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Preface

This manual explains the overview of products related to NEC Storage Manager (hereinafter may be referred to as iSM) and introduces the related manuals.

iSM is software that centrally operates/manages NEC Storage disk array. To do so, iSM manages the configurations and state of the NEC Storage disk array and sends alert notifications according to performance information or fault information.

iSM consists of the server section that controls storage and the client section that monitors/operates it, and can manage remote storage.

Remarks
1. The term “iSM” in this text refers to all the NEC Storage Manager program products.
2. Trademarks and registered trademarks
   - Microsoft®, Windows® and Windows NT® are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
   - HP-UX is a registered trademark of Hewlett-Packard Co. in the United States.
   - UNIX is a registered trademark of The Open Group in the United States and other countries.
   - Solaris is a registered trademark of Sun Microsystems, Inc. in the United States.
   Other product names and company names, etc. are registered trademarks or trademarks of the associated companies.
3. In this document, matters to which careful attention needs to be paid will be described as follows:
   Be sure to observe the contents.
   If the indications are ignored and the system is improperly operated, settings which have been already made might be affected.

<table>
<thead>
<tr>
<th>Type of Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Description</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
</tr>
<tr>
<td>Describes contents which require special attention during operation.</td>
</tr>
</tbody>
</table>
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Chapter 1 Manual List

Refer to the following manuals (PDF files) as needed:

- NEC Storage Manager: Included in the “NEC Storage Manager” CD-R
- ReplicationControl: Included in the “NEC Storage ReplicationControl” CD-R
- : Included in the corresponding product (software) CD-R

- “NEC Storage Manager Manual Guide” IS901
  This User’s Manual explains the overview of the system and function of NEC Storage Manager.

- “NEC Storage Manager User’s Manual” IS004
  Each manual above explains the basic functions for using NEC Storage Manager.

Refer to the manual when:

- Installing NEC Storage Manager in a server and client.
- Using the following basic functions of NEC Storage Manager:
  Configuration display, state monitoring, nickname setting (disk array name, LD name, and port name),
  error monitoring, log output, and event link.
- Starting/Stopping the server and client.
- Using the volume list command.
- A software error occurred in the server or client while NEC Storage Manager was running.
Chapter 1 Manual List

- “NEC Storage Manager Configuration Setting Tool User’s Manual” IS002
  This manual explains how to refer the configuration setting and configuration information of the disk array through CLI (Command Line Interface).
  * Refer to “IS007” for operation through GUI (Graphical User Interface).

Refer to the manual when:
  - Understanding the storage configuration of the NEC Storage series.
  - Binding/unbinding logical disks. (Batch changing also permitted)
  - Making the following settings for disk arrays:
    (Cross Call mode, auto assignment mode, auto repair mode, format time, expand LUN, disk array time, error log dump)
  - Displaying information about disk configurations and the disk arrays.
  - Specifying the start of repairing disks.

- “NEC Storage Manager Configuration Setting Tool User’s Manual (GUI)” IS007
  This manual explains how to refer the configuration setting and configuration information of the disk array through GUI (Graphical User Interface).
  * Refer to “IS002” for operation through CLI (Command Line Interface).

  If “NEC Storage AccessControl” and “NEC Storage ReallocationControl” are installed, settings cannot be made through CLI. In this case, refer to “IS007”.

Refer to the manual when:
  - Understanding the storage configuration of the NEC Storage series.
  - Binding/unbinding logical disks. (Batch changing also permitted)
  - Setting nicknames (disk array name, LD name, and port name). (Batch changing also permitted)
  - Batch changing replication settings.
  - Setting the platforms of ports.
  - Making the following settings for disk arrays:
    (Cross Call mode, auto assignment mode, auto repair mode, format time, expand LUN, disk array time, error log dump)
  - Specifying the start of repairing disks.
  - Setting AccessControl. * Function of “NEC Storage AccessControl”
  - Maintaining and managing logical disks (e.g., assigning/releasing pooled spare disks to a business server). * Function of “NEC Storage ReallocationControl”
● “NEC Storage Performance Monitor/Optimizer User’s Manual” IS008

This manual explains the functions and operation methods when the performance monitoring function “NEC Storage Performance Monitor” and the performance optimization function “NEC Storage Performance Optimizer” have been installed.

Refer to the manual when:
- Using the performance monitoring function.
  - Displaying the load state in real time
  - Setting a threshold for monitoring an overload
  - Collecting the statistical information of performance
- Using the performance optimization function.
  - Detecting bottlenecks (displaying the busy ratio)
  - Replacing logical disks (tuning performance)

● “NEC Storage Manager Data Replication User’s Manual (Function Guide)” IS015

This manual explains the operation methods common to OSs, which are used to perform the data replication functions provided by “NEC Storage Dynamic Data Replication”, “NEC Storage Remote Data Replication”, and “NEC Storage Replication Control”.

Refer to the manual when:
- Understanding the function of data replication.
- Pairing volumes.
- Creating/separating the replication volume of a master volume.
- Restoring replication volumes.
- Creating volume lists.
- Performing volume operation such as the mounting/unmounting of a file system under Windows.

● “NEC Storage Manager Data Replication User’s Manual (Installation and Operation Guide for Windows)” IS016

This manual explains the operation method that is used to perform the data replication functions provided by “NEC Storage Dynamic Data Replication”, “NEC Storage Remote Data Replication”, and “NEC Storage Replication Control” for Windows.

Refer to the manual when:
- Installing NEC Storage Replication Control.
- Understanding the designs of systems or operation samples of data replication.
- A data replication error occurred.
Chapter 1  Manual List

- “NEC Storage Manager Data Replication Command Reference” IS021
  This manual explains commands related to data replication. Refer to the manual when using data replication functions through CLI (Command Line Interface).

- “NEC Storage ReplicationControl SQL Option User's Manual” IS006
  This manual explains the functions and operation methods of NEC Storage ReplicationControl SQL Option.

  Refer to the manual when:
  - Installing NEC Storage ReplicationControl SQL Option.
  - Creating the backup copies of snapshots.
  - Restoring snapshots.
  - An error occurred while NEC Storage ReplicationControl SQL Option was running.

- “NEC Storage Manager Messages Handbook” IS010
  This manual explains messages (error, warning, notice, and information) displayed by NEC Storage Manager and the measures to be performed. The messages are listed in ID order.
Chapter 2 Functional Enhancement Overview

This chapter explains the new main functions of NEC Storage Manager Ver2.1.
For details on revision history, refer to “README.TXT” on the NEC Storage Manager CD-R.

<NEC Storage Manager>
• If link information has been changed in the environment setting, the setting can be changed even while NEC Storage Manager is running.
• A mail header file can be created/edited during link information setting in the environment setting.  (Only NEC Storage Manager under Windows)
• Double-clicking on a message in the message display area displays the help information for the message.  (The first page of the message list is displayed in Ver1.5 or earlier.)
• The properties screens of DAC (Disk Array Controller) and DE (Disk Enclosure) can be displayed.
• The properties screen of each disk array displays the WWN (*1) of the disk array.
• In addition to the configuration setting screen, the main screen (various properties screen) displays all the path information (up to 64) of LD Sets.  (With NEC Storage Manager of Ver1.5 or earlier, only the configuration setting screen displays all the path information.)
• Disk array information is displayed for a client to understand that the disk array cannot be monitored due to an invalid setting or connection failure in the following case:
  The IP of the disk array to be monitored is specified incorrectly in the server environment setting, or the server fails in connection with the disk array.

*1: WWN standard for World Wide Name, which is unique ID information assigned to each HBA (Host Bus Adapter).

<NEC Storage Manager, Configuration Setting>
• A function to set network information such as IP addresses has been added.
• A function to unlock an optionally purchased product has been added.
• A function to bind a logical disk in the same capacity as for a bound logical disk has been added.  The function is used in specifying the capacity of a logical disk.

<NEC Storage PerformanceMonitor>
• The real-time monitoring function has been enhanced as follows:
  • Display items (busy ratio, read hit ratio, and write hit ratio) of the numeric value table have been added.
  • Functions to select the display/non-display of time-series graphs and change the display order have been added.
Chapter 2  Functional Enhancement Overview

• The overload monitoring function has been enhanced as follows:
  - A function to customize conditions for monitoring thresholds has been added.
  - A function to delete thresholds collectively has been added.
  - A function to reset the threshold excess state when the setting conditions are satisfied has been added.
  - A function to save thresholds has been added.

• The function to collect/accumulate/extract statistical information has been enhanced as follows:
  - The command to start/stop accumulating statistical information has been changed to iSMprflog start/stop, and is supported under both UNIX and Windows.
  - A function to automatically adjust the interval for accumulating statistical information has been added.
  - The output items of CSV file and edit report is added / changed.
  - A function to output header information into CSV files has been added.
  - A function to download statistical information history files into client PCs has been added.
  - Performance analysis supporting tool can be used on client PCs.

<NEC Storage PerformanceOptimizer>
• A function to display the busy ratios of logical disks and RANKs in graphs has been added.
• A function to plan logical disk replacement has been added.
• A function to display the predicted busy ratio in a graph after logical disk replacement has been added.
• A function to schedule logical disk movement has been added.
• Even if a RANK contains only a single logical disk, the logical disk can be replaced.

<NEC Storage ReplicationControl>
• The iSMrc_ldlist command to obtain and display logical disk list information has been added.
• The iSMrc_pair command to pair/unpair volumes has been added.
• The commands of NEC Storage ReplicationControl enable the operation and management of data replication linking with the replication management function of NEC Storage Manager.

<NEC Storage ReplicationControl SQL Option>
• The following options have been added to the iSMsql_snapshotbkup command:
  - -dbfile: Backups the snapshots of multiple databases simultaneously.
  - -metafolder: Specifies a folder for saving metafiles.
  - -file: Specifies multiple pairs of volumes.
  - -rvuse: Specifies time at which RVs are usable.
• The following options have been added to the iSMsql_snapshotrst command:
  - -dbfile: Restores the snapshots of multiple databases simultaneously.
  - -metafolder: Specifies a folder for saving metafiles.
  - -mode: Specifies the RV operation mode to be used at restoration.

<NEC Storage AccessControl>
• A function to rename LD Sets has been added.
• Access Control can be performed for each LD Set even while the port mode is active.

<NEC Storage ReallocationControl>
• A function to display a capacity by LD group has been added.
This chapter describes an overview of the system, software and hardware of NEC Storage Manager.


### 3.1 System Overview

NEC Storage Manager consists of server and client functions.

The server function operates on a management server, and directly monitors the disk arrays of the NEC Storage series connected through a LAN or FC (Fibre Channel).

The client function operates on a PC connected with the management server through a LAN, and provides the user with the monitoring and operation functions through the GUI.

NEC Storage Manager provides various functions to operate the disk arrays of the NEC Storage series. Figure 3-1 shows a system configuration sample using NEC Storage Manager.

*1 This product is included in NEC Storage BaseProduct.
• It is recommended that the management server and the NEC Storage series should be connected through a LAN. They can also be connected through a fibre channel. In this case, however, if the business server is subjected to a high load, contention may occur between application I/O and performance monitoring, performance optimization, or data replication I/O. The I/O path of each server also needs to be specified in the Access Control setting. Thus, connection through a LAN from a separate management server is safer than connection through FC.

• If connecting the management server and a disk array through a LAN, you need to set the network information (e.g., IP Address) for the disk array. Set the information correctly according to the manual provided with the disk array.

• NEC Storage Manager can monitor more than one disk array simultaneously. However, do not use more than one NEC Storage Manager to simultaneously monitor a single disk array. If multiple NEC Storage Managers are used to monitor a single disk array, a repeatedly noticed error or a conflict between their statistical information of performance may cause operation trouble.
3.2 Software

This section explains NEC Storage Manager and related program products.

Table 3-1 Software List

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC Storage BaseProduct</td>
<td>Performs basic control for disk arrays. For details, refer to (1) “NEC Storage BaseProduct” in the following page.</td>
</tr>
<tr>
<td>NEC Storage Manager</td>
<td>Monitors the basic state of NEC Storage disk arrays and displays the configurations. For details, refer to (2) “NEC Storage Manager” in the following page.</td>
</tr>
<tr>
<td>NEC Storage AccessControl</td>
<td>Sets accessible logical disks for each business server</td>
</tr>
<tr>
<td>NEC Storage ReallocationControl</td>
<td>Optimizes the usage of disk resources and maintains/manages logical disks.</td>
</tr>
<tr>
<td>NEC Storage PerformanceMonitor</td>
<td>Displays the performance information of disk arrays in real time and monitors the load state.</td>
</tr>
<tr>
<td>NEC Storage PerformanceOptimizer</td>
<td>Detects bottlenecks in storage performance and optimizes disk performance by adjusting the load balance.</td>
</tr>
<tr>
<td>NEC Storage ReplicationControl</td>
<td>Sets operation for data replication functions.</td>
</tr>
<tr>
<td>NEC Storage DynamicDataReplication</td>
<td>Creates replication volumes in the same storage system.</td>
</tr>
<tr>
<td>NEC Storage RemoteDataReplication</td>
<td>Creates replication volumes between different storage systems.</td>
</tr>
<tr>
<td>NEC Storage ReplicationControl SQL Option</td>
<td>Creates backup copies of Microsoft SQL Server 2000 without stopping it, which enables 24-hour non-stop operation.</td>
</tr>
</tbody>
</table>

For extended function, refer to 4.4 “Functions of Optional Software” as well.
(1) **NEC Storage BaseProduct**

NEC Storage BaseProduct includes storage control software, which is responsible for the basic control of disk arrays, and the software of NEC Storage Manager, which enables the monitoring of the basic state of disk arrays.

The storage control software performs basic control such as host interface control, disk control, RAID control, logical disk control, and cache control for disk arrays. The software of NEC Storage Manager is explained in (2) below.

For details, refer to the “NEC Storage Manager User’s Manual” in accordance with the OS under which the NEC Storage Manager server is to be installed.

“NEC Storage BaseProduct” is a program product required for operating the disk arrays of the NEC Storage S1200/S2200/S1300/S2300/S3300/S4300 series.

(2) **NEC Storage Manager**

NEC Storage Manager is software that enables the monitoring of the basic state of NEC Storage disk arrays.

NEC Storage Manager has the following functions:

- **Centralized management of storage**
  Manages multiple disk arrays (up to 64) of the NEC Storage series through a single control server.

- **Storage state management and configuration management**
  Centrally manages the storage state and configuration information, and displays the information through the GUI under Windows.

- **Configuration setting**
  Enables users to arbitrarily set a storage internal configuration. Users can build logical disks from physical disks through the GUI under Windows. Available functions depend on the model of the NEC Storage series. For details, refer to the “NEC Storage Manager Configuration Setting Tool User’s Manual (GUI)”.

- **Error notice function**
  If a storage error occurs, this function sends mail and starts the program. The function enables the sending of error notices to remote maintenance persons and the customization of system-specific error management.

For details, refer to the “NEC Storage Manager User’s Manual” in accordance with your OS.
NEC Storage S1100/S2100/S3100/S4100/A2100/A4100 series: NEC Storage Manager is provided as standard software with the disk arrays.
NEC Storage S1200/S2200/S1300/S2300/S3300/S4300 series: NEC Storage Manager is included in “NEC Storage BaseProduct” that is a program product required for operating the disk arrays.

3.3 Hardware

This section explains the overview of the NEC Storage series disk array, which is the object of the NEC Storage Manager.

Each disk array of the NEC Storage series consists of a controller (DAC: Disk Array Controller) and one or more disk enclosures (DE: Disk Enclosure). The control contains control-system components such as a host director (HD: Host Director), replication director (RD: Replication Director), disk director (DD: Disk Director), and cache module (cache module card), and controls a disk enclosure(s) in which multiple physical disks (PD: Physical Disk) are installed.

A single disk enclosure can contain 10 or 15 physical disks, and 4 disk enclosures are managed as an array group. (The NEC Storage 2000/1000 series does not have the concept of an array group.)

For details, refer to the “NEC Storage Manager Configuration Setting Tool User’s Manual (GUI)”.

(1) NEC Storage 4000 series

The NEC Storage 4000 series, high-end disk array of the NEC Storage series, realizes high scalability (up to 10 extended cabinets can be connected to a basic cabinet and up to 1200 physical disks can be mounted on the NEC Storage S4300) and high availability (all components have redundancy). Furthermore, it provides the function to replicate logical disks (DynamicDataReplication and RemoteDataReplication) in and between disk arrays, and enables backup and batch processing to be performed in parallel with the main operation.
Figure 3-2  Disk Array Configuration (NEC Storage 4000 Series)
(2) **NEC Storage 3000 series**

The NEC Storage 3000 series, mid-range disk array of the NEC Storage series, realizes **high scalability** (up to 2 extended cabinets can be connected to a basic cabinet and up to 240 physical disks can be mounted) and **high availability** (all components have redundancy). Furthermore, it supports functions equivalent to all of the solutions provided by the NEC Storage 4000 series, thereby efficiently performing operation.

![Disk Array Configuration (NEC Storage 3000 Series)](image-url)
(3) NEC Storage 2000 series

NEC Storage 2000 series, mid-range disk array of the NEC Storage series, realizes **high scalability** (up to 14 disk enclosures can be extended) and **high availability** (main components have redundancy). Furthermore, it provides a **function to replicate logical disks** in the disk array, and enables effective backup and batch processing.

![Disk Array Configuration (NEC Storage 2000 Series)](image)
(4) **NEC Storage 1000 series**

NEC Storage 1000 series, entry model disk array of the NEC Storage series, realizes the little **space consuming** (One controller and maximum of 15 physical disks may be loaded to 3U) and **high availability** (main components are redundant).

![Disk Array Configuration (NEC Storage 1000 Series)](image-url)
Chapter 4 Functions of NEC Storage Manager

This chapter explains the basic functions of NEC Storage Manager and optional software.

4.1 Main Window of NEC Storage Manager

This section explains the screen layout of the main window for iSM clients.

Figure 4-1 is the main window of an iSM client that is displayed immediately after login to the iSM server.

![Main Window of NEC Storage Manager](image)

(1) Configuration display area

Displays the configurations of the disk arrays to be managed.

The disk array to be managed is a disk array defined in the iSM server with which the iSM client is connected. The configuration display area is divided into “disk array layer”, “component layer”, and “individual component layer”, and displays the following information in tree view.
Chapter 4  Functions of NEC Storage Manager

Table 4-1  Layers of the Configuration Display Area

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk array layer</td>
<td>Displays the disk array managed by the iSM server, and the icon that indicates the operating/monitoring state.</td>
</tr>
<tr>
<td>Component layer</td>
<td>Sorts components into four categories (logical disk, physical disk, controller, and enclosure), and displays the icons that indicate the operating/monitoring states of the components.</td>
</tr>
<tr>
<td>Individual component layer</td>
<td>Lists logical disks and physical disks, and displays the icons that indicate the operating/monitoring states of the disks.</td>
</tr>
</tbody>
</table>

![Figure 4-2  Configuration Information Display in Tree View](image)

The configuration display area displays the state of each management target, which is expressed by the shape and shade (dark/light) of the icon.

For details on the icons, refer to “Basic Functions” in the “NEC Storage Manager User’s Manual” in accordance with your OS.
(2) **Information list display area**

Displays a list of information about components in the layer immediately following the layer you selected (left-clicked) in the configuration display area. If you select a disk array in the configuration display area, the area displays a list of information about resources (“logical disk”, “physical disk”, “controller”, and “enclosure”) that configure the disk array. If you select logical disk, the system displays a list of information about the logical disks.

(3) **Message display area**

Displays messages that indicate disk array errors, NEC Storage Manager errors, and operating states. Double-clicking on a message displays the help information for the message. For the display contents, refer to the “NEC Storage Manager Messages Handbook”.

(4) **Status bar**

Displays the current state of the iSM client.

While a session is established, “Con.”, the address of a server on which the iSM server is active, the server’s port number, the client name, the user level, and the type and the number of display components are displayed.

### 4.2 User Level of NEC Storage Manager

NEC Storage Manager defines user levels and specifies operable ranges. Therefore, users of iSM clients need to preset a user level.

Define the user level setting in the iSM server. For the definition, refer to 1.3.2 “Setting User Information” of the “NEC Storage Manager User’s Manual”.

<table>
<thead>
<tr>
<th>User Level</th>
<th>Operable Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Use of only the reference functions mainly performed to display/monitor state information is permitted. (For general users)</td>
</tr>
<tr>
<td>Level 2</td>
<td>Use of the level-1 functions and the functions necessary for daily operation is permitted. (For operators)</td>
</tr>
<tr>
<td>Level 3</td>
<td>Use of all the functions including the settings of disk arrays is permitted. (For system administrators)</td>
</tr>
</tbody>
</table>

Immediately after an iSM client is connected with the iSM server, the user level is displayed on the iSM client’s status bar. Only functions available at the level can be executed. Only level-3 users are permitted to execute the configuration setting function.
4.3 Basic Functions of NEC Storage Manager

The basic functions of NEC Storage Manager include the following functions required for operating disk arrays:

(1) Configuration display

The configuration display function is a basic function of NEC Storage Manager that displays the configuration of physical resources making up a disk array, and logical disks recognized by the business server. Since multiple disk array configurations can be managed, the disk arrays can be centrally monitored in the same view through the iSM client.

For details, refer to “Configuration Display” in the “NEC Storage Manager User’s Manual” in accordance with your OS.

(2) State monitoring

The state monitoring function monitors the occurrences of the following events in the disk arrays to be managed by NEC Storage Manager:

- State transition in components
- Changing of disk array names, logical disk names, and port names
- Configuration change

When detecting any of the above events, the state monitoring function reflects information about the detected event onto the configuration management screen of the iSM client. At the same time, the function outputs the message indicating the event to various logs, and performs link processing such as execution of the script file whenever the event is detected.

For details, refer to “State Monitoring” in the “NEC Storage Manager User’s Manual” in accordance with your OS.

(3) Nickname setting

The nickname setting function is used via the iSM client to set the disk array name, LD name (+ OS Type), and Port name for the disk array to be managed. The disk array can be managed efficiently by matching the set information to the identification information provided by the business server that operates the disk array.

For details, refer to “Nickname Setting” in the “NEC Storage Manager User’s Manual” in accordance with your OS.
(4) **Fault monitoring**

While iSM clients are connected, all iSM messages are output to the message display area of the iSM client screen, which enables each iSM client to monitor disk array errors. A display message is collected as a log file, and the occurrence of the error is reported to the iSM clients matching the message level in real time.

For details, refer to “Fault Monitoring” in the “NEC Storage Manager User’s Manual” in accordance with your OS.

(5) **Log output**

The log output function outputs messages, which indicate iSM error information and operation information, to various logs (operation log and syslog under UNIX, and operation log and event log under Windows).

For details, refer to “Log Output” in the “NEC Storage Manager User’s Manual” in accordance with your OS.

(6) **Event link**

The event link function takes action such as sending mail and starting a file (a shell file under UNIX, and an executable file or batch file on the monitoring server under Windows) according to the message contents. You can define link processing for each message level and specify the mail destination, the mail contents, and the file to be started.

For details, refer to “Event Link” in the “NEC Storage Manager User’s Manual” in accordance with your OS.
4.4 Functions of Optional Software

This section explains optional software that can be used with NEC Storage Manager and outlines the functions of the optional software. Optional software that can be used depending on the model of the NEC Storage series as shown in Table 4-3.

Table 4-3 Optional Software Products Available with Disk Arrays

<table>
<thead>
<tr>
<th>Software Products</th>
<th>Model of the NEC Storage Series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1100</td>
</tr>
<tr>
<td>(1) NEC Storage AccessControl</td>
<td>O</td>
</tr>
<tr>
<td>(2) NEC Storage ReallocationControl</td>
<td>-</td>
</tr>
<tr>
<td>(3) NEC Storage PerformanceMonitor</td>
<td>O</td>
</tr>
<tr>
<td>(4) NEC Storage PerformanceOptimizer</td>
<td>-</td>
</tr>
<tr>
<td>(5) NEC Storage ReplicationControl</td>
<td>-</td>
</tr>
<tr>
<td>(6) NEC Storage DynamicDataReplication</td>
<td>-</td>
</tr>
<tr>
<td>(7) NEC Storage RemoteDataReplication</td>
<td>-</td>
</tr>
<tr>
<td>(8) NEC Storage ReplicationControl SQL Option</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) NEC Storage AccessControl – Access Control software

This software ensures security for a disk array shared by multiple servers by determining whether access to logical disks (volumes) in the disk array is permitted for each HBA (Host Bus Adapter) port (World Wide Name *1) of the servers. Access permission is set and displayed through NEC Storage Manager.

*1: Unique ID information assigned to each HBA port

<Required software> NEC Storage Manager

<Reference manual> “NEC Storage Manager Configuration Setting Tool User’s Manual (GUI)” (IS007)

(2) NEC Storage ReallocationControl - Resource optimization software

This LD maintenance/management software optimizes the usage of disks by managing the disk resources of the whole system in an integrated manner under SAN environment. The software pools spare logical disk hidden from server by using Access Control function. Since the software can assign pooled logical disks to a business server and release them from the business server as required, it can increase disk usage efficiency by optimizing the total number of spare disks.
Chapter 4  Functions of NEC Storage Manager

<Required software> NEC Storage Manager and NEC Storage AccessControl

<Reference manual> “NEC Storage Manager Configuration Setting Tool User’s Manual (GUI)” (IS007)

(3) NEC Storage PerformanceMonitor - Performance monitoring software

This software displays the performance information of disk arrays in real time, monitors loads, and accumulates statistical information.

- Displaying information in real time: Displays the performance information (e.g., I/O density and average response time) of disk arrays and logical disks at specified intervals in real time.
- Monitoring loads: Sets a load threshold for disk arrays and logical disks, and outputs a message to inform administrators that the set threshold is exceeded.
- Accumulating statistical information: Collects performance information of disk arrays at specified intervals, and accumulates the information as performance logs in a file.

<Required software> NEC Storage Manager

<Reference manual> “Part I Performance Monitoring Function” of the “NEC Storage Performance Monitor/Optimizer User’s Manual” (IS008)

(4) NEC Storage PerformanceOptimizer - Performance optimization software

This software improves the disk performance of disk array by monitoring the storage access state, detecting bottlenecks in performance, and replacing data on which access is concentrated (logical disk replacement). The software enables the dynamic replacement of logical disks without operation being stopped.

<Required software> NEC Storage Manager, NEC Storage PerformanceMonitor, NEC Storage AccessControl, and NEC Storage ReallocationControl

<Reference manual> “Part II Performance Optimization Function” of the “NEC Storage Performance Monitor/Optimizer User’s Manual” (IS008)

(5) NEC Storage ReplicationControl

This software sets operation for a data replication function (NEC Storage DynamicDataReplication or NEC Storage RemoteDataReplication) through the business server connected with the disk array. The software enables replication operations such as volume replication specification, replication volume separation specification, and reconnection specification through the CLI (Command Line Interface).

<Required software> NEC Storage Manager and NEC Storage DynamicDataReplication (or
(6) **NEC Storage DynamicDataReplication - Replication (copy) creation software**

NEC Storage DynamicDataReplication quickly creates replication volumes (logical disks) in the same storage system through simple operation; NEC Storage RemoteDataReplication quickly creates replication volumes (logical disks) between different storage systems through simple operation. The software enables backup/batch processing using replication data in parallel to the online operation, which increases online operation time and processing efficiency.

NEC Storage Manager is responsible for displaying, setting, and controlling the operating state of data replication.

- NEC Storage DynamicDataReplication Creates replication volumes in the same storage system.
- NEC Storage RemoteDataReplication Creates replication volumes between different storage systems.

(7) **NEC Storage RemoteDataReplication - Replication (copy) creation software**

<Reference manuals> “NEC Storage Manager Data Replication User’s Manual (Function Guide)” (IS015)
“NEC Storage Manager Data Replication User’s Manual (Installation and Operation Guide for Windows)” (IS016)
“NEC Storage Manager Data Replication Command Reference” (IS021)

(8) **NEC Storage ReplicationControl SQL Option**

When being used with a data replication function (NEC Storage DynamicDataReplication or NEC Storage RemoteDataReplication), this software creates the snapshot of a database instantaneously without stopping Microsoft SQL Server 2000. The snapshot can be used for backup and concurrent processing, which enables 24-hour non-stop operation.

<Required software> NEC Storage Manager, NEC Storage ReplicationControl, NEC Storage DynamicDataReplication (or NEC Storage RemoteDataReplication), and Microsoft SQL Server 2000 Enterprise Edition (or Microsoft SQL Server
Chapter 4  Functions of NEC Storage Manager

2000 Standard Edition)

<Reference manual>  “NEC Storage ReplicationControl SQL Option User’s Manual” (IS006)
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