

# Disk Array management program 2 (for maintenance) User's Guide

## Considerations

Before using this Disk Array management program 2, read safety instructions described in this guide carefully. Be sure to observe precautions in individual chapters. Keep this guide at hand for reference at any time.

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# Preface

This guide describes how to operate functions of servicing the Hitachi disk array units (DF500, collectively called the array unit below) using the Disk Array management program 2 (called the manager 2 below).

For the specifications of the array unit, see the guide attached to the array unit.

## **Notes on use:**

- This guide is intended for customer support engineer of the array unit.
- When using the manager 2, be sure to read this guide and understand the operating procedures and instructions described herein thoroughly before starting your operation. Understand, in particular, the descriptions in the Chapter **Safety Precautions** thoroughly and follow the instructions in this guide.
- The user is presupposed to have thorough knowledge of the basic operation of Windows, Solaris, and IRIX.
- “Windows 95”, “Windows 98”, “Windows 2000”, and “Windows NT Version 4.0” are abbreviated to “Windows” in the guide.
- This guide quotes screens that appears when the product version of the Manager 2 runs with Windows NT 4.0, and when an array unit (DF500(RK)) is configured from a dual system and is connected to a LAN. When the Manager 2 runs with Windows 95, Windows 98, Windows 2000, Solaris, and IRIX, displayed on some screens differ from those shown in this guide, but ways for operations are the same. In addition, when the bundle version’s is used, the menus of functions not supported on the main screen and the unit screen, etc. are not displayed.



# Safety Precaution

When using this manager 2, read the following notes carefully, and follow the instructions to operate the manager 2.

## Precautions before starting your operation

- Do not operate an array unit except system administrators responsible for operation of systems including array units, system engineers for construction of systems including array units, and qualified service personnel for maintenance of array units.
- Read and understand this guide thoroughly before starting your operation.

## Cautions while starting your operation

- While operating the manager 2, the contents of an error, which occurs in an array unit, may be displayed as an error message. In this case, read the user's guide or maintenance guide to look up action on the error message and handle the error according to the action.
- When performing operations in this guide with a caution attention mark indicated, be sure to read precautions before starting the operation, and follow them to operate.



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# Chapter 1 Outline

## 1.1 Outline

The maintenance function of the manager 2 achieves functions used only to service the array unit.

## 1.2 Notes on Using the Manager 2

When using this manager 2, take the following considerations.

- When using the manager 2 on “RS232C connection”, the “ERROR INF” (a function to specify an error information transfer mode to the RS232C) must be set to “OFF” (suspension of an error information transfer) by means of the system parameter setting function of the array unit.  
(The “ERROR INF” is set to “OFF” when shipped from the factory.) Otherwise, it may be caused that the manager 2 fails to be connected to the array unit or that functions of the manager 2 end abnormally.
- Regarding the functions to be executed by the manager 2, some are available and others are not available during an on-line. For details, see “*Disk Array management program 2 User’s guide*”.  
For a case of high I/O load, functions that are available in the on-line might cause a command time-out in the host or a recovering fault in the manager 2. A use during off-line is recommended.
- A logical unit, at least, must be in the array unit, to make available all of manager 2 functions. If no logical unit are in the array unit, some functions selected can not be operated.
- The Manager 2 allows to open multiple unit screens. When multiple unit screens are open, a shortage of memory may occur depending on the configuration of a machine in which the Manager 2 has been installed, resulting in hang up of programs. When opening unit screens, open only one unit screen to operate an array unit.
- The Manager 2 allows to open multiple unit screens for one array unit. When doing operations by opening multiple unit screens for one array unit, operations may terminate abnormally. Open only one unit screen for one array unit to operate an array unit.

- When the Manager 2 is run with Windows 98, if MS-IME 98(Ver.6.00.0) has been installed in a Windows 98 system, the starting of the Manager 2 may terminate abnormally. When running with Windows 98, install MSIME 98-SR1.
- When the manager 2 is in operation, it may hang up in the following cases. If the manager 2 hangs up, terminate it forcibly and check the array unit status and the connection status of RS232C or LAN. Then, boot up the manager 2 once again. And start the manager 2 again after you finish other application.
  - In case that the communication with the connected array unit fails due to controller blockage, array unit failure, or disconnected LAN connection, etc., or in case that the array unit receives a Reset/LIP from the host.
  - Other application works at the same time, and a CPU use rate is high.

### 1.3 Operating Environment

Refer to the *Disk Array management program 2 User's Guide*.

# Chapter 2 Outline of Functions

## 2.1 Function List

Maintenance functions of the manager 2 are listed in Table 2.1.

Table 2.1 Manager 2 Maintenance Function List

No	Classification	Function name	Outline of function	Notes
1	Display of statistical information	Display of number of drive restoration startings Display of cache memory failures statistical information Display of drive failures statistical information Display of host SPC failures statistical information Display of drive SPC failures statistical information Display of drive DMA failures statistical information Display of host DMA failures statistical information Display of DUAL I/F system failures statistical information	Statistical information is displayed by selecting an item.	An array unit not supported is displayed in half tone and cannot be selected.
2	Display of logical unit failure data information	Display of logical unit failure data information	The segments for each logical unit is displayed.	—
3	Trace information and controller failure information file output	Outputting trace information and controller failure information to a file	Trace information and controller failure information are output to a file.	—
4	Setting a prefetch size	Setting prefetch information	It sets a prefetch staging size by the RAID levels, a next starting opportunity and host data transfer access size.	Prefetch information is set at an optimum value on shipment. <b>If the setting is changed unpreparedly, it will affect performance and may interfere with operation:</b>
5	Setting a threshold	Setting a threshold for preventive maintenance	It sets a threshold for the number of failures of a disk controlled by preventive maintenance.	—

Table 2.1 Manager 2 Maintenance Function List (Continued)

No	Classification	Function name	Outline of function	Notes
6	Drive maintenance	Detach	Blocks a specified drive forcibly.	—
		Data reconstruction	Reconstructs data on a specified drive.	—
		Copyback	Copies data from a spare drive to a specified drive.	—
		Dynamic sparing	Copies data forcibly from a specified drive to a spare drive, and then blocks the specified drive.	—
		System copy	Copies the system area of a system drive from another system drive.	—
7	Setting a mode for reporting to the host	Setting a mode for reporting to the host using an SSB	This setting specifies a mode for reporting an SSB to the host when a trouble such as a failure in a part of the disk array subsystem occurs.	—

# Chapter 3 Operation

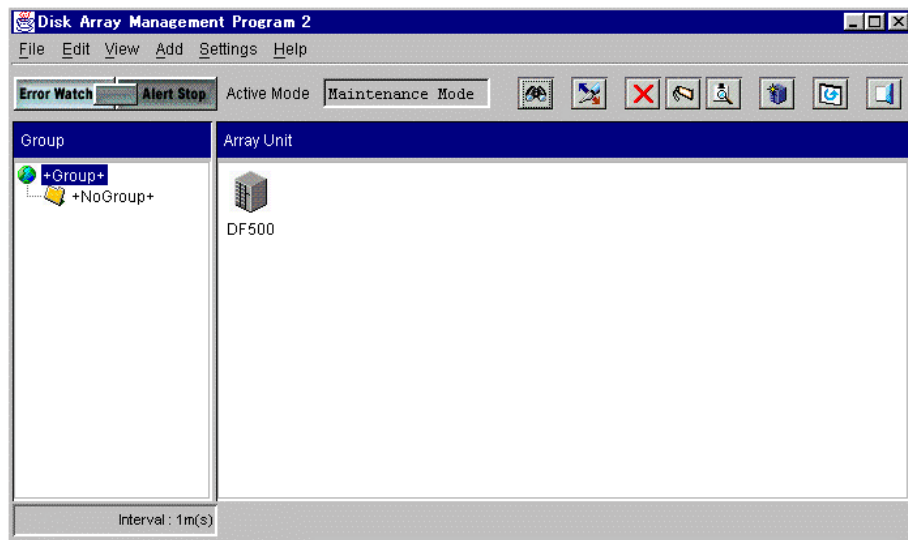
## 3.1 Setting and Cancel of the Maintenance mode

To use the maintenance function, follow the procedure below.

### 3.1.1 Setting of the maintenance mode

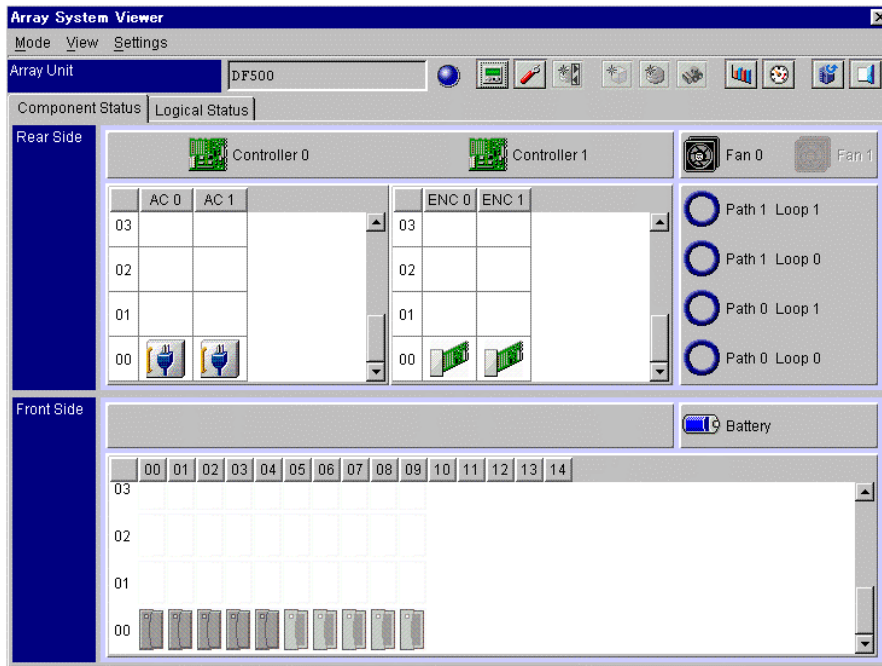
To use the maintenance function, follow the procedure below.

1. Starts the manager 2.
2. Pointing the focus to the “ : **Register Array Unit**” button, press the [Ctrl], [Shift], and [E] keys together at the same time.

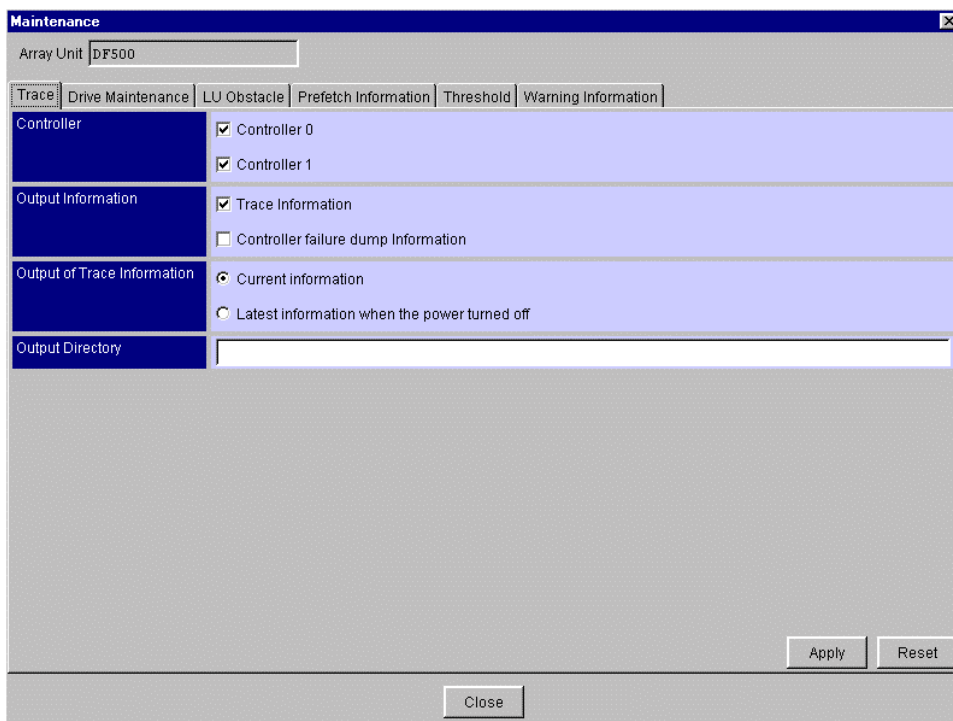


**Maintenance Mode** is displayed in the **Active Mode** field at the top right on the main screen, and the manager 2 operates in the maintenance mode.

3. Double-click the icon of an array unit on the Main screen. The Unit screen is displayed.



4. Select “**Settings—Maintenance**”. The Maintenance screen is displayed.




5. Click **Close** button, then the Unit screen is displayed.

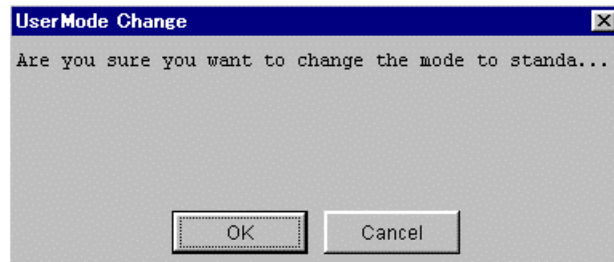
6. Select “**Mode—Exit**” in the Unit screen. The Main screen is displayed.

### 3.1.2 Cancel of the service personnel mode

To cancel the service personnel mode, follow the procedure below.

If Maintenance Mode is deselected, it will be Normal Mode regardless of the mode before changing to Maintenance Mode.


1. Click the “ : **Change Mode**” in the tool bar on the Main screen.
2. A confirming message appears. Click **OK** button.

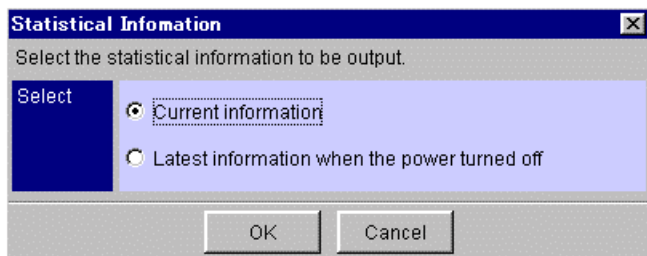


Manager 2 enters Normal Mode, and **Normal Mode** appears at **Active Mode** at the upper of the main window.

### 3.2 Displaying Statistical Information

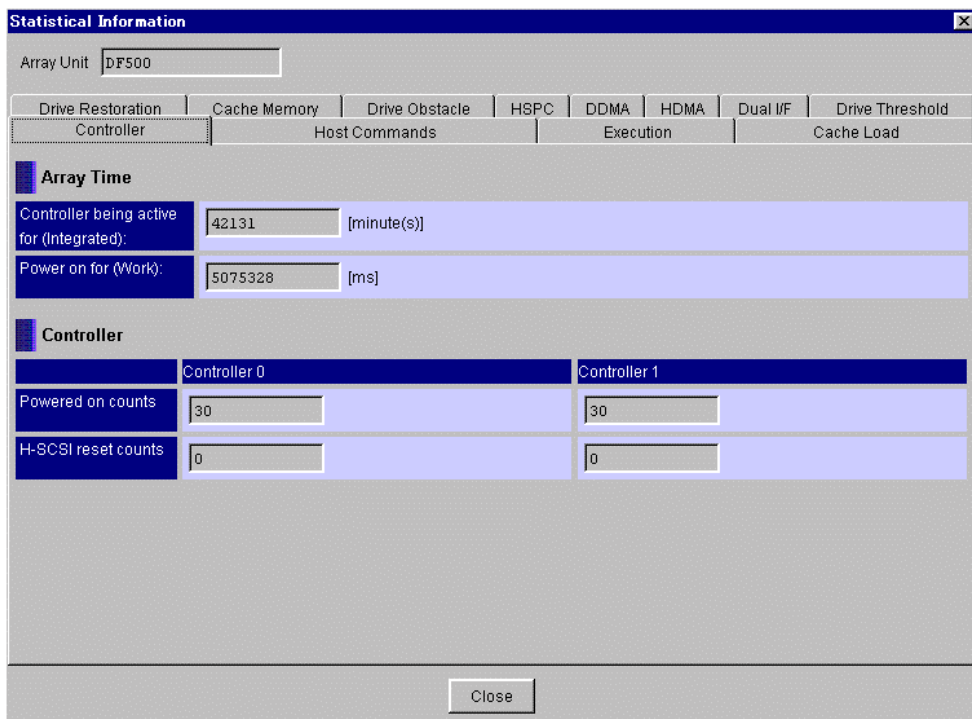
You can display the statistical information in the array unit.

1. Select “**View—Statistical Information**” on the Unit screen. Or, when you click the : **Statistical Information**” in the tool bar.
2. Specifies statistical information which to display by **Select**, and clicks the **OK** button.



- **Select:** Statistical information to be displayed
  - Current Information:** Current information
  - Latest Information when the power turned off:** Information when starting up an array unit

3. The **Statistical Information** screen is displayed.



- **Statistical Information:** Type of statistical information
  - **Controller Use Condition:** State of the controller operation
  - **Number of Host Commands:** Number of host command receptions
  - **Command Execution Condition:** State of command execution
  - **Cache Load Condition:** State of the cache load
  - **Number of Drive Restorations:** Number of drive restoration startings
  - **Cache Memory:** Cache memory failures statistical information
  - **Drive:** Drive failures statistical information
  - **H-SPC:** Host SPC failures statistical information
  - **D-DMA:** Drive DMA failures statistical information
  - **H-DMA:** Host DMA failures statistical information
  - **DUAL I/F:** DUAL I/F system failures statistical information
  - **Drive Threshold:** Preventive maintenance failures statistical information

As for **Controller Use Condition**, **Number of Host Commands**, **Command Execution Condition**, and **Cache Load Condition**, see *Disk Array management program 2 User's Guide*.

### 3.2.1 Displaying number of drive restoration startings

1. Click **Drive Restoration** tab.

The screenshot shows a window titled "Statistical Information" with a close button in the top right corner. Below the title bar, there is a text field for "Array Unit" containing the value "DF500". The main area of the window is divided into several sections. At the top, there are four tabs: "Controller", "Host Commands", "Execution", and "Cache Load". The "Controller" tab is selected and contains sub-sections for "Drive Restoration", "Cache Memory", "Drive Obstacle", "HSPC", "DDMA", "HDMA", "Dual I/F", and "Drive Threshold". The "Drive Restoration" sub-section is active and displays two tables. The first table, titled "Drive Restoration Count", has two columns: "Controller 0" and "Controller 1". It contains two rows: "Interleave" and "Background", each with a text field containing the value "0". The second table, titled "Total Number of System Restoration Starting", also has two columns: "Controller 0" and "Controller 1", and one row with a text field containing the value "0". At the bottom center of the window is a "Close" button.

- **Drive Restoration Count:**
  - **Interleave:** Accumulated number of startings of drive restoration using interleave
  - **Background:** Accumulated number of startings of drive restoration performed in the background
- **Total Number of System Restoration Starting:** Accumulated number of system restoration starts

### 3.2.2 Displaying cache memory failures statistical information

1. Click **Cache Memory** tab.

The screenshot shows a window titled "Statistical Information" with a close button in the top right corner. Below the title bar, there is a text field for "Array Unit" containing "DF500". The window is divided into several tabs: "Controller", "Host Commands", "Execution", and "Cache Load". The "Cache Memory" tab is selected. Under this tab, there are sub-sections for "Drive Restoration", "Drive Obstacle", "HSPC", "DDMA", "HDMA", "Dual I/F", and "Drive Threshold". The main content area is divided into three sections:

- Number of Battery Power Drops:** Two input fields for Controller 0 and Controller 1, both containing "0".
- Correctable Error Threshold:** Two input fields for Controller 0 and Controller 1, both containing "0".
- Number of Correctable Errors:** Two tables, one for Controller 0 and one for Controller 1. Each table has columns for "SLOT" and "Number".

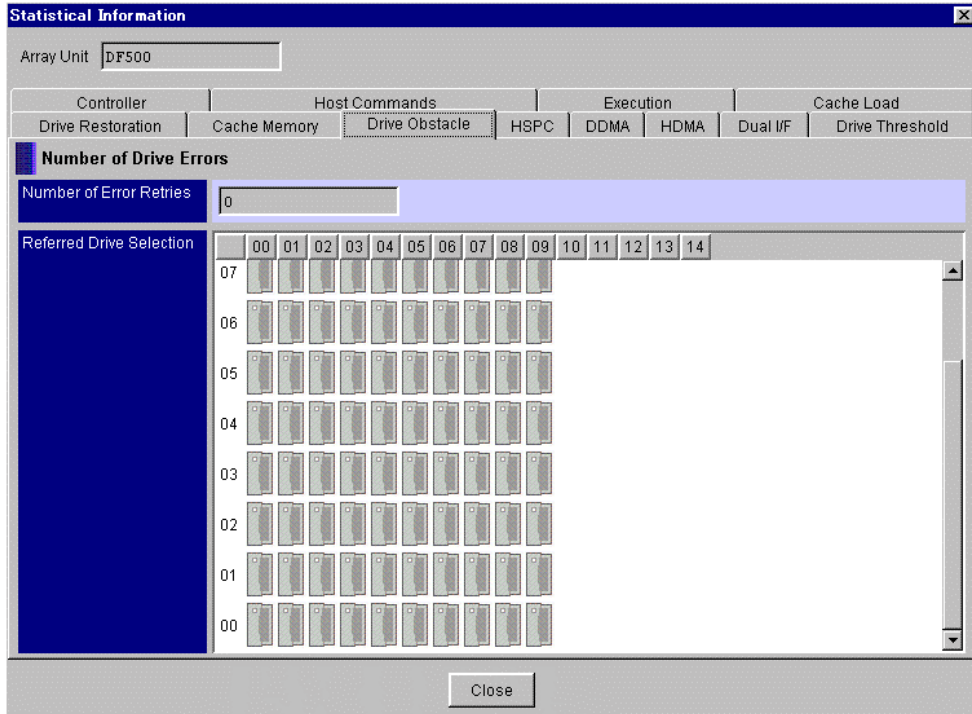
Controller 0		Controller 1	
SLOT	Number	SLOT	Number
0	0	0	0
1	0	1	0
2	0	2	0
3	0	3	0

At the bottom of the window, there is a "Close" button.

- **Number of Battery Power Drops:** Accumulated number of cache battery voltage drops
- **Correctable Error Threshold:** Threshold number of correctable errors
- **Number of Correctable Errors:** Accumulated number of correctable errors per cache slot

### 3.2.3 Displaying drive failures statistical information

1. Click **Drive Obstacle** tab.



2. Double-click on the drive icon you want to display.

3. Information of the double-clicked drive is displayed.

**Drive Obstacle Information**

Drive Unit No.  HDU No.

Number of Online Verify Errors

	Correctable	Uncorrectable	Restoration Count
Controller 0	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Controller 1	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Number of Read/Write Errors

	Controller 0		Controller 1	
	(Recovered)	(Unrecovered)	(Recovered)	(Unrecovered)
Mechanical Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Medium Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Read/Write Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Drive I/F Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Controller Hard Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
SCSI I/F Errors	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Close

- **Drive:**
  - Unit No.:** Unit No. of the selected drive.
  - HDU No.:** HDU No. of the selected drive.
- **Number of Online Verify Errors:** Accumulated number of errors which occurred when executing the read/write operations.
  - **Correctable:** Accumulated number of correctable errors occurred in on-line verify execution
  - **Uncorrectable:** Accumulated number of uncorrectable errors occurred in on-line verify execution
  - **Restoration Count:** Accumulated number of restorations occurred in on-line verify execution
- **Number of Read/Write Errors:** Accumulated number of errors which occurred when executing the read/write operations.
  - **Mechanical Errors:** Accumulated number of mechanism-related errors
  - **Medium Errors:** Accumulated number of medium-related errors
  - **Read/Write Errors:** Accumulated number of read/write-related errors
  - **Drive I/F Errors:** Accumulated number of drive interface errors
  - **Controller Hard Errors:** Accumulated number of controller hardware errors
  - **SCSI Interface Errors:** Accumulated number of SCSI interface errors

### 3.2.4 Displaying host SPC failures statistical information

1. Click **HSPC** tab.

Statistical Information

Array Unit: DF500

Controller | Host Commands | Execution | Cache Load  
Drive Restoration | Cache Memory | Drive Obstacle | **HSPC** | DDMA | HDMA | Dual I/F | Drive Threshold

**Error Retry Count**

	H-SPC#0	H-SPC#1	H-SPC#2	H-SPC#3
Controller 0	0	0	0	0
Controller 1	0	0	0	0

**Number of H-SPC Errors**

	H-SPC#0	H-SPC#1	H-SPC#2	H-SPC#3
Controller 0	0	0	0	0
Controller 1	0	0	0	0

**H-SPC Error Threshold**

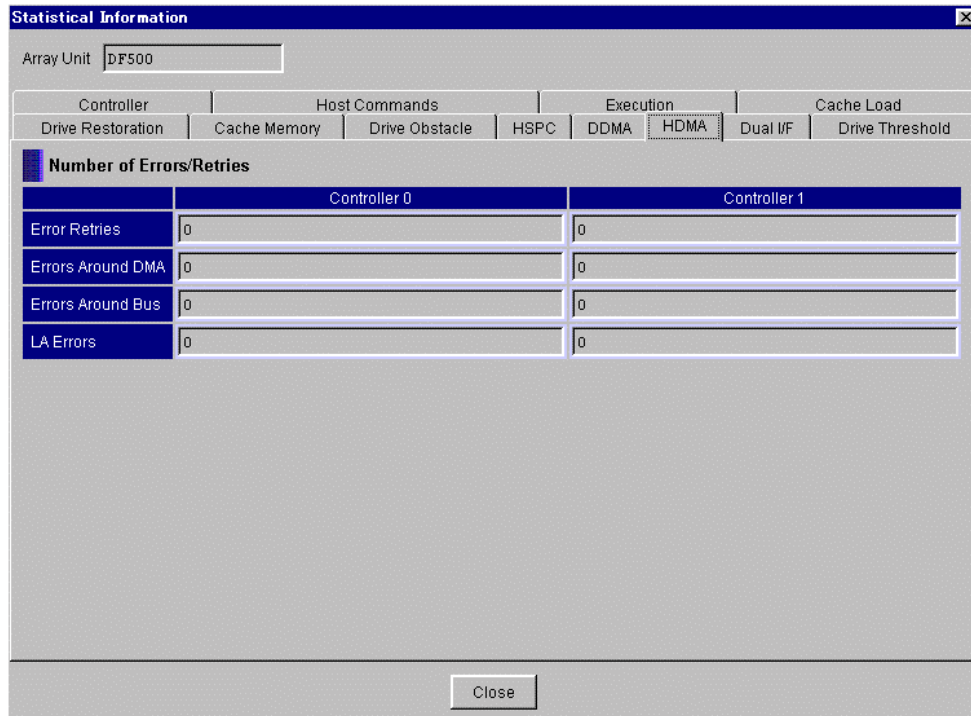
	H-SPC#0	H-SPC#1	H-SPC#2	H-SPC#3
Controller 0	0	0	0	0
Controller 1	0	0	0	0

Close

- **Error Retry Count:** Number of error retries per host SPC
- **Number of H-SPC Errors:** Accumulated number of host SPC errors per host SPC
- **H-SPC Error Threshold:** Threshold value for host SPC errors per host SPC (not supported)

### 3.2.5 Displaying host DMA failures statistical information

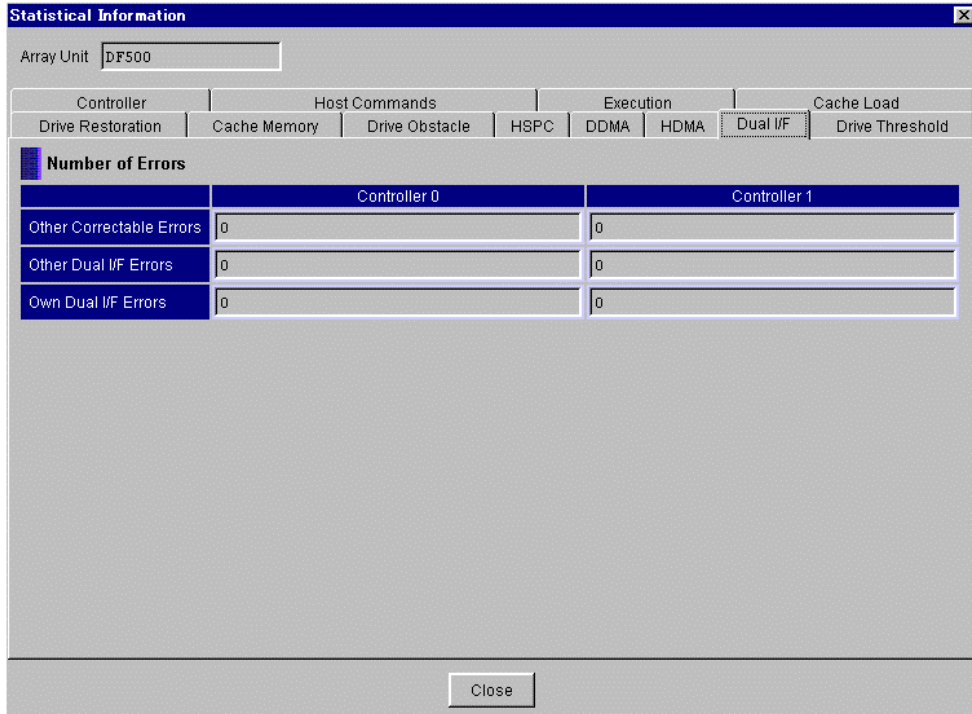
1. Click **HDMA** tab.



- **Error Retries:** Number of DMA error retries
- **Errors Around DMA:** Accumulated number of DMA-related errors
- **Errors Around Bus:** Accumulated number of bus-related errors
- **LA Errors:** Accumulated number of LA errors

### 3.2.6 Displaying DUAL I/F system failures statistical information

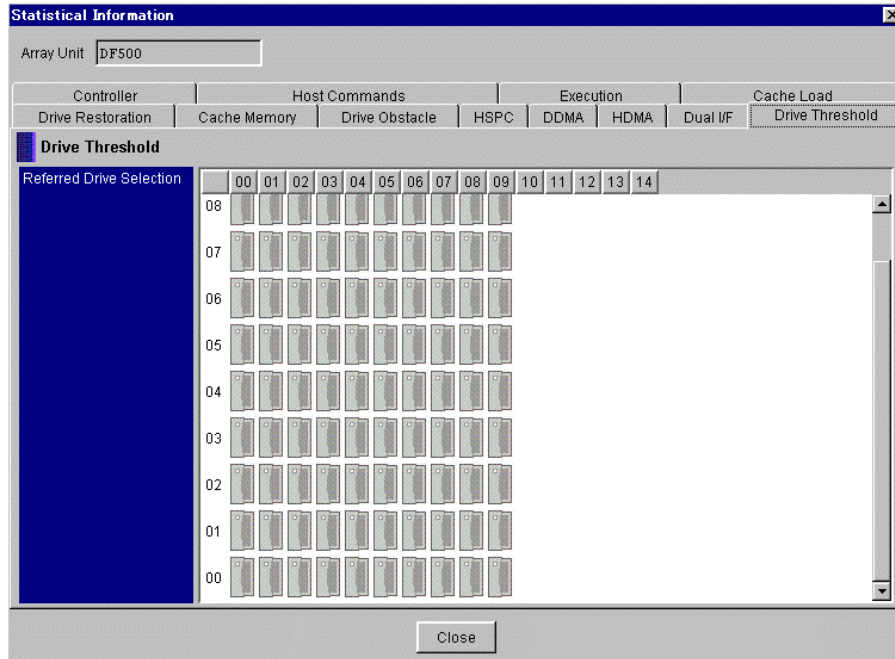
1. Click **Dual I/F** tab.



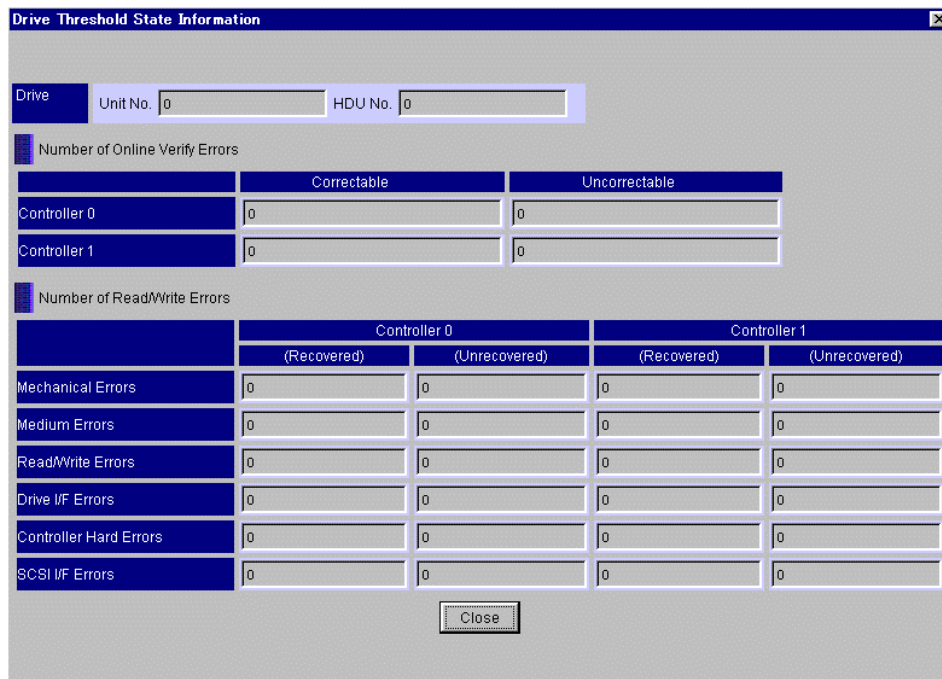
- **Other Correctable Errors:** Accumulated number of correctable errors occurred in the controller of another system
- **Other Dual I/F Errors:** Accumulated number of Dual I/F errors occurred in the controller of another system
- **Own Dual I/F Errors:** Accumulated number of Dual I/F errors occurred in the controller of own system

### 3.2.7 Displaying preventive maintenance failures statistical information

1. Click **Drive Threshold** tab.



2. Double-click on the drive icon you want to display.
3. Information of the double-clicked drive is displayed.

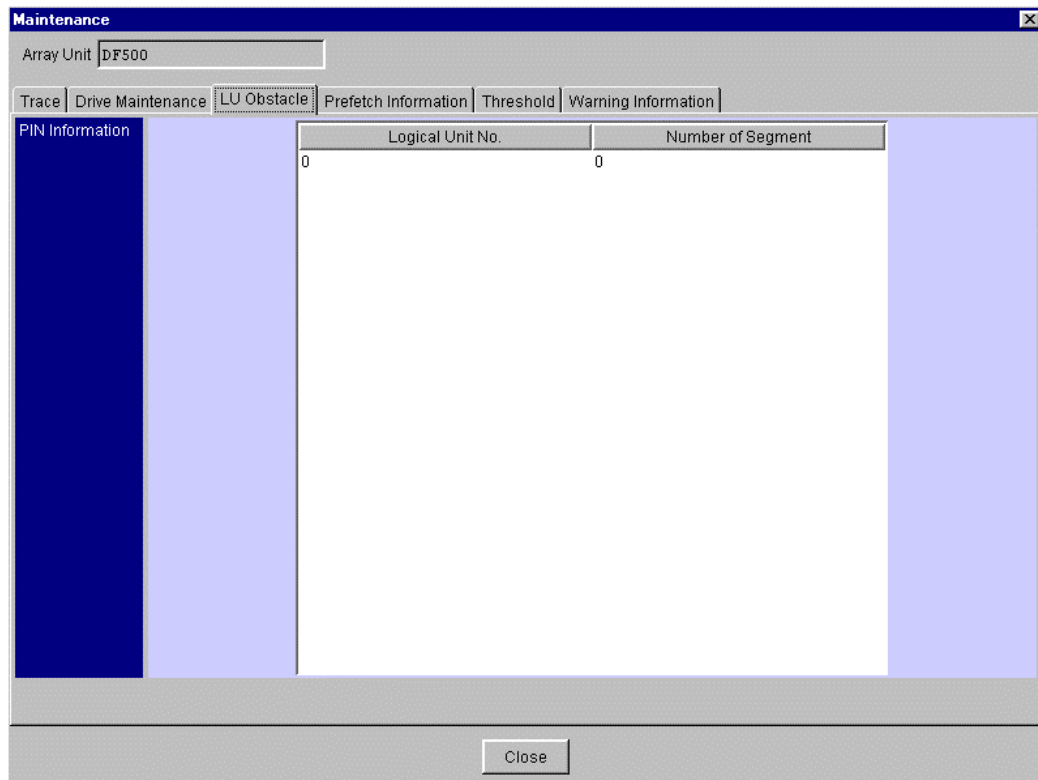


- **Drive:**
  - Unit No.:** Unit No. of the selected drive.
  - HDU No.:** HDU No. of the selected drive.
- **Number of Online Verify Errors:** Accumulated number of errors which occurred when executing the read/write operations.
  - **Correctable:** Accumulated number of correctable errors occurred in on-line verify execution
  - **Uncorrectable:** Accumulated number of uncorrectable errors occurred in on-line verify execution
  - **Restoration Count:** Accumulated number of restorations occurred in on-line verify execution
- **Number of Read/Write Errors:** Accumulated number of errors which occurred when executing the read/write operations.
  - **Mechanical Errors:** Accumulated number of mechanism-related errors
  - **Medium Errors:** Accumulated number of medium-related errors
  - **Read/Write Errors:** Accumulated number of read/write-related errors
  - **Drive I/F Errors:** Accumulated number of drive interface errors
  - **Controller Hard Errors:** Accumulated number of controller hardware errors
  - **SCSI Interface Errors:** Accumulated number of SCSI interface errors

### 3.3 Displaying Logical Unit Failure Data Information

The PIN information of each logical unit is displayed

1. Click **LU Obstacle** tab on the Maintenance screen.



The number of segments, including PIN, in each logical unit is displayed.

### 3.4 Outputting trace information and controller failure information to a file

Outputs the trace information and controller failure dump information in an array unit to a file.

1. Click **Trace** tab on the Maintenance screen.

The screenshot shows a window titled "Maintenance" with a close button (X) in the top right corner. Below the title bar, there is a text field for "Array Unit" containing "DF500". A tabbed interface is visible with the following tabs: "Trace", "Drive Maintenance", "LU Obstacle", "Prefetch Information", "Threshold", and "Warning Information". The "Trace" tab is selected and highlighted in blue. Under the "Trace" tab, there are four sections:

- Controller:** Two checkboxes, "Controller 0" and "Controller 1", both of which are checked.
- Output Information:** Two checkboxes, "Trace Information" (checked) and "Controller failure dump Information" (unchecked).
- Output of Trace Information:** Two radio buttons, "Current information" (selected) and "Latest information when the power turned off" (unselected).
- Output Directory:** An empty text input field.

At the bottom right of the window, there are two buttons: "Apply" and "Reset". At the bottom center, there is a "Close" button.

- **Controller:** No. of a controller whose trace information is output.  
**Controller 0:** Trace information and controller failure dump information of Controller 0  
**Controller 1:** Trace information and controller failure dump information of Controller 1
- **Output Information:** Information to be output  
**Trace Information:** Clicks the check box to output trace information.  
**Controller failure dump Information:** Clicks the check box to output controller failure dump information.
- **Output of Trace Information:**  
**Current Information:** Stored in the current memory (Current information is stored in it.)  
**Latest information when the power turned off:** Stored on the system disk (Information at the time when the array unit is started up is stored in it.)
- **Output Directory:** Store location of trace information to be output.  
If not specified, trace information is output to the directory where the manager 2 has been installed.

**Note:** Controller failure dump information is too large to fit into one FD, so output it the hard disk. When outputting trace information to FDs, output that of each controller individually. When outputting trace information of both controllers together at the same time, output it to the hard disk.

Controller failure dump information to be output is files listed in Table 3.4-1. The files are output in a compressed format. Analyze these output files by a dedicated tool. For the dedicated tool, refer to the maintenance manual of the array unit.

Table 3.4-1 List of Types of Controller Failure Dump Information to Be Output

Type of trace	Output file name
Controller failure dump information	ctfdump.xx

**Note:** The extension, “XX”, of output file names denotes the No. of a controller whose information is specified for outputting.

00 Controller 0’s information

01 Controller 1’s information

Trace information to be output is files listed in Table 3.4-2. The files are output in a binary format. Analyze these output files by a dedicated tool. For the dedicated tool, refer to the maintenance manual of the array unit.

Table 3.4-2 List of Types of Trace Information to Be Output

Type of trace	Output file name
Interrupt	s1inter.xx
Host Command	s1host.xx
Drive Command	s1drv.xx
Module	s1module.xx
Job	s1job.xx
SSB	s1ssb.xx
Error	s1err.xx
Failure	s1fail.xx
Down	s1down.xx
Drive Detach	s1detach.xx
LU Change	s1luc.xx
Lick Service command	s1link.xx
Operation during on-line	s1onope.xx

Table 3.4-2 List of Types of Trace Information to Be Output (Continued)

Type of trace	Output file name
Cause of hardware failure	s1hard.xx
Front end fiber	s1fend.xx
Back end failure	s1bobs.xx
Back end link	s1blink.xx
Back end module	s1bmodu.xx
Back end easiness	s1beasyf.xx
Module in starting-up operation	s1premf.xx
Operation while starting up	s1preof.xx
Pseudo-response	s1gjif.xx
Easy input and output	s1easyf.xx
FC driver interruption	s1fcint.xx
FC driver module	s1fcmodu.xx
SES	s1ses.xx
Data share	s1share.xx
Web message (common file for controller)	s1msgcom.xx
Web message (individual file for controller)	s1msgfls.xx
System Parameters Configuration Information	sysprm.txt
RAID/LU Configuration Information	raidlu.txt
Trace take over Information	VRS

**Note:** The extension, “XX”, of output file names denotes the No. of a controller whose information is specified for outputting.

00 : Trace information of Controller 0

01 : Trace information of Controller 1

### 3.5 Setting prefetch information

1. Click **Prefetch Information** tab on the Maintenance screen.

The screenshot shows a window titled "Maintenance" with a sub-header "Array Unit" set to "DF500". Below this is a tabbed interface with the following tabs: "Trace", "Drive Maintenance", "LU Obstacle", "Prefetch Information" (selected), "Threshold", and "Warning Information".

The "Prefetch Information" tab contains the following settings:

Setting	Value	Unit / Note
Prefetch Staging Size		
RAID0	64	
RAID1 /0+1	64	
RAID5	128	(Number of Sub Blocks)
Next Starting Opportunity	50	%
Number of Read Blocks before Host Data Transfer	255	(Number of Sub Blocks)

At the bottom right of the window are "Apply" and "Reset" buttons. At the bottom center is a "Close" button.

- **Prefetch Staging Size:** Specifies a prefetch staging size (base) value when performing sequential read.

**RAID0:** The prefetch staging size (base value) and the actual prefetch staging size are the same.

**RAID1 /0+1:** The actual prefetch staging size will be as follows.  
Prefetch staging size (base value) × 4 times

**RAID5:** The actual prefetch staging size will be as follows depending on the stripe size.

Stripe size : 16 [k byte] : Prefetch staging size (base value) × 1 time

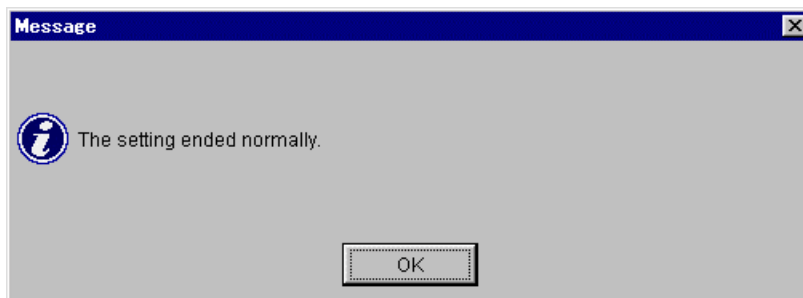
Stripe size : 32 [k byte] : Prefetch staging size (base value) × 2 times

Stripe size : 64 [k byte] : Prefetch staging size (base value) × 4 times

- **Next Starting Opportunity:** When prefetching by sequential read, specify a next starting opportunity. If you specify 50 [%], a next prefetch is performed on the opportunity of having transferred to the host 50 [%] of the prefetched data amount.
- **Number of Read Blocks before Host Data Transfer:** Reading transfers data from a disk to the host via cache. Data transfer to the host is started on the opportunity of the number of blocks of the data transferred from a disk to the cache. It specifies an opportunity to start data transfer to the host.

**Note:** The prefetch staging size, next starting opportunity and host data transfer access size are set at optimum values. If the setting is changed unpreparedly, it will affect performance and may interfere with operation. When changing them, contact the manufacturer in advance.

2. Change the value and click **Apply** button.
3. A confirming message appears. Click **OK** button.



### 3.6 Setting a threshold for preventive maintenance

1. Click **Threshold** tab on the Maintenance screen.

Number of Read/Write Errors		(Recovered)	(Unrecovered)
Mechanical Errors	50	2	
Medium Errors	100	50	
Read/Write Errors	10	2	
Drive I/F Errors	50	2	
Controller Hard Errors	50	2	
SCSI I/F Errors	50	2	

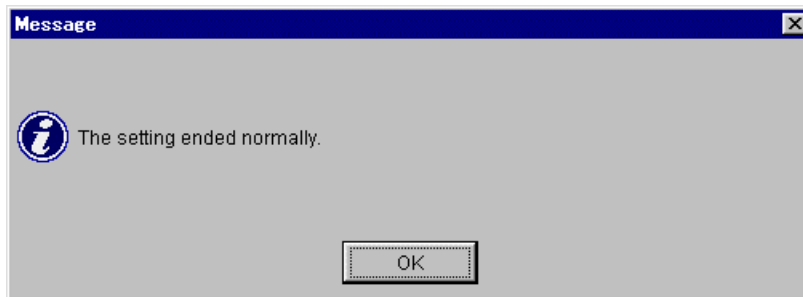
Number of Online Verify Errors	
Correctable	100
Uncorrectable	50

- **Number of Read/Write Errors:** Specifies a threshold of a read/write error.
  - Mechanical Errors:** Accumulated number of mechanical error occurrences
  - Medium Errors:** Accumulated number of medium error occurrences
  - Read/Write Errors:** Accumulated number of read/write error occurrences
  - Drive I/F Errors:** Accumulated number of drive interface error occurrences
  - Controller Hard Errors:** Accumulated number of controller hardware error occurrences
  - SCSI I/F Errors:** Accumulated number of SCSI interface error occurrences
- **Number of Online Verify Errors:** Specifies a threshold of a read/write error.
  - Correctable:** Accumulated number of occurrences of correctable error in on-line verify execution
  - Uncorrectable:** Accumulated number of occurrences of uncorrective error in on-line verify execution

A threshold is specified in the range of 1 to 65,535 with 1 as a unit. If you specify 0, it will not be an object of preventive maintenance.

**Note:** A threshold is set at an optimum value: If the setting is changed unpreparedly, it may perform preventive maintenance operation outside the range of it or may not operate even though there is an object for it: When changing it, contact the manufacturer in advance.

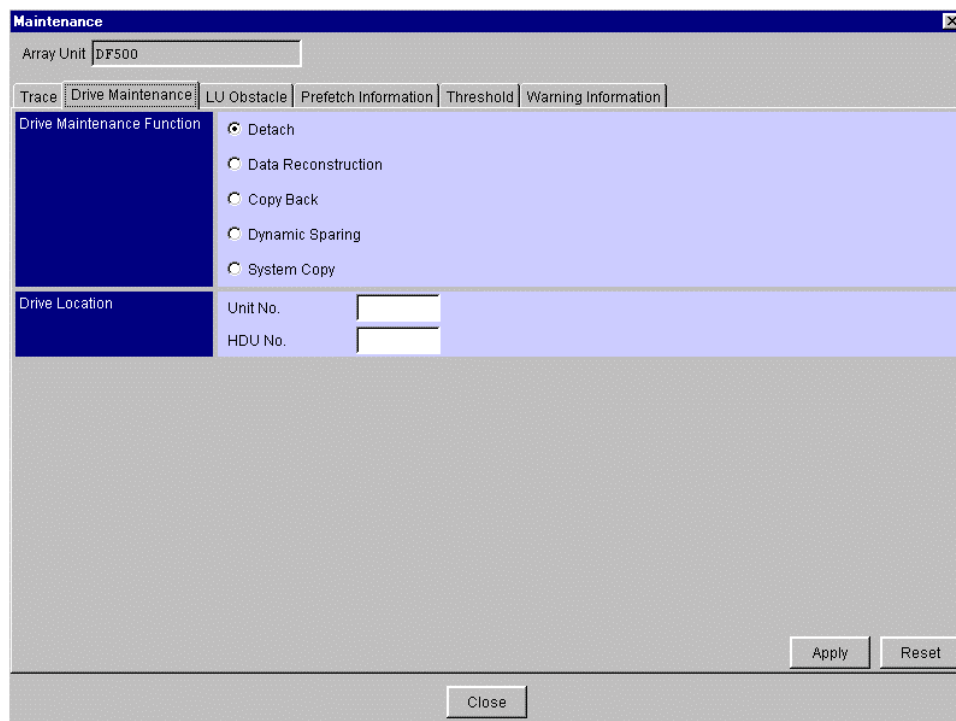
2. Change the value and click **Apply** button.
3. A confirming message appears. Click **OK** button.



### 3.7 Drive Maintenance

Performs maintenance functions on drives mounted in array units such as blocking a drive forcibly and instructing to restore.

1. Click **Drive Maintenance** tab on the Maintenance screen.



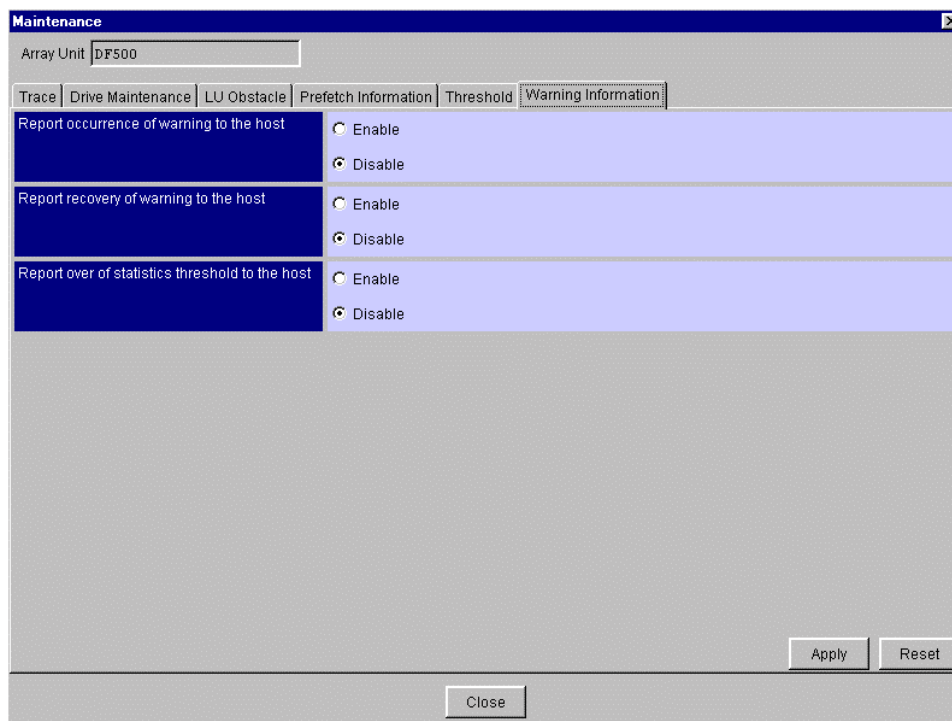
- **Drive Maintenance Function:**
  - Detach:** Blocks a drive specified in the **Drive Location** box forcibly.
  - Data Reconstruction:** Reconstructs data on a drive specified in the **Drive Location** box.  
To a drive specified in the **Drive Location** box, execute reconstruction after replacing its HDU. If executing without replacing an HD, this results in an error without executing the reconstruction.
  - Copy Back:** Copies data from a spare drive to a drive specified in the **Drive Location** box.
  - Dynamic Sparring:** Copies data forcibly from a drive specified in the **Drive Location** box to a spare drive.
  - System Copy:** Copies the system area from the current system drive to a system drive specified in the **Drive Location** box.
- **Drive Location:**
  - Unit No.:** Unit No. of a drive on which to perform a maintenance function
  - HDU No.:** HDU No. of a drive on which to perform a maintenance function

2. Selects the **Drive Maintenance Function** to perform, and specifies the Drive Location of a drive on which to perform a selected function.
3. If you click the **Apply** button, a selected function will be performed.

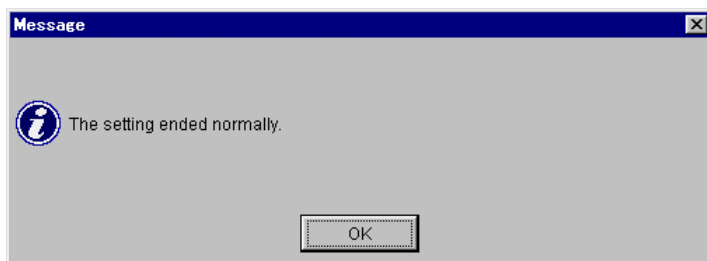
### 3.8 Setting a mode for reporting to the host using an SSB

This setting specifies a mode for reporting an SSB to the host when a trouble such as a failure in a part of the disk array subsystem occurs.

1. Click **Warning Information** tab on the Maintenance screen.



- **Report occurrence of warning to the host:** Reporting an SSB to the host when a failure which causes a warning occurs.
  - **Report recovery of warning to the host:** Reporting an SSB to the host when the subsystem recovers from a failure which caused a warning.
  - **Report over of statistics threshold to the host:** Reporting an SSB to the host when any of the statistical data exceeds its threshold value.
2. Click on an item you want to set to validate it, and then click **Apply** button.
  3. A confirming message appears. Click **OK** button.





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Disk Array management program 2  
(for maintenance)

User's Guide

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**HITACHI**

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