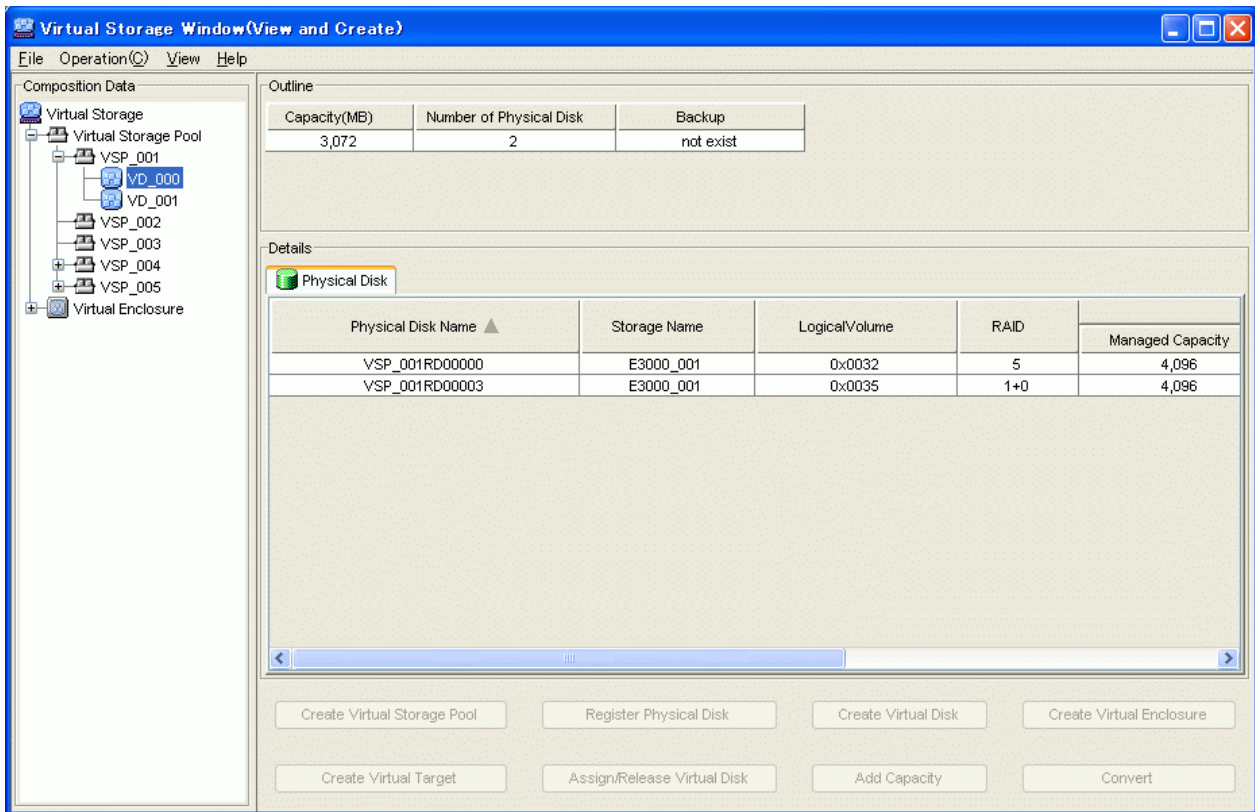


Table A.10 Display information of "Outline area (Virtual Disk)"

Item	Description	Remarks
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Virtual disk capacity	
Number of Physical Disk	Number of physical disks constituting the virtual disk	
Backup	Whether backup disks are available	

Table A.11 Display information of "Details area (Physical Disk)"

Item	Description	Remarks
Physical Disk Name	Name of the physical disk registered in the virtual storage pool	
Storage Name	Name of the physical disk storage	
Product ID	Product ID of the storage	Hidden by default
Serial Number	Serial number of the storage	Hidden by default
AffinityGroup:LUN	Affinity group number, logical unit number	Hidden by default
LogicalVolume	Storage internal number of the physical disk	
RAID	RAID level of the physical disk (1+0,1,5,6,0)	
Encryption	Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Managed Capacity	Physical disk capacity
	Assigned	Physical space assigned to a virtual disk
	No Assigned	Physical space not assigned to a virtual disk
	VS900 management area	Physical disk capacity of a VS900 Management Area
Number of Non-assigned Extent	Total number of extents available on the physical disk	Hidden by default

## A.2.5 Displaying the virtual enclosure (root node)

The following describes the window displayed when you select the Virtual Enclosure (root).

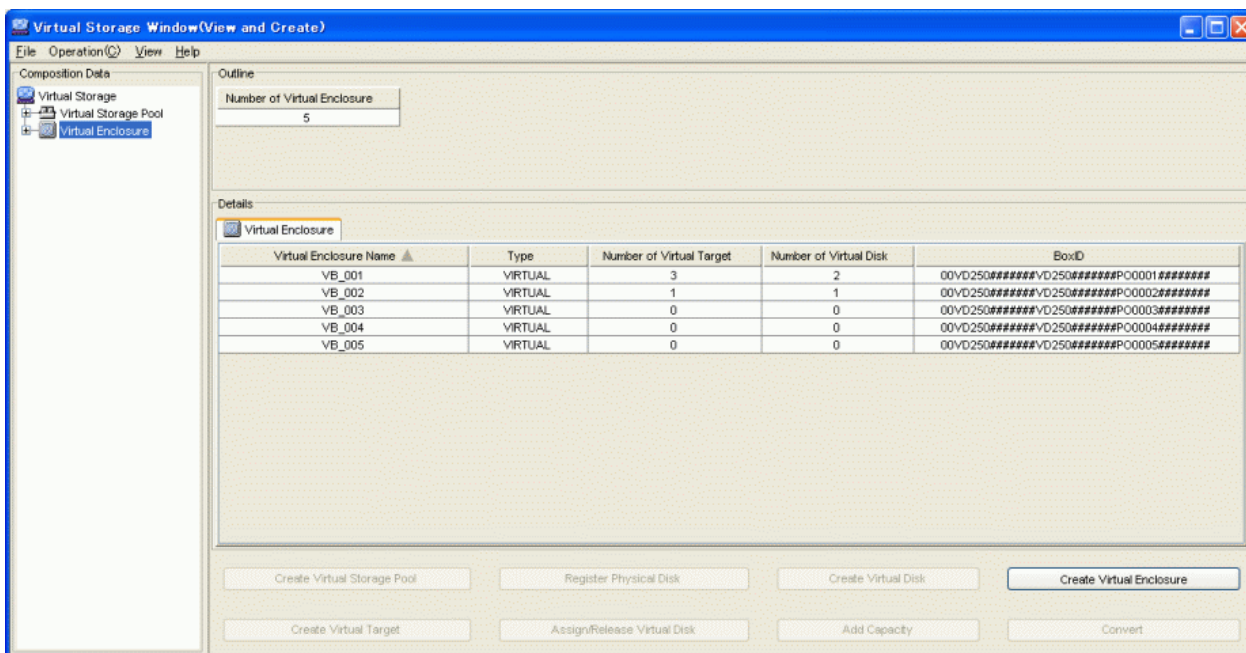


Table A.12 Display information of "Outline area (Virtual Enclosure [root])"

Item	Description
Number of Virtual Enclosure	Total number of virtual enclosures created

Table A.13 Display information of "Details area (Virtual Enclosure [root])"

Item	Description
Virtual Enclosure Name	Name of the virtual enclosure created
Type	Displays 'VIRTUAL'
Number of Virtual Target	Number of virtual targets created from the virtual enclosure pool concerned
Number of Virtual Disk	Total number of virtual disks registered in the virtual enclosure
BoxID	Specific identifier for the virtual enclosure

## A.2.6 Displaying the virtual enclosure

The following describes the window displayed when you select the desired virtual enclosure name in the Composition Data tree.



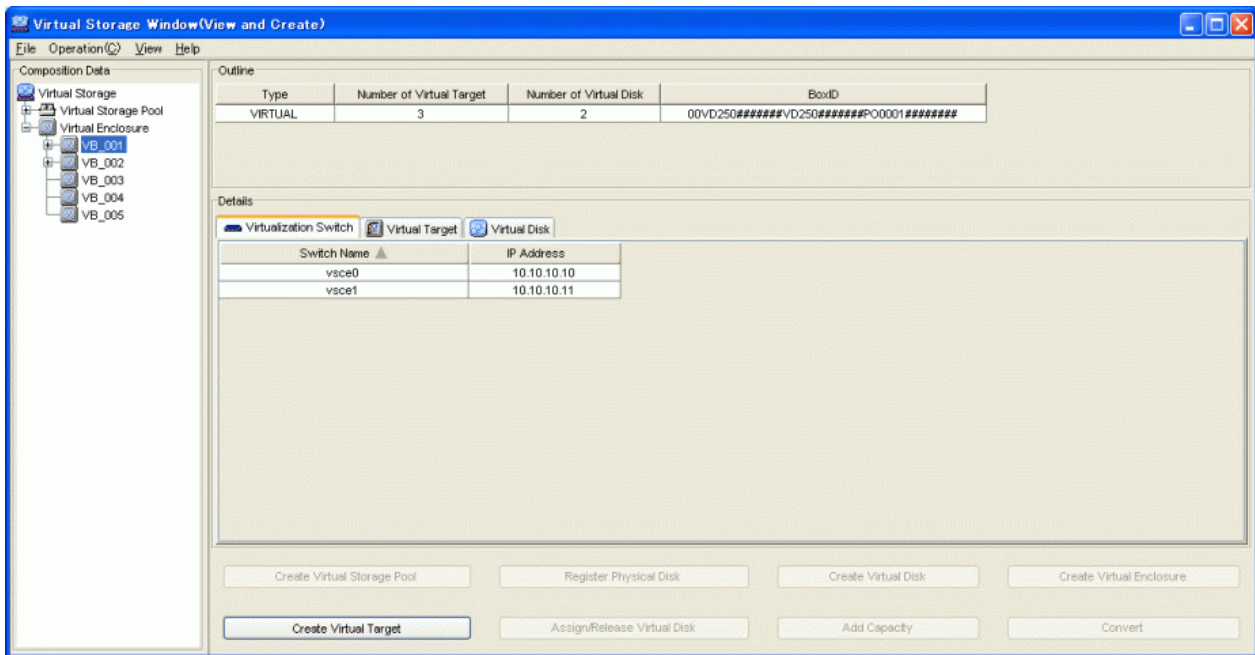


Table A.14 Display information of "Outline area (Virtual Enclosure)"

Item	Description
Type	Displays 'VIRTUAL'
Number of Virtual Target	Number of virtual targets registered with the virtual enclosure
Number of Virtual Disk	Total number of virtual disks registered in the virtual enclosure
BoxID	Specific identifier for the virtual enclosure

Table A.15 Display information of "Details area (Virtualization Switch)"

Item	Description
Switch Name	Name of the virtualization switch registered in the virtual enclosure
IP Address	IP address of the virtualization switch

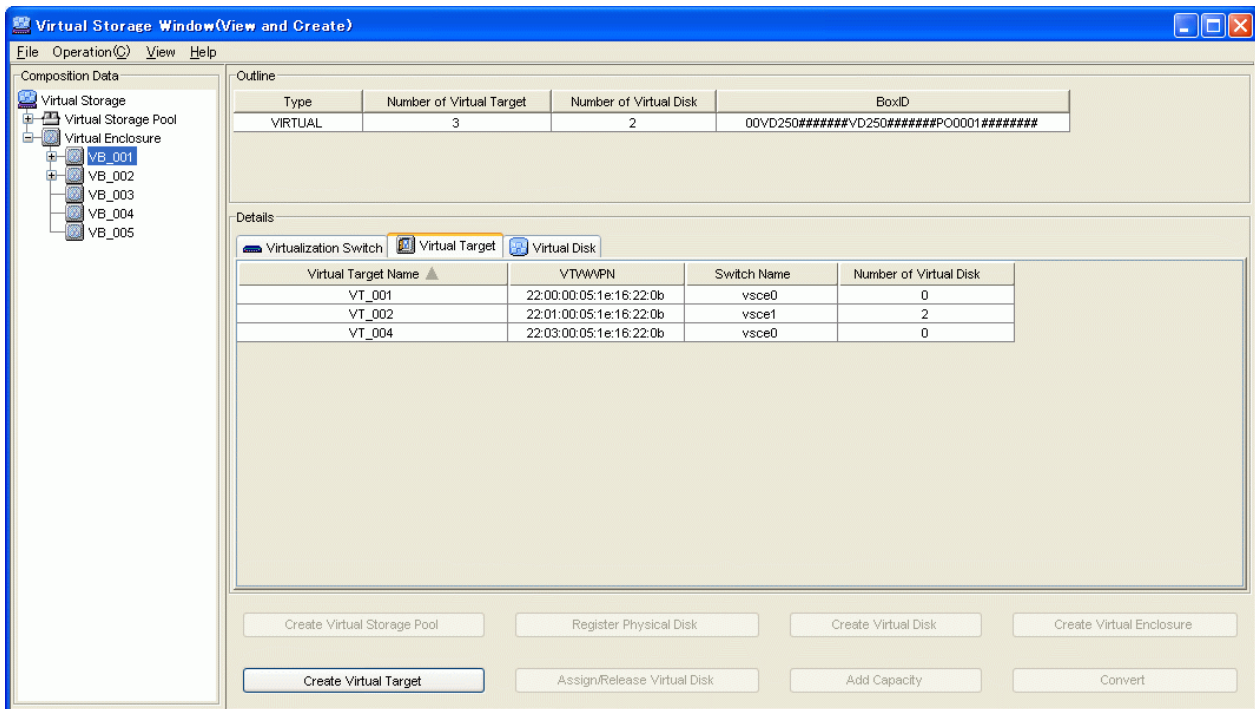


Table A.16 Display information of "Details area (Virtual Target)"

Item	Description
Virtual Target Name	Name of the virtual target registered in the virtual enclosure
VTWWPN	WWN of the virtual target
Switch Name	Name of the virtualization switch registered to the virtual target
Number of Virtual Disk	Total number of virtual disks registered to the virtual target

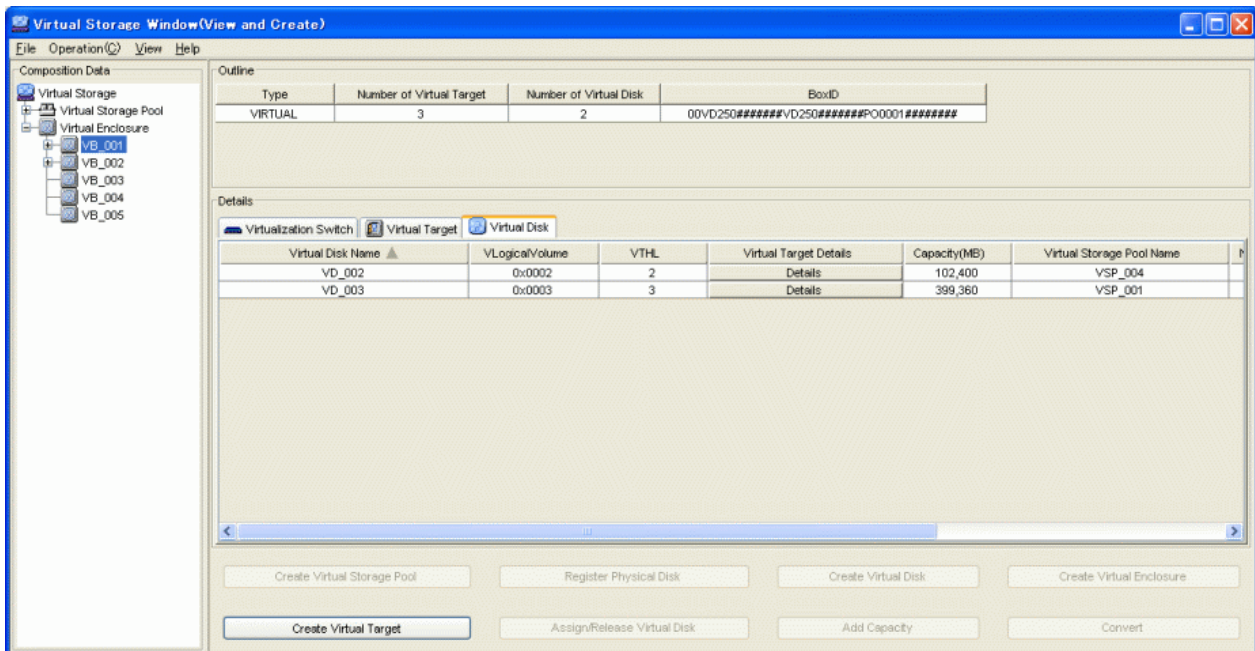


Table A.17 Display information of "Details area (Virtual Disk)"

Item	Description	Remarks
Virtual Disk Name	Name of the virtual disk registered in the virtual enclosure	

Item	Description	Remarks
VLogicalVolume	Virtual disk identifier	
VTHL	Host identifier for the virtual disk (HostLUN)	
Virtual Target Details	Details button for the virtual target to which a virtual disk has been assigned	
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Virtual disk capacity	
Virtual Storage Pool Name	Name of the virtual storage pool in which the physical disk is registered	
Number of Physical Disk	Number of physical disks constituting the virtual disk	
Physical Disk Details	Details button for physical disk information	
Backup	Identifier that indicates whether backup is available  Yes: Backup available No: Backup not available	

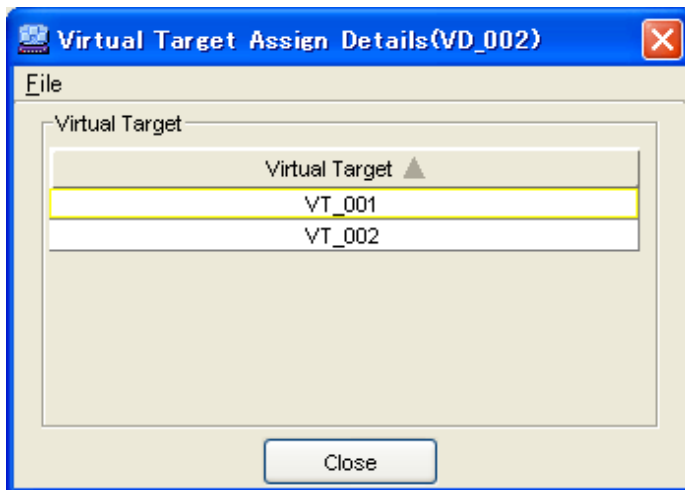


Table A.18 Display information of "Details area (Virtual Target)"

Item	Description
Virtual Target	List of virtual targets to which a virtual disk has been assigned

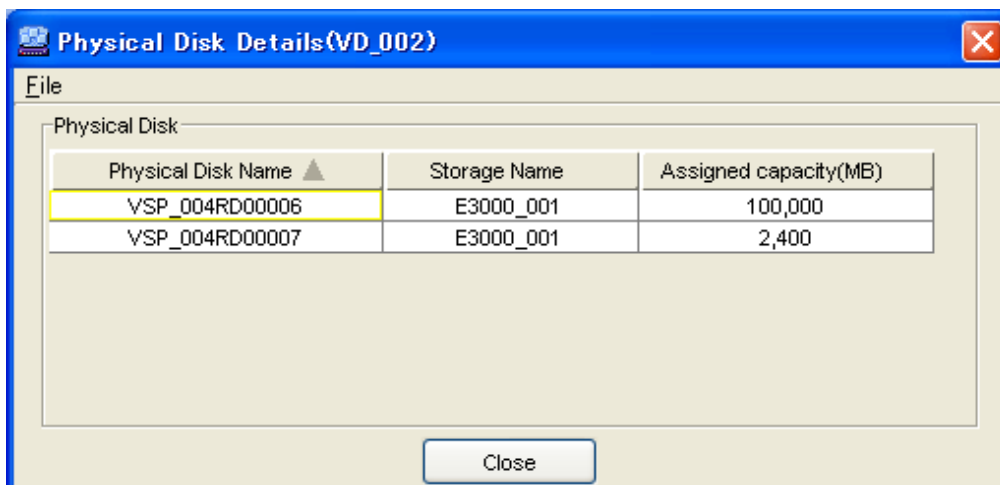


Table A.19 Display information of "Physical Disk Details" dialog

Item	Description	Remarks
Physical Disk Name	Name of the physical disk constituting a virtual disk	
Storage Name	Name of the physical disk storage	
Encryption	Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Assigned capacity (MB)	Physical space capacity assigned to a virtual disk	

## A.2.7 Displaying the virtual target

The following describes the window displayed when you select the virtual target name under the Virtual Enclosure in the Composition Data tree.

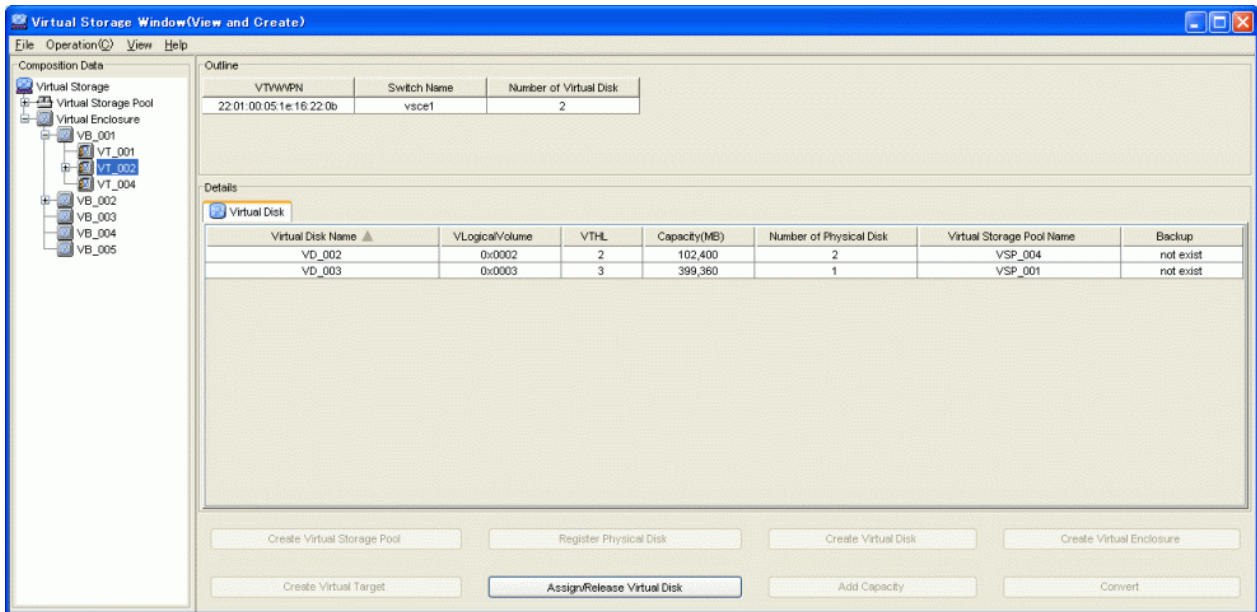


Table A.20 Display information of "Outline area (Virtual Target)"

Item	Description
VTWWPN	WWN of the virtual target
Switch Name	Name of the virtualization switch registered to the virtual target
Number of Virtual Disk	Total number of virtual disks registered in the virtual enclosure

Table A.21 Display information of "Details area (Virtual Disk)"

Item	Description	Remarks
Virtual Disk Name	Name of the virtual disk registered to the virtual target	
VLogicalVolume	Virtual disk identifier	
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default
VTHL	Host identifier for the virtual disk (HostLUN)	
Capacity (MB)	Virtual disk capacity	
Number of Physical Disk	Number of physical disks constituting the virtual disk	
Virtual Storage Pool Name	Name of the virtual storage pool in which the physical disk is registered	
Backup	Identifier that indicates whether backup is available	

Item	Description	Remarks
	Yes: Backup available No: Backup not available	

## A.2.8 Displaying the virtual disk

The following describes the window displayed when you select the virtual disk name under the Virtual Enclosure displayed in the Composition Data tree.

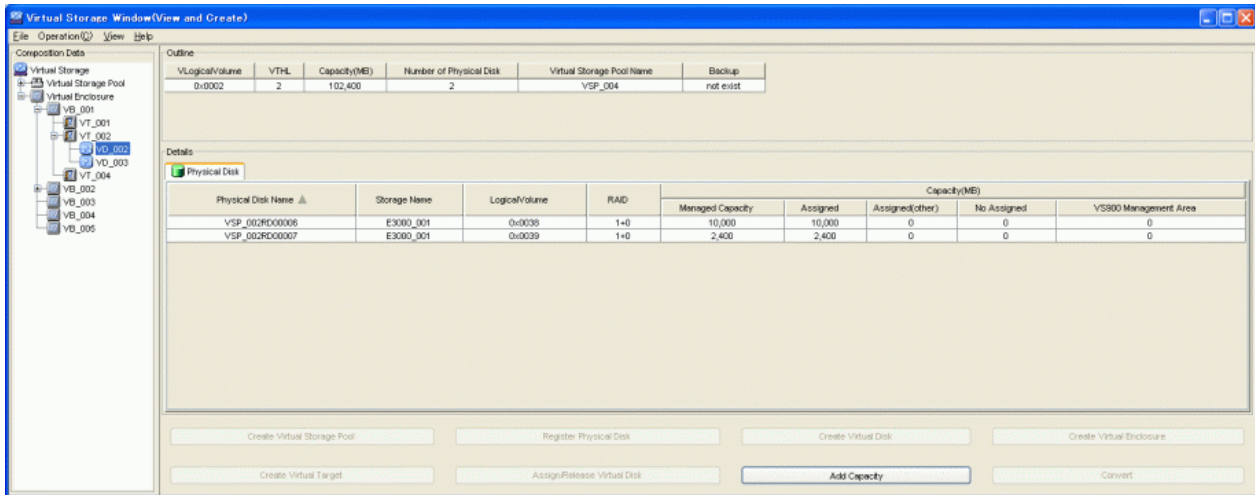


Table A.22 Display information of "Outline area (Virtual Disk)"

Item	Description	Remarks
VLogicalVolume	Virtual disk identifier	
VTHL	Host identifier for the virtual disk (HostLUN)	
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Virtual disk capacity Total capacity assigned to each physical disk displayed in the Details area	
Number of Physical Disk	Number of physical disks constituting the virtual disk	
Virtual Storage Pool Name	Name of the virtual storage pool in which the physical disk is registered	
Backup	Identifier that indicates whether backup is available Yes: Backup available No: Backup not available	

Table A.23 Display information of "Details area (Virtual Disk)"

Item	Description	Remarks
Physical Disk Name	Name of the physical disk constituting the virtual disk	
Storage Name	Name of the physical disk storage	
Product ID	Product ID of the storage	Hidden by default
Serial Number	Serial number of the storage	Hidden by default
AffinityGroup:LUN	Affinity group number:logical unit number	Hidden by default
LogicalVolume	Storage internal number of the physical disk	
RAID	RAID level of the physical disk (1+0,1,5,6,0)	

Item		Description	Remarks
Encryption		Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Capacity (MB)	Managed Capacity	Physical disk capacity	
	Assigned	Physical space capacity assigned to the virtual disk concerned	
	Assigned (other)	Physical space capacity assigned to another virtual disk	
	No Assigned	Physical space capacity not assigned to the virtual disks	
	VS900 Management Area	Physical disk capacity of a VS900 management area	
Number of Non-assigned Extent		Total number of extents available on the physical disk	Hidden by default

## A.3 Explanation of Windows under "Copy"

This section describes the window content and items displayed under "Copy".

### A.3.1 Displaying copy inquiry

The following describes the windows displayed for copy status inquiry.

Session ID	Type	Switch Name	Copy Source	Copy Source (Details)	Copy Destination (Details)	Status	Error Unit	Start Time	VS900 Management Area
00000001	Migration	vsce1	VDis01	Details	Details	Copying(070%)		Jan 1, 1970 9:01:40 AM	Details
00000002	Migration(Backup exists)	vsce2	VDis02	Details	Details	Equivalence	Error of Mirror Volume	Jan 1, 1970 9:01:40 AM	Details
00000003	Migration	vsce3	VDis03	Details	Details	Copying(090%)	Error of Source Volume	Jan 1, 1970 9:01:40 AM	Details
00000004	Migration(Backup exists)	vsce4	VDis04	Details	Details	Equivalence	Error of Destination Volume	Jan 1, 1970 9:01:40 AM	Details
00000005	Migration	vsce5	VDis05	Details	Details	Error		Jan 1, 1970 9:01:40 AM	Details

Table A.24 Display information of "Copy Status"

Item	Description	Remarks
	Operation buttons for copy processing [Stop]: Stops copy processing. [Switch]: Switches the virtual disk composition to the migration destination physical disk. This button is enabled only with "Retain migration backup" selected at migration startup.	
Session ID	Session ID at copy processing startup	
Type	Copy processing type "Migration": Indicates auto-switching migration. "Migration (Backup exists)": Indicates migration in which the user switches the physical disks. "Replication": Indicates replication. "ACM": Indicates replication started from ETERNUS SF AdvancedCopy Manager.	
Switch Name	Name of the virtualization switch which is performing copy processing	
Copy Source	Name of the virtual disk where copy processing is being performed	
Copy Source (Details)	Details button for the copy source	

Item	Description	Remarks
Copy Destination (Details)	Details button for the copy destination	
Status	<p>Status of copy processing</p> <p>"Copying": Copying data from the copy source to the copy destination.</p> <p>"Equivalent": Maintaining equivalence of the copy source and copy destination after completing copy processing.</p> <p>"Standing by for automatic switch": Maintaining the equivalency between the copy source and the copy destination after data copying is completed. (Valid when migration is executed by specifying not to hold the migration backup disk)</p> <p>"Unusual": An error occurred during data copying.</p> <p>"Suspend": Suspending data copying.</p> <p>"Halt Copy": Suspending processing because of an error detected during data copying.</p> <p>"Error": Error occurred during copy processing.</p> <p>In cases of " Unusual", display the "Error Unit" item and check error details. Please see the Abnormal end record of "<a href="#">6.4.1.3 [Solaris OS/Linux OS]Copy log</a>" or "<a href="#">6.4.1.4 [Windows]Copy log</a>", and confirm the cause.</p>	
Error Unit	<p>Copy error location</p> <p>"Error of Source Volume": An error occurred on the copy source physical disk.</p> <p>"Error of Destination Volume ": An error occurred on the copy destination physical disk.</p> <p>"VS900 Management Area error": An error occurred in a VS900 management area.</p> <p>"Unknown (other errors)": An error other than the above occurred.</p> <p>"Unknown (VSC Engine unsupport)": An error occurred because an unsupported VSC Engine function is specified.</p>	Hidden by default
VS900 Management Area	Button for displaying detailed information on the VS900 management area used for the session	Hidden by default

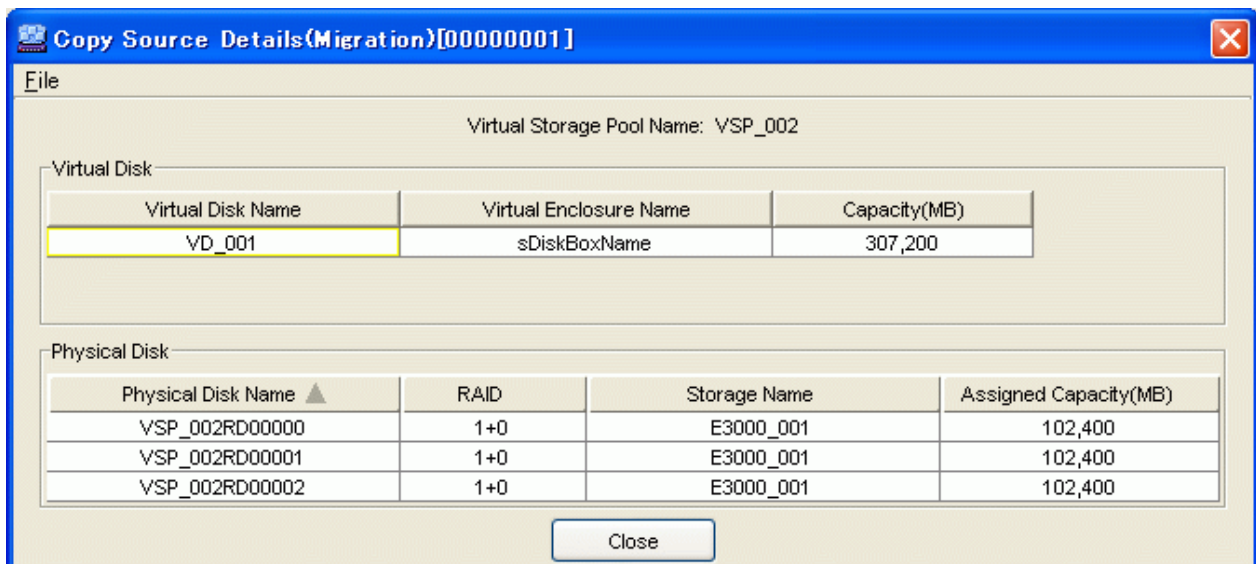


Table A.25 Display information of "Copy Source Details" dialog

Item	Description	Remarks
Virtual Storage Pool Name	Name of the virtual storage pool in which the physical disk is registered	

Item	Description	Remarks
Virtual Disk Name	Name of the virtual disk used for copying	
Virtual Enclosure Name	Name of the virtual enclosure in which the virtual disk is registered	
Capacity (MB)	Virtual disk capacity	
Encryption	Encryption attribute of the virtual disk (encryption, non-encryption)	Hidden by default
Physical Disk Name	List of physical disks constituting the virtual disk	
RAID	RAID level of the physical disk (0, 1+0, 1, 5, 6)	
Storage Name	Name of the physical disk storage	
Encryption	Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Assigned Capacity (MB)	Capacity assigned from the physical disk concerned to the virtual disk	

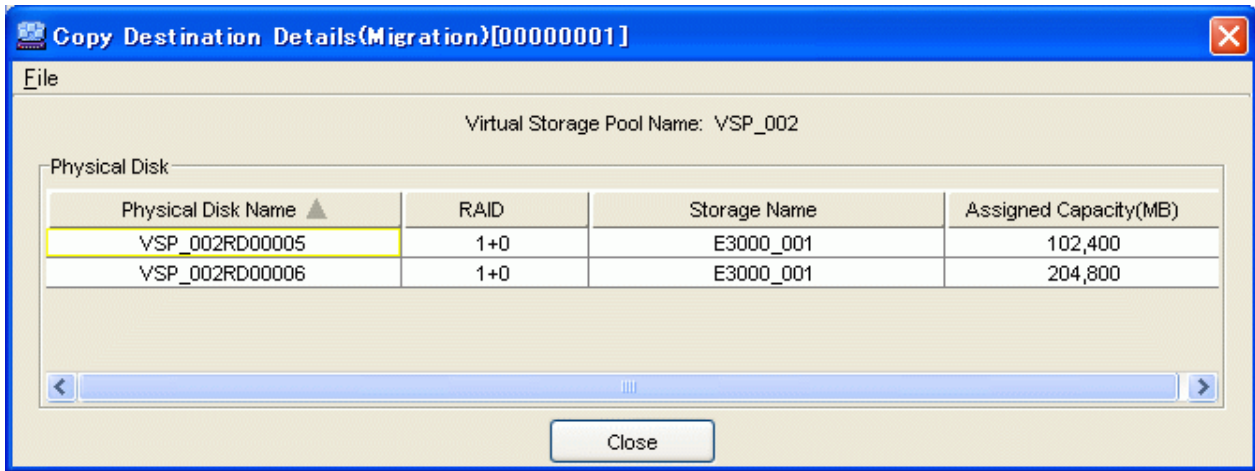


Table A.26 Display information of "Copy Destination Details" dialog

Item	Description	Remarks
Virtual Storage Pool Name	Name of the virtual storage pool in which the physical disk is registered	
Virtual Disk Name	Name of the copy destination virtual disk (displayed only for replication)	
Virtual Enclosure Name	Name of the virtual enclosure in which the copy destination virtual disk is registered (displayed only for replication)	
Capacity (MB)	Capacity of the copy destination virtual disk (displayed only for replication)	
Physical Disk Name	List of copy destination physical disks	
RAID	RAID level of the physical disk (0, 1+0, 1, 5, 6)	
Storage Name	Name of the physical disk storage	
Encryption	Encryption attribute of the physical disk (encryption, non-encryption)	Hidden by default
Assigned Capacity (MB)	Capacity assigned from the physical disk concerned to the virtual disk	



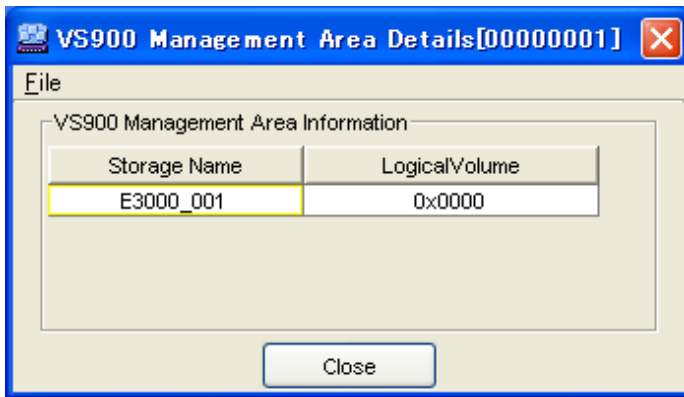


Table A.27 Display information of the "VS900 Management Area Details" dialog

Item	Description
Storage Name	Disk unit name of the physical disk containing a VS900 management area
LogicalVolume	Internal disk unit number of the physical disk containing a VS900 management area

### A.3.2 Displaying the migration backup disk list

The following describes the displayed information in the Migration Backup Disk List dialog.

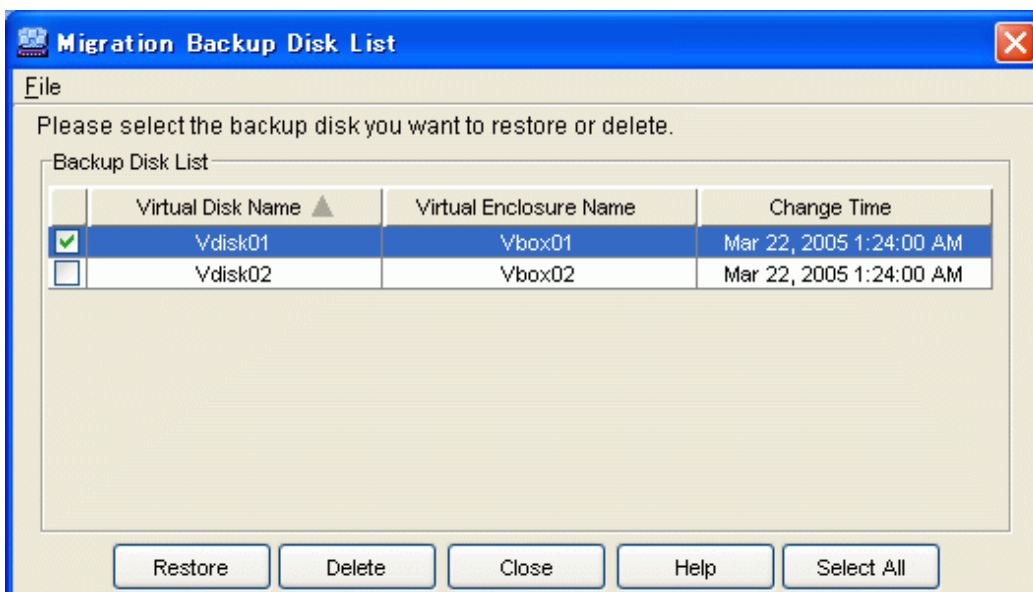


Table A.28 Display information of "Migration Backup Disk List" dialog

Item	Description
	Operation buttons for the migration backup disk list [Restore]: Restores the backup disk to where it was originally stored. [Delete]: Deletes the backup disk.
Virtual Disk Name	Name of the virtual disk used for backup
Virtual Enclosure Name	Name of the virtual enclosure in which the backup disk is registered
Change Time	Time when the virtual disk configuration is changed to the migration destination physical disk

### A.3.3 Displaying the copy history list

The following describes the displayed information in the Copy History List dialog.

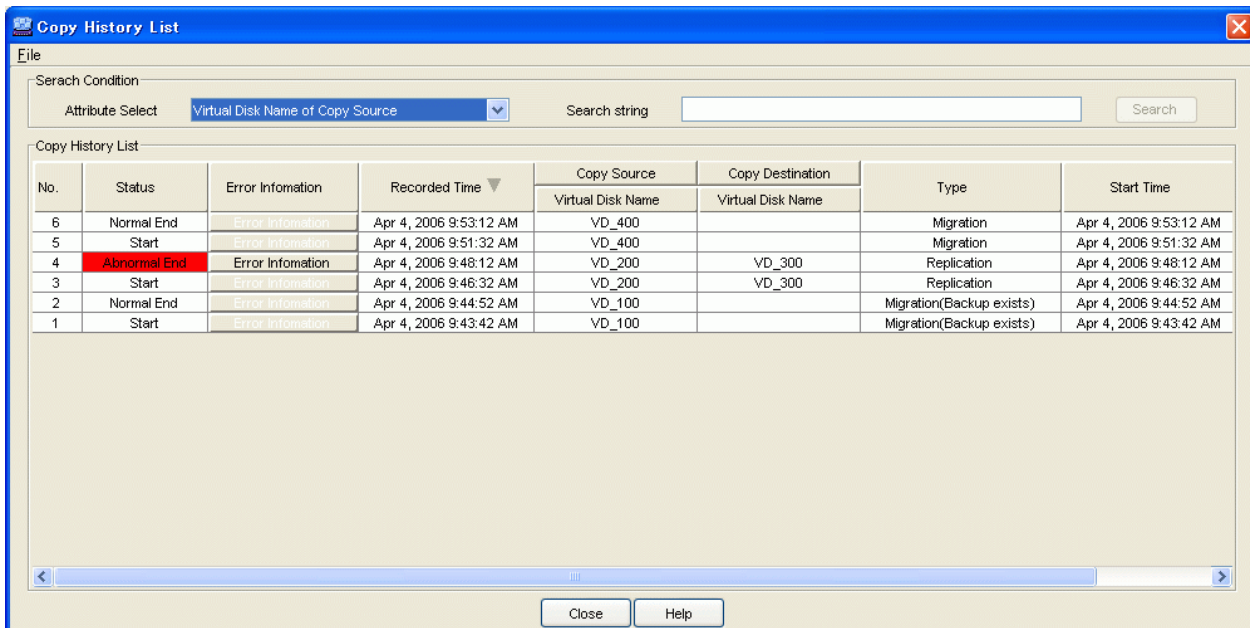


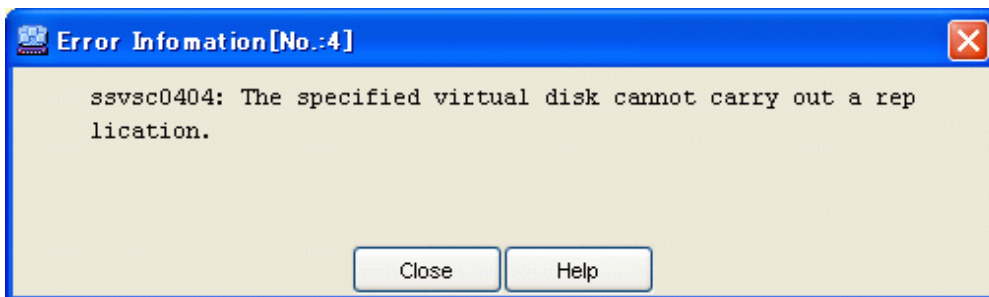
Table A.29 Display information of the "Copy History List" dialog

Item	Description	Remarks
No.	Copy history number (1 or higher)	
Status	Copy processing status "Copying": Copying data from the copy source to the copy destination. "Synchronized": Maintaining synchronization of the copy source and copy destination after completing copy processing. "Error": An error occurred during copy processing.	
Error Unit	Copy error location "Error of Mirror Volume": An error occurred on a mirror volume physical disk. "Error of Source Volume": An error occurred on the copy source physical disk. "Error of Destination Volume": An error occurred on the copy destination physical disk. "VS900 Management Area error": An error occurred in a VS900 management area. "Unknown (Other errors)": An error other than the above occurred. "Unknown (VSC-Engine unsupported)": An error occurred because an unsupported VSC Engine function is specified. "Unknown": Error of unknown origin occurred.	Hidden by default
Error Information	Error information obtained at an abnormal end of copying	
Recorded Time	Logged dates and times in the copy history	
Copy Source	Virtual Disk Name	Name of the copy source virtual disk

Item		Description	Remarks
	Virtual Enclosure Name	Name of the copy source virtual enclosure	Hidden by default
Copy Destination	Virtual Disk Name	Name of the copy destination virtual disk	
	Virtual Enclosure Name	Name of the copy destination virtual enclosure	Hidden by default
	Capacity (MB)	Copy capacity	Hidden by default
Type	Copy processing type "Migration": Indicates auto-switching migration. "Migration (Backup exists)": Indicates migration in which the user switches physical disks. "Replication": Indicates replication. "ACM": Indicates replication started from ETERNUS SF AdvancedCopy Manager.		
Switch Name	Name of the virtualization switch used to execute copy processing		Hidden by default
Execution Type	Type of application executing copy processing "VSC": Executed from ETERNUS SF Storage Cruiser. "other": Executed from an application other than ETERNUS SF Storage Cruiser (including ETERNUS SF AdvancedCopy Manager)		Hidden by default
Start Time	Start time of copy processing		
Session ID	Session ID at copy processing startup		

The error information dialog box is explained here.

The cause of an abnormal end of copying can be determined from the message ID displayed in the error information dialog box. For details, refer to "[Appendix E Error Messages](#)".



## A.4 Explanation of Windows under "Maintenance"

This section describes the window content and items displayed under "Maintenance".

Virtualization Switch				Composition Data			Firmware		
Switch Name	IP Address	Group ID	Status	Management Software	Version	Status	Version	Creation Day	TraceLevel
vsce0	10.10.10.0	1	normal	<a href="http://10.10.10.0">http://10.10.10.0</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce1	10.10.10.1	1	normal	<a href="http://10.10.10.1">http://10.10.10.1</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce3	10.10.10.3	2	normal	<a href="http://10.10.10.3">http://10.10.10.3</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce2	10.10.10.2	2	error	<a href="http://10.10.10.2">http://10.10.10.2</a>					
vsce5	10.10.10.5	3	normal	<a href="http://10.10.10.5">http://10.10.10.5</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce4	10.10.10.4	3	normal	<a href="http://10.10.10.4">http://10.10.10.4</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	4
vsce7	10.10.10.7	4	normal	<a href="http://10.10.10.7">http://10.10.10.7</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce6	10.10.10.6	4	normal	<a href="http://10.10.10.6">http://10.10.10.6</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce9	10.10.10.9	5	normal	<a href="http://10.10.10.9">http://10.10.10.9</a>	075bcd15	unusual	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce8	10.10.10.8	5	normal	<a href="http://10.10.10.8">http://10.10.10.8</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce10	10.10.10.10	6	normal	<a href="http://10.10.10.10">http://10.10.10.10</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce11	10.10.10.11	6	normal	<a href="http://10.10.10.11">http://10.10.10.11</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce12	10.10.10.12	7	normal	<a href="http://10.10.10.12">http://10.10.10.12</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1
vsce13	10.10.10.13	7	normal	<a href="http://10.10.10.13">http://10.10.10.13</a>	075bcd15	normal	00002b67	Aug 21, 1970 8:00:24 AM	1

Table A.30 Display information of "Maintenance"

Item	Description	Remarks	
Virtualization Switch	Switch Name	Name of the virtualization switch	
	IP Address	IP address of the virtualization switch	
	Group ID	Switch ID in redundant configuration Indicates that redundant configuration is built with switches of the same ID.	
	Series Name	Series name of the virtualization switch	Hidden by default
	Model Name	Model name of the virtualization switch	Hidden by default
	Initiator	Details button for the initiator	Hidden by default
	Status	Operating status of VSC Engine "Normal": VSC Engine is operating. "Stopped": VSC Engine is stopped. Otherwise, communication with the virtualization switch failed. "Error": The VSC engine is in error.	
Management Software	Button for displaying the management software on a virtualization switch		
Composition Data	Version	Version number of composition data collected by the virtualization switch concerned	
	Status	Consistency of composition data between the virtualization switch and admin server "normal": Consistent "unusual": Inconsistent	
Firmware	Version	Program version number of VSC Engine	
	Creation Day	Build day of the VSC engine program	
	Trace Level	Level of trace information collected in the virtualization switch	



The <Details> buttons for the virtualization switches displayed in the Maintenance window are hidden by default.

To display the <Details> buttons in the Maintenance window, follow the procedure described in "Items for display/non-display" in Section "A.1.2 Common operations in the window", and then display the initiator information.

## A.4.1 Displaying initiator details

The following describes the initiator details window.

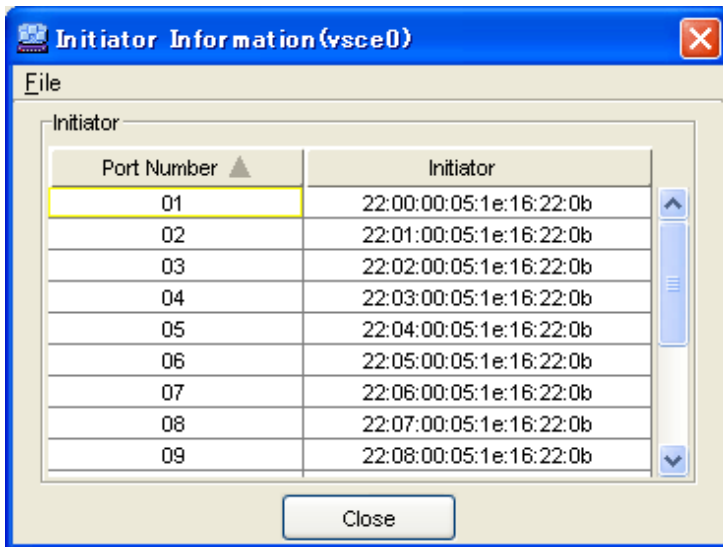


Table A.31 Display information of "Initiator Information" dialog

Item	Description
Port Number	Port number of the virtualization switch
Initiator	Initiator of the port number

# Appendix B Admin Server Commands

This appendix provides reference for commands used with Virtual Storage Conductor running on the admin server.

## Description format

The command description format is as follows:

### Standard format

Indicates optional characters or optional strings. Input the data as specified.

### Italics

Indicates input characters or input strings.

The following table lists the characters that can be input.

Character type	Meaning	Number of bytes per character
Characters	Characters listed in "Table: Characters that can be input"	1
Numeric	Numeric characters from 0 to 9 of characters	1
Lowercase	Lowercase characters from a to z of characters	1
Uppercase	Uppercase characters from A to Z of characters	1
Special character	"_" (underscore)	1
Alphabetic	Uppercase and Lowercase alphabetic characters	1
Alphanumeric	Alphabetic and numeric characters	1

Uppercase and lowercase characters are distinguished.

Table B.1 Characters that can be input

High-order 4 bits	Low-order 4 bits															
	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>
<i>0</i>																
<i>1</i>																
<i>2</i>																
<i>3</i>	0	1	2	3	4	5	6	7	8	9						
<i>4</i>		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
<i>5</i>	P	Q	R	S	T	U	V	W	X	Y	Z					_
<i>6</i>		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
<i>7</i>	p	q	r	s	t	u	v	w	x	y	z					

### { a | b }

Select either a or b.

### [ a ]

You can omit a.

### Underscore

Default value

...

You can specify this repeatedly.

## Notes

### Command execution privilege

All commands must be executed by a user with root (administrator) privileges.

### Resource name

Name each resource (including the virtualization switch, virtual storage pool, physical disk, virtual enclosure, virtual target, and virtual disk) to make it identifiable to users and VSC. These names must be unique in VSC. The virtual storage pool and virtual enclosure must not have the same name.

## B.1 [Solaris OS/Linux OS]Admin Server Commands

---

### B.1.1 getvsw Command

---

#### NAME

getvsw - Displays information of the virtualization switches

#### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd getvsw [-s switch-name]  
/opt/FJSVssmgr/sbin/vscmcmd getvsw -h
```

#### DESCRIPTION

This command displays information of the virtualization switches registered on the admin server.

This command must be executed by a user with root privileges.

#### OPTIONS

##### -s *switch-name*

Specifies the name of virtualization switch whose information you want to display.

If you do not specify this operand, the names and status of all virtualization switches registered on the admin server are listed.

##### -h

Indicates how to use the command.

#### EXAMPLES

The names and status of all virtualization switches registered on the admin server are displayed as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd getvsw  
SwitchName      Status      ConfigFile  GroupID  
vsce1           running     correct     1  
vsce2           running     incorrect   1  
Command terminated normally.
```

Details of the virtualization switch named "vsce1" are displayed as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd getvsw -s vsce1
SwitchName vsce1
HostName vsce1
GroupID 1
Series VS900
Model VS900
Status running
ConfigFile correct
TraceLevel 0
Version 01010B0C
FirmVersion 01010007
BuildDate Mon dd, yyyy hh:mm:ss XM
SwitchDate Mon dd, yyyy hh:mm:ss XM
Copyright FUJITSU LIMITED
Command terminated normally.
```

Table B.2 Display items and meanings of the getvsw command

Item name	Meaning
SwitchName	Name of the virtualization switch
HostName	Host name defined in the /etc/hosts file
GroupID	ID of switches in the redundancy configuration This indicates that the redundancy configuration is built in the switches with the same ID
Series	Series name
Model	Model name
Status	Operating status of VSC Engine <ul style="list-style-type: none"> <li>• running Running normally</li> <li>• abnormal Running abnormally</li> </ul>
ConfigFile	Status of composition data held by VSC Engine <ul style="list-style-type: none"> <li>• correct The correct status in which the data is consistent with composition data of VSC Manager</li> <li>• incorrect The incorrect status in which the data is inconsistent with composition data of VSC Manager</li> </ul>
TraceLevel	Setting level of the trace used for VSC Engine troubleshooting
Version	Version number of composition data held by VSC Manager. Displays "NONE" when no composition data has been created.
FirmVirsiion	Version number of the VSC Engine firmware
BuildDate	Creation date of the VSC Engine
SwitchDate	Current time of the internal clock held by the virtualization switch
Copyright	Indicates Copyright

## EXIT STATUS

- 0: Information of the virtualization switch is displayed.
- 1: Information of the virtualization switch is not displayed.



## SEE ALSO

None

## NOTES

- If "abnormal" is displayed in "Status", the following items are not displayed:
  - Series
  - Model
  - ConfigFile
  - TraceLevel
  - Version
  - FirmVersion
  - BuildDate
  - SwitchDate
  - Copyright
- If "incorrect" is displayed in "ConfigFile", you must restore the composition data.

## B.1.2 setvscetrclvl Command

---

### NAME

setvscetrclvl - Sets the trace level of VSC Engine

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd setvscetrclvl -s switch-name -c trace-level  
/opt/FJSVssmgr/sbin/vscmcmd setvscetrclvl -h
```

### DESCRIPTION

This command sets the output level of trace for troubleshooting VSC Engine. Execute this command as instructed by the customer engineer (CE or SE).

This command must be executed by a user with root privileges.

### OPTIONS

#### **-s *switch-name***

Specifies the name of the virtualization switch.

#### **-c *trace-level***

Sets the trace level.

The relationship between trace level and output content is as follows.

0: Error information

1: Error information, warning information, and notification information

2: Error information, warning information, notification information, and program information

**-h**

Indicates how to use the command.

## EXAMPLES

Sets the trace level of virtualization switch "vsce1" to 2 as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd setvscetrclvl -s vsce1 -c 2  
Command terminated normally.
```

## EXIT STATUS

0: The trace level is set.

1: Trace level is not set.

## SEE ALSO

[getvsw](#)

## NOTES

The customer engineer (CE) collects data for error investigation. Contact your customer engineer (CE). Return to trace level "0" immediately after the customer engineer (CE) collects the necessary data.

## B.1.3 startrep Command

---

### NAME

startrep - Starts replication

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd startrep -v virtual-disk-name -d destination-virtual-disk-name [-f]  
/opt/FJSVssmgr/sbin/vscmcmd startrep -h
```

### DESCRIPTION

This command starts replication and returns the session ID. Thereafter, use this session ID to control the replication.

This command must be executed by a user with root privileges.

### OPTIONS

**-v *virtual-disk-name***

Specifies the name of the virtual disk as the replication source.

**-d *destination-virtual-disk-name***

Specifies the name of the virtual disk as the replication destination.

**-f**

Permits copying of encrypted items to non-encrypted items.

**-h**

Indicates how to use the command.

## EXAMPLES

Replicates virtual disk "VDisk\_0001" to virtual disk "VDisk\_0101" as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd startrep -v VDisk_0001 -d VDisk_0101
SessionID 10020028
Command terminated normally.
```

Replicates virtual disk "VDisk\_0002" to virtual disk "VDisk\_0202".

Allows forcible specification of encrypted volumes to non-encrypted volumes.

```
# /opt/FJSVssmgr/sbin/vscmcmd strtrep -v VDisk_0002 -d VDisk_0202 -f
SessionID 10020028
ssvsc0434: The copy from Encryption attribute volume to Non-Encryption attribute volume was carried
out.
Command terminated normally.
```

## EXIT STATUS

0: Replication has been started.

1: Replication has not been started.

## SEE ALSO

[finishrep](#), [cancelrep](#), [getsession](#)

## NOTES

- Do not access a virtual disk from the transaction server while replicating that virtual disk. Otherwise, an access error occurs.
- You cannot replicate the following virtual disks:
  - Virtual disk under migration process
  - Virtual disk under replication process

## B.1.4 finishrep Command

---

### NAME

finishrep - Finishes replication

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd finishrep -i session-id
/opt/FJSVssmgr/sbin/vscmcmd finishrep -h
```

### DESCRIPTION

This command cancels the synchronized state and finishes replication. This command can be executed in any session of synchronized replication.

This command must be executed by a user with root privileges.

## OPTIONS

### **-i *session-id***

Specifies the session ID of the session that finishes replication.

### **-h**

Indicates how to use the command.

## EXAMPLES

Finishes the replication being performed with session ID "00020027" as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd finishrep -i 00020027
Command terminated normally.
```

## EXIT STATUS

0: Replication has been finished.

1: Replication could not be finished.

## SEE ALSO

[startrep](#), [getsession](#)

## B.1.5 cancelrep Command

---

### NAME

cancelrep - Cancels replication

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd cancelrep -i session-id
/opt/FJSVssmgr/sbin/vscmcmd cancelrep -h
```

### DESCRIPTION

This command cancels replication in progress.

This command must be executed by a user with root privileges.

## OPTIONS

### **-i *session-id***

Specifies the session ID of the session in which you want to cancel replication.

### **-h**

Indicates how to use the command.

## EXAMPLES

Cancel the replication in progress with session ID "00010001" as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd cancelrep -i 00010001
Command terminated normally.
```

## EXIT STATUS

0: Replication has been canceled.

1: Replication could not be canceled.

## SEE ALSO

[getsession](#)

## B.1.6 getsession Command

---

### NAME

getsession - Displays the execution status of migration/replication and EC (ACM)

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd getsession [-i session-id]
/opt/FJSVssmgr/sbin/vscmcmd getsession -h
```

### DESCRIPTION

This command displays the execution status of migration/replication and EC (ACM).

This command must be executed by a user with root privileges.

### OPTIONS

#### **-i session-id**

Specifies the session ID to display the execution status of a specific session.

If you do not specify this operand, the status of all migration, replication, and EC (ACM) in progress is displayed.

#### **-h**

Indicates how to use the command.

## EXAMPLES

Displays the status of all migration, replication, and EC (ACM) in progress as follows:

The session ID for EC (ACM) begins with 0.

```
# /opt/FJSVssmgr/sbin/vscmcmd getsession
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase      TotalCapacity StartDate
CopyAbend ManagementArea
10010001 migration VBox_0001      VDisk_0009
vscl     VSC        copying(87%)   1024MB      Aug 31, 2004 6:00:05 PM COPY_ABEND_CAUSE_OK
-
```

```

10010021 migration VBox_0001 VDisk_0010 Yes
vsce1 VSC Equivalent 1024MB Aug 31, 2004 6:00:10 PM COPY_ABEND_CAUSE_OK
-
10020027 replication VBox_0001 VDisk_0001 VBox_0001 VDisk_0101
vsce2 VSC Equivalent 500MB Sep 1, 2004 12:00:05 AM COPY_ABEND_CAUSE_OK
-
Command terminated normally.

```

Displays the migration status with session ID "10010021" as follows:

```

# /opt/FJSVssmgr/sbin/vscmcmd getsession -i 10010021
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase          TotalCapacity StartDate
CopyAbend ManagementArea
10010021 migration VBox_0001 VDisk_0010 Yes
vsce1    VSC      Equivalent 1024MB      Aug 31, 2004 6:00:05 PM COPY_ABEND_CAUSE_OK
-
Command terminated normally.

```

Displays the replication status with session ID "00020027" as follows:

The session ID for EC (ACM) begins with 0.

```

# /opt/FJSVssmgr/sbin/vscmcmd getsession -i 00020027
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase          TotalCapacity StartDate
CopyAbend ManagementArea
00020027 EC(ACM)   VBox_0001 VDisk_0001 VBox_0001 VDisk_0101
vsce2    other    Equivalent 500MB      Sep 1, 2004 12:00:05 AM COPY_ABEND_CAUSE_OK
-
Command terminated normally.

```

Table B.3 Display items and meanings of the getsession command

Display item	Meaning
SID	Session ID of migration/replication
Type	Session type <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC(ACM): ACM copy</li> </ul>
FromVirtualBoxName	<ul style="list-style-type: none"> <li>• Migration: Name of the virtual enclosure that includes the virtual disk performing migration</li> <li>• Replication or EC (ACM): Name of the virtual enclosure containing the replication or EC (ACM) source virtual disk</li> </ul>
FromVirtualDiskName	<ul style="list-style-type: none"> <li>• Migration: Name of the virtual disk performing migration</li> <li>• Replication or EC (ACM): Name of the replication or EC (ACM) source virtual disk</li> </ul>
ToVirtualBoxName	<ul style="list-style-type: none"> <li>• Migration: Blank (no information)</li> <li>• Replication or EC (ACM): Name of the virtual enclosure containing the replication or EC (ACM) destination virtual disk</li> </ul>

Display item	Meaning
ToVirtualDiskName	<ul style="list-style-type: none"> <li>• Migration: Blank (no information)</li> <li>• Replication or EC (ACM): Name of the replication or EC (ACM) destination virtual disk</li> </ul>
BackUp	<ul style="list-style-type: none"> <li>• Migration: Backup disk information <ul style="list-style-type: none"> <li>- Yes: After completing migration, retain a backup disk.</li> <li>- No: After completing migration, do not retain a backup disk.</li> </ul> </li> <li>• Replication or EC (ACM): Blank (no information)</li> </ul>
SwitchName	Name of the virtualization switch performing migration/replication
Application	<ul style="list-style-type: none"> <li>• Migration or replication The character string "VSC" is displayed.</li> <li>• EC (ACM)</li> <li>• The character string "other" is displayed.</li> </ul>
Phase	<p>Migration, replication or EC (ACM) execution status</p> <ul style="list-style-type: none"> <li>• Equivalent: Synchronization maintained</li> <li>• Automatic change (standby): Equivalency maintained (status where, by specifying not to hold the migration backup disk, migration was executed and is standing by for automatic switch)</li> <li>• Copying(nn%): Synchronization completed (nn%: Percentage of data copying completed)</li> <li>• No pair: Waiting for execution</li> <li>• Err suspend: Abnormal condition</li> <li>• No pair: Copying not executed</li> <li>• Finish: Copying completed</li> <li>• Suspend: Suspended</li> <li>• Halt: Detected a path error in the copy destination device, and has suspended the copy operation</li> </ul>
TotalCapacity	<ul style="list-style-type: none"> <li>• Migration: Capacity (MB) of the virtual disk performing migration</li> <li>• Replication or EC (ACM): Capacity (MB) of the replication or EC (ACM) source virtual disk</li> <li>• ETERNUS SF AdvancedCopy Manager : Total copy size (MB)</li> </ul>

Display item	Meaning
StartDate	Start date of migration, replication or EC (ACM)
Abend	<p>Error cause</p> <ul style="list-style-type: none"> <li>• 0x00: Normal COPY_ABEND_CAUSE_OK</li> <li>• 0x01: Mirror volume error COPY_ABEND_CAUSE_MIRROR</li> <li>• 0x02: Copy source volume error COPY_ABEND_CAUSE_SRC</li> <li>• 0x03: Copy destination volume error COPY_ABEND_CAUSE_DST</li> <li>• 0x04: VS900 management area error COPY_ABEND_CAUSE_MANAGEMENT_ARE</li> <li>• 0x80: Other error COPY_ABEND_CAUSE_OTHER</li> <li>• 0x81: Engine unsupported COPY_ABEND_CAUSE_ENGINE_UNSUPORT</li> </ul>
ManagementArea	<p>Management area information</p> <ul style="list-style-type: none"> <li>• Unit-name + LunV-number: Obtained management area</li> <li>• "-": No management area</li> <li>• "unknown": A management area exists but cannot be obtained.</li> </ul>

## EXIT STATUS

0: Execution status has been displayed.

1: Execution status could not be displayed.

## SEE ALSO

[startrep](#)

## NOTES

This command displays an error message under either of the following conditions:

- VSC Engine is stopped.
- Communicate with VSC Engine is not possible because the virtualization switch is powered off.

The virtualization switches that can be communicated with have their session displayed.



## B.1.7 remakeconf Command

---

### NAME

remakeconf - Restores composition data of VSC Engine

### SYNOPSIS

```
/opt/FJSVssmgr/sbin/vscmcmd remakeconf -s switch-name  
/opt/FJSVssmgr/sbin/vscmcmd remakeconf -h
```

### DESCRIPTION

This command restores composition data of the virtualization switch from the admin server.

This command must be executed by a user with root privileges.

### OPTIONS

**-s *switch-name***

Specifies the name of the virtualization switch.

**-h**

Indicates how to use the command.

### EXAMPLES

Restores the composition data of virtualization switch "vsce1" as follows:

```
# /opt/FJSVssmgr/sbin/vscmcmd remakeconf -s vsce1  
Command terminated normally.
```

### EXIT STATUS

0: Composition data has been recreated.

1: Composition data could not be recreated.

### SEE ALSO

[getvsw](#)

### NOTES

Stop access from any transaction server via the virtualization switch that is restoring composition data.

For how to restore composition data, refer to "[6.2 Saving and Restoring the Configuration Information](#)", and follow the procedure described.

## B.2 [Windows]Admin Server Commands

---

## B.2.1 getvsw Command

---

### NAME

getvsw - Displays information of the virtualization switches

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getvsw [-s switch-name]
```

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getvsw -h
```

(\$INS\_DIR means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command displays information of the virtualization switches registered on the admin server.

This command must be executed by a user with administrator privileges.

### OPTIONS

#### **-s *switch-name***

Specifies the name of virtualization switch whose information you want to display.

If you do not specify this operand, the names and status of all virtualization switches registered on the admin server are listed.

#### **-h**

Indicates how to use the command.

### EXAMPLES

Displays the status of all migration, replication, and EC (ACM) in progress as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getvsw
SwitchName      Status      ConfigFile GroupID
vsce1           running    correct   1
vsce2           running    incorrect 1
Command terminated normally.
```

Details of the virtualization switch named "vsce1" are displayed as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getvsw -s vsce1
SwitchName      vsce1
HostName        vsce1
GroupID         1
Series          VS900
Model           VS900
Status          running
ConfigFile      correct
TraceLevel      0
Version         01010B0C
FirmVersion     01010007
BuildDate       Mon dd, yyyy hh:mm:ss XM
SwitchDate      Mon dd, yyyy hh:mm:ss XM
Copyright       FUJITSU LIMITED
Command terminated normally.
```

Table B.4 Display items and meanings of the getvsw command

Item name	Meaning
SwitchName	Name of the virtualization switch
HostName	Host name defined in the %SystemRoot%\system32\drivers\etc\hosts file
GroupID	ID of switches in the redundancy configuration This indicates that the redundancy configuration is built in the switches with the same ID
Series	Series name
Model	Model name
Status	Operating status of VSC Engine <ul style="list-style-type: none"> <li>• running Running normally</li> <li>• abnormal Running abnormally</li> </ul>
ConfigFile	Status of composition data held by VSC Engine <ul style="list-style-type: none"> <li>• correct The correct status in which the data is consistent with composition data of VSC Manager</li> <li>• incorrect The incorrect status in which the data is inconsistent with composition data of VSC Manager</li> </ul>
TraceLevel	Setting level of the trace used for VSC Engine troubleshooting
Version	Version number of composition data held by VSC Manager. Displays "NONE" when no composition data has been created.
FirmVirsiion	Version number of the VSC Engine firmware
BuildDate	Creation date of the VSC Engine
SwitchDate	Current time of the internal clock held by the virtualization switch
Copyright	Indicates Copyright

**EXIT STATUS**

- 0: Information of the virtualization switch is displayed.
- 1: Information of the virtualization switch is not displayed.

**SEE ALSO**

None

**NOTES**

- If "abnormal" is displayed in "Status", the following items are not displayed:
  - Series
  - Model
  - ConfigFile
  - TraceLevel
  - Version

- FirmVersion
- BuildDate
- SwitchDate
- Copyright

- If "incorrect" is displayed in "ConfigFile", you must restore the composition data.

## B.2.2 setvscetrclvl Command

---

### NAME

setvscetrclvl - Sets the trace level of VSC Engine

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe setvscetrclvl -s switch-name -c trace-level
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe setvscetrclvl -h
```

(\$INS\_DIR means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command sets the output level of trace for troubleshooting VSC Engine. Execute this command as instructed by the customer engineer (CE or SE).

This command must be executed by a user with administrator privileges.

### OPTIONS

#### **-s *switch-name***

Specifies the name of the virtualization switch.

#### **-c *trace-level***

Sets the trace level.

The relationship between trace level and output content is as follows.

0: Error information

1: Error information, warning information, and notification information

2: Error information, warning information, notification information, and program information

#### **-h**

Indicates how to use the command.

### EXAMPLES

Sets the trace level of virtualization switch "vsce1" to 2 as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe setvscetrclvl -s vsce1 -c 2
Command terminated normally.
```

### EXIT STATUS

0: The trace level is set.

1: Trace level is not set.

## SEE ALSO

[getvsw](#)

## NOTES

The customer engineer (CE) collects data for error investigation. Contact your customer engineer (CE). Return to trace level "0" immediately after the customer engineer (CE) collects the necessary data.

## B.2.3 startrep Command

---

### NAME

startrep - Starts replication.

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe startrep -v virtual-disk-name -d destination-  
virtual-disk-name [-f]  
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe startrep -h
```

(*\$INS\_DIR* means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command starts replication and returns the session ID. Thereafter, use this session ID to control the replication.

This command must be executed by a user with administrator privileges.

### OPTIONS

**-v *virtual-disk-name***

Specifies the name of the virtual disk as the replication source.

**-d *destination-virtual-disk-name***

Specifies the name of the virtual disk as the replication destination.

**-f**

Permits copying of encrypted items to non-encrypted items.

**-h**

Indicates how to use the command.

### EXAMPLES

Replicates virtual disk "VDisk\_0001" to virtual disk "VDisk\_0101" as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe startrep -v VDisk_0001 -d VDisk_0101  
SessionID 10020028  
Command terminated normally.
```

Replicates virtual disk "VDisk\_0002" to virtual disk "VDisk\_0202".

Allows forcible specification of encrypted volumes to non-encrypted volumes.

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe startrep -v VDisk_0002 -d VDisk_0202 -f
SessionID 10020028
ssvsc0434: The copy from Encryption attribute volume to Non-Encryption attribute volume was carried
out.
Command terminated normally.
```

## EXIT STATUS

- 0: Replication has been started.
- 1: Replication has not been started.

## SEE ALSO

[finishrep](#), [cancelrep](#), [getsession](#)

## NOTES

- Do not access a virtual disk from the transaction server while replicating that virtual disk. Otherwise, an access error occurs.
- You cannot replicate the following virtual disks:
  - Virtual disk under migration process
  - Virtual disk under replication process

## B.2.4 finishrep Command

---

### NAME

finishrep - Finishes replication

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe finishrep -i session-id
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe finishrep -h
```

(\$INS\_DIR means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command cancels the synchronized state and finishes replication. This command can be executed in any session of synchronized replication.

This command must be executed by a user with administrator privileges.

### OPTIONS

**-i *session-id***

Specifies the session ID of the session that finishes replication.

**-h**

Indicates how to use the command.

## EXAMPLES

Finishes the replication being performed with session ID "00020027" as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe finishrep -i 00020027
Command terminated normally.
```

## EXIT STATUS

0: Replication has been finished.

1: Replication could not be finished.

## SEE ALSO

[startrep](#), [getsession](#)

## B.2.5 cancelrep Command

---

### NAME

cancelrep - Cancels replication

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe cancelrep -i session-id
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe cancelrep -h
```

(*\$INS\_DIR* means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command cancels replication in progress.

This command must be executed by a user with administrator privileges.

### OPTIONS

**-i *session-id***

Specifies the session ID of the session in which you want to cancel replication.

**-h**

Indicates how to use the command.

## EXAMPLES

Cancel the replication in progress with session ID "00010001" as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe cancelrep -i 00010001
Command terminated normally.
```

## EXIT STATUS

0: Replication has been canceled.

1: Replication could not be canceled.

## SEE ALSO

[getsession](#)

## B.2.6 getsession Command

---

### NAME

getsession - Displays the execution status of migration/replication and EC(ACM)

### SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getsession [-i session-id]
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getsession -h
```

(\$INS\_DIR means "Program Directory" specified at the Manager installation.)

### DESCRIPTION

This command displays the execution status of migration/replication and ESC(ACM).

This command must be executed by a user with administrator privileges.

### OPTIONS

#### **-i session-id**

Specifies the session ID to display the execution status of a specific session.

If you do not specify this operand, the status of all migration, replication, and EC (ACM) in progress is displayed.

#### **-h**

Indicates how to use the command.

### EXAMPLES

Displays the status of all migration, replication, and EC (ACM) in progress as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getsession
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase           TotalCapacity StartDate
CopyAbend ManagementArea
10010001 migration VBox_0001      VDisk_0009
vsce1    VSC        copying(87%)   1024MB          Aug 31, 2004 6:00:05 PM COPY_ABEND_CAUSE_OK
-
10010021 migration VBox_0001      VDisk_0010
vsce1    VSC        Equivalent     1024MB          Aug 31, 2004 6:00:10 PM COPY_ABEND_CAUSE_OK
-
10020027 replication VBox_0001      VDisk_0001      VBox_0001      VDisk_0101
vsce2    VSC        Equivalent     500MB           Sep 1, 2004 12:00:05 AM COPY_ABEND_CAUSE_OK
-
Command terminated normally.
```



Displays the migration status with session ID "10010021" as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getsession -i 10010021
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase      TotalCapacity StartDate
CopyAbend ManagementArea
10010021 migration VBox_0001      VDisk_0010      Yes
vsce1    VSC      Equivalent  1024MB      Aug 31, 2004 6:00:05 PM COPY_ABEND_CAUSE_OK
-
Command terminated normally.
```

Displays the replication and EC (ACM) status with session ID "0020027" as follows:  
The session ID for EC (ACM) begins with 0.

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe getsession
SID      Type      FromVirtualBoxName FromVirtualDiskName ToVirtualBoxName ToVirtualDiskName
BackUp   SwitchName Application Phase      TotalCapacity StartDate
CopyAbend ManagementArea
00020027 EC(ACM)   VBox_0001      VDisk_0001      VBox_0001      VDisk_0101
vsce2    other    Equivalent  500MB      Sep 1, 2004 12:00:05 AM COPY_ABEND_CAUSE_OK
-
Command terminated normally.
```

Table B.5 Display items and meanings of the getsession command

Display item	Meaning
SID	Session ID of migration/replication
Type	Session type <ul style="list-style-type: none"> <li>• migration: Migration</li> <li>• replication: Replication</li> <li>• EC(ACM): ACM Copy</li> </ul>
FromVirtualBoxName	<ul style="list-style-type: none"> <li>• Migration: Name of the virtual enclosure that includes the virtual disk performing migration</li> <li>• Replication or EC (ACM): Name of the virtual enclosure containing the replication or EC (ACM) source virtual disk</li> </ul>
FromVirtualDiskName	<ul style="list-style-type: none"> <li>• Migration: Name of the virtual disk performing migration</li> <li>• Replication or EC (ACM): Name of the replication or EC (ACM) source virtual disk</li> </ul>
ToVirtualBoxName	<ul style="list-style-type: none"> <li>• Migration: Blank (no information)</li> <li>• Replication or EC (ACM): Name of the virtual enclosure containing the replication or EC (ACM) destination virtual disk</li> </ul>
ToVirtualDiskName	<ul style="list-style-type: none"> <li>• Migration: Blank (no information)</li> <li>• Replication or EC (ACM): Name of the replication or EC (ACM) destination virtual disk</li> </ul>
BackUp	<ul style="list-style-type: none"> <li>• Migration: Backup disk information</li> </ul>

Display item	Meaning
	<ul style="list-style-type: none"> <li>- Yes: After completing migration, retain a backup disk.</li> <li>- No: After completing migration, do not retain a backup disk.</li> <li>• Replication or EC (ACM): Blank (no information)</li> </ul>
SwitchName	Name of the virtualization switch performing migration/replication
Application	<ul style="list-style-type: none"> <li>• Migration or replication The character string "VSC" is displayed.</li> <li>• EC (ACM) The character string "other" is displayed.</li> </ul>
Phase	<p>Migration, replication or EC (ACM) execution status</p> <ul style="list-style-type: none"> <li>• Equivalent: Synchronization maintained</li> <li>• Automatic change(standby): Equivalency maintained (status where, by specifying not to hold the migration backup disk, migration was executed and is standing by for automatic switch)</li> <li>• Copying(nn%): Synchronization completed (nn%: Percentage of data copying completed)</li> <li>• No pair: Waiting for execution</li> <li>• Err suspend: Abnormal condition</li> <li>• No pair: Copying not executed</li> <li>• Finish: Copying completed</li> <li>• Suspend: Suspended</li> <li>• Halt: Detected a path error in the copy destination device, and has suspended the copy operation</li> </ul>
TotalCapacity	<ul style="list-style-type: none"> <li>• Migration: Capacity (MB) of the virtual disk performing migration</li> <li>• Replication or EC (ACM): Capacity (MB) of the replication or EC (ACM) source virtual disk</li> <li>• ETERNUS SF AdvancedCopy Manager : Total copy size (MB)</li> </ul>
StartDate	Start date of migration, replication, or EC (ACM)
Abend	<p>Error cause</p> <ul style="list-style-type: none"> <li>• 0x00: Normal COPY_ABEND_CAUSE_OK</li> </ul>

Display item	Meaning
	<ul style="list-style-type: none"> <li>• 0x01: Mirror volume error COPY_ABEND_CAUSE_MIRROR</li> <li>• 0x02: Copy source volume error COPY_ABEND_CAUSE_SRC</li> <li>• 0x03: Copy destination volume error COPY_ABEND_CAUSE_DST</li> <li>• 0x04: VS900 management area error COPY_ABEND_CAUSE_MANAGEMENT_ARE</li> <li>• 0x80: Other error COPY_ABEND_CAUSE_OTHER</li> <li>• 0x81: Engine unsupported COPY_ABEND_CAUSE_ENGINE_UNSUPORT</li> </ul>
ManagementArea	<p>Management area information</p> <ul style="list-style-type: none"> <li>• Unit-name + LunV-number: Obtained management area</li> <li>• "-": No management area</li> <li>• "unknown": A management area exists but cannot be obtained.</li> </ul>

## EXIT STATUS

0: Execution status has been displayed.

1: Execution status could not be displayed.

## SEE ALSO

[startrep](#)

## NOTES

This command displays an error message under either of the following conditions:

- VSC Engine is stopped.
- Communicate with VSC Engine is not possible because the virtualization switch is powered off.

The virtualization switches that can be communicated with have their session displayed.

## B.2.7 remakeconf Command

## NAME

remakeconf - Restores composition data of VSC Engine

## SYNOPSIS

```
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe remakeconf -s switch-name  
$INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe remakeconf -h
```

(*\$INS\_DIR* means "Program Directory" specified at the Manager installation.)

## DESCRIPTION

This command restores composition data of the virtualization switch from the admin server.

This command must be executed by a user with administrator privileges.

## OPTIONS

**-s *switch-name***

Specifies the name of the virtualization switch.

**-h**

Indicates how to use the command.

## EXAMPLES

Restores the composition data of virtualization switch "vsce1" as follows:

```
> $INS_DIR¥Manager¥opt¥FJSVssmgr¥sbin¥vscmcmd.exe remakeconf -s vsce1  
Command terminated normally.
```

## EXIT STATUS

0: Composition data has been recreated.

1: Composition data could not be recreated.

## SEE ALSO

[getvsw](#)

## NOTES

Stop access from any transaction server via the virtualization switch that is restoring composition data.

For how to restore composition data, refer to "[6.2 Saving and Restoring the Configuration Information](#)", and follow the procedure described.

# Appendix C Commands for Virtualization Switch

This appendix provides a reference for commands to be executed on a virtualization switch.

## C.1 vscefieldsetnow Command

### NAME

vscefieldsetnow - Sets up the VSC Manager for connection

### SYNOPSIS

```
vscefieldsetnow
```

### DESCRIPTION

This command changes or dynamically adds a VSC Manager for connection while the VSC engine is running during the operation.

This command can be executed while the VSC engine is running.

This command must be executed by a user with administrator privileges.

### OPTIONS

None.

### EXAMPLES

```
vsce1:admin> vscefieldsetnow

Setting up VSCManager. <cr> to skip a parameter

How many VSC Manager do you install in this system?: (1..2) [2] 2
  // Input explanation: Enter the number 2 to specify that two VSC Managers will be set up. //

Input 'IP Address' of VSC Manager 1: [192.168.1.1] 192.168.1.6
  // Input explanation: Enter new IP Address (192.168.1.6) to change the address from the one
  displayed. //

Input 'IP Address' of VSC Manager 2: [192.168.1.100]
  // Input explanation: Press [ENTER] key to accept the IP Address displayed. //

[VSC Manager(1)]
  IP Address = 192.168.1.6
[VSC Manager(2)]
  IP Address = 192.168.1.100
Are you sure ? Yes:1 No:other -> 1
vscefieldsetnow: Operation normally end.
```

### EXIT STATUS

0: Normal end of setting up the VSC Manager for connection.

1: Failure to set up the VSC Manager for connection.

## C.2 vscreateconfigfile Command

---

### NAME

vscreateconfigfile - Initializes the configuration information stored on a virtualization switch

### SYNOPSIS

```
vscreateconfigfile
```

### DESCRIPTION

This command initializes the configuration information stored on a virtualization switch.

This command must be executed by a user with administrator privileges.

### OPTIONS

None.

### EXIT STATUS

0: Normal end of initializing configuration information

1: Failure to initialize configuration information

## C.3 vsceportset Command

---

### NAME

vsceportset - Changes the communication port number used for communication with the admin server

### SYNOPSIS

```
vsceportset
```

### DESCRIPTION

Use this command to change the port number when the default port number (7420) used for communication with the admin server or the default port number (7422) used for communication with the virtualization switch in a redundant configuration is already in use.

This command must be executed by a user with administrator privileges.

### OPTIONS

None.

## EXAMPLES

This command changes the port number used for communication with the admin server to 7455, the port number used for communication with the other virtualization switch in a redundant configuration to 7456, and the port number used for local interface communication in the virtualization switch to 7457.

```
vsctl:admin> vsceportset
Input vsc-manager-engine-if port Number:[7420] -> 7455 [ENTER] Example: Specify 7455.
Input vsc-engine-engine-if port Number:[7422] -> 7456 [ENTER] Example: Specify 7456.
Input vsc-engine-self-if port Number:[7423] -> 7457 [ENTER] Example: Specify 7457.

Setting parameters are ...
vsc-manager-engine-if Port Number = 7520
vsc-engine-engine-if Port Number = 7522
vsc-engine-self-if Port Number = 7523
Are you sure ? Yes:1 No:other -> 1 [ENTER] Confirm data for execution.

vsceportset Operation normally end.
```

When the vsceportset command is executed, the value displayed in each square bracket in the input request message is the currently set value. If you do not want to change the currently set value, simply press [ENTER] without entering any value.

```
vsctl:admin> vsceportset
Input vsc-manager-engine-if port Number:[7455] -> [ENTER] Example: Specify no value.
Input vsc-engine-engine-if port Number:[7456] -> [ENTER] Example: Specify no value.
Input vsc-engine-self-if port Number:[7457] -> [ENTER] Example: Specify no value.

Setting parameters are ...
vsc-manager-engine-if Port Number = 7455
vsc-engine-engine-if Port Number = 7456
vsc-engine-self-if Port Number = 7457
Are you sure ? Yes:1 No:other -> 1 [ENTER] Confirm data for execution.

vsceportset Operation normally end.
```

## EXIT STATUS

- 0: Normal end of changing the port number
- 1: Failure to change the port number

## C.4 vscestopengine Command

---

### NAME

vscestopengine - Stops the engine program on the virtualization switch

### SYNOPSIS

```
vscestopengine
```

### DESCRIPTION

This command stops the engine program on the virtualization switch.

This command must be executed by a user with administrator privileges.

## **OPTIONS**

None

## **EXIT STATUS**

0: Normal end of stop processing

1: Failure to stop the program



## Appendix D Limit Values

This appendix describes the limit values for Virtual Storage Conductor.

### D.1 Virtual Storage Resources

The following table lists the limit values for virtual storage resources.

Table D.1 Limit values for virtual storage resources

Item to be limited	Limit value	Description
Max number of virtualization switches	128	Number of virtualization switches that one admin server can manage.
Number of virtualization switches in redundant configuration	2	Number of virtualization switches when one Virtual Storage Conductor has a redundant configuration.
Max number of virtual storage pools	128	Multiple virtual storage pools created for each Virtual Storage Conductor (single virtualization switch or virtualization switch in redundant configuration) are all managed on the admin server. This limit value is the maximum number of virtual storage pools that one admin server can manage.
Max number of virtual enclosures	1024	Multiple virtual enclosures created for each Virtual Storage Conductor (single virtualization switch or virtualization switch in redundant configuration) are all managed on the admin server.  This limit value is the maximum number of virtual enclosures that one admin server can manage.
Maximum physical disk size	2TB-512B	The maximum registerable size of physical disks is a value found by reducing 512B (byte) from 2TB (terabyte).
Max number of physical disks	65535	Total number of physical disks that can be registered in all virtual storage pools that one admin server can manage.
	16384	Total number of physical disks that can be registered to one virtualization switch
Max number of virtual disks	128	This limit value applies to each port of the virtualization switch connected to the host bus adapter (HBA). When a virtual disk is distributed among multiple virtual targets, the total number applies.
	2048	Maximum number of virtual disks that can be created for each Virtual Storage Conductor (single virtualization switch or virtualization switch in redundant configuration)
Max size of virtual disk	2097151MB	This limit value is obtained by subtracting 1MB from 2TB.
Minimum size of virtual disk	1MB	The minimum size of a virtual disk is 1MB.
Max number of virtual targets	32	This limit value applies to each port of the virtualization switch that is connected to the host bus adapter (HBA).
	32	The values on the left are applicable to each virtualization switch in one virtual enclosure.
	240	This limit value applies to each virtualization switch.
Max number of physical disks configuring virtual disk	16	One virtual disk can be created from multiple physical disks. This limit value is the maximum number of physical disks that configure the virtual disk.

Item to be limited	Limit value	Description
Max number of extents of physical disks configuring virtual disk	16	This limit value is the maximum number of extents (total number of extents of all physical disks) of physical disks that configure the virtual disk.  When one physical disk is not used, this number is "1". Thus, when no physical disks are used, the maximum number of extents is equal to the number of physical disks.
Number of multi-paths of virtual disk	2	Each physical connection between the server and virtualization switch becomes an individual path.
Max copy multiplicity	128	The maximum number of times multiple migrations or replications can be performed simultaneously using one virtualization switch group (redundancy configuration).
	4	The maximum number of times multiple replications can be performed using one virtual disk that contains the copy source.
Max-Throttle	40	The value based on Max-Throttle specification for the channel adapter (CA) where the physical disk that constitutes a virtual disk is installed  The storage type is GR, ETERNUS2000, ETERNUS3000, or ETERNUS6000.
	256	The value based on Max-Throttle specification for the channel adapter (CA) where the physical disk that constitutes a virtual disk is installed  The storage type is ETERNUS4000 or ETERNUS8000.

## D.2 Server Connected to a Virtualization Switch

The following table lists the limit value concerning the server connected to a virtualization switch.

Table D.2 Limit value concerning the server

Item to be limited	Limit value	Description
Max number of host bus adapters	32	This limit value applies to each port of the virtualization switch connected to the host bus adapter (HBA).

## D.3 Storage Connected to a Virtualization Switch

The following table lists the limit values for the storage that is connected to a virtualization switch.

Table D.3 Limit values concerning the storage

Item to be limited	Limit value	Description
Max number of channel adapters (CA)	256	This limit value applies to each port of the virtualization switch connected to a storage
Max number of disks	256	Maximum number of physical disks assigned to one channel adapter (CA) in the storage

# Appendix E Error Messages

## E.1 VSC Manager

This appendix describes the error messages output by VSC Manager.

Either English or Japanese messages are output as specified in environment variable LANG.

Messages output by VSC Manager consist of those output to the system log and those output to the operator terminal.

### Message output format

VSC Manager outputs messages in the following output format:

```
label: error_type: message_ID: message_text
```

### Labels

VSC Manager outputs messages with the following labels:

Label	Meaning
FSP_FJSVssvsc_Service	Common service
FSP_FJSVssvsc_Virtual	Virtual disk operation
FSP_FJSVssvsc_Copy	Migration or replication operation
FSP_FJSVssvsc_Mainte	Maintenance operation

### Error type

VSC Manager outputs messages with the following error types:

Error type	Meaning
ERR	Take action as instructed.
WARNING	Take any action required as instructed.
INFO	The system administrator need not take any action.

Table E.1 Items in message text

Item	Description
Message text	Text of a message to be output. Each message is output in the following format: Message ID : Message text
Explanation	Explains why this message is output.
Parameters	Explains the meanings of any parameters included in the message.
User action	Explains the action to be taken for this message.

### ssvsc0000

#### ssvsc0000: System error occurred.

#### Explanation

An unexpected error occurred.

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0001**

#### **ssvsc0001: Command name is invalid.**

---

## Explanation

The command name is invalid.

## User action

Specify a correct command name.

For more information, refer to "[Appendix B Admin Server Commands](#)".

### **ssvsc0002**

#### **ssvsc0002: Input form of an option is invalid.**

---

## Explanation

An option is in an incorrect input form.

## User action

Confirm that:

- A value is specified after an option that requires a value.
- A value is not specified after an option that does not require a value
- A correct option is specified.
- No option is specified more than once.
- Only one value is specified after an option.

For more information, refer to "[Appendix B Admin Server Commands](#)".

### **ssvsc0003**

#### **ssvsc0003: Command name is not specified.**

---

## Explanation

No command string is specified.

## User action

Refer to "[Appendix B Admin Server Commands](#)", and specify a command.

### **ssvsc0004**

#### **ssvsc0004: The h option and other options are specified simultaneously.**

---

## Explanation

The -h option and other options are specified simultaneously.

## User action

The -h option cannot be specified simultaneously with other options.

To specify help, specify the -h option alone.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## **ssvsc0005**

### **ssvsc0005: The value of an option is invalid. Option = {0}**

---

#### Explanation

An option has an invalid value.

#### Parameters

Option with an invalid value specified

#### User action

Confirm that the %Option values:

- Are the correct character type.
- Are the correct length.
- Are within the correct specification range.
- Are correctly delimited with a comma or colon.
- Consist of as many values as required.

Re-enter the command with the option specified in a valid form.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## **ssvsc0006**

### **ssvsc0006: The required option is not specified.**

---

#### Explanation

A mandatory option is not specified.

#### User action

Re-enter the command with the mandatory option specified.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## **ssvsc0007**

### **ssvsc0007: The same virtualization switch host name is specified.**

---

#### Explanation

There is already an existing virtualization switch with the specified host name.

#### User action

Specify a unique name for the virtualization switch.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## **ssvsc0008**

### **ssvsc0008: The same virtual target name is specified.**

---

#### Explanation

The specified virtual target name already exists.

#### User action

Specify a unique name for the virtual target.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## ssvsc0009

### **ssvsc0009: The same combination of WWN and host-lun is specified.**

---

#### Explanation

The specified combination of a WWN and LUN already exists.

#### User action

Specify a unique combination of a WWN and LUN.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## ssvsc0010

### **ssvsc0010: The same real disk name is specified.**

---

#### Explanation

The specified physical disk name already exists.

#### User action

Specify a unique name for the physical disk.

For more information, refer to "[Appendix B Admin Server Commands](#)".

## ssvsc0101

### **ssvsc0101: A mismatch was found in composition data files of virtual storage. *SwitchName = {0}***

---

#### Explanation

A mismatch was found in the configuration information between virtual switch = {0} and VSC Manager.

#### Parameters

0: The name of the virtual switch that does not match the configuration information

#### User action

Perform the following for the virtualization switch (%SwitchName):

1. Restore the configuration information by referring to "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)".
2. Confirm that the status of the configuration information of %SwitchName matches that on the Virtual Storage Window (Maintenance). Alternatively, using the getvsw command, confirm that the ConfigFile for %SwitchName has the correct status.

## ssvsc0102

### **ssvsc0102: A mismatching data was found in configuration data files. *Item = {0}***

---

#### Explanation

The configuration data file contains %Item with an incorrectly specified value.

#### Parameters

0: Name of the item with an incorrectly specified value

#### User action

Verify the value specified for %Item in the configuration data file.

Correct any incorrect value, and restart Resource Coordinator.

If Resource Coordinator does not operate normally, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (SE).

### **ssvsc0103**

**ssvsc0103: Unable to connect to the VSC manager. The VSC manager address is {0}:{1}.**

---

#### **Explanation**

No connection to VSC Manager can be established from the Virtual Storage Window (View and Create). VSC Manager may not be operating normally.

#### **Parameters**

0: IP address

1: Port number

#### **User action**

Confirm that VSC Manager is operating normally.

If it is not operating normally, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0104**

**ssvsc0104: Unable to access to the VSC manager. The VSC manager address is {0}:{1}.**

---

#### **Explanation**

No connection to VSC Manager can be established from the Virtual Storage Window. The VSC Manager may not be operating normally.

#### **Parameters**

0: IP address

1: Port number

#### **User action**

Confirm that VSC Manager is operating normally.

If it is not operating normally, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0105**

**ssvsc0105: Unrecoverable error has been detected in communication between client and VSC manager. The VSC manager address is {0}:{1}.**

---

#### **Explanation**

An unrecoverable error was detected in communication between the Virtual Storage Window and VSC Manager. VSC Manager probably ended abnormally during communication, or the Virtual Storage Window and VSC Manager may have versions that do not match.

#### **Parameters**

0: IP address

1: Port number

#### **User action**

Confirm that VSC Manager is operating normally, or verify the versions of the Virtual Storage Window and VSC Manager. If VSC Manager is not operating normally, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0106**

**ssvsc0106: VSC Manager does not start yet.**

---

## Explanation

VSC Manager is not running.

## User action

Re-execute the resource coordinator command.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0200**

**[ssvsc0200: Since processing in which it did not complete in virtualization switch was canceled, Discontinuing the processing which is required.](#)**

---

## Explanation

The requested processing could not be executed because processing was in progress on the virtualization switch.

The processing in progress was canceled.

## User action

Perform the operation again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0201**

**[ssvsc0201: The specified virtualization switch name is not registered.](#)**

---

## Explanation

The host name of the virtualization switch is incorrect, or the virtualization switch is not registered.

## User action

Confirm that the virtualization switch specified in the Virtual Storage Window (Maintenance) exists. Also, use the `getvsw` command to check whether the virtualization switch is registered. Then, specify the correct host name for the virtualization switch, or register the virtualization switch.

## **ssvsc0202**

**[ssvsc0202: The specified virtual storage pool name already exists.](#)**

---

## Explanation

Multiple virtual storage pools cannot be created with the same name.

## User action

Check virtual storage pool names in the Virtual Storage Window (View and Create), and specify a virtual storage pool name not being used.

## **ssvsc0203**

**[ssvsc0203: The specified virtual storage pool does not exist.](#)**

---

## Explanation

The specified name of the virtual storage pool is incorrect. Alternatively, the specified virtual storage pool does not exist.

## User action

Check the virtual storage pool name on the Virtual Storage Window (View and Create).



#### **ssvsc0204**

##### **ssvsc0204: The specified physical disk name already exists.**

---

#### Explanation

Multiple physical disks cannot be registered with the same name.

#### User action

Check physical disk names in the Virtual Storage Window (View and Create), and specify a physical disk name not being used.

#### **ssvsc0205**

##### **ssvsc0205: The specified physical disk does not exist.**

---

#### Explanation

The specified physical disk name is incorrect. Alternatively, the specified physical disk doesn't exist.

#### User action

In the Virtual Storage Window (View and Create), check the physical disk name.

#### **ssvsc0206**

##### **ssvsc0206: The specified virtual enclosure name already exists.**

---

#### Explanation

An attempt was made to create a virtual enclosure with an existing name.

#### User action

Check virtual enclosure names in the Virtual Storage Window (View and Create).

#### **ssvsc0207**

##### **ssvsc0207: The specified virtual enclosure does not exist.**

---

#### Explanation

The specified virtual enclosure name is incorrect. Alternatively, the specified virtual enclosure doesn't exist.

#### User action

Check virtual enclosure names in the Virtual Storage Window (View and Create).

#### **ssvsc0208**

##### **ssvsc0208: The specified virtual target name already exists.**

---

#### Explanation

Multiple virtual targets cannot be created with the same name.

#### User action

Check virtual target names in the Virtual Storage Window (View and Create), and specify a virtual target name not being used.

#### **ssvsc0209**

##### **ssvsc0209: The specified virtual target does not exist.**

---

## Explanation

The virtual target name is incorrect. Alternatively, the specified virtual target doesn't exist.

## User action

Check virtual target names in the Virtual Storage Window (View and Create).

## **ssvsc0210**

### **ssvsc0210: The specified virtual disk name already exists.**

---

## Explanation

Multiple virtual disks cannot be created with the same name.

## User action

Check virtual disk names in the Virtual Storage Window (View and Create), and specify a virtual disk name not being used.

## **ssvsc0211**

### **ssvsc0211: The physical disk is not registered into the specified virtual storage pool.**

---

## Explanation

The specified virtual storage pool does not have any physical disk.

## User action

Check the virtual storage pool in the Virtual Storage Window (View and Create), and register a physical disk in the virtual storage pool.

## **ssvsc0212**

### **ssvsc0212: The availabilities of a virtual storage pool or a physical disk are insufficient.**

---

## Explanation

A virtual disk with the specified capacity cannot be created because the virtual storage pool or physical disk is short of free space.

## User action

Check the size of unallocated space in the virtual storage pool or physical disk in the Virtual Storage Window (View and Create).

- If a virtual disk is automatically created or capacity is added:
  - Register physical disks corresponding to the configuration conditions in the virtual storage pool.
  - Delete unnecessary virtual disks created in the specified virtual storage pool, which consist of physical disks corresponding to the configuration conditions.
- If a virtual disk is selected and created or capacity is added by the user:
  - Select a physical disk with unallocated space.
  - Register the physical disk in the virtual storage pool.
  - Delete unnecessary virtual disks created in the specified virtual storage pool.

## **ssvsc0213**

### **ssvsc0213: The specified virtual disk does not exist.**

---

## Explanation

The virtual disk name is incorrect. Alternatively, the specified virtual disk doesn't exist.

## User action

Check the name of the virtual disk being created on the Virtual Storage Window (View and Create).

## ssvsc0214

### ssvsc0214: The specified virtualization switch host name already exists.

---

## Explanation

Multiple virtualization switches cannot be created with the same host name.

## User action

Check the registered host names of virtualization switches in the Virtual Storage Window (Maintenance ). Alternatively, use the `getvsw` command to check the registered host names of virtualization switches.

## ssvsc0215

### ssvsc0215: Since a virtualization switch is in an equipment exchange state, this function cannot be performed. *Virtualization switch host name = {0}*

---

## Explanation

The virtualization switch with %HostName is being replaced. Functions are restricted during switch replacement.

## Parameters

0: Name of the virtualization switch in an exchange state

## User action

After the virtualization switch is replaced, perform registration of the virtualization switch on the ESC Resource Management Window. Then, refer to "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)".

## ssvsc0216

### ssvsc0216: The memory is lack.

---

## Explanation

The memory space is running low.

## User action

Restart VSC Manager.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0217

### ssvsc0217: The specified virtual storage pool does not exist. *The number of succeeded in deleting = {0}/ {1}units*

---

## Explanation

An invalid virtual storage pool name was specified. Alternatively, the specified virtual disk doesn't exist.

## Parameters

0: Number of units successfully deleted

1: Specified number of units

## User action

Check the name of the virtual storage pool on the Virtual Storage Window (View and Create).

### **ssvsc0218**

**ssvsc0218: The specified physical disk does not exist. The number of succeeded in release = {0}/{1}units**

#### **Explanation**

An invalid physical disk name was specified. Alternatively, the specified physical disk doesn't exist.

#### **Parameters**

- 0: Number of units successfully released
- 1: Specified number of units

#### **User action**

Check physical disk names in the Virtual Storage Window (View and Create).

### **ssvsc0219**

**ssvsc0219: The specified virtual enclosure does not exist. The number of succeeded in deleting = {0}/{1}units**

#### **Explanation**

An invalid virtual enclosure name is specified, or the specified virtual enclosure name doesn't exist.

#### **Parameters**

- 0: Number of units successfully deleted
- 1: Specified number of units

#### **User action**

Check virtual enclosure names in the Virtual Storage Window (View and Create).

### **ssvsc0220**

**ssvsc0220: The specified virtual target does not exist. The number of succeeded in deleting = {0}/{1}units**

#### **Explanation**

An invalid virtual target name was specified. Alternatively, the specified virtual target doesn't exist.

#### **Parameters**

- 0: Number of units successfully deleted
- 1: Specified number of units

#### **User action**

Check virtual target names in the Virtual Storage Window (View and Create).

### **ssvsc0221**

**ssvsc0221: The specified virtual disk does not exist. The number of succeeded in deleting = {0}/{1}units**

#### **Explanation**

An invalid virtual disk name was specified. Alternatively, the specified virtual disk doesn't exist.

#### **Parameters**

- 0: Number of units successfully deleted
- 1: Specified number of units

## User action

Check the names of created virtual disks in the Virtual Storage Window (View and Create).

### **ssvsc0222**

#### **ssvsc0222: Numbers for farm of an engine of a processing object are different.**

---

## Explanation

Different firmware versions of VSC Engine are being used in a redundant configuration.

## User action

Set up a redundant configuration using virtualization switches with the same firmware versions. If the problem persists, referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

### **ssvsc0223**

#### **ssvsc0223: Since a virtualization switch is in an equipment exchange state, failed to deletion. Host name = {0} The number of succeeded in making = {1}/{2}units**

---

## Explanation

The virtualization switch with %HostName is being replaced. Functions are restricted during switch replacement.

## Parameters

- 0: Host name of the virtualization switch being replaced
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

After the virtualization switch is replaced perform registration on the ESC Resource Management Window. Then restore the configuration information; refer to "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)".

### **ssvsc0224**

#### **ssvsc0224: Since a virtualization switch is in an equipment exchange state. Virtualization switch host name = {0}**

---

## Explanation

The virtualization switch with %HostName is being replaced. Functions are restricted during switch replacement.

## Parameters

- 0: Host name of the virtualization switch being replaced

## User action

After the virtualization switch is replaced perform registration on the ESC Resource Management Window, and then restore the configuration information; refer to "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)".

### **ssvsc0225**

#### **ssvsc0225: Failed to getting of real disk information.**

---

## Explanation

Physical disk information could not be obtained because an error occurred when storage unit information was being retrieved.

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0226

### **ssvsc0226: Commit script cannot be performed. file = {0}**

---

#### Explanation

The commit script start program was deleted.

#### Parameters

0: Path of the commit script start program file

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0227

### **ssvsc0227: The number of virtual targets of SCSI command cues exceeds the limitation value of CA port. LogicalVolume = {0} , Limitation value = {1} , excess the number = {2}**

---

#### Explanation

The number of SCSI command queues of virtual targets exceeds the limit value for a CA port.

#### Parameters

0: Physical disk information

1: Information regarding the number of queues

2: Number of excess queues

#### User action

Select a physical disk from another CA port.

## ssvsc0228

### **ssvsc0228: The number of virtual targets of SCSI command cues exceeds the limitation value of CA port. VLogicalVolume = {0} , LogicalVolume = {1} , Limitation value = {2} , excess the number = {3}**

---

#### Explanation

The number of SCSI command queues of virtual targets exceeds the limit value for a CA port.

#### Parameters

0: Virtual disk information

1: Physical disk information

2: Information regarding the number of queues

3: Number of excess queues

#### User action

Using a physical disk under another CA port, create a virtual disk again.

## ssvsc0229

### **ssvsc0229: It failed in the excess of the number of SCSI command cues check processing of the virtual target. Code = {0}**

---

#### Explanation

Processing to check whether the number of SCSI command queues of virtual targets exceeds the limit value has failed.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)," collect the necessary data for troubleshooting, and then contact your Fujitsu engineer (CE or SE).

### **ssvsc0230**

#### **ssvsc0230: The specified virtualization switch name is already registered.**

---

## Explanation

A virtualization switch of the same name is not allowed to multi-register.

## User action

Check virtualization switch names on the virtual storage window (maintenance) to set an unused virtualization switch name.

### **ssvsc0231**

#### **ssvsc0231: Since a virtualization switch is in an equipment exchange state, Failed to release. Host name = {0} The number of succeeded in release = {1}/{2}units**

---

## Explanation

The virtualization switch for %HostName is being replaced. While the device is being replaced, the functions are restricted.

## Parameters

0: The host name of a virtualization switch that is being replaced

1: Quantity that has succeeded in release

2: Specified quantity

## User action

Since exchange virtualization switch, after the virtualization switch is replaced, execute "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)" and perform registration on the ESC Resource Management Window.

### **ssvsc0232**

#### **ssvsc0232: The principal switch is not registered.**

---

## Explanation

As a principal switch is not registered, required information cannot be obtained.

## User action

Resister the principal switch.

### **ssvsc0233**

#### **ssvsc0233: Failed to getting virtualization switch. Host name = {0}**

---

## Explanation

A failure occurred in a virtualization switch, and the information acquisition failed.

## Parameters

0: Virtualization switch name

## User action

Refer to "[6.3 Collecting Data](#)" to collect required data for troubleshooting and contact the Fujitsu engineer (CE/SE).

## **ssvsc0234**

**ssvsc0234: Since a virtualization switch is in an equipment exchange state, Failed to process. Host name = {0} The number of succeeded in processing = {1}/{2}units**

---

### **Explanation**

The virtualization switch (%HostName) is being replaced. During device replacement, functions will be limited.

### **Parameters**

- 0: Name of the host of the virtualization switch being replaced
- 1: Number of units successfully processed
- 2: Number of units specified

### **User action**

After the virtualization switch is replaced perform registration on the Physical Device Replacement Window. Refer to "[6.2.3.3 Restoring the configuration information of a virtualization switch](#)".

## **ssvsc0300**

**ssvsc0300: The maximum number of creating virtual storage pools was exceeded.**

---

### **Explanation**

No more virtual storage pools can be created.

### **User action**

Delete unnecessary virtual storage pools and try again.  
For the number of virtual storage pools that can be created, refer to "[Appendix D Limit Values](#)."

## **ssvsc0301**

**ssvsc0301: The physical disk is registered into the specified virtual storage pool.**

---

### **Explanation**

A virtual storage pool in which a physical disk is registered cannot be deleted.

### **User action**

Confirm that the specified name of the virtual storage pool is correct.  
In the Virtual Storage Window (View and Create), check for a physical disk in the virtual storage pool to be deleted.  
If the virtual storage pool contains a physical disk, release the physical disk from the virtual storage pool before executing the command.

## **ssvsc0302**

**ssvsc0302: The specified physical disk name already exists.**

---

### **Explanation**

An attempt was made to register a physical disk that has already been registered.

### **User action**

Verify the WWN and LUN in the Virtual Storage Window (View and Create), and execute the command again.

## **ssvsc0303**

**ssvsc0303: The maximum number of registering physical disks was exceeded.**

---



## Explanation

No more physical disks can be registered.

## User action

Release unnecessary physical disks, and execute the command again.

For the number of physical disks that can be registered, refer to "[Appendix D Limit Values](#)".

## ssvsc0304

### **ssvsc0304: The specified physical disk does not exist. Code = {0}**

---

## Explanation

VSC Engine could not find the specified physical disk.

## Parameters

0: VSC Engine error code

## User action

Check the storage unit management window or the Design Sheet specifications to verify the WWN and LUN to be registered. In the related management windows, confirm that all the physical disks that constitute virtual disks are connected to virtualization switches.

## ssvsc0305

### **ssvsc0305: There is no response from the specified real disk. Code = {0}**

---

## Explanation

The specified physical disk did not respond.

## Parameters

0: VSC Engine error code

## User action

Check the power supply and connection cable of the disk unit.

Alternatively check the following settings of the disk unit; host worldwide name, host affinity and virtualization switch zoning.

For details, refer to "[3.4.1.1 Using the zoning function of a virtualization switch](#)" and "[3.4.1.2 Using the host table settings mode of ETERNUS and GR](#)".

If the problem persists, collect the necessary data for troubleshooting and contact your Fujitsu engineer (CE or SE).

## ssvsc0306

### **ssvsc0306: The specified physical disk is disk equipment of the outside for support. Code = {0}**

---

## Explanation

The specified physical disk is a non-supported disk unit or not a disk unit at all.

## Parameters

0: VSC Engine error code

## User action

Use supported hardware for operation.

For details, refer to "[1.4.1 Supported hardware](#)".

### **ssvsc0307**

#### **ssvsc0307: Failed to Registration of a physical disk. Code = {0}**

---

##### Explanation

Physical disk registration failed because an error occurred in a virtualization switch.

##### Parameters

0: VSC Engine error code

##### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0308**

#### **ssvsc0308: The specified physical disk is assigned to the real space of a virtual disk.**

---

##### Explanation

The specified physical disk is allocated to the real space of a virtual disk.

##### User action

Delete the allocated virtual disk and then execute the command again.

### **ssvsc0309**

#### **ssvsc0309: The physical disk specified in the specified virtual storage pool does not exist.**

---

##### Explanation

The specified physical disk is registered in another virtual storage pool.

##### User action

Verify the relationship between the virtual storage pool and physical disk, which is registered in the virtual storage pool, in the Virtual Storage Window (View and Create), and execute the command again.

### **ssvsc0310**

#### **ssvsc0310: The maximum number of creating virtual enclosures was exceeded.**

---

##### Explanation

No more virtual enclosures can be created.

##### User action

Delete unnecessary virtual enclosures, and execute the command again.

For the number of virtual enclosures that can be created, refer to "[Appendix D Limit Values](#)".

### **ssvsc0311**

#### **ssvsc0311: The specified BOX-ID already exists.**

---

##### Explanation

An attempt was made to create a virtual enclosure with a BOX-ID that was already created.

##### User action

Verify the box\_id for the virtual enclosure in the Virtual Storage Window (View and Create).

## ssvsc0312

### ssvsc0312: The virtual target is created to the specified virtual enclosure.

---

#### Explanation

A virtual enclosure in which a virtual target is registered cannot be deleted.

#### User action

Confirm that the specified virtual enclosure name is correct.

In the Virtual Storage Window (View and Create), check for a virtual target in the virtual enclosure to be deleted.

If the virtual enclosure contains a virtual target, delete the virtual target from the virtual enclosure before executing the command.

## ssvsc0313

### ssvsc0313: The specified enclosure or the specified virtualization switch is a mistake.

---

#### Explanation

A virtual target cannot be created because the relationship between the virtualization switch and the virtual enclosure is invalid.

#### User action

Verify the relationship between the registered virtualization switch and the virtual enclosure in the Virtual Storage Window (View and Create), and execute the command again.

## ssvsc0314

### ssvsc0314: The maximum number of creating virtual targets was exceeded in the specified virtual enclosure. Code = {0}

---

#### Explanation

No more virtual targets can be created in the same virtual enclosure.

#### Parameters

0: VSC Engine error code

#### User action

Delete unnecessary virtual targets, and execute the command again.

For the number of virtual targets that can be created in the same virtual enclosure, refer to "[Appendix D Limit Values](#)".

## ssvsc0315

### ssvsc0315: The maximum number of creating virtual targets was exceeded in the specified virtualization switch. Code = {0}

---

#### Explanation

No more virtual targets can be created in the virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Delete unnecessary virtual targets, and execute the command again.

For the number of virtual targets that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

## **ssvsc0316**

### **ssvsc0316: Failed to creation of a virtual target. Code = {0}**

---

#### Explanation

A virtual target could not be created because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0317**

### **ssvsc0317: The virtual disk is assigned to the specified virtual target.**

---

#### Explanation

The virtual target to which a virtual disk is assigned cannot be deleted.

#### User action

Unassign the virtual disk from the virtual target, and delete the virtual target.

## **ssvsc0318**

### **ssvsc0318: Failed to deletion of a virtual target. Code = {0}**

---

#### Explanation

A virtual target could not be deleted because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0319**

### **ssvsc0319: The specified virtual target is invalid.**

---

#### Explanation

A virtual disk cannot be allocated to the specified virtual target because the virtualization switch that controls the corresponding virtual storage pool does not have the virtual target.

#### User action

Check the Virtual Storage Window (View and Create) and ensure that the virtual disk is specified for the corresponding storage pool on the virtualization switch.

## **ssvsc0320**

### **ssvsc0320: The virtual target in a different virtual enclosure was specified.**

---

#### Explanation

The specified virtual target belongs to a different virtual enclosure.

## User action

Check the virtual target name in the Virtual Storage Window (View and Create). Specify a virtual target that belongs to the same virtual enclosure.

### **ssvsc0322**

#### **ssvsc0322: The maximum number of creating extents of physical disk that constituted a virtual disk was exceeded.**

---

## Explanation

An attempt was made to create an extent that constitutes a virtual disk that exceeds the maximum number of extents that can be created.

## User action

Take either of the following procedures on the Virtual Storage Window (View and Create) screen.

- If a virtual disk is automatically created or capacity is added:
  - Register physical disks corresponding to the configuration conditions in the virtual storage pool.
  - Specify another virtual storage pool.
- If a virtual disk is selected and created or capacity is added by the user:
  - Refer to "[A.2.3 Displaying the virtual storage pool](#)" to check the number of unallocated extents of the "View and Create" screen and specify physical disks so that the number of extents may not exceed the maximum permissible number. For details, refer to "[Appendix D Limit Values](#)".
  - Execute "Candidate Selection".
  - Register physical disks in the virtual storage pool.

If capacity is added, there are cases where the number of extents has already reached the maximum permissible number. In this case, use Migration to expand the capacity.

### **ssvsc0324**

#### **ssvsc0324: The maximum number of creating virtual disks was exceeded in the specified virtualization switch. Code = {0}**

---

## Explanation

No more virtual disks can be created in the virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Delete unnecessary virtual disks, and execute the command again.

For the number of virtual disks that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

### **ssvsc0325**

#### **ssvsc0325: Failed to creation of a virtual disk. Code = {0}**

---

## Explanation

A virtual disk could not be created because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0326**

#### **ssvsc0326: The specified virtual disk is now copying. Code = {0}**

---

## Explanation

You cannot manipulate a virtual disk that is being copied.

## Parameters

0: VSC Engine error code

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the `getsession` command to check the copy status.

### **ssvsc0327**

#### **ssvsc0327: Failed to deletion of a virtual disk. Code = {0}**

---

## Explanation

A virtual disk could not be deleted because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0328**

#### **ssvsc0328: The specified host quota number already exists.**

---

## Explanation

Each host allocation number in the same virtual target must be unique.

## User action

Check the host allocation numbers of virtual disks in the Virtual Storage Window (View and Create).

Specify a host allocation number that is unique within the virtual target.

### **ssvsc0329**

#### **ssvsc0329: The number of host quota numbers which can be created on the virtual targets is over the maximum number which can be created. Code = {0}**

---

## Explanation

No more host allocation numbers can be created in the same virtual target.

## Parameters

0: VSC Engine error code

## User action

Delete unnecessary host allocation numbers, and execute the command again.

For the number of host allocation numbers that can be created in a virtual target, refer to "[Appendix D Limit Values](#)".

### **ssvsc0330**

#### **ssvsc0330: Failed to setting of a host quota number. Code = {0}**

---

##### Explanation

A host allocation number could not be set because an error occurred in a virtualization switch.

##### Parameters

0: VSC Engine error code

##### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0331**

#### **ssvsc0331: The I/O error occurred when it accessed a physical disk. Code = {0}**

---

##### Explanation

An error was detected during access to the physical disk from the virtualization switch.

##### Parameters

0: VSC Engine error code

##### User action

Execute the command again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0332**

#### **ssvsc0332: It is in the state which cannot use a virtual disk. Code = {0}**

---

##### Explanation

An error occurred in the virtualization switch.

##### Parameters

0: VSC Engine error code

##### User action

Check the disk unit status and execute the command again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0333**

#### **ssvsc0333: A physical disk cannot be registered in WWN and host-lun which were specified.**

---

##### Explanation

The access path from the specified physical disk to the virtual storage pool is incorrect. Alternatively, the number of virtualization switches managed by the specified virtual storage pool and the number of paths for the physical disks do not match.

##### User action

Check the storage unit management window or the Design Sheet specifications to verify the WWN and LUN to be registered. Confirm that all the physical disks constituting the virtual disk are connected to the virtualization switches on the Relationship Management Window.

Ensure that the physical disk can be seen from all the virtualization switches controlled by the specified virtual storage pool. Ensure that there is only one access path to a physical disk from each virtualization switch.

#### **ssvsc0334**

##### **ssvsc0334: Physical disk does not exist in the specified composition conditions.**

---

#### Explanation

There is no physical disk that meets the specified configuration conditions.

#### User action

Refresh the Virtual Storage Window (View and Create) and enter the configuration conditions again.

#### **ssvsc0335**

##### **ssvsc0335: Failed to capacity addition of a virtual disk. Code = {0}**

---

#### Explanation

Failed to add capacity to a virtual disk because an error occurred in the virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0336**

##### **ssvsc0336: The specified physical disk cannot carry out capacity addition of a virtual disk.**

---

#### Explanation

The specified physical disk is registered in a different virtual storage pool from the physical disk that constitutes the virtual disk.

#### User action

Specify a physical disk registered in the same virtual storage pool.

#### **ssvsc0337**

##### **ssvsc0337: The specified virtual disk is assigned to the virtual target.**

---

#### Explanation

You cannot delete the specified virtual disk because it is allocated to the virtual target.

#### User action

Unassign the virtual disk before deleting it.

#### **ssvsc0338**

##### **ssvsc0338: The specified physical disk does not exist. LogicalVolume = {0}**

---

#### Explanation

The information of the physical resources under management may be outdated.

#### Parameters

0: Physical disk information



#### User action

Refresh the physical resources management status to the latest one and register the physical disk again.

#### **ssvsc0339**

**ssvsc0339: The specified virtual disk cannot be accessed from the virtualization switch group of the specified virtual target.**

---

#### Explanation

The same virtualization switch group must control the virtual target and virtual disk.

#### User action

In the Virtual Storage Window (View and Create), check the virtualization switch of the virtual enclosure to which the virtual target belongs, and check the virtualization switch of the virtual storage pool containing the virtual disk. Specify a virtual target and virtual disk in the same virtualization switch.

#### **ssvsc0340**

**ssvsc0340: The specified virtual disk in the process of migration or backup already exists. *Virtual disk = {0}***

---

#### Explanation

Either the specified virtual disk is in the process of migration or there is a migration backup.

#### Parameters

0: Virtual disk name

#### User action

In the Virtual Storage Window (Copy), confirm that the specified virtual disk is not in the process of migration or that there is no migration backup. Cancel migration or delete the backup, then execute the command again.

#### **ssvsc0341**

**ssvsc0341: The host quota number of the specified virtual disk is intermingled. *Virtual disk = {0}***

---

#### Explanation

The virtual disk can be allocated with only one host allocation number.

#### Parameters

0: Virtual disk name

#### User action

In the Virtual Storage Window (View and Create), check the host allocation number of virtual disks and allocate the virtual disk with the same host allocation number.

#### **ssvsc0342**

**ssvsc0342: The virtual target in a different virtual enclosure was specified. *Virtual disk = {0}***

---

#### Explanation

A different virtual enclosure has the specified virtual target.

#### Parameters

0: Virtual disk name

## User action

In the Virtual Storage Window (View and Create), check the virtual target name.  
Specify a virtual target included in the same virtual enclosure.

### **ssvsc0343**

**ssvsc0343: The specified virtual disk is now copying. Virtual disk = {0} Code = {1}**

---

## Explanation

You cannot manipulate a virtual disk that is being copied.

## Parameters

0: Virtual disk name  
1: VSC Engine error code

## User action

In the Virtual Storage Window (Copy), check the copying status.

### **ssvsc0344**

**ssvsc0344: It is in the state which cannot use a virtual disk. Virtual disk = {0} Code = {1}**

---

## Explanation

An error occurred in the virtualization switch.

## Parameters

0: Virtual disk name  
1: VSC Engine error code

## User action

Check the disk unit status and repeat this operation.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0345**

**ssvsc0345: Failed to assignment of a virtual disk. Code = {0}**

---

## Explanation

A virtual disk could not be allocated because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0346**

**ssvsc0346: Failed to creation of a virtual enclosure. Code = {0}**

---

## Explanation

A virtual enclosure could not be created because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0347**

**ssvsc0347: The I/O error occurred when it accessed a physical disk. LogicalVolume = {0}. Code = {1}**

---

## Explanation

An error was detected during access from the virtualization switch to the physical disk.

## Parameters

0: Physical disk information

1: VSC Engine error code

## User action

Submit the request again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0348**

**ssvsc0348: The specified physical disk is disk equipment of the outside for support. LogicalVolume = {0}. Code = {1}**

---

## Explanation

The specified physical disk is a non-supported disk unit or not a disk unit at all.

## Parameters

0: Physical disk information

1: VSC Engine error code

## User action

Use supported hardware for operation. For details, refer to "[1.4.1 Supported hardware](#)".

### **ssvsc0349**

**ssvsc0349: The specified physical disk is in a busy state. LogicalVolume = {0}.**

---

## Explanation

The specified physical disk returned a busy status.

## Parameters

0: Physical disk information

## User action

Submit the request again.

### **ssvsc0350**

**ssvsc0350: The specified host quota number already exists. Virtual disk = {0}**

---

## Explanation

No more host allocation numbers can be created in the same virtual target.

## Parameters

0: Virtual disk name

## User action

In the Virtual Storage Window (View and Create), check the host allocation number of the virtual disk.

## **ssvsc0351**

**ssvsc0351: The specified physical disk already exists. LogicalVolume = {0}**

---

## Explanation

An attempt was made to register a physical disk that has already been registered.

## Parameters

0: Physical disk information

## User action

Refresh the Virtual Storage Window (View and Create), verify the WWN and LUN, and execute the command again.

## **ssvsc0352**

**ssvsc0352: A physical disk cannot be registered in WWN and host-lun which were specified. LogicalVolume = {0}**

---

## Explanation

The access path from the specified physical disk to the virtual storage pool is incorrect.

Or the number of virtualization switches managed by the specified virtual storage pool is not consistent with that of physical disk paths.

## Parameters

0: Physical disk information

## User action

Check the WWN and LUN of a physical disk to be registered on the management window of the storage device or on the specifications in design sheet.

Check on the related management window if the physical disks making up a virtual disk are connected to all the virtualization switches.

Set up so that the physical disks can be seen from all the virtualization switches managed by the specified virtual storage pool.

In addition, the number of access paths to the physical disks from each virtualization switch should be one.

## **ssvsc0353**

**ssvsc0353: The specified physical disk does not exist. LogicalVolume = {0} Code = {1}**

---

## Explanation

The specified physical disk could not be found from VSC Engine.

## Parameters

0: Physical disk information

1: VSC Engine error code

## User action

Check the storage unit management window or the Design Sheet specifications to verify the WWN and LUN to be registered.

In the related management windows, confirm that all the physical disks that constitutes the virtual disk are connected to virtualization switches.

#### **ssvsc0354**

**ssvsc0354: The specified physical disk is assigned to the real space of a virtual disk. LogicalVolume = {0}**

---

##### Explanation

The specified physical disk is allocated to the real space of a virtual disk.

##### Parameters

0: Physical disk information

##### User action

In the Virtual Storage Window (View and Create), check the virtual disk allocated to the real space.

#### **ssvsc0355**

**ssvsc0355: The most suitable real disk that constituted a virtual disk, was not be elected in consideration of an associated CM.**

---

##### Explanation

The virtual disk that is most suitable considering the associated CM cannot be selected from the specified virtual storage pool.

##### User action

Perform one of the following actions in the Virtual Storage Window (View and Create):

- To create a virtual disk in the specified virtual storage pool or add the capacity, do not use the <Candidate Selection> and <Automatic creation> button but directly select the physical disk.
- Add physical disks corresponding to the configuration conditions to the specified virtual storage pool.
- Specify another virtual storage pool.

#### **ssvsc0356**

**ssvsc0356: The maximum number of creating virtual disks was exceeded in the specified virtualization switch.**

---

##### Explanation

No more virtual disks can be created in the virtualization switch.

##### User action

Delete unnecessary virtual disks, and execute the command again.

For the number of virtual disks that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

#### **ssvsc0357**

**ssvsc0357: The maximum number of creating extents of physical disk that constituted a virtual disk was exceeded. The number of succeeded in making = {0}/{1}units.**

---

##### Explanation

The maximum number of extents that can be created for the physical disks constituting a virtual disk has been exceeded.

##### Parameters

0: Number of units successfully created  
1: Specified number of units

## User action

Take either of the following procedures on the Virtual Storage Window (View and Create) screen.

- If a virtual disk is automatically created or capacity is added:
  - Register physical disks corresponding to the configuration conditions in the virtual storage pool.
  - Specify another virtual storage pool.
- If a virtual disk is selected and created or capacity is added by the user:
  - Refer to "[A.2.3 Displaying the virtual storage pool](#)" to check the number of unallocated extents of the "View and Create" screen and specify physical disks so that the number of extents may not exceed the maximum permissible number. For details, refer to "[Appendix D Limit Values](#)".
  - Execute "Candidate Selection".
  - Register physical disks in the virtual storage pool.

If capacity is added, there are cases where the number of extents has already reached the maximum permissible number. In this case, use Migration to expand the capacity.

## ssvsc0358

**ssvsc0358: The most suitable real disk that constituted a virtual disk, was not be elected in consideration of an associated CM. The number of succeeded in making = {0}/{1}units**

---

### Explanation

The virtual disk that is most suitable considering the associated CM cannot be selected from the specified virtual storage pool.

### Parameters

- 0: Number of units successfully created
- 1: Specified number of units

## User action

Perform one of the following actions in the Virtual Storage Window (View and Create):

- To create a virtual disk in the specified virtual storage pool or add the capacity, do not use the <Candidate Selection> and <Automatic creation> button but directly select the physical disk.
- Add physical disks corresponding to the configuration conditions to the specified virtual storage pool.
- Specify another virtual storage pool.

## ssvsc0359

**ssvsc0359: It is in the state which cannot use a virtual disk. Code = {0} The number of succeeded in making = {1}/{2}units**

---

### Explanation

An error was detected during access from the virtualization switch to the physical disk.

### Parameters

- 1: Number of units successfully created
- 2: Specified number of units

## User action

Execute the command again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0360**

**ssvsc0360: There is no response from the specified real disk. Code = {0} The number of succeeded in making = {1}/{2}units**

---

#### **Explanation**

No response was issued from the selected physical disk.

#### **Parameters**

- 0: VSC Engine error code
- 1: Number of units successfully created
- 2: Specified number of units

#### **User action**

Execute the command again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0361**

**ssvsc0361: Failed to creation of a virtual disk. Code = {0} The number of succeeded in making = {1}/{2}units**

---

#### **Explanation**

A virtual disk could not be created because an error occurred in a virtualization switch.

#### **Parameters**

- 0: VSC Engine error code
- 1: Number of units successfully created
- 2: Specified number of units

#### **User action**

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0362**

**ssvsc0362: It is in the state which cannot use a virtual disk. Code = {0} The number of succeeded in making = {1}/{2}units**

---

#### **Explanation**

An error occurred in the virtualization switch.

#### **Parameters**

- 0: VSC Engine error code
- 1: Number of units successfully created
- 2: Specified number of units

#### **User action**

Check the state of the disk unit and reenter the command.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0363**

**ssvsc0363: The physical disk is registered into the specified virtual storage pool. The number of succeeded in deleting = {0}/{1}units**

---

**Explanation**

A virtual storage pool in which a physical disk is registered cannot be deleted.

**Parameters**

0: Number of units successfully deleted

1: Specified number of units

**User action**

In the Virtual Storage Window (View and Create), check for a physical disk in the virtual storage pool that is to be deleted.

If the virtual storage pool contains a physical disk, release the physical disk from the virtual storage pool before executing the command.

**ssvsc0364**

**ssvsc0364: The specified physical disk is assigned to the real space of a virtual disk. The number of succeeded in release = {0}/{1}units**

---

**Explanation**

The specified physical disk has already been allocated to the real space of a virtual disk.

**Parameters**

0: Number of units successfully released

1: Specified number of units

**User action**

Refresh the Virtual Storage Window (View and Create), select an unallocated physical disk, and execute the command again.

**ssvsc0365**

**ssvsc0365: The virtual target is created to the specified virtual enclosure. The number of succeeded in deleting = {0}/{1}units**

---

**Explanation**

A virtual enclosure in which a virtual target is registered cannot be deleted.

**Parameters**

0: Number of units successfully deleted

1: Specified number of units

**User action**

In the Virtual Storage Window (View and Create), check for a virtual target in the virtual enclosure that is to be deleted.

If the virtual enclosure contains a virtual target, delete the virtual target from the virtual enclosure before executing the command.

**ssvsc0366**

**ssvsc0366: The virtual disk is assigned to the specified virtual target. The number of succeeded in deleting = {0}/{1}units**

---

**Explanation**

A virtual target to which a virtual disk has been allocated cannot be deleted.



## Parameters

- 0: Number of units successfully deleted
- 1: Specified number of units

## User action

Unassign the virtual disk before deleting the virtual target.

### **ssvsc0367**

**ssvsc0367: Failed to deletion of a virtual target. Code = {0} The number of succeeded in deleting = {1}/  
{2}units**

---

## Explanation

A virtual target could not be deleted because an error occurred in a virtualization switch.

## Parameters

- 0: VSC Engine error code
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0368**

**ssvsc0368: The specified virtual disk is now copying. Code = {0} The number of succeeded in deleting =  
{1}/  
{2}units**

---

## Explanation

You cannot operate a virtual disk that is subject to a copy operation.

## Parameters

- 0: VSC Engine error code
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the `getsession` command to check the copy status.

### **ssvsc0369**

**ssvsc0369: Failed to deletion of a virtual disk. Code = {0} The number of succeeded in deleting = {1}/  
{2}units**

---

## Explanation

An error occurred in the virtualization switch.

## Parameters

- 0: VSC Engine error code
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0370**

**ssvsc0370: The specified virtual disk is assigned to the virtual target. The number of succeeded in deleting = {0}/{1}units**

---

#### **Explanation**

The specified virtual disk cannot be deleted because it is allocated to a virtual target.

#### **Parameters**

- 0: Number of units successfully deleted
- 1: Specified number of units

#### **User action**

Unassign the virtual disk before deleting it.

### **ssvsc0371**

**ssvsc0371: It is in the state which cannot use a virtual disk. Code = {0} The number of succeeded in deleting = {1}/{2}units**

---

#### **Explanation**

An error occurred in the virtualization switch.

#### **Parameters**

- 0: VSC Engine error code
- 1: Number of units successfully deleted
- 2: Specified number of units

#### **User action**

Check the state of the disk unit and reenter the command.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0372**

**ssvsc0372: The I/O error occurred when it accessed a physical disk. Code = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

#### **Explanation**

An error was detected during access to the physical disk from the virtualization switch.

#### **Parameters**

- 0: VSC Engine error code
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

#### **User action**

Execute the command again.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0373**

**ssvsc0373: The specified physical disk is disk equipment of the outside for support. Code = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

**Explanation**

The specified physical disk is an unsupported disk unit or it is not a disk unit.

**Parameters**

- 0: VSC Engine error code
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

**User action**

Use supported hardware for operation. For details, refer to "1.4.1 Supported hardware".

**ssvsc0374**

**ssvsc0374: It is in the state which cannot use a virtual disk. Code = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

**Explanation**

An error occurred in the virtualization switch.

**Parameters**

- 0: VSC Engine error code
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

**User action**

Confirm that the status of the disk unit is normal, then execute the command again.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

**ssvsc0375**

**ssvsc0375: Failed to batch conversion. Code = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

**Explanation**

Batch conversion failed because an error occurred in a virtualization switch.

**Parameters**

- 0: VSC Engine error code
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

**User action**

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

**ssvsc0376**

**ssvsc0376: The maximum number of creating virtual targets was exceeded in the specified virtual enclosure.**

---

Explanation

No more virtual targets can be created in the same virtual enclosure.

User action

Delete unnecessary virtual targets, and execute the command again. For the number of virtual targets that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

**ssvsc0377**

**ssvsc0377: The maximum number of creating virtual targets was exceeded in the specified virtualization switch.**

---

Explanation

No more virtual targets can be created in the virtualization switch.

User action

Delete unnecessary virtual targets, then execute the command again. For the number of virtual targets that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

**ssvsc0378**

**ssvsc0378: The number of host quota numbers which can be created on the virtual targets is over the maximum number which can be created.**

---

Explanation

No more host allocation numbers can be created in the same target.

User action

Delete unnecessary host allocation numbers, then execute the command again. For the number of host allocation numbers that can be created in a virtualization switch, refer to "[Appendix D Limit Values](#)".

**ssvsc0379**

**ssvsc0379: The specified host quota number already exists.**

---

Explanation

Each host allocation number in the same virtual target must be unique.

User action

Check the host allocation numbers of virtual disks in the Virtual Storage Window (View and Create). Specify a host allocation number that is unique within the virtual target.

**ssvsc0380**

**ssvsc0380: A physical disk cannot be registered in WWN and host-lun which were specified. LogicalVolume = {0} The number of succeeded in making = {1}/{2}units**

---

Explanation

The access path from the specified physical disk to the virtual storage pool is incorrect.

Alternatively, the number of virtualization switches managed by the specified virtual storage pool does not match the number of paths for the physical disks.

## Parameters

- 0: Physical disk information
- 1: Number of units successfully created
- 2: Specified number of units

## User action

Check the storage unit management window or the Design Sheet specifications to verify the WWN and LUN of the physical disk to be registered.

Confirm that all the physical disks constituting the virtual disk are connected to the virtualization switches on the Relationship Management Window. Ensure that the physical disk can be seen from all the virtualization switches controlled by the specified virtual storage pool. Ensure that there is only one access path to a physical disk from individual virtualization switch.

## **ssvsc0381**

**ssvsc0381: The specified physical disk does not exist. Code = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

## Explanation

The specified physical disk could not be found from VSC Engine.

## Parameters

- 0: VSC Engine error code
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

## User action

Check the storage unit management window or the Design Sheet specifications to verify the WWN and LUN to be registered.

In the related management windows, confirm that the physical disk is connected to all virtualization switches associated with the virtual storage used.

## **ssvsc0382**

**ssvsc0382: The specified physical disk does not exist. LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

## Explanation

Information on the physical resources under management is probably out of date.

## Parameters

- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

## User action

Update the physical resource management status, then register the physical disk again.

## **ssvsc0383**

**ssvsc0383: The specified physical disk already exists. LogicalVolume = {0} The number of succeeded in making = {1}/{2}units**

---

## Explanation

An attempt was made to register an already registered physical disk.

## Parameters

- 0: Name of the physical disk that could not be registered
- 1: Number of units successfully created
- 2: Specified number of units

## User action

Verify the WWN and LUN in the Virtual Storage Window (View and Create).

### **ssvsc0384**

**ssvsc0384: Neither the device name nor the LUNV number of the input parameter are used.**

---

## Explanation

The input parameter values were ignored because values obtained by the system were used.

## User action

Verify the unit name and LUNV in the Virtual Storage Window (View and Create).

### **ssvsc0385**

**ssvsc0385: The physical disk is not registered into the CA Port.**

---

## Explanation

A VS900 management area could not be created because no physical disk connected to the specified CA port had been registered.

## User action

Register a physical disk connected to the specified CA port.

### **ssvsc0386**

**ssvsc0386: The VS900 management area in the specified CA port has been made.**

---

## Explanation

Creating a VS900 management area failed because there is already an existing VS900 management area for the specified CA port.

## User action

In the "List of VS900 Management Areas" window, confirm that the VS900 management area of the specified CA port already exists.

### **ssvsc0387**

**ssvsc0387: As for a real disk in the specified CA port, empty capacity necessary for the VS900 management area is insufficient.**

---

## Explanation

A VS900 management area could not be created because the physical disk connected to the specified CA port does not have sufficient free space to accommodate the VS900 management area.

## User action

Perform one of the following operations in the Virtual Storage Window (View and Create) until sufficient free space for the VS900 management area can be secured:

- Increase the size of the physical disk connected to the specified CA port.
- Delete a virtual disk to which the physical disk connected to the specified CA port is allocated.

### **ssvsc0388**

### **ssvsc0388: Failed to creation of a VS900 management area. Code = {0}**

---

#### Explanation

A VS900 management area could not be created because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0389**

### **ssvsc0389: The VS900 management area does not exist in the specified CA port.**

---

#### Explanation

Deleting the VS900 management area of the specified CA port failed because it was not found.

#### User action

In the "List of VS900 Management Areas" window, confirm that the VS900 management area of the specified CA port does not exist.

### **ssvsc0390**

### **ssvsc0390: The session that uses the VS900 management area in the specified CA port exists. SessionID = {0}**

---

#### Explanation

The VS900 management area of the specified CA port could not be deleted because the session using the VS900 management area cannot be reallocated to another VS900 management area.

#### Parameters

0: ID of the session in use

If multiple sessions are in use, they are all displayed delimited by a comma ",".

#### User action

Terminate the target session(s), then execute the command again.

### **ssvsc0391**

### **ssvsc0391: The session that uses the VS900 management area in the specified CA port cannot be allocated in another VS900 management area. SessionID = {0}**

---

#### Explanation

An attempt was made to relocate the session using the VS900 management area of the specified CA port to another VS900 management area, but no alternative VS900 management area was found. Therefore, the VS900 management area could not be deleted.

#### Parameters

0: ID of the session in use

If multiple sessions are in use, they are all displayed delimited by a comma ",".

#### User action

Create another VS900 management area in the same switch group as that of the specified VS900 management area, then execute the command again.

If no other VS900 management area can be created, terminate the target session(s), then execute the command again.

## ssvsc0392

**ssvsc0392: The session that uses the VS900 management area in the specified CA port exists. *Reallocatable SessionID = {0} Not Reallocatable SessionID = {1}***

---

### Explanation

An attempt was made to relocate the session using the VS900 management area of the specified CA port to another VS900 management area, but the attempt failed. Therefore, the VS900 management area could not be deleted.

### Parameters

- 0: ID of a relocatable session. If multiple sessions are in use, they are all displayed delimited by a comma ",".
- 1: ID of a non-relocatable session. If multiple sessions are in use, they are all displayed delimited by a comma ",".

### User action

Perform one of the following operations, and execute the command again:

- Terminate the non-relocatable session(s).
- Create another VS900 management area in the same switch group as that of the specified VS900 management area.

If no other VS900 management area can be created, terminate the relocatable session(s).

## ssvsc0393

**ssvsc0393: Failed to deletion of a VS900 management area. *Code = {0}***

---

### Explanation

The VS900 management area could not be deleted because an error occurred in a virtualization switch.

### Parameters

- 0: VSC Engine error code

### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0394

**ssvsc0394: The specified physical disk is assigned to the VS900 management area. *LogicalVolume = {0}***

---

### Explanation

The specified physical disk could not be released because it had been allocated to a VS900 management area.

### Parameters

- 0: Physical disk information

### User action

Delete the VS900 management area to which the disk is allocated, then execute the command again.

## ssvsc0395

**ssvsc0395: The specified physical disk is assigned to the VS900 management area. *The number of succeeded in release = {0}/{1}units***

---

### Explanation

The specified physical disk could not be released because it had been allocated to a VS900 management area.



## Parameters

- 0: Number of units successfully released
- 1: Specified number of units

## User action

Delete the VS900 management area to which the disk is allocated, then execute the command again.

### **ssvsc0396**

#### **ssvsc0396: The virtual target that specifies HP-UX for use OS exists.**

---

## Explanation

Because the virtualization switch that has the specified virtual target contains a virtual target whose specified OS is HP-UX, virtual targets in the virtualization switch cannot be deleted.

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0397**

#### **ssvsc0397: The virtual target that specifies HP-UX for use OS exists. The number of succeeded in deleting = {0}/{1}units**

---

## Explanation

Because the virtualization switch that has the specified virtual target contains a virtual target whose specified OS is HP-UX, virtual targets in the virtualization switch cannot be deleted.

## Parameters

- 0: Number of units successfully deleted
- 1: Specified number of units

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0398**

#### **ssvsc0398: The virtual target cannot be create by specified use OS.**

---

## Explanation

A virtual target for the CA port using the specified OS has already been created with another OS.

## User action

Update the data in the Virtual Storage Window (View and Create).

### **ssvsc0399**

#### **ssvsc0399: The specified physical disk is off the subject of the support.**

---

## Explanation

The specified physical disk is excluded from support. Therefore, it cannot be registered.

## User action

Check the following information on a physical disk in which an error occurred.

- Check if the physical disk capacity exceeds the maximum value defined in VSC Engine.

After correcting the above mentioned matter, update the management status of the physical resource to the latest status and then re-register the physical disk.

#### **ssvsc0400**

##### **[ssvsc0400: Backup has already existed in the specified virtual disk.](#)**

---

###### Explanation

A virtual disk having a backup cannot be migrated.

###### User action

Delete the backup disk in the Virtual Storage Window (Copy), then execute migration processing again.

#### **ssvsc0401**

##### **[ssvsc0401: The specified sessionID does not exist.](#)**

---

###### Explanation

The specified session has already ended.  
Otherwise, the specified session ID is incorrect.

###### User action

Confirm that the target session ID exists in the Virtual Storage Window (Copy).  
Use the `getsession` command to check the session ID.

#### **ssvsc0402**

##### **[ssvsc0402: The specified virtual storage pool cannot carry out a migration.](#)**

---

###### Explanation

The virtual storage pool that includes the virtual disk to be migrated and the destination virtual storage pool are not controlled by the same virtualization switch group.

###### User action

Specify a virtual storage pool associated with the same virtualization switch group as that of the virtual storage pool to which the virtual disk to be migrated belongs.

#### **ssvsc0403**

##### **[ssvsc0403: The specified virtualization switch cannot carry out a migration.](#)**

---

###### Explanation

The specified virtualization switch does not form a redundant configuration with the following virtualization switch:

- The virtualization switch associated with the virtual storage pool to which the virtual disk to be migrated belongs

###### User action

Specify the virtualization switch associated with the virtual storage pool to which the virtual disk to be migrated belongs.

#### **ssvsc0404**

##### **[ssvsc0404: The specified virtual disk cannot carry out a replication.](#)**

---

###### Explanation

The replication cannot be carried out in the same virtual disk.

## User action

Specify a copy destination virtual disk that is different from the copy source virtual disk.

### **ssvsc0405**

#### **[ssvsc0405: The specified virtualization switch cannot carry out a replication.](#)**

---

## Explanation

The specified virtualization switch does not form a redundant configuration with the following virtualization switch:

- The virtualization switch associated with the virtual storage pool to which the virtual disk to be replicated belongs

## User action

Specify the virtualization switch associated with the virtual storage pool to which the virtual disk to be replicated belongs.

### **ssvsc0406**

#### **[ssvsc0406: The maximum number of copying simultaneously was exceeded. Code = {0}](#)**

---

## Explanation

No more copy processing can be started.

## Parameters

0: VSC Engine error code

## User action

Cancel copying in the Virtual Storage Window (Copy), or use the cancelrep command to cancel replication. For the maximum number of concurrent copy processing, refer to "[Appendix D Limit Values](#)".

### **ssvsc0407**

#### **[ssvsc0407: The specified sessionID is not a session of a migration.](#)**

---

## Explanation

The specified session ID is not for migration. Therefore, migration can neither be canceled nor terminated.

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the getsession command to check the session type.

### **ssvsc0408**

#### **[ssvsc0408: The specified sessionID is not a session of a replication.](#)**

---

## Explanation

The specified session ID is not for replication. Therefore, replication can neither be canceled nor terminated.

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the getsession command to check the session type.

### **ssvsc0409**

#### **[ssvsc0409: The specified sessionID is not equivalent.](#)**

---

## Explanation

Migration or replication is in progress with the session of the specified session ID, so the session cannot be terminated.

## User action

Check the copy status in the Virtual Storage Window (Copy), then execute the command again when the status changes to "synchronized".  
Alternatively, use the `getsession` command to check the copy status, then execute the command again when "Phase" changes to "equivalent".

## **ssvsc0410**

### **ssvsc0410: Backup does not exist in the specified virtual disk.**

---

## Explanation

There is no migration backup for the virtual disk.

## User action

Confirm that the target virtual disk has a backup disk in the Virtual Storage Window (Copy).

## **ssvsc0411**

### **ssvsc0411: The specified virtual disk is now migration.**

---

## Explanation

The specified virtual disk is already in the process of migration.

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the `getsession` command to check the copying status.

If the following conditions are all met, it is likely that an internal error occurred:

- The Virtual Storage Window (copy) does not display a session for the specified virtual disk.
- The migration backup disk list window does not display the specified virtual disk.
- The detailed information on already allocated physical disks displayed in the Virtual Storage Window (View and Create) includes the specified virtual disk.
  
- If the `getsession` command indicates that the relevant copy session is present:  
Refresh the Virtual Storage Window (Copy). If the problem persists, close the Virtual Storage Window (Copy) and open it again. If the problem still persists, restart the admin client program.
- If the `getsession` command indicates that the relevant copy session does not exist, or if the action taken as described in above fails to solve the problem:  
Refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then restart the Manager. Also, contact your Fujitsu engineer (CE or SE).

## **ssvsc0412**

### **ssvsc0412: The specified virtual disk is now replication.**

---

## Explanation

The specified virtual disk is already in the process of replication.

## User action

Check the copy status in the Virtual Storage Window (Copy). Alternatively, use the `getsession` command to check the copying status.

## **ssvsc0413**

### **ssvsc0413: Failed to getting session information.**

---

## Explanation

Failed to get session information.

## User action

Check the status information for the virtualization switch in the Virtual Storage Window (Maintenance). If the status information indicates an error (abnormal), check the virtualization switch or network for errors.

Alternatively, use the getvsw command to check the status information for the virtualization switch. If the status information indicates an error (abnormal), check the virtualization switch or network for errors.

## **ssvsc0414**

### **ssvsc0414: Failed to starting migration. Code = {0}**

---

## Explanation

Migration could not be started because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0415**

### **ssvsc0415: Failed to changing migration. Code = {0}**

---

## Explanation

Migration could not be changed because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0416**

### **ssvsc0416: Failed to stopping migration. Code = {0}**

---

## Explanation

Migration could not be stopped because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0417**

### **ssvsc0417: Failed to replicating migration backup. Code = {0}**

---

## Explanation

A migration backup could not be restored because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0418**

### **ssvsc0418: Failed to deleting migration backup. Code = {0}**

---

## Explanation

A migration backup could not be deleted because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0419**

### **ssvsc0419: Failed to starting replication. Code = {0}**

---

## Explanation

Replication could not be started because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0420**

### **ssvsc0420: Failed to separation replication. Code = {0}**

---

## Explanation

Replication could not be isolated because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0421**

### **ssvsc0421: Failed to stopping replication. Code = {0}**

---

## Explanation

Replication could not be stopped because an error occurred in a virtualization switch.

## Parameters

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0422**

##### **ssvsc0422: The specified replication point virtual disk does not exist.**

---

#### Explanation

The specified name of the destination virtual disk is incorrect.

#### User action

Check the virtual disk in the Virtual Storage Window (View and Create), then specify a valid virtual disk name.

#### **ssvsc0423**

##### **ssvsc0423: Failed to getting the session status. Code = {0}**

---

#### Explanation

Session status information could not be obtained because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0424**

##### **ssvsc0424: The specified virtual disk cannot carry out a replication. Code = {0}**

---

#### Explanation

The virtual storage pool that includes the virtual disk to be replicated and the destination virtual storage pool are not controlled by the same virtualization switch group.

#### Parameters

0: VSC Engine error code

#### User action

Specify a virtual storage pool associated with the same virtualization switch group as that of the virtual storage pool to which the virtual disk to be replicated belongs.

#### **ssvsc0425**

##### **ssvsc0425: Failed to automatic changing migration. Code = {0} SessionID = {1}**

---

#### Explanation

Migration could not be automatically changed because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

1: A session ID.

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0426**

**ssvsc0426: It is not in agreement with the real disk storage capacity of a migration place and a migration source.**

---

### Explanation

If migration is executed in a mode that does not retain a migration backup disk, the destination physical disk must have the same capacity as the source physical disk.

### User action

Execute migration with the capacity of the destination physical disk equal to that of the source physical disk.

## **ssvsc0427**

**ssvsc0427: Unable to read all files.**

---

### Explanation

An attempt to read the entire copy history failed.

### User action

Check whether the copy history file is damaged.

## **ssvsc0428**

**ssvsc0428: Unable to read some files. File name = {0}**

---

### Explanation

An attempt to read the copy history failed.

### Parameters

0: Name of the copy history file

### User action

Check whether the copy history file is damaged.

## **ssvsc0429**

**ssvsc0429: Failed to stopping replication.**

---

### Explanation

Replication could not be stopped.

### User action

Confirm that:

- The switch status in the Maintenance window is normal.
- The Engine status is active.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0430**

**ssvsc0430: Failed to stopping migration.**

---



## Explanation

Migration could not be stopped.

## User action

Confirm that:

- The switch status in the Maintenance window is normal.
- The Engine status is active.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0431**

### **ssvsc0431: The specified virtual disk is not assigned to the virtual target.**

---

## Explanation

The virtual disk to be copied has not been allocated to a virtual target.

## User action

Allocate the target virtual disk to a virtual target in the Storage Virtualization Window (View and Create).

## **ssvsc0432**

### **ssvsc0432: The capacity of the replication point virtual disk is insufficient.**

---

## Explanation

Replication cannot be carried out because the capacity of the virtual disk specified as the replication destination is smaller than that of the virtual disk of the replication source.

## User action

Specify, as the replication destination, a virtual disk with a capacity larger than that of the replication source virtual disk.

## **ssvsc0433**

### **ssvsc0433: It cannot copy from Encryption attribute volume to Non-Encryption attribute volume was detected.**

---

## Explanation

The encrypted volumes cannot be copied to the non-encrypted volumes.

## User action

Specify a volume with the encryption attribute as the virtual disk of the replication destination. Alternatively, specify the "f" option and re-execute.

## **ssvsc0434**

### **ssvsc0434: The copy from Encryption attribute volume to Non-Encryption attribute volume was carried out.**

---

## Explanation

Replication from the encrypted volumes to the non-encrypted volumes was carried out.

## User action

If copying from an encrypted volume to a non-encrypted volume is not permitted, terminate the replication session.

## **ssvsc0435**

### **ssvsc0435: The specified sessionID is now copying.**

---

#### Explanation

The session with the specified ID is being copied, and so cannot be terminated.

#### User action

Check the copy status on the Virtual Storage Window (Copy), and re-execute the command when it has changed to the equivalency maintain status.

Alternatively, check the copy status using the `getssession` command and re-execute the command when the phase has become equivalent.

## **ssvsc0436**

### **ssvsc0436: Failed to stopping migration. Code = {0} The number of succeeded in processing = {1}/ {2}units**

---

#### Explanation

An error occurred with a virtualization switch, and migration could not be stopped.

#### Parameters

0: VSC engine error code

1: Number of units successfully processed

2: Number of units specified

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0437**

### **ssvsc0437: Failed to stopping migration. The number of succeeded in processing = {0}/ {1}units**

---

#### Explanation

Migration could not be stopped.

#### Parameters

0: Number of units successfully processed

1: Number of units specified

#### User action

Confirm that:

- the switch status on the maintenance window is normal
- the engine is in the activation status

If the problem persists, by referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

## **ssvsc0438**

### **ssvsc0438: Failed to getting session information. The number of succeeded in processing = {0}/ {1}units**

---

#### Explanation

Session information could not be obtained.

## Parameters

0: Number of units successfully processed  
1: Number of units specified

## User action

Check the status information of the virtual switch on the Virtual Storage Window (Maintenance). If the status shows abnormal, check for errors in the virtual switch or the network.

Alternatively, check the status information of the virtualization switch using the `getvsw` command. If the status shows abnormal, check for errors in the virtual switch or the network.

## **ssvsc0439**

**ssvsc0439: The specified sessionID does not exist. The number of succeeded in processing = {0}/{1}units**

## Explanation

The specified session has already ended. Alternatively, an incorrect session ID has been specified.

## Parameters

0: Number of units successfully processed  
1: Number of units specified

## User action

Check if the session ID exists on the Virtual Storage Window (Copy).

Check the session ID using the `getsession` command.

## **ssvsc0440**

**ssvsc0440: Failed to stopping replication. The number of succeeded in processing = {0}/{1}units**

## Explanation

Replication could not be stopped.

## Parameters

0: Number of units successfully processed  
1: Number of units specified

## User action

Confirm that:

- the switch status on the maintenance window shows normal
- the engine is in the activation status

If the problem persists, by referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

## **ssvsc0441**

**ssvsc0441: Failed to stopping replication. Code = {0} The number of succeeded in processing = {1}/{2}units**

## Explanation

An error occurred with a virtualization switch, and replication could not be stopped.

## Parameters

- 0: VSC engine error code
- 1: Number of units successfully processed
- 2: Number of units specified

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0442**

**ssvsc0442: Failed to changing migration. Code = {0} The number of succeeded in processing = {1}/  
{2}units**

---

## Explanation

An error occurred with a virtualization switch, and migration could not be switched.

## Parameters

- 0: VSC engine error code
- 1: Number of units successfully processed
- 2: Number of units specified

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0443**

**ssvsc0443: The specified sessionID is not equivalent. The number of succeeded in processing = {0}/  
{1}units**

---

## Explanation

The session with the specified ID is not in the equivalency maintain status, and so cannot be ended.

## Parameters

- 0: Number of units successfully processed
- 1: Number of units specified

## User action

Check the copy status on the Virtual Storage Window (Copy), and re-execute the command when it has changed to the equivalency maintain status.

Alternatively, check the copy status using the getsession command and re-execute the command when the phase has become equivalent.

## **ssvsc0444**

**ssvsc0444: Failed to replicating migration backup. Code = {0} The number of succeeded in processing =  
{1}/{2}units**

---

## Explanation

An error occurred with a virtualization switch, and the migration backup could not be restored.

## Parameters

- 0: VSC engine error code
- 1: Number of units successfully processed
- 2: Number of units specified

#### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0445**

**ssvsc0445: Backup does not exist in the specified virtual disk. The number of succeeded in processing = {0}/{1}units**

---

#### Explanation

The migration backup for the virtual disk cannot be found.

#### Parameters

- 0: Number of units successfully processed
- 1: Number of units specified

#### User action

Ensure that a backup disk exists for the virtual disk by checking the Virtual Storage Window (Copy).

#### **ssvsc0446**

**ssvsc0446: Failed to deleting migration backup. Code = {0} The number of succeeded in processing = {1}/{2}units**

---

#### Explanation

An error occurred with a virtualization switch, and the migration backup could not be deleted.

#### Parameters

- 0: VSC engine error code
- 1: Number of units successfully processed
- 2: Number of units specified

#### User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0447**

**ssvsc0447: The specified virtual disk reaches an executable number of copies. Code = {0}**

---

#### Explanation

The specified virtual disk has reached the maximum number of copies that can be executed. Therefore, no more copies can be made.

#### Parameters

- 0: VSC engine error code

#### User action

Stop replication of the specified virtual disk of the copy source on the Virtual Storage Window (Copy) or using the cancelrep command.

For the maximum number of copies, refer to "[Appendix D Limit Values](#)".

#### **ssvsc0500**

**ssvsc0500: The host name is invalid in the virtualization switch. Host name = {0}**

---

#### Explanation

Failed to communicate with the virtualization switch because the host name of the virtualization switch is invalid.

## Parameters

0: Name of the virtualization switch used for communication

## User action

- Solaris OS/Linux OS

Confirm that:

- The host name of the virtualization switch is registered in the /etc/hosts file.
- The correct IP address of the virtualization switch is entered in the /etc/hosts file.

- Windows

Confirm that:

- The host name of the virtualization switch is registered in the %SystemRoot%\system32\drivers\etc\hosts file.
- The correct IP address of the virtualization switch is entered in the %SystemRoot%\system32\drivers\etc\hosts file.

## ssvsc0501

### **ssvsc0501: The maximum number of registering virtualization switches was exceeded.**

---

## Explanation

No more virtualization switches can be registered.

## User action

Delete unnecessary virtualization switches, then execute the command again. For the number of virtualization switches that can be registered, refer to "[Appendix D Limit Values](#)".

## ssvsc0502

### **ssvsc0502: The host name of specified virtualization switch already exists.**

---

## Explanation

Multiple virtualization switches cannot be registered with the same host name.

## User action

Check the registered virtualization switch information in the Virtual Storage Window (Maintenance). Alternatively, use the getvsw command to check the registered host names of virtualization switches.

## ssvsc0503

### **ssvsc0503: Virtualization switch status is error. SwitchName = {0}**

---

## Explanation

The virtualization switch is in an error status.

## Parameters

0: Name of the virtualization switch in error status

## User action

Verify the status of the target virtualization switch.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0504

**ssvsc0504: The specified device is deleted from devices subject to management of a storage resource. Please click a [delete] button, when you perform device exchange. Please perform again after deleting all the resources of virtual storage relevant to the specified device, when not performing device exchange.**

---

**Explanation**

There is virtual configuration information for the virtualization switch.

**User action**

If you want to proceed with device exchange, click the <Delete> button.

If you do not want to proceed with device exchange, delete all resources of virtual storage related to the specified device and try again.

**ssvsc0505**

**ssvsc0505: The corresponding information does not exist.**

---

**Explanation**

The specified information does not exist.

**User action**

Verify the configuration information in the Virtual Storage Window (View and Create).

**ssvsc0506**

**ssvsc0506: The virtualization switch is not initialized.**

---

**Explanation**

The virtualization switch is not initialized.

**User action**

Use the vscreateconfigfile command of VSC Engine to initialize the virtualization switch.

**ssvsc0507**

**ssvsc0507: Failed to restoring of the trace level of VSC Engine. Code = {0}**

---

**Explanation**

The VSC Engine trace level could not be set because an error occurred in a virtualization switch.

**Parameters**

0: VSC Engine error code

**User action**

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

**ssvsc0508**

**ssvsc0508: Failed to restoring of virtualization switch composition data files. Code = {0}**

---

**Explanation**

The configuration information in the virtualization switch could not be re-created because an error occurred in a virtualization switch.

**Parameters**

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0509**

##### **ssvsc0509: Failed to stopping VSC Engine.**

---

#### Explanation

VSC Engine could not be stopped because an error occurred in a virtualization switch.

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0510**

##### **ssvsc0510: Failed to change of the virtual enclosure BoxID. Code = {0}**

---

#### Explanation

The virtual enclosure BoxID could not be changed because an error occurred in a virtualization switch.

#### Parameters

0: VSC Engine error code

#### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0511**

##### **ssvsc0511: The virtualization switch is not registered as devices for management. Host name = {0}**

---

#### Explanation

The virtualization switch is not registered as a device to be managed.

#### Parameters

0: Name of the virtualization switch

#### User action

On the ESC Resource Management Window, search for and add the device to be managed. If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0512**

##### **ssvsc0512: The information of devices for management of a virtualization switch is error. Host name = {0}**

---

#### Explanation

The managed device information for the virtualization switch is incorrect.

#### Parameters

0: Name of the virtualization switch

#### User action

On the Resource Management Window, perform the following procedures:

1. Delete the device to be managed.
2. Select Delete in the Replace Device message.



3. Add and delete the device to be managed.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### ssvsc0513

#### ssvsc0513: Failed to getting virtualization switch. Code = {0}

---

##### Explanation

Information could not be obtained because an error was generated at the virtualization switch.

##### Parameters

0: VSC engine error code

##### User action

Refer to "6.3 Collecting Data" and collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### ssvsc0514

#### ssvsc0514: Failed to getting virtualization switch. Code = {0} Host name = {1}

---

##### Explanation

Information could not be obtained because an error was generated at the virtualization switch.

##### Parameters

0: VSC engine error code

1: Virtualization switch name

##### User action

Refer to "6.3 Collecting Data" and collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### ssvsc0600

#### ssvsc0600: Because the number of VSC Engine of farm versions is old, this function cannot be executed.

---

##### Explanation

The firmware version of the VSC engine concerned does not meet the requirement for this function to be executed.

##### User action

Refer to the VSC engine manual and upgrade the firmware of the VSC engine.

### ssvsc0700

#### ssvsc0700: Unable to read a composition data files of virtual storage.

---

##### Explanation

Failed to read the configuration information file.

##### User action

Confirm the status of the vsccompose file in the following directory.

Platform	Directory that vsccompose exists
Windows	\$TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current (\$TMP_DIR means "Work Directory" specified at the Manager installation.)

Platform	Directory that vsccompose exists
Solaris OS, Linux	/var/opt/FJSVssmgr/current

- No disk error has occurred.
- The directory does not contain another directory.
- The directory contains only files with extension .repository.
- The directory contains a file.

If no file exists, use the commit script to restore the backup virtual storage configuration information into the following directory. After restoration, restart the manager.

- Solaris OS, Linux: /vsccompose
- Windows: %vsccompose

When all the conditions above are met, the configuration information file may be corrupt.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0701

### ssvsc0701: Unable to update a configuration file of virtual storage.

#### Explanation

The configuration information file could not be written to the directory specified.  
Or, the update process of configuration information to VSC Engine failed.

#### User action

Take the following procedures to make checks.

1. Update the Virtual Storage Window (Maintenance) screen to check the latest status of the virtualization switch.
  - If the virtualization switch is stopped:  
Check if the virtualization switch has been started. If not, proceed to step 2.
  - If the virtualization switch is working:  
Proceed to step 3.
2. Take the following procedures.
  1. Log into the virtualization switch by the username "admin" and enter the vsccreateconfigfile command to initialize the configuration information.
  2. Log into the virtualization switch by the username "admin" and enter the reboot command to reboot the virtualization switch.
  3. After the virtualization switch has been rebooted, proceed to step 3.
3. Once again update the Virtual Storage Window (Maintenance) screen to the latest status to check the status of the configuration information.
  - When the state of the composition data is Inconsistent  
Refer to "6.2.3.3 Restoring the configuration information of a virtualization switch" to restore the configuration information.
  - When the state of the composition data is consistent  
Confirm the status of the vsccompose file in the following directory.

Platform	Directory that vsccompose exists
Windows	\$TMP_DIR%Manager%var%opt%FJSVssmgr%current (%TMP_DIR% means "Work Directory" specified at the Manager installation.)

Platform	Directory that vsccompose exists
Solaris OS, Linux	/var/opt/FJSVssmgr/current

- No disk error has occurred.
- The directory or file is not write-protected.
- The file system of the directory has sufficient free disk space.

If migration or replication is in progress, cancel copying that has ended abnormally in the copying status view.

When all the conditions above are met, the configuration information file may be corrupt.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0702

### ssvsc0702: Copy-log file does not exist.

---

#### Explanation

The copy log file in the configuration data file is incorrect.

#### User action

Confirm the status of the vsclg file in the following directory.

Platform	Directory that vsclg exists
Windows	\$TMP_DIR\Manager\var\opt\FJSVssmgr\current (\$TMP_DIR means "Work Directory" specified at the Manager installation.)
Solaris OS, Linux	/var/opt/FJSVssmgr/current

- The directory or file has not been moved or deleted.

After confirming, restart VSC Manager.

## ssvsc0703

### ssvsc0703: Failed to updating of the copy-log file.

---

#### Explanation

The copy log file could not be written to the directory specified.

#### User action

Confirm the status of the vsclg file in the following directory.

Platform	Directory that vsclg exists
Windows	\$TMP_DIR\Manager\var\opt\FJSVssmgr\current (\$TMP_DIR means "Work Directory" specified at the Manager installation.)
Solaris OS, Linux	/var/opt/FJSVssmgr/current

- No disk error has occurred.
- The directory or file is not write-protected.
- The file system has sufficient free disk space.

When all the conditions above are met, the copy log file may be corrupt. Move or delete the copy log file.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0705

### ssvsc0705: Failed to updating of the trace file.

---

#### Explanation

Failed to write to the log file.

#### User action

Confirm the status of the vsclg file in the following directory.

Platform	Directory that vsclg exists
Windows	\$TMP_DIR¥Manager¥var¥opt¥FJSVssmgr¥current (\$TMP_DIR means "Work Directory" specified at the Manager installation.)
Solaris OS, Linux	/var/opt/FJSVssmgr/current

- No disk error has occurred.
- The directory or file is not write-protected.
- The file system has sufficient free disk space.

When all the conditions above are met, the copy log file may be corrupt. Move or delete the copy log file.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0800

### ssvsc0800: A network socket error occurred in communication with a virtualization switch. *Host name = {0}*

---

#### Explanation

An error occurred in communication with the virtualization switch.

#### Parameters

0: Name of the virtualization switch used for communication

#### User action

Confirm that:

- VSC engine starts
- The network environment is normal

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0801

### ssvsc0801: The host name is invalid in virtualization switch. *Host name = {0}*

---

#### Explanation

Failed to communicate with the virtualization switch because the host name of the virtualization switch is invalid.

## Parameters

0: Name of the virtualization switch used for communication

## User action

Confirm that:

- The port number of VSC Engine is correct.
- VSC Engine is running.
- Confirm that the network environment is normal.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0802

### **ssvsc0802: The specified physical disk is in a busy state.**

---

## Explanation

The specified physical disk returned a busy status.

## User action

Execute the command again.

## ssvsc0803

### **ssvsc0803: VSC Engine is in an unusual state.**

---

## Explanation

The virtualization switch encountered an internal error.

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0804

### **ssvsc0804: A network timeout error occurred in communication with a virtualization switch. Host name = {0}**

---

## Explanation

In communication with the virtualization switch, the wait time (three minutes) was exceeded.

## Parameters

0: Name of the virtualization switch used for communication

## User action

Confirm that:

- The virtualization switch specified as %HostName is operating.
- The network environment is normal.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0805

### **ssvsc0805: The unusual state occurred in the communication during a virtualization switch.**

---

#### **Explanation**

The communication between virtualization switches failed.

#### **User action**

Confirm that the network environment is normal.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0806**

### **ssvsc0806: A network socket error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in making = {1}/{2}units**

---

#### **Explanation**

An error occurred during communication with the virtualization switch.

#### **Parameters**

- 0: Name of the virtualization switch to communicate with
- 1: Number of units created successfully
- 2: Specified number of units

#### **User action**

Confirm that:

- VSC engine starts
- The network environment is normal

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0807**

### **ssvsc0807: The host name is invalid in virtualization switch. Host name = {0} The number of succeeded in making = {1}/{2}units**

---

#### **Explanation**

Communication with the virtualization switch failed because the host name of the virtualization switch was invalid.

#### **Parameters**

- 0: Name of the virtualization switch to communicate with
- 1: Number of units created successfully
- 2: Specified number of units

#### **User action**

Ensure that:

- The port number of the VSC engine is valid.
- The VSC engine is active.
- The network environment contains no error.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0808**

**ssvsc0808: The specified physical disk is in a busy state. The number of succeeded in making = {0}/{1}units**

---

### **Explanation**

The busy status was reported from the specified physical disk.

### **Parameters**

- 0: Number of units successfully created
- 1: Specified number of units

### **User action**

Reenter the command.

## **ssvsc0809**

**ssvsc0809: VSC Engine is in an unusual state. The number of succeeded in making = {0}/{1}units**

---

### **Explanation**

An internal error occurred on the visualization switch.

### **Parameters**

- 0: Number of units successfully created
- 1: Specified number of units

### **User action**

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0810**

**ssvsc0810: A network timeout error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in making = {1}/{2}units**

---

### **Explanation**

In communication with the virtualization switch, the wait time (three minutes) was exceeded.

### **Parameters**

- 0: Host name
- 1: Number of units successfully created
- 2: Specified number of units

### **User action**

Ensure that:

- The virtualization switch that was set by %HostName is active.
- The network environment contains no error.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## **ssvsc0811**

**ssvsc0811: The unusual state occurred in the communication during a virtualization switch. The number of succeeded in making = {0}/{1}units**

---

## Explanation

Communication between visualization switches failed.

## Parameters

- 0: Number of units successfully created
- 1: Specified number of units

## User action

Check for errors in the network environment.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0812

**ssvsc0812: A network socket error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in deleting = {1}/{2}units**

---

## Explanation

Communication between visualization switches failed.

## Parameters

- 0: Name of the virtualization switch to communicate with
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

Confirm that:

- VSC engine starts
- The network environment is normal

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0813

**ssvsc0813: The host name is invalid in virtualization switch. Host name = {0} The number of succeeded in deleting = {1}/{2}units**

---

## Explanation

Communication with the virtualization switch failed because the host name of the virtualization switch was invalid.

## Parameters

- 0: Name of the virtualization switch to communicate with
- 1: Number of units successfully deleted
- 2: Specified number of units

## User action

Ensure that:

- The port number of the VSC engine is valid.
- The VSC engine is active.
- The network environment contains no error.



If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0814**

**ssvsc0814: The specified physical disk is in a busy state. The number of succeeded in deleting = {0}/{1}units**

---

##### Explanation

The busy status was reported from the specified physical disk.

##### Parameters

- 0: Number of units successfully deleted
- 1: Specified number of units

##### User action

Reenter the command.

#### **ssvsc0815**

**ssvsc0815: VSC Engine is in an unusual state. The number of succeeded in deleting = {0}/{1}units**

---

##### Explanation

An internal error occurred in the visualization switch.

##### Parameters

- 0: Number of units successfully deleted
- 1: Specified number of units

##### User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0816**

**ssvsc0816: A network timeout error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in deleting = {1}/{2}units**

---

##### Explanation

In communication with the virtualization switch, the wait time (three minutes) was exceeded.

##### Parameters

- 0: Host name
- 1: Number of units successfully deleted
- 2: Specified number of units

##### User action

Ensure that:

- The virtualization switch that was set by %HostName is active.
- The network environment contains no error.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

#### **ssvsc0817**

**ssvsc0817: The unusual state occurred in the communication during a virtualization switch. The number of succeeded in deleting = {0}/{1}units**

---

**Explanation**

Communication between virtualization switches failed.

**Parameters**

- 0: Number of units successfully deleted
- 1: Specified number of units

**User action**

Check for errors in the network environment.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

**ssvsc0818**

**ssvsc0818: The specified physical disk is in a busy state. LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

**Explanation**

Busy Status was returned from the specified physical disk.

**Parameters**

- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

**User action**

Execute the command again.

**ssvsc0819**

**ssvsc0819: The unusual state occurred in the communication during a virtualization switch. LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

**Explanation**

Communication between virtualization switches failed.

**Parameters**

- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

**User action**

Check the network environment for errors.

If the problem persists, refer to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

**ssvsc0820**

**ssvsc0820: VSC Engine is in an unusual state. LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

## Explanation

An internal error occurred in the virtualization switch.

## Parameters

- 1: Physical disk information
- 2: Number of units successfully deleted
- 3: Specified number of units

## User action

Referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0821**

***ssvsc0821: A network socket error occurred in communication with a virtualization switch. Host name = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units***

---

## Explanation

An error occurred during communication with the virtualization switch.

## Parameters

- 0: Name of the virtualization switch to communicate with
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

## User action

Confirm that:

- VSC engine starts
- The network environment is normal

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0822**

***ssvsc0822: The host name is invalid in virtualization switch. Host name = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units***

---

## Explanation

Communication with the virtualization switch failed because the host name of the virtualization switch is invalid.

## Parameters

- 0: Name of the virtualization switch communicated with
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

## User action

Confirm that:

- The port number of VSC Engine is correct.
- VSC Engine is active.
- The network environment contains no error.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0823**

**ssvsc0823: A network timeout error occurred in communication with a virtualization switch. Host name = {0} LogicalVolume = {1} The number of succeeded in making = {2}/{3}units**

---

#### Explanation

A timeout (3 minutes) occurred during communication with the virtualization switch.

#### Parameters

- 0: Name of the virtualization switch communicated with
- 1: Physical disk information
- 2: Number of units successfully created
- 3: Specified number of units

#### User action

Confirm that:

- The virtualization switch set with %HostName is active.
- The network environment contains no error.

If the problem persists, refer to "6.3 Collecting Data", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

### **ssvsc0824**

**ssvsc0824: A network socket error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in processing = {1}/{2}units**

---

#### Explanation

Communication with a virtualization switch failed.

#### Parameters

- 0: Name of virtualization switch in communication with
- 1: Number of units successfully processed
- 2: Number of units specified

#### User action

Confirm that:

- VSC engine starts
- The network environment is normal

If the problem persists, by referring to "6.3 Collecting Data", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

### **ssvsc0825**

**ssvsc0825: The host name is invalid in virtualization switch. Host name = {0} The number of succeeded in processing = {1}/{2}units**

---

#### Explanation

Communication with a virtualization switch failed because the host name of the virtualization switch is incorrect.

## Parameters

- 0: Name of the virtualization switch in communication with
- 1: Number of units successfully processed
- 2: Number of units specified

## User action

Confirm that:

- VSC engine port number is correct
- VSC engine is running
- the network environment is normal

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0826

**ssvsc0826: VSC Engine is in an unusual state. The number of succeeded in processing = {0}/{1}units**

---

## Explanation

An internal error was generated with the virtualization switch.

## Parameters

- 0: Number of units successfully processed
- 1: Number of units specified

## User action

Referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, then contact your Fujitsu engineer (CE or SE).

## ssvsc0827

**ssvsc0827: A network timeout error occurred in communication with a virtualization switch. Host name = {0} The number of succeeded in processing = {1}/{2}units**

---

## Explanation

The communication timeout (3 minutes) for the virtualization switch has exceeded.

## Parameters

- 0: Host name
- 1: Number of units successfully processed
- 2: Number of units specified

## User action

Confirm that:

- The virtualization switch specified with %HostName is activated
- The network environment is normal

If the problem persists, by referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

## ssvsc0828

**ssvsc0828: The unusual state occurred in the communication during a virtualization switch. The number of succeeded in processing = {0}/{1}units**

---

## Explanation

Communication with a virtualization switch failed.

## Parameters

- 0: Number of units successfully processed
- 1: Number of units specified

## User action

Confirm that the network environment is normal.

If the problem persists, by referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

## ssvsc0902

### [ssvsc0902: Command Started "{0}"](#)

---

## Explanation

The command started.

## Parameters

- 0: Name of the command that started

## User action

None

## ssvsc0903

### [ssvsc0903: Command Terminated "{0}"](#)

---

## Explanation

The command ended.

## Parameters

- 0: Name of the command that ended

## User action

None

## ssvsc0905

### [ssvsc0905: CommitScript error occurred. output={0}](#)

---

## Explanation

An error occurred in the commit script.

## Parameters

- 0: Error information of the commit script

## User action

- Confirm that the commit script is correctly written.
- Confirm that the commit script runs normally by itself.

## ssvsc0906

### **ssvsc0906: CommitScript does not exist. COMMIT\_SCRIPT = {0}**

---

#### Explanation

The commit script file cannot be found in the specified folder.

#### Parameters

0: File name of the commit script

#### User action

Confirm that:

- the commit script file is stored in the specified folder
- the directory or file specified in the commit script is not write-protected.

### **ssvsc0907**

### **ssvsc0907: CommitScript standard output={0}**

---

#### Explanation

The commit script output %Message to standard output.

#### Parameters

0: Message that was output

#### User action

None

### **ssvsc0908**

### **ssvsc0908: CommitScript standard error. output={0}**

---

#### Explanation

The commit script output %Message to standard error output.

#### Parameters

0: Error message that was output

#### User action

Confirm that the commit script is correctly written.  
Confirm that the commit script runs normally by itself.

### **ssvsc0909**

### **ssvsc0909: VSC Manager stopped normally.**

---

#### Explanation

VSC Manager stopped normally.

#### User action

None

### **ssvsc0913**

### **ssvsc0913: Delete operation terminated. Because the device is used for Virtualization switch.**

---

## Explanation

The specified device is used by virtual storage.

## User action

The device cannot be deleted.

To delete the device, release all physical disks of the specified device.

## **ssvsc1304**

### **ssvsc1304: The management information of the physical resource has latest possibilities.**

---

## Explanation

The SAN management information or the relationship management information may not be in the latest status.

## User action

Update the SAN management information or the relationship management information to the latest.

If the problem persists, by referring to "[6.3 Collecting Data](#)", collect the necessary data for troubleshooting, and contact your Fujitsu engineer (CE or SE).

## **ssvsc1305**

### **ssvsc1305: The specified LogicalVolume is connected with plural affinity groups. LogicalVolume = {0}**

---

## Explanation

The logical volume is configured with multiple affinity groups.

## Parameters

0: Specified logical volume

## User action

Check the configuration of affinity groups related to the specified logical volume on the storage device.

## **ssvsc1306**

### **ssvsc1306: The specified LogicalVolume is connected with plural HostLUNs. LogicalVolume = {0}**

---

## Explanation

The logical volume is configured with multiple Host LUNs.

## Parameters

0: Specified logical volume

## User action

Check the configuration of Host LUNs related to the specified logical volume on the storage device.

## **E.2 Virtual Storage Window**

---

This appendix describes the messages output by the Virtual Storage Window.

Either English or Japanese messages are output as specified by environment variable LANG.

Messages from the Virtual Storage Window are output to the admin client window as dialogs.



Table E.2 Items in message text

Item	Description
Message text	Text of a message to be output. Each message is output in the following formats: Message ID "Message text (Japanese)" "Message text (English)"
Explanation	Explains why this message is output.
Message type	Indicates the message type. Information: Indicates the reason why to discontinue ongoing processing. Error: Indicates that processing cannot continue. Confirmation: Indicates confirmation before processing. Operation procedure: Prompts the input of necessary information for processing. Result notification: Reports the processing result.
System processing	Explains the system processing after message output.
User action	Explains the action to be taken in response to this message.

## ssgui4000

### ssgui4000

---

A network socket error occurred in communication with a VSC Manager.

#### Explanation

Communication with the admin server failed.

#### Message type

Error

#### System processing

Does not start the Virtual Storage Window.

#### User action

Confirm that the admin server is operating normally.  
Also, confirm that the admin server is connected normally to the network.

## ssgui4001

### ssgui4001

---

Failed to start Virtual Storage Window.

#### Explanation

An internal error was detected during Virtual Storage Window startup.

#### Message type

Error

#### System processing

Does not start the Virtual Storage Window.

## User action

Collect the necessary data for troubleshooting and contact your Fujitsu service engineer (SE).

## **ssgui4002**

### [ssgui4002](#)

---

Failed to show the information.

## Explanation

An internal error was detected during the display of information.

## Message type

Error

## System processing

Displays no information in the Virtual Storage Window.

## User action

Collect the necessary data for troubleshooting and contact your Fujitsu service engineer (SE).

## **ssgui4003**

### [ssgui4003](#)

---

The virtualization switch is not registered. Please register it into the administrative server.

## Explanation

Since the virtualization switch is not registered, stopped, or under abnormal conditions, the Virtual Storage Window cannot request processing.

Alternatively, the information for VS900 is not entered correctly in the host's file of the administrative server.

## Message type

Error

## System processing

Rejects requests issued to the Virtual Storage Window.

## User action

Verify that the virtualization switch is registered with ESC.

Verify that the virtualization switch is operating normally.

Verify that the information for VS900 is entered correctly in the host's file of the administrative server.

## **ssgui4006**

### [ssgui4006](#)

---

There is no information to display.

## Explanation

Since there is no information to display, the Virtual Storage Window displays no information.

## Message type

Information

## System processing

Does not process requests.

## User action

Create resources for virtual storage and retry processing.

## **ssgui4010**

### [ssgui4010](#)

---

Failed to get the data.

## Explanation

Failed to acquire data.

## Message type

Error

## System processing

Does not process requests.

## User action

Collect the necessary data for troubleshooting and contact your Fujitsu service engineer (SE).

## **ssgui4050**

### [ssgui4050](#)

---

The web browser is not registered.

## Explanation

Web browser is not registered.

## Message type

Error

## System processing

Cannot open the manual.

## User action

Register a web browser.

## **ssgui4099**

### [ssgui4099](#)

---

The program error was detected.

## Explanation

An internal error occurred in the Virtual Storage Window.

## Message type

Error

## System processing

Does not process requests.

## User action

Collect the necessary data for troubleshooting and contact your Fujitsu service engineer (SE).

## **ssgui4109**

### [ssgui4109](#)

---

Are you sure you want to delete the virtual storage pool?

## Explanation

This message confirms whether you want to delete the virtual storage pool.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4112**

### [ssgui4112](#)

---

The virtual storage pool which can be deleted does not exist.

## Explanation

Every virtual storage pool contains a physical disk.

## Message

Information

## System processing

Does not process requests.

## User action

Release all the physical disks that are registered in the virtual storage pool you want to delete.

## **ssgui4116**

### [ssgui4116](#)

---

Are you sure you want to release the physical disk?

## Explanation

This message confirms whether you want to release the selected physical disk from the virtual storage pool.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4117**

### [ssgui4117](#)

---

The physical disk which can be registered does not exist.

## Explanation

There is no physical disk that can be registered in the virtual storage pool selected.

No storage device is registered. Alternatively, all the physical disks of storage devices have already been registered.

## Message type

Information

## System processing

Does not process requests.

## User action

Use ESC to check whether a storage device to be used as virtual storage is registered.

In the View and Create window, check whether all physical disks are registered in the virtual storage pool.

## **ssgui4118**

### [ssgui4118](#)

---

The physical disk which can be released does not exist.

## Explanation

Every physical disk in the selected virtual storage pool constitutes a virtual disk.

Only a physical disk that does not constitute a virtual disk can be released.

## Message type

Information

## System processing

Does not process requests.

## User action

Check the virtual storage pool for physical disks.

## **ssgui4121**

### [ssgui4121](#)

---

Are you sure you want to convert?

## Explanation

This message requests confirmation to execute batch conversion.

## Message type

Confirmation

## System processing

Waits until the reply button is clicked.

## User action

Click the reply button.

## **ssgui4122**

### [ssgui4122](#)

---

The physical disk of other storage is already selected.

## Explanation

A physical disk belonging to another storage unit has already been selected.

All selected physical disks must belong to the same storage unit.

## Message type

Information

## System processing

Does not process requests.

## User action

A physical disk cannot be selected from any storage unit other than the one to which the selected physical disk belongs.

To select a physical disk belonging to another storage unit, cancel the selections of all physical disks currently selected and select the physical disks again.

## **ssgui4123**

### [ssgui4123](#)

---

The physical disk which can be converted does not exist.

## Explanation

The selected virtual storage pool contains no physical disk that can be registered.

The storage unit may not be registered, or all physical disks in the storage unit may already be registered.

## Message type

Information

## System processing

Does not process requests.

## User action

Using Systemwalker Resource Coordinator, check whether the storage unit used for virtual storage is registered.

In the "View and Create" window, check whether all the physical disks are already registered in the virtual storage pool.

## **ssgui4124**

## **ssgui4124**

---

The physical disk which is in agreement with the selected condition does not exist.

### Explanation

No physical disks matched the selected condition when physical disks were being selected.

### Message type

Information

### System processing

Does not process requests.

### User action

Select another condition when selecting physical disks.

## **ssgui4125**

## **ssgui4125**

---

You cannot set the capacity with the selected condition.

### Explanation

The capacity input in the physical disk selection conditions exceeds the total capacity of physical disks to be selected using the selected condition.

### Message type

Information

### System processing

Does not process requests.

### User action

Select another RAID level and storage when selecting physical disks.

Alternatively, change the capacity.

## **ssgui4126**

## **ssgui4126**

---

Is it good though security decreases when non-encryption volume exists together to the encryption volume?

### Explanation

Confirm if you want to create the virtual disk even though the security level will deteriorate.

### Message type

Confirmation

### System processing

Waits until the reply button is selected.

### User action

Select the reply button.

## **ssgui4211**

### **ssgui4211**

---

The total assigned capacity is out of range.  
Please select a physical disk to become a right capacity.

#### **Explanation**

The total capacity of the physical disks selected to create a virtual disk exceeds the permissible capacity of the virtual disk.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

Select the physical disks and retry processing to set the total capacity within the permissible capacity of the virtual disk.

## **ssgui4215**

### **ssgui4215**

---

The addition of capacity is not made to the virtual disk because it is created by the maximum capacity.

#### **Explanation**

You cannot add capacity to the virtual disk since maximum disk capacity has already been reached.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

You cannot add capacity to the virtual disk.

## **ssgui4217**

### **ssgui4217**

---

Are you sure you want to add capacity to the virtual disk?

#### **Explanation**

This message confirms whether you want to add capacity to the virtual disk.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is selected.

#### **User action**

Select the reply button.



## **ssgui4219**

### **ssgui4129**

---

Are you sure you want to delete the virtual disk?

#### **Explanation**

This message confirms whether you want to delete the virtual disk.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is selected.

#### **User action**

Select the reply button.

## **ssgui4221**

### **ssgui4221**

---

Are you sure you want to assign the virtual disk?

#### **Explanation**

This message confirms whether you want to assign the virtual disk to the virtual target.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is selected.

#### **User action**

Select the reply button.

## **ssgui4230**

### **ssgui4230**

---

The inputted VTHL is already used.

#### **Explanation**

The input value is already used as VTHL.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

Enter the value that is not used as VTHL and retry processing.

## **ssgui4231**

### [ssgui4231](#)

---

The physical disk which is suitable for conditions does not exist.

#### Explanation

There is no suitable physical disk for the input conditions.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Change the input conditions and retry processing.

## **ssgui4233**

### [ssgui4233](#)

---

The physical disk which can be added capacity to the virtual disk does not exist.

#### Explanation

There is no physical disk that can add capacity to the virtual disk.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Register a physical disk in the virtual storage pool to which the virtual disk belongs.  
Alternatively, increase the amount of free space on a registered physical disk.

## **ssgui4236**

### [ssgui4236](#)

---

The physical disk which can constitute the virtual disk does not exist.

#### Explanation

There is no suitable physical disk for the input conditions.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Register a physical disk in the virtual storage pool to which the virtual disk belongs.  
Alternatively, increase the amount of free space on a registered physical disk.

## **ssgui4238**

### [ssgui4238](#)

---

The virtual disk which can be assigned to and released from the virtual target does not exist.

#### Explanation

There is no virtual disk that can be assigned to and released from the virtual target.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Create virtual disks that can be assigned to the virtual target.

## **ssgui4239**

### [ssgui4239](#)

---

This virtual disk cannot be changed VTHL because it is assigned to the other virtual target.

#### Explanation

The virtual disk is already assigned to another virtual target.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Change the VTHL after releasing the virtual disk from the other virtual target.

## **ssgui4240**

### [ssgui4240](#)

---

The same VTHL is already used.

#### Explanation

A virtual disk of the same VTHL is already assigned.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Select another VTHL or change the assigned virtual disk VTHL.

## **ssgui4241**

### **ssgui4241**

---

The number of VTHL to be assigned is insufficient.

#### Explanation

There is not sufficient VTHL to be assigned.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Reduce the number of virtual disks to be assigned or select a smaller VTHL.

## **ssgui4242**

### **ssgui4242**

---

The duplicate VTHL is going to be assigned.

#### Explanation

The VTHL of the virtual disk to be assigned is duplicated.

#### Message type

Information

#### System processing

Does not process requests.

#### User action

Select the virtual disks to avoid VTHL duplication.

## **ssgui4309**

### **ssgui4309**

---

Are you sure you want to delete the virtual enclosure?

#### Explanation

This message confirms whether you want to delete the virtual enclosure.

#### Message type

Confirmation

#### System processing

Waits until the reply button is selected.

#### User action

Select the reply button.

## **ssgui4312**

### **ssgui4312**

---

The virtual enclosure which can be deleted does not exist.

#### **Explanation**

Every virtual enclosure contains a virtual target.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

Delete all the virtual targets that have been created in the virtual enclosure you want to delete.

## **ssgui4317**

### **ssgui4317**

---

The virtual enclosure which is related to the same switch group does not exist.

#### **Explanation**

No virtual enclosure belongs to the same switch group as that of the virtualization switch associated with the selected virtual storage pool.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

In the "View and Create" window, check for any virtual enclosure belonging to the same switch group as that of the virtualization switch associated with the selected virtual storage pool.

## **ssgui4409**

### **ssgui4409**

---

Are you sure you want to delete the virtual target?

#### **Explanation**

This message confirms whether you want to delete the virtual target.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is selected.

#### **User action**

Select the reply button.

## **ssgui4410**

### **ssgui4410**

---

The virtual target which can constitute the redundant configuration with the specified virtual target does not exist.

#### **Explanation**

There is no virtual target that can constitute a redundant configuration with the specified virtual target. Otherwise, a virtual disk is already assigned to the copy destination virtual target.

#### **Message type**

Information

#### **System processing**

Does not process requests.

#### **User action**

Create a virtual disk that can constitute a redundant configuration with the specified virtual target, and then retry processing.

Check whether any virtual disk is already assigned to the copy destination virtual target. If you find any assigned virtual disk, release it from this target. Then, retry processing.

## **ssgui4413**

### **ssgui4413**

---

Are you sure you want to copy the virtual target?

#### **Explanation**

This message confirms whether you want to copy the virtual target.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is selected.

#### **User action**

Select the reply button.

## **ssgui4414**

### **ssgui4414**

---

The number of virtual targets of SCSI command cues exceeds the limitation value of CA. Is processing continued?

#### **Explanation**

This message requests that a virtual disk be allocated, the size of virtual disk space be increased, a virtual target be copied, or migration be started, even though the maximum number of SCSI command queues of a CA has been exceeded.

#### **Message type**

Confirmation

#### **System processing**

Waits until the reply button is clicked.

## User action

If the <OK> button is clicked, disk read or write performance may deteriorate. Consider possible performance degradations before clicking the reply button.

## **ssgui4416**

### [ssgui4416](#)

---

The virtual target which can be deleted does not exist.

## Explanation

At least one virtual disk is allocated to every virtual enclosure.

## Message type

Information

## System processing

Does not process requests.

## User action

Delete all virtual disks that have been allocated to the virtual target you want to delete.

## **ssgui4502**

### [ssgui4502](#)

---

The physical disk which is suitable for conditions does not exist.

## Explanation

There is no suitable physical disk for the input conditions.

## Message type

Information

## System processing

Does not process requests.

## User action

Change the input conditions and retry processing.

## **ssgui4505**

### [ssgui4505](#)

---

"Hold Migration Backup Disk" cannot be released because of indispensability.

## Explanation

If the capacity of a virtual disk to be migrated cannot completely be divided by the MB, "Hold Migration Backup Disk" becomes indispensable and cannot be released.

## Message type

Information

## System processing

"Hold Migration Backup Disk" cannot be released.

## User action

Start the migration with "Hold Migration Backup Disk" checked.

## **ssgui4508**

### [ssgui4508](#)

---

Are you sure you want to start the migration?

## Explanation

This message confirms whether you want to perform migration.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4509**

### [ssgui4509](#)

---

The specified virtual disk has the backup disk.  
Are you sure you want to delete it?

## Explanation

There is a backup disk of previous migration processing on the virtual disk you want to use for performing migration. This message confirms whether you want to delete the backup disk.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4510**

### [ssgui4510](#)

---

Are you sure you want to stop the migration?

## Explanation

This message confirms whether you want to stop migration.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.



#### User action

Select the reply button.

#### **ssgui4511**

##### [ssgui4511](#)

---

Are you sure you want to change the migration?

#### Explanation

This message confirms whether you want to switch the physical disk that constitutes the virtual disk.

#### Message type

Confirmation

#### System processing

Waits until the reply button is selected.

#### User action

Select the reply button.

#### **ssgui4512**

##### [ssgui4512](#)

---

Are you sure you want to restore the migration backup disk?

#### Explanation

This message confirms whether you want to return the physical disk that constitutes the virtual disk to the backup disk.

#### Message type

Confirmation

#### System processing

Waits until the reply button is selected.

#### User action

Select the reply button.

#### **ssgui4513**

##### [ssgui4513](#)

---

Are you sure you want to delete the migration backup disk?

#### Explanation

This message confirms whether you want to delete the backup disk created in migration processing.

#### Message type

Confirmation

#### System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4515**

### [ssgui4515](#)

---

The migration destination virtual storage pool does not exist.

## Explanation

Migration processing cannot be started because there is no migration destination virtual storage pool.

## Message type

Information

## System processing

Does not display the "Select Migration Destination" dialog box.

## User action

In the View and Create window, confirm the migration destination virtual storage pool.

## **ssgui4516**

### [ssgui4516](#)

---

Failed to get the physical disk information.

## Explanation

Failed to acquire the information for the copy (migration, replication, or ACM) source or destination physical disk.

## Message type

Information

## System processing

Does not process requests.

## User action

Collect the necessary data for troubleshooting and contact your Fujitsu engineer (CE or SE).

## **ssgui4518**

### [ssgui4518](#)

---

The migration source virtual disk does not exist.

## Explanation

Migration processing cannot be started because there is no migration source virtual disk.

## Message type

Information

## System processing

Does not process requests.

## User action

Check in the View and Create window whether there is a virtual disk that can be migrated.

## **ssgui4521**

### [ssgui4521](#)

---

It is not in agreement with the real disk storage capacity of a migration place and a migration source.

## Explanation

- When it was specified to not retain a migration backup disk  
The capacity of the migration destination physical disk must be the same as that of the migration source physical disk.
- When it was specified to retain a migration backup disk  
The capacity of the migration destination physical disk must be equal to or greater than that of the migration source physical disk.

## Message type

Information

## System processing

Does not process requests.

## User action

- When it was specified to not retain a migration backup disk  
Match the capacity of the migration destination physical disk with that of the migration source physical disk and then execute migration.
- When it was specified to retain a migration backup disk  
Make the capacity of the migration destination physical disk equal or greater than that of the migration source physical disk and then execute migration.

## **ssgui4522**

### [ssgui4522](#)

---

The information of migration backup disk does not exist.

## Explanation

Migration backup disk list information was not found.

## Message type

Information

## System processing

Does not process requests.

## User action

Check the information on the virtual disk in the View and Create window to see whether the virtual disk is a migration backup disk.

## **ssgui4523**

### [ssgui4523](#)

---

You cannot set the capacity with the selected condition.

## Explanation

The capacity input in the conditions for selecting migration destination physical disks exceeds the total capacity of physical disks to be selected using the selected condition.

## Message type

Information

## System processing

Does not process requests.

## User action

Select another condition when selecting physical disks.

Alternatively, change the capacity.

## **ssgui4524**

### [ssgui4524](#)

---

The physical disk which is in agreement with the selected condition does not exist.

## Explanation

No physical disks matched the selected condition when migration destination physical disks were being selected.

## Message type

Information

## System processing

Does not process requests.

## User action

Select another condition when selecting the physical disks.

## **ssgui4525**

### [ssgui4525](#)

---

After the migration is executed, a virtual disk in the migration destination is encrypted.

Are you sure you want to start the migration?

## Explanation

Confirm if you want to execute the migration processing even though the virtual disk in the migration destination will be encrypted.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4526**

## **ssgui4526**

---

After the migration is executed, a virtual disk in the migration destination is not encrypted.  
Are you sure you want to start the migration?

### **Explanation**

Confirm if you want to execute the migration processing even though the virtual disk in the migration destination will not be encrypted.

### **Message type**

Confirmation

### **System processing**

Waits until the reply button is selected.

### **User action**

Select the reply button.

## **ssgui4527**

## **ssgui4527**

---

The composition condition of recommending it does not suffice for the capacity of a migration source virtual disk.

### **Explanation**

The total capacity of the physical disks that meet the recommended configuration conditions in the migration destination is not sufficient for the capacity of the virtual disk in the migration source. Therefore, the physical disks in the migration destination cannot be selected under the recommended configuration conditions.

### **Message type**

Information

### **System processing**

Moves to the selection screen of the migration destination (physical disks).

### **User action**

Change the configuration condition and select the physical disks.

Alternatively, change the capacity.

## **ssgui4530**

## **ssgui4530**

---

Are you sure you want to stop the replication?

### **Explanation**

This message confirms whether you want to stop replication processing.

### **Message type**

Confirmation

### **System processing**

Waits until the reply button is selected.

#### User action

Select the reply button.

#### **ssgui4540**

##### [ssgui4540](#)

---

Are you sure you want to stop the ACM?

#### Explanation

This message confirms whether you want to stop the backup processing started from the ACM.

#### Message type

Confirmation

#### System processing

Waits until the reply button is selected.

#### User action

Select the reply button.

#### **ssgui4550**

##### [ssgui4550](#)

---

The retrieval item was not found.

#### Explanation

In forward matching, no more names in the copy history list match the input retrieval name.

#### Message type

Information

#### System processing

Waits until the reply button is clicked.

#### User action

Click the reply button.

#### **ssgui4551**

##### [ssgui4551](#)

---

There is no information of copy history.

#### Explanation

No copy history information was found.

#### Message type

Information

#### System processing

Waits until the reply button is clicked.

## User action

Click the reply button.

## **ssgui4560**

### [ssgui4560](#)

---

The VS900 management area does not exist.

## Explanation

No VS900 management area was found.

It is likely that no physical disk is registered in the virtual storage pool.

## Message type

Information

## System processing

Waits until the reply button is clicked.

## User action

Register a physical disk in the virtual storage pool.

## **ssgui4561**

### [ssgui4561](#)

---

All the VS900 management areas have been created.

## Explanation

No more VS900 management areas can be created because VS900 management areas have been created for all CA ports.

## Message type

Information

## System processing

Waits until the reply button is clicked.

## User action

Click the reply button.

## **ssgui4562**

### [ssgui4562](#)

---

The VS900 management area which can be deleted does not exist.

## Explanation

No VS900 management area can be deleted because no management area has been created, or management areas are in use in copy processing.

## Message type

Information

## System processing

Waits until the reply button is clicked.

#### User action

Click the reply button.

#### **ssgui4563**

##### [ssgui4563](#)

---

Are you sure you want to delete the VS900 management area?

#### Explanation

This message requests confirmation to delete the VS900 management area.

#### Message type

Information

#### System processing

Waits until the reply button is clicked.

#### User action

Click the reply button.

#### **ssgui4566**

##### [ssgui4566](#)

---

The physical disk where the VS900 management area can be created does not exist.

#### Explanation

There is no physical disk on which a VS900 management area can be created.

It is likely that no physical disk is registered in the virtual storage pool.

#### Message type

Information

#### System processing

Waits until the reply button is clicked.

#### User action

Register a physical disk in the virtual storage pool.

#### **ssgui4567**

##### [ssgui4567](#)

---

Failed to create the VS900 management area.

#### Explanation

A VS900 management area could not be created.

A list of CA ports in which no VS900 management area could be created is displayed, with detailed error information.

#### Message type

Error



## System processing

Waits until the reply button is clicked.

## User action

Select a CA port from the list of CA ports in which no VS900 management area could be created and check the detailed error information.

## **ssgui4568**

### [ssgui4568](#)

---

Failed to delete the VS900 management area.

## Explanation

A VS900 management area could not be deleted.

A list of CA ports from which a VS900 management area could not be deleted is displayed, with detailed error information.

## Message type

Error

## System processing

Waits until the reply button is clicked.

## User action

Select a CA port from the CA ports from which a VS900 management area could not be deleted and check the detailed error information.

## **ssgui4599**

### [ssgui4599](#)

---

The information on the copy status is being acquired.

## Explanation

Information cannot be updated or manipulated while copy status is being acquired at every monitoring period set in the operating environment window.

## Message type

Information

## System processing

Information cannot be updated or manipulated until the acquisition of copy status is completed.

## User action

Wait a while and then execute the processing before display of this message.

## **ssgui4902**

### [ssgui4902](#)

---

Are you sure you want to stop the VSC-Engine?

## Explanation

This message confirms whether you want to stop the engine program running on the virtualization switch.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4903**

### [ssgui4903](#)

---

Are you sure you want to recreate the composition data?

## Explanation

This message requests confirmation to integrate the virtualization switch configuration information stored on the admin server with the virtualization switch configuration information stored in VSC Engine.

## Message type

Confirmation

## System processing

Waits until the reply button is clicked.

## User action

Click the reply button.

## **ssgui4905**

### [ssgui4905](#)

---

Are you sure you want to change the tracelevel?

## Explanation

This message confirms whether you want to change the level of trace collected by the engine program running on the virtualization switch.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## **ssgui4912**

### [ssgui4912](#)

---

Are you sure you want to change the BOXID?

## Explanation

This message confirms whether you want to change the BOXID.

## Message type

Confirmation

## System processing

Waits until the reply button is selected.

## User action

Select the reply button.

## ssgui4914

### ssgui4914

---

A virtual enclosure does not exist in the virtualization switch.

## Explanation

The virtualization switch is not associated with the virtual enclosure specified.

## Message type

Information

## System processing

Does not process requests.

## User action

BOXID can be edited only when the virtual enclosure is associated with a virtualization switch. Check the specified virtual enclosure.

## E.3 VSC Engine

---

This appendix describes the VSC Engine codes.

Table E.3 List of VSC Engine Codes

Code (Hexadecimal)	Explanation	Action
0001	VSC Engine received an undefined command code.	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version number of firmware. Upon confirming "0102", see " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0002	VSC Engine detected the following errors in the command received: <ul style="list-style-type: none"><li>• Command length</li><li>• Command format</li></ul>	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version number of firmware. Upon confirming "0102", see " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0003	VSC Engine detected the following error in the command received: <ul style="list-style-type: none"><li>• Command version</li></ul>	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version number of firmware. Upon confirming "0102", see " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0004	VSC Engine detected an argument error in the command received.	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version

Code (Hexadecimal)	Explanation	Action
		number of firmware. Upon confirming "0102", see <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0010	VSC Engine received a command with an invalid transaction ID.	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version number of firmware. Upon confirming "0102", see <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0012	VSC Engine received events that exceeded the maximum number allowed within a transaction.	Confirm that the first 4 digits in the Version field of firmware in the "Maintenance" window are "0102". If they are not "0102", ask the customer engineer (CE) to change the version number of firmware. Upon confirming "0102", see <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0020	VSC Engine received an I/O error report from storage while processing the command received.	An error has occurred in storage containing the physical disk registered in the virtual storage pool. Investigate the storage.
0021	VSC Engine received an error report from XPathOS while processing the command received.	Check for any error in the virtualization switch.  If no error occurred, see <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine.
0022	Memory assignment failed while VSC Engine was processing the command received.	See <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine.
0023	VSC Engine detected an error (internal conflict) while processing the command received.	See <a href="#">"6.3 Collecting Data"</a> to collect investigation data about VSC Engine.
0030	VSC Engine failed to detect the specified physical disk.	Confirm that the physical disk specified in "Register Physical Disk" or "Create Virtual Disk" is correct.  See <a href="#">"3.4.1.1 Using the zoning function of a virtualization switch"</a> to confirm that zoning between the virtual initiator of the virtualization switch and the storage is correct. Make sure that the WWN for the virtual initiator of any other virtualization switch is not registered, and that the WWN of the channel adaptor (CA) connected to the other virtualization switch is not registered.
0031	VSC Engine attempted to perform I/O operation on the specified physical disk, but storage was not ready.	Confirm that the storage containing the physical disk specified in "Register Physical Disk" or "Create Virtual Disk" is turned on, and that the FC cable from the virtualization switch to storage is correctly connected.  When using the host table setting (affinity setting), confirm that the WWNs for the virtual initiator of the virtualization switch registered to storage and zoning are correct. (See <a href="#">"3.4.1.2 Using the host table settings mode of ETERNUS and GR."</a> )
0032	The specified physical disk is storage not supported by VSC Engine.	Confirm that the physical disk specified in "Register Physical Disk" or "Create Virtual Disk" is in VSC Engine-supported storage.
0033	VSC Engine attempted to perform I/O operation on the specified physical disk, but Busy status was returned from storage.	Busy status was returned from storage containing the physical disk specified in "Register Physical Disk" or "Create Virtual Disk".

Code (Hexadecimal)	Explanation	Action
		Wait a while and retry operation.
0044	VSC Engine detected an error in the transaction sequence.  (An attempt to manipulate the object with the specified transaction ID failed.)	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0045	VSC Engine detected a communication error while communicating with a remote VSC Engine in redundant configuration via a network.	Confirm that the virtualization switch constituting the redundant configuration is turned on. Also, check for any problems, such as disconnected Ethernet cable.
0046	In a redundant configuration, one VSC Engine detected that its version is inconsistent with that of the other VSC Engine.	Referring to " <a href="#">6.3 Collecting Data</a> ", collect investigation data about VSC Engine.
0050	VSC Engine was blocked for some reason.	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine.  Then, turn on the virtualization switch.
0110	VSC Engine detected the following condition while checking the storage connection:  <ul style="list-style-type: none"> <li>• Detected more channel adapters than those allowed in storage connectable to the virtualization switch.</li> </ul>	For the number of channel adapters of storage connectable to a virtualization switch, see " <a href="#">D.3 Storage Connected to a Virtualization Switch</a> ."  Review the system configuration.
0200	VSC Engine detected the following error while creating a virtual target:  <ul style="list-style-type: none"> <li>• The specified WWN is reserved by VSC Engine. (It is not available to the user.)</li> </ul>	Check whether the first four digits in the firmware version column in the "Maintenance" window are "0102". If the digits are not "0102", ask your Fujitsu engineer (CE) to change the firmware version. If the digits are "0102", see " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0201	VSC Engine detected the following error while creating a virtual target:  <ul style="list-style-type: none"> <li>• The specified WWN is already assigned to the virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0202	VSC Engine detected the following condition while creating a virtual target:  <ul style="list-style-type: none"> <li>• An attempt is made to create more virtual targets than allowed in a virtual enclosure.</li> </ul>	For the number of virtual targets that can be created in a virtual enclosure, see " <a href="#">D.1 Virtual Storage Resources</a> ".
0203	VSC Engine detected the following condition while creating a virtual target:  <ul style="list-style-type: none"> <li>• An attempt was made to create more virtual targets than can be created in a virtualization switch.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the number of virtual targets that the virtualization switch can create.
0300	VSC Engine detected the following error while creating a virtual disk:  <ul style="list-style-type: none"> <li>• The specified virtual disk already exists.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0301	VSC Engine detected the following error while creating a virtual disk:  <ul style="list-style-type: none"> <li>• The RAID type of physical disk specified as a component configuring the virtual</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
	disk and that of the actual physical disk do not match.	
0302	<p>VSC Engine detected the following error while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The specified virtual disk capacity and total capacity of all physical disks specified to constitute the virtual disk do not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0303	<p>VSC Engine detected the following conditions while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The number of physical disks configuring the virtual disk exceeded the maximum number.</li> <li>• The number of extents configuring the virtual disk exceeded the maximum number.</li> </ul>	<p>See "<a href="#">D.1 Virtual Storage Resources</a>" for the maximum numbers and extents of physical disks that constitute a virtual disk.</p> <p>Change the physical disks configuring the virtual disk.</p>
0305	<p>VSC Engine detected the following error while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The number of mirrors specified as components configuring the virtual disk exceeded the specified value.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0306	<p>VSC Engine detected the following error while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The number of mirrors specified as components configuring the virtual disk and that of the actually specified physical disks do not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0307	<p>VSC Engine detected the following error while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The area of the physical disk specified as components configuring the virtual disk is already assigned to another one.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0308	<p>VSC Engine detected the following condition while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• An attempt was made to create more virtual disks than can be created.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the number of virtual disks that can be created.
0309	<p>VSC Engine detected the following condition while creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• The number of multi-paths connectable to one virtual disk exceeded the maximum number.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the number of multi-paths of a virtual disk that the virtualization switch can create.
0310	<p>VSC Engine detected the following condition while checking the physical disks and creating a virtual disk:</p> <ul style="list-style-type: none"> <li>• An attempt was made to register more physical disks than the number of physical</li> </ul>	For the number of physical disks that can be used by a virtualization switch, see " <a href="#">D.1 Virtual Storage Resources</a> ".

Code (Hexadecimal)	Explanation	Action
	disks that can be registered with one virtualization switch.	
0320	VSC Engine detected the following error while checking the specified WWN: <ul style="list-style-type: none"> <li>• There is no virtual target with the specified WWN.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0400	VSC Engine detected the following error while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0401	VSC Engine detected the following errors while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• The specified virtualization switch does not exist.</li> <li>• There is no redundant configuration with the specified virtualization switch.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0402	VSC Engine detected the following error while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• The number of shared information items of the virtual disk is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0403	VSC Engine detected the following error while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• All composition data held by each of the multiple virtualization engines, that constitute the redundant configuration, does not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0404	VSC Engine detected the following condition while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
0405	VSC Engine detected the following condition while setting shared information of the virtual disk: <ul style="list-style-type: none"> <li>• The specified virtual disk cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	Wait for a while and then perform the operation. Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.
0600	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>• The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0601	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>• The specified virtual disk is already assigned to another virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
0602	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>The specified virtual target does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0603	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>Another virtual disk is already assigned to the specified virtual target LUN.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0604	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>The specified LUN is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " collect investigation data about VSC Engine, VSC Manager, and the admin client.
0605	VSC Engine detected the following condition while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>An attempt was made to assign more virtual disks than the maximum number assignable to the specified virtual target.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " to check the number of virtual disks assignable to a virtual target.
0607	VSC Engine detected the following error while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>The backup disk created in migration processing is specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
0608	VSC Engine detected the following condition while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>The specified virtual disk cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	Wait a few minutes and then perform the operation. Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.
0609	VSC Engine detected the following condition while assigning the virtual disk to the virtual target: <ul style="list-style-type: none"> <li>The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
1100	VSC Engine detected the following error while adding capacity to the virtual disk: <ul style="list-style-type: none"> <li>The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1102	VSC Engine detected the following error while adding capacity to the virtual disk: <ul style="list-style-type: none"> <li>After adding capacity, that of the virtual disk and the total capacity of all physical disks configuring the virtual disk do not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1103	VSC Engine detected the following conditions while adding capacity to the virtual disk: <ul style="list-style-type: none"> <li>The number of physical disks configuring the virtual disk exceeded the maximum number.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the maximum numbers of physical disks and extents that constitute a virtual disk.



Code (Hexadecimal)	Explanation	Action
	<ul style="list-style-type: none"> <li>The number of extents configuring the virtual disk exceeded the maximum number.</li> </ul>	
1104	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>The number of physical disks configuring the virtual disk added to increase the capacity and information for the physical disks do not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1106	<p>VSC Engine detected the following error while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>The number of mirrors specified as components configuring the virtual disk and that of the actually specified physical disks do not match.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1107	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>An error was detected after adding capacity and while changing information for the virtual disk.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1108	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>An error was detected while information about the virtual disk before capacity was added was being deleted.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
1109	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>The number of multi-paths exceeded that connectable to one virtual disk.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the number of multi-paths of a virtual disk that the virtualization switch can create.
1110	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
1111	<p>VSC Engine detected the following condition while adding capacity to the virtual disk:</p> <ul style="list-style-type: none"> <li>The specified virtual disk cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	<p>Wait for a while and then perform the operation.</p> <p>Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.</p>
2100	<p>VSC Engine detected the following error while deleting virtual disks from the virtual target:</p> <ul style="list-style-type: none"> <li>The specified virtual target does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
2101	<p>VSC Engine detected the following error while deleting virtual disks from the virtual target:</p> <ul style="list-style-type: none"> <li>A specified virtual disk does not exist in the specified virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
2102	VSC Engine detected the following condition while deleting virtual disks from the virtual target: <ul style="list-style-type: none"> <li>The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
2300	VSC Engine detected the following error while deleting the virtual disk: <ul style="list-style-type: none"> <li>The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
2301	VSC Engine detected the following error while deleting the virtual disk: <ul style="list-style-type: none"> <li>The specified virtual disk is assigned to the virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
2302	VSC Engine detected the following condition while deleting the virtual disk: <ul style="list-style-type: none"> <li>The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
2303	VSC Engine detected the following error while deleting the virtual disk: <ul style="list-style-type: none"> <li>The specified virtual disk is assigned to a virtual target on another virtualization switch constituting a redundant configuration.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
2400	VSC Engine detected the following error while deleting the virtual target: <ul style="list-style-type: none"> <li>The specified virtual target does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
2401	VSC Engine detected the following error when deleting the virtual target: <ul style="list-style-type: none"> <li>A virtual disk is still assigned to the specified virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3100	VSC Engine detected the following errors when starting migration or replication: <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> <li>The virtual disk specified as the replication source does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3101	VSC Engine detected the following errors when starting migration or replication: <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> <li>The virtual disk specified as the replication destination does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3102	VSC Engine detected the following error when starting migration or replication:	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
	<ul style="list-style-type: none"> <li>The migration destination is incorrectly specified.</li> </ul>	
3103	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The processing code is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3104	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The priority is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3105	<p>VSC Engine detected the following condition when starting migration or replication:</p> <ul style="list-style-type: none"> <li>No session ID was assigned.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3106	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>Migration or replication with the specified session ID already exists.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3107	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The replication source virtual disk and replication destination virtual disk are the same.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3108	<p>VSC Engine detected the following conditions when starting migration or replication:</p> <ul style="list-style-type: none"> <li>Failed to associate the source and destination of migration.</li> <li>Failed to associate the source and destination of replication.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3109	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The replication destination virtual disk is already assigned to the virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3110	<p>VSC Engine detected the following conditions when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The area of the migration destination overlaps with that of the destination of other migration or replication.</li> <li>The area of replication destination overlaps with that of the destination of other migration or replication.</li> <li>Another replication is operating in the migration conversion destination area.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3111	<p>VSC Engine detected the following condition when starting migration or replication:</p> <ul style="list-style-type: none"> <li>Failed to create a work virtual disk for migration or replication.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
3112	<p>VSC Engine detected the following error when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The specified session does not exist in migration or replication.</li> </ul>	<p>See "<a href="#">6.3 Collecting Data</a>" to collect investigation data about VSC Engine, VSC Manager, and the admin client.</p>
3113	<p>VSC Engine detected the following condition when starting migration or replication:</p> <ul style="list-style-type: none"> <li>A conflict was detected in internal management information.</li> </ul>	<p>See "<a href="#">6.3 Collecting Data</a>" to collect investigation data about VSC Engine, VSC Manager, and the admin client.</p>
3114	<p>VSC Engine detected the following conditions when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The virtual disk specified as the migration source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> <li>The virtual disk specified as the replication source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	<p>Wait a few minutes and then perform the operation.</p> <p>Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.</p>
3115	<p>VSC Engine detected the following conditions when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The storage containing the physical disk specified as the migration destination is not ready.</li> <li>The virtual disk specified as the replication source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	<p>Wait for a while and then perform the operation.</p> <p>Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.</p>
3116	<p>VSC Engine detected the following condition when starting migration or replication:</p> <ul style="list-style-type: none"> <li>The physical disks configuring the virtual disk before migration and those specified as the migration destination do not have matching path connection configurations. For example, paths from all virtualization switches constituting a redundant configuration are connected to the physical disks configuring the virtual disk before migration, but are connected to the virtual disks after migration from only some parts of the virtualization switches.</li> </ul>	<p>Check the system configuration.</p> <p>The path configuration (FC cable connection between the virtualization switch and storage) of the physical disks configuring the virtual disk before migration and that of the physical disks for the migration destination must be identical. The path connection configurations must be identical (including the virtualization switch constituting the redundant configuration).</p>
3117	<p>VSC Engine detected the following condition when starting migration or replication:</p> <ul style="list-style-type: none"> <li>An attempt was made to perform more migration or replication processes than simultaneously possible.</li> </ul>	<p>See "<a href="#">D.1 Virtual Storage Resources</a>" for simultaneously performing multiple copy operations.</p>
3118	<p>VSC Engine detected the following condition when starting migration or replication:</p>	<p>See "<a href="#">6.3 Collecting Data</a>" to collect investigation data about VSC Engine, VSC Manager, and the admin client.</p>

Code (Hexadecimal)	Explanation	Action
	<ul style="list-style-type: none"> <li>The specified migration process failed to exclude other migration or replication processes.</li> </ul>	
3119	<p>The VSC engine has detected the following status when starting migration or replication:</p> <p>An attempt was made to execute a migration or replication process in excess of the maximum simultaneous multiple processes for one virtual disk.</p>	<p>The maximum simultaneous multiple processes for one virtual disk is 4.</p> <p>Check the number of migration and/or replication processes simultaneously executed.</p>
3200	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3201	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3202	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The migration destination is incorrectly specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3203	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The disk type of virtual disk specified for migration is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3204	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The capacity of the physical disk specified as the migration destination is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3205	<p>VSC Engine detected the following error when starting migration:</p> <ul style="list-style-type: none"> <li>The configuration of the physical disk specified as the migration destination is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3206	<p>VSC Engine detected the following conditions in the virtual disk configuration after starting migration:</p> <ul style="list-style-type: none"> <li>The number of physical disks configuring the virtual disk exceeded the maximum number.</li> <li>The number of extents configuring the virtual disk exceeded the maximum number of those of physical disks configuring the virtual disk.</li> </ul>	See " <a href="#">D.1 Virtual Storage Resources</a> " for the maximum number and extents of physical disks configuring a virtual disk.

Code (Hexadecimal)	Explanation	Action
3300	<p>VSC Engine detected the following errors while acquiring the status of migration or replication:</p> <ul style="list-style-type: none"> <li>• The virtual disk specified for migration does not exist.</li> <li>• The virtual disk specified as the replication source does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3301	<p>VSC Engine detected the following errors while acquiring the status of migration or replication:</p> <ul style="list-style-type: none"> <li>• The virtual disk specified for migration does not exist.</li> <li>• The virtual disk specified as the replication destination does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3302	<p>VSC Engine detected the following error while acquiring the status of migration or replication:</p> <ul style="list-style-type: none"> <li>• The migration destination is incorrectly specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3400	<p>VSC Engine detected the following errors while canceling migration or replication:</p> <ul style="list-style-type: none"> <li>• The virtual disk specified for migration does not exist.</li> <li>• The virtual disk specified as the replication source does not exist. VTLUN of the migration source does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3401	<p>VSC Engine detected the following errors while canceling migration or replication:</p> <ul style="list-style-type: none"> <li>• The virtual disk specified for migration does not exist.</li> <li>• The virtual disk specified as the replication destination does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3402	<p>VSC Engine detected the following error while canceling migration or replication:</p> <ul style="list-style-type: none"> <li>• The migration destination is incorrectly specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3403	<p>VSC Engine detected the following error while canceling migration or replication:</p> <ul style="list-style-type: none"> <li>• The processing code is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3500	<p>VSC Engine detected the following errors when stopping access from the host of the virtual disk:</p> <ul style="list-style-type: none"> <li>• The virtual disk specified for migration does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
	<ul style="list-style-type: none"> <li>The virtual disk specified as the replication source does not exist. VTLUN of the migration source does not exist.</li> </ul>	
3501	<p>VSC Engine detected the following conditions when stopping access from the host of the virtual disk:</p> <ul style="list-style-type: none"> <li>The virtual disk specified as the migration source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> <li>The storage containing the physical disk specified as the migration destination is not ready.</li> <li>The virtual disk specified as the replication source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> <li>The virtual disk specified as the replication source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	<p>Wait a few minutes and then perform the operation.</p> <p>Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.</p>
3600	<p>VSC Engine detected the following errors while restarting access from the host of the virtual disk:</p> <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> <li>The virtual disk specified as the replication source does not exist. VTLUN of the migration source does not exist.</li> </ul>	<p>See "<a href="#">6.3 Collecting Data</a>" to collect investigation data about VSC Engine, VSC Manager, and the admin client.</p>
3601	<p>VSC Engine detected the following error while restarting access from the host of the virtual disk:</p> <ul style="list-style-type: none"> <li>The specified migration process failed to exclude other migration or replication processes.</li> </ul>	<p>Wait a few minutes and then perform the operation.</p> <p>If no improvement results, see "<a href="#">6.3 Collecting Data</a>" to collect investigation data about VSC Engine, VSC Manager, and the admin client.</p>
3602	<p>VSC Engine detected the following conditions while restarting access from the host of the virtual disk:</p> <ul style="list-style-type: none"> <li>The virtual disk specified as the migration source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> <li>The storage containing the physical disk specified as the migration destination is not ready.</li> <li>The virtual disk specified as the replication source cannot be used because the status</li> </ul>	<p>Wait for a while and then perform the operation.</p> <p>Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.</p>

Code (Hexadecimal)	Explanation	Action
	<p>of physical disks configuring the virtual disk is being checked.</p> <ul style="list-style-type: none"> <li>The virtual disk specified as the replication source cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	
3702	<p>VSC Engine detected the following error while releasing the synchronized state:</p> <ul style="list-style-type: none"> <li>The specified session ID cannot be specified because the session was started from a transaction server.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3703	<p>VSC Engine detected the following error while releasing the synchronized state:</p> <ul style="list-style-type: none"> <li>The migration destination is incorrectly specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3704	<p>VSC Engine detected the following error while releasing the synchronized state:</p> <ul style="list-style-type: none"> <li>The specified session ID is currently being synchronized.</li> </ul>	Perform the operation after being synchronized.
3800	<p>VSC Engine detected the following error while finishing (detaching) migration:</p> <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3801	<p>VSC Engine detected the following error while finishing (detaching) migration:</p> <ul style="list-style-type: none"> <li>The virtual disk specified for migration does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3802	<p>VSC Engine detected the following error while finishing (detaching) migration:</p> <ul style="list-style-type: none"> <li>The migration destination is incorrectly specified.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3803	<p>VSC Engine detected the following condition while finishing (detaching) migration:</p> <ul style="list-style-type: none"> <li>An error was detected from the virtual disk specified for migration while information for the physical disks configuring the virtual disk was being registered with the migration destination physical disks.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3804	<p>VSC Engine detected the following condition while finishing (detaching) migration:</p> <ul style="list-style-type: none"> <li>An error was detected from the virtual disk specified for migration while information for the physical disk configuring the virtual disk before migration was being deleted.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.



Code (Hexadecimal)	Explanation	Action
3805	VSC Engine detected the following condition while finishing (detaching) migration: <ul style="list-style-type: none"> <li>The specified session is still synchronized.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3900	VSC Engine detected the following error: <ul style="list-style-type: none"> <li>There is no virtual disk with the specified virtual disk number.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3901	VSC Engine detected the following error: <ul style="list-style-type: none"> <li>The virtual disk number (before being changed) is incorrect.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3902	VSC Engine detected the following error: <ul style="list-style-type: none"> <li>A virtual disk with the virtual disk number (after being changed) already exists.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3903	VSC Engine detected the following condition: <ul style="list-style-type: none"> <li>The specified virtual disk is in the process of migration or replication.</li> </ul>	Perform the operation after migration or replication is completed.
3904	VSC Engine detected the following error: <ul style="list-style-type: none"> <li>The specified virtual disk is already assigned to a virtual target of another virtualization switch constituting a redundant configuration.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3906	VSC Engine detected the following error: <ul style="list-style-type: none"> <li>The specified virtual disk is assigned to the virtual target.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
3907	VSC Engine detected the following condition: <ul style="list-style-type: none"> <li>The specified virtual disk cannot be used because the status of physical disks configuring the virtual disk is being checked.</li> </ul>	Wait a few minutes and then perform the operation. Physical disks configuring the virtual disk may not be ready for such reason as the storage configuring the virtual disk not being turned on. Confirm that the storage containing the physical disks is turned on and that the FC cable from the virtualization switch to the storage is correctly connected.
3C00	VSC Engine detected the following condition: The VS900 management area with the specified ID does not exist.	Referring to " <a href="#">6.3 Collecting Data</a> ", collect investigation data concerning VSC Engine and VSC Manager.
3C01	VSC Engine detected the following condition: The VS900 management area with the specified ID already exists.	Referring to " <a href="#">6.3 Collecting Data</a> ", collect investigation data concerning VSC Engine and VSC Manager.
3C02	VSC Engine detected the following condition: The specified physical disk area has already been allocated to another virtual disk or VS900 management area.	Referring to " <a href="#">6.3 Collecting Data</a> ", collect investigation data concerning VSC Engine and VSC Manager.
3C03	VSC Engine detected the following condition: The VS900 management area to be deleted is being used in a copy session.	Perform the operation after migration processing or replication processing is complete.
3C04	VSC Engine detected the following condition:	For a session in which a VS900 management area cannot be reallocated, create another VS900 management area in the same

Code (Hexadecimal)	Explanation	Action
	To delete a VS900 management area, an attempt was made to reallocate a VS900 management area but no usable VS900 management area was found.	switch group as that of the specified VS900 management area, then execute the command again.  For a session in which a VS900 management area can be reallocated, create another VS900 management area in the same switch group as that of the specified VS900 management area, then execute the command again.
3C05	VSC Engine detected the following condition:  Reallocating a VS900 management area to delete a VS900 management area failed.	Referring to " <a href="#">6.3 Collecting Data</a> ", collect investigation data concerning VSC Engine and VSC Manager.
4400	VSC Engine detected the following error while acquiring a list of virtual disks:  <ul style="list-style-type: none"> <li>• The specified virtual target does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
4600	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
4700	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• The specified virtual disk does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5100	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• The specified transaction already exists.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5101	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• An attempt was made to generate more transactions than the maximum number that can be generated.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5300	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• The specified transaction does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5301	VSC Engine detected the following condition and was blocked:  <ul style="list-style-type: none"> <li>• An error occurred while composition data was being reflected in the virtualization switch.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5400	VSC Engine detected the following error:  <ul style="list-style-type: none"> <li>• The specified transaction does not exist.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
5401	VSC Engine detected the following condition:  <ul style="list-style-type: none"> <li>• An error occurred while an operation was being rolled back.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
6100	VSC Engine detected the following condition:  <ul style="list-style-type: none"> <li>• An error was reported from XPathOS.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
6101	VSC Engine detected the following condition:  <ul style="list-style-type: none"> <li>• No reply was returned from XPathOS after waiting the specified period of time.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
6200	VSC Engine detected the following condition:  <ul style="list-style-type: none"> <li>• Failed to perform command processing.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

Code (Hexadecimal)	Explanation	Action
6201	VSC Engine detected the following condition: <ul style="list-style-type: none"> <li>• An error occurred at command processing startup.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.
6400	VSC Engine detected the following condition and was blocked: <ul style="list-style-type: none"> <li>• An error occurred while composition data was being reflected in the virtualization switch.</li> </ul>	See " <a href="#">6.3 Collecting Data</a> " to collect investigation data about VSC Engine, VSC Manager, and the admin client.

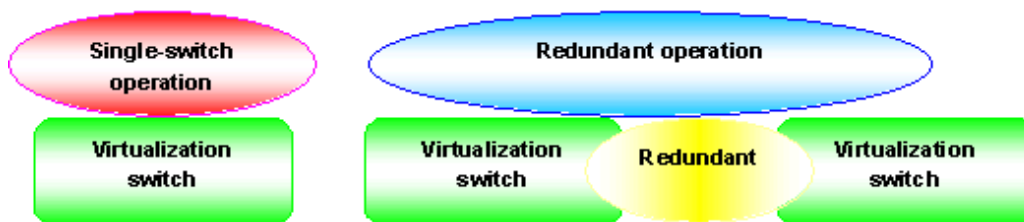
# Appendix F Single-Switch Operation of Virtualization Switch

To secure high reliability of transaction processing, virtualization switches are used in a redundant configuration for virtual storage operation as a standard. However, depending on the transaction server conditions (such as the number of mounted HBAs or a lack of availability for multipath operation), a redundant configuration of virtualization switches may be impossible. In such a special case only, one of the virtualization switch is permitted to implement virtual storage operation.

This appendix explains how to implement virtual storage operation with a single virtualization switch.

## F.1 Overview of Single-Switch Operation of Virtualization Switch

The term "single-switch operation of a virtualization switch" means an operation mode in which virtual storage operation is performed with a single virtualization switch.



### Note

In single-switch operation mode, the transaction server and virtual disk are connected through a single access path. If an accident occurs on the path, the transaction server cannot continue access. In addition, various restrictions apply when virtual storage operation is performed. Therefore, in order to use single-switch operation, you need to carefully examine in advance the relevant factors.

To perform single-switch operation, the virtualization switch needs to be set up for single operation. Contact your Fujitsu engineer (CE) in advance.

## F.2 System Configuration for Single-switch Operation

This section explains the system configuration required for single-switch operation.

A virtualization switch running in single-switch operation mode and virtualization switches running in redundant operation mode can coexist in a system. However, the same virtualization switch cannot be used in both operation modes.

Figure F.1 System that mixes both single-switch operation and redundant operation

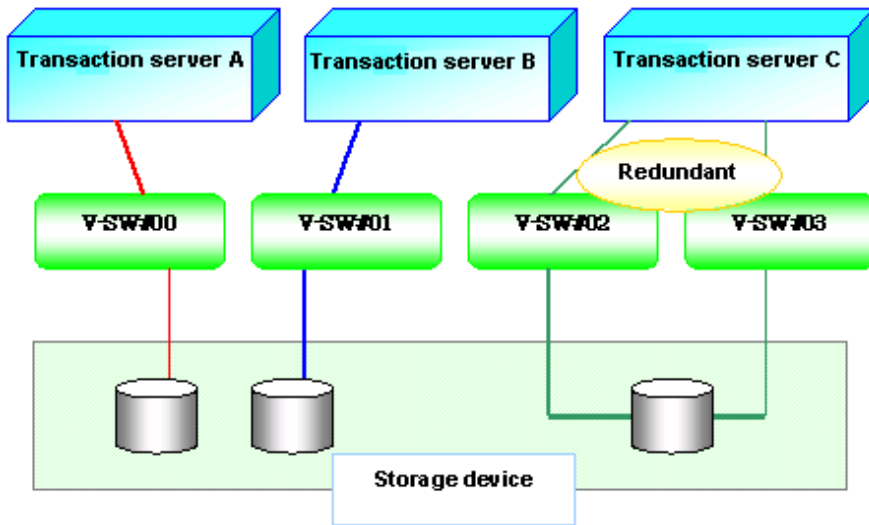
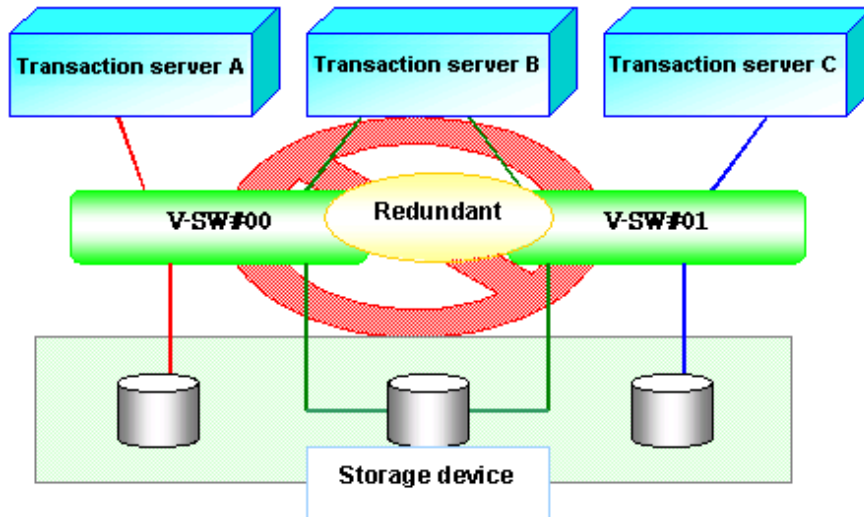


Figure F.2 Unworkable virtualization switch configuration



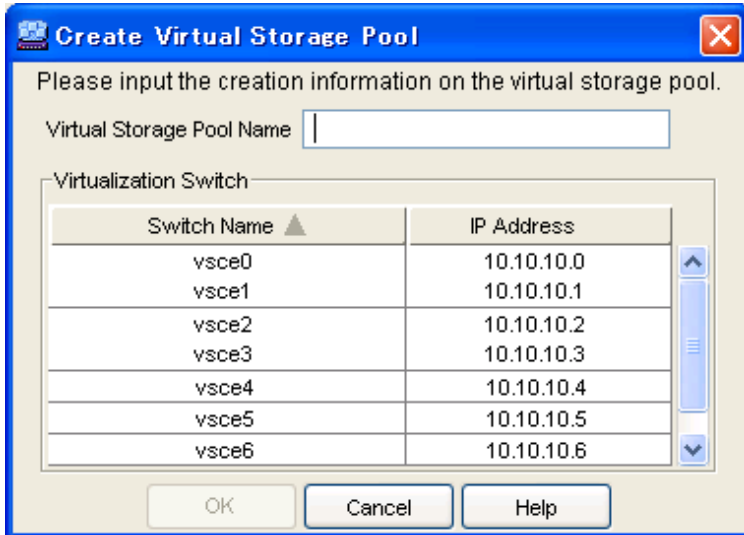
## F.3 Creating Virtual Storage Resources

The method for creating virtual storage resources in single-switch operation mode is the same as that explained in "Chapter 5 Operations". This section mainly explains what should be noted when you create virtual storage resources.

### F.3.1 Creating virtual storage pools

To create a virtual storage pool, you need to select a virtualization switch group to be associated with the virtual storage pool to be created. When creating a virtual storage pool that is used in single-switch operation mode, select a virtualization switch pool represented by a single virtualization switch.

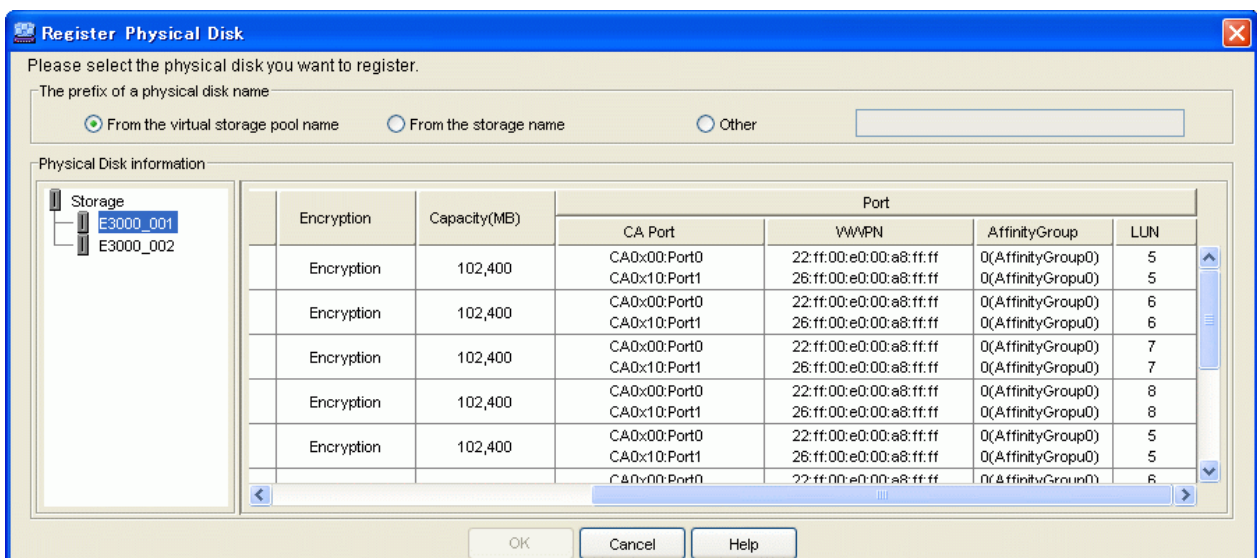
Figure F.3 Image of specifying virtual storage pools and virtualization switch groups

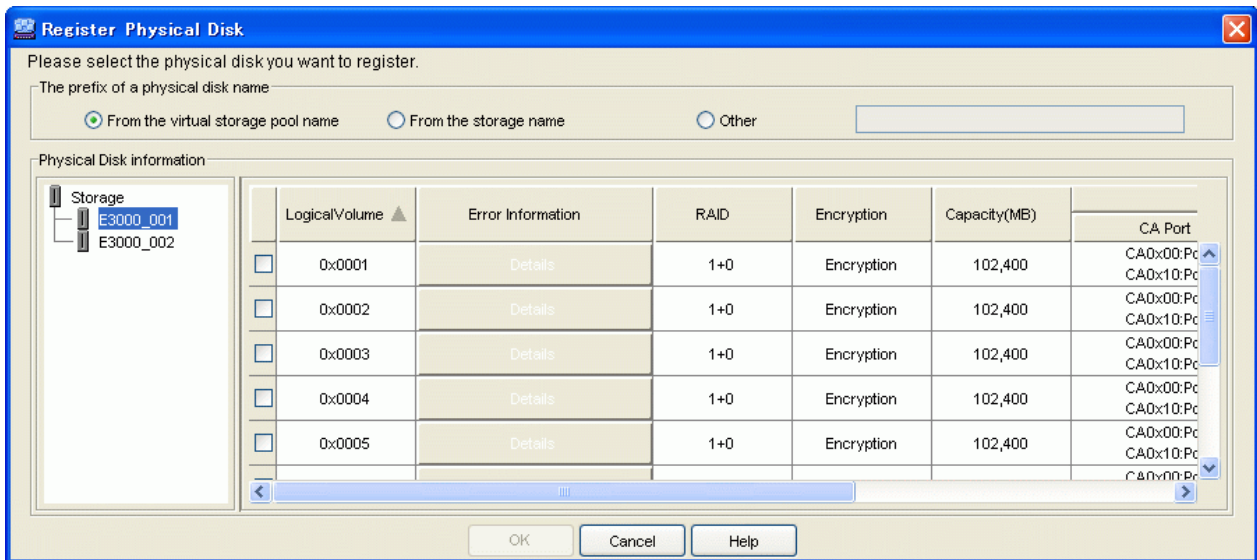


### F.3.2 Registering physical disks

In single-switch operation mode, register physical disks in accordance with the procedure explained in "5.1.2.3 Registering individual physical disks".

A physical disk that is recognized by a virtualization switch associated with a virtual storage pool is displayed as a physical disk that can be registered in the "Register Physical Disk" dialog box. Depending on the storage device setup status, information on multiple ports may be displayed as port information on the connected physical disk. Note that this means the physical disk is also recognized by another virtualization switch.

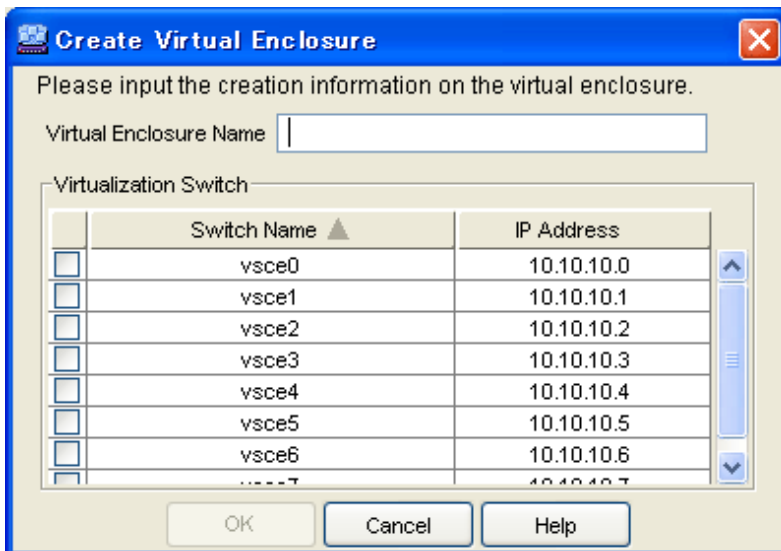




### F.3.3 Creating virtual enclosures

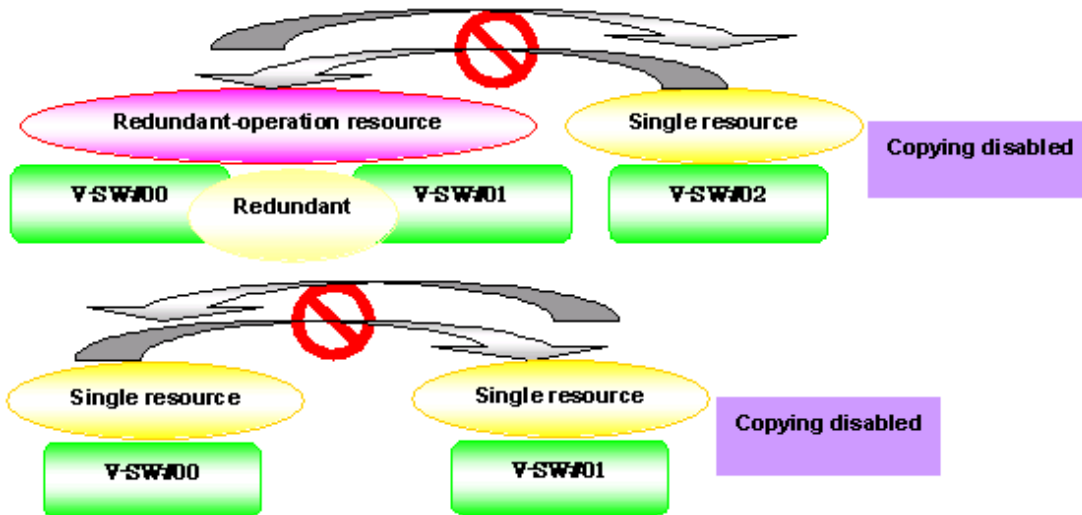
To create a virtual enclosure, you need to select the group of the virtualization switch that controls the virtual enclosure to be created. When creating a virtual enclosure that is used in single-switch operation mode, select a virtualization switch pool represented by a single virtualization switch.

More than one virtualization switch group can be selected for a virtual enclosure. However, Fujitsu recommends not mixing single-switch-operation and redundant-operation virtualization switch groups to prevent confusion among operation modes.



## F.4 Using the Copy Function

The virtual storage copy function (migration/replication) cannot be executed between single operation environments or between single-switch operation and redundant operation environments.



## F.5 Changing the Operation Mode

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To change the operation mode of a virtualization switch, delete in advance all the virtual storage resources under control of the relevant virtualization switch.



# Glossary

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## Automatic switching function

---

When migration is performed without retaining any backup disk, this function automatically switches physical disks immediately after data is copied to a destination physical disk.

## Backup disk

---

A source physical disk used and retained for recovery purpose during migration.

## BOX-ID

---

Information that identifies a virtual enclosure for recognition by a SCSI interface.

## Commit script

---

A script executed by VSC Manager when saving the configuration information each time the resource status of virtual storage is changed and configuration information is updated.

## Configuration information

---

A database that stores the relationship between resources in virtual storage, and which is the most important information of virtual storage. VSC Manager (which manages all configuration information) constantly checks the consistency between this information and each item of configuration information stored in a virtualization switch.

## Copy log

---

A file that records information on the start, stop, execution result, and other aspects of migration or replication.

## Migration

---

A function that copies a physical disk that makes up a virtual disk(s) to another physical disk. The virtualization switch copies data from the source to the destination disk during migration.

## Migration completion instruction

---

Refers to switching physical disks after data is copied to a destination physical disk.

## Number of SCSI command queues

---

The number of SCSI commands that a channel adapter (CA) for storage unit can accept concurrently

## Physical disk

---

A logical unit (LUN) allocated from a disk unit. A physical disk is a storage medium that actually stores data and an element that makes up a virtual disk.

## Physical disk registration

---

Refers to adding a physical disk to a virtual storage pool.

## Physical disk release

---

Refers to removing a physical disk from a virtual storage pool.

## Replication

---

A function that creates a copy of a virtual disk. The virtualization switch is used to copy data to a destination virtual disk.

## Resources

---

A generic term for resources that are required to use the virtual storage function (virtual storage pools, virtual enclosures, virtual targets, virtual disks, and physical disks).

## SMI Agent

---

Brocade agent program required by SMI-S for managing a virtualization switch.

## Synchronization maintained

---

A status in which the transaction server write request is executed to both the source and destination physical disks (during migration) to maintain data synchronization between these two disks.

It also refers to a status in which the transaction server write request is executed to both the source and destination virtual disks (during replication) to maintain data synchronization between these two disks.

## Transaction server

---

A generic term for servers that run applications for accessing data on the connected virtual disks.

## Virtual disk

---

A logical volume independent of the physical attribute and size of a physical disk.

## Virtual enclosure

---

A logical enclosure for integrating virtual disks into an arbitrary unit.

## Virtual initiator

---

A generic term for a unique World Wide Name (WWN) created from WWNs allocated to the ports of a virtualization switch.

## Virtual storage

---

A generic term for the function that allows you to make a volume of an arbitrary size, independently of the attributes (e.g., size, RAID group) of logical units created on a disk unit.

## Virtual storage pool

---

A logical device that stores physical disks for constituting virtual disks.

## Virtual storage window

---

A generic term for the operation interface (GUI) for the virtual storage function.

## Virtual target

---

An access path for connecting a transaction server and a virtual disk.

## Virtual target allocation

---

Act of attaching a virtual disk to a virtual target.

## Virtual target copy

---

A function that copies the information of another virtual target (to which virtual disks are attached) into an arbitrary virtual target. This function is used for building a virtual disk environment in a multipath configuration.

## Virtualization switch

---

A generic term for the "ETERNUS VS900 Model 200 Virtualization Switch", a fibre channel switch with the storage virtualization function.

## Virtualization switch group

---

A generic term for multiple groups (pairs) of virtualization switches in redundant configurations.

## VSC Engine

---

Firmware that runs on a virtualization switch. This firmware processes various requests regarding a virtual disk according to instructions from VSC Manager.

## VSC Manager

---

Manages the configuration information to form the foundation of the virtual storage function, handles and forwards processing requests issued via the virtual storage window to VSC Engine that runs on the target virtualization switch. VSC Manager runs on an admin server.

## VS900 management area

---

A necessary management area for using the replication suspend/resume function of ETERNUS SF AdvancedCopy Manager.  
The suspend/resume function is enabled by using the area for virtual storage.

## VTHL

---

A number used to allocate a virtual disk to a virtual target. The VTHL number is the number of a disk recognized by a transaction server.