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D A T A   S Y S T E M S

Hitachi Freedom Storage™
Thunder 9200™

LUN Security 9200
User's Guide

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Document Revision Level

Revision	Date	Description
MK-91DF554-0	June 2001	Initial Release.

Source Document Revision Level

The following source document was used to produce this 9200 user guide:

DF-F500-WSEC LUN Security User's Guide, Second Edition.

Preface

Before using LUN Security 9200, read the operating procedures and notices included in this guide. Carefully follow the safety precautions and instructions.

The *Hitachi Freedom Storage™ Thunder 9200™ LUN Security 9200 User's Guide* assumes that:

- The user has a background in data processing and understands direct-access storage device subsystems and their basic functions.

- The user is familiar with the Hitachi Freedom Storage™ Thunder 9200™ array subsystem.

Note: When you replace the Host Bus Adapter (HBA) of the host (server) with the system using LUN Security 9200, you need to change the setting of LUN Security 9200. (Refer to: *WWN Change Operation when the HBA is Replaced*.)

For further information on Hitachi Data Systems products and services, please contact your Hitachi Data Systems account team, or visit the Hitachi Data Systems worldwide web site at http://www.hds.com. For specific information on the supported host systems and platforms for the 9200, please refer to the user documentation for the product, or contact the vendor's customer support service.

Note: The term "9200" refers to the Hitachi Thunder 9200™ subsystem, unless otherwise noted. Please refer to the *Hitachi Thunder 9200™ User and Reference Guide* (MK-90DF504) for further information on the 9200 disk array subsystem.

Note: The use of LUN Security 9200 and all other Hitachi Data Systems products is governed by the terms of your license agreement(s) with Hitachi Data Systems.

Safety Precautions

Note the following when using LUN Security 9200:

- Only administrators, system engineers, and field engineers who are familiar with Hitachi Data Systems disk array units are allowed to run LUN Security 9200.

- Make certain you read and fully understand this guide before you operate LUN Security 9200.

- Carefully follow instructions included with the "CAUTION" label.

⚠ **CAUTION**

Failure to follow these instructions can result in serious system damage and/or the loss of system data.

COMMENTS

Please send us your comments on this document: doc.comments@hds.com.

Make sure to include the document title, number, and revision.
Please refer to specific page(s) and paragraph(s) whenever possible.

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Thank you!

Contents

Chapter 1   Overview

The LUN Security 9200 feature enables specific hosts to access arbitrary LUNs. This feature prevents data from damages caused by illegal accesses in a SAN environment. By using host's World Wide Name (WWN), you can set a LUN to communicate only with a specific WWN(s), allowing you to limit access to that LUN to a specific host(s). When WWNs are specified, the hosts assume that only permitted LUNs are connected to the hosts.

The major functions of the LUN Security 9200 are:

The LUN Security 9200 enables the user to specify or change LUN accessibility for each selected host from the panel or Configuration Manager II.

Once specified, the LUN Security 9200 allows the host to recognize only the specified LUs.
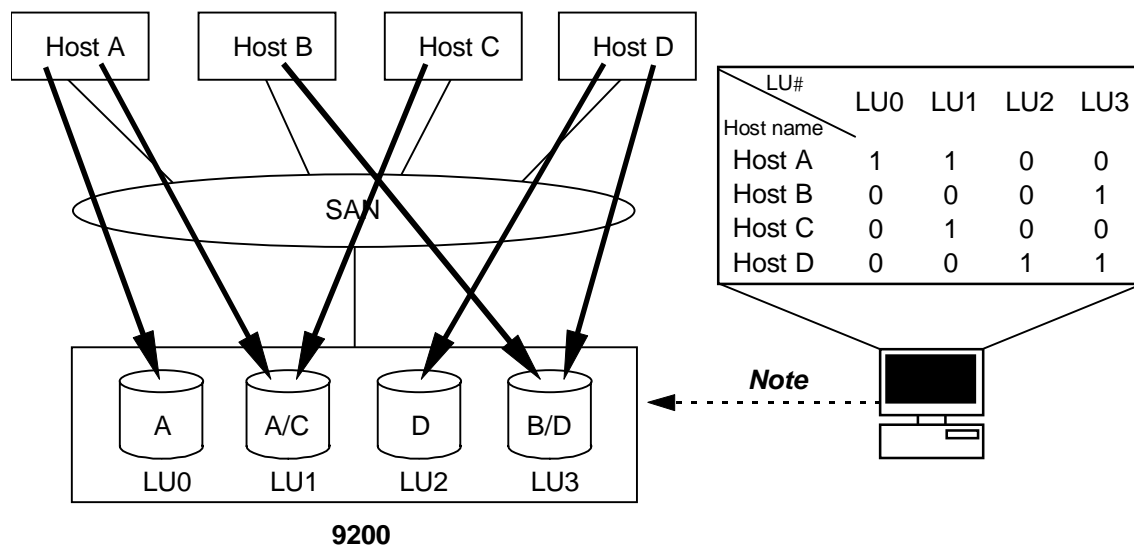
9200

Note: Register the file directly from the management server using the Resource Manager 9200 program.

This document includes the following information:

- Installing and Uninstalling LUN Security 9200

- Enabling or Disabling LUN Security 9200

- Browsing and Setting LUN Security 9200 Information

1.1   Specifications

The specifications of LUN Security 9200 are as follows:

Item	Specifications
Available LUNs	• LUNs can be specified only in Fibre systems (LUNs cannot be specified in the SCSI systems). • Units can be specified if they already have the LUN Security 9200 of a licensed option.
Number of WWNs to be Registered	Up to 128 WWNs of hosts for a port can be registered.
Security Setting	Specify one or more WWNs which can access LUNs. • You can specify 2 or more WWNs for each LUN.
WWN Change	You can change the WWN access without disrupting the security settings. • The WWN change function is effective when you have to change the WWN; for example, when you replace a host board.
LUN Security 9200 Enable/Disable	LUN Security 9200 can be enabled or disabled for each port. You can also disable LUN Security 9200 temporarily. • The security information which has been set is retained while LUN Security is disabled. It can be restored when LUN Security 9200 is enabled again. • Since LUN Security 9200 is disabled when it is initially installed, the system can easily be operated.
Security level of the LUN Security Control Feature	When using the LUN Security Control Feature, you can select one of "Check INQUIRY" and "Check All Commands" as a security level. • The "Check INQUIRY" option specifies checking the access made to LUs with an INQUIRY command, one of the SCSI commands. • The "Check All Commands" option specifies checking the access made to LUs with all the SCSI commands individually.
Setting in the Online Status	You can set the security parameters by using the Resource Manager 9200 Program in the online status.

Note: You can only select a security level of the **Check INQUIRY** and **Check All Commands** of the LUN Security Control Feature when a combination of the X557 or later versions of the Hitachi disk array unit microprogram and Resource Manager 9200 are available. The table below describes the security level available in combinations of the Hitachi disk array unit microprogram and Resource Manager 9200 for both 5800 and 9200.

Revision of the Hitachi disk array unit microprogram	Disk Array Management Program 2	Disk Array Management Program
X556 or earlier	"Check INQUIRY" only	"Check INQUIRY" only
X557 or later	Selection from "Check INQUIRY" and "Check All Commands"	"Check INQUIRY" only

1.2 Notes on Setting LUN Security 9200 Information

⚠ CAUTION

This section includes important notes on setting LUN Security 9200 information:

- Verify that the LUN Security 9200 setting information is correct and accurate. The settings must be correct for the system to run smoothly.

- This function is not available when a host (OS or driver) cannot identify an LU without LUN#0 or when a host cannot identify LUs after an undefined LU is found (when "Inquiry" is not issued).

- The LUN Security 9200 function is disabled on a port connected to the HP server (access cannot be restricted when the 9200 is set in HP mode).

- When you replace the HBA of the host (server) attached to a 9200 using LUN Security 9200, be sure to change the setting of the LUN Security 9200. (For details, see "WWN Change Operation when the HBA is Replaced".)

Chapter 2   Installing and Uninstalling LUN Security 9200

This section includes the following:

- Installing LUN Security 9200

- Uninstalling LUN Security 9200

2.1   Installing LUN Security 9200

The LUN Security 9200 option is usually unselectable (closed). To make this option available, you must install LUN Security 9200 (DF-F500-WSEC) and make its functions selectable (open). To install this function, use the Option FD provided with the optional feature or the key code.

LUN Security 9200 is installed and uninstalled through the Resource Manager 9200 program. For operating procedures, refer to the *Resource Manager 9200 User's Guide*.

The following instructions describe how to install LUN Security 9200 (DF-F500-WSEC), using the GUI version of Resource Manager 9200:

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will install LUN Security 9200. Connect to this array unit; the following window is displayed.
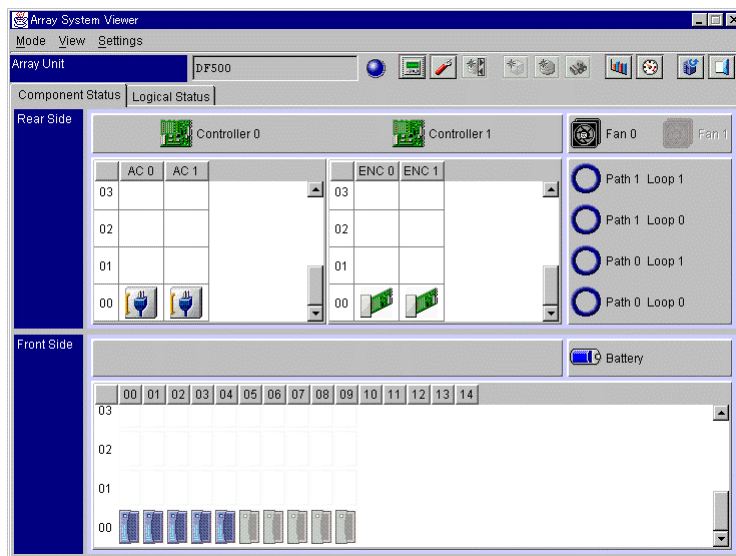
3. From the **Settings** menu, select **Configuration Settings**.

    Alternatively, from the tool bar, select the **Configuration Settings** button.

    The Parameter dialog box is displayed.
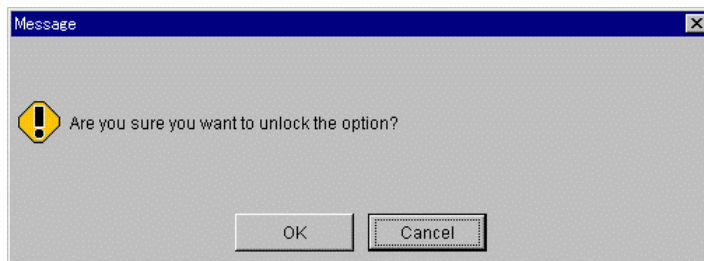
4. Click the **Option** tab.
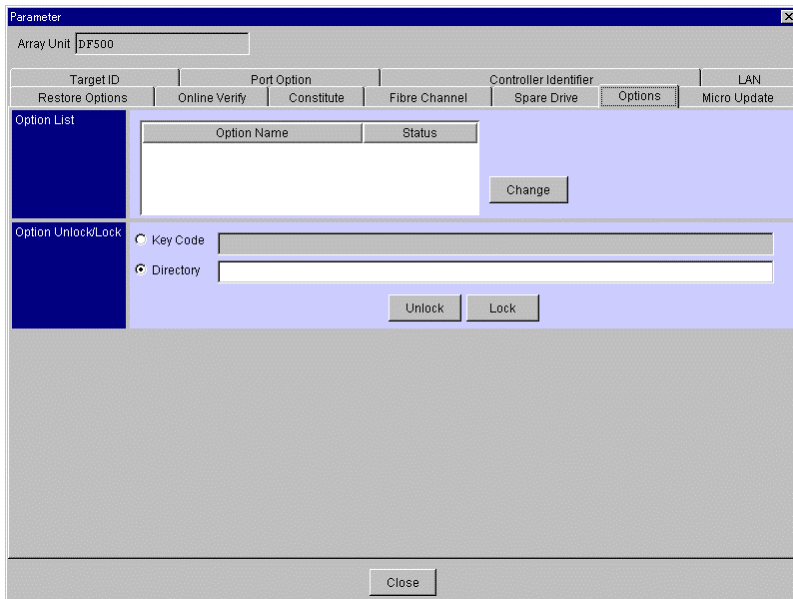
5. Unlock the optional features by using either of the following:

   – Key FD

   – Key Code

Key FD

a) Insert the key FD into the FDD of the system where Resource Manager 9200 is installed.

b) Click the **Directory** radio button to enter a path to the FD.

c) Click the **Unlock** button.

d) A screen appears, requesting a confirmation to unlock the LUN Security 9200 option. Click the **OK** button.

e) A message appears, confirming that this optional feature is unlocked. Click the **OK** button.

```
Message                                              [X]

  (i)  The option is unlocked.



                        [    OK    ]
```
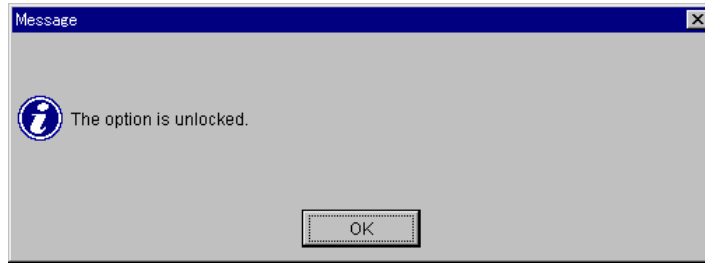
Key Code

a) Click the **Key Code** radio button to enter a key code in the text box.

b) Click the **Unlock** button.

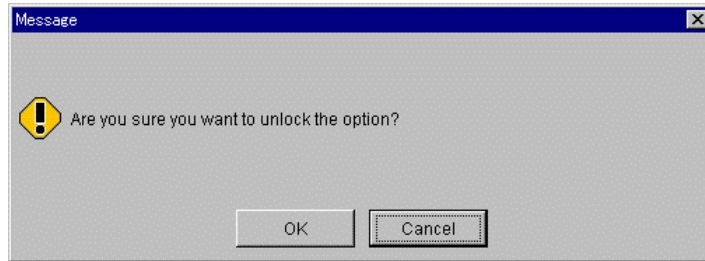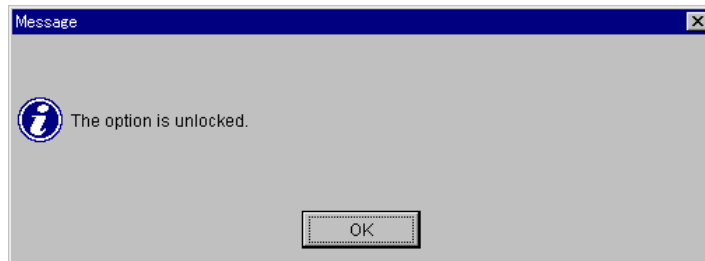c) A screen appears, requesting a confirmation to unlock the LUN Security 9200 option. Click the **OK** button.

```
Message                                              [X]

  (!)  Are you sure you want to unlock the option?



                  [  OK  ]    [  Cancel  ]
```

d) A message appears, confirming that this optional feature is unlocked. Click the **OK** button.

```
Message                                              [X]

  (i)  The option is unlocked.



                        [    OK    ]
```

e) The window is updated, then displayed.

Parameter						☒

Array Unit DF500

Target ID	Port Option		Controller Identifier		LAN
Restore Options	Online Verify	Constitute	Fibre Channel	Spare Drive	Options	Micro Update

Option List

Option Name	Status
LUN-SECURITY	Enable

Change

Option Unlock/Lock

○ Key Code

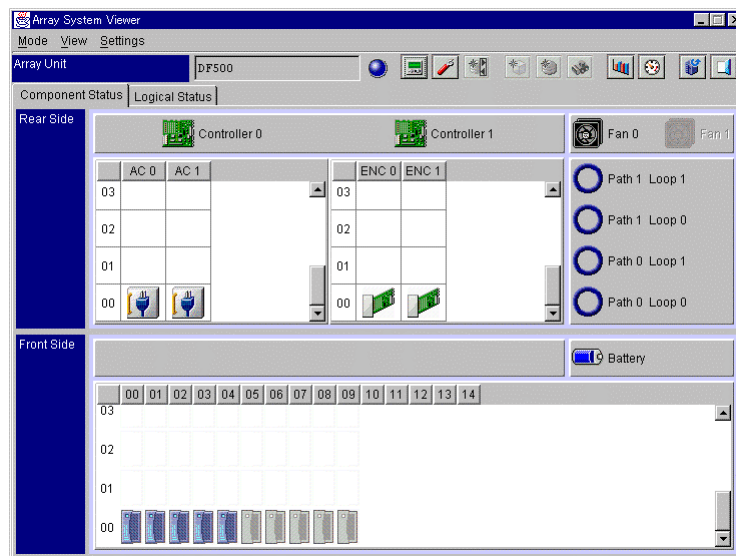◉ Directory

Unlock   Lock

Close

2.2 Uninstalling LUN Security 9200

To uninstall LUN Security 9200, use the Option FD provided with the optional feature or the key code.

LUN Security 9200 is installed and uninstalled through the Resource Manager 9200 program. For operating procedures, refer to the *Resource Manager 9200 User's Guide*.

The following instructions describe how to uninstall LUN Security 9200 (DF-F500-WSEC), using the GUI version of Resource Manager 9200:

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will uninstall LUN Security 9200. Connect to this array unit; the following window is displayed.

3. From the **Settings** menu, select **Configuration Settings**.

   Alternatively, from the tool bar, select the **Configuration Settings** button.

   The Parameter dialog box is displayed.
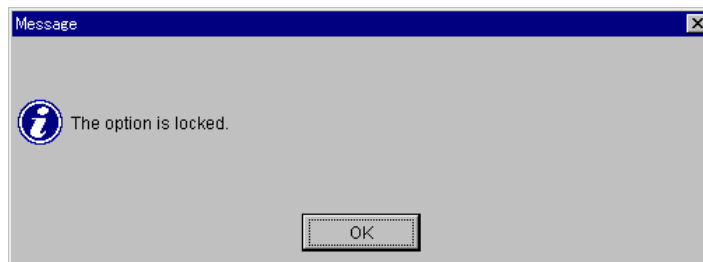
4. Click the **Option** tab.

5. Lock the optional features by using either of the following:

   – Key FD

   – Key Code

Key FD

a) Insert the key FD into the FDD of the system where Resource Manager 9200 is installed.

b) Click the **Directory** radio button to enter a path to the FD.

c) Click the **Lock** button.

d) A screen appears, requesting a confirmation to lock the LUN Security 9200 option. Click the **OK** button.
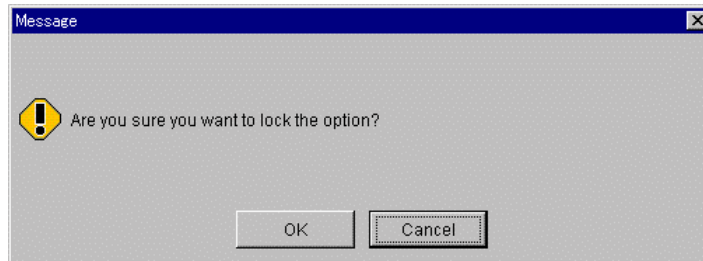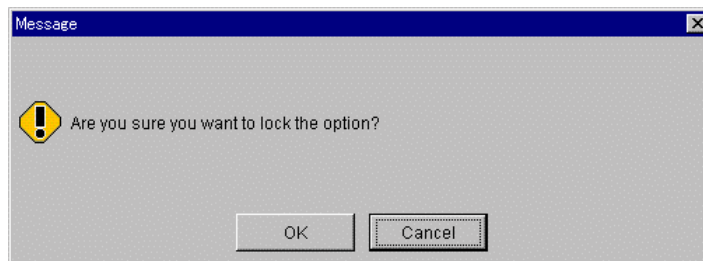

e) A message appears, confirming that this optional feature is locked. Click the **OK** button.

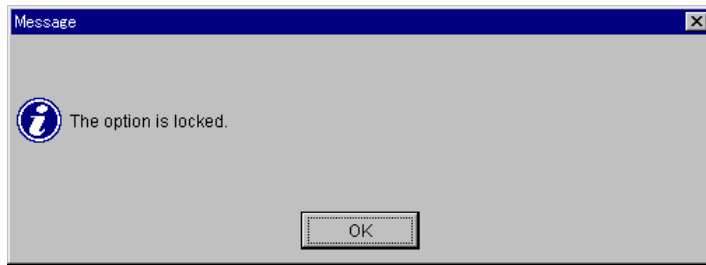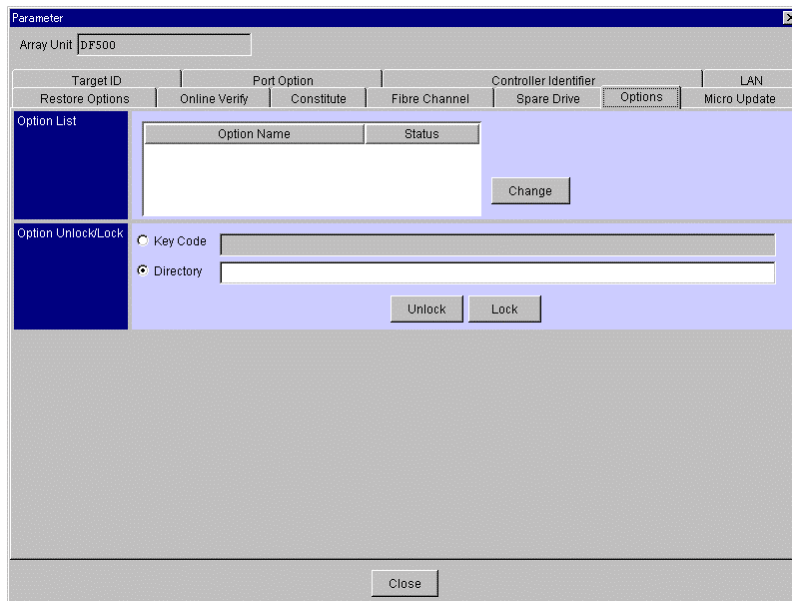*Key Code*

a) Click the **Key Code** radio button to enter a key code in the text box.

b) Click the **Lock** button.

c) A screen appears, requesting a confirmation to lock the LUN Security 9200 option. Click the **OK** button.

d) A message appears, confirming that this optional feature is closed. Click the **OK** button.

6. The window is updated, then displayed.

Chapter 3   Enabling or Disabling LUN Security 9200

LUN Security 9200 can be enabled or disabled without uninstalling this function. The following instructions describe how to enable or disable LUN Security 9200 without uninstalling this function, using the GUI version of Resource Manager 9200.

1. Start the Resource Manager 9200 program and switch to **Management Mode**.

2. Register the array unit in which you will uninstall LUN Security 9200. Connect to this array unit; the following window is displayed.
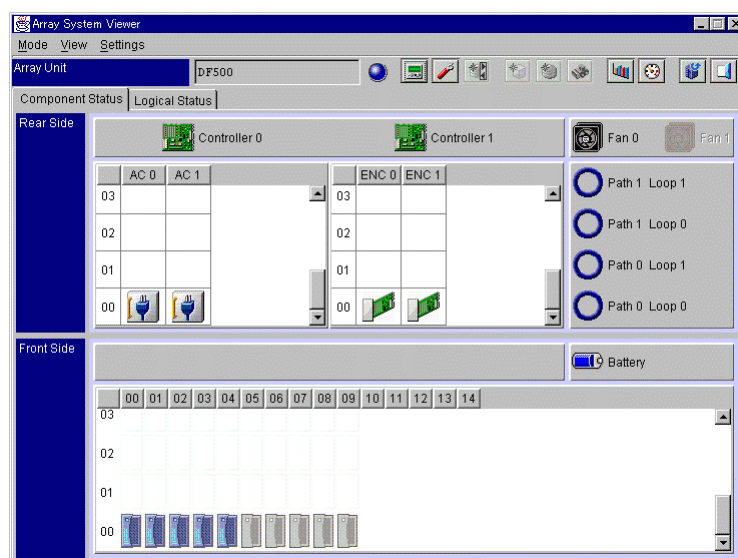
3. From the **Settings** menu, select **Configuration Settings**.

    Alternatively, from the tool bar, select the **Configuration Settings** ![button] button.

    The Parameter dialog box is displayed.

4. Click the **Option** tab.
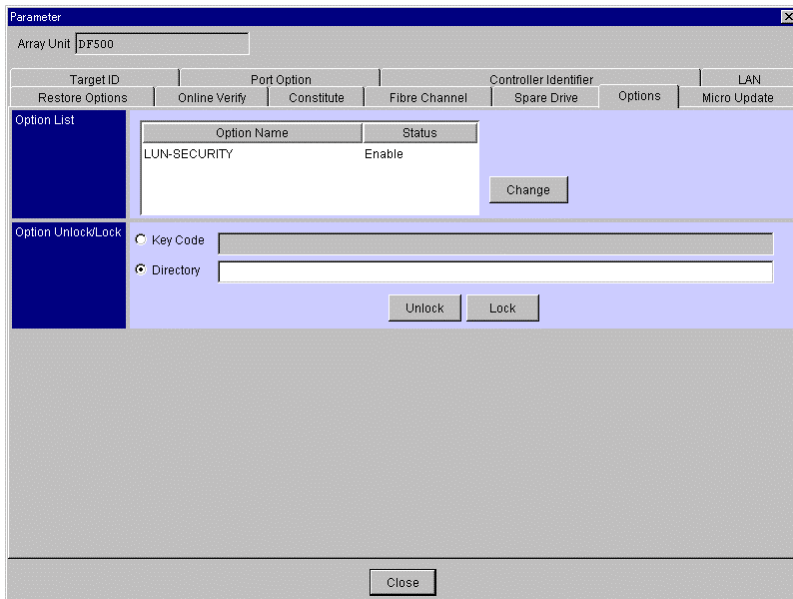
5. Click **LUN-SECURITY** in the **Option Name** text box, then click the **Change** button.

6. Click **OK**.
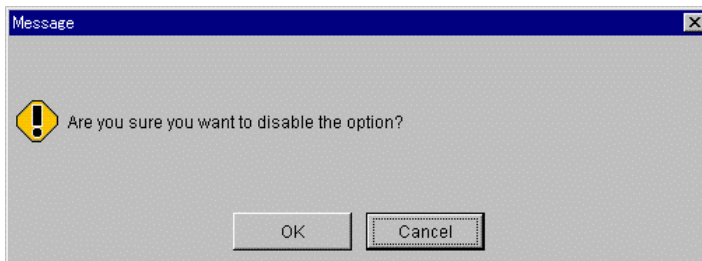
7. A message appears, confirming that this option is set. Click the **OK** button.

8. The window is updated, then displayed.

Note: This setting is not active until the system is rebooted. The 9200 subsystem cannot access the host until the reboot is completed and the system restarts. Therefore, be certain the host has stopped accessing data before starting the reboot process.

Note: Even when the LUN Security 9200 feature is disabled, the access check settings are valid.

Chapter 4   Browsing and Setting LUN Security 9200 Information

When LUN Security 9200 information has been set, only specified hosts are allowed to access the selected LUNs. LUN Security 9200 information consists of the following:

- Host Identification Information

- Access Check Required Information

- Setting the Security Information

- Deleting the WWN of the Host HBA

- Deleting the WWN Accessible for Each LUN

- Changing the WWN of the Host HBA (Changing the WWN when the host is replaced)

- Using the WWN Change Operation when the HBA is Replaced

4.1   Host Identification Information

Host identification specifies which hosts are allowed to access a selected LUN. This information contains three setting items per host for each. Up to 128 hosts can be specified.

1. Node name of host (mandatory)

2. Port name of host (mandatory)

3. LUN which allows the host to access (specified with internal LU, mandatory)

4.2   Access Check Required Information

This information specifies whether a selected LUN inhibits accessibility by hosts other than the specified host. By setting Access-check = enabled, a selected LUN inhibits accessibility by hosts other than the specified host. By setting Access-check = disabled, a selected LUN can be accessed by all hosts, ignoring the host identification information.

The following list indicates whether each setting item is set, browsed, and access-checked.

No.	Host identification item	Setting	Browsing	Access-check
1	Host's node name	Enabled	Enabled	Not checked
2	Host's port name	Enabled	Enabled	Checked
3	LUN which allows the host to access	Enabled	Enabled	Checked

Host identification information and Access Check Necessity Information must be set for each port.

4.3 Setting the Security Information

Security information is set through the Resource Manager 9200 program.

Note: Before setting the security information, you must install LUN Security 9200 (DF-F500-WSEC) and make its functions selectable (open). Refer to Installing and Uninstalling LUN Security 9200 on page 5.

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will install LUN Security 9200. Connect to this array unit; the following window is displayed.

3. From the **Settings** menu, select **Configuration Settings**.

   Alternatively, from the tool bar, select the **Configuration Settings** button.

   The Parameter dialog box is displayed.

4. Click the **Fibre Channel** tab.

5. To set security information, click the **Portxx** button in the ports displayed in the **Security Information** box. window. Click on the **Add** button. The WWN window appears.

6. Enter the **Node Name** (hexadecimally 16 digits) and **Port Name** (hexidecimally 16 digits) of the host WWN from the keyboard. Click the **OK** button.

The added WWN appears in the Security Information window, as displayed in the following screen.

7. Click the **Security Information Enable** check box. Click the **LUN Security** button.

8. Select **Security Check Level** and **Logical Unit No.** from the Logical Unit No. list. Select the **Node Name** from the Node Name list. Click the **Add** button.

9. Click the **ON** button.

10. Click the **Apply** button on the **Fibre Channel** tab. The following message appears.

11. Click the **OK** button. This is the end of the security information setting.

12. Write down the security information on the following form and update it when changes are made.

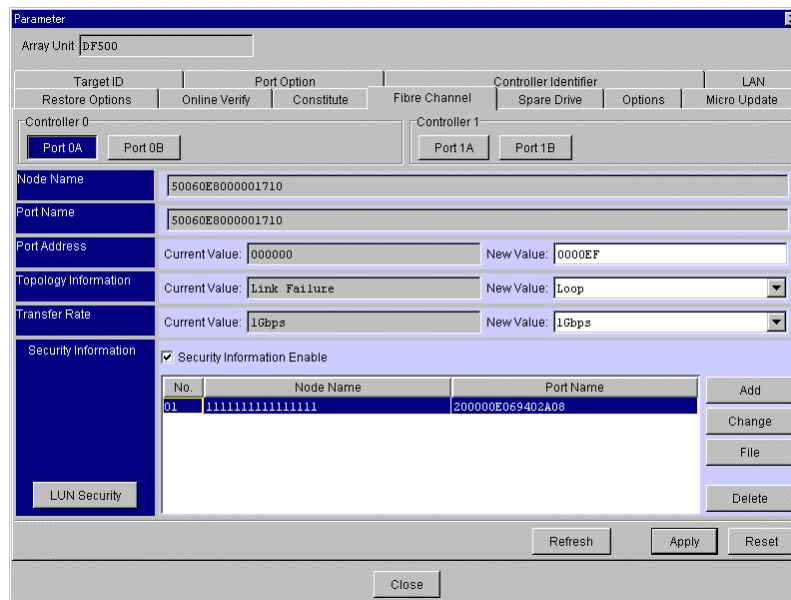| CTL#	Port#	Node name of the host	Port name of the host	LUN which allows the host to access

4.4 Deleting the WWN of the Host HBA

To delete the WWN information of the host HBA using Resource Manager 9200, follow these steps:

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will uninstall LUN Security 9200. Connect to this array unit; a corresponding window is displayed.

3. From the **Settings** menu, select **Configuration Settings**.

   Alternatively, from the tool bar, select the **Configuration Settings** [img] button.
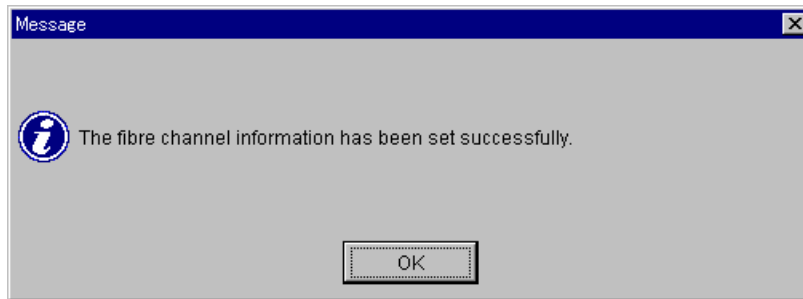
4. Click the **Fibre Channel** tab.

5. Click the **Portxx** button and security **No.** to delete the security information among those ports displayed in the **Security Information** box. Click the **Delete** button.

6. Click the **Apply** button.

7. Click the **OK** button in the main window.

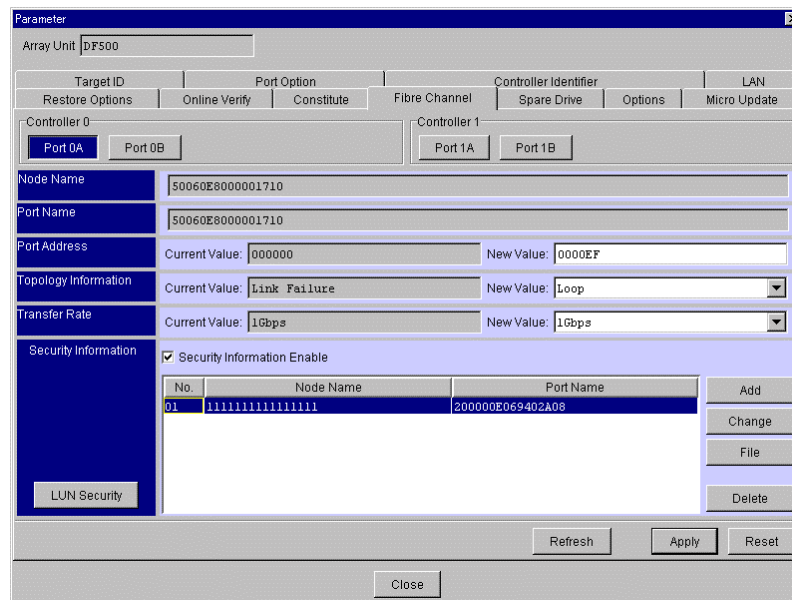This is the end of security information deletion

4.5 Deleting the WWN Accessible for Each LUN

To delete the WWN information accessible for each LUN using Resource Manager 9200, follow these steps:

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will install LUN Security 9200. Connect to this array unit; a corresponding window is displayed.

3. From the **Settings** menu, select **Configuration Settings**.

   Alternatively, from the tool bar, select the **Configuration Settings** button.

4. Click the **Fibre Channel** tab.

5. Click the **Portxx** button and security **No.** to delete the security information among those ports displayed in the **Security Information** box. Click the **LUN Security** button.

6. Click **WWN** to delete from the **Accesssible WWN** box. Click the **Delete** button.

7. Click the **OK** button.

8. Click the **Apply** button. The following message appears.

9. Click the **OK** button.

This is the end of security information deletion.

4.6 Changing the WWN of the Host HBA (Changing the WWN when the host HBA is replaced)

To change the WWN of the host HBA with Resource Manager 9200, follow these steps. Perform this operation when the host HBA is replaced.

1. Start Resource Manager 9200 and switch to **Management Mode**.

2. Register the array unit in which you will install LUN Security 9200. Connect to this array unit; a corresponding window is displayed.

3. From the **Settings** menu, select **Configuration Settings**.

   Alternatively, from the tool bar, select the **Configuration Settings** ▣ button.
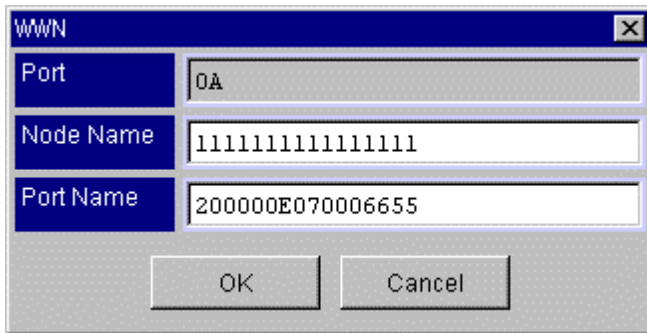
4. Click the **Fibre Channel** tab.

```
┌─ Parameter ──────────────────────────────────────────────────── [X] ┐
│  Array Unit  DF500                                                    │
│  ┌───────────┬────────────┬──────────────────┬──────────────┐        │
│  │ Target ID │ Port Option │  Controller Identifier │   LAN   │        │
│  ├───────┬──────────┬──────────┬────────────┬─────────┬──────────┤    │
│  │Restore Options│Online Verify│Constitute│Fibre Channel│Spare Drive│Options│Micro Update│
│  ┌─ Controller 0 ──────────────┐    ┌─ Controller 1 ──────────────┐  │
│  │ [ Port 0A ] [ Port 0B ]     │    │ [ Port 1A ] [ Port 1B ]     │  │
│  └─────────────────────────────┘    └─────────────────────────────┘  │
│  Node Name    │ 50060E8000001710                                    │ │
│  Port Name    │ 50060E8000001710                                    │ │
│  Port Address │ Current Value: 000000      New Value: 0000EF        │ │
│  Topology Information │ Current Value: Link Failure  New Value: Loop ▼│
│  Transfer Rate │ Current Value: 1Gbps   New Value: 1Gbps          ▼ │ │
│  Security Information │ ☑ Security Information Enable                │ │
│                       │ No. │ Node Name │ Port Name │   [ Add ]      │
│                       │ 01  │1111111111111111│200000E069402A08│[Change]│
│                       │                                │ [ File ]     │
│     [ LUN Security ]  │                                │ [ Delete ]   │
│                                      [ Refresh ] [ Apply ] [ Reset ]  │
│                              [ Close ]                                 │
└──────────────────────────────────────────────────────────────────────┘
```
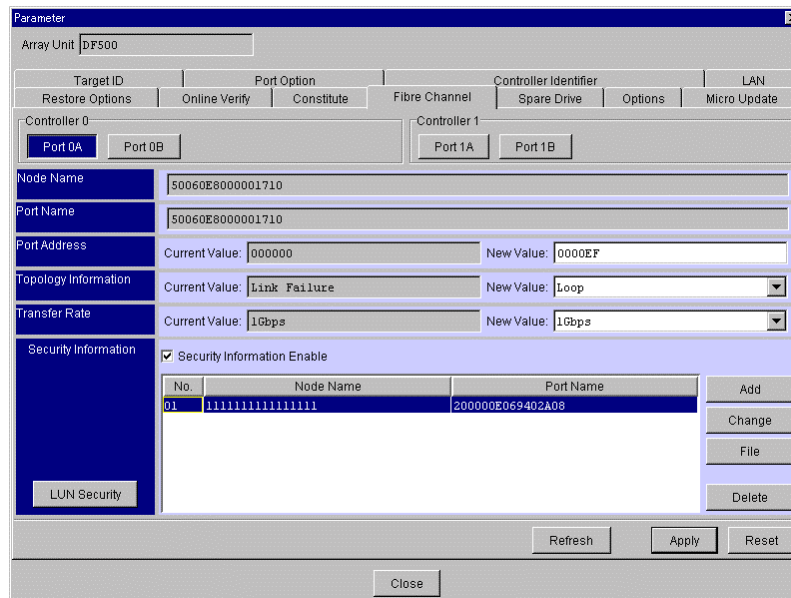
5. Click the **Portxx** button to change the security information amont the ports in the **Port Information** box. Click the **Change** button.

6. Enter the **Node Name** and the **Port Name** of the host's WWN from the keyboard. Click the **OK** button. **Node Name** and **Port Name** are hexadecimally 16 digits.

7. Click the **Apply** button. The following message appears.
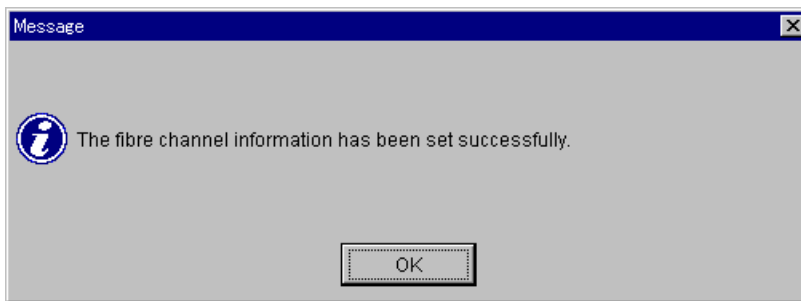
8. Click the **OK** button.

This is sthe end of the security information change.

4.7 Using the WWN Change Operation when the HBA is Replaced

When you replace the HBA of the host (server) using LUN Security 9200 (DF-F500-WSEC), you need to change the WWN setting of LUN Security 9200. This section includes the following information:

- WWN Change Procedure when the HBA is Replaced

- Obtaining the WWN of a Host

4.7.1 WWN Change Procedure when the HBA is Replaced

Follow these steps:

1. Check the WWN before and after HBA replacement. For the WWN after HBA replacement, see *Obtaining the WWN of a Host*.

2. Change the WWN before HBA replacement to the WWN after HBA replacement by the following LUN Security 9200 setting procedure.

   When changing the setting, see Operation with the Disk Array Management Program-*Changing the WWN of the Host HBA (Changing the WWN when the host HBA is replaced).*

3. Restart the host whose HBA was replaced, and check that the LU which was recognized before HBA replacement can be recognized after HBA replacement. When the LU cannot be recognized correctly, the LUN Security 9200 is not correctly set. Use the procedures from 2 above to set the WWN again.

4.7.2 Obtaining the WWN of a Host

The node name, port name, and N_port ID of a host (which is required as host identification information) can be obtained using the host console.

This section explains how to obtain the WWN of a host on the following systems:

- Sun (JNI)

- Windows NT (Emulex Light Pulse)

- Windows NT (Qlogic)

4.7.2.1 Sun (JNI)

Turn on the system. Log in as a super user on the Login window and execute the following command:

Input and Display Example

```
# dmesg     ← Command name
        :
Ethernet address = 8:0:20:89:b:7
root nexus = Sun Ultra 2 UPA/SBus (UltraSPARC-II 296MHz)
sbus0 at root: UPA 0x1f 0x0 ...
fas0:    rev 2.2 FEPS chipSUNW,fas0 at sbus0: SBus0 slot 0xe offset
0x8800000 and slot
0xe offset 0x8810000 Onboard device sparc9 ipl 4        N_Port ID (HBA#1)
sd0 at SUNW,fas0: target 0 lun 0
sd0 is /sbus@1f,0/SUNW,fas@e,8800000/sd@0,0
        <SUN4.2G cyl 3880 alt 2 hd 16 sec 135>          Port name (HBA#1)
sd6 at SUNW,fas0: target 6 lun 0
sd6 is /sbus@1f,0/SUNW,fas@e,8800000/sd@6,0
fcaw0: Host: Port 000001 (WWN 200000e0694005e5)
fcaw0: JNI Fibre Channel Adapter model FCW
fcaw0: 64-bit SBus 1: IRQ 3: FCODE Version 12 [a1f55]
fcaw0: Fibre Channel WWN: 200000e0694005e5
fcaw0: FCA Driver Version 2.2.0.HIT.03, Feb 04, 1999 for Solaris 2.6
fcaw0: All Rights Reserved.                             N_Port ID (HBA#2)
fcaw0: < Total IOPB space used: 1140160 bytes >
fcaw0: < Total DMA space used: 4235293 bytes >
fcaw0: < DMA redzone len 224 bytes >                    Port name (HBA#2)
fcaw1: Host: Port 000001 (WWN 200000e0694005f6)
fcaw1: JNI Fibre Channel Adapter model FCW
fcaw1: 64-bit SBus 3: IRQ 3: FCODE Version 12 [a1f55]
fcaw1: Fibre Channel WWN: 200000e0694005f6
fcaw1: FCA Driver Version 2.2.0.HIT.03, Feb 04, 1999 for Solaris 2.6
fcaw1: All Rights Reserved.
```

When the command is executed, the information in the previous example (in this case, 2 HBAs are installed) is output.

Read and record the port name and the N_Port ID. The node name can be obtained from the port name. Replace the value "20" of the highest one byte of the port name (200000e069xxxxxx) by "10".

Example

    Port name: <u>20</u>0000e069xxxxxx

                              ↓

    Node name: <u>10</u>0000e069xxxxxx

4.7.2.2 Windows NT (Emulex Light Pulse)

When the Emulex driver is installed on the host, the Iputilnt utility is installed on Windows NT. Run the Iputilnt utility to obtain the WWN of the host. Follow these steps:

1. Start the Iputilnt utility.

2. Select Adapter X on the display. (Adapters corresponding to the number of installed HBAs are displayed.)

3. Select Adapter Revision Levels on the Category menu.

4. IEEE Address XX-XX-XX-XX-XX-XX (6 bytes) appears on the bottom of the screen.

5. Place 10-00 before the IEEE Address XX-XX-XX-XX-XX-XX. This is a port name.

Example:

    10-00-XX-XX-XX-XX-XX-XX

6. The node name is equal to the port name.

7. The N_Port ID is omitted.

8. When two or more HBAs are installed, repeat Steps 2 through 7 above.

Note: The Iputilnt utility is supported by the Emulex driver of version 4.2 or later. If the version is earlier than 4.2, check the IEEE Address by the label on the board.

4.7.2.3 Windows NT (Qlogic)

To obtain the WWN of a host on the Windows NT (Qlogic2100F), follow these steps:

1. When the host starts up or when the QLA2xxx board is initialized for rebooting, the message: **Press<ALT-Q> for Fast!UTIL** appears. Press the **Q** key while holding down the **ALT** key. The **Qlogic Fast!UTIL** utility starts.

2. Select an adapter corresponding to the HBA. (Adapters corresponding to the number of installed HBAs are displayed.)

3. Select **Configuration Settings** from the **Fast!UTIL** option and press the **Enter** key.

4. Select **Host Adapter Settings** from **Configuration Setting** and press the **Enter** key.

5. Read the value in the **Adapter Node Name** field on the **Host Adapter Settings** window. This contains the node name and the port name of the host (set for security).

6. When two or more HBAs are installed, repeat Steps 2 through 5 above.

Example

```
                     Qlogic Fast!UTIL Version x. xx

       ┌──────────────────────────────┐
       │   Select Adapter(Example)    │
       │ Adapter Type    I/O Address  │
       │   WLA2xxx          F800      │
       └──────────────────────────────┘


                    Host Adapter Settings(Example)

           BIOS Address         : D8000        node name and
           BIOS Revision        : 1.28         port name
           Adapter Serial Number : A26181
           Interrupt Level      : 5
           Adapter Node Name    :│200000E0 8B00 4566│
                       .
                       .
                       .
```