LUN Management
User's Guide (DF600)

Trademarks

Notice of Export Controls

Document Revision Level

Revision	Date	Description
K6602943-0	January 2003	1st Release

Preface

Before using LUN Management, read the operating procedures and notices included in this guide.

The *LUN Management 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 Disk array subsystem.
- The user is familiar with the *Disk Array Management Program 2 (for GUI) User's Guide* and/or the *Disk Array Management Program (for CLI) User's Guide*.

Note: When you replace the Host Bus Adapter (HBA) of the host (server) with the system using LUN Management, you need to change the setting of LUN Management.

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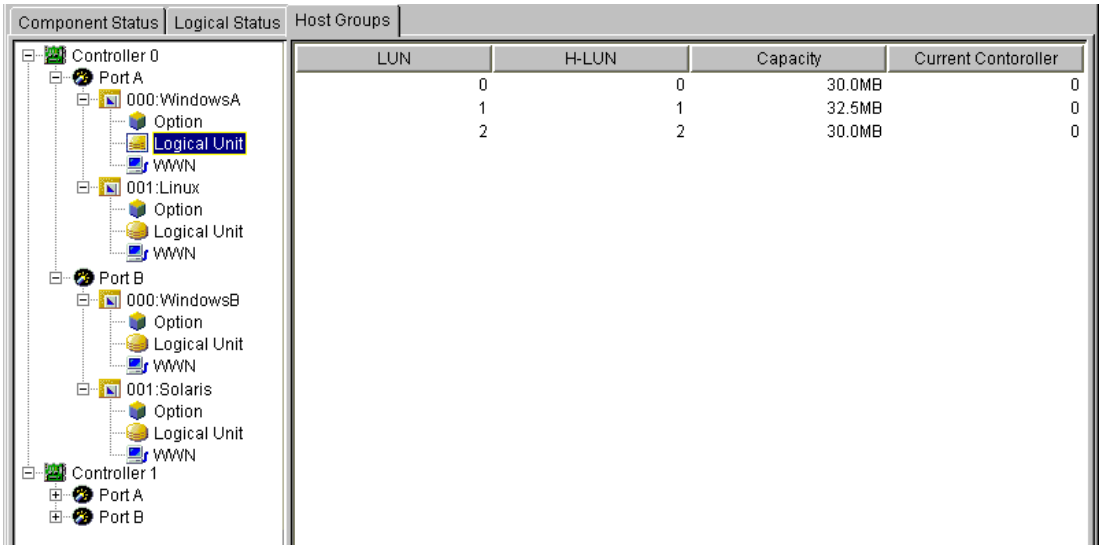
Chapter 1 Overview of LUN Management

LUN Management function can set Option (Host Connection Mode), Logical Unit (LU) and WWN (World Wide Name) for each Connected-Host; so that multiple Hosts can be connected to a Port.

By using LUN Management function, each Host can access a Logical Unit as if a dedicated Port to the Host even if the Host shares the Port with other Hosts.



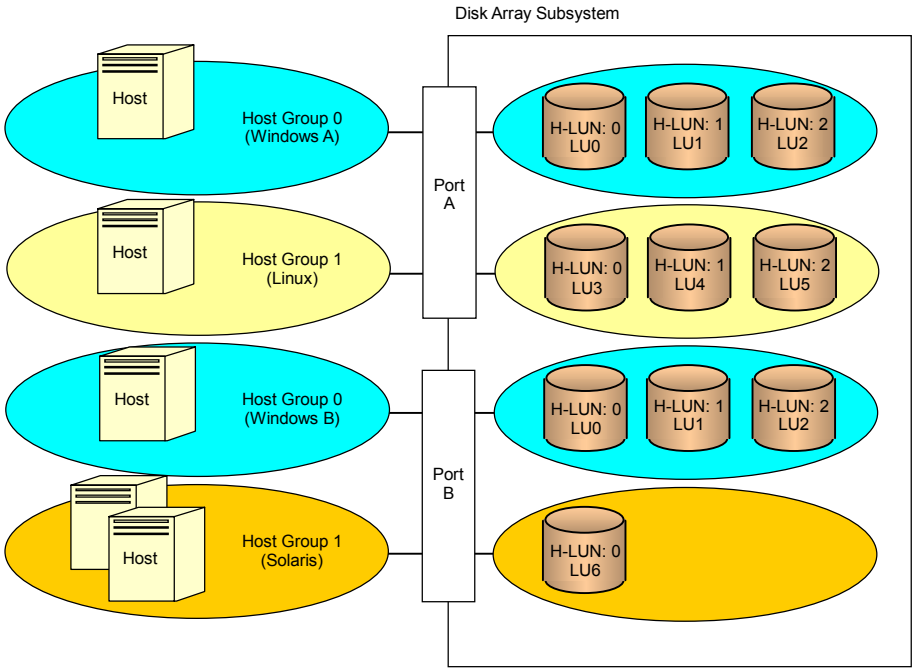


Figure 1.1 Setting Access Paths between Hosts and Logical Units

1.1 Creating a Host Group

The system-configuration engineer connects a Port of the Disk Array subsystem to a Host using the Switch etc., then sets a data input/output path between the Host and the LU using LUN Management. This setting specifies which Host can access which LU.

In order to set a data input/output path, the Hosts that are authorized to access the LU are required to be classified as a Host Group. Then the classified Host Group is set to the Port.

As shown in Figure 1.1, for example, when a Windows Host and a Linux Host are connected to Port A, it is necessary to create Host Groups of LUs to be accessed from the Windows Host and the Linux Host respectively, using LUN management.

A Host Group Option (Host Connection Mode) can be set to the created Host Groups. This validates the Host Group Option that was set to each Host Group.

The Hosts that are connected to different Ports cannot share an identical Host Group. Even if the LU to be accessed is the same, respective Host Groups should be created for respective Ports to which the Hosts are connected.

1.2 Setting a Host

After creating a Host Group, the Host that has been classified to the Host Group is set. The setting is performed by using World Wide Name (WWN) of the Host Bus Adapter (HBA). The identical WWN cannot be set to another Host Group in the identical Port.

As shown in Figure 1.1, for example, the WWN of the Windows Host Bus Adapter is registered to the Windows Host Group in the Port A, and the WWN of the Linux Host Bus Adapter is registered to the Linux Host Group also in the Port A.

1.3 Setting a Logical Unit

After setting a Host to a Host Group, the LU is connected to the Host Group, by setting a LU Mapping to the Host Group. Then a data input/output path is set between the LU and the Host that belongs to the Host Group. Consequently, the Host can access the LU.

As described above, the LU that can be accessed from a Host is determined by the Host Group. A Host can access a LU that is connected to the Host group to which the Host belongs, but cannot access a LU that is connected to another Host Group.

For example, in Figure 1.1, a Host that belongs to the Windows Host Group in the Port A cannot access the LUs in the Linux Host Group. Similarly, a Host that belongs to the Linux Host Group cannot access the LUs in the Windows Host Group.

LUN Management can set a Host to access multiple LUs. In Figure 1.1, for example, a Host in the Windows Host Group in Port B can access three LUs.

Further, LUN Management can set a LU to be accessed from multiple Hosts. For example, in Figure 1.1, two Hosts in the Solaris Host Group in the Port B can access the same LU.

1.4 Setting after Operation has started

LUN Management can add, modify or delete a Host Group after operation of the system has started. For example, when a disk is additionally installed or a Host is additionally connected, a Host Group can be additionally created. When removing an existing Host, the Host Group that is connected to the Host is deleted first and then the Host will be removed. Additionally, when adding, modifying or deleting the settings by LUN Management, it is not necessary to reboot the Disk Array subsystem.

1.5 Specifications

The specifications of LUN Management are shown in Table 1.1:

Table 1.1 The Specifications of LUN Management

Item	Specifications
Host Group	• Up to 128 Host Groups can be set for each Port. • Host Group 0 (zero) is specified as the standard.
Setting/Deleting a Host Group	• Host Groups 1 through 127 can be set or deleted. • Host Group 0 (zero) cannot be deleted. In order to delete WWN and LU Mapping of Host Group 0 (zero), initialize Host Group 0 (zero).
Host Group Name	• When creating a Host Group, setting the Host Group Name is required. The Host Group Name can be changed.
WWN (Node Name, Port Name)	• Up to 128 World Wide Names (WWN) of Host Bus Adapters (HBA) that can access the Host Group can be set for a Host Group. • The identical WWN cannot be set to another Host Group in the identical Port. • WWN can also be set to the Host Group by selecting from a Logined WWN of the Host Bus Adapter that is connected to the Port.
WWN Nickname	• A Nickname can be assigned to a WWN. A Nickname can be omitted.
Host Connection Mode	• The Host Connection Mode of the Host Group, set by LUN Management, can be changed.
LU Mapping	• LU Mapping can be set to the Host Group that is set by LUN Management. • Up to 256 LU Mappings can be set for a Host Group. Up to 256X128 LU Mappings can be set for a Port.
Enable/Disable setting for each port	• LUN Management can be set enable or disable for each Port. • Even when enable is set, already set LUN Management information is kept, and it will be succeeded when enable is set again.
Setting in a hot replacement	• When adding, modifying or deleting the setting by LUN Management, it is not necessary to reboot the Disk Array subsystem.
Concurrent use with LUN Security	• LUN Management cannot be used together with LUN Security concurrently.

1.6 Notes

- Verify that the LUN Management 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. It is necessary to set H-LUN = 0 to the Host Group to which such a host belongs.

Table 1.2 Combinations of OS and HBA

OS	HBA	Remarks
HP-UX®	Genuine HP® HBA	When HP connection mode2 = ON is selected
IRIX	Genuine SGI™ HBA	
Windows® 2000	Emulex HBA (with Miniport Driver) Qlogic HBA	

- When you replace the HBA of the host attached to a Disk Array subsystem using LUN Management, be sure to change the setting of the LUN Management.
- When using this LUN Management Feature together with the Dual ID Succession Function, set the same LUN Management information for both ports of a Disk Array subsystem which pair up for the Dual ID Succession Function.
- LUN Management settings (enabling or disabling) are valid after the host is recognized again. ***Note:*** The settings are not valid immediately after the setting. To make the setting valid, reboot the host (to be recognized again).
- The WWN set up by LUN Security is taken over to LUN Management as login WWN. However, when WWN (a Node Name or Port Name) of all zero is set up by LUN Security, install LUN Management after deleting the WWN.

Chapter 2 Preparing for LUN Management Operations (GUI)

This chapter provides instructions for preparing for LUN Management operations using the GUI version of the Disk Array Management Program 2. This section includes the following:

- Installing the LUN Management Feature
- Adding a Host Group
- Setting a Host Group Option
- Setting Logical Units
- Adding a WWN

2.1 Installing and Uninstalling

The LUN Management feature is usually unselectable (locked); to make it available, you must install the LUN Management feature and make its functions selectable (unlocked). **To install this function, the key code provided with the optional feature is required.**

Follow the instructions below to install The LUN Management feature. LUN Management is installed and uninstalled using Disk Array Management Program 2.

Note: Before installing and uninstalling, make sure that the array unit is in normal operating condition. If a failure such as a controller blockade has occurred, installation and uninstallation operations cannot be performed.

2.1.1 Installing

The following paragraphs describe installation procedures performed by using the GUI version of Disk Array Management Program 2.

1. Start the Disk Array Management Program 2, and change the operation mode to **Management Mode** (administrator mode).
2. Register the subsystem (array unit) in which you will install the LUN Management feature. Connect to the subsystem.

The Array System Viewer panel appears; it displays the connected subsystem.

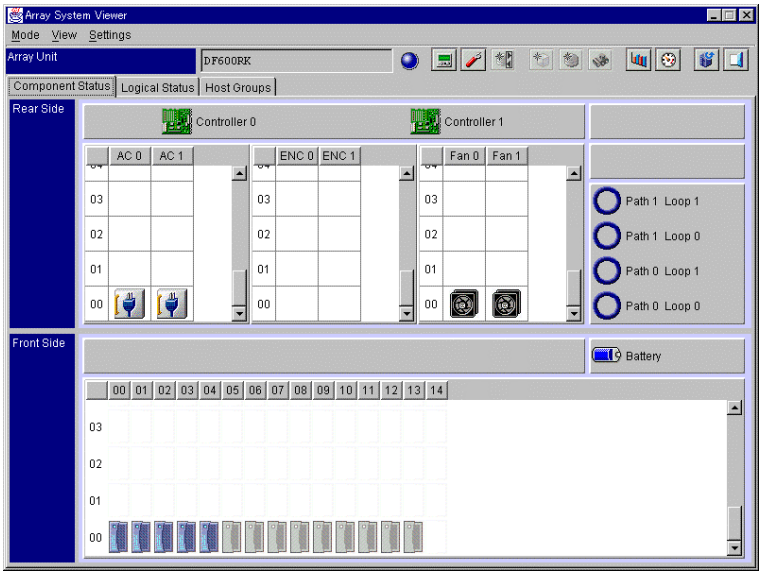


Figure 2.1 Array System Viewer Panel (Component Status Page)

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

   The Parameter panel is displayed.

4. On the Parameter panel, select the **Options** tab.

   The **Options** page is displayed in front.

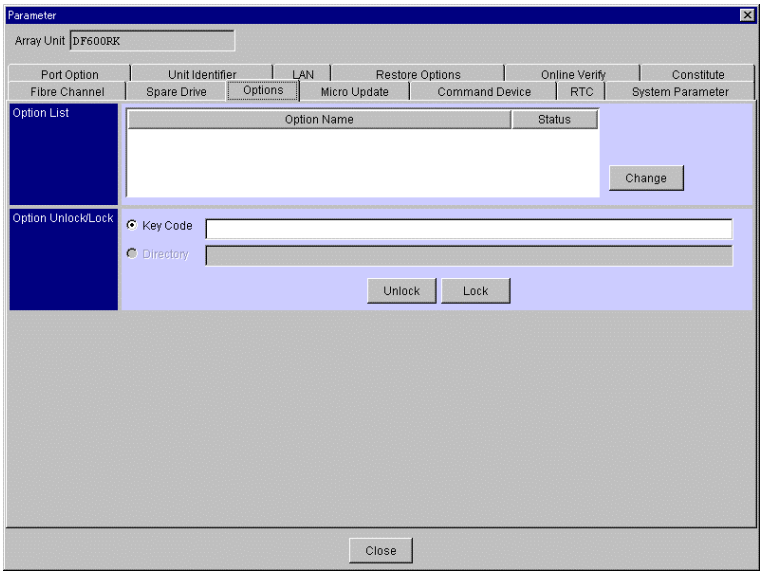


Figure 2.2 Parameter Panel (Options Page)

5. Enter a **key code** in the text box and click the **Unlock** button.
6. A screen appears, requesting confirmation to unlock LUN Management. Click the **OK** button.

   In the **Option Name**, **LUN-MANAGEMENT** is displayed; the status is **Enable**.

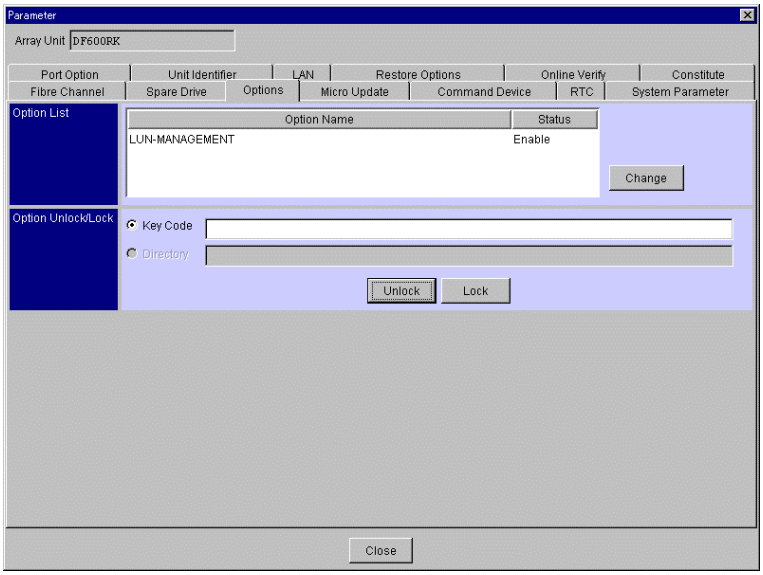


Figure 2.3 Parameter Panel (Unlocked: Enable)

The installation of the LUN Management feature is now complete. To perform other operations, connect to the subsystem again and open the Array System Viewer panel.

2.1.2 Uninstalling

Follow the instructions below to uninstall the LUN Management feature. When it is uninstalled, the LUN Management feature is not available (locked) until it is opened by the key code.

Note: The following condition must be satisfied in order to uninstall the LUN Management feature.

- All host group security must be set to disable.

Follow the instructions below to uninstall LUN Management:

1. Start the Disk Array Management Program 2 and change the operation mode to **Management Mode** (administrator mode).
2. Register the subsystem (array unit) in which you will uninstall the LUN Management feature. Connect to the subsystem.

   The Array System Viewer panel (Figure 2.1) appears; it displays the connected subsystem.
3. From the **Settings** menu, select **Configuration Settings**. Alternatively, from the tool bar, select the **Configuration Settings** button.

   The Parameter panel is displayed.
4. On the Parameter panel, select the **Options** tab.

   The **Options** page (Figure 2.3) is displayed in front.
5. Enter a **key code** in the text box and click the **Lock** button.
6. A screen appears, requesting confirmation to lock LUN Management. Click the **OK** button.

The LUN Management feature is now uninstalled. To perform other operations, connect to the subsystem again and open the Array System Viewer panel.

2.1.3 Enabling or Disabling

The LUN Management feature can be set to enable or disable when it is installed.

Follow the instructions below to enable/disable LUN Management:

1. Start the Disk Array Management Program 2 and change the operation mode to **Management Mode** (administrator mode).
2. Register the subsystem (array unit) in which you will change the status of the LUN Management feature. Connect to the subsystem.

   The Array System Viewer panel (Figure 2.1) appears; it displays the connected subsystem.
3. From the **Settings** menu, select **Configuration Settings**. Alternatively, from the tool bar, select the **Configuration Settings** button.

   The Parameter panel is displayed.
4. On the Parameter panel, select the **Options** tab.

   The **Options** page (Figure 2.3) is displayed in front.
5. From the **Option Name**, select **LUN-MANAGEMENT** and then select the **Change** button.
6. A message appears, confirming that you want to change the status (enable or disable). Click the **OK** button.

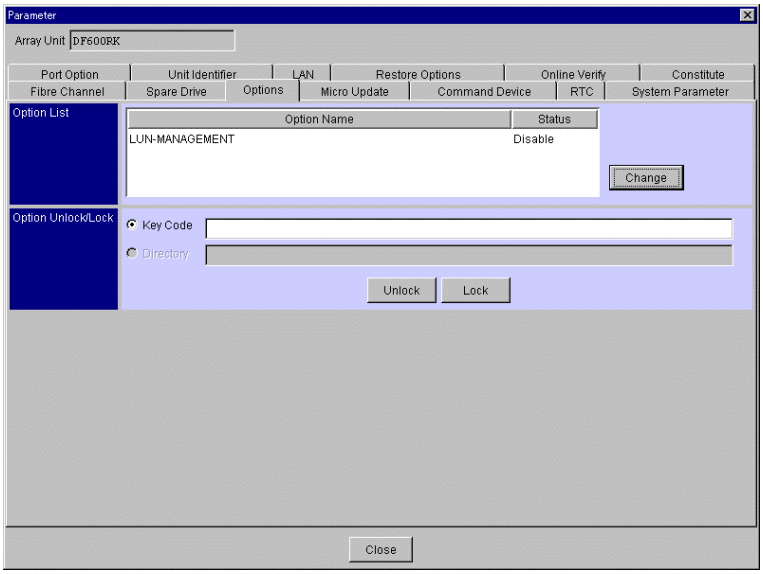


Figure 2.4 Parameter Panel (Unlocked: Disable)

The status of LUN Management feature is now changed (enabled/disabled). To perform other operations, connect to the subsystem again and open the Array System Viewer panel.

Note: When disabling or uninstalling this LUN Management feature, it is necessary to disable to the Host Group Security of all ports.

Chapter 3 Performing LUN Management Operations (GUI)

3.1 Adding a Host Group

Create a Host Group for each Port. First, set the Host Group Security to be enable for each Port. Then, create a Host Group.

3.1.1 Setting the Host Group Security

Set the Host Group Security to be enable or disable for each Port. The default setting is disable for all Ports.

The procedure for setting enable/disable of Host Group Security will be described further.

1. Start the Disk Array Management Program 2 and change the operation mode to **Management Mode** (administrator mode).
2. Register the subsystem (array unit) in which you will set the enable/disable of Host Group Security. Connect to the subsystem.

   The Array System Viewer panel (Figure 2.1) appears; it displays the connected subsystem.
3. Click the **Host Groups** tab.
4. Select **Port A** or **Port B** in **Controller 0** or **Controller 1**. Right-click the icon of selected Port, then a context menu will be displayed. Then select **Enable**/**Disable** in the menu.

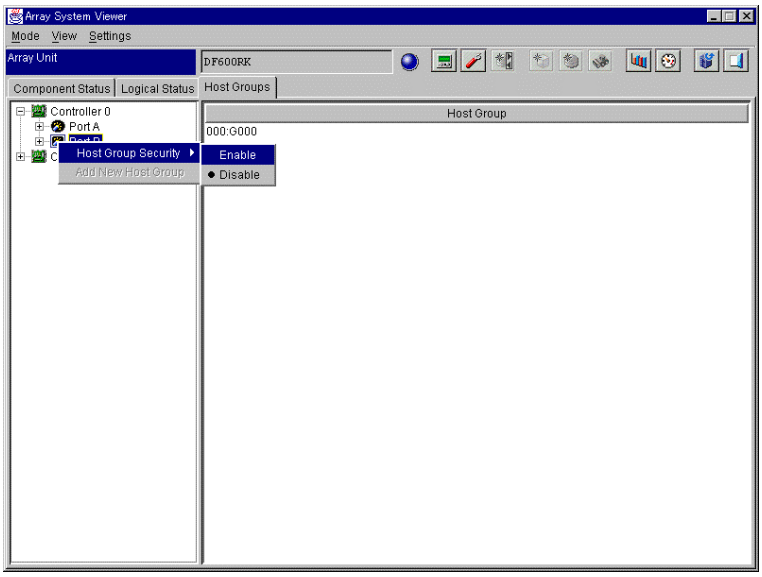


Figure 3.1 Setting the Host Group Security in the Context Menu

The setting can be started from the **Settings** menu. (Refer to Figure 3.2)

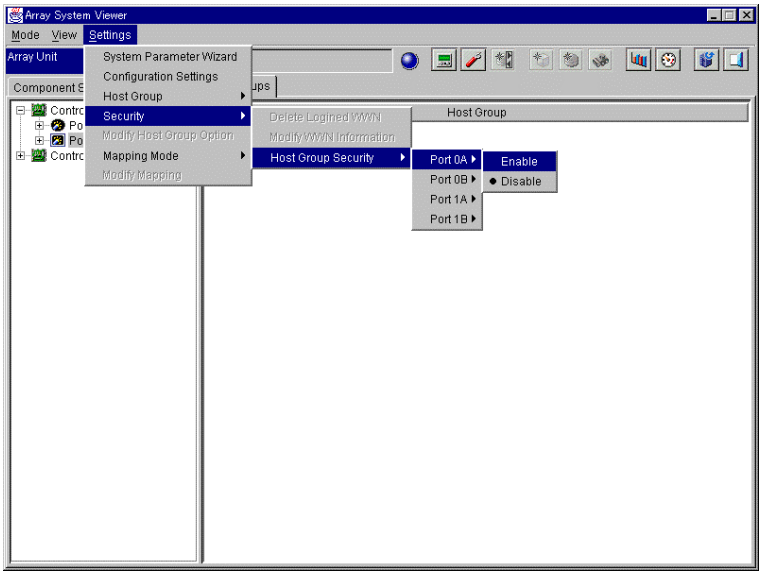
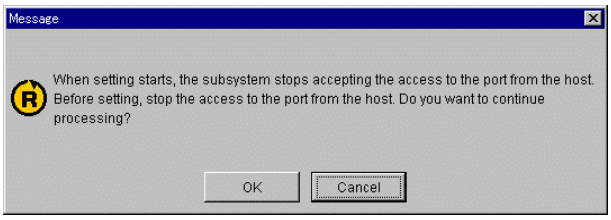
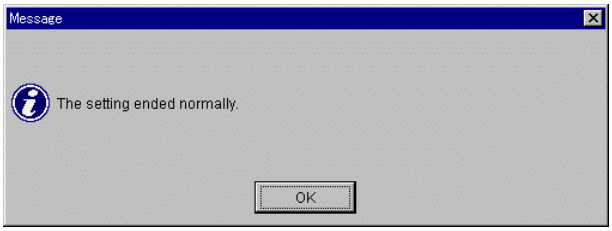


Figure 3.2 Setting the Host Group Security in the Settings Menu

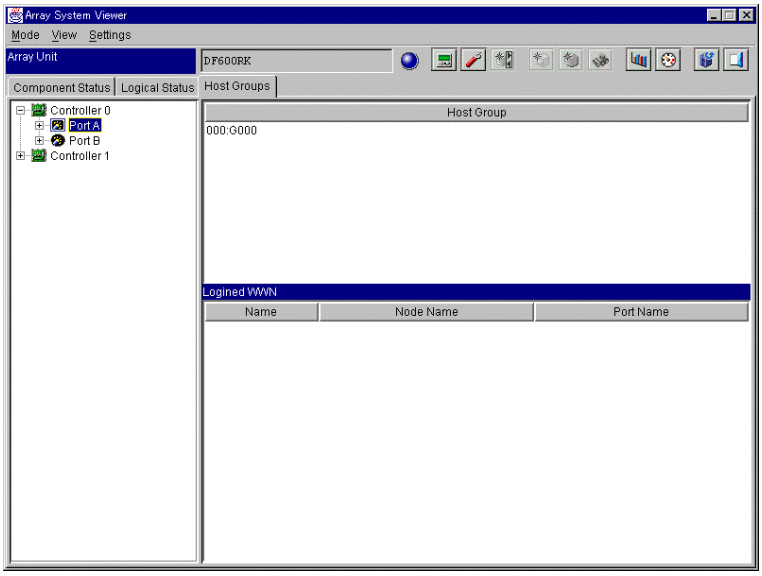
5. The confirmation message is displayed. Click the **OK** button.





If the Host Group Security has been set enable, **Logined WWN** is displayed.

The WWN of the Host Bus Adapter that is connected to the selected Port is displayed in the **Logined WWN**.



3.1.2 Adding a Host Group

Create Host Groups for each Port. The procedure for creating a Host Group will be described further.

1. Select **Port A** or **Port B**, and right-click the icon of selected Port, then a context menu is displayed. Select **Add New Host Group** in the menu.

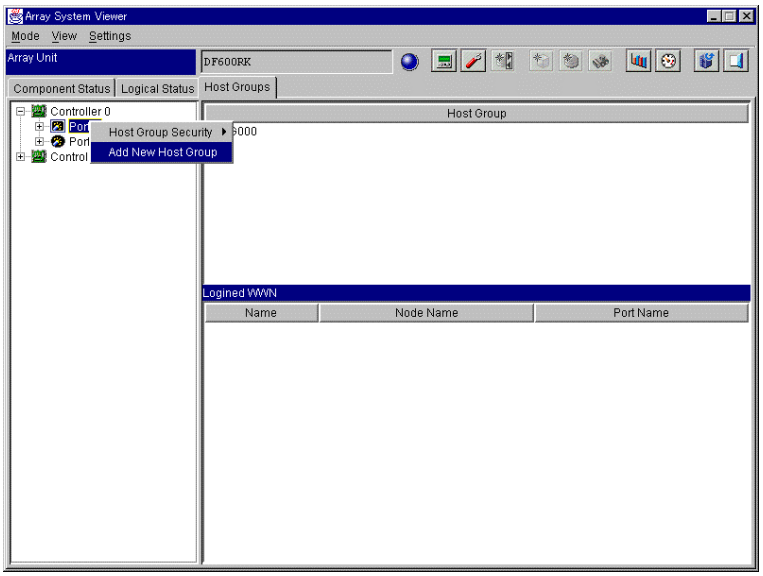


Figure 3.3 Adding a Host Group in the Context Menu

The process can be started from the **Settings** menu. (Refer to Figure 3.4)

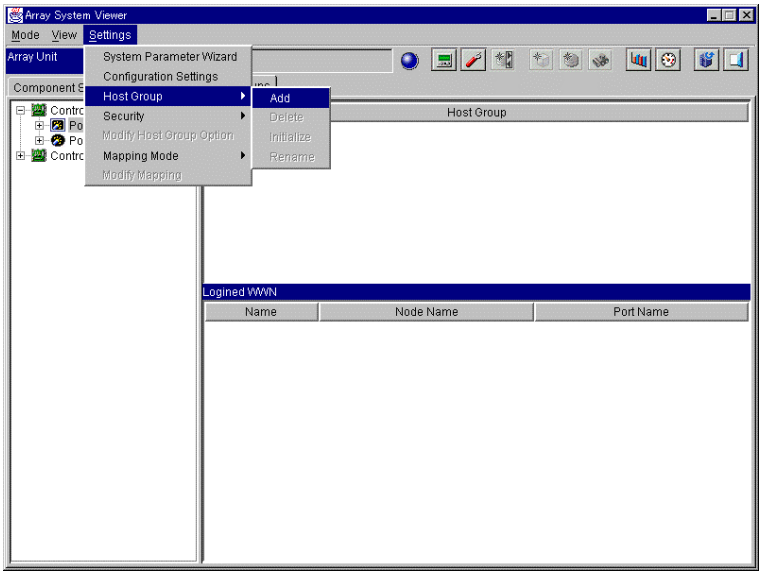


Figure 3.4 Adding a Host Group in the Settings Menu

2. Enter the **No.** and the **Name**, and Click the **OK** button.

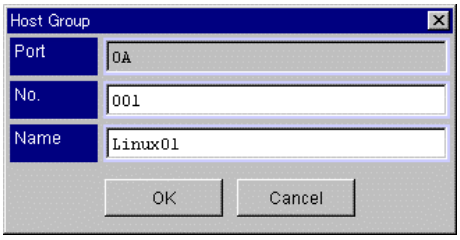


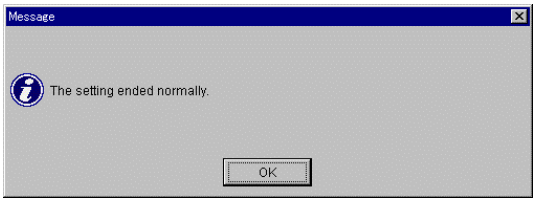
Figure 3.5 Host Group Dialogue Box

- **No.**: Enter a numeral from 1 through 127.
- **Name**: Enter the name of the Host Group with eight or less alphanumeric character.

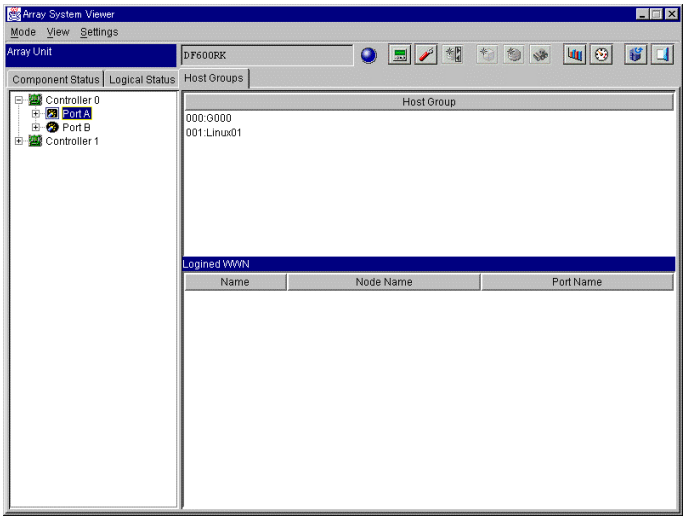
  (Excluding \, /, : , , , ;, *, ?, ", <, >, | and ')

  Spaces at the top or end are ignored. An identical name cannot be used in an identical Port.

3. The confirmation message is displayed. Click the **OK** button.



The information that has been set is displayed.



3.2 Setting a Host Group Option

A Host Group Option is set for each Host Group.

1. Select an **Option** icon in the Host Group, and select **Modify Host Group Option** in the **Settings** menu.

   The process can be started from the context menu of the **Option** icon.

   Option Property is displayed.

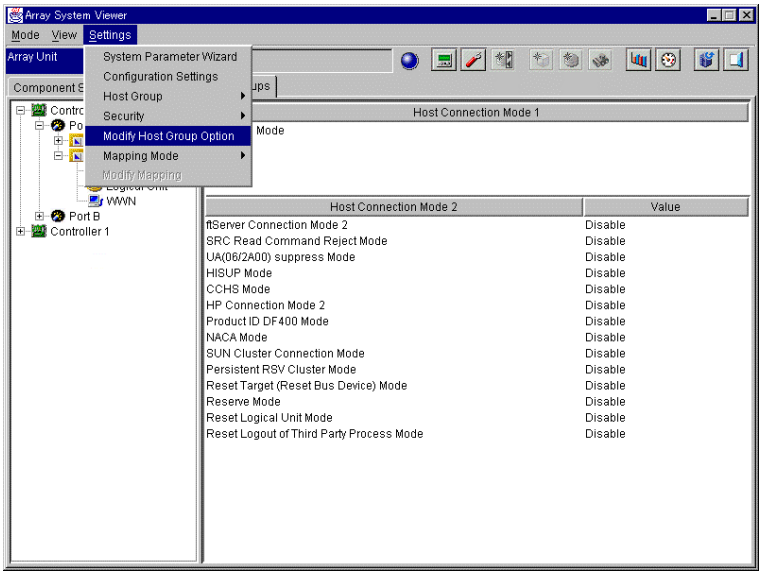


Figure 3.6 Setting a Host Group Option in the Settings Menu

2. Specify **Host Connection Mode 1** and **Host Connection Mode 2**, and click the **OK** button.

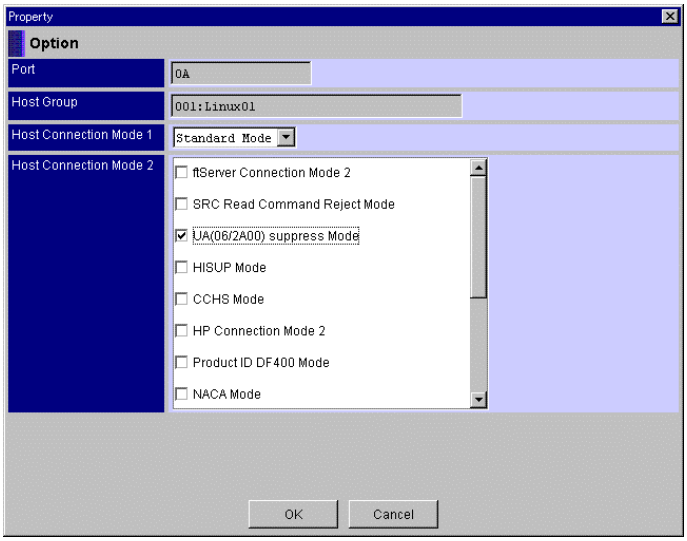
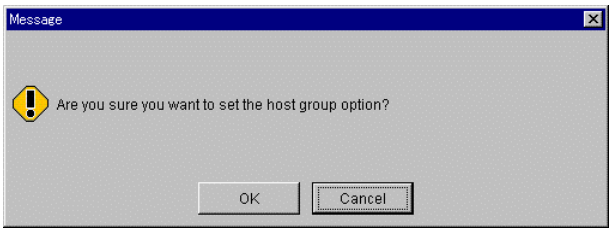
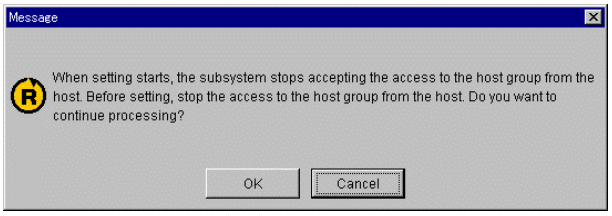
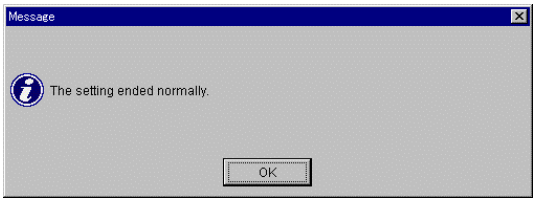


Figure 3.7 Setting a Host Connection Mode

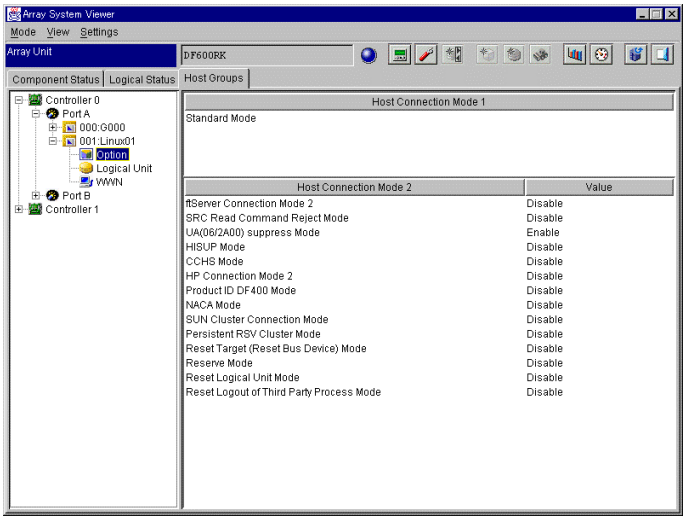
3. The confirmation message is displayed. Click the **OK** button.







The information that has been set is displayed.



3.3 Setting Logical Units

Logical Units to be recognized by each host is set to each Host Group. (This process is called LU Mapping)

1. Select a **Logical Unit** icon in the Host Group, and then select **Modify Mapping** in the **Settings** menu.

   This process can be started from the context menu of the **Logical Unit** icon.

   The **Mapping Property** is displayed.

   It is necessary to set **Enable** to **Mapping Mode** for setting LU Mapping.

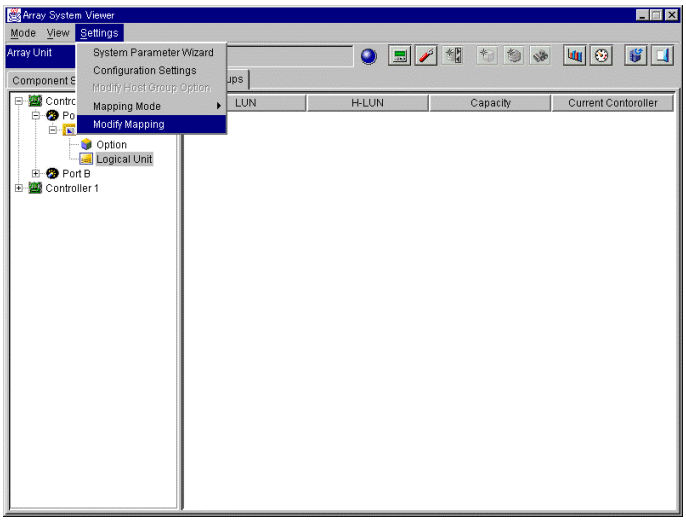


Figure 3.8 Modify Mapping in the Settings Menu

2. Select the **LUN** number, then select **HostLUN** number. Click  button and add **LUN**/**HostLUN** number to **Reserved Configuration** List.

   Add all the Logical Units to be recognized by the Host, then click the **OK** button.

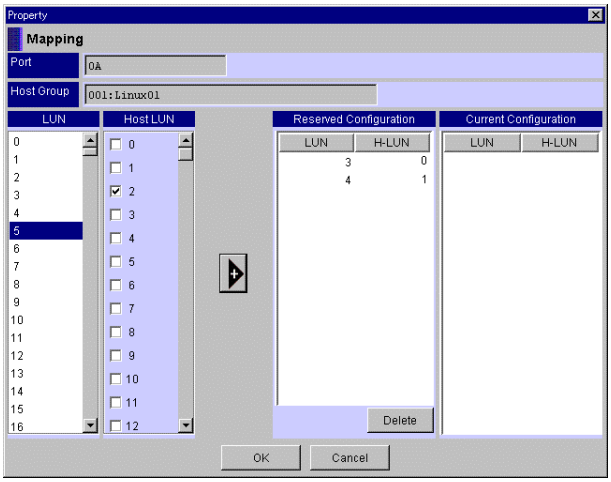
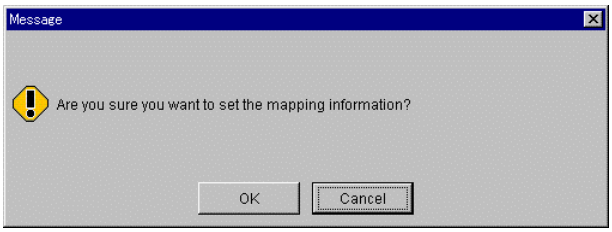
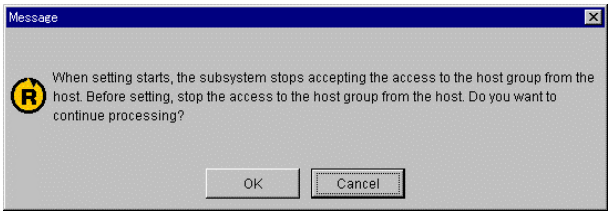
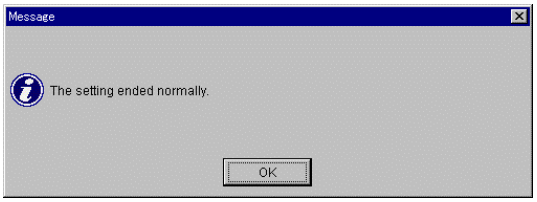


Figure 3.9 Mapping Property

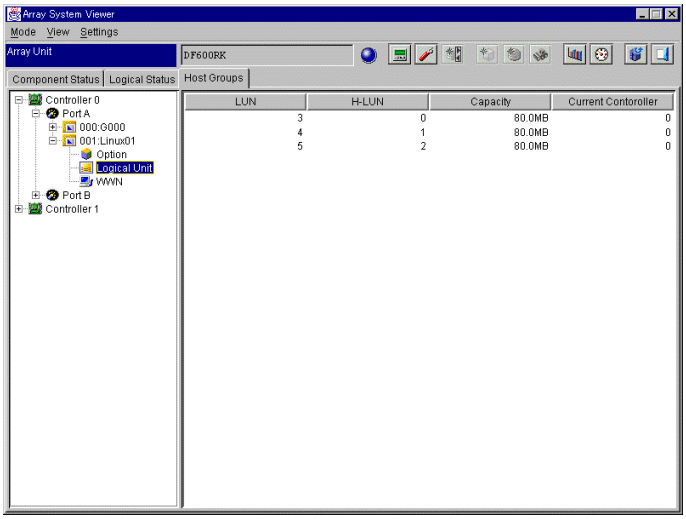
3. The confirmation message is displayed. Click the **OK** button.







The information that has been set is displayed.



3.4 Adding a WWN

WWNs of a Host Bus Adapter is set to each Host Group. When a Port is connected to a Host, WWNs of Host Bus Adapters that is listed in **Logined WWN** can be selected and added to the Host Group. WWN is used for identifying Hosts.

For the process of obtaining WWN Information, refer to Appendix B.

3.4.1 Adding a WWN by Entry

1. Select a **WWN** icon in the Host Group, then point **Security** in the **Settings** menu and select **Modify WWN Information**.

   This process can be started from a context menu of a **WWN** icon.

   WWN Information Property is displayed.

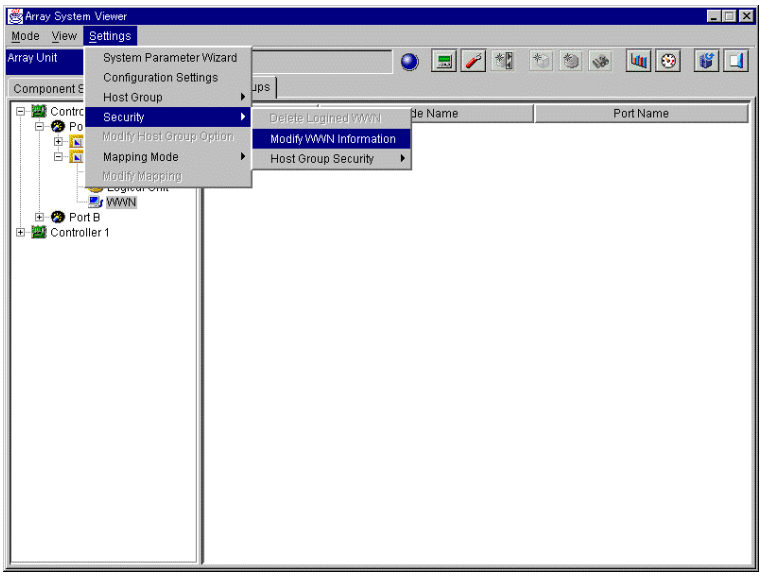


Figure 3.10 Modify WWN Information from the Settings Menu

2. Click the **Add** button. **WWN** Dialogue Box is displayed.

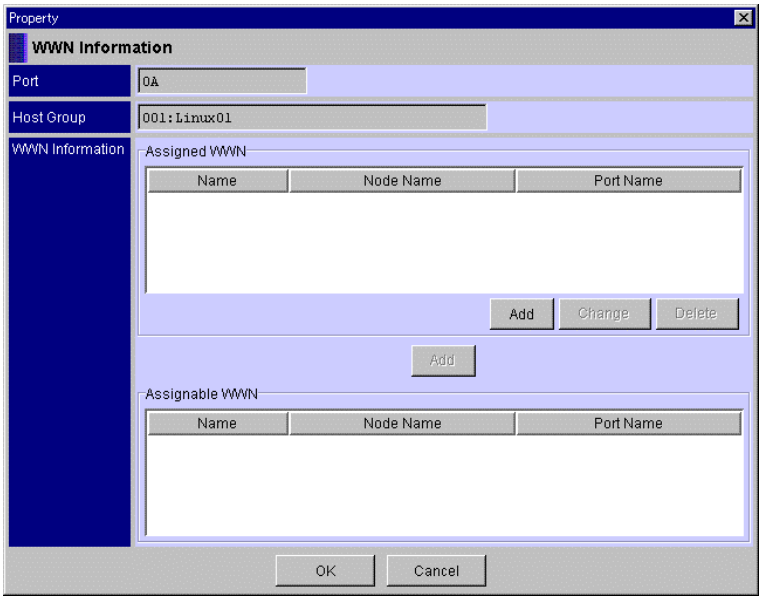


Figure 3.11 WWN Information Property

3. Enter the **Name** (Nickname), the **Node Name** and the **Port Name**. Then click the **OK** button.

   The information that has been entered into **WWN Information Property** is displayed.

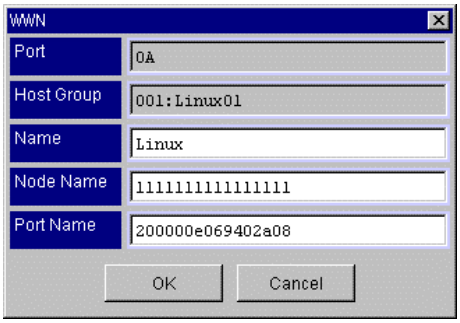


Figure 3.12 WWN Dialogue Box

- **Name**: Enter the name of the Host Group with eight or less alphanumeric character.

  (Excluding \, /, : , , , ;, *, ?, ", <, >, | and ')

  Spaces at the top or end are ignored. An identical name cannot be used in an identical Port.
- **Node Name**: Enter the Node Name with sixteen hexadecimal numerals.
- **Port Name**: Enter the Port Name with sixteen hexadecimal numerals.

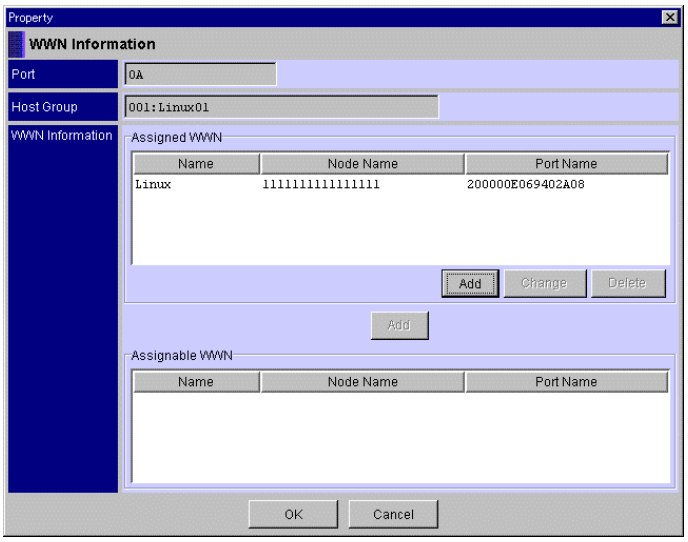
WWN Setting Items that can be omitted are shown in Table 3.1. Also items that are used for identifying Hosts are shown in Table 3.1.

Table 3.1 WWN Setting Items

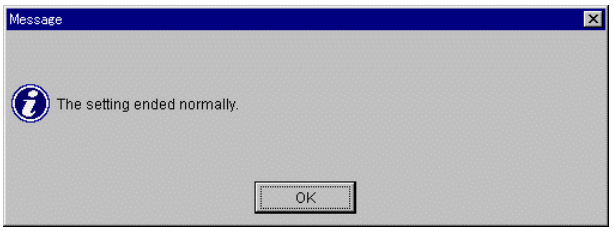
Setting Item	Omission of setting	Use for identification of the Host
Name	Can be omitted	Not used
Node Name	Setting is necessary	Not used
Port Name	Setting is necessary	Used

Note: Up to 128 WWNs can be assigned for a Port. This means, the total of the number of WWNs that have been already assigned (**Assigned WWN**) and the number of WWNs that can be assigned (**Assignable WWN**) further is 128 for a Port. When the number of WWNs assigned to a Port exceeds 128 and the further input is impossible, delete a **Logined WWN** which is not assigned to a Host Group.

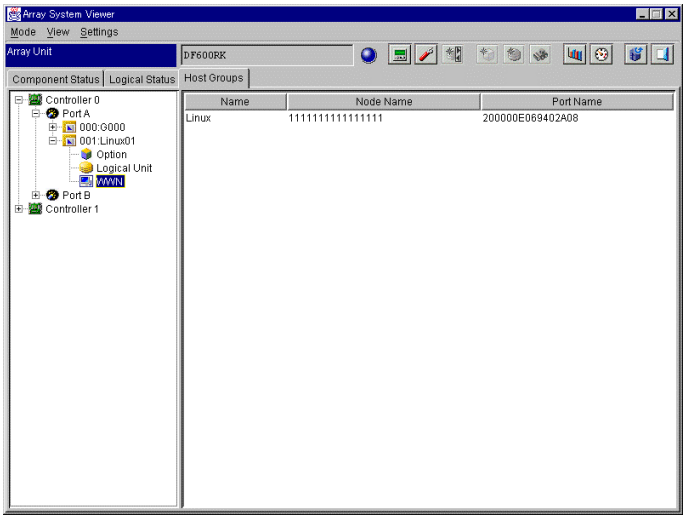
4. Click the **OK** button.



5. Click the **OK** button.



The information that has been set is displayed.



3.4.2 Selecting and Adding a Assignable WWN

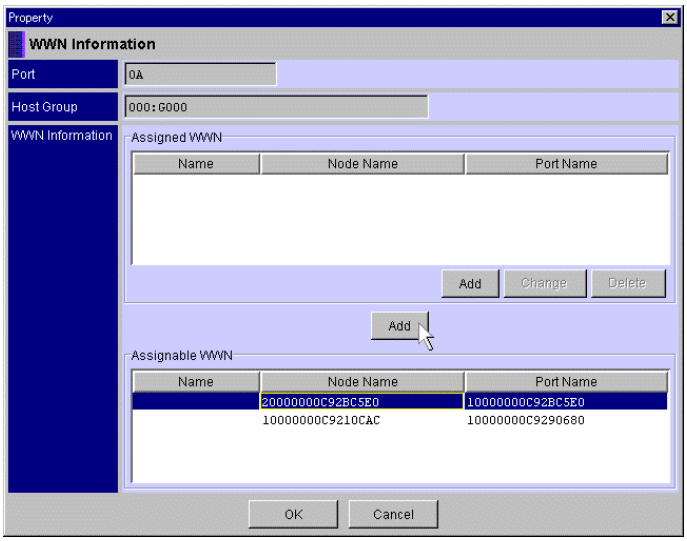
1. Select a **WWN** icon in a Host Group, then point **Security** in the **Settings** menu and select **Modify WWN Information**. (Refer to Figure 3.10)

   This process can be started from a context menu of a **WWN** icon.

   WWN Information Property is displayed.

2. WWNs of Host Bus Adapters being connected to the Port are displayed in **Assignable WWN**. When a WWN of the Host Bus Adapter being connected to the Port is already assigned to another Host Group in the same Port, the WWN is not displayed in **Assignable WWN**. When the WWN is deleted from the Host Group to which the WWN has been assigned, the WWN is displayed in **Assignable WWN**.

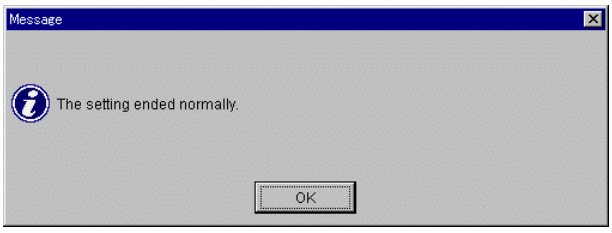
   Select WWN Information in **Assignable WWN** list, and click **Add** button.



   The WWN moves from **Assignable WWN** list to **Assigned WWN** list.

3. Click the **OK** button.

4. The confirmation message is displayed. Click the **OK** button.



Note: In some case, the WWN is not listed in **Assignable WWN** list, even though the Port is connected to a Host. When the WWN to be assigned to a Host Group is not listed in **Assignable WWN** list, input and add the WWN.

3.5 Changing a Host Group Name

1. Select a **Host Group** for changing its Host Group Name, and point the Host Group in the **Settings** menu then select **Rename**.

   This process can be started from a context menu of the **Host Group**.

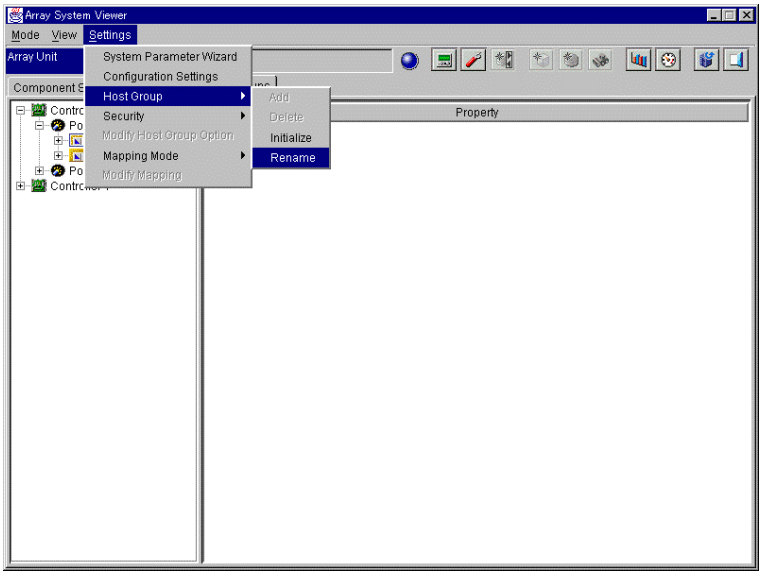
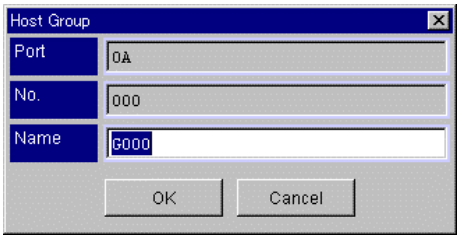


Figure 3.13 Changing the Host Group Name in the Settings Menu

2. Host Group dialogue box is displayed. Change the **Name** and click the **OK** button.

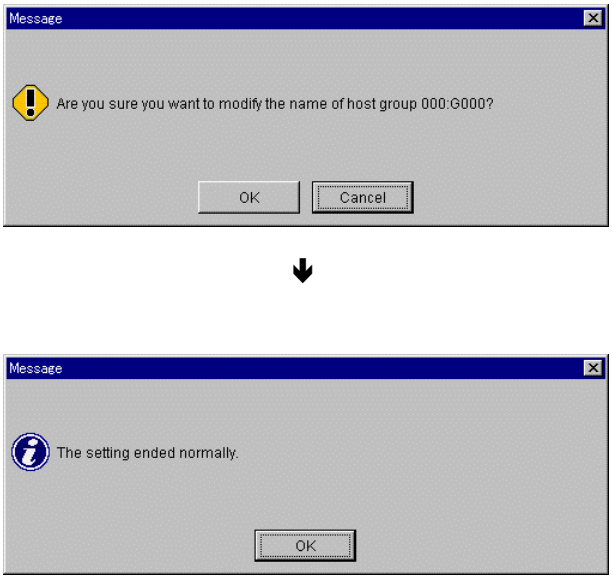


– **Name**: Enter the name of the Host Group with eight or less alphanumeric character.

(Excluding \, /, : , , , ;, *, ?, ", <, >, | and ')

Spaces at the top or end are ignored. An identical name cannot be used in an identical Port.

3. The confirmation message is displayed. Click the **OK** button.



3.6 Deleting a Host Group

Note: Host Group 0 cannot be deleted. When deleting all the WWNs and all the Logical Units in the Host Group 0, initialize the Host Group 0. (Refer to 3.7)

1. Select the **Host Group** to be deleted, then point **Host Group** in the **Settings** menu, and select **Delete**.

   This process can be started from the context menu of the **Host Group**.

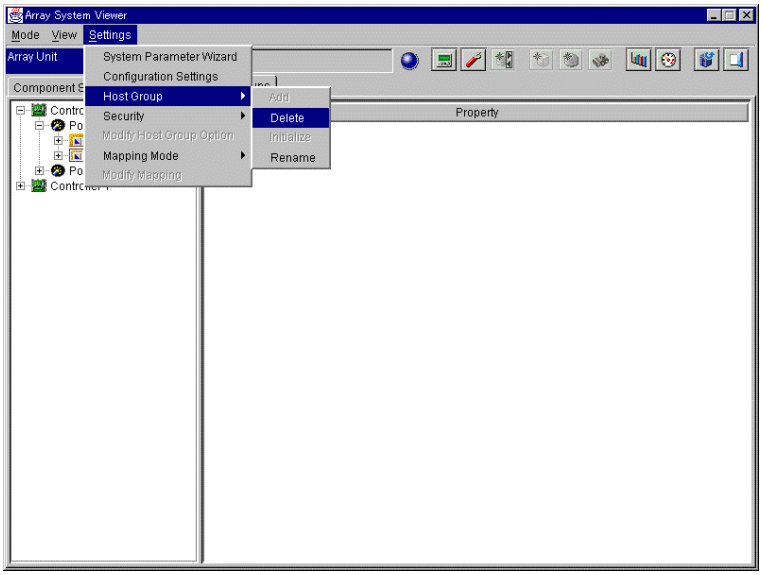
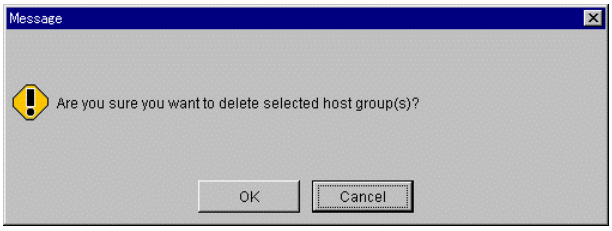
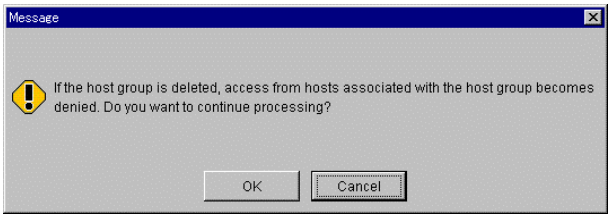
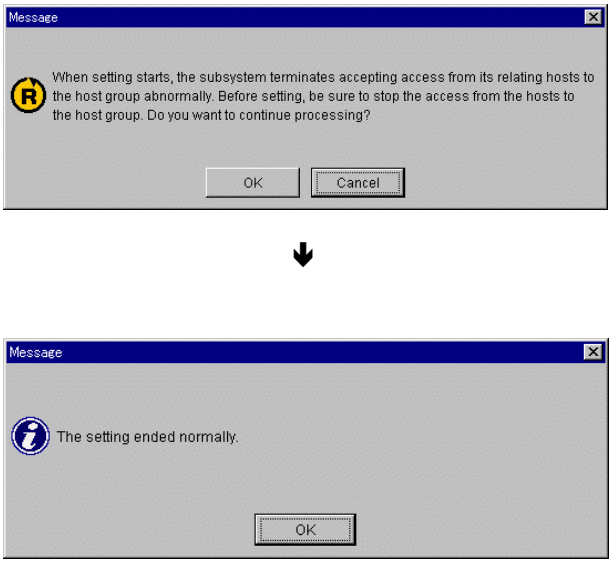


Figure 3.14 Deleting a Host Group from the Settings Menu

2. The confirmation message is displayed. Click the **OK** button.






Message
When setting starts, the subsystem terminates accepting access from its relating hosts to the host group abnormally. Before setting, be sure to stop the access from the hosts to the host group. Do you want to continue processing?
OK
Cancel
Message
The setting ended normally.
OK

3.7 Initializing the Host Group 0

The Host Group 0 can be reset to the default state.

When the Host Group 0 is reset to the default state, WWNs that belong to the Host Group 0 are deleted and the settings of the Logical Units that belong to the Host Group 0 are also deleted. The Host Group Option of the Host Group 0 is reset to the default state, and the Host Group Name is reset to G000.

1. Select the **Host Group 0** to be initialized, then point **Host Group** in the **Settings** menu, and select **Initialize**.

   This process can be started from the context menu of the **Host Group 0**.

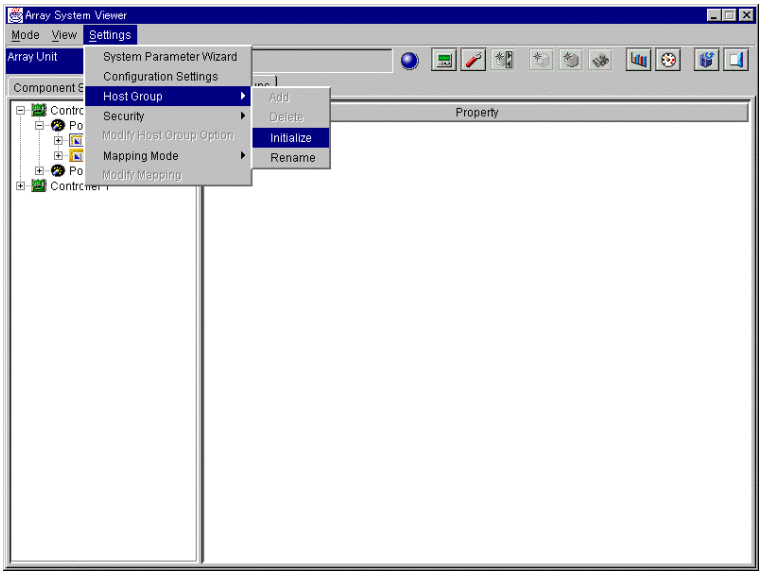
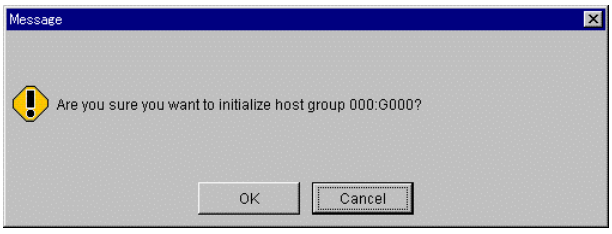
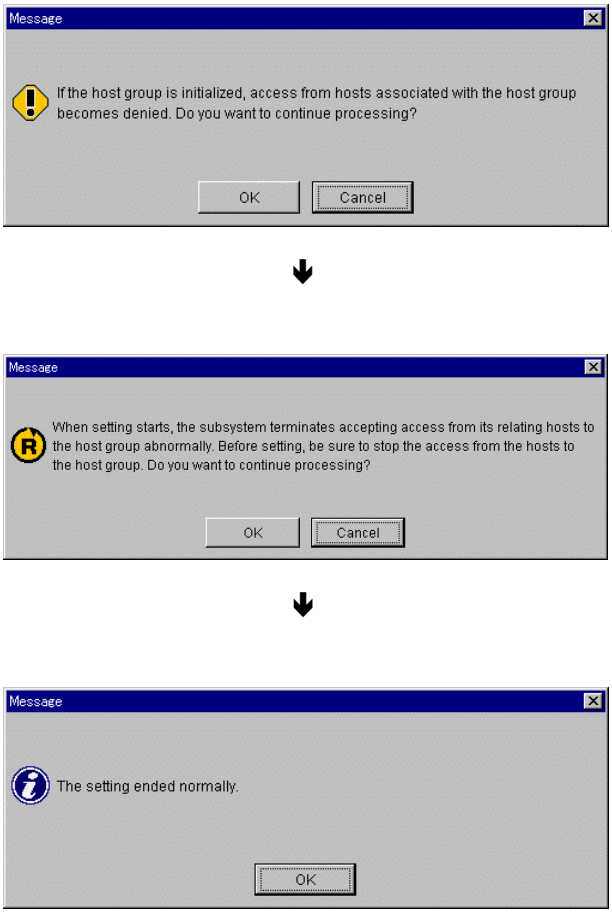


Figure 3.15 Initializing the Host Group 0 from the Settings Menu

2. The confirmation message is displayed. Click the **OK** button.




Message
If the host group is initialized, access from hosts associated with the host group becomes denied. Do you want to continue processing?
OK
Cancel
Message
When setting starts, the subsystem terminates accepting access from its relating hosts to the host group abnormally. Before setting, be sure to stop the access from the hosts to the host group. Do you want to continue processing?
OK
Cancel
Message
The setting ended normally.
OK

3.8 Changing a WWN

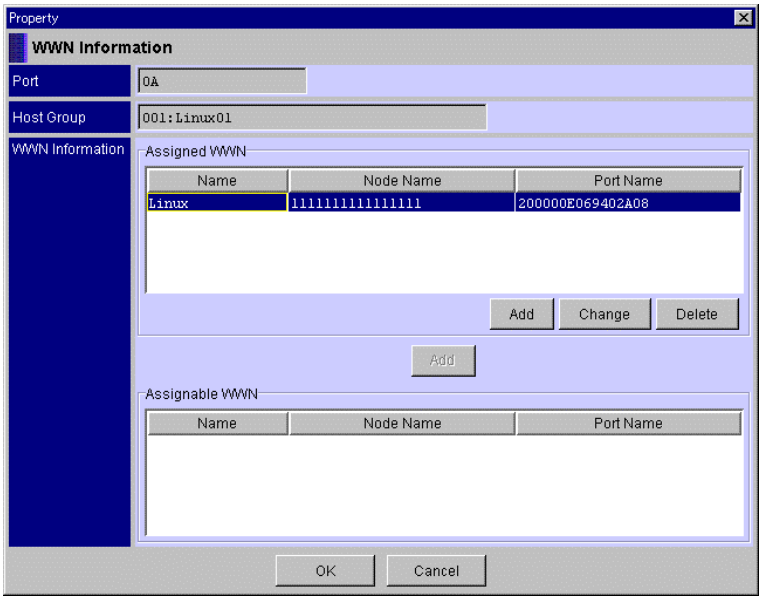
1. Select a **WWN** icon in a Host Group then point **Security** in the **Settings** menu and select **Modify WWN Information**. (Refer to Figure 3.10)

   This process can be started from a context menu of a **WWN** icon.

   WWN Information Property is displayed.

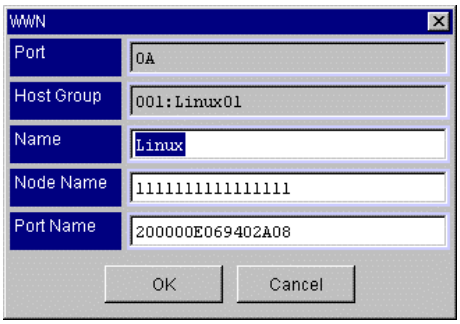
2. Select a **Name** to be changed, and click the **Change** button.

   WWN dialogue box is displayed.



3. Enter the **Name**, the **Node Name** or the **Port Name**. Then click the **OK** button.

   The information that has been entered is displayed on **WWN Information Property**.

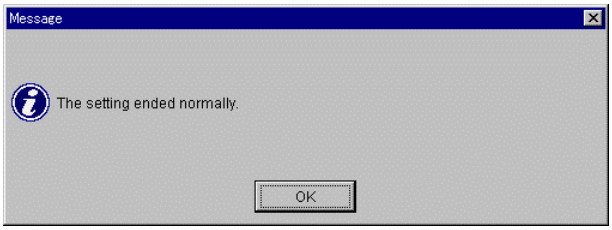


   - **Name**: Enter the name of the Host Group with eight or less alphanumeric character.

     (Excluding \, /, : , , , ;, *, ?, ", <, >, | and ')

     Spaces at the top or end are ignored. An identical name cannot be used in an identical Port.
   - **Node Name**: Enter the Node Name with sixteen hexadecimal numerals.
   - **Port Name**: Enter the Port Name with sixteen hexadecimal numerals.

4. Click the **OK** button on **WWN Information Property**.
5. The confirmation message is displayed. Click the **OK** button.



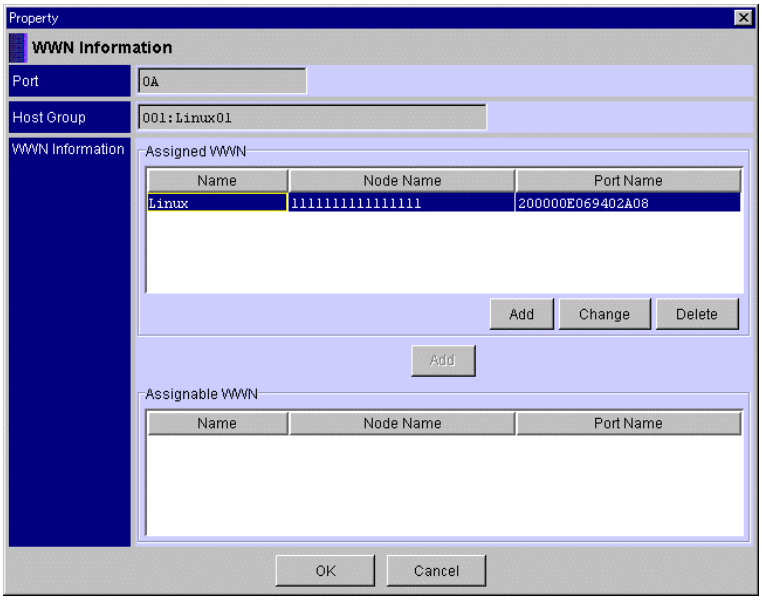
3.9 Deleting a WWN

1. Select a **WWN** icon in a Host Group then point **Security** in the **Settings** menu and select **Modify WWN Information**. (Refer to Figure 3.10)

   This process can be started from a context menu of a **WWN** icon.

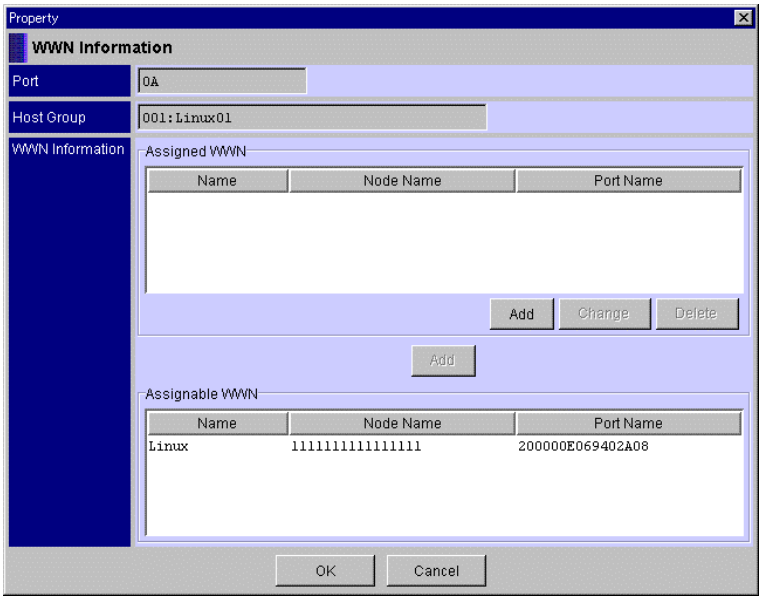
   WWN Information Property is displayed.

2. Select the **Name** to be deleted in **Assigned WWN** list, and click the **Delete** button.

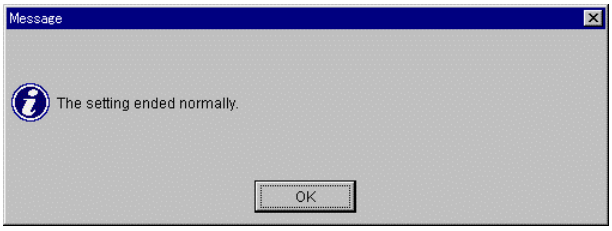


When the WWN to be deleted is an entered WWN and has not been connected to the Host after the entry, the WWN to be deleted is deleted from the **Assigned WWN** list.

When the WWN to be deleted is a Logined WWN, or has been connected to the Host of the WWN after the entry, the WWN to be deleted is moved from the **Assigned WWN** list to the **Assignable WWN** list.



3. Click the **OK** button.
4. The confirmation message is displayed. Click the **OK** button.



3.10 Deleting a Logined WWN

1. In **Port A** or **Port B**, select a **Logined WWN** to be deleted in, and point **Security** in the **Settings** menu, select **Delete Logined WWN**.

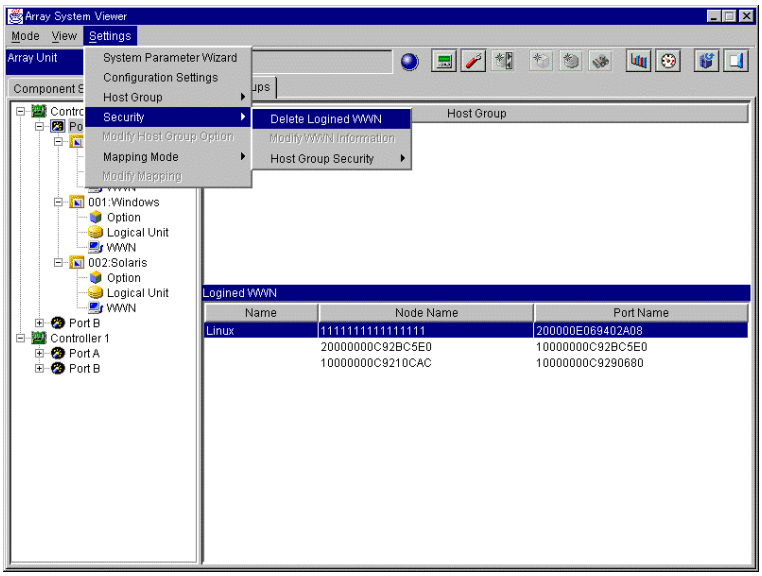
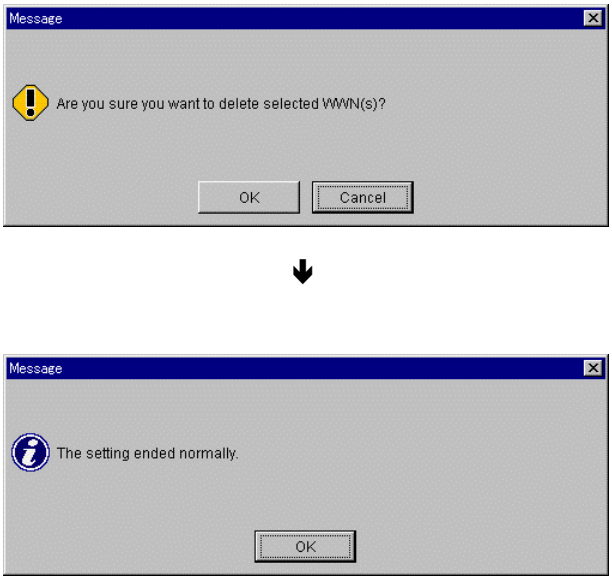


Figure 3.16 Deleting a Logined WWN

When a WWN that has been already assigned to a Host Group is deleted from the **Logined WWN** list, the WWN is deleted from the list but the assignment to the Host Group remains.

2. The confirmation message is displayed. Click the **OK** button.



Appendix A Operations Using CLI

This section includes the following:

- Installing LUN Management
- Uninstalling LUN Management
- Enabling or Disabling LUN Management
- Adding a Host Group
- Setting a Host Group Option
- Setting Logical Units (LU Mapping)
- Adding a WWN
- Changing a Host Group Name
- Deleting a Host Group
- Initializing the Host Group 0
- Changing a WWN
- Deleting a WWN
- Deleting a Logined WWN

A.1 Installing LUN Management

The LUN Management option is usually unselectable (closed). To make this option available, you must install LUN Management and make its functions selectable (open). To install this function, use the key code provided with the optional feature.

LUN Management is installed and uninstalled through the Disk Array Management Program.

Note: Before installing and uninstalling, make sure that the array unit is in normal operating condition. If a failure such as a controller blockade has occurred, installation and uninstallation operations cannot be performed.

The following instructions describe how to install LUN Management, using the CLI version of Disk Array Management Program:

1. From the command prompt, register the subsystem (array unit) in which you will install the LUN Management feature. Connect to the subsystem.
2. Unlock the optional features by using the following:

Example 1:

```
% auopt -unit df600 -lock off -keycode Key code
Password:
Option was opened.
%
```

Example 2:

```
% auopt -unit df600 -refer
Password:
Option name      Status
LUN-MANAGEMENT   Enable
%
```

A.2 Uninstalling LUN Management

To uninstall LUN Management, use the key code provided with the optional feature.

LUN Management is installed and uninstalled through the Disk Array Management Program.

The following instructions describe how to uninstall LUN Management, using the CLI version of Disk Array Management Program:

1. From the command prompt, register the subsystem (array unit) in which you will uninstall the LUN Management feature. Connect to the subsystem.
2. Lock the optional features by using the following:

Example 1:

```
% auopt -unit df600 -lock on -keycode Key code
Password:
Option was closed.
%
```

Example 2:

```
% auopt -unit df600 -refer
Password:
DMEC002015:No information displayed.
%
```

A.3 Enabling or Disabling LUN Management

LUN Management can be enabled or disabled without uninstalling this function. The following instructions describe how to enable or disable LUN Management without uninstalling this function, using the CLI version of Disk Array Management Program.

1. From the command prompt, register the subsystem (array unit) in which you will change the status of the LUN Management feature. Connect to the subsystem.
2. Execute the `auopt` command to change the status (enable or disable) of the LUN Management feature.

   The following is an example of how to change the status from enable to disable. To change the status from disable to enable, enter `enable` after the `-st` option.

Example 1:

```
% auopt -unit df600 -option LUN-MANAGEMENT -st disable
Password:
Option setting ended normally.
%
```

Example 2:

```
% auopt -unit df600 -refer
Password:
Option name      Status
LUN-MANAGEMENT   Disable
%
```

Note: When disabling or uninstalling this LUN Management feature, it is necessary to disable to the Host Group Security of all ports.

A.4 Adding a Host Group

Create a Host Group for each Port. First, set the Host Group Security to be valid for each Port. Then, create a Host Group.

A.4.1 Setting the Host Group Security

Set the Host Group Security to be valid or invalid for each Port. The default setting is invalid for all Ports.

1. From the command prompt, register the subsystem (array unit) in which you want to set the host group security information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A

   Use `off` with `-hgs` option, when disabled LUN Management is changed.

Example:

```
% auhgwwn -unit df600 -set -hgs 0 A on
Password:
Are you sure you want to enable the host group security on port0A? (y/n [n]: y
When setting starts, the subsystem stops accepting the access to the port from the
host.
Before setting, stop the access to the port from the host.
Do you want to continue processing? (y/n [n]): y
The security information has been set successfully.
%
```

4. Specify as follows when the checking information has been set:

Example:

```
% auhgwwn -unit df600 -refer
Password:
Port  0A  Host Group Security  ON
Port  0B  Host Group Security  OFF
Port  1A  Host Group Security  OFF
Port  1B  Host Group Security  OFF
%
```

A.4.2 Adding a Host Group

Create Host Groups for each Port. The procedure for creating a Host Group will be described further.

1. From the command prompt, register the subsystem (array unit) in which you want to set the host group information. Connect to the subsystem.
2. Execute the `auhgdef` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Host group name: win001

Example:

```
% auhgdef -unit df600 -add 0 A -gno 1 -gname win001
Password:
Host group information has been set successfully.
%
```

4. Specify as shown when setting the following information:

Example:

```
% auhgdef -unit df600 -refer
Password:
Port 0A
  Group  HostGroupName
      0  G000
      1  win001
Port 0B
  Group  HostGroupName
      0  G000
Port 1A
  Group  HostGroupName
      0  G000
Port 1B
  Group  HostGroupName
      0  G000
%
```

A.5 Setting a Host Group Option

A Host Group Option is set for each Host Group.

1. From the command prompt, register the subsystem (array unit) in which you want to set the host group option information. Connect to the subsystem.
2. Execute the `auhgopt` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Host Connection Mode 1: Standard
   - Host Connection Mode 2: UA(06/2A00) suppress Mode

Example:

```
% auhgopt -unit df600 -set 0 A -gno 1 -HostConnection standard -UASuppress enable
Password:
Are you sure you want to set the host group option? (y/n [n]): y
When setting starts, the subsystem stops accepting the access to the host group
from the host.
Before setting, stop the access to the host group from the host.
Do you want to continue processing? (y/n [n]): y
The host group option has been set successfully.
%
```

A.6 Setting Logical Units

Logical Units to be recognized by each host is set to each Host Group. (This process is called LU Mapping)

1. From the command prompt, register the subsystem (array unit) in which you want to set the logical unit mapping information. Connect to the subsystem.
2. Execute the `auhgmap` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Logical Unit to be recognized by the host: 0
   - Subsystem internal Logical Unit: 0

     It is necessary to set **Enable** to **Mapping Mode** for setting LU Mapping.

Example:

```
% auhgmap -unit df600 -add 0 A 1 0 0
Password:
The mapping information has been set successfully.
%
```

4. Specify as shown when setting the following information:

Example:

```
% auhgmap -unit df600 -refer
Password:
Mapping mode = ON
Port  Group         H-LUN  LUN
  0A  001:win001        0    0
%
```

A.7 Adding a WWN

WWNs of Host Bus Adapter is set to each Host Group. (Refer to A.7.1)
When a Port is connected to a Host, WWNs of Host Bus Adapters that is listed in **Logined WWN** can be selected and added to the Host Group. (Refer to A.7.2)
WWN is used for identifying Hosts.

For the process of obtaining WWN Information, refer to Appendix B.

A.7.1 Adding a WWN by Entry

1. From the command prompt, register the subsystem (array unit) in which you want to set the WWN information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Host information (node name and port name): 1111111111111111 and 200000e069402a08
   - WWN nickname: win001

Example:

```
%auhgwwn -unit df600 -set -permhg 0 A 1111111111111111 200000e069402a08 -wname win001
         -gno 1
Password:
The security information has been set successfully.
%
```

4. Specify as shown when setting the following information:

Example:

```
% auhgwwn -unit df600 -refer
Password:
Port  0A  Host Group Security  ON
  Logined WWN
    Name      Node name          Port name
  Assigned WWN
    Name      Node name          Port name          Host Group
    win001    1111111111111111   200000E069402A08   001:win001
  Assignable WWN
Port  0B  Host Group Security  OFF
Port  1A  Host Group Security  OFF
Port  1B  Host Group Security  OFF
%
```

A.7.2 Selecting and Adding a Assignable WWN

The following instructions describe how to display the Assignable WWN list and how to assign the WWN on the Assignable WWN list.

1. From the command prompt, register the subsystem (array unit) in which you want to set the WWN information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 0

Example:

```
% auhgwwn -unit df600 -refer -permhg 0 A -gno 0
Password:
Port  0A  Host Group Security  ON
  Assigned WWN
    Name      Node name          Port name          Host Group
  Assignable WWN
    Name      Node name          Port name
              10000000C9210CAC   10000000C9290680
% auhgwwn -unit df600 -assign -permhg 0 A 10000000C9210CAC 10000000C9290680 -gno 0
Password:
The security information has been set successfully.
% auhgwwn -unit df600 -refer -permhg 0 A -gno 0
Password:
Port  0A  Host Group Security  ON
  Assigned WWN
    Name      Node name          Port name          Host Group
              10000000C9210CAC   10000000C9290680   000:G000
  Assignable WWN
    Name      Node name          Port name
%
```

A.8 Changing a Host Group Name

1. From the command prompt, register the subsystem (array unit) in which you want to change the host group name. Connect to the subsystem.
2. Execute the `auhgdef` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Current host group name: win001
   - New host group name: win002

Example:

```
% auhgdef -unit df600 -chg 0 A -gno 1 -newgname win002
Password:
Are you sure you want to change the name of host group? (y/n [n]): y
Host group information has been set successfully.
%
```

A.9 Deleting a Host Group

1. From the command prompt, register the subsystem (array unit) in which you want to delete the host group. Connect to the subsystem.
2. Execute the `auhgdef` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1

Example:

```
% auhgdef -unit df600 -rm 0 A -gno 1
Password:
Are you sure you want to delete specified host group(s)? (y/n [n]): y
After setting, access from hosts associated with the host group will be denied.
Do you want to continue processing? (y/n [n]): y
When setting starts, the subsystem stops accepting the access to the host group
from the host. Do you want to continue processing? (y/n [n]): y
Host group information has been set successfully.
%
```

A.10 Initializing the Host Group 0

1. From the command prompt, register the subsystem (array unit) in which you want to initialize the specified host group 0. Connect to the subsystem.
2. Execute the `auhgdef` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A

Example:

```
% auhgdef -unit df600 -init 0 A
Password:
Are you sure you want to initialize host group 0? (y/n [n]): y
After setting, access from hosts associated with the host group 0 will be denied.
Do you want to continue processing? (y/n [n]): y
When setting starts, the subsystem stops accepting the access to the host group
from the host. Do you want to continue processing? (y/n [n]): y
Host group information has been set successfully.
%
```

A.11 Changing a WWN

1. From the command prompt, register the subsystem (array unit) in which you want to change the WWN information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 1
   - Host information (node name and port name): 1111111111111111 and 200000e069402a08
   - WWN nick name: winNT01

Example:

```
%auhgwwn -unit df600 -chg -rename 0 A 1111111111111111 200000e069402a08 -gno 1
         -newwname winNT01
Password:
The security information has been set successfully.
%
```

4. Specify as shown when setting the following information:

Example:

```
% auhgwwn -unit df600 -refer
Password:
Port  0A  Host Group Security  ON
  Logined WWN
    Name      Node name          Port name
  Assigned WWN
    Name      Node name          Port name          Host Group
    winNT01   1111111111111111   200000E069402A08   001:win001
  Assignable WWN
Port  0B  Host Group Security  OFF
Port  1A  Host Group Security  OFF
Port  1B  Host Group Security  OFF
%
```

A.12 Deleting a WWN

Delete the WWN on the assigned WWN list.

1. From the command prompt, register the subsystem (array unit) in which you want to delete the WWN information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host group number: 0
   - Host information (node name and port name): 1111111111111111 and 200000e069402a08

Example:

```
% auhgwwn -unit df600 -rm -permhg 0 A 1111111111111111 200000e069402a08 -gno 0
Password:
The security information has been set successfully.
%
```

4. Specify as shown when setting the following information:

Example:

```
% auhgwwn -unit df600 -refer -permhg 0 A -gno 0
Password:
Port  0A  Host Group Security  ON
  Assigned WWN
    Name      Node name          Port name          Host Group
  Assignable WWN
    Name      Node name          Port name
              1111111111111111   200000E069402A08
%
```

A.13 Deleting a Logined WWN

Delete the WWN on the logined WWN list. The following instructions describe how to display the logined WWN and how to delete the WWN on the logined WWN list.

1. From the command prompt, register the subsystem (array unit) in which you want to delete the WWN information. Connect to the subsystem.
2. Execute the `auhgwwn` command to specify the subsystem.
3. Use the following settings:
   - Subsystem name: df600
   - Controller: 0
   - Port: A
   - Host information (node name and port name): 1111111111111111 and 200000e069402a08

Example:

```
% auhgwwn -unit df600 -refer -login 0 A
Password:
Port  0A  Host Group Security  ON
  Logined WWN
    Name       Node name          Port name
    Linux      1111111111111111   200000E069402A08
               10000000C9210CAC   10000000C9290680

% auhgwwn -unit df600 -rm -perm 0 A 1111111111111111 200000e069402a08
Password:
Are you sure you want to delete selected WWN? (y/n [n])] y
The security information has been set successfully.
%
```

Appendix B Using the WWN Change Operation when the HBA is Replaced

When you replace the HBA of the host (server) using LUN Management, you need to change the WWN setting of LUN Management. This section includes the following information:

- WWN Change Procedure when the HBA is Replaced
- Obtaining the WWN of a Host

B.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 in section B.2.
2. Change the WWN before HBA replacement to the WWN after HBA replacement by the following LUN Management setting procedure.

   When changing the setting, see Changing the WWN of the Host HBA (Changing the WWN when the host HBA is replaced) in section 3.8.
3. Restart the host with the replaced HBA. Verify that the LU was recognized; this must occur before HBA replacement can be recognized after the HBA replacement. When the LU is not recognized, LUN Management is not correctly set. Use the procedures from step 2 above to set the WWN again.

B.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:

- Solaris™
- HP®
- IBM®
- SGI™
- Windows NT®/Windows® 2000

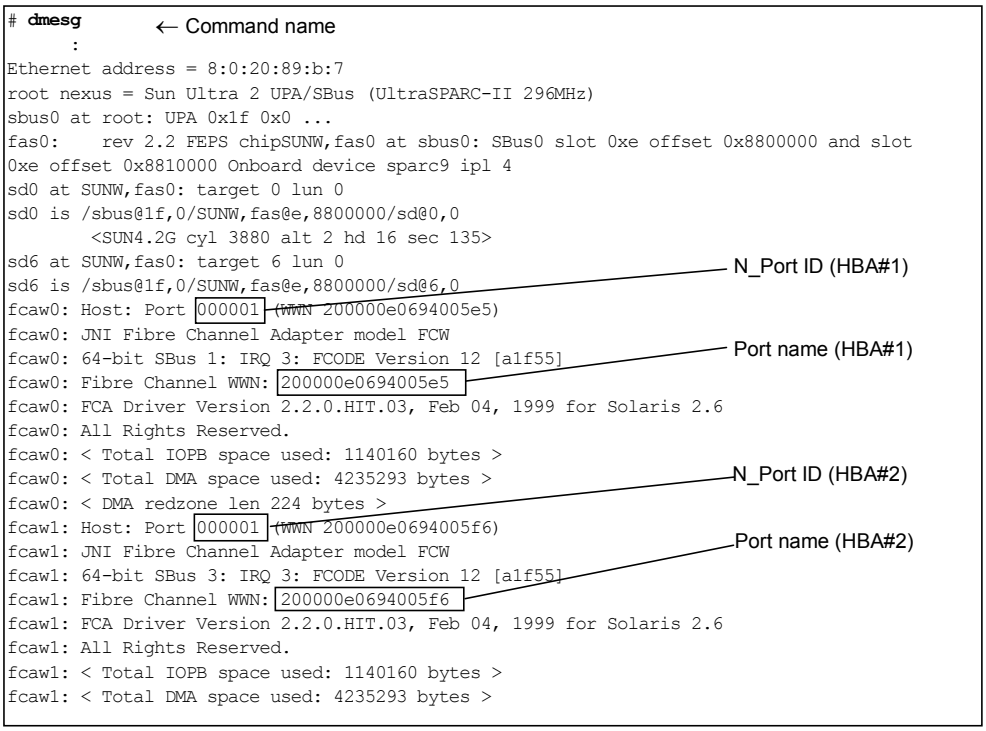
B.2.1 Solaris™

There are two methods for obtaining the WWN of a host:

Method 1:

To obtain the WWN of a host when the JNI HBA is FC64-1063 or FCI-1063 (driver version: HIT.06.01 earlier):

1. Execute the following command to obtain the WWN of the HBA.



2. 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: 200000e0694005e5

↓

Node name: 100000e0694005e5

Method 2:

When the JNI HBA is FC64-1063 or FCI-1063 (driver version: HIT.07 later), or FCE-1063, FCE-6410, FCE-6460, FCE-1473, FCC-6460 the system parameters of the subsystem must be changed.

1. Execute the following command to obtain the file name of the HBA.

Example:

```
E250-1# luxadm inq /dev/rdsk/c3t0d0s2  ←Command name

INQUIRY:
  Physical Path:
  /devices/pci@1f,4000/fibre-channel@4/sd@0,0:c,raw
Vendor:               HITACHI
Product:              DF600F
Revision:
Device type:           0x0  (Disk device)
Removable media:        no
ISO version:           0
ECMA version:          0
ANSI version:          2  (Device complies to ANSI X3.131-1994 (SCSI-2))
Response data format:    2
Additional length:      0x73
          VENDOR-SPECIFIC PARAMETERS
Byte#             Hex Value                                    ASCII
36   44 35 30 4c 30 30 42 41 30 30 30 30 00 31 41 00      D50L00BA0000.1A.
     00 01 00 00                                             ....
96   00 00 05 00 00 00 ff 00 10 00 00 00 0e 24 90 74      .....$.t
     10 00 08 00 20 b0 19 a8                                 .... ...
                                  Node Name
```

2. Refer to the node name shown in the previous output example. The port name can be obtained from the node name. When the node name is 100000000e249074, the port name is obtained through replacement of the top byte, that is, 10 with 20. Therefore, the port name turns out to be 200000000e249074.

Example:

Node name: 100000000e249074

↓

Port name: 200000000e249074

Determining an HBA Location:

A label with the WWN is adhered on the JNI HBA; identify the WWN.

B.2.2 HP®

To obtain the WWN of a host when the genuine HP® HBA is A3404A, A3740A, A5158A, A6684A, A6685A, or A6795A:

1. Execute the following command to obtain the file name of the HBA.

Example:

```
# ioscan -nfC fc
Class   I H/W Path Driver S/W State  H/W Type   Description
=============================================================
fc    0 0/4/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc    1 0/5/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc    2 0/8/0/0  td  CLAIMED   INTERFACE  HP Tachyon TL/TS Fibre Channel Mass S
torage Adapter
                 /dev/td2        <-- Device file Name
fc    3 0/12/0/0 td  CLAIMED   INTERFACE  HP Tachyon TL/TS Fibre Channel Mass S
torage Adapter
                 /dev/td3        <-- Device file Name
fc    4 1/10/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc    5 1/12/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
```

2. Refer to the Device file name shown in the output example above. In this example, the device file names are: /dev/td2 and /dev/td3.
3. Using the device file names shown above, execute the command shown below to obtain the WWN of the HBA.

Example:

```
# fcmsutil /dev/td3
              Vendor ID is = 0x00103c
              Device ID is = 0x001028
        TL Chip Revision No is = 2.3
     PCI Sub-system Vendor ID is = 0x00103c
         PCI Sub-system ID is = 0x000006
           Previous Topology = PTTOPT_FABRIC
          Local N_Port_id is = 0x011600
     N_Port Node World Wide Name = 0x50060b000008829f   <-- Node Name
     N_Port Port World Wide Name = 0x50060b000008829e   <-- Port Name
             Driver state = AWAITING_LINK_UP
           Hardware Path is = 0/12/0/0
       Number of Assisted IOs = 504123690
   Number of Active Login Sessions = 0
```

4. Refer to the node name and port name shown in the example above.

Determining an HBA Location:

When HP-UX® is running in HP9000, you may not be able to match the HBA with the WWN because there is no way to identify the HBA address based on the slot location. In this case, correlate the HBA with a WWN using the following procedure:

1. Connect the host and the subsystem. Start the system.
2. Execute the following command to obtain the device file name of the HBA.

Example:

```
# ioscan -nfC fc
Class   I H/W Path Driver S/W State  H/W Type   Description
=================================================================
fc     0 0/4/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc     1 0/5/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc     2 0/8/0/0  td  CLAIMED   INTERFACE  HP Tachyon TL/TS Fibre Channel Mass S
torage Adapter                Address of /dev/td2
            /dev/td2                                    Device file Name
fc     3 0/12/0/0  td  CLAIMED   INTERFACE  HP Tachyon TL/TS Fibre Channel Mass S
torage Adapter                Address of /dev/td3
            /dev/td3                                    Device file Name
fc     4 0/10/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
fc     5 0/12/0/0  fcT1 UNCLAIMED  UNKNOWN   PCI SerialBus (107e0004)
```

3. Disconnect the Fibre channel cable of the HBA of the WWN that you wish to identify.
4. Determine which disk is currently connected and its correspondence with the device file of the HBA.

Example:

```
# ioscan -nfC disk
Class    I  H/W Path      Driver  S/W State  H/W Type    Description
========================================================================
disk     0  0/0/1/0.2.0    sdisk   CLAIMED    DEVICE      HP     DVD-ROM 6x/32x
                      /dev/dsk/c0t2d0  /dev/rdsk/c0t2d0
disk     1  0/0/2/0.6.0    sdisk   CLAIMED    DEVICE      SEAGATE ST39102LC
                      /dev/dsk/c1t6d0  /dev/rdsk/c1t6d0
disk     2  0/0/2/1.6.0    sdisk   CLAIMED    DEVICE      SEAGATE ST39103LC
                      /dev/dsk/c2t6d0  /dev/rdsk/c2t6d0
disk   169  0/8/0/0.1.19.232.0.0.0  sdisk  CLAIMED   DEVICE     HITACHI DF600F
                      /dev/dsk/c19t0d0  /dev/rdsk/c19t0d0
disk   170  0/8/0/0.1.19.232.0.0.1  sdisk  CLAIMED   DEVICE     HITACHI DF600F
                      /dev/dsk/c19t0d1  /dev/rdsk/c19t0d1
         :                   HBA address                  not connected
disk   141  0/12/0/0.1.19.228.0.0.0 sdisk  NO_HW     DEVICE     HITACHI DF600F
                      /dev/dsk/c21t0d0  /dev/rdsk/c21t0d0
disk   297  0/12/0/0.1.19.228.0.0.1 sdisk  NO_HW     DEVICE     HITACHI DF600F
                      /dev/dsk/c21t0d1  /dev/rdsk/c21t0d1
         :
```

As indicated in the above example, the disks identified as NO-HW are not connected. According to this information and the address of the device file of the HBA, the device file name of the HBA, whose cable has been disconnected, is: /dev/td3.

Execute the **fcmsutil** to obtain the WWN of the /dev/td3.

5. Plug in the disconnected Fibre channel cable.

B.2.3 IBM®

To obtain the WWN of a host when the genuine IBM is FC6227 or FC6228:

1. Execute the following command to obtain the device file name of the HBA.

Example:

```
# lsparent -C -k iocb
    fcs0 Available 27-08 FC Adapter <------ device file Name
    fcs1 Available 3A-08 FC Adapter
    fcs2 Available 31-08 FC Adapter
    fcs3 Available 34-08 FC Adapter
```

2. Refer to the Device file name shown in the example above. In this example, the device file names are: fcs0, fcs1, fcs2, and fcs3.
3. Using the device file names given in the previous example, execute the following example to obtain the WWN of the HBA.

Example:

```
# lscfg -vl fcs0
DEVICE            LOCATION          DESCRIPTION

fcs0              27-08             FC Adapter

      Part Number.................09P1162
      EC Level....................D
      Serial Number...............KT04904230
      Manufacturer................0010
      FRU Number..................09P1173
      Network Address.............10000000C925437E <------ Port Name
      ROS Level and ID............02903290
      Device Specific.(Z0)........4002206D
      Device Specific.(Z1)........10020193
      Device Specific.(Z2)........3001506D
      Device Specific.(Z3)........02000909
      Device Specific.(Z4)........FF101450
      Device Specific.(Z5)........02903290
      Device Specific.(Z6)........06113290
      Device Specific.(Z7)........07113290
      Device Specific.(Z8)........20000000C925437E
      Device Specific.(Z9)........SS3.22A0
      Device Specific.(ZA)........S1F3.22A0
      Device Specific.(ZB)........S2F3.22A0
      Device Specific.(YL)........P1-I8/Q1
```

The value shown in the Network Address section in the output example above is the port name.

Determining an HBA Location:

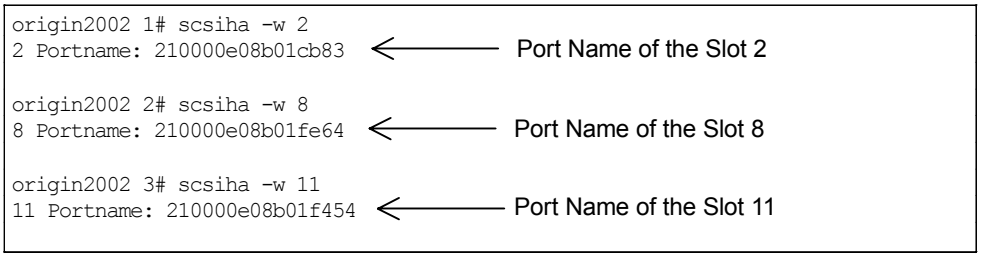
A label with the WWN is adhered on the genuine IBM HBA; identify the WWN.

B.2.4 SGI™

To obtain the WWN of a host when the genuine SGI™ is XT-FV-1PORT:

1. Execute the following command to obtain the WWN of the HBA.

Example:



2. Refer to the port name shown in the output example above.

Determining an HBA Location:

The location and arrangement of slots vary, depending on the model of SGI™ server. However, you match the HBA and WWN by referring to the slot location of each model.

B.2.5 Windows NT®/ Windows® 2000

There are two methods for obtaining the WWN of a host:

- Emulex Port Driver/SCSI Miniport Driver
- Qlogic QLA2200F/QLA2300F

Emulex Port Driver

When the Emulex driver is installed on the host, the Emulex Configuration Tool (elxcfg.exe) is installed on Windows NT®/Windows® 2000. Run the Emulex Configuration Tool to obtain the WWN of the host. Follow these steps:

1. Start the elxcfg.exe.
2. Double-click HBA to obtain the WWN on the Available Adapter list. (Adapters corresponding to the number of installed HBAs are displayed.)
3. The Port WWN (Port Name) and Node WWN (Node Name) are displayed in the Adapter Information screen.
4. When two or more HBAs are installed, repeat Steps 2 through 3 above.

Emulex SCSI Miniport Driver

When the Emulex driver is installed on the host, the LightPulse Utility/NT (lputilnt.exe) is installed on Windows NT®/Windows® 2000. Run the LightPulse Utility/NT to obtain the WWN of the host. Follow these steps:

1. Start the lputilnt.exe.
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 LightPulse Utility/NT 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.

Qlogic QLA2200F/QLA2300F:

To obtain the WWN of a host on the Windows NT® (Qlogic2200F), 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: