5. SVP procedure

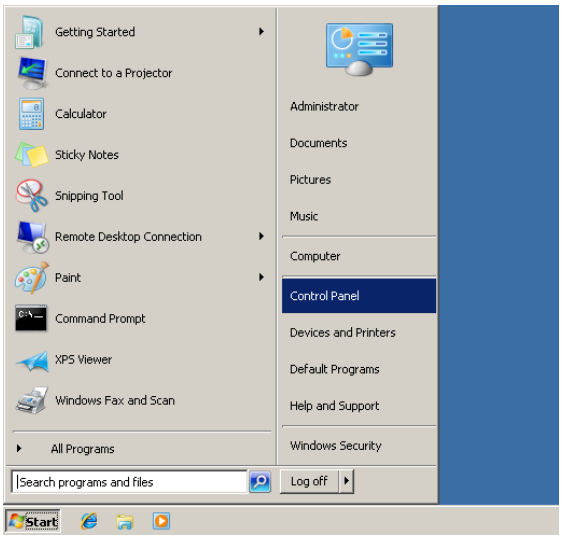
5.1 INDEX

5.2 New Installation SVP Procedure

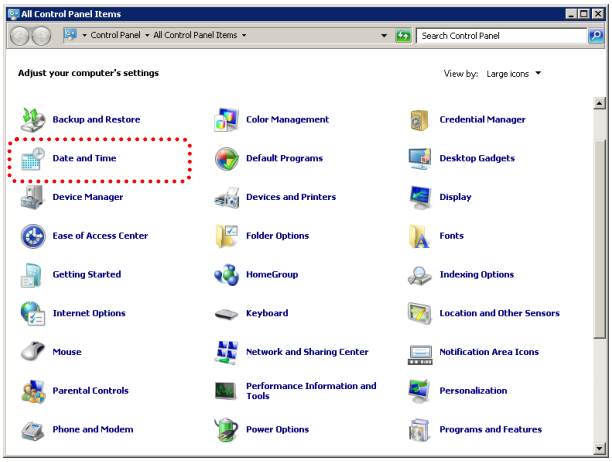
5.2.1 TOD Setting and Set IP Address

[1] TOD Setting (Turn on storage system power before TOD Setting)

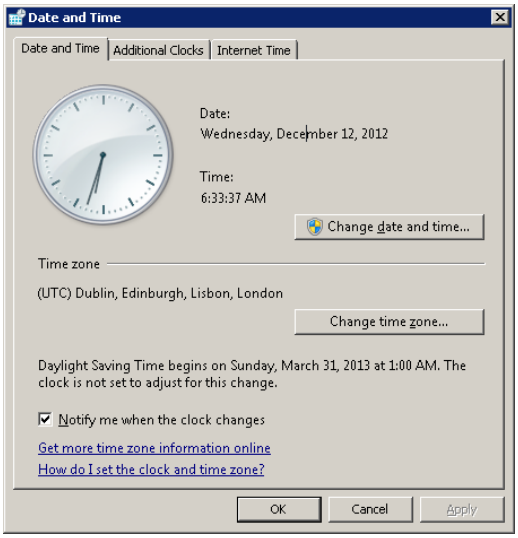
1. <Open [Control Panel]>
   Select (DR) [Settings] and then [Control Panel] from [Start].



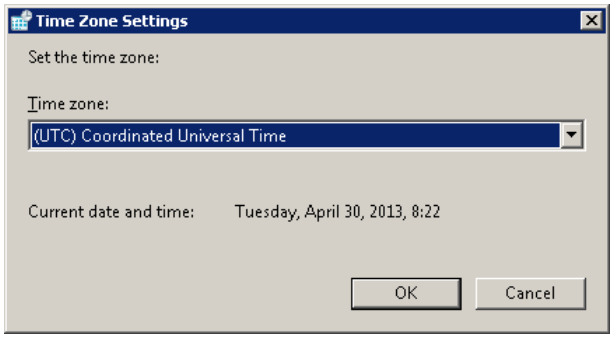
2. <Open [Date and Time]>
   Select (DC) [Date and Time] from [Control Panel].



3. <Select [Time zone]>
   Select (CL) [Change time zone...].



4. <Check the setting of [Time zone]>
   Make sure that the setting of [Time zone] is "(UTC) Coordinated Universal Time". Then, press [OK] (CL).



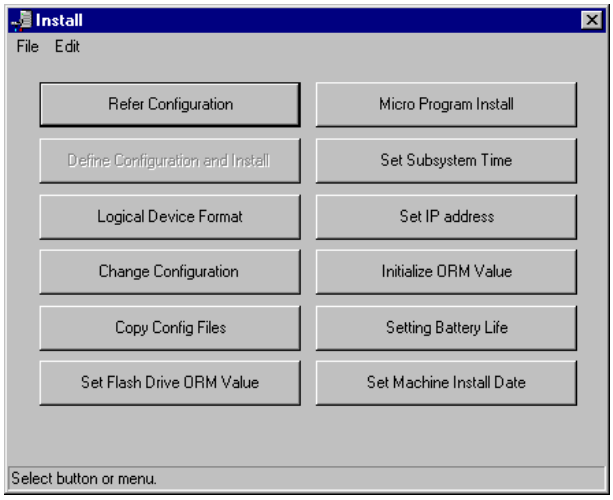
5. <Close [Control Panel]>
   Select (DR) [File] and then [Close] from [Control Panel].

6. Change the mode to [Modify Mode] from [View Mode] (CL).

7. Select (CL) [Install].

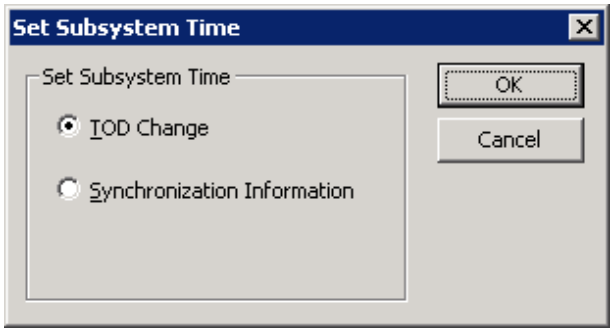
8.

Select (CL) [Set Subsystem Time] in the 'Install' window.



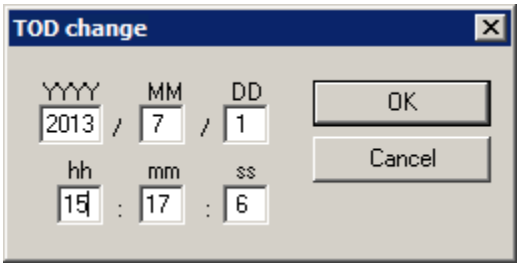
9.

Select (CL) [TOD Change] in the 'Set Subsystem Time' window, and then select (CL) [OK].



10.

Specify the date (year, month and day) and time (hour, minute and second) and select (CL) [OK].



11.

Close the 'Install' window.

In case of New Installation, go to INST02-340 Step (5).

[2] Set IP Address

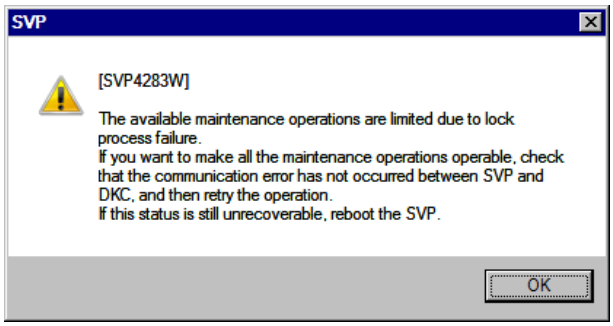
NOTICE:
- The Case where SVP High Reliability kit is installed.
  When SVP High Reliability kit is installed, Both Master SVP and Standby SVP need to be set IP Address.
  Firstly set IP Address of Standby SVP.
  After completing it, please set the IP Address of Master SVP.

Although "RC = 7ff200" may occur, there is no problem.
Please complete SIM before operation.

1.

Change the mode to [Modify Mode] from [View Mode] (CL).

When SVP is Standby SVP, "The available maintenance operations are limited due to lock process failure. If you want to make all the maintenance operations operable, check that the communication error has not occurred between SVP and DKC, and then retry the operation. If this status is still unrecoverable, reboot the SVP." is displayed, select (CL) the [OK] button.

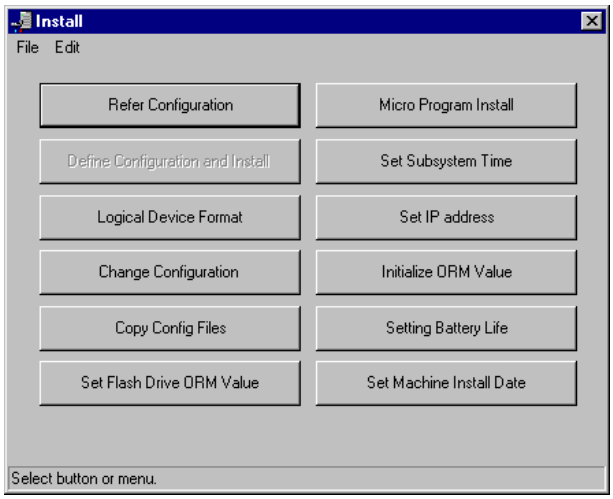


2.

Select (CL) [Install].

3.

Select (CL) [Set IP address] in the 'Install' window.



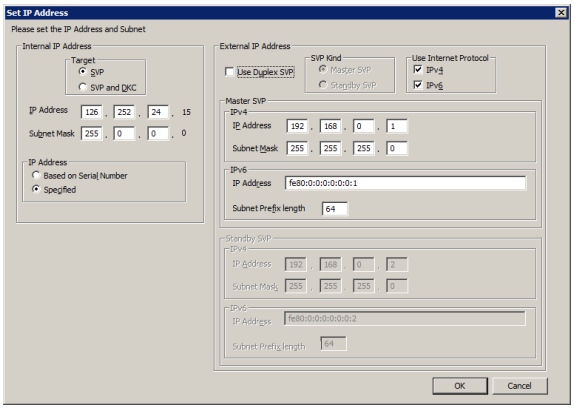
4. <Change the IP Address>

(1)

Select (CL) [SVP] and setting IP Address and Subnet Mask of an Internal IP Address.

The case when SVP High Reliability kit is installed. Check (CL) [Use Duplex SVP], and check (CL) in the SVP Kind.

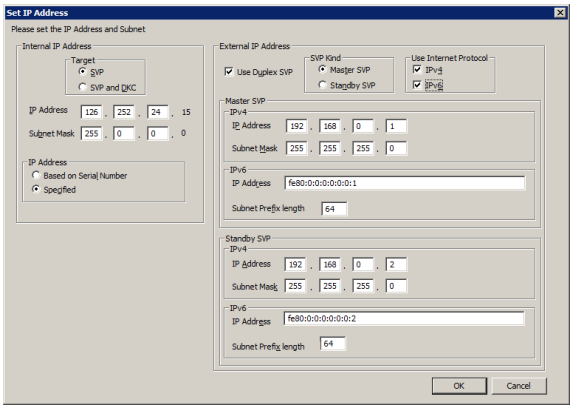
* [Master SVP] is checked (CL) when setting to Master SVP.
* [Standby SVP] is checked (CL) when setting to Standby SVP.



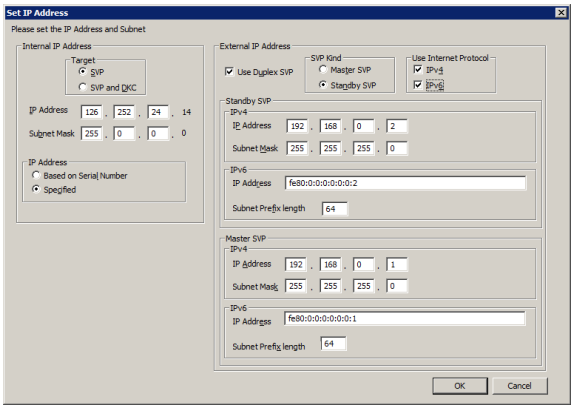
The SVP High Reliability kit un-setting up

Check (CL) [IPv4] in the Use Internet Protocol in the case of use IPv4. And enter the IP addresses and subnet masks of the IPv4 of the Master and Standby SVPs.
Check (CL) [IPv6] in the Use Internet Protocol in the case of use IPv6. And enter the IP addresses and subnet prefix length of the IPv6 of the Master and Standby SVPs.
Select (CL) [OK] after setting External IP Address.

NOTE: In case of setting Subnet Mask of internal IP Address, the previous address may be displayed if you set an address that is different than the value of DKC.
If the displayed address is different from what you have set, make the setting again to match the value of DKC.



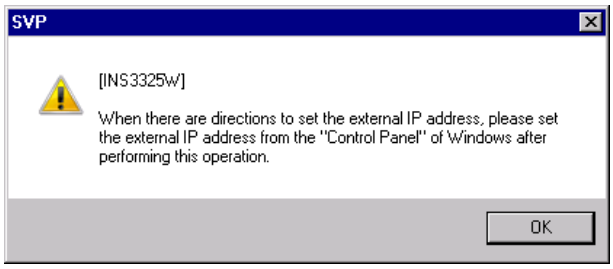
The SVP High Reliability kit setting up (Master SVP)



The SVP High Reliability kit setting up (Standby SVP)

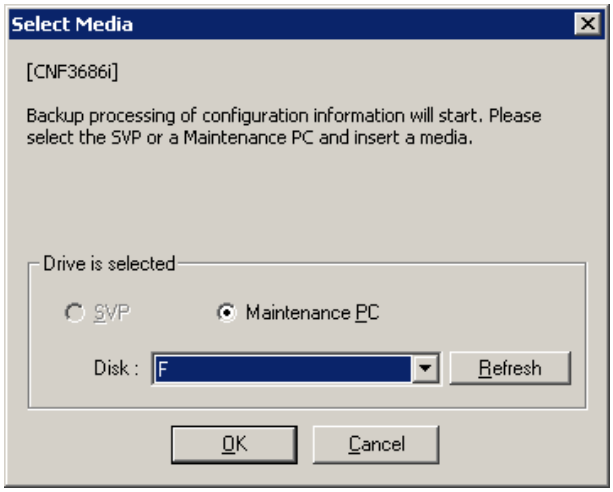
(2)

Select (CL) [OK] in response to the confirmation message “When there are directions to set the external IP address, please set the external IP address from the “Control Panel” of Windows after performing this operation.”.

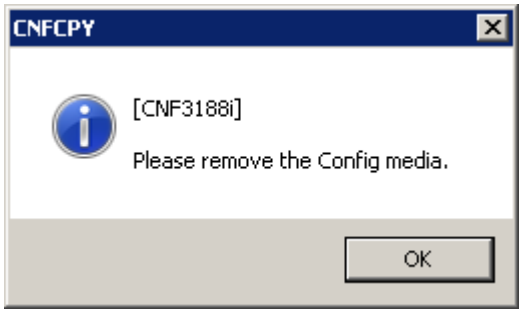


(3) <Backup for configuration information>

① The message “Backup processing of configuration information will start. Please select the SVP or a Maintenance PC and insert a media.” is displayed. Set the Config media to the selected drive and select (CL) [OK].

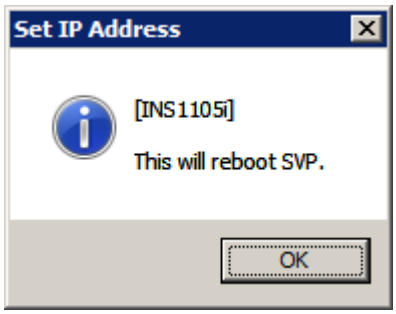


② When backup of configuration information is completed, the message “Please remove the Config media.” is displayed. Remove the configuration information media and select (CL) [OK].



(4)

In response to the message “This will reboot SVP.”, select (CL) [OK].



Change the IP Address is abnormally terminated if the message “Failed to change the IP address.” is displayed. Identify the error cause according to the procedure shown in “TROUBLE SHOOTING SECTION”.

(Refer to TRBL02-440)

NOTICE: If the remote connection to the Maintenance PC is disconnected during the operation, reconnect by changed IP address it to continue the operation. Please perform a remote desktop reconnection after more than five minutes from pushing down the [OK] button of a [INS1105i] message. (Operation for connection to SVP, refer to SVP01-60.)

(5)

When a “Use Duplex SVP” or “SVP Kind” of External IP Address is changed, it is necessary to execute the following operation.

- Setting an external IP Address (Refer to INST03-12-510, 4-12)
- Executing SSVP Reset (Refer to INST03-12-600)

[3] Setting Web Console

Make a setting of the Web Console according to [Web Console] section 1. (WEB01-10)

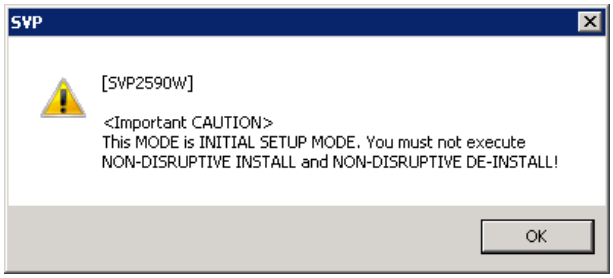
5.2.2 Configuration Information Definition

⚠ CAUTION

This operation is necessary only when a storage system is newly installed. It is not performed afterward. If it is performed by mistake, a system down or a data loss may be caused.

1. <Mode Change>
   Change the mode to [Initial Setting].
   Select "Shift" + "Ctrl" + "I".

   Enter the password and select (CL) [OK].



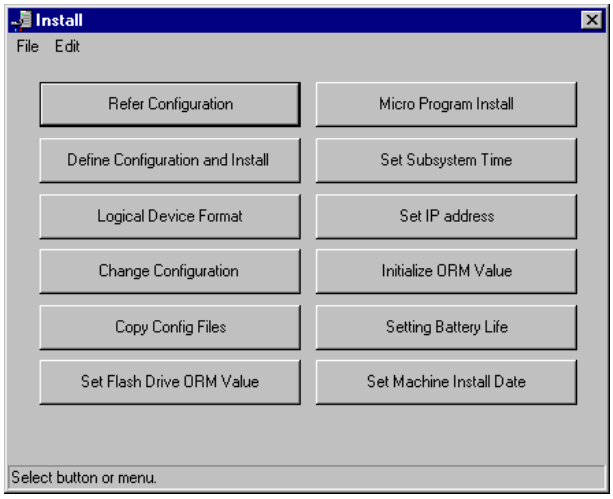
   Select (CL) [OK] in response to the confirmation message
   "<Important CAUTION>
   This MODE is INITIAL SETUP MODE. You must not execute NON-DISRUPTIVE INSTALL and NON-DISRUPTIVE DE-INSTALL!"

   Please call Technical Support Division for asking the password.
   Select (CL) [Install].

   NOTE: The mode changes to [Initial Setting (Unlocked)] when the storage system is in CE MODE.

2.

   Select (CL) [Define Configuration and Install].



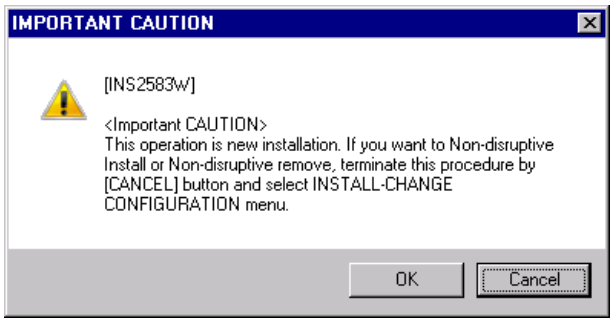
⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if executed in an occasion other than the new storage system installation, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

3.

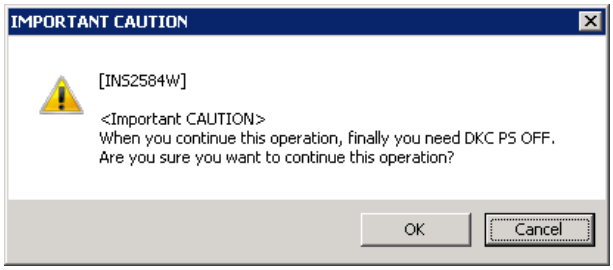
(1)

Select (CL) [OK] in response to the confirmation message "<Important CAUTION>
This operation is new installation. If you want to Non-disruptive Install or Non-disruptive remove, terminate this procedure by [CANCEL] button and select INSTALL-CHANGE CONFIGURATION menu.".



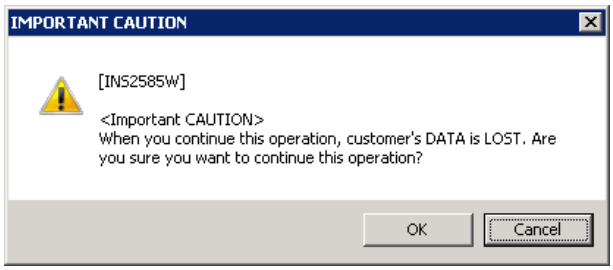
(2)

Select (CL) [OK] in response to the confirmation message "<Important CAUTION>
When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?".



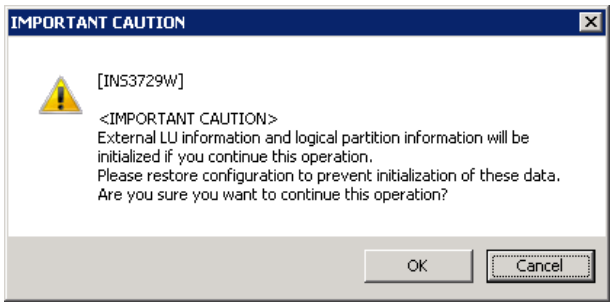
(3)

Select (CL) [OK] in response to the confirmation message "<Important CAUTION>
When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?".



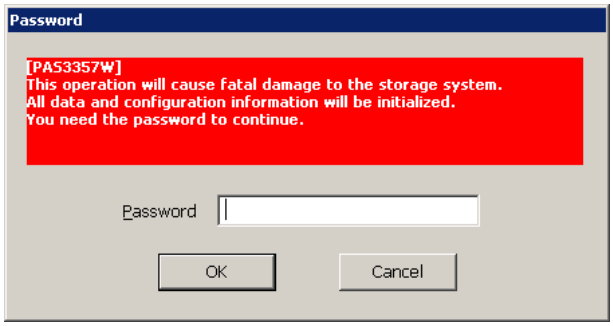
(4)

Select (CL) [OK] in response to the confirmation message "<IMPORTANT CAUTION> External LU information and logical partition information will be initialized if you continue this operation. Please restore configuration to prevent initialization of these data. Are you sure you want to continue this operation?".

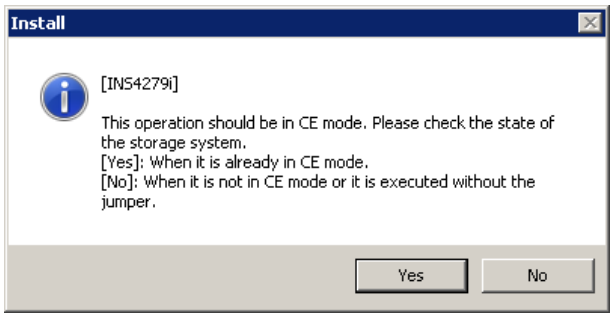


(5)

Enter the password and select (CL) [OK]. Entering the password is required in this operation.
Please call Technical Support Division for asking it.



(6)

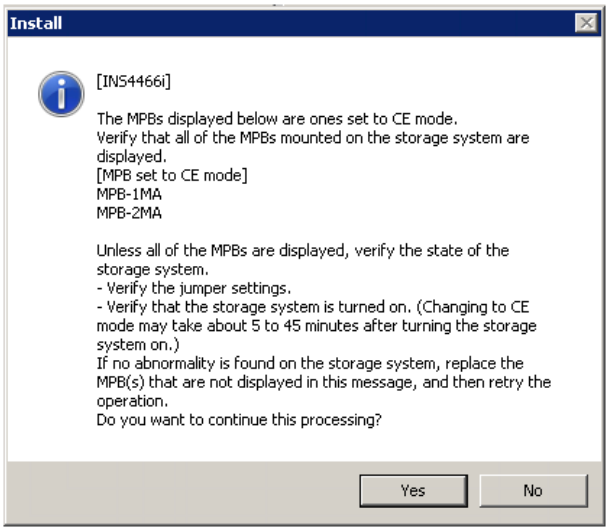


Response to the message “This operation should be in CE mode. Please check the state of the storage system.
[Yes]: When it is already in CE mode.
[No]: When it is not in CE mode or it is executed without the jumper.”.

NOTE: Don’t change the number of installed Hardware (CM/PCBs/etc) except for powering on the storage system with CEMD Maintenance Jumpers (LOC06-160) installed.

When [Yes] is selected (CL), go to Step (6)-1.
When [No] is selected (CL), go to Step (7).

(6)-1



Response to the message “The MPBs displayed below are ones set to CE mode.
Verify that all of the MPBs mounted on the storage system are displayed.
[MPB set to CE mode]
MPB-nnn
MPB-nnn

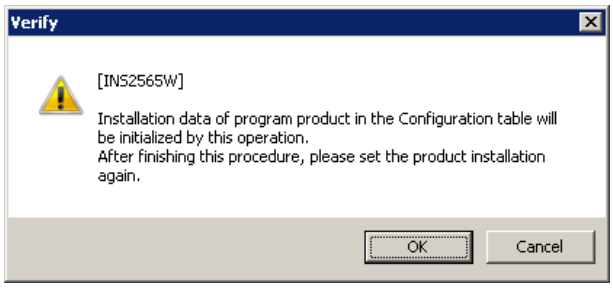
Unless all of the MPBs are displayed, verify the state of the storage system.
- Verify the jumper settings.
- Verify that the storage system is turned on. (Changing to CE mode may take about 5 to 45 minutes after turning the storage system on.)
If no abnormality is found on the storage system, replace the MPB(s) that are not displayed in this message, and then retry the operation.
Do you want to continue this processing?”.

When [Yes] is selected (CL), go to Step (7). When [No] is selected (CL), go back to Step 2.

NOTE: MPB displaying in a message is MPB in the CE mode when this message was displayed. Unless all of the MPBs are displayed, select (CL) [No] and start with Step 2 again.

(7)

Select (CL) [OK] in response to the confirmation message “Installation data of program product in the Configuration table will be initialized by this operation. After finishing this procedure, please set the product installation again.”.

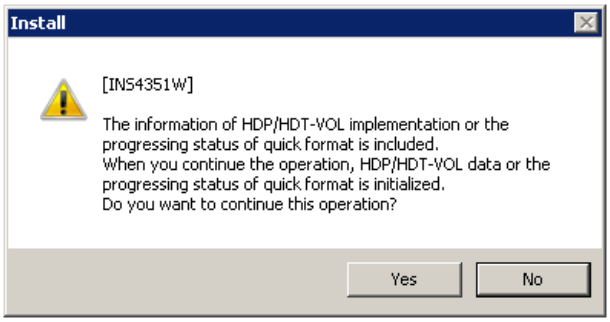


NOTE: When information of HDP/HDT-VOL implementation or progressing state of quick format is not included, go to Step 4

NOTICE: When SVP High Reliability kit is installed and IP Address is changed from this operation.
Set IP Address of Standby SVP. (Refer to INST05-02-40)
After completing it, please set IP Address of Master SVP from this operation.

(8)

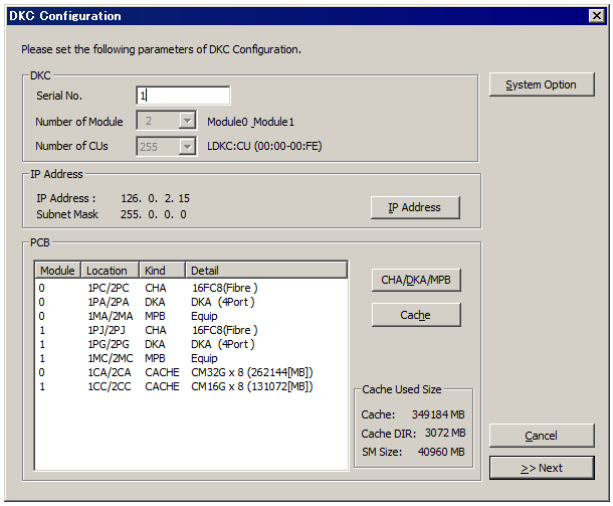
Response to the message “The information of HDP/HDT-VOL implementation or the progressing status of quick format is included. When you continue the operation, HDP/HDT-VOL data or the progressing status of quick format is initialized.
Do you want to continue this operation?”.



When you continue this operation, select (CL) [Yes].
When [No] is selected (CL), this processing will be stopped. Return to Step 2.

4. <DKC Configuration window>

Set the configuration information following the storage system configuration information worksheet.



[IP Address]:
The 'IP Address Configuration' window is displayed.
Refer to Step 4-1.

[CHA/DKA/MPB]:
The 'CHA/DKA/MPB Configuration' window is displayed.
Refer to Step 4-2.

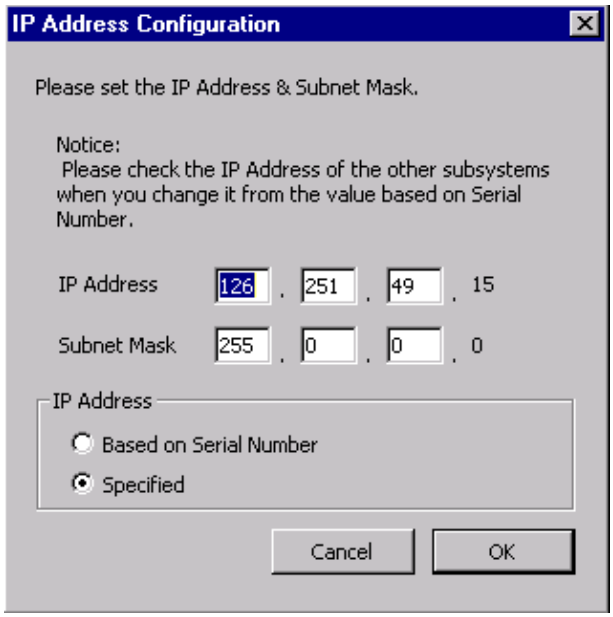
[Cache]:
The 'Cache Configuration' window is displayed.
Refer to Step 4-3.

[System Option]:
The 'System Option' window is displayed.
Refer to Step 4-4.

When the setting of all the entry items is completed, select (CL) the [>>Next] button. The routine goes to Step 4-5.
A selection (CL) of the [Cancel] button completes this operation procedure.

4-1 <IP Address Configuration window>

Set the configuration information following the storage system configuration information worksheet.

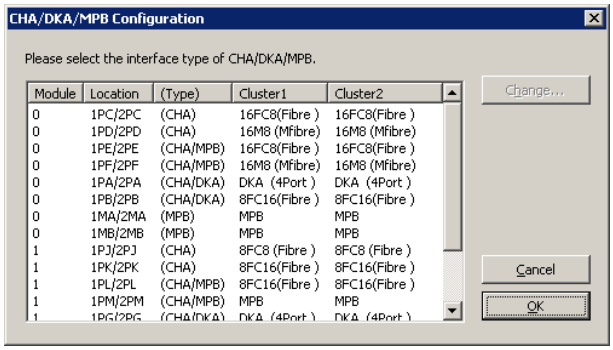


Set the IP address and the subnet mask.

After the setting is completed, select (CL) the [OK] button.
Return to Step 4.
Select (CL) the [Cancel] button not to reflect the settings.
Return to Step 4.

4-2 <CHA/DKA/MPB Configuration window>

Set the PCB type following the storage system configuration information worksheet.



[Change...]:

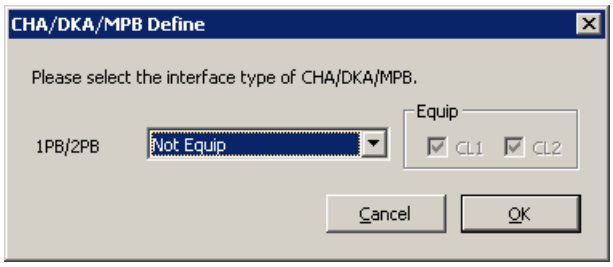
The ‘CHA/DKA/MPB Define’ window is displayed. (Refer to Step 4-2-1.)

After setting the items, select (CL) [OK]. (Go back to Step 4.)

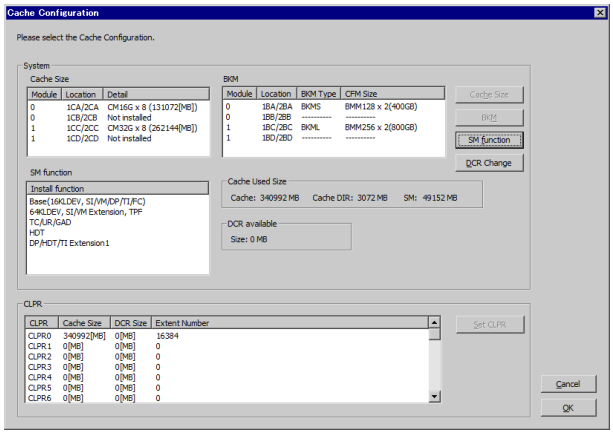
Select (CL) [Cancel] not to reflect the settings. (Go back to Step 4)

4-2-1 <CHA/DKA/MPB Define window>

Select PCB types following the storage system configuration information worksheet. And then select (CL) [OK]. (Go back to Step 4-2.)



4-3 <Cache Configuration window>



Set the configuration information following the storage system configuration information worksheet.

Set the cache capacities/SM function.

[Cache Size]:

The ‘Cache Size Define’ window is displayed. (Refer to Step 4-3-1.)

[BKM]:

The ‘BKM Define’ window is displayed. (Refer to Step 4-3-2.)

[SM function]:

The ‘SM function Define’ window is displayed. (Refer to Step 4-3-3.)

[DCR Change]:

The ‘DCR Available Size Define’ window is displayed. (Refer to Step 4-3-4.)

[Set CLPR]:

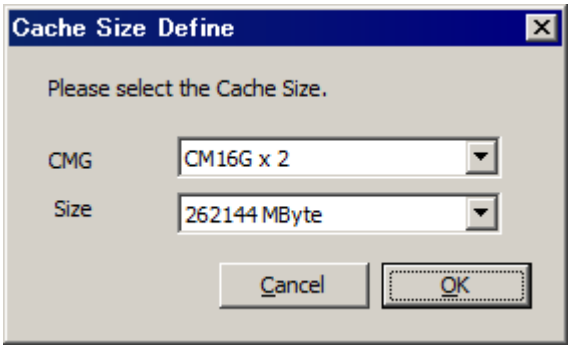
The ‘CLPR Define’ window is displayed. (Refer to Step 4-3-5.)

After the setting is completed, select (CL) the [OK] button. (Return to Step 4.)

Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 4.)

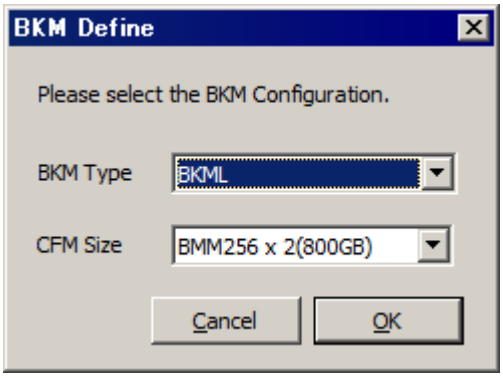
4-3-1 <Cache Size Define window>

Set the Cache Size in the ‘Cache Size Define’ window, select (CL) [OK]. (Return to Step 4-3.)



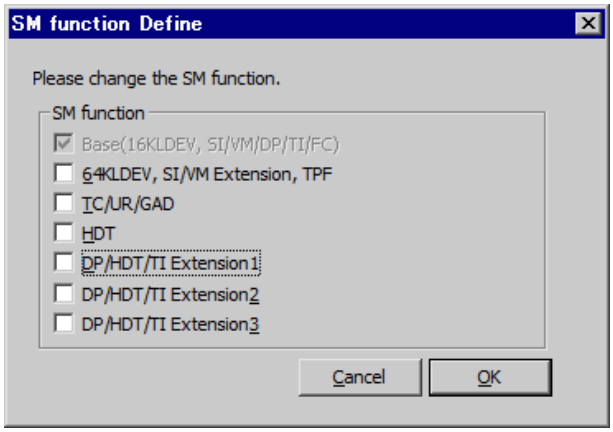
4-3-2 <BKM Define window>

Set the BKM function in the ‘BKM Define’ window, select (CL) the [OK] button.
(Return to Step 4-3.)



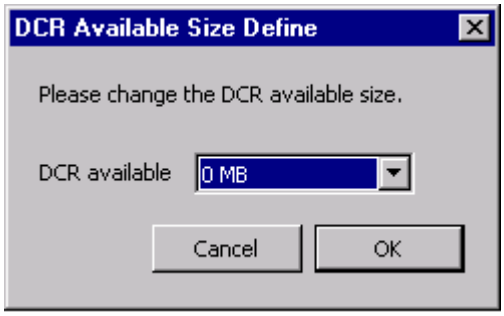
4-3-3 <SM function Define window>

Set the SM function in the 'SM function Define' window, select (CL) the [OK] button. (Return to Step 4-3.)



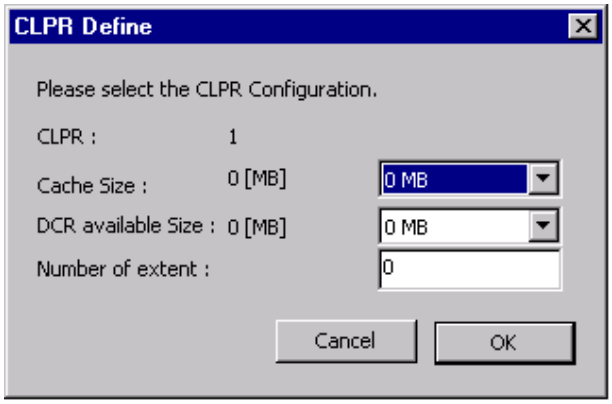
4-3-4 <DCR Available Size Define window>

Set the DCR available size in the 'DCR Available Size Define' window and select (CL) the [OK] button. (Return to Step 4-3.)



4-3-5 <CLPR Define window>

Set the Cache Size/DCR available Size/Number of extent in the 'CLPR Define' window and select (CL) the [OK] button. (Return to Step 4-3.)



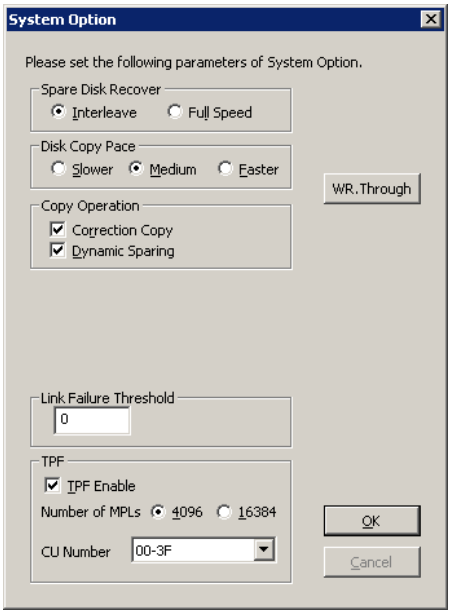
4-4 <System Option window>

Set the configuration information following the storage system configuration information worksheet.

Set the system option information.

If select (CL) [WR.Trough], 'Synchronous Destage Mode Define' window is displayed. (Refer to Step 4-4-1.)

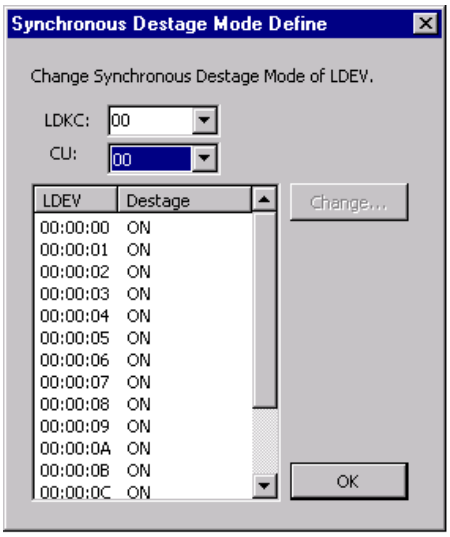
After setting all the items, select (CL) the [OK] button. (Return to Step 4.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 4.)



4-4-1 <Synchronous Destage Mode Define Window>

Set the configuration information following the system configuration information worksheet.

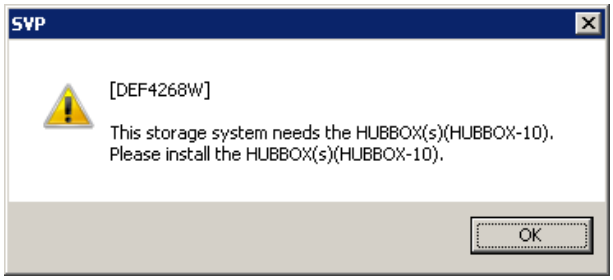
After setting all the items, select (CL) [OK]. (Return to Step 4-4.)



4-5 <HUBBOX message>

Select (CL) [OK] in response to the confirmation message
"This storage system needs the HUBBOX(s)(HUBBOX-nn). Please install the HUBBOX(s)(HUBBOX-nn)."
(Go to Step 5.)

NOTE: This windows is displayed when storage system needs the HUBBOX.



5. <CHA Setting>

According to the types of setting CHA, windows are displayed.

Setting the Fibre: Go to Step 5-1.
Setting the MFibre: Go to Step 5-2.

When the setting of all CHAs is completed, go to Step 6.

5-1 <Fibre PCB Configuration window>

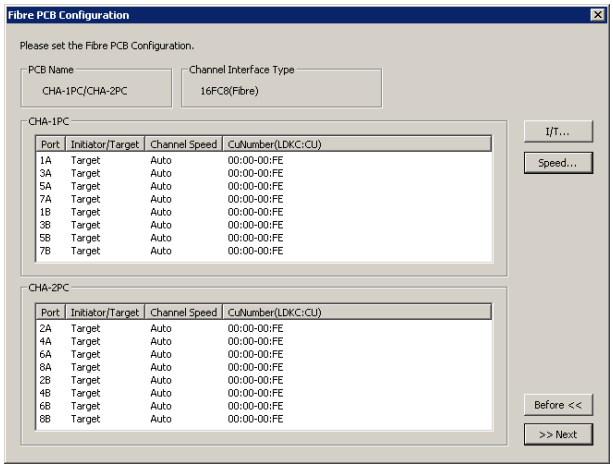
[I/T...]:

Makes a setting of the 'Target / RCU Target / Initiator / External'. (Refer to Step 5-1-1.)

[Speed...]:

Sets the channel speed. (Refer to Step 5-1-2.)

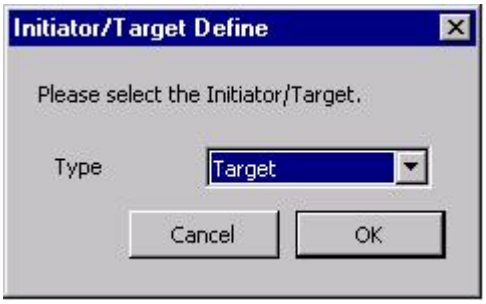
After the setting is completed, select (CL) the [>>Next] button for setting the next CHA.
Return to Step 5.



When the [Before<<] button is selected (CL), the window is returned to the preceding window.

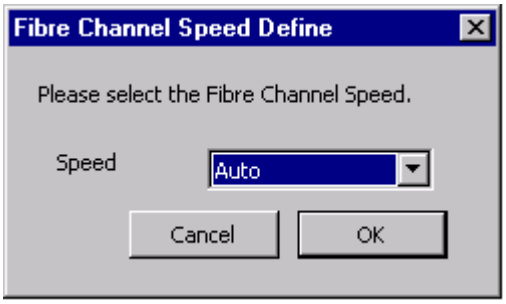
5-1-1 <Initiator/Target Define window>

Make a setting of the 'Target / RCU Target / Initiator / External' and select (CL) the [OK] button. (Return to Step 5-1.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 5-1.)



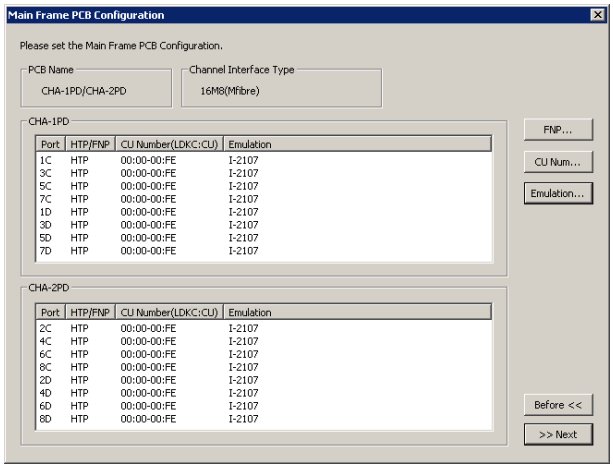
5-1-2 <Fibre Channel Speed Define window>

Set the channel speed and select (CL) the [OK] button. (Return to Step 5-1.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 5-1.)



5-2 <Mainframe PCB Configuration window>

Set the configuration information following the storage system configuration information worksheet.



[FNP...]: Sets the HTP/FNP. (Refer to Step 5-2-1.)
[CU Num...]: Sets the valid CU number. (Refer to Step 5-2-2.)
[Emulation...]: Sets the DKC Emulation. (Refer to Step 5-2-3.)

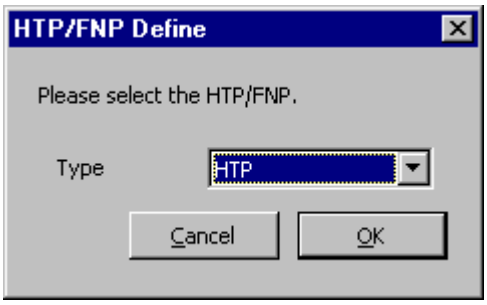
After the setting is completed, select (CL) the [>>Next] button.
Go to Step 5-2-4.

When the [Before<<] button is selected (CL), the window is returned to the preceding window.

NOTE: The setting of “CU Number” cannot be done for the definition that crosses 16KLDEV boundary (00:00-00:3F/00:40-00:7F/00:80-00:BF/00:C0-00:FE) for per two ports. When the definition that crosses 16KLDEV boundary is done, it is defined for per two ports.

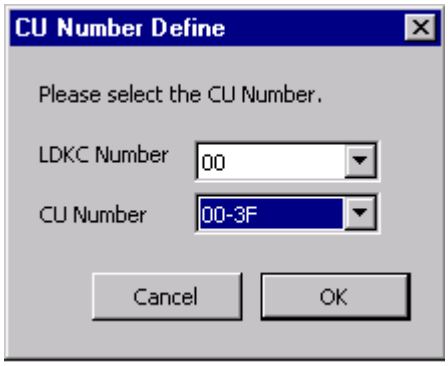
5-2-1 <HTP/FNP Define window>

Set the HTP/FNP and select (CL) the [OK] button. (Return to Step 5-2.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 5-2.)



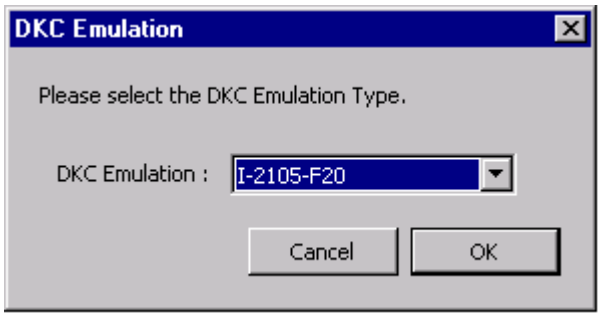
5-2-2 <CU Number Define window>

Set the valid LDKC/CU number and select (CL) the [OK] button. (Return to Step 5-2.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 5-2.)



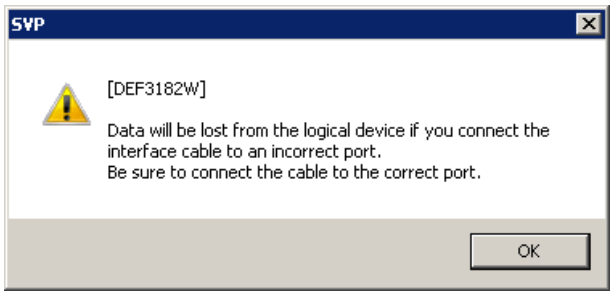
5-2-3 <DKC Emulation window>

Set the DKC Emulation and select (CL) the [OK] button. (Return to Step 5-2.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 5-2.)



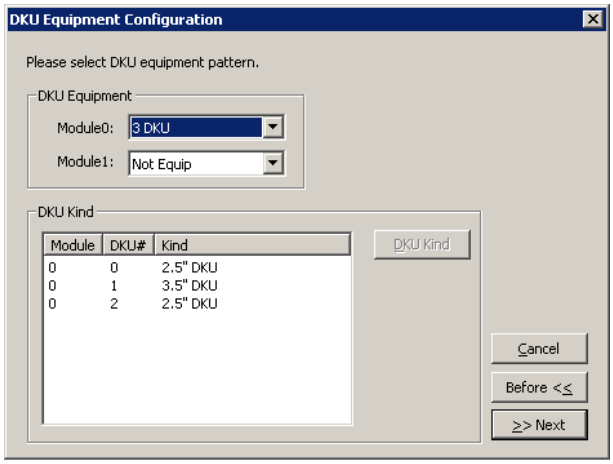
5-2-4 <SVP message>

Select (CL) [OK] for setting the next CHA in response to the confirmation message “Data will be lost from the logical device if you connect the interface cable to an incorrect port. Be sure to connect the cable to the correct port.”.



NOTE: This windows is displayed when Serial (8S) and Mfibre (8M) Channel is installed.

6. <DKU Equipment Configuration window>
Set the configuration information following the storage system configuration information worksheet.

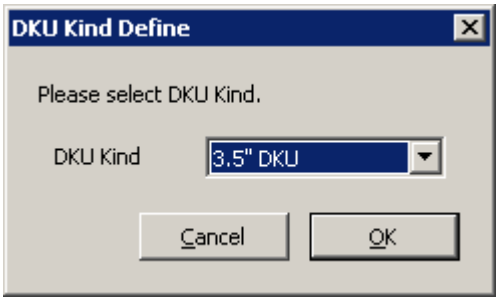


Set the DKU equipment (Module0/Module1) pattern.

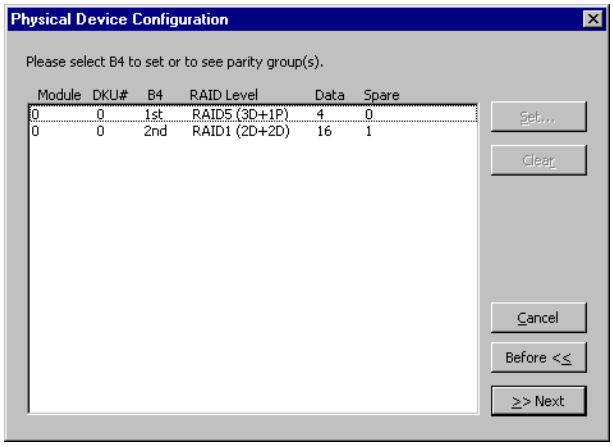
When you want to set the DKU type, select (CL) [DKU Kind].
Go to Step 6-1.

After the setting is completed, select (CL) the [>>Next] button. (Go to Step 7.)
When the [Before<<] button is selected (CL), the window is returned to the preceding window.
This operation is completed when the [Cancel] button is selected (CL).

6-1 <DKU Kind Define window>
Set DKU Kind select (CL) the [OK] button.
Return to Step 6.



7. <Physical Device Configuration window>
   Set the configuration information following the storage system configuration information worksheet.

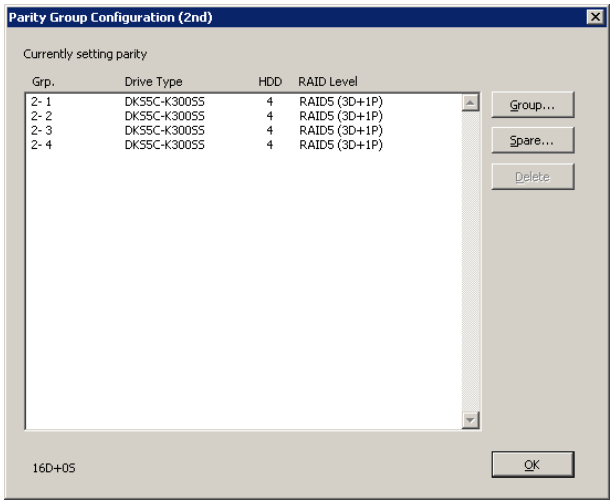


   [Set...]:
   Defines the parity group(s) or the spare disk in the specified B4. (Go to Step 7-1.)
   [Clear]
   Cancels the setting of the B4.

   After setting all the items, select (CL) the [>>Next] button. (Go to Step 8.)
   When the [Before<<] button is selected, return to Step 6.
   This operation is completed when the [Cancel] button is selected (CL).

7-1 <Parity Group Configuration window>

Set the configuration information following the storage system configuration information worksheet.



[Group...]: Sets the parity group(s). (Refer to Step 7-1-1.)
[Spare...]: Sets the spare drive. (Refer to Step 7-1-2.)
[Delete]: Deletes the item.

Grp*: A parity group for which the RAID connection has been set

NOTE: When you want to set the spare drive, make the setting of it first.

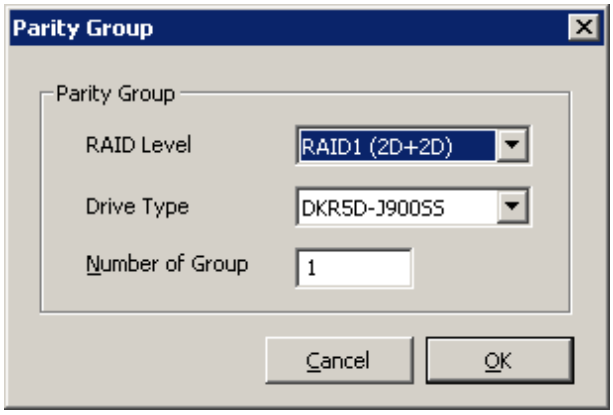
After setting all the items, select (CL) the [OK] button. Return to Step 7.

7-1-1 <Parity Group window>

Set the RAID Level, Drive Type, and Number of Group.

Then select (CL) the [OK] button. (Return to Step 7-1.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 7-1.)

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.

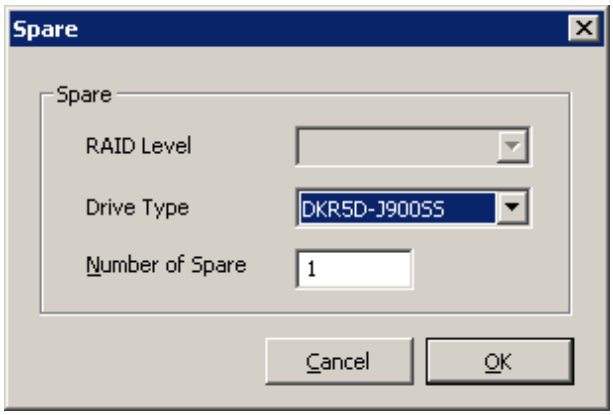


7-1-2 <Spare window>

Set the Drive Type and Number of Spare.

Then select (CL) the [OK] button. (Return to Step 7-1.)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 7-1.)

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



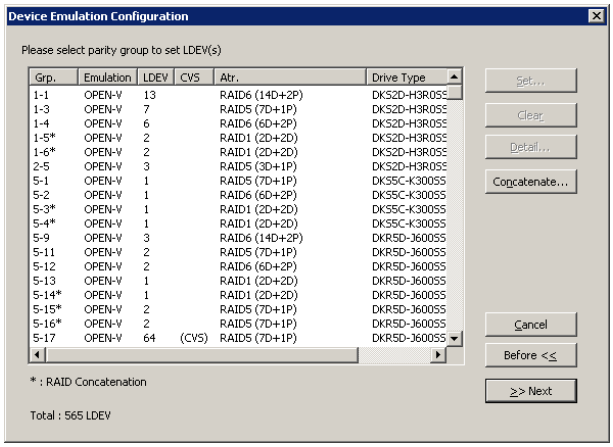
8. <Define Device Emulation>

After setting up all items corresponding to 8-1 to 8-3 for definition of Device Emulation, select (CL) [>>Next].
Selecting (CL) [Before<<] returns you to the previous window.

- If defining Device Emulation, go to Step 8-1.
- If setting RAID concatenation, go to Step 8-2.
- If defining of Customized Volume Size (CVS), go to Step 8-3.

8-1 <Define Device Emulation>

(1)



In the 'Device Emulation Configuration' window, select (CL) the parity group, and then select (CL) the [Set...] button. Go to Item (2).

When canceling the emulation, go to Step 8-1 (3).
After the setting is completed, select (CL) the [>>Next] button.

This operation is completed when the [Cancel] button is selected (CL).

(CVS): A parity group for which the CVS has been set
Grp*: A parity group for which the RAID connection has been set

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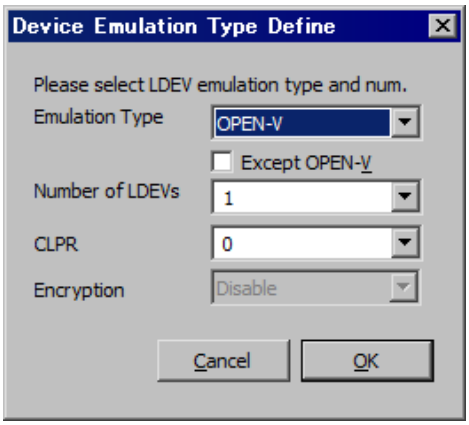
(2)



After setting all items in the 'Device Emulation Type Define' window, select (CL) the [OK] button. (Return to Step 8-1 (1).)
Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 8-1 (1).)

NOTE: OPEN-V is a recommended OPEN volume. To set other than OPEN-V, please select "Except OPEN-V".

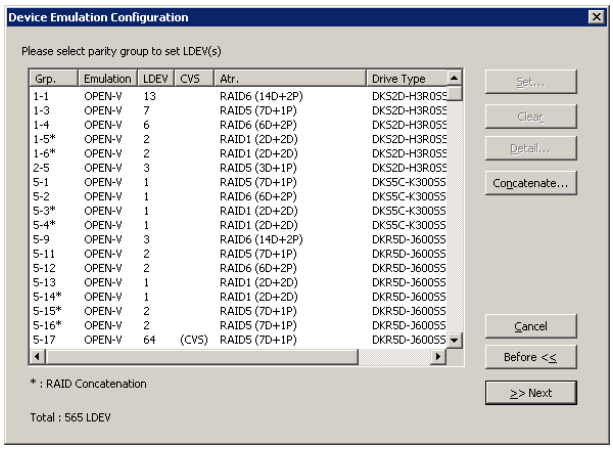
NOTE: "0" can be set to the value of Number of LDEVs for all the emulation types.
If you don't know the LDEV size you will use, set "0". You can save time by setting "0" because LDEV format will not run.
When you set "0", please make LDEVs later using the CVS function.

NOTE: If 3390-A is selected, a 3390-A volume whose capacity is as large as that of standard capacity of the specified emulation type can be created by specifying (3390-3 size), (3390-9 size), (3390-L size), or (3390-M size) in the "Number of LDEVs". If a parity group consists of drives with 1TB or larger is specified, only (3390-M size) can be selected in the "Number of LDEVs".

(3) <Canceling emulation>

Select (CL) the parity group and select (CL) the [Clear] button.
This operation is completed when the [Cancel] button is selected (CL).

(CVS): A parity group for which the CVS has been set
Grp*: A parity group for which the RAID connection has been set

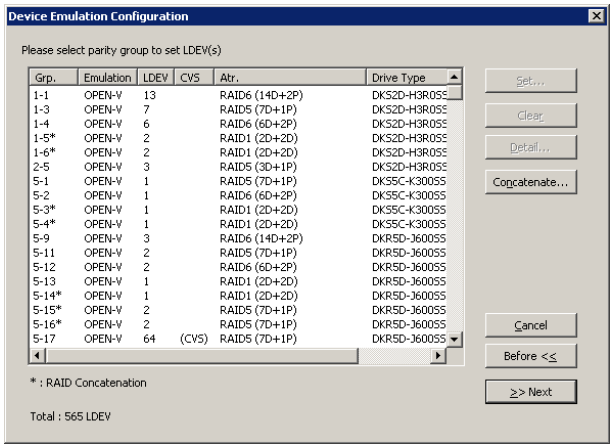


8-2 <Setting RAID concatenation>

(1)

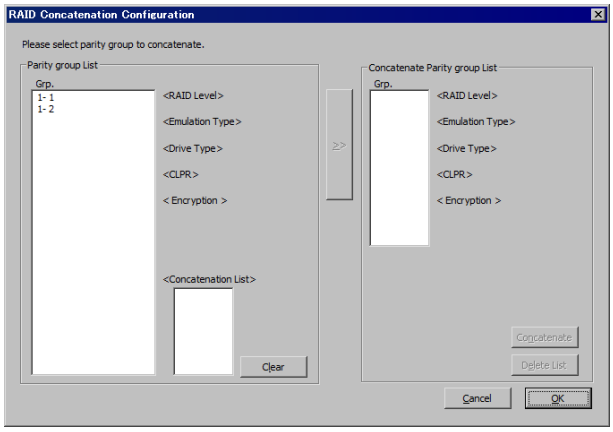
After setting the LDEV emulation type and a number of LDEVs, select (CL) the [Concatenate...].
This operation is terminated when the [Cancel] is selected (CL).

(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.



(2)

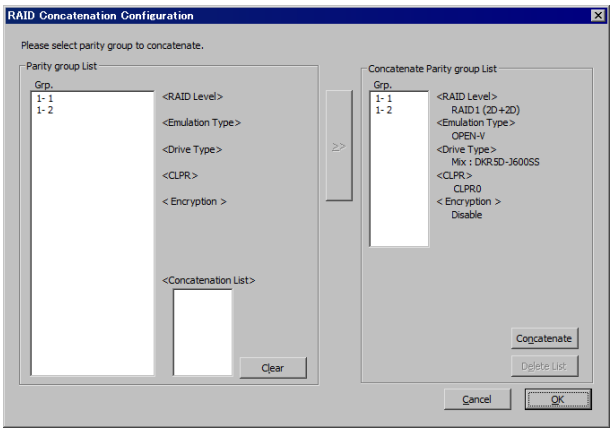
Parity groups to which the RAID concatenation can be applied are displayed in the Parity group List.
Select (CL) parity groups to which you want to apply the RAID concatenation and press (CL) the [>>] button.



(3)

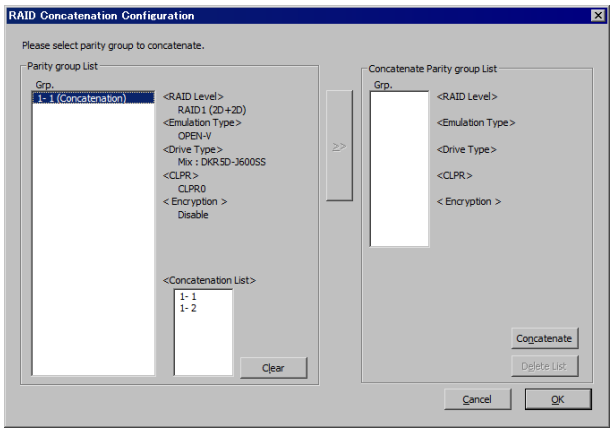
The selected parity groups are registered in the Concatenate Parity group List. Then press (CL) the [Concatenate] button.

NOTE: The [Concatenate] button cannot be pressed if the concatenation does not meet a condition of the RAID concatenation. Adjust the number of the parity groups in the Concatenate Parity group List.



(4)

When the RAID concatenation is completed, “(Concatenation)” is displayed in the Parity group List. Selecting the “(Concatenation)” displays the concatenated parity groups in the Concatenation List. Pressing the [Clear] button cancels the RAID concatenation.



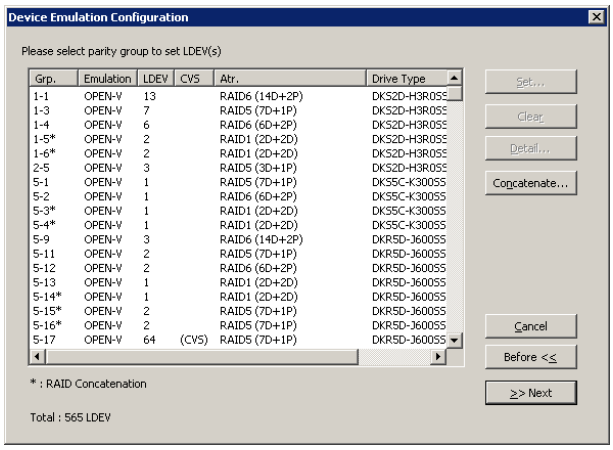
(5)

When all the settings of the RAID concatenation are completed, press (CL) the [OK] button. Select (CL) the [Cancel] button not to reflect the settings. (Return to Step 8-2 (1))

8-3 <Defining of Customized Volume Size (CVS)>

(1)

Select (CL) a parity group for which the LDEV emulation type and the number of LDEVs have been set on the 'Device Emulation Configuration' window and select (CL) [Detail...].
This procedure is terminated by selecting (CL) [Cancel].



(CVS): A parity group where CVS is installed.

- When you select a parity group other than OPEN-V, go to Step (2).
- When you select OPEN-V, go to Step (3).

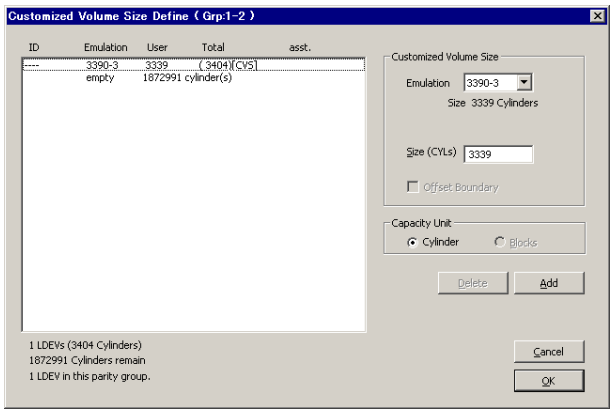
Grp*: A parity group where RAID Concatenation is installed.

asst.: A parity group where the Make Volume process cannot be performed because it includes the LDEV in which Path/pool-VOL is set.

NOTE: Even if a parity group includes the LDEV in which the journal volume is set, "+" is not displayed.

(2) <Definition other than OPEN-V>

A volume other than OPEN-V can be defined in the “Customized Volume Size Define” window.



- Delete of the Volume
  A volume can be deleted by selecting (CL) the volume from the LDEV list box and selecting (CL) [Delete].
- Add of the Volume
  A volume can be added by entering the LDEV emulation type and the user size (Mbyte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
  (It can be added in the optional space “empty” by selecting (CL) “empty” from the LDEV list box.)
  The two or more CVs can be registered when the operation above is performed repeatedly.

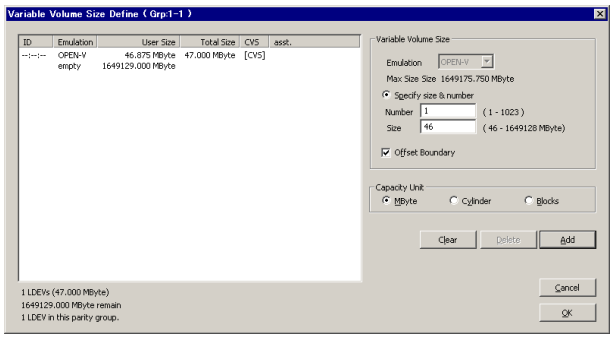
The boundary correction existence is specifiable with “Offset Boundary”.
(When a volume for mainframe host is selected, it is not possible to select it.)

Adding or deleting operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

NOTE: The two or more volumes can be selected and deleted.

The routine returns to the preceding window by selecting (CL) [Cancel].
The routine returns to the preceding window and the change is reflected by selecting (CL) [OK].

(3) <Definition of OPEN-V>
OPEN-V can be defined in the "Variable Volume Size Define" window.



- Delete of the Volume
  The volume can be deleted by selecting (CL) [Delete] in the state (CL) of selecting (CL) the volume in the LDEV list box.
  All the volumes in the LDEV list box can be deleted by selecting (CL) [Clear].
- Add of the Volume
  It can be added by selecting (CL) Variable Volume Size from the status "select (CL) 'empty'" or "no selection" in the LDEV list box and selecting (CL) [Add].

Adding or deleting operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

NOTE: The two or more volumes can be selected and deleted.

- Variable Volume Size
  "Specify size & number" : Defines the specified number of the specified user size.
- Offset Boundary : The boundary correction existence is specified.
- Capacity Unit
  "MByte" : Makes data displayed or entered by [MByte].
  "Cylinder" : Makes data displayed or entered by the [Cylinder].
  "Blocks" : Makes data displayed or entered by the [Blocks].
- asst. : When Path/pool-VOL is defined, "+" is displayed.
  [Clear] : Deletes all the volumes.
  [Delete] : Deletes all the selected volumes.
  [Add] : Adds volumes.
  [Cancel] : Invalidates the setting, and returns to the preceding window.
  The routine returns to Step (1).
  [OK] : Confirms the setting, and returns to the preceding window.
  The routine returns to Step (1).

9. <Define LDEV ID>

After setting up all items, select (CL) [>>Next]. Selecting (CL) [Before<<] returns you to the previous screen.

9-1 <Definition Screen for LDEV ID>

Select (CL) the parity group to be defined and select (CL) a function from the [LDEV ID] list box.

[Linear...]:

LDEV ID is assigned to LDEV in the order of parity group. Refer to Step 9-3.

[Disperse...]:

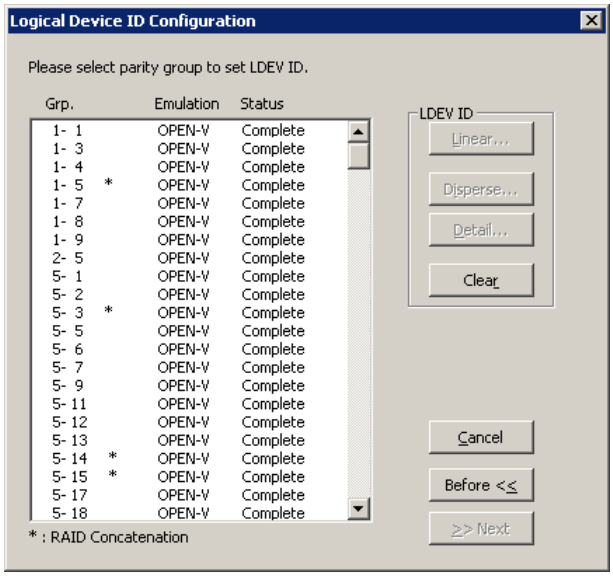
LDEV ID is assigned discretely in the order of parity group. Refer to Step 9-3.

[Detail...]:

A screen to define LDEV in detail is displayed. Refer to Step 9-2.

[Clear]:

Select (CL) [Clear] to delete.



Status: Status of LDEV ID.

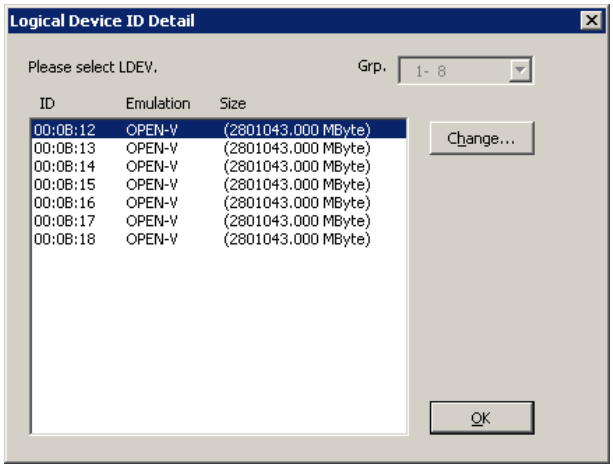
① “Complete” : LDEV ID is assigned.
② “-------” : LDEV ID is not assigned.
③ “Error” : Invalid LDEV ID is assigned.

This procedure is terminated by selecting (CL) [Cancel].

9-2 <Detailed Definition Screen for LDEV ID>

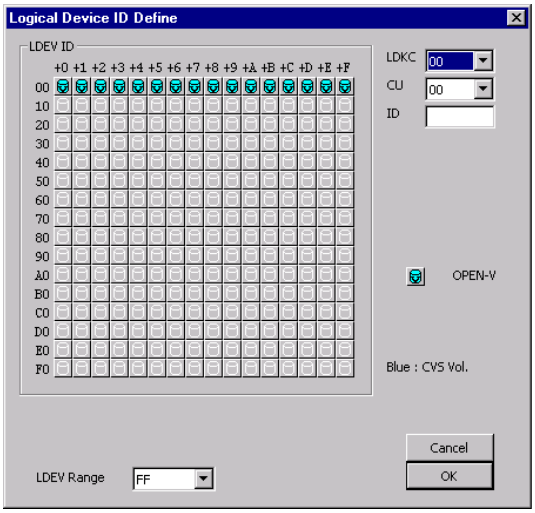
LDEV ID is defined in detail for each LDEV in the parity group.
Select (CL) [LEDV] from the list box and select (CL) [Change...].
The screen for LDEV ID input is displayed.

NOTE: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the “Grp List” is displayed.



9-3 <Input LDEV ID>

Select LDKC in the LDKC pull down menu.
Select CU in the CU pull down menu.
The status of usage of ID in the CU is displayed in the LDEV ID panel.
White disk of panel: not used
Black disk of panel: using
Input LDEV ID you want to set or head LDEV ID in the ID Edit box.
After setting, select (CL) [OK]. Return to the preceding window.

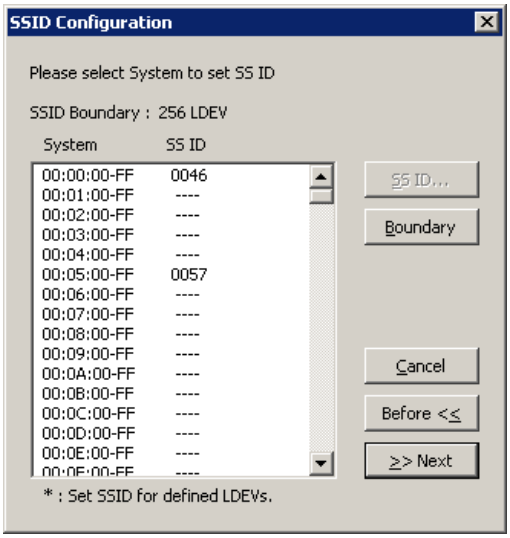


NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

10. <SSID Configuration window>

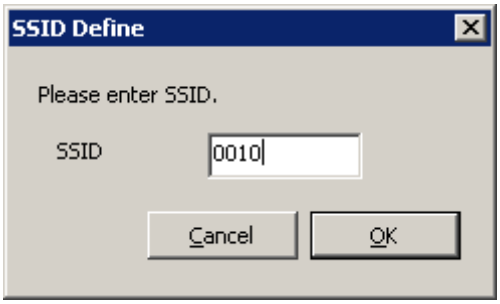
Set the SSID and the SSID boundary type.
[SS ID...]: The 'SSID Define' window is displayed. (Go to Step 10-1.)
[Boundary]: The 'SSID Boundary Define' window is displayed. (Go to Step 10-2.)

After the setting is completed, select (CL) the [>>Next] button.
This operation is completed when the [Cancel] button is selected (CL).



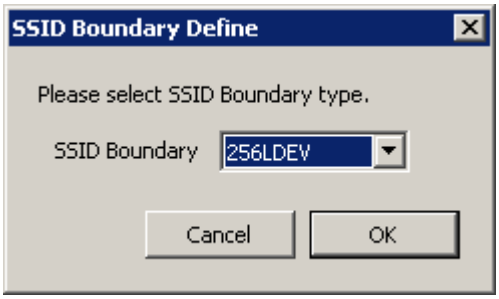
10-1

Set the SSID and select (CL) the [OK] button. (Return to Step 10.)



10-2 <SSID Boundary Define window>

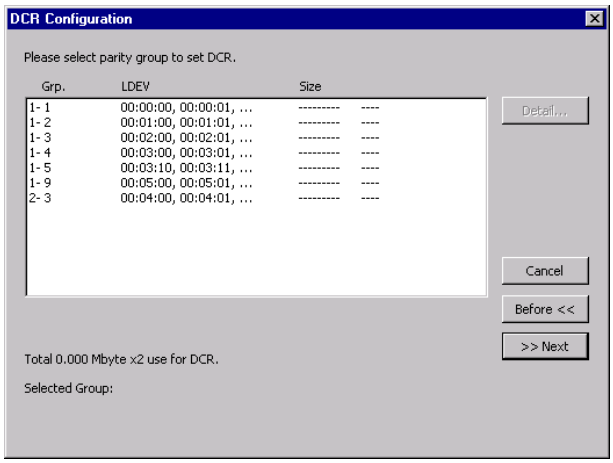
Set the boundary of the SSID and select (CL) the [OK] button. (Return to Step 10.)



11. <Defining DCR>

(1)

Select (CL) a parity group having LDEV(s) for which the DCR is to be set on the “DCR Configuration” screen and press (CL) the [Detail...] button.



Total cache memory size which DCR area use is displayed.

If the selected parity group has a DCR area, the BIND size and to PRIO size are displayed under the “DCR Configuration” screen.

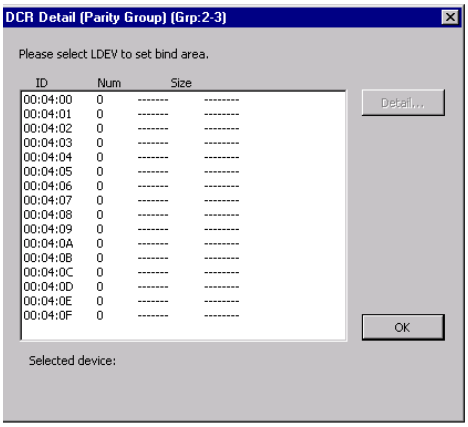
Go to Step (6) to delete a parity group.

After setting above, select (CL) [>>Next].

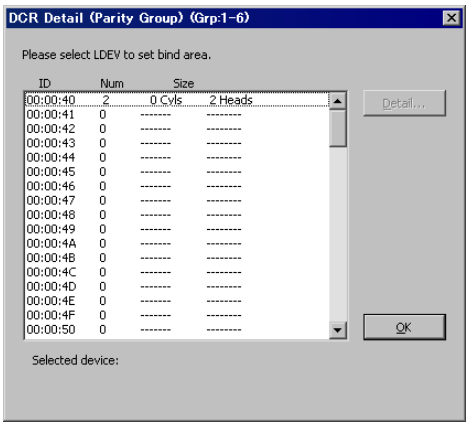
This procedure is terminated by selecting (CL) [Cancel].

(2)

Select (CL) an LDEV where the DCR is to be set on the “DCR Detail (Parity Group)” screen and press (CL) the [Detail...] button.
If the selected LDEV has a DCR area, the BIND size and the PRIO size are displayed under the “DCR Detail (Parity Group)” screen.



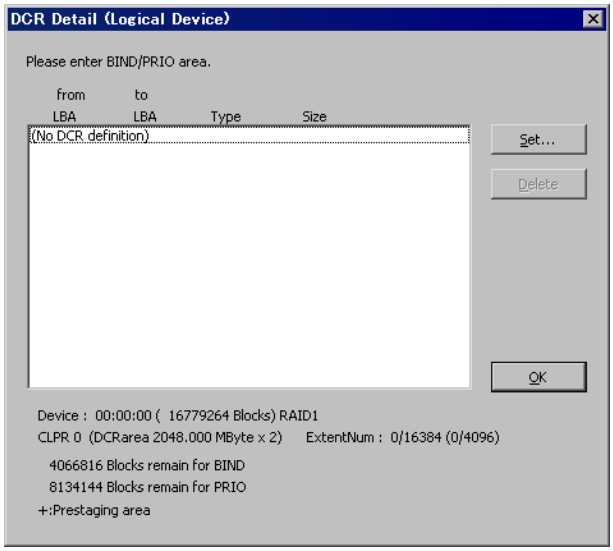
(For open system)



(For Mainframe system)

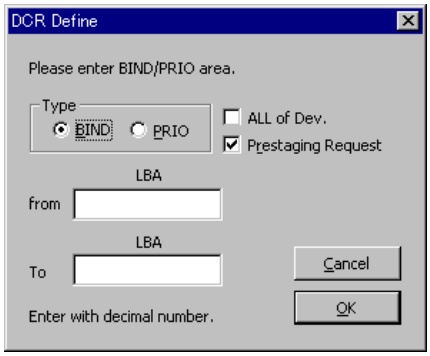
(3)

Confirm the LDEV size and the number of slots allowed to be set for each type on the “DCR Detail (Logical Device)” screen. Press (CL) the [Set...] button to set the DCR area.

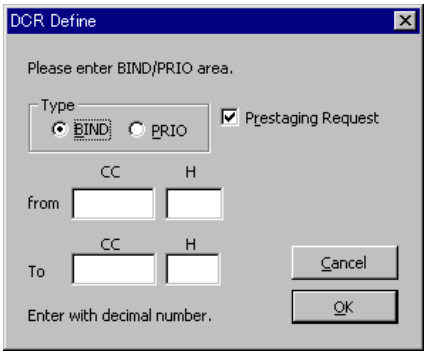


(4)

Enter the type, starting cylinder number, starting head number, ending cylinder number, and ending head number (for Mainframe system. Refer to the screen on the right.) or the type, starting LBA, and ending LBA (for open system. Refer to the screen on the left.) on the “DCR Define” screen and select (CL) [OK].
For open system, all items are allowed to be set.



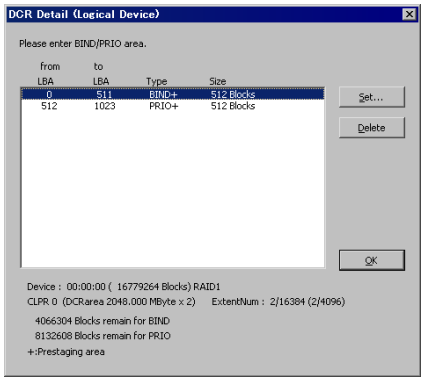
(For open system)



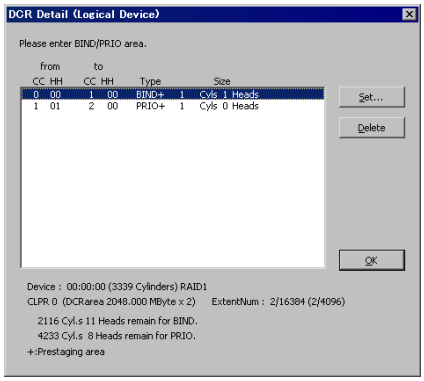
(For Mainframe system)

(5)

When the screen is returned to the “DCR Detail (Logical Device)” screen, the entrance result is displayed.



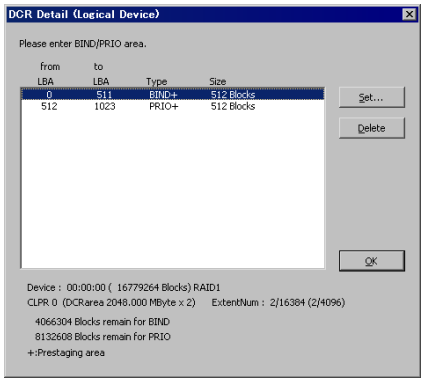
(For open system)



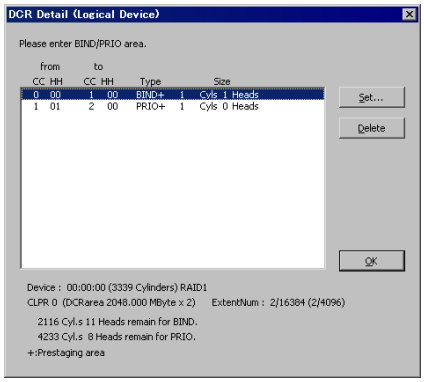
(For Mainframe system)

(6)

When an item in the list box is selected (CL) and the [Delete] button is pressed (CL) on the "DCR Detail (Logical Device)" screen, the DCR setting is deleted. When the setting is completed, press (CL) [OK].



(For open system)



(For Mainframe system)

(7)

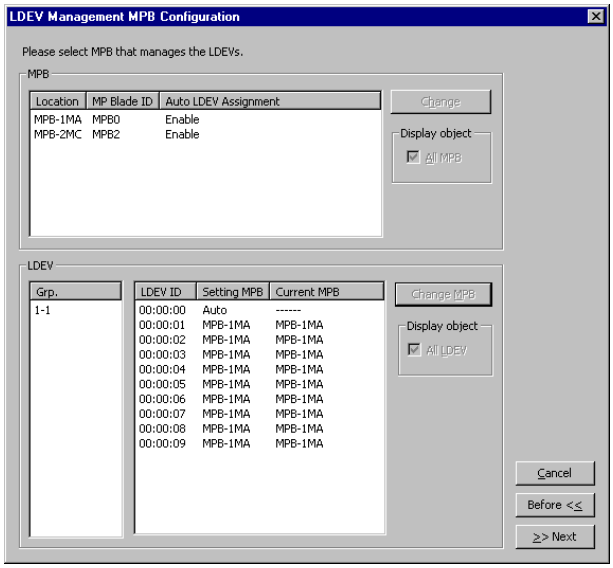
If you want to set other LDEV(s) in the parity group which you selected, repeat steps (2) to (6) for the LDEV(s).

(8)

If you want to set other LDEV(s) in other parity group, repeat steps (1) to (6) for the LDEV(s).

12. <Define Auto LDEV Assignment and Management MPB>

Set the Auto LDEV Assignment and Management MPB.



[Change]:

The ‘Auto LDEV Assignment Define’ window is displayed.
(Refer to Step 12-1.)

[Change MPB]:

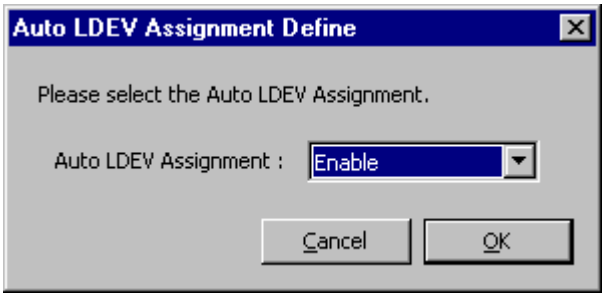
The ‘Management MPB Define’ window is displayed.
(Refer to Step 12-2.)

When the setting of all the entry items is completed, select (CL) the [>>Next] button.
(The routine goes to Step 13)

12-1 <Define Auto LDEV Assignment>

Define Auto LDEV Assignment and select (CL) [OK].
Go back to Step 12.

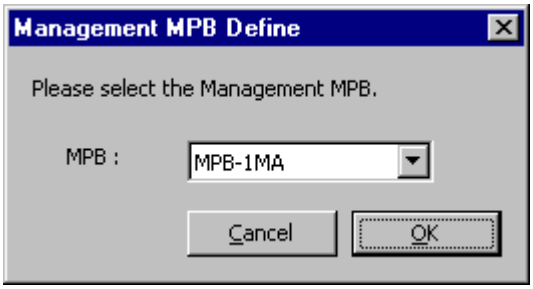
Select (CL) [Cancel] not to reflect the setting.
Go back to Step 12.



12-2 <Define Management MPB>

Define Management MPB and select (CL) [OK].
Go back to Step 12.

Select (CL) [Cancel] not to reflect the setting.
Go back to Step 12.

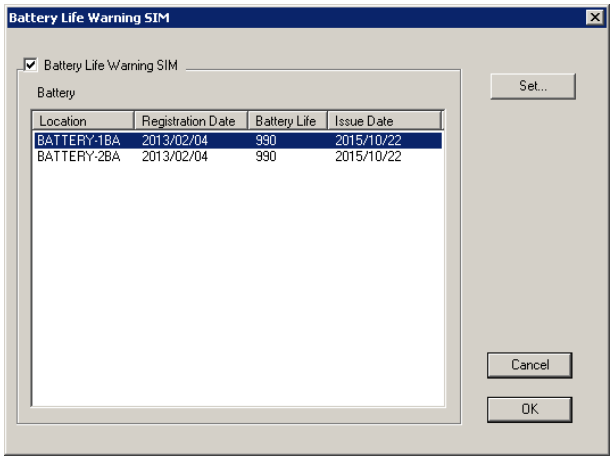


13. <Define Battery Life Warning SIM>

Select (CL) [Set...] applying the check to [Battery Life Warning SIM] and select (CL) the target CM Battery.
(Go to Step 13-1.)

Make sure that the all input items are correct and select (CL) [OK].
(Go to Step 14.)

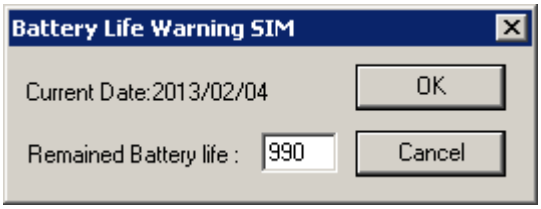
NOTE: If the date is displayed as "****/**/**", follow Step 13-1 to set the date.



13-1 <Define Battery Life Warning SIM>

Select (CL) [OK] after inputting the remainder days until Warning SIM is reported.
(Return to Step 13.)

NOTE: After executing the periodical exchange of a battery, set 33 month (990 days).



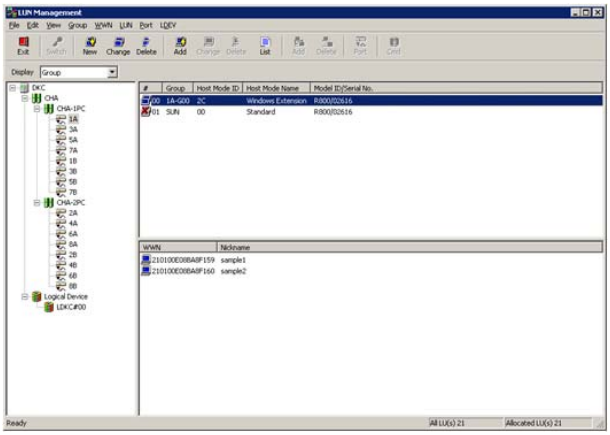
NOTE: Default value is 33 month (990 days), which is 3 month earlier than the lifetime of a battery (3 years).
Determine the number of days remained based on your maintenance plan.

NOTE: The input ranges of "Remained Battery life" are from 1 to 3650. Please set [Battery Life Warning SIM] of Step 13 to check off when not reporting on Warning SIM.

14. <LUN Management Screen>

When is equipmented Open PCB(s), LUN Management dialog to be displayed.

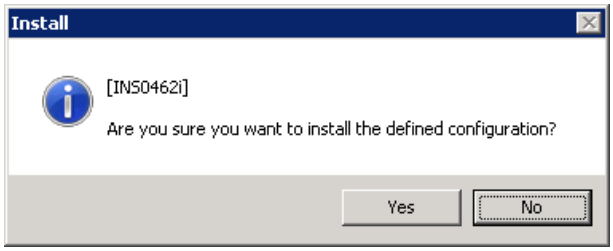
After setting LUN, and close the dialog.
For the setting of LUN, see section 5.3.1.4 LUN Management (INST05-03-450).



15. <Install configuration information>

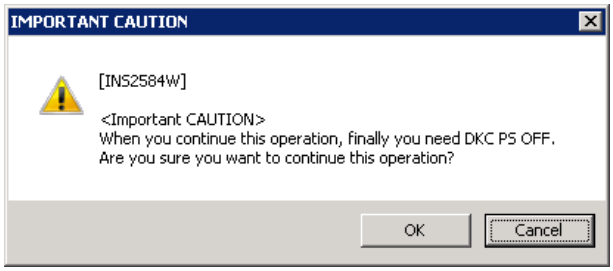
(1)

Select (CL) [Yes] in response to the confirmation message “Are you sure you want to install the defined configuration?”. Selecting (CL) [No] cancels the configuration change processing and terminates the installation procedure.



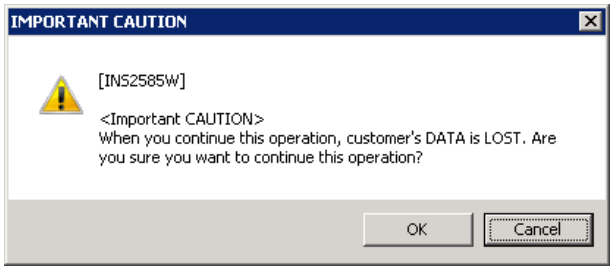
(2)

Select (CL) [OK] in response to the confirmation message
“<Important CAUTION>
When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



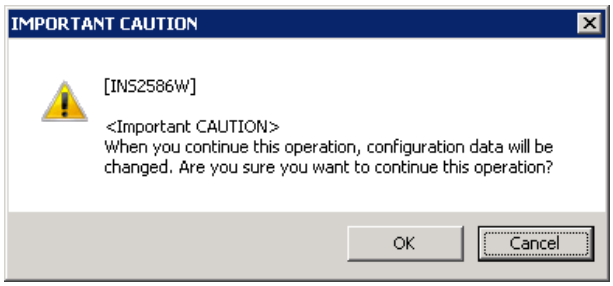
(3)

Select (CL) [OK] in response to the confirmation message
“<Important CAUTION>
When you continue this operation, customer’s DATA is LOST. Are you sure you want to continue this operation?”.



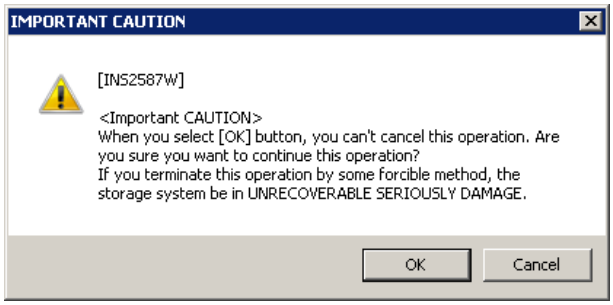
(4)

Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
When you continue this operation, configuration data will be changed. Are you sure you want to continue this operation?".



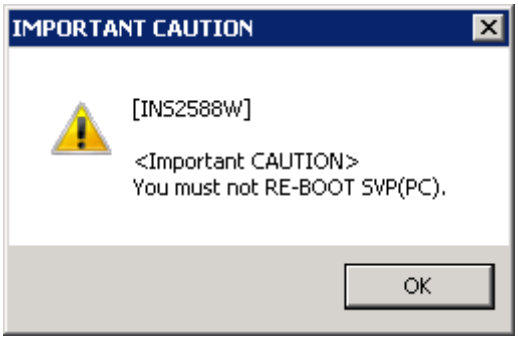
(5)

Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
When you select [OK] button, you can't cancel this operation. Are you sure you want to continue this operation?
If you terminate this operation by some forcible method, the storage system be in UNRECOVERABLE SERIOUSLY DAMAGE.".

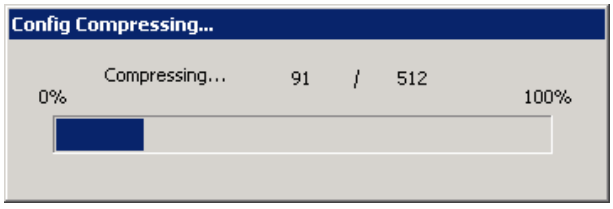


(6)

Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
You must not RE-BOOT SVP(PC).".



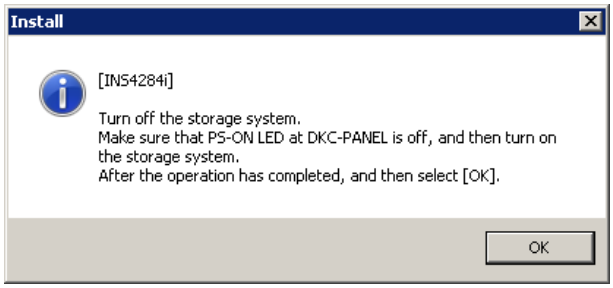
16. <Compressing of the configuration information>
The configuration information is compressed.
The dialog of Config Compressing... is displayed.
After the compressing is completed, go to Step 18.



NOTE: However, on page INST05-02-100 (6), it advances to Step 17 when [No] is selected (CL).

17.

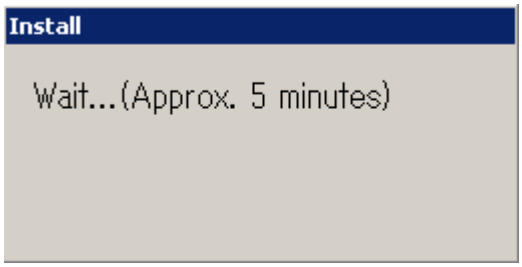
Select (CL) [OK] in response to the message "Turn off the storage system. Make sure that PS-ON LED at DKC-PANEL is off, and then turn on the storage system. After the operation has completed, and then select [OK].".



17-1

"Wait... (Approx. 5 minutes)" is displayed.

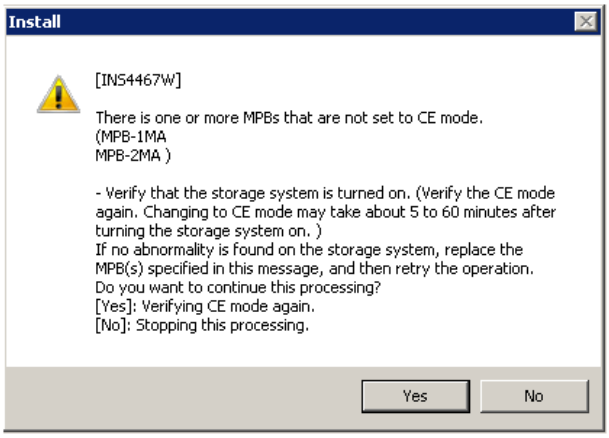
When there is MPB which is not CE mode, go to Step 17-2.
When there is not MPB which is not CE mode, go to Step 18.



17-2

Response to the message "There is one or more MPBs that are not set to CE mode.
(MPB-nnn
MPB-nnn)

- Verify that the storage system is turned on. (Verify the CE mode again. Changing to CE mode may take about 5 to 60 minutes after turning the storage system on.)
If no abnormality is found on the storage system, replace the MPB(s) specified in this message, and then retry the operation.
Do you want to continue this processing?
[Yes]: Verifying CE mode again.
[No]: Stopping this processing."

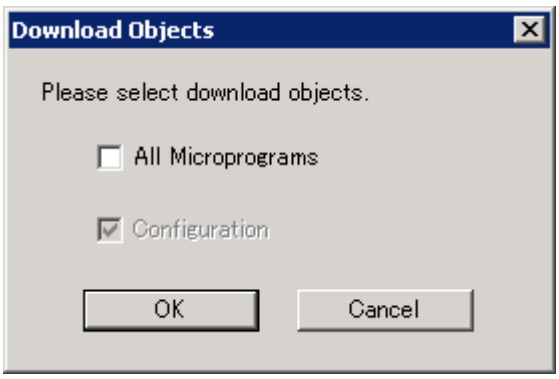


NOTE: The time required to change to CE mode after turning the storage system ON varies depending on cache size. When a cache PCB with the maximum size (524,288 MB) is mounted, changing to CE mode may take up to 60 minutes.

When [Yes] is selected (CL), Verifying of CE mode again. When there is not MPB which is not CE mode, go to Step 18. When there is MPB which is not CE mode, this message is displayed again.
When [No] is selected (CL), go back to Step 2.

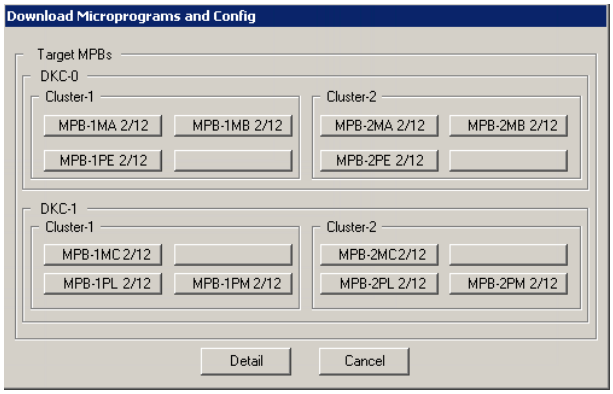
18. <Download Objects window>

If you want to download micro-programs, please select (CL) [All Microprograms], and select (CL) [OK].



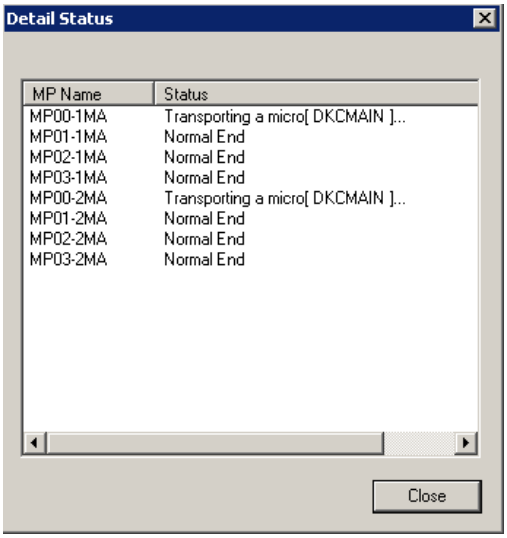
19. <Configuration information transfer>

The configuration information is forwarded.
After the forward is completed, go to Step 20.
Select (CL) [Detail]. Go to Step 19-1.



19-1

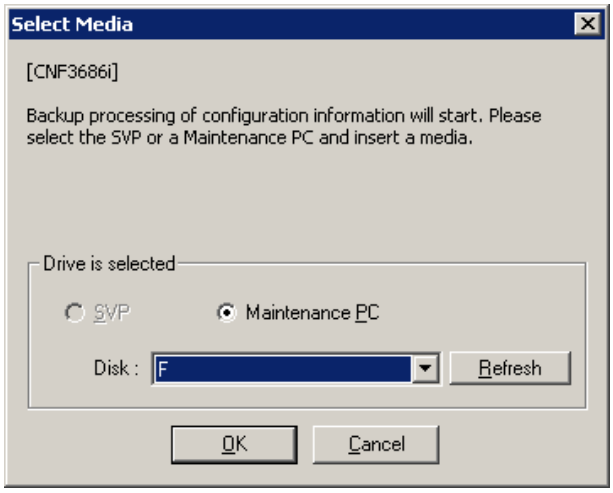
Details of transfer situation are confirmed on Detail Status window.
When you close the 'Detail Status' window, select (CL) [Close].



20.

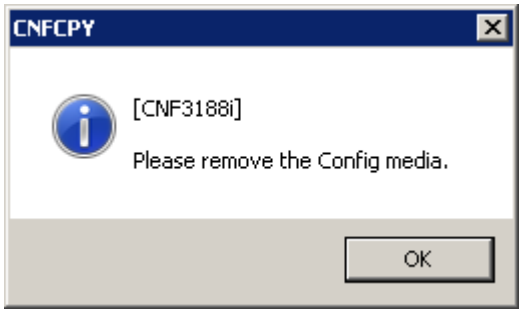
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



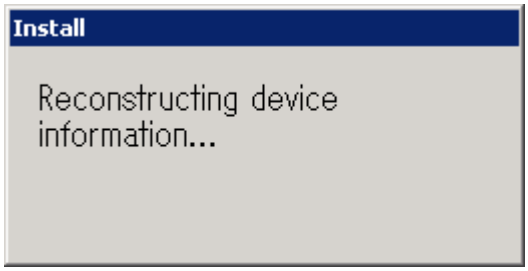
21.

When this procedure is completed, the message "Please remove the Config media." is displayed.
Remove the configuration information media, and then select (CL) [OK].



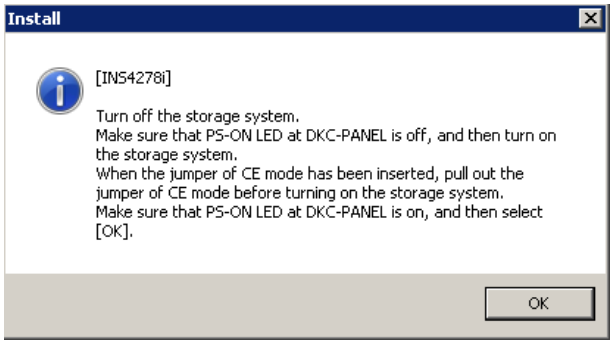
22.

"Reconstructing device information..." is displayed.



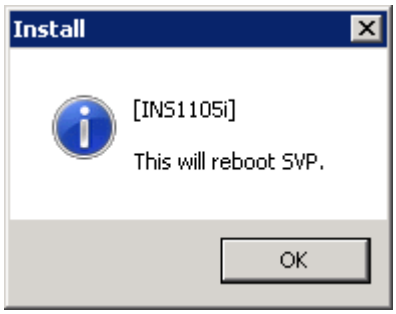
23.

Select (CL) [OK] in response to the message "Turn off the storage system. Make sure that PS-ON LED at DKC-PANEL is off, and then turn on the storage system. When the jumper of CE mode has been inserted, pull out the jumper of CE mode before turning on the storage system. Make sure that PS-ON LED at DKC-PANEL is on, and then select [OK].".



24.

Select (CL) [OK] in response to "This will reboot SVP.".



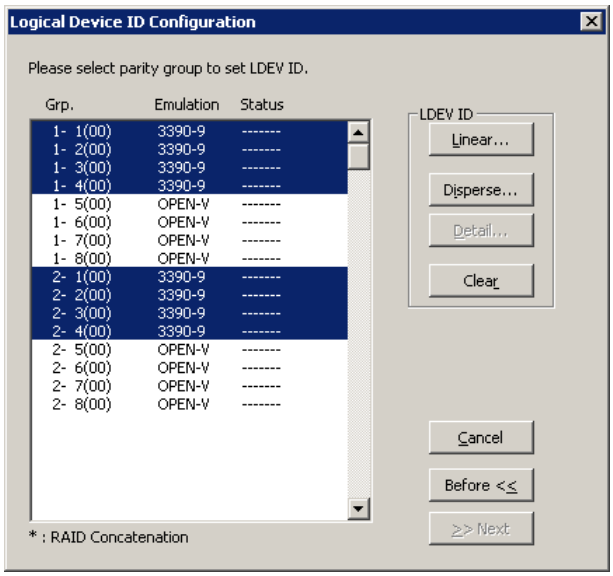
5.2.2.1 LDEV ID setting procedure when the emulation types of different systems coexist

5.2.2.1.1 Coexistence in units of parity group

The LDEV ID setting procedure is explained using an example of a case in which both the 3390 system LDEV and OPEN system LDEV are set in the same storage system. This example shows the ID setting procedure when the B4-1/B4-2 is fully equipped with RAID5 (3D+1P), and the B4-1 and the B4-2 are defined as the 3390-3/OPEN-3 and the 3390-9/OPEN-3 respectively. Since systems other than the 3390 system cannot coexist in the parity group, the ID can be defined in this procedure.

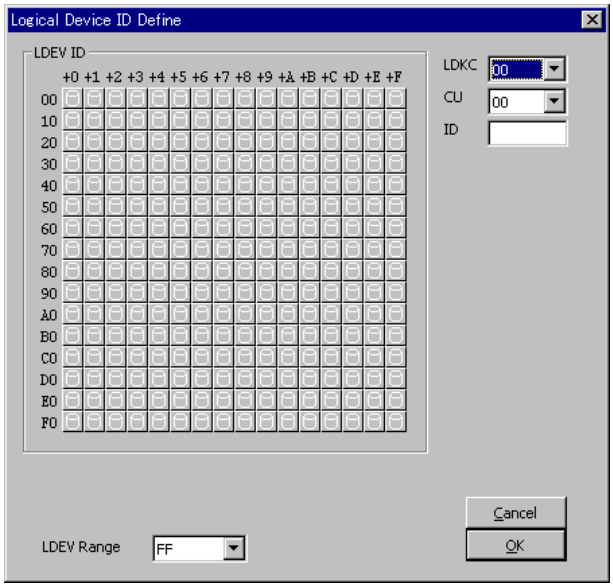
1.

Select only the parity group for which the 3390 system emulation type has been defined and then select (CL) [Linear...] or [Disperse...].



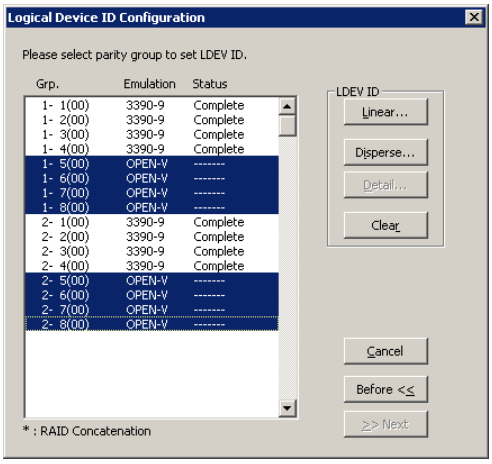
2.

Input the LDEV ID and select (CL) [OK]. In the example, the case selected [Disperse...] is displayed.



3.

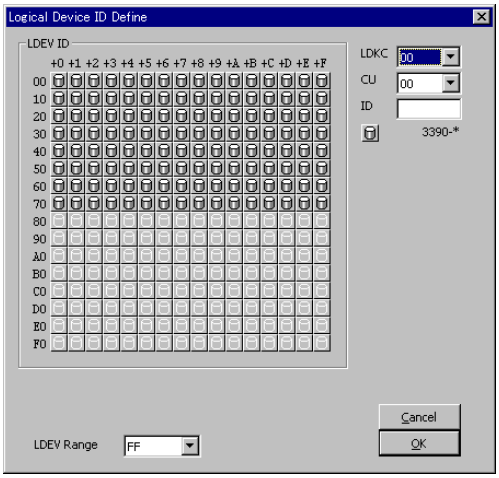
Select only the parity group for which the OPEN system emulation type has been set and then select (CL) [Linear...] or [Disperse...].



4.

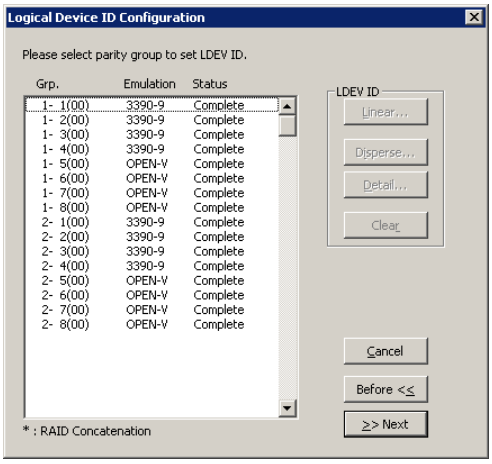
Input the LDEV ID. In this case, take care not to make a coexistence occur in the block. In the example, 0:a0 and the subsequent are unused blocks. Therefore, input a0. After the setting is completed, select (CL) [OK].

NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



5.

Setting is completed.



Needless to say, the setting sequence of steps (1) and (3) may reversed.
If emulation types of different systems are selected at the same time, the guarding function works to prevent the setting by making the Linear and Dispense buttons unselect able.

5.2.3 Check Procedure

⚠ CAUTION

This operation is necessary only when a storage system is newly installed. It is not performed afterward. If it is performed by mistake, a system down or a data loss may be caused.

1. <Execute Power-on CUDG>
   Perform the power-on procedure from the DKCPANEL.
   (See INST03-14-10)
   Power-on CUDG is automatically executed on the DKC logic circuitry.
   If an error occurs, SIM Log, SSB Log has logging.
   (See SVP02-02-10)

---

2. <Execute DKU Path inline test>
   Perform DKU Path inline tests on all DKAs installed during the new installation procedure to check the validity of the drives.
   Please carry out A3 routine after carrying out A0 routine.
   See DIAGNOSIS SECTION for the test procedure. (DIAG04-130) (*1)

   NOTE: Before carrying out the DKU Path inline test, switch the current application to the program manager and have the SVP initial screen (which is shown in the right figure) displayed.

---

3. <Check storage system status and all MPs micro-version>
   Check the storage system Status and all MPs micro-version.
   (See SVP03-01-10 and SVP03-07-10)

*1: When wrong connection of the DEV I/F CABLE is detected by DKU Path inline, please recover according to following operation.
(1) PS/OFF
(2) Fix the DEV I/F CABLE connection
(3) PS/ON and execute DKU Path inline again

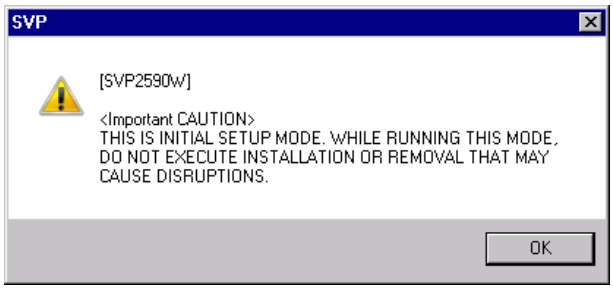
4. <Format LDEV>

⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if executed in an occasion other the new storage system installation, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

Change the mode to [Initial Setting].
Select [Shift] + [Ctrl] + [I].
Enter the password and select (CL) [OK].
Please call Technical Support Division for asking the password.

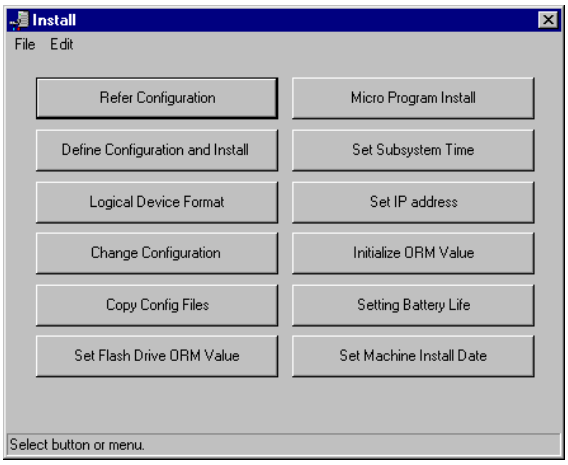
Select (CL) [OK] in response to the confirmation message "<Important CAUTION> THIS IS INITIAL SETUP MODE. WHILE RUNNING THIS MODE, DO NOT EXECUTE INSTALLATION OR REMOVAL THAT MAY CAUSE DISRUPTIONS.".



Select (CL) [Install].

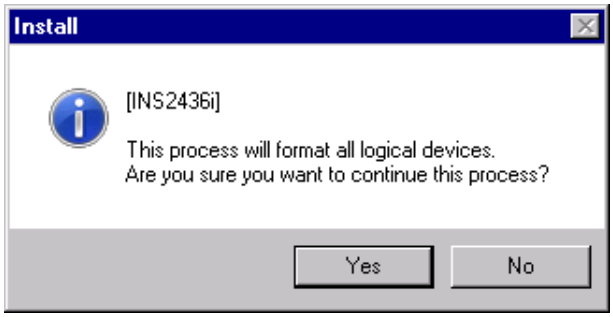
Select (CL) [Logical Device Format].

NOTE: Execute Format Logical Device after confirming all Logical Device is blocked.



4-1

Select (CL) [Yes] in response to "This process will format all logical devices. Are you sure you want to continue this process?".

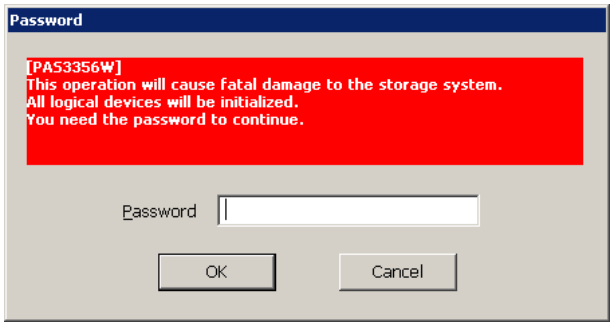


4-2

⚠ CAUTION

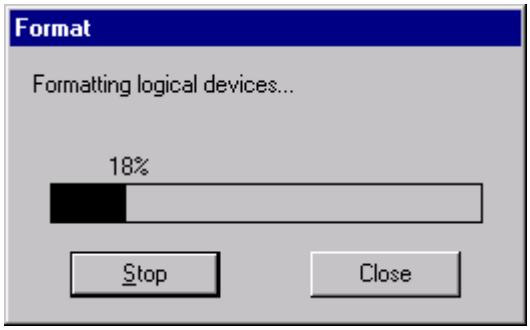
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if executed in an occasion other than the new storage system installation, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

Enter the password and select [OK] (CL).
Password is needed for this operation.
Please call Technical Support Division to obtain a password and authorization.



4-3

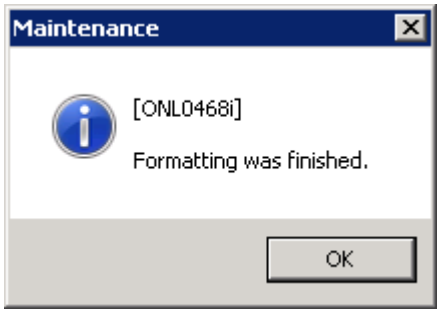
When LDEV Formatting is complete, “Formatting logical devices...” shown in the right figure disappears and “Formatting was finished.” is displayed.



4-4

Select (CL) [OK] in response to “Formatting was finished.”.

LDEV formatting is abnormally terminated if the message “Formatting logical devices rejected by DKC.” or “Formatting the logical device is failed.” is displayed.
Identify the error cause according to the procedure shown in “TROUBLE SHOOTING SECTION”.



4-5 <Check logical device status>
Check if Logical Devices are normal by with referring to the ‘Logical Device Status’ display.

5. <Check storage system status>
Check if all parts are normal by referring to ‘Maintenance’.

6. <Check system interlock operation>
Start the test program from the host to check for normal storage system’s interlocked operation with the host.

7. <Delete error log>
Power ON/OFF the storage system to make sure that the storage system starts normally (neither ALARM nor MESSAGE indicators should light).

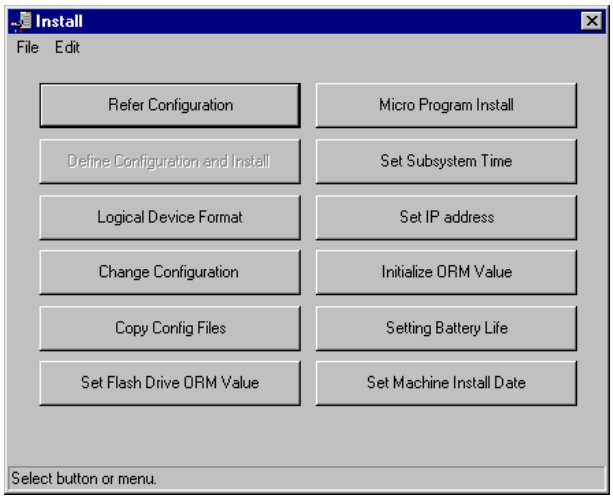
Delete all error log information from the SVP and transfer the storage system to the user.
See SVP02-03-10.

Go to Step INST02-380.

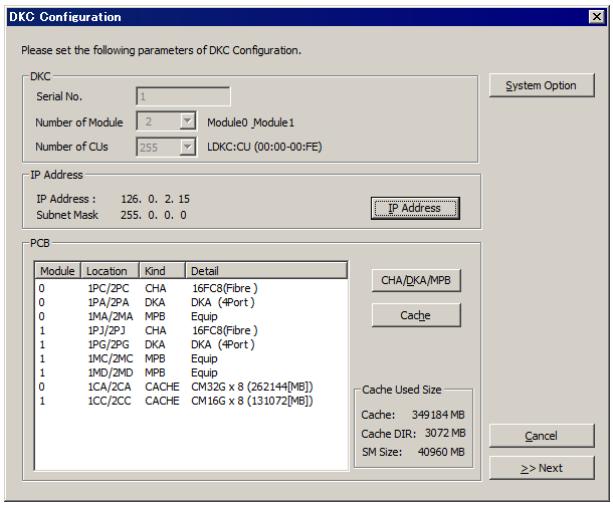
5.2.4 Refer Configuration

1. <Start [Install]>
   Select (CL) [Install] from 'SVP'.

2. Select (CL) [Refer Configuration].



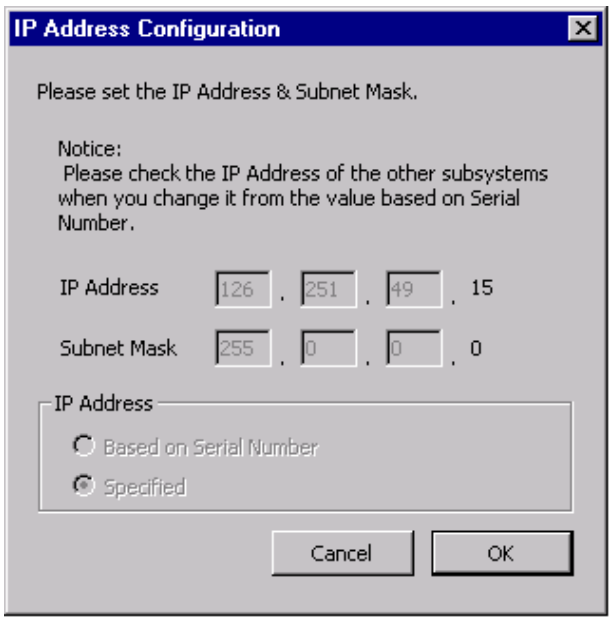
3. <DKC Configuration window>
   [IP Address]:
   The 'IP Address Configuration' window is displayed.
   Refer to Step 3-1.
   [CHA/DKA/MPB]:
   The 'CHA/DKA/MPB' window is displayed.
   Refer to Step 3-4.
   [Cache]:
   The 'Cache Configuration' window is displayed.
   Refer to Step 3-2.
   [System Option]:
   The 'System Option' window is displayed.
   Refer to Step 3-3.



   When the [>>Next] button is selected (CL), go to Step 4.
   This procedure is completed when the [Cancel] button is selected (CL).

3-1 <IP Address Configuration window>

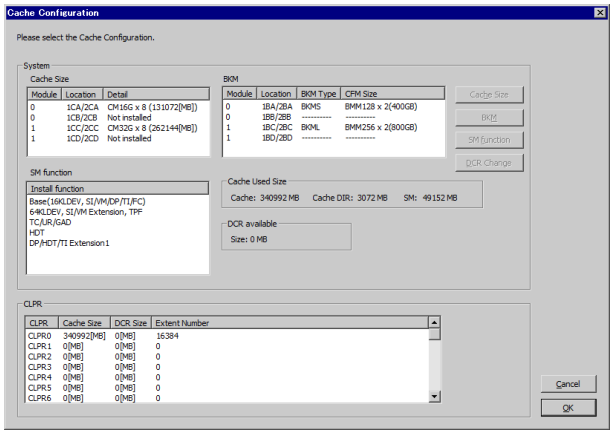
Select (CL) the [OK] button. (Return to Step 3.)



3-2 <Cache Configuration window>

Select (CL) the [OK] button. (Return to Step 3.)

Refer to INST01-80 for the SVP screen display and the conversion of the option type names.

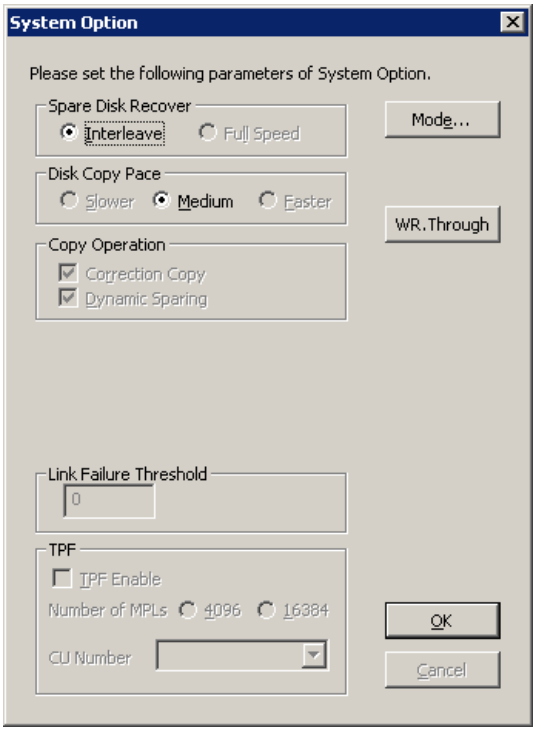


3-3 <System Option window>

When the [Mode...] is selected (CL), the 'Mode' window is displayed. (Refer to Step 3-3-1.)

When the [WR.Trough] is selected (CL), the 'Synchronous Destage Mode Define' window is displayed. (Refer to Step 3-3-2.)

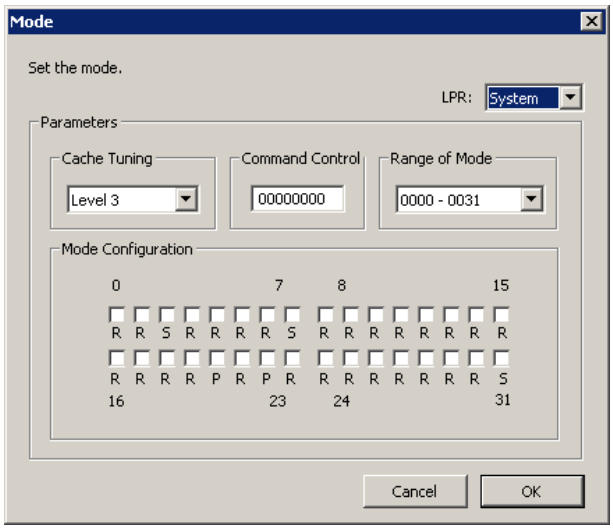
Selecting (CL) [OK] returns to Step 3.



3-3-1 <Mode window>

By setting "Range of Mode," the range shown in "Mode Configuration" is changed

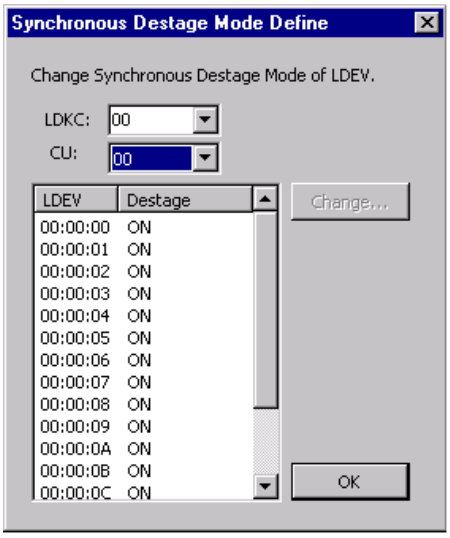
Select (CL) the [OK] button. (Return to Step 3-3.)



3-3-2 <Synchronous Destage Mode Define window>

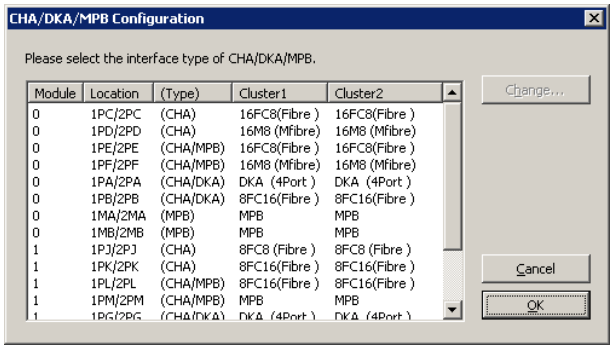
Destage Status of LDEVs to the specified LDKC/CV is displayed.

Select (CL) the [OK] button. (Return to Step 3-3.)



3-4 <CHA/DKA/MPB Configuration>

Selecting (CL) [OK]. (Return to Step 3.)



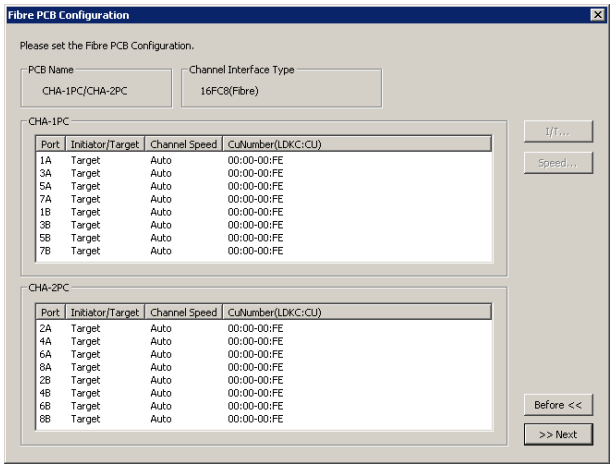
4. <CHA Setting>
According to the types of setting CHA, windows are displayed.

Setting the Fibre: Go to Step 4-1.
Setting the MFibre: Go to Step 4-2.

When the setting of all CHAs is completed, go to Step 5.

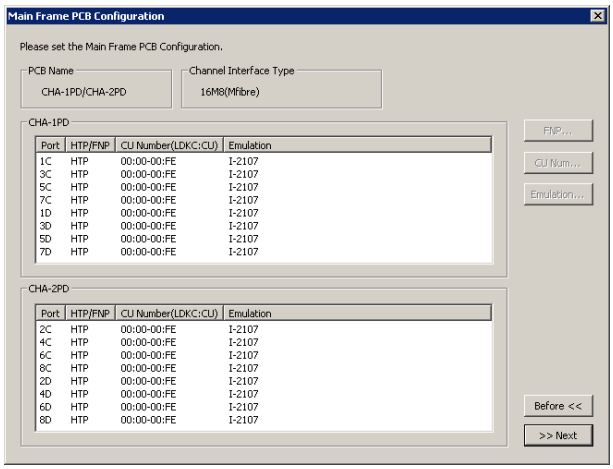
4-1 <Fibre PCB Configuration window>
After checking the display, select (CL) the [>>Next] button.
Return to Step 4.

When the [Before<<] button is selected (CL), the window is returned to the preceding window.

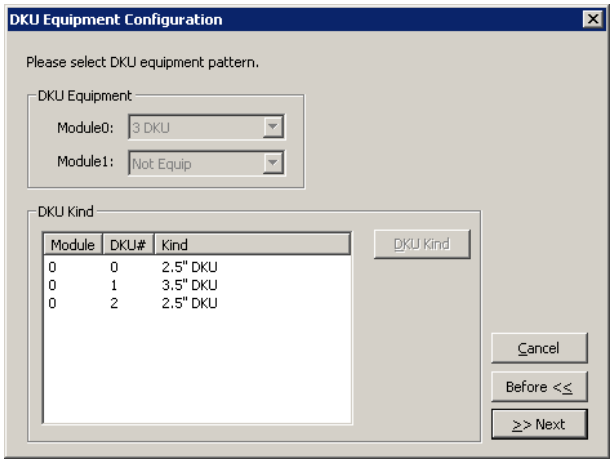


4-2 <Mainframe PCB Configuration window>
After checking the display, select (CL) the [>>Next] button.
Return to Step 4.

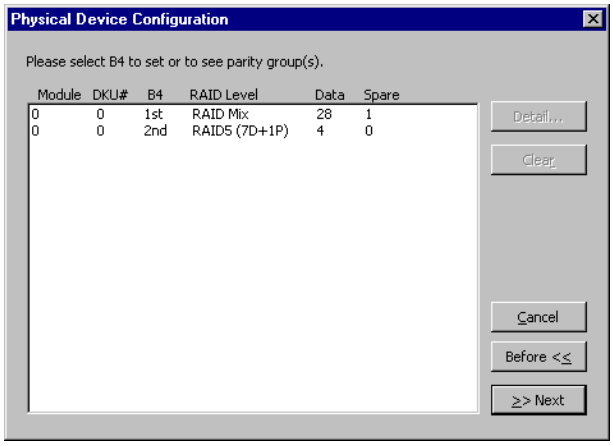
When the [Before<<] button is selected (CL), the window is returned to the preceding window.



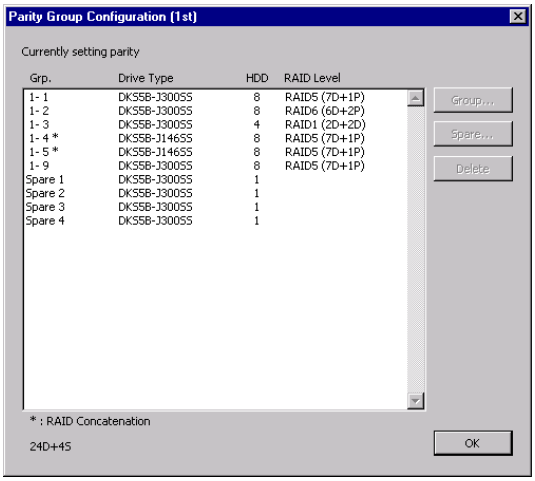
5. <DKU Equipment Configuration window>
The DKU equipment pattern is displayed.
Select (CL) the [>>Next] button. (Go to Step 6.)
This operation is completed when the [Cancel] button is selected (CL).



6. <Physical Device Configuration window>
[Detail...]: Refers to details of parity group(s) or the spare drive in the B4.
(Go to Step 6-1.)
Select (CL) the [>>Next] button. (Go to Step 7.)
This operation is completed when the [Cancel] button is selected (CL).



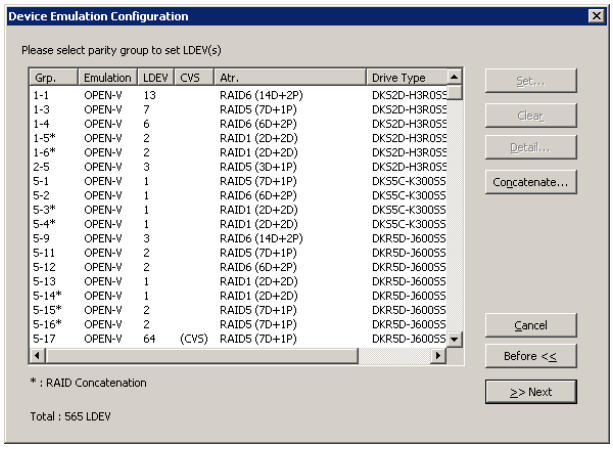
6-1 <Parity Group Configuration window>
Select (CL) the [OK] button. (Return to Step 6.)



7. <Setting device emulation>

The 'Device Emulation Configuration' window is displayed.
Select (CL) the parity group and select (CL) the [Detail...] button. (Go to Step 7-1.)
Select (CL) the [Concatenate...] button. (Go to Step 7-2.)

Select (CL) the [>>Next] button. (Go to Step 8.)

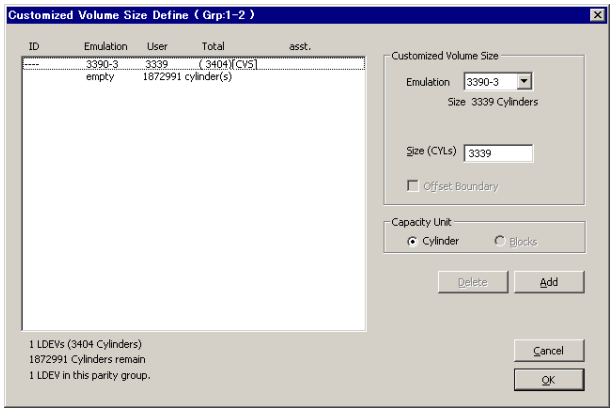


This operation is completed when the [Cancel] button is selected (CL).
(CVS): A parity group for which the CVS has been set
Grp*: A parity group for which the RAID connection has been set

7-1

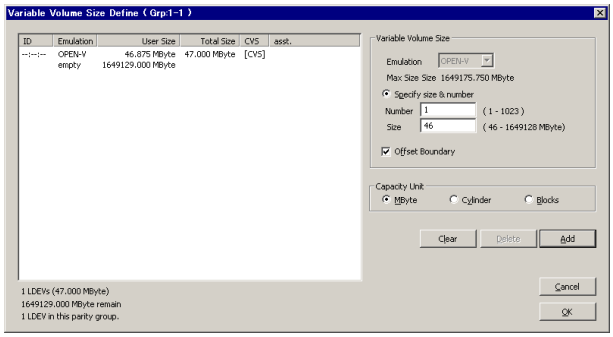
7-1-1 <Customized Volume Size Define>

Customized Volume Size Define is displayed.
Select (CL) [OK]. Return to Step 7 or 7-1.



7-1-2 <Variable Volume Size Define window>

The 'Variable Volume Size Define' window is displayed.



- Offset Boundary :
  The boundary correction existence is specified.
- Capacity Unit
  "MByte" : Makes data displayed by the MByte.
  "Cylinder": Makes data displayed by the cylinder.
  "Blocks" : Makes data displayed by the Blocks.
- asst. : When Path/pool-VOL is defined, "+" is displayed.

  NOTE: Even if the journal volume is defined, "+" is not displayed.

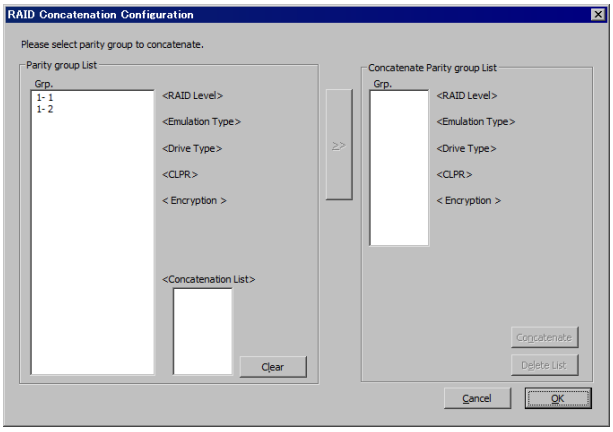
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step 7 or 7-1.

[OK] : Fixes the setting and makes the preceding window return. Return to Step 7 or 7-1.

7-2 <RAID Concatenation Configuration window>

The 'RAID Concatenation Configuration' window is displayed.
When the "(Concatenation)" displayed in the Parity group List is selected (CL), parity groups that have been concatenated are displayed in the Concatenation List.

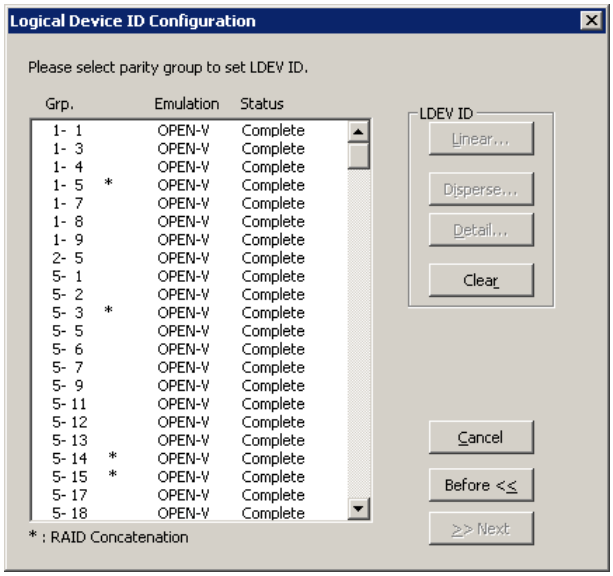
Select (CL) the [OK]. Return to Step 7.



8. <Logical Device ID Configuration window>

Logical Device ID Configuration is displayed.
Select (CL) a parity group and select (CL) [Detail...]. Go to Step 8-1.
Select (CL) [>> Next]. Go to Step 9.
This procedure is terminated by selecting (CL) [Cancel].
Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.

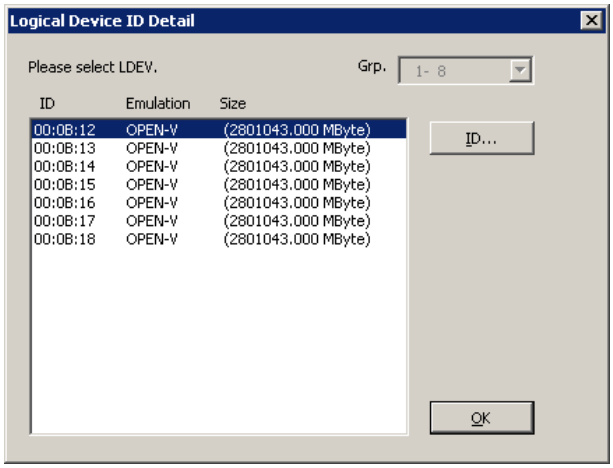
① "Complete" : LDEV ID is assigned.
② "-------" : LDEV ID is not assigned.
③ "Error" : Invalid LDEV ID is assigned.



8-1

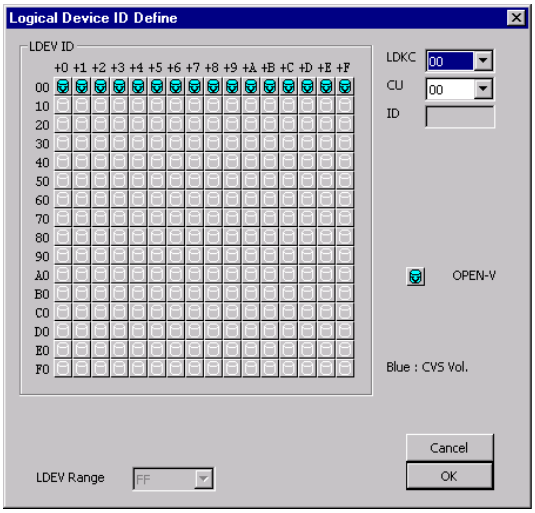
Logical Device ID Detail is displayed.
Select (CL) [ID...]. Go to Step 8-2.
Select (CL) [OK]. Return to Step 8.

NOTE: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the “Grp List” is displayed.



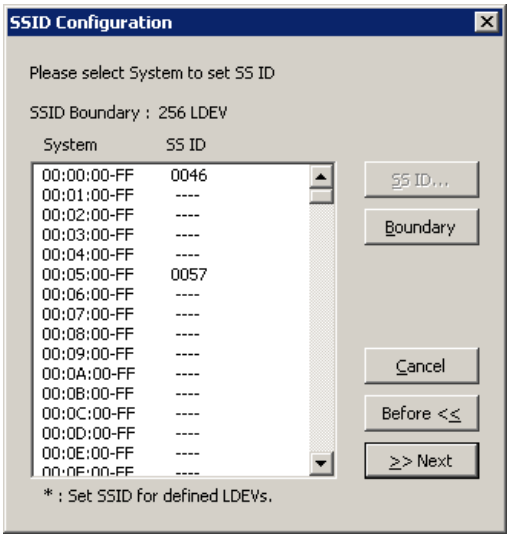
8-2

The status of usage of ID in the specified LDKC/CU is displayed in the LDEV ID panel.
Select (CL) [OK] or [Cancel]. Return to Step 8-1.



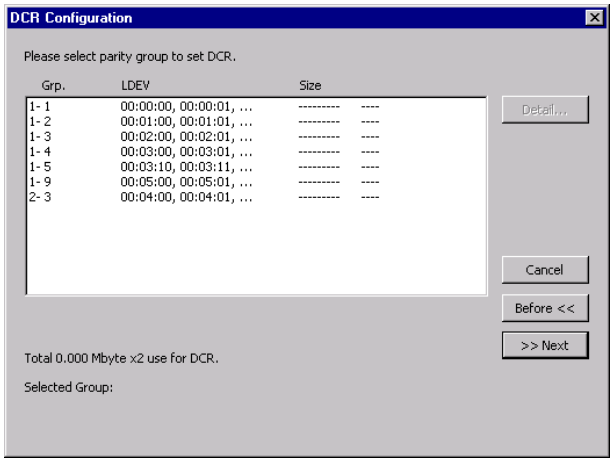
9. <Set SSID>

SSID Configuration is displayed.
Select (CL) [>> Next]. Go to Step 10.
This procedure is terminated by selecting (CL) [Cancel].



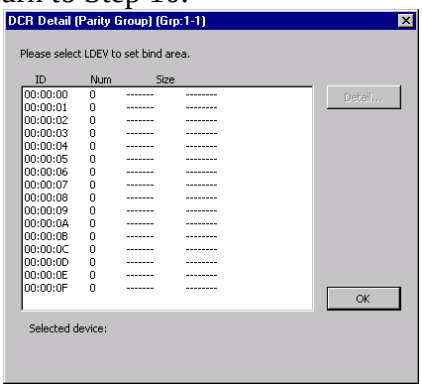
10. <DCR Configuration windows>

When the parity group is selected (CL), and then the [Detail...] button is selected (CL), go to Step 10-1.
Select (CL) the [>>Next] button.
This operation is completed when the [Cancel] button is selected (CL).

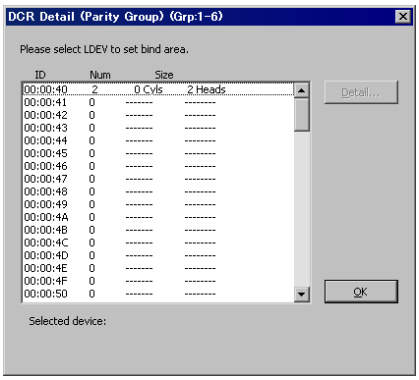


10-1 <DCR detail (Parity group) window>

DCR detail (Parity group) is displayed.
Select (CL) an LDEV and select [Detail...]. Go to Step 10-2.
Select (CL) [OK]. Return to Step 10.



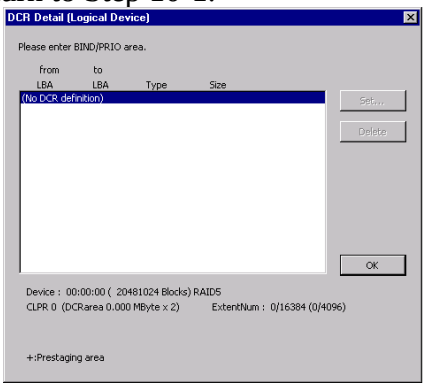
(For open system)



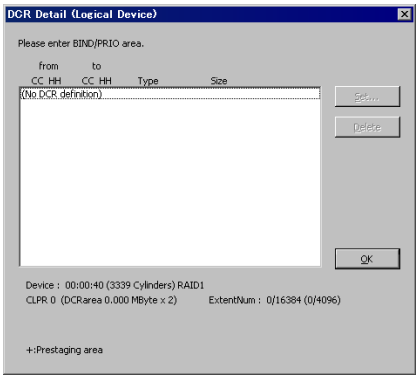
(For Mainframe system)

10-2 <DCR detail (Logical device) window>

DCR detail (Logical device) is displayed.
Select (CL) [OK]. Return to Step 10-1.



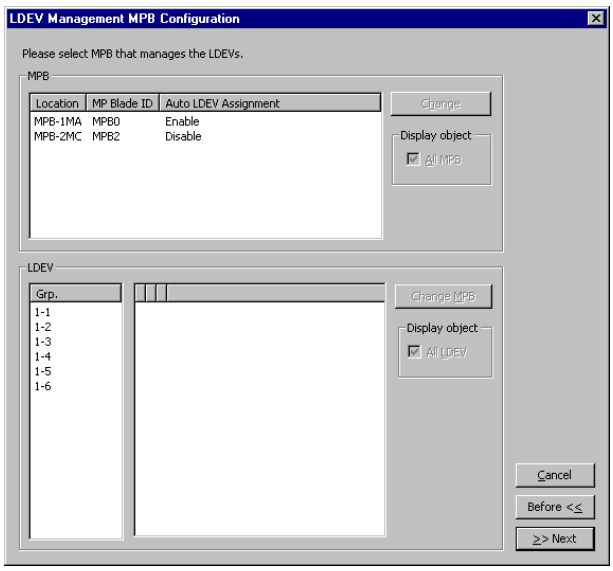
(For open system)



(For Mainframe system)

11. <LDEV Management MPB Configuration window>

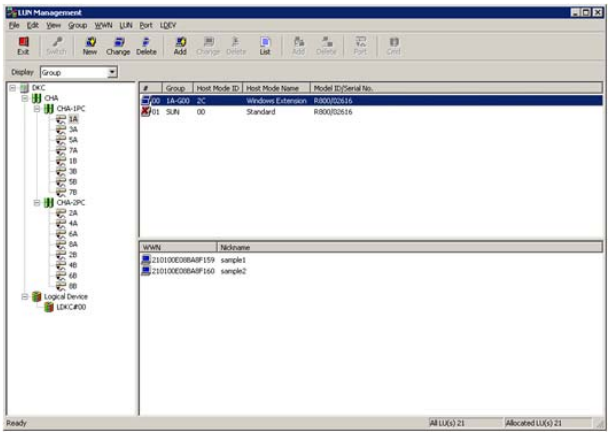
Auto LDEV Assignment and Management MPB is displayed.
Select (CL) [>>Next]. Go to Step 12.



12. <LUN Management Screen>

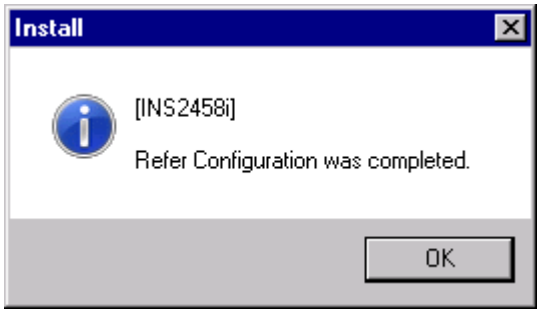
When is equipmented Open PCB(s), LUN Management dialog to be displayed.

After setting LUN, and close the dialog.
For the setting of LUN, see section 5.3.1.4 LUN Management (INST05-03-450).



13.

Select (CL) [OK].
Close the 'Install' window.



14.

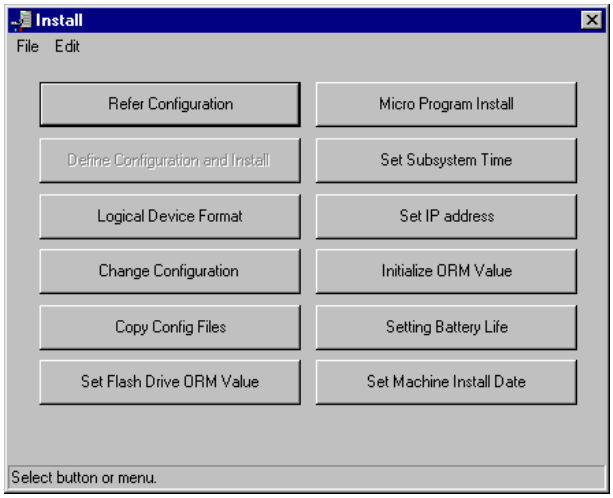
Change the Mode from [Modify Mode] to [View Mode].

5.3 Change Configuration SVP Procedure

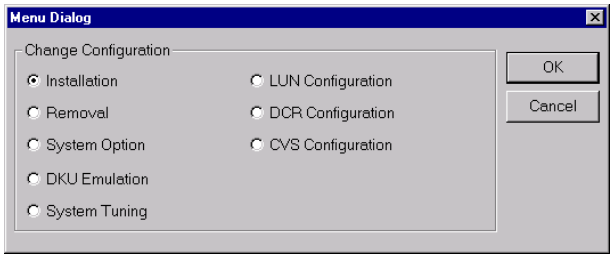
5.3.1 Setting up the New Device Structure Information

1. <Mode Change>
   Change the mode to Modify Mode.
   Select (CL) [Install].

2. <Start the 'Menu Dialog' screen>
   Select (CL) [Change Configuration].



3. <Start Device Structure Setup screen>
   Select (CL) the item in the 'Menu Dialog' dialog box and select (CL) [OK].



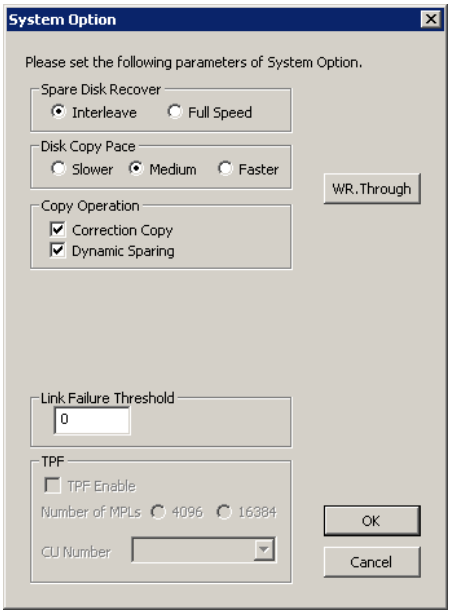
Function	Menu Item	
• System Option	System Option	(INST05-03-20)
• DCR Configuration	DCR Configuration	(INST05-03-40)
• CVS Configuration	CVS Configuration	(INST05-03-90)
• LUN Management	LUN Configuration	(INST05-03-450)

5.3.1.1 System Option

1. <Definition of System Option>
   Define the system option information in the 'System Option' window.

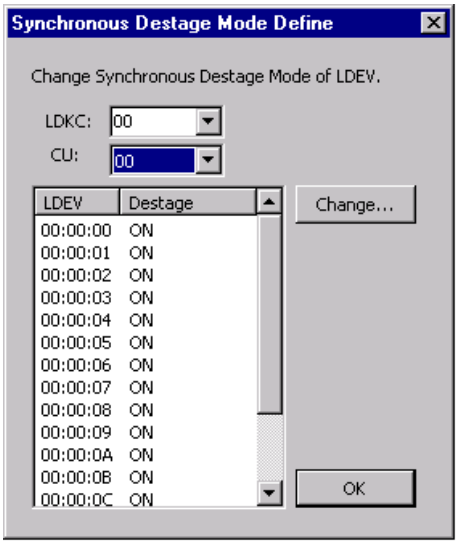
   When [WR.Through] is selected (CL), go to Step 2.

   After all the items are set, select (CL) [OK].
   Go to Step 3.

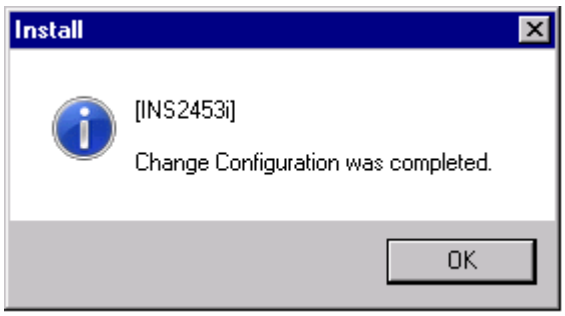


2. <Setting Destage Mode>
   Set the destage mode in the 'Synchronous Destage Mode Define' window.

   When [OK] is selected (CL), return to Step 1.



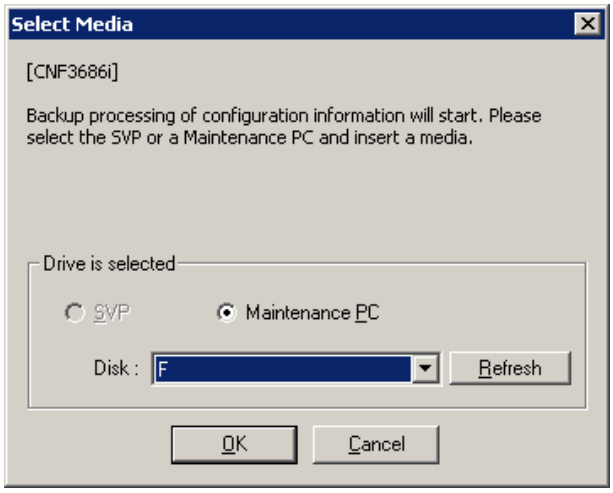
3. "Change Configuration was completed." is displayed.
   Selection (CL) [OK].



4.

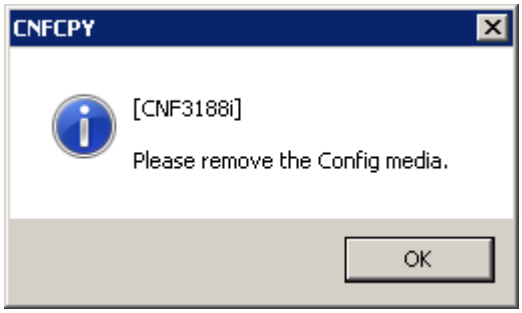
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



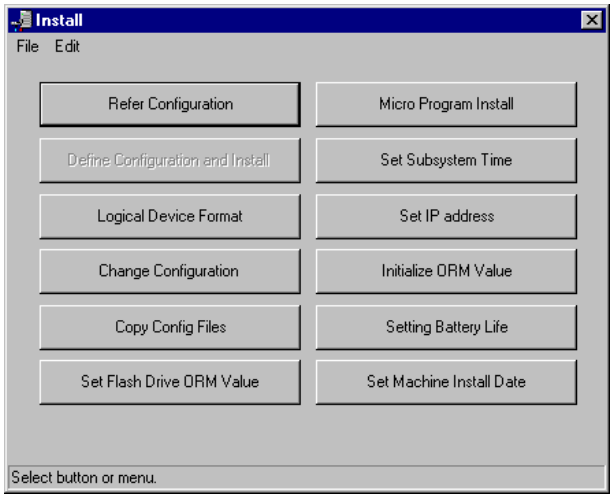
5.

When this procedure is completed, the message "Please remove the Config media." is displayed.
Remove the configuration information media, select (CL) [OK].



6.

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



7.

Change the Mode from [Modify Mode] to [View Mode].

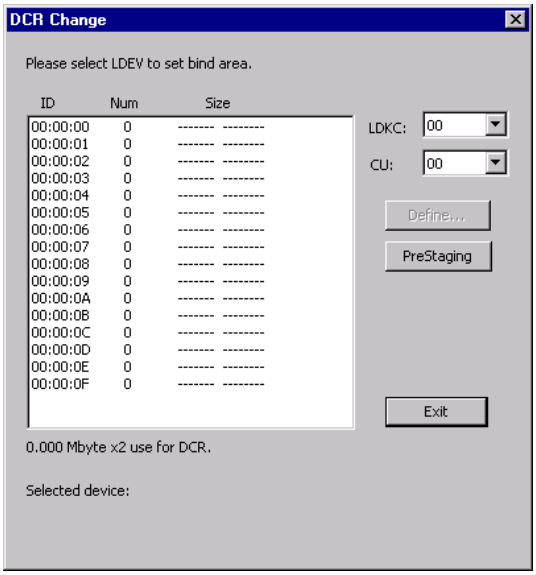
5.3.1.2 DCR Configuration

(1)

The “DCR Change” window appears and the contents of the entered setting are displayed. When the CU is selected (DR) in the combo box, installed LDEV(s) and contents of the DCR definition are updated. Select (CL) LDEV to change the setting, then press (CL) the [Define...] button.

Total cache memory size occupied by the DCR area is displayed.

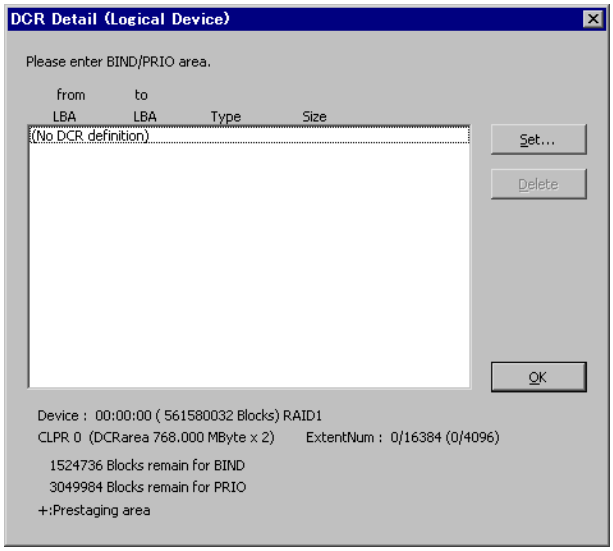
If the selected LDEV has a DCR area, the BIND size and the PRIO size are displayed in “DCR Change” window.



NOTICE: To use DCR function, you should install the program product for mainframe volumes or for open volumes into the DKC. Do not set DCR function to Remote Command Device.

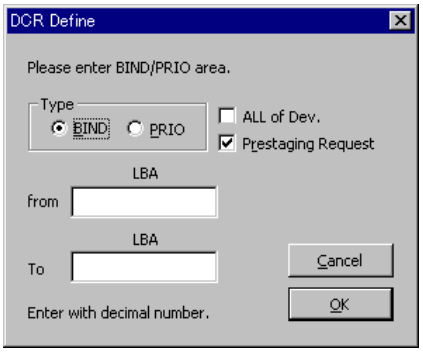
(2)

The “DCR Detail (Logical Device)” screen appears and the setting of the DCR in the LDEV is displayed.
To add a new setting, press (CL) the [Set...] button.

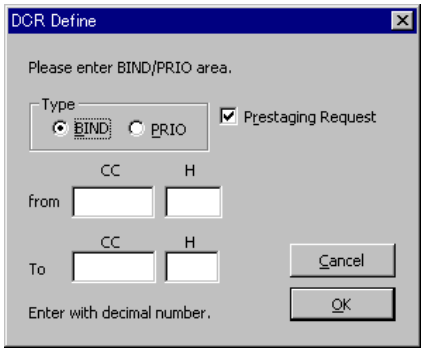


(3)

When the [Set...] button is pressed (CL) on the “DCR Detail (Logical Device)” screen, the “DCR Define” screen appears. To register new data in the DCR area, enter the type, starting cylinder number, starting head number, ending cylinder number, and ending head number (In the case of Mainframe, refer to the screen on the right) or the type, starting LBA, and ending LBA (In the case of the open system, refer to the screen on the left).
If you want to stage the data on the cache, check the Prestaging Request box.
When the entry is completed, return the screen to the “DCR Detail (Logical Device)” screen by pressing (CL) the [OK] button.



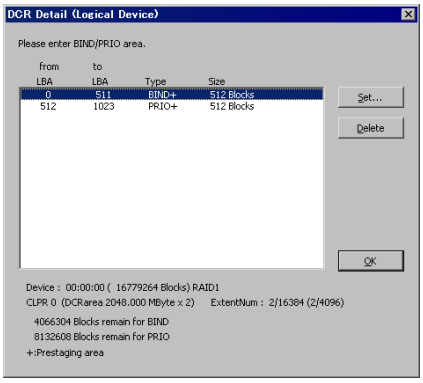
(In the case of open system)



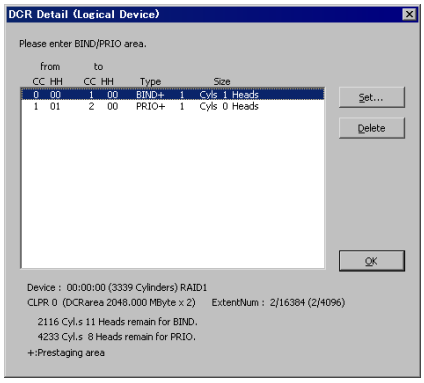
(In the case of Mainframe system)

(4)

Contents of the entered setting are displayed in the list box on the “DCR Detail (Logical Device)” screen.



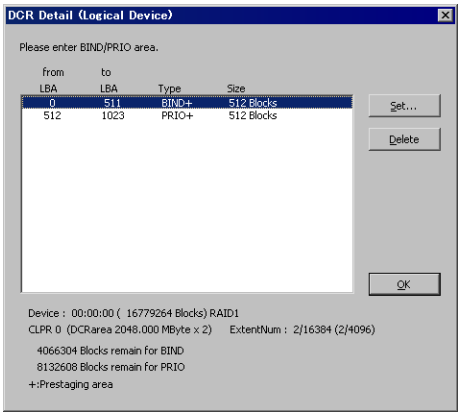
(In the case of open system)



(In the case of Mainframe system)

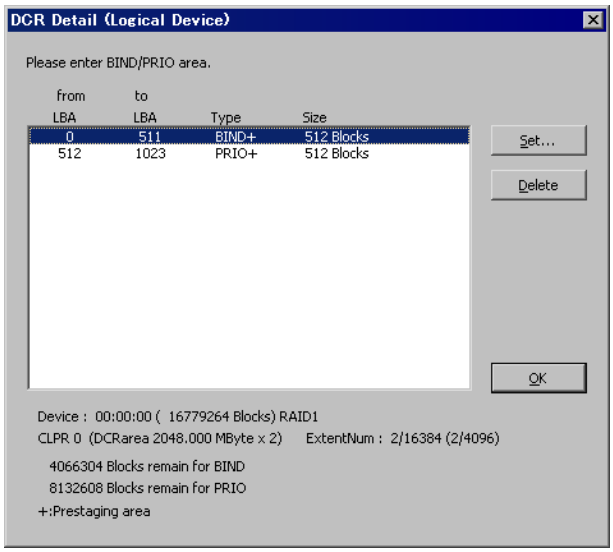
(5)

To delete a set item, select (CL) the DCR setting to be deleted and press (CL) the [Delete] button on the “DCR Detail (Logical Device)” screen.



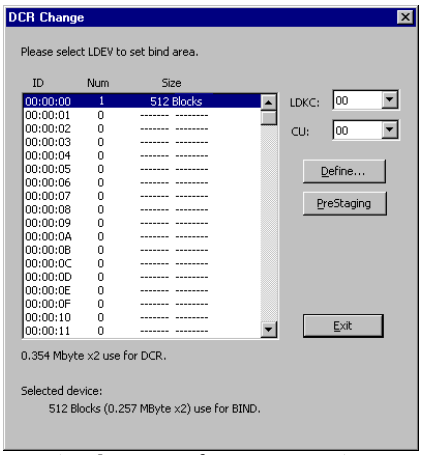
(6)

By pressing (CL) the [OK] button on the "DCR Detail (Logical Device)" screen after the new setting is entered, a process to change the setting for the LDEV is executed.
When no change is required, press (CL) the [Cancel] button.

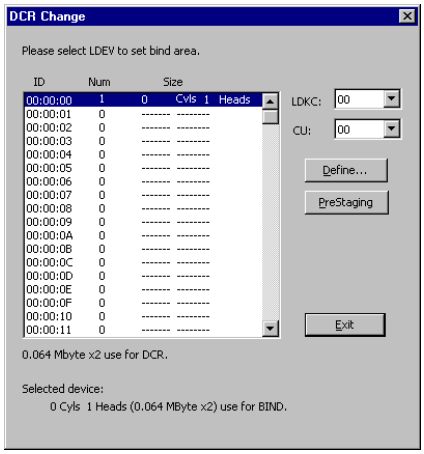


(7)

The screen returns to the "DCR Change" screen after the processing is completed. The changed setting is displayed in the list box.



(In the case of open system)



(In the case of Mainframe system)

(8)

Repeat steps (1) through (7) for the LDEV(s) of which you want to change the setting.

(9)

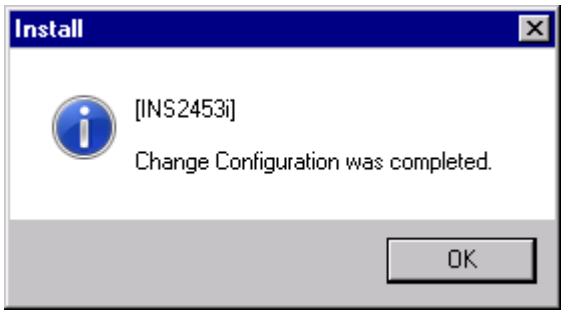
When you want to set DCR PreStaging, select (CL) [PreStaging].
The [PreStaging] button begins the Pre-staging processing only for the "PreStaging Request" specified data.

(10)

When the changing operation is completed, quit the “DCR Change” screen by pressing (CL) the [Exit] button.

(11)

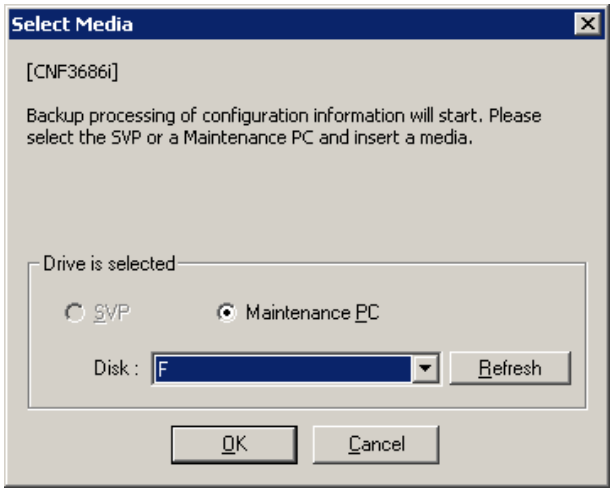
“Change Configuration was completed.” is displayed.
Select (CL) [OK].



(12)

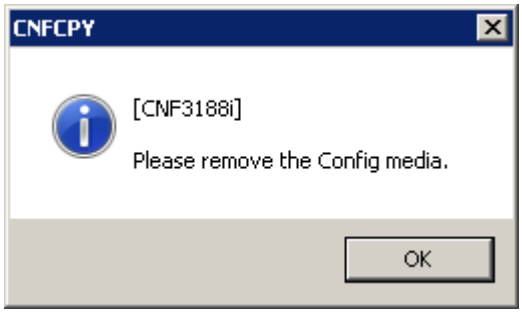
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



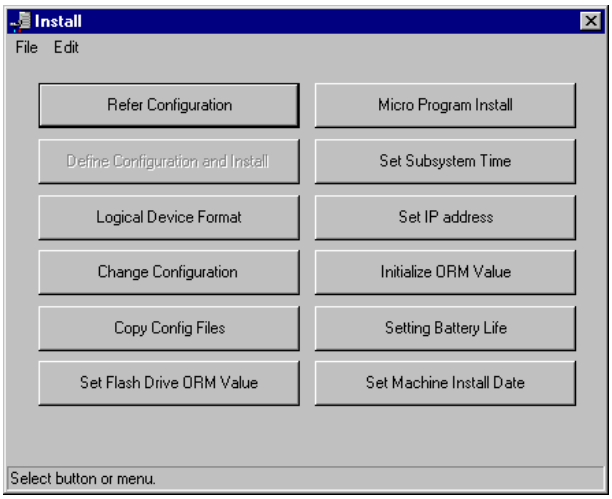
(13)

When this procedure is completed, the message “Please remove the Config media.” is displayed.
Remove the configuration information media, select (CL) [OK].



(14)

After the procedure is completed, return to 'Install' window.
Select (CL) [File]-[Exit].



(15)

Change the mode from [Modify Mode] to [View Mode].

5.3.1.3 CVS Configuration

- Volume to Space---------- Go to Step 1.
- LDEV (CVS) Installation---------- Go to Step 2.
- Volume Initialize ---------- Go to Step 3.

1. <Volume to Space>

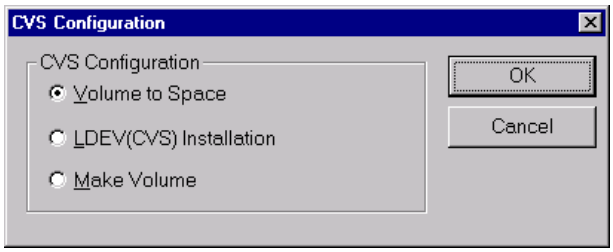
NOTICE: When you set Cross-OS File Exchange volumes to customized volumes and reset them to the normal volume again, these volumes could not be set as Cross-OS File Exchange volumes. Please refer to the following table.

Emulation Types for Cross-OS File Exchange volumes	Emulation types after changing from Customized volume to normal volume
3390-3A	3390-3
3390-3B	
3390-3C	

If you want to reset these volumes as Cross-OS File Exchange, please call technical support division to set them to Cross-OS File Exchange volumes by SVP.

(1)

Select (CL) [Volume to Space] and select (CL) [OK].



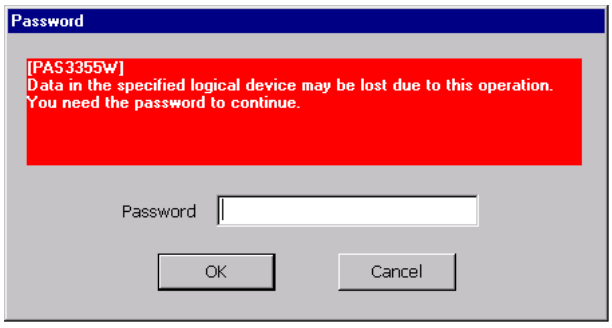
NOTICE: To use CVS function, you should install the program product for mainframe volumes or for open volumes into the DKC.

⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

NOTE: When the Volume to Space function is performed, the alias information which is set to the specified LDEV is also deleted.
If you set the alias to the LDEV, you must migrate the alias information to another LDEV before the Volume to Space function is performed, or you must reconfigure the alias after the Volume to Space function is performed.

Enter the password and select (CL) [OK].

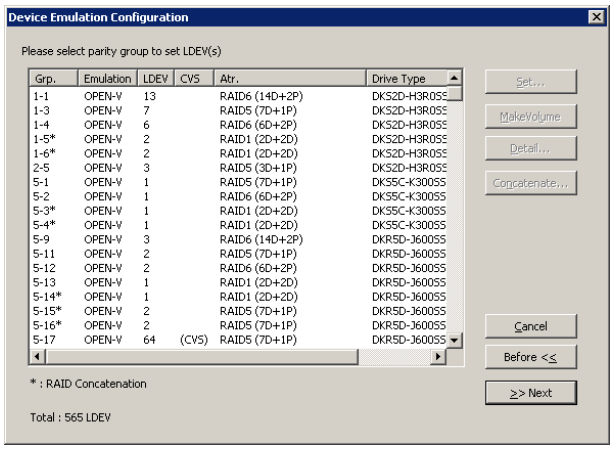


(2)

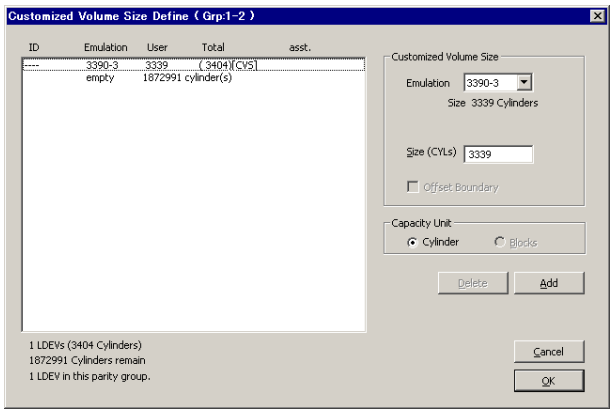
Select (CL) a parity group with Volume(s) to be changed on the 'Device Emulation Configuration' window and press (CL) the [Detail...] button.

When all the settings are completed, press (CL) [>>Next]. Go to Step (4).

(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.



(3) <Definition other than OPEN-V>
When the Volume(s) to be deleted is selected (CL) on the 'Customized Volume Size Define' window and the [Delete] button is pressed (CL), the Volume(s) is deleted.
The two or more volumes can be selected and deleted. However, the last one volume cannot be deleted.



• Offset Boundary :
The boundary correction existence is specified.
(When a volume for mainframe host is selected, it is not possible to select it.)

• Capacity Unit
"Cylinder" : Makes data displayed or entered by the Cylinder.
"Blocks" : Makes data displayed or entered by the Blocks.
(When a volume for mainframe host is selected, it became selection of only "Cylinder".)

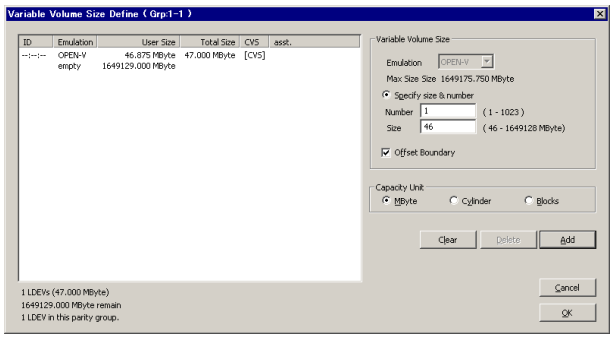
[Delete] : Deletes a selected volume.
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2).
[OK] : Fixes the setting and makes the preceding window return. Return to Step (2).

NOTE: In the following case, the [Delete] button is not available.
① Volume with SCSI path(s) ("+" indicated) is selected.
② Volume with pool-VOL ("+" indicated) is selected.
③ Volume with the journal volume ("+" indicated) is selected.

(3-1) <Definition of OPEN-V>

When you select a volume you want to delete in the 'Variable Volume Size Define' window and select (CL) the [Delete], the volume is deleted.

The two or more volumes can be selected and deleted. However, the last one volume cannot be de deleted.



- Offset Boundary : The boundary correction existence is specified.
- Capacity Unit

  "Cylinder" : Makes data displayed or entered by the Cylinder.

  "Blocks" : Makes data displayed or entered by the Blocks.
- asst. : When Path/pool-VOL/the journal volume is defined, "+" is displayed.

[Delete] : Deletes a selected volume.

[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2).

[OK] : Fixes the setting and makes the preceding window return. Return to Step (2).

NOTE: In the following case, the [Delete] button is not available.

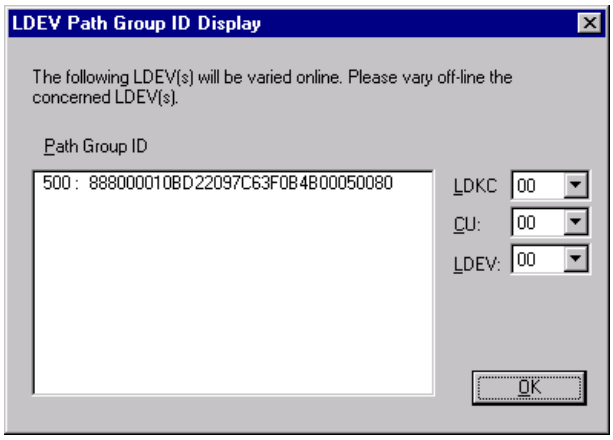
① Volume with SCSI path(s) ("+" indicated) is selected.

② Volume with pool-VOL ("+" indicated) is selected.

③ Volume with the journal volume ("+" indicated) is selected.

(4) <Display LDEV Path Group ID>

When some of the LDEVs to be uninstalled are connected to hosts because a Vary On-line operation was performed, the “LDEV Path Group ID Display” window appears.



LDKC/CU/LDEV:

Only the LDEVs to be installed, which are connected to hosts, are displayed

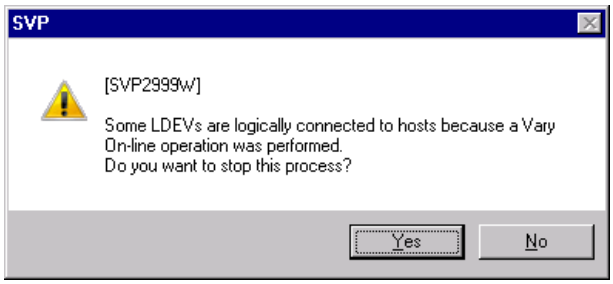
Path Group ID:

List of Path Group IDs of the hosts connected to the LDEVs to be uninstalled.

Depending on the host, the LPAR information may be registered in the 4th byte of the Path Group ID (7th and 8th characters on the window. “01” on the window above), and the host serial number may be registered in the 5th and 6th bytes (9th to 12th characters on the window. “0BD2” on the window above).

After clicking [OK], click [Yes] for the message, “Some LDEVs are logically connected to hosts because a Vary On-line operation was performed. Do you want to stop this process?”

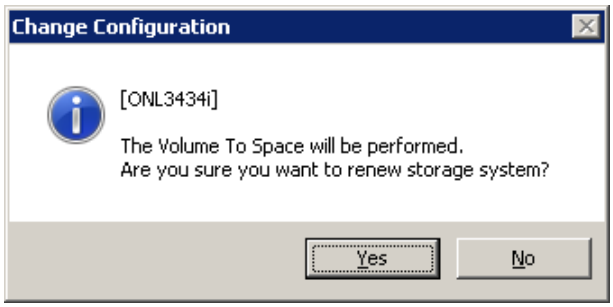
After that, disconnect all the LDEVs to be uninstalled from the host and perform the uninstallation again.



(5)

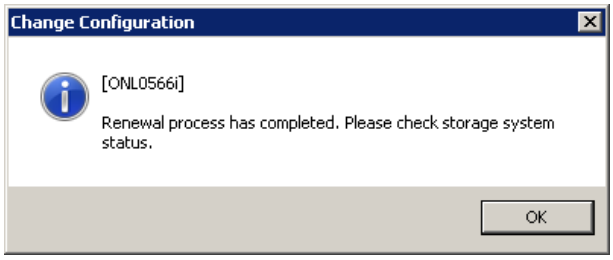
Select (CL) [Yes] in response to "The Volume To Space will be performed. Are you sure you want to renew storage system?".

When [No] is selected (CL), returns to INST05-03-10 Step 2.



(6)

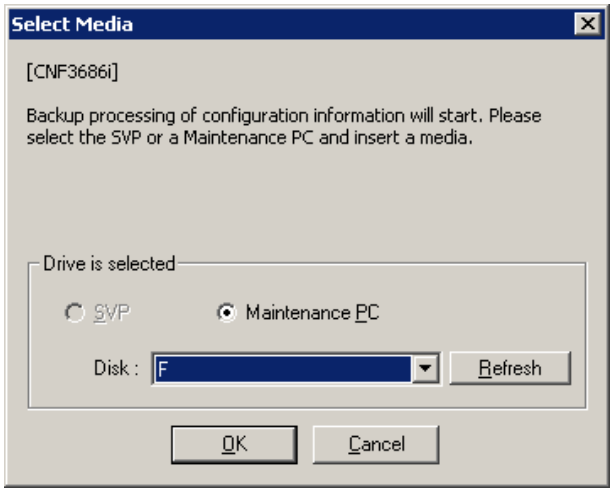
"Renewal process has completed. Please check storage system status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



(7)

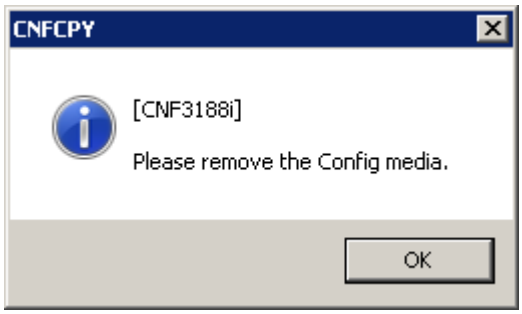
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



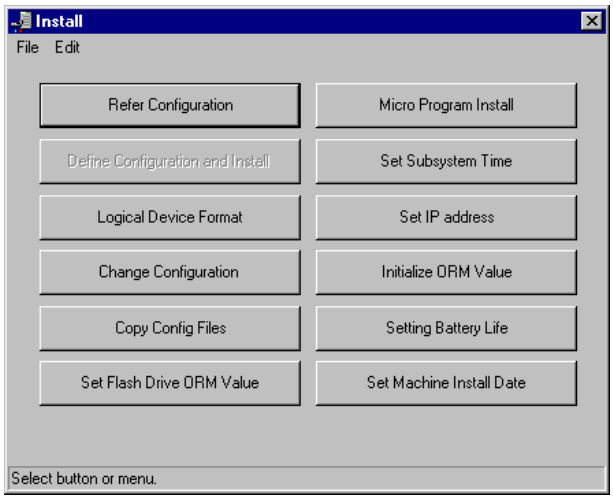
(8)

When this procedure is completed, the message “Please remove the Config media.” is displayed. Remove the configuration information media, select (CL) [OK].



(9)

After the procedure is completed, return to ‘Install’.
Select (CL) [File]-[Exit].



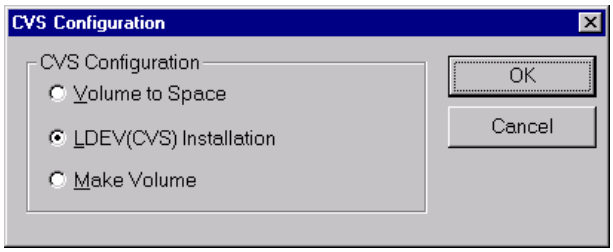
(10)

Change the mode to View Mode.

2. <LDEV(CVS) Installation>

(1)

Select (CL) [LDEV(CVS) Installation] and select (CL) [OK].

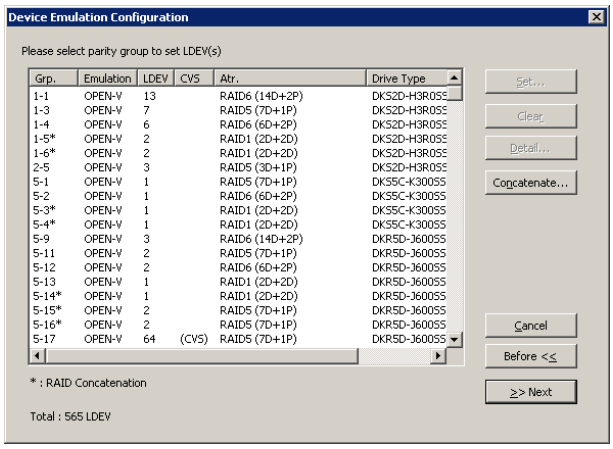


(2)

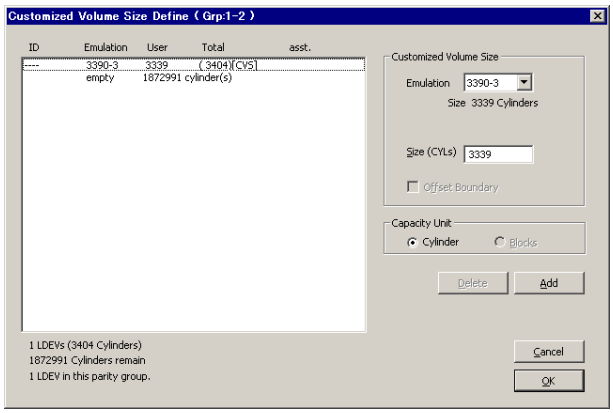
Select (CL) a parity group to which the CV(s) is to be added on the “Device Emulation Configuration” screen and press (CL) the [Detail] button.

When all the settings are completed, press (CL) [>>Next]. Go to Step (4).

(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.



(3)



A volume other than OPEN-V can be defined in the 'Customized Volume Size Define' window.

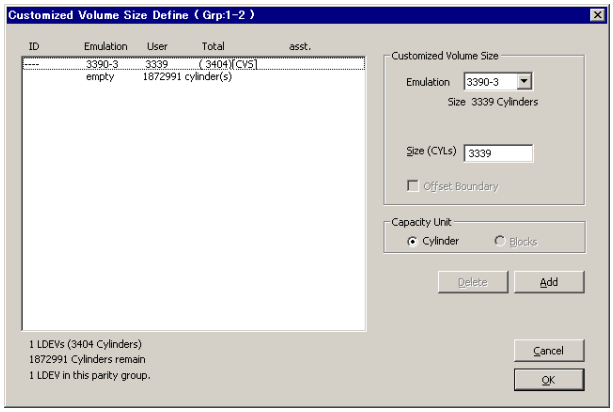
• Add of CVS
  Perform ① Add of the Volume.

① <u>Add of the Volume</u>
  A volume can be added by entering the LDEV emulation type and the user size (MByte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
  (It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)
  The two or more CVs can be registered when the operation above is performed repeatedly.

• Offset Boundary :
  The boundary correction existence is specified.
  (When a volume for mainframe host is selected, it is not possible to select it.)

• Capacity Unit
  "Cylinder" : Makes data displayed or entered by the Cylinder.
  "Blocks" : Makes data displayed or entered by the Blocks.
(When a volume for mainframe host is selected, it became selection of only "Cylinder".)

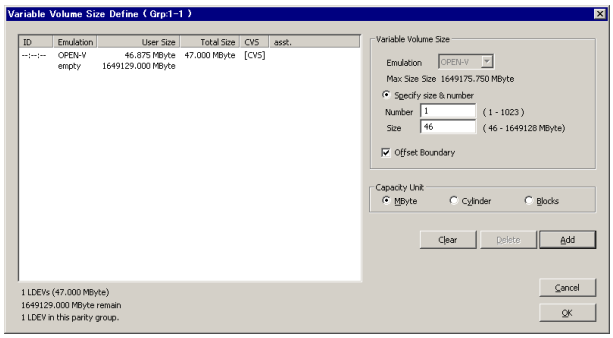
The contents registered are displayed in the list box.
The deletion can be made only for the added CV(s). When the addition is made incorrectly, select (CL) [Cancel] to make the setting invalid and perform the setting again.



[OK] : Fixes the setting and makes the preceding window return. Return to Step (2).
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2).

(3-1) Definition of OPEN-V

OPEN-V can be defined in the 'Variable Volume Size Define' window.



- Add of CVS

  Perform ① Add of the Volume.

① <u>Add of the Volume</u>

After selecting the "Specify Size & number" in the 'Variable Volume Size Define' window and entering user size and number of volumes to be added, register a volume by selecting (CL) the [Add].

(It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)

After adding CVS, check that "CVS" is displayed for the added volume in the LDEV list box.

The volume that have been registered are displayed in the list box. Only the added volume can be deleted.

- Variable Volume Size

"Specify size & number" : Defines the specified number of the specified user size.

- Offset Boundary : The boundary correction existence is specified.

• Capacity Unit

“MByte” : Makes data displayed or entered by the MByte.

“Cylinder” : Makes data displayed or entered by the cylinder.

“Blocks” : Makes data displayed or entered by the Blocks.

• asst. : When Path/pool-VOL/the journal volume is defined, “+” is displayed.

[Delete] : Deletes a selected volume.

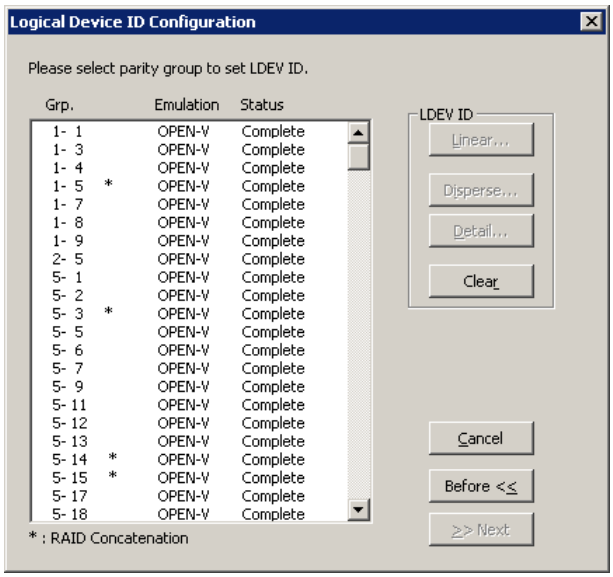
[Add] : Adds a volume.

[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2).

[OK] : Fixes the setting and makes the preceding window return. Return to Step (2).

(4)

Set LDEV ID(s) for the added CV(s). For the parity group having the added CV(s), the status which shows the ID allocation is indicated as "-------". Therefore, select (CL) such a parity group.



[Linear...]: LDEV ID is assigned to LDEV in the order of parity group. Go to Step (5).
[Disperse...]:LDEV ID is assigned discretely in the order of parity group. Go to Step (5).
[Detail...]: A screen to define LDEV in detail is displayed. Go to Step (5-1).

Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "-------" : LDEV ID is not assigned.
③ "Error" : Invalid LDEV ID is assigned.

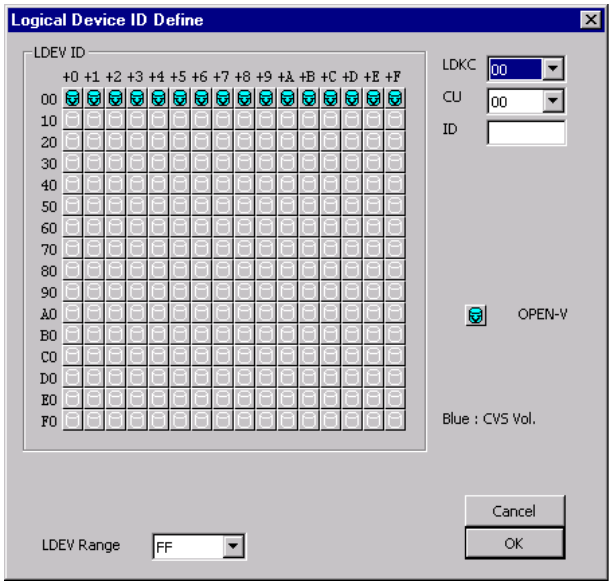
---

(5)

Press (CL) the [Linear...] button and enter an LDEV ID you want to allocate on the "Logical Device ID Define" screen.

Make sure that the entered item is correct and select (CL) [OK]. Go to Step (6).

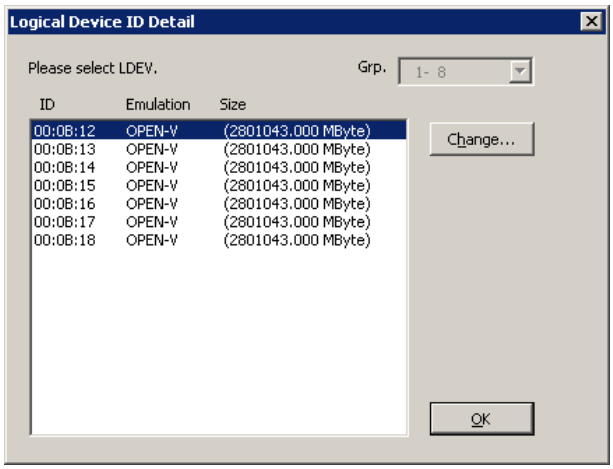
NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



(5-1)

When the [Detail...] is pressed (CL), the 'Logical Device ID Detail' window is displayed. Select an emulation type for which the LDKC, CU and ID status are displayed as "--:--:--" and select (CL) [Change...]. Go to Step (5-2).
When you want to register successive IDs, you can select the two or more emulation types.

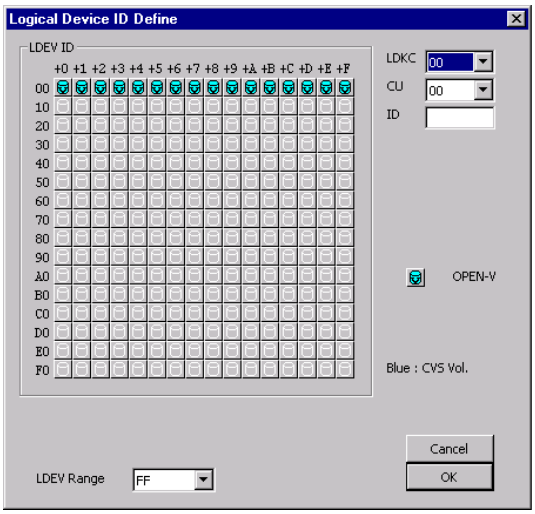
NOTE: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



(5-2)

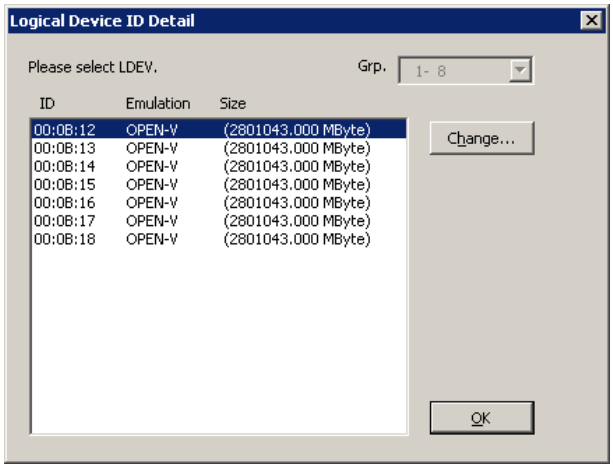
Enter LDKC, a CU and LDEV ID you want to allocate on the 'Logical Device ID Define' window. Then, select (CL) [OK].
Go to Step (5-3).

NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



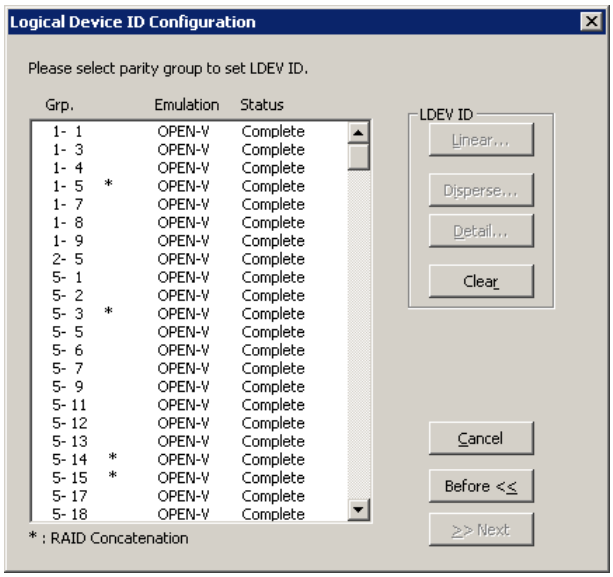
(5-3)

Make sure that the LDKC(s), the CU(s) and ID(s) have been registered.
If there is any emulation type for which the LDKC, CU and ID status are displayed as "--:--:--", return to Step (5-1).
If all the settings have been made, select (CL) [OK]. Go to Step (6).



(6)

When the screen is returned to the 'Logical Device ID Configuration' window, the setting result is displayed.

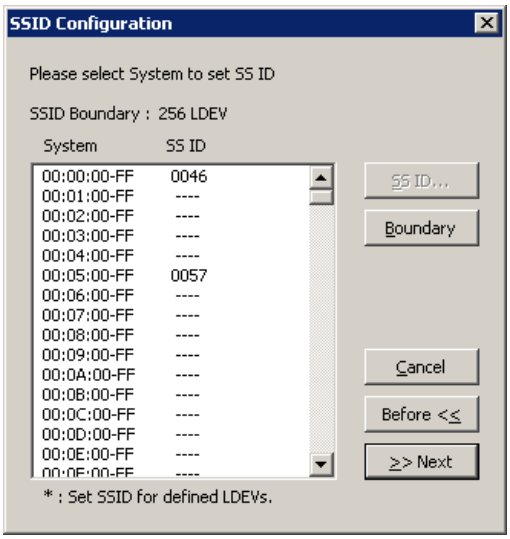


If the status of a parity group shows other than "Complete", return to Step (4).
After all the settings are completed, select (CL) [Detail...] to check the settings, and then select (CL) [>>Next]. Go to Step (7).

Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "-------" : LDEV ID is not assigned.
③ "Error" : Invalid LDEV ID is assigned.

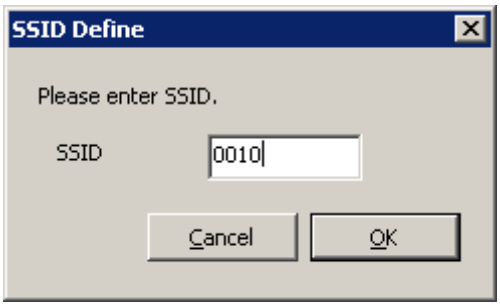
(7)

If a new SSID is required as a result of defining an LDEV ID, define the new SSID. Select (CL) a storage system where the SSID is to be newly defined and press (CL) the [SS ID...] button. Go to Step (8).
When no SSID is to be defined, selecting [>>Next]. Go to Step (9).



(8)

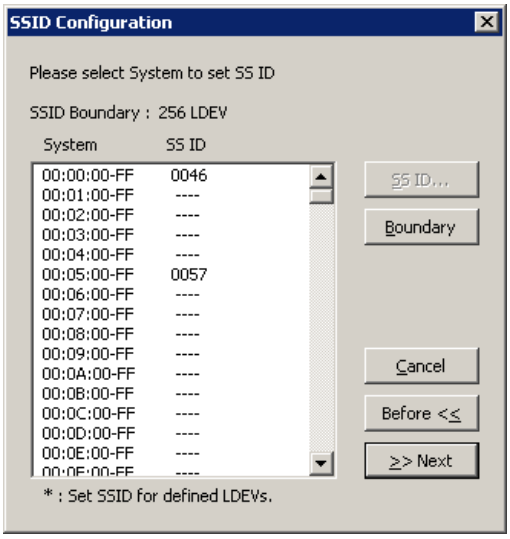
Enter the SSID on the “SSID Define” screen and select (CL) [OK]. Go to Step (9).



(9)

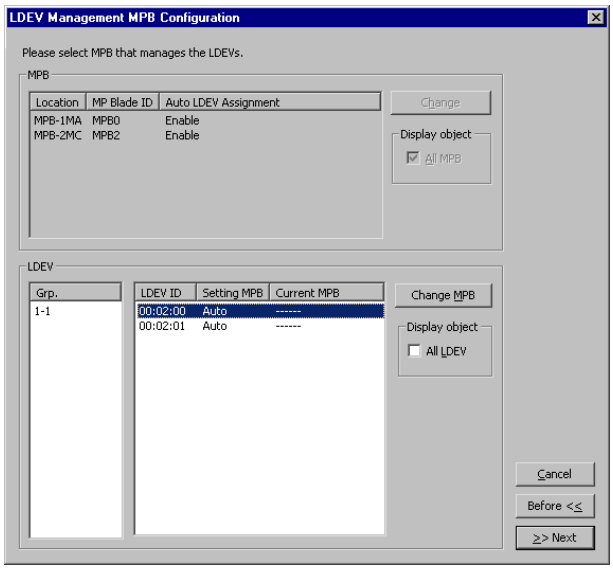
When the screen is returned to the “SSID Configuration” screen by pressing (CL) the [OK] button, the set contents are displayed.

When [>>Next] is selected (CL), the definition of the addition ends. (Additional process starts.) Go to Step (10).



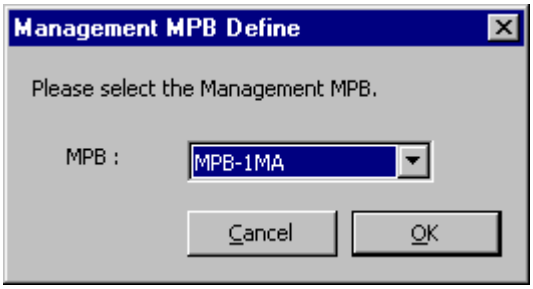
(10)

In the ‘LDEV Management MPB Configuration’ window, select (CL) [Change MPB].
Go to Step (11).



(11)

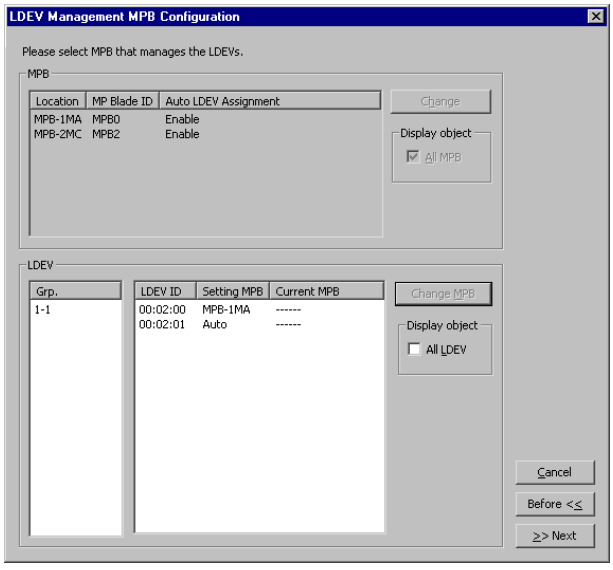
Define Management MPB and select (CL) [OK].
Go to Step (12).



(12)

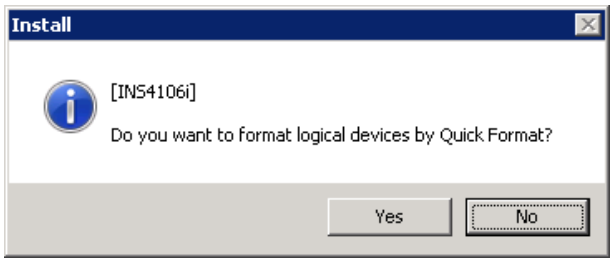
When the screen is returned to the ‘LDEV Management MPB Configuration’ window, the setting result is displayed.

Make sure that the entered item is correct and select (CL) [>>Next]. Go to Step (13).



(13) <Selection of format>

Select (CL) [Yes] in response to "Do you want to format logical devices by Quick Format?" when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



NOTE: Next, Quick Format cannot be executed in the shown volume.

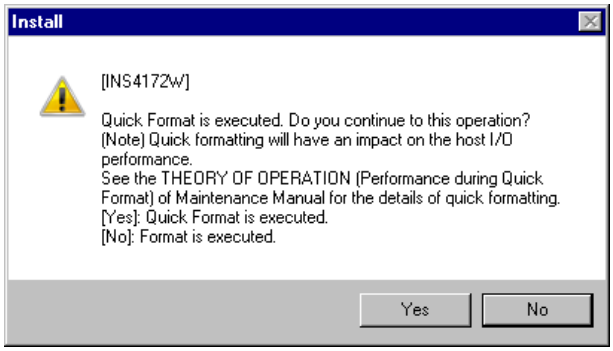
- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes

When [Yes] is selected Go to Step (14).
When [No] is selected Go to Step (15).

---

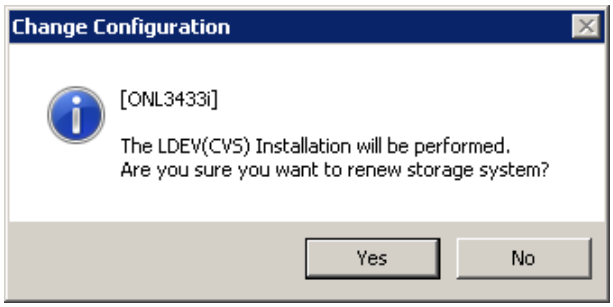
(14) <Execution of Quick Format>

For the message "Quick Format is executed. Do you continue to this operation?
(Note) Quick formatting will have an impact on the host I/O performance.
See the THEORY OF OPERATION (Performance during Quick Format) of Maintenance Manual for the details of quick formatting.
[Yes]: Quick Format is executed.
[No]: Format is executed.", select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.



(15)

Select (CL) [Yes] in response to “The LDEV(CVS) Installation will be performed. Are you sure you want to renew storage system?”.



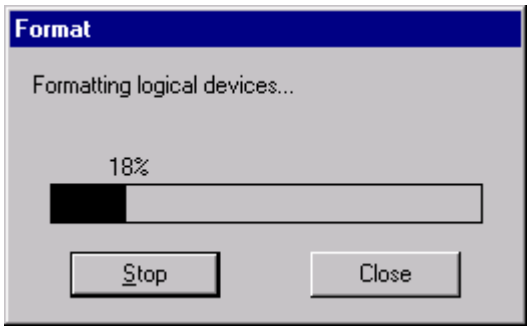
When [No] is selected (CL), returns to INST05-03-10 Step 2.

NOTE: On page INST05-03-270 (14), it advances to (16-1) when a Quick Format is selected (CL).

(16)

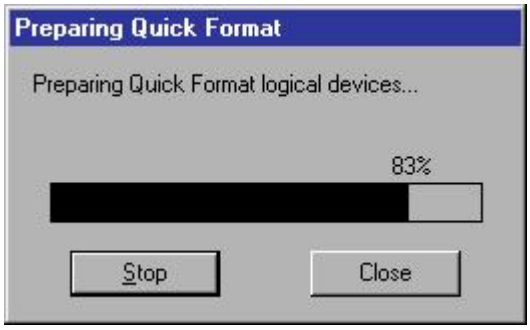
"Formatting logical devices..." is displayed.

NOTE: When System Option 269 is set and all LDEVs in ECC Group are other than the format target, SIM = 0x4100XX is not output at the end even.



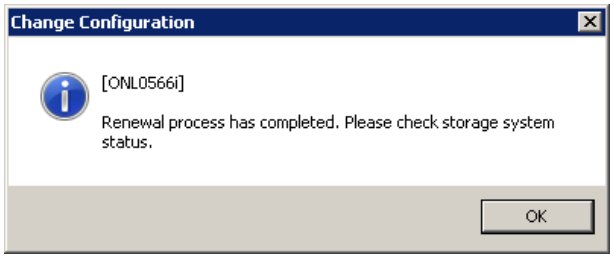
(16-1)

"Preparing Quick Format logical devices..." is displayed.



(17)

"Renewal process has completed. Please check storage system status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



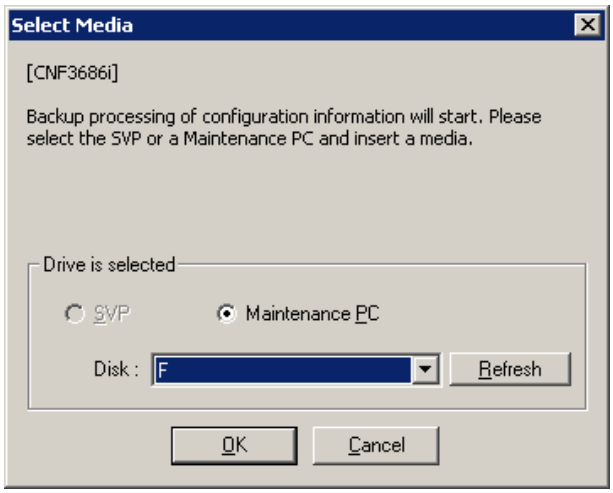
(17-1) <QUICK FORMAT>

Refer to the logical device window in the 'Maintenance' window to check that the Quick Format is in progress. (SVP03-06-10 through 100)

(18)

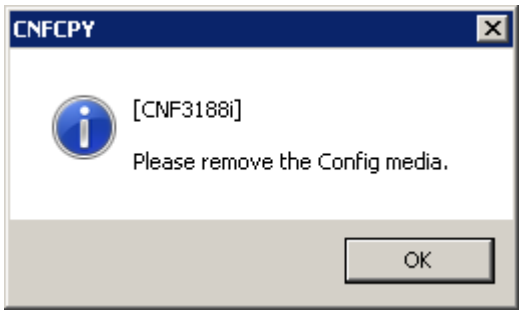
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



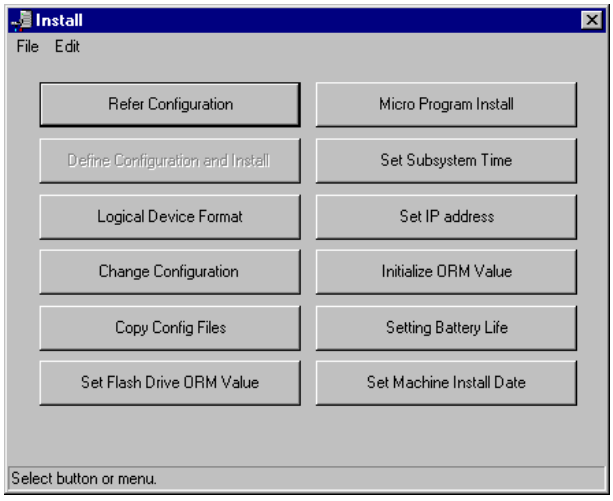
(19)

When this procedure is completed, the message "Please remove the Config media." is displayed.
Remove the configuration information media, select (CL) [OK].



(20)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(21)

Change the mode to View Mode.

NOTICE: When you set Cross-OS File Exchange volumes to customized volumes and reset them to the normal volume again, these volumes could not be set as Cross-OS File Exchange volumes. Please refer to the following table.

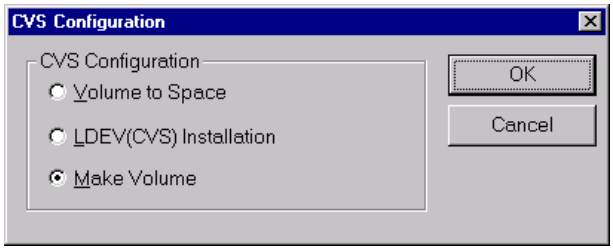
Emulation Types for Cross-OS File Exchange volumes	Emulation types after changing from Customized volume to normal volume
3390-3A	3390-3
3390-3B	
3390-3C	

If you want to reset these volumes as Cross-OS File Exchange, please call technical support division to set them to Cross-OS File Exchange volumes by SVP.

3. <Volume Initialize>

(1)

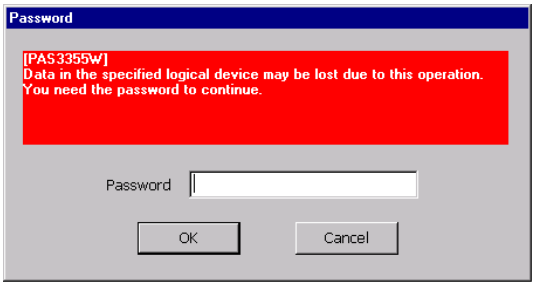
Select (CL) [Make Volume], then select (CL) [OK].



⚠ CAUTION

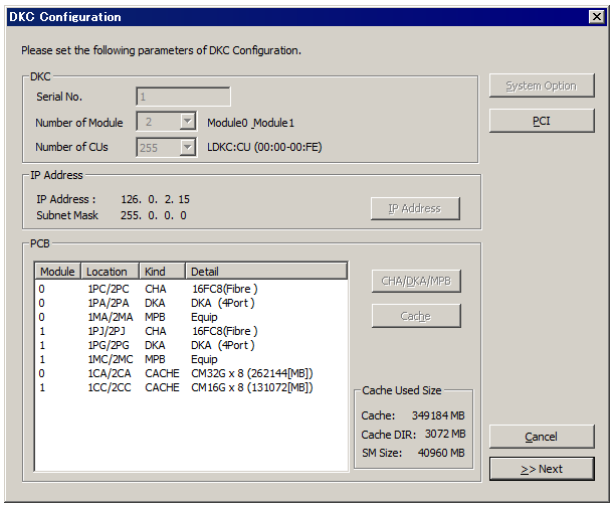
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

Enter the password and select (CL) [OK].



(1-1)

Select (CL) [>>Next].
Go to Step (2).

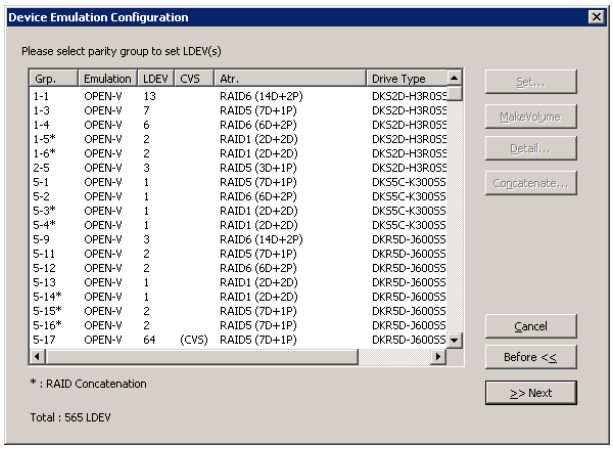


(2)

A parity group can initialize of LDEV in the 'Device Emulation Configuration' window.

Select (CL) a parity group with Volume(s) to be initialized on the 'Device Configuration' window, and press (CL) the [MakeVolume] button. Go to Step (2-1).

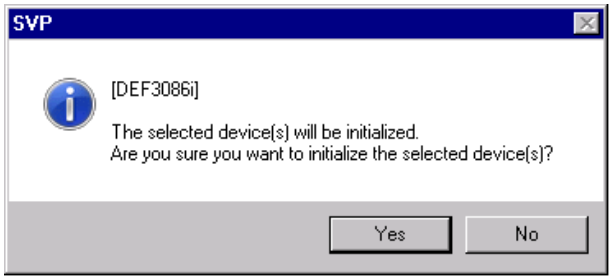
When all the settings are completed, press (CL) [>>Next]. Go to Step (4).



(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.
asst.: A parity group where the Make Volume process cannot be performed because it includes the LDEV in which Path/pool-VOL/the journal volumes is set.

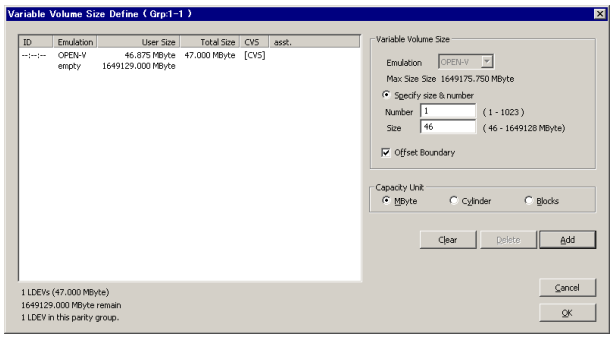
(2-1)

A message, "The selected device(s) will be initialized. Are you sure you want to initialize the selected device(s)?" is displayed. Select (CL) [Yes].



(2-2) Definition of OPEN-V

OPEN-V can be defined in the 'Variable Volume Size Define' window.



- Add of the Volume
  After selecting the "Specify Size & number" in the 'Variable Volume Size Define' window and entering user size and number of volumes to be added, register a volume by selecting (CL) the [Add].
  (It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list.)

The volume that has been registered is displayed in the list box. Only the added volume can be deleted.

- Variable Volume Size
  "Specify size & number" :
  Defines specified number of specified user sizes.
- Offset Boundary :
  The boundary correction existence is specified.

- Capacity Unit
  “MByte” : Makes data displayed or entered by the MByte.
  “Cylinder” : Makes data displayed or entered by the cylinder.
  “Blocks” : Makes data displayed or entered by the Blocks.
- asst. : When Path/pool-VOL/the journal volume is defined, “+” is displayed.

[Clear] : Deletes all the volumes.
[Delete] : Deletes a selected volume.
[Add] : Adds a volume.
[Cancel] : Invalidates the setting and makes the preceding window return. The routine is returned to Step (2).
[OK] : Fixes the setting and makes the preceding window return. The routine is returned to Step (2).

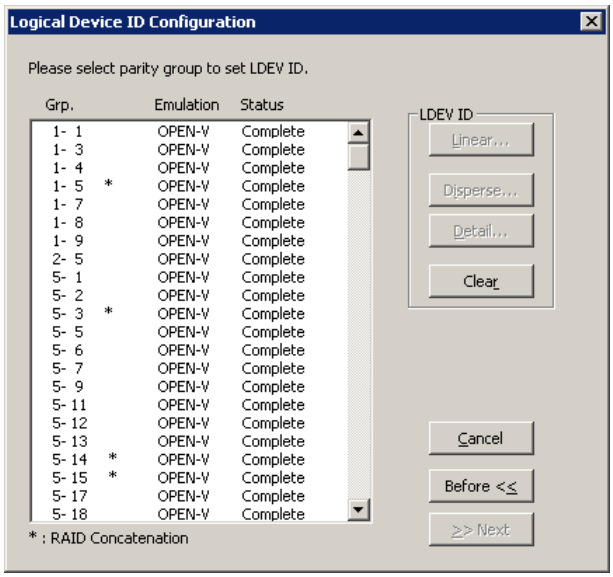
(3)

To return the volume(s) in other parity group(s) to the normal LDEV(s), repeat Step (2). Return to Step (2).

---

(4)

Set LDEV ID(s) for the added LDEV(s). For the parity group having the added LDEV(s), the status which shows the ID allocation is indicated as "-------". Therefore, select (CL) such a parity group.



[Linear...]: LDEV ID is assigned to LDEV in the order of parity group. Go to Step (5).
[Disperse...]:LDEV ID is assigned discretely in the order of parity group. Go to Step (5).
[Detail...]: A screen to define LDEV in detail is displayed. Go to Step (5-1).

Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "-------" : LDEV ID is not assigned.
③ "Error" : Invalid LDEV ID is assigned.

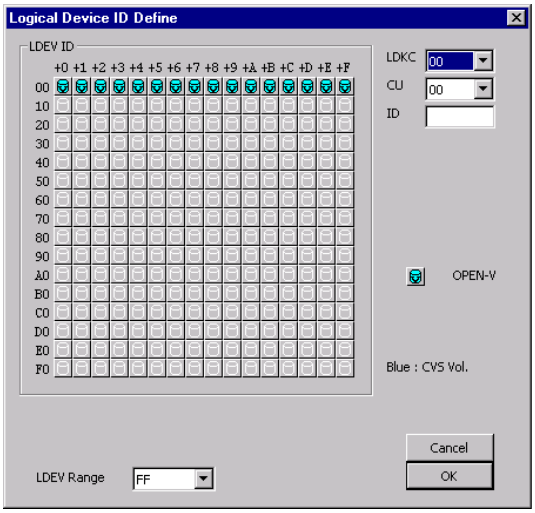
---

(5)

Press (CL) the [Linear...] button and enter an LDEV ID you want to allocate on the "Logical Device ID Define" screen.

Make sure that the entered item is correct and select (CL) [OK]. Go to Step (6).

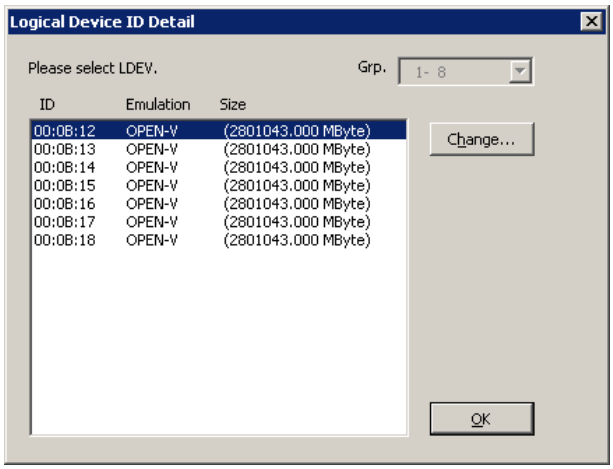
NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



(5-1)

When the [Detail...] is pressed (CL), the 'Logical Device ID Detail' window is displayed. Select an emulation type for which the LDKC, CU and ID status are displayed as "--:--:--" and select (CL) [Change...]. Go to Step (5-2).
When you want to register successive IDs, you can select the two or more emulation types.

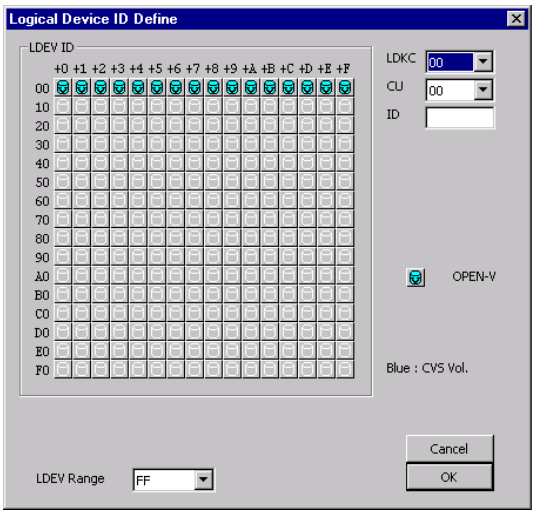
NOTE: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



(5-2)

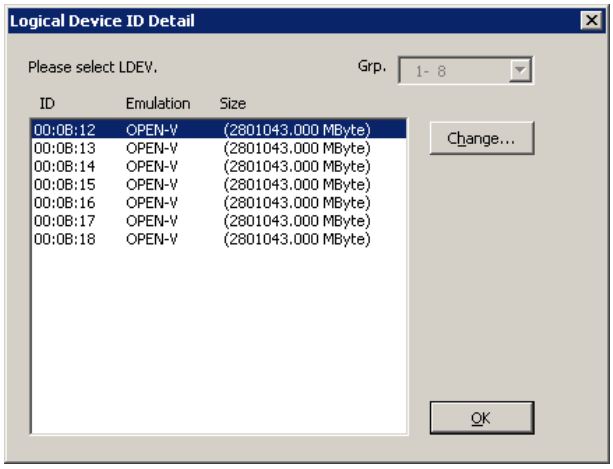
Enter LDKC, a CU and LDEV ID you want to allocate on the 'Logical Device ID Define' window. Then, select (CL) [OK].
Go to Step (5-3).

NOTE: The definition range (terminal) is decided with LDEV Range.
For example, if LDEV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



(5-3)

Make sure that the LDKC(s), CU(s) and ID(s) have been registered.
If there is any emulation type for which the LDKC, CU and ID status are displayed as "--:--:--", return to Step (5-1).
If all the settings have been made, select (CL) [OK]. Go to Step (6).

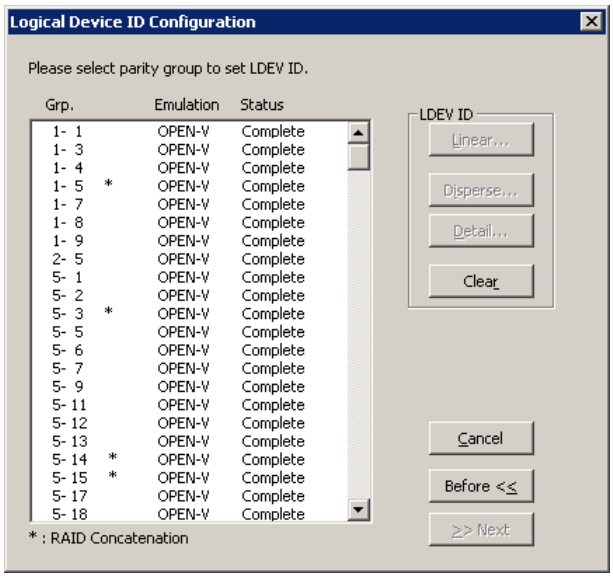


(6)

When the screen is returned to the 'Logical Device ID Configuration' window, the setting result is displayed.

If the status of a parity group shows other than "Complete", return to Step (4).
When all the settings are completed, press (CL) [>>Next]. Go to Step (7).

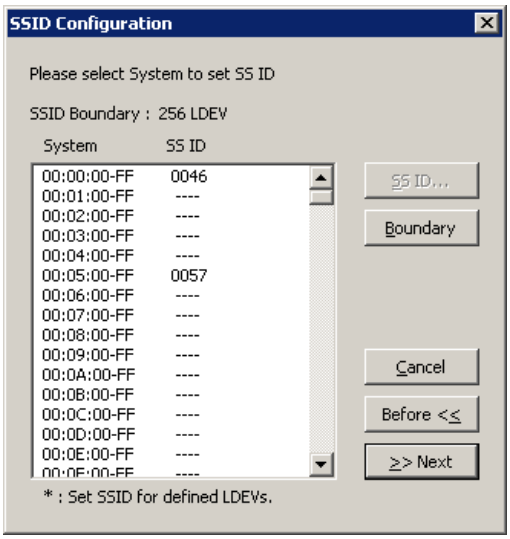
Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "-------" : LDEV ID is not assigned.
③ "Error" : Invalid LDEV ID is assigned.



(7)

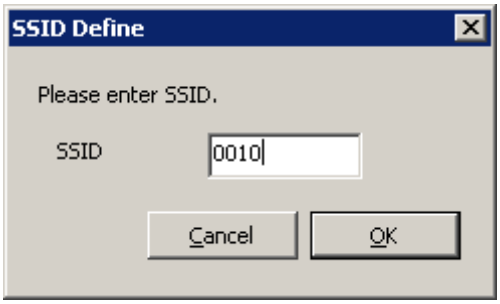
If a new SSID is required as a result of defining an LDEV ID, define the new SSID. Select (CL) a storage system where the SSID is to be newly defined and press (CL) the [SS ID...] button. Go to Step (8).

When no SSID is to be defined, selecting [>>Next]. Go to Step (10).



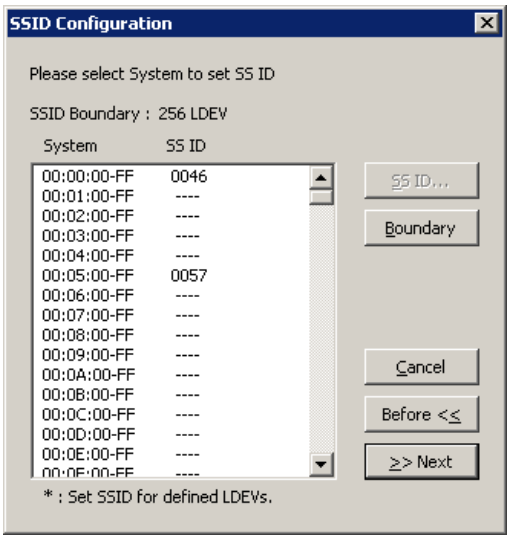
(8)

Enter an SSID on the 'SSID Define' window and select (CL) [OK]. Go to Step (9).



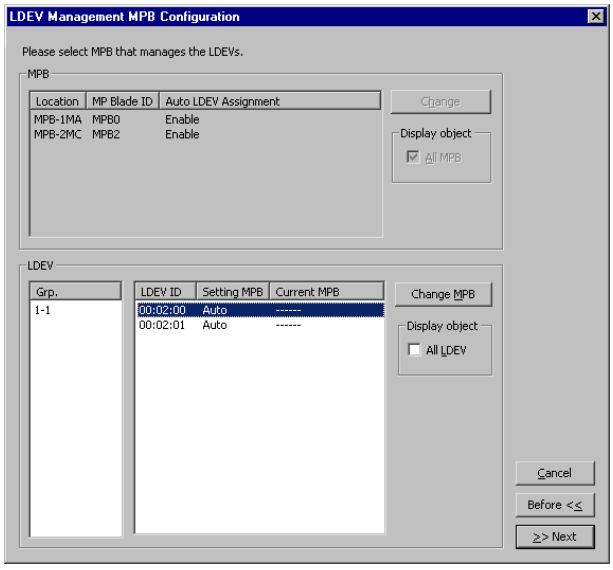
(9)

When the screen is returned to the 'SSID Configuration' window, the registered SS ID is displayed.
Press (CL) the [>>Next] button to quit the definition screen.
Go to Step (10).



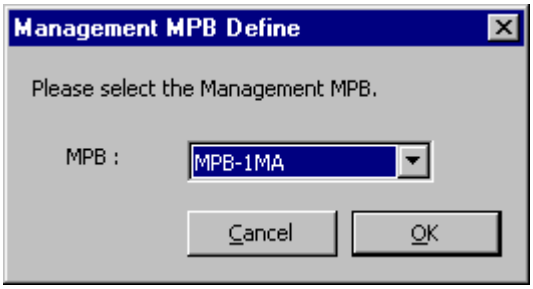
(10)

In the ‘LDEV Management MPB Configuration’ window, select (CL) [Change MPB].
Go to Step (11).



(11)

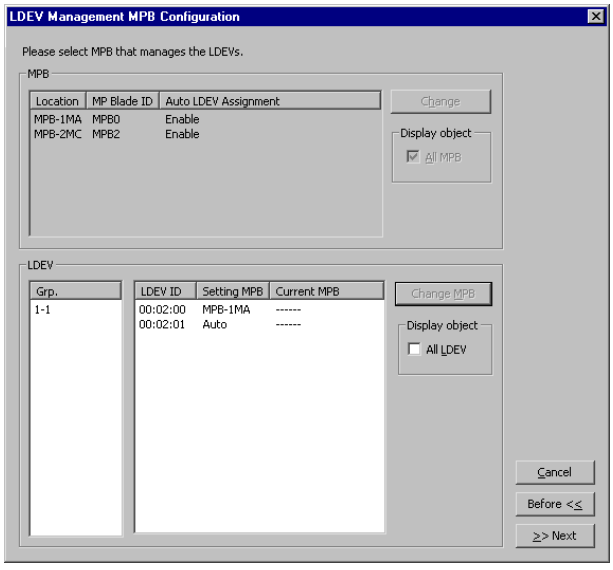
Define Management MPB and select (CL) [OK].
Go to Step (12).



(12)

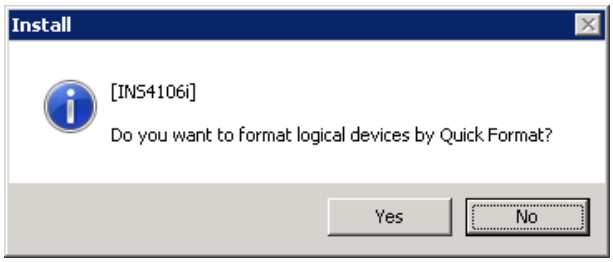
When the screen is returned to the ‘LDEV Management MPB Configuration’ window, the setting result is displayed.

Make sure that the entered item is correct and select (CL) [>>Next]. Go to Step (13).



(13) <Selection of format>

Select (CL) [Yes] in response to “Do you want to format logical devices by Quick Format?” when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



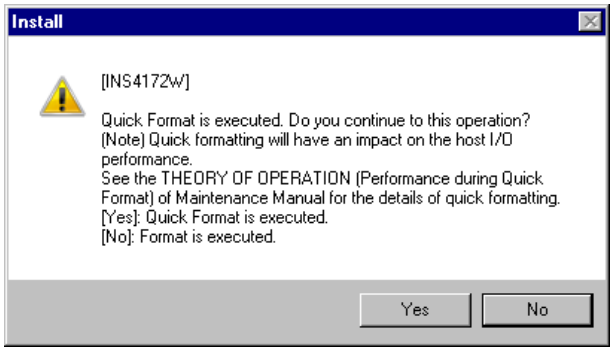
NOTE: Next, Quick Format cannot be executed in the shown volume.

- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes

When [Yes] is selected Go to Step (13-1).
When [No] is selected Go to Step (14).

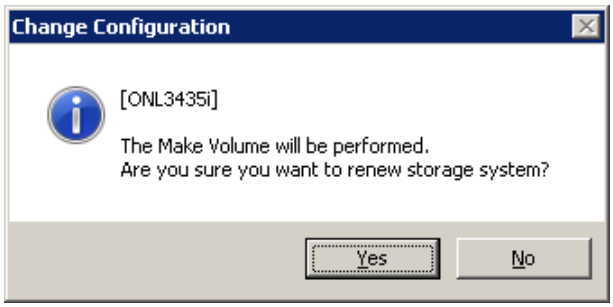
(13-1) <Execution of Quick Format>

For the message “Quick Format is executed. Do you continue to this operation?
(Note) Quick formatting will have an impact on the host I/O performance.
See the THEORY OF OPERATION (Performance during Quick Format) of Maintenance Manual for the details of quick formatting.
[Yes]: Quick Format is executed.
[No]: Format is executed.”, select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.



(14)

Select (CL) [Yes] in response to “The Make Volume will be performed. Are you sure you want to renew storage system?”.



When [No] is selected (CL), returns to INST05-03-10 Step 2.

NOTE: When System Option 503 is set, LDEV Format is not executed and the message “The newly installed LDEV has not been formatted. Please format the newly installed LDEV after the maintenance operation has completed.” is displayed. If [OK] is selected (CL) for this message, it goes to Step (13).

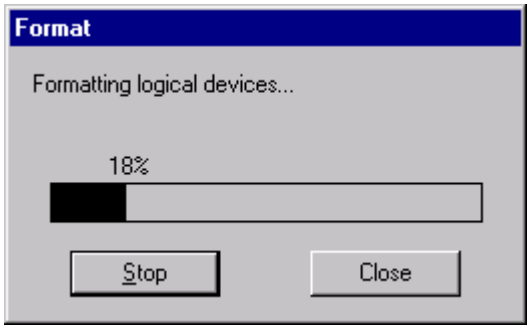
NOTE: On page INST05-03-410 (13-1), it advances to (15-1) when a Quick Format is selected (CL).

---

(15)

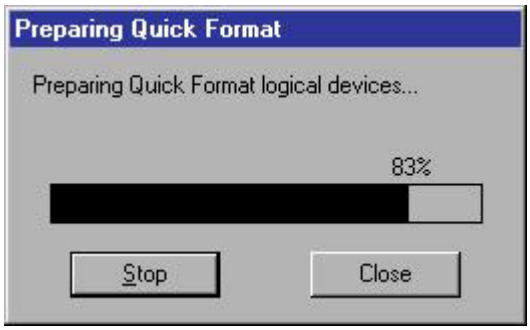
“Formatting logical devices...” is displayed when LDEV Format is necessary.

NOTE: When System Option 269 is set and all LDEVs in ECC Group are other than the format target, SIM = 0x4100XX is not output at the end even.



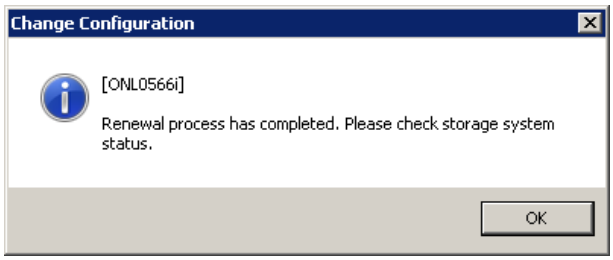
(15-1)

“Preparing Quick Format logical devices...” is displayed.



(16)

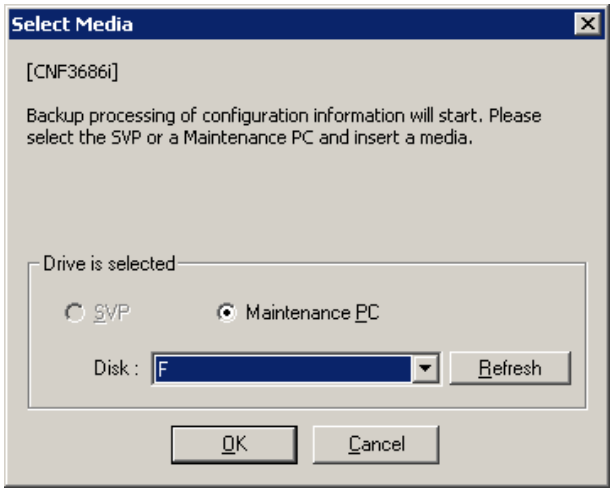
"Renewal process has completed. Please check storage system status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



(17)

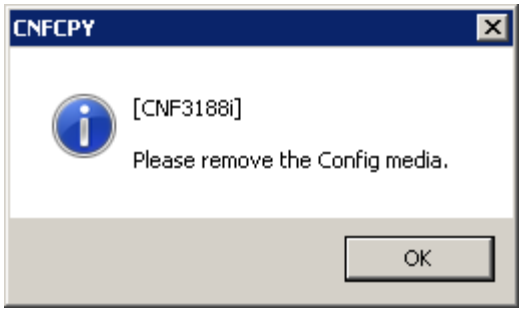
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



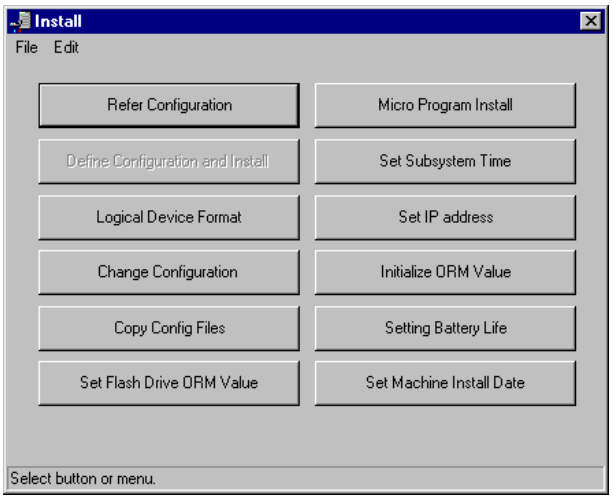
(18)

When this procedure is completed, the message "Please remove the Config media." is displayed. Remove the configuration information media, select (CL) [OK].



(19)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(20)

Change the mode to View Mode.

5.3.1.4 LUN Management

(1) Outline

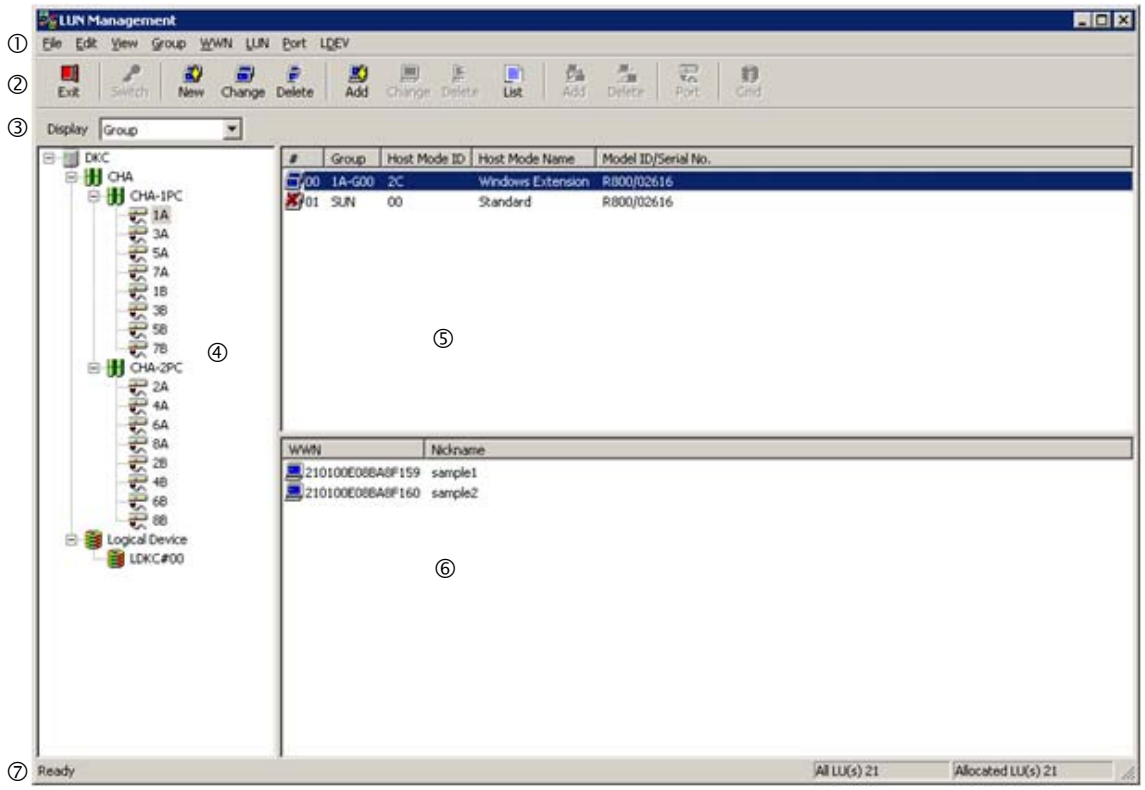


Figure 5.3.1.4-1-1 Main Window

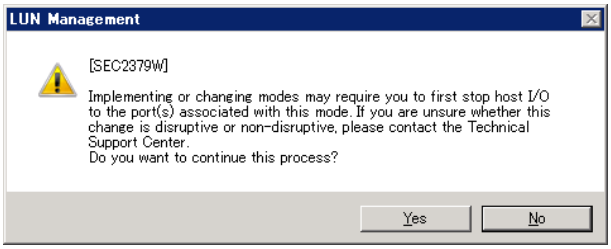
The Main window consists of the following elements.

Table 5.3.1.4-1-1 Outline of Main Window Elements

No.	Item	Description
①	Menu	Menu of items operable by this function.
②	Tool bar	Part of the menu enabled to be operable by buttons.
③	Switch	When “Switch” displayed in the tree view is selected (Port), the status of the switch is selectable. The setting of the groups or LUN is selectable.
④	Tree	The structure that it is conscious of the hardware construction. (A port type is attached to a port.)
⑤	Upper right list	Displays the details of an item selected from the tree.
⑥	Lower right list	Displays the details of an item selected from the upper list, if any.
⑦	Status bar	Displays outlined function of each item on the menu and tool bar when the mouse is positioned on it. Also it displays the all of the LU figures and the LU figures with the pass definition.

NOTE: If the error has occurred by the setting of LUN Management that was started from Change Configuration, refer to "2.3.1 Action When LUN Management Setting on SVP Change Configuration Failed" (TRBL02-240) of the TROUBLE SHOOTING SECTION.

NOTICE: If you change the settings, message asking for a confirmation is displayed. Please confirm the message. Select(CL) [Yes] button, continue this process.



Menu items and their details are shown below.

Table 5.3.1.4-1-2 List of Menu Items

Menu	Submenu	Description	Tool bar
File	Exit	• Closes the window.	 "Exit"
Edit	Copy	• Copies group / WWN / LUN to the clip board.	None
	Paste	• Pastes the information of the clip board.	None
View	Toolbar	• Makes the tool bar displayed or not.	None
	Status Bar	• Makes the status bar displayed or not.	None
	LDEV Size	• Changes the unit of LDEV size to be displayed to MB GB or TB.	None
	LUN Status	• Displays/does not display the LUN status (including the Host reserve status) in the LUN list.	None
Group	New...	• Creates a new group.	 "New"
	Change...	• Changes a group name or adds a member.	 "Change"
	Delete	• Deletes a group.	 "Delete"
	Host Mode	• Refers to the Host Mode and the Host Mode Option.	None
WWN	Add...	• Adds a WWN and its nickname.	 "Add"
	Change...	• Changes a WWN and its nickname.	 "Change"
	Delete	• Deletes a WWN.	 "Delete"
	Login List	The hosts identified by the following WWN login to the DKC. (Only WWN has the deletion function.)	 "List"
LUN	Add...	• Adds a LUN.	 "Add"
	Delete	• Deletes a LUN.	 "Delete"
	Command Device	• Changes command device and command device security information.	 "Cmd"
	Force Reset	• Cancels the Host reserve status of the selected LUN. (When the [View] – [LUN Status] menu cannot be selected, this menu does not exist.)	None

(To be continued)

(Continued from the preceding page)

Menu	Submenu	Description	Tool bar
Port	Parameter...	• Changes a port parameter.	 "Port"
	Security Switch...	• Sets whether to use the security function or not.	 "Switch"
LDEV	Command Device...	• Changes command device and command device security information.	 "Cmd"
	Alternate	• Refers to LUN information from LDEV. Besides, it is possible to eliminate a LUN through the "Alternate" window started.	None

Restriction item

1. LUN and Group Configuration executable check item

Table 5.3.1.4-1-3 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Pair Status
1	Group	Add	—	—
2		Delete	A	—
3	Group Name	Modify	—	—
4	Host Mode	Modify	B	—
5	WWN	Add	—	—
6		Delete	—	—
7		Modify	—	—
8	LUN	Add	—	E
9		Delete	C	D

A: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified group cannot be deleted.

B: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified Host Mode of the group cannot be modified. I/O check (Host I/O) will not be performed on a modification of Host Mode Option.

C: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified LUN cannot be deleted.

D: When the pair volume of TrueCopy/ShadowImage/Thin Image/global-active device (including the reserve volume of ShadowImage) has no LUN by deleting LUN, the specified LUN cannot be deleted.

E: When the volume is a JNL Vol of UR or Quorum disk of global-active device, path addition is not allowed.

2. Port parameter check item

Table 5.3.1.4-1-4 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Remaining pass MCU-RCU	Remaining Copy Volume
1	AL-PA	Modify	A	B	C
2	Topology	Modify	A	B	C
3	Channel Speed	Modify	A	—	—
4	Security Switch	Modify	—	—	—

A: When the LUN in the specified port is reserved by the host or is executing the I/O, the parameter cannot be modified.

B: When the path between MCU and RCU of the TrueCopy/Universal Replicator/global-active device is formed with the port of the CHT, the parameter cannot be modified.

C: When the copy volume of RCU of the TrueCopy/Universal Replicator/global-active device exists in the port, the parameter cannot be modified.

3. Command device check item

Table 5.3.1.4-1-5 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Pair Status	Guard Status
1	Command Device	Set	A	B	D
2		Clear	C	—	—
3	Command Device Security	Set	C	—	—
4		Clear	C	—	—
5	User Authentication	Set	C	—	—
6		Clear	C	—	—
7	Device Group Definition	Set	C	—	—
8		Clear	C	—	—

A: When the LUN to the specified volume is reserved by the host or is executing the I/O, the Command Device cannot be set.

B: When the specified volume is TrueCopy/ShadowImage/global-active device volume, the Command Device cannot be set.

C: R/W has to be stopped when this parameter is modified.

D: A volume with an attribute other than R/W, or VMA setting volume cannot be defined as a command device.

(2) Setting Security Switch

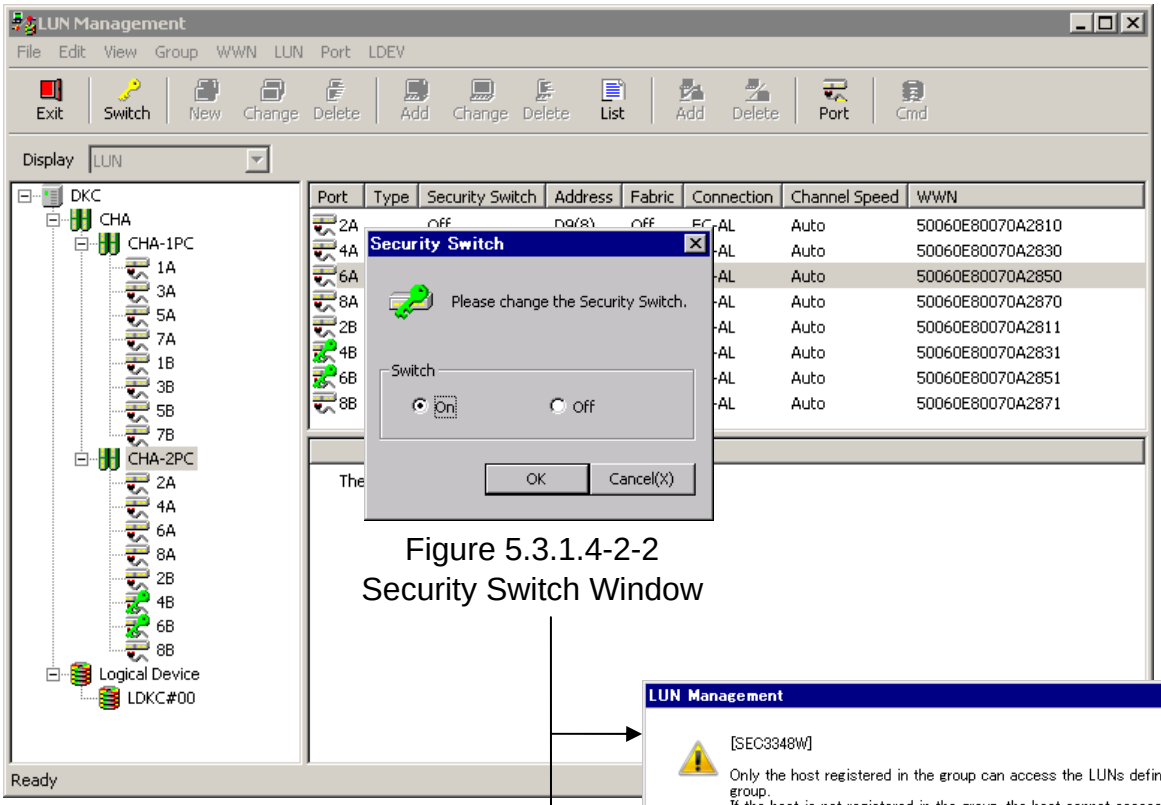


Figure 5.3.1.4-2-1 Main Window

Figure 5.3.1.4-2-2
Security Switch Window

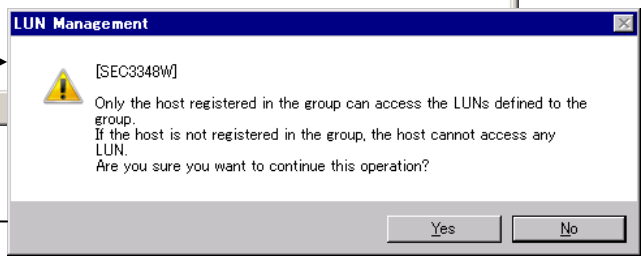


Figure 5.3.1.4-2-3 SEC3348W

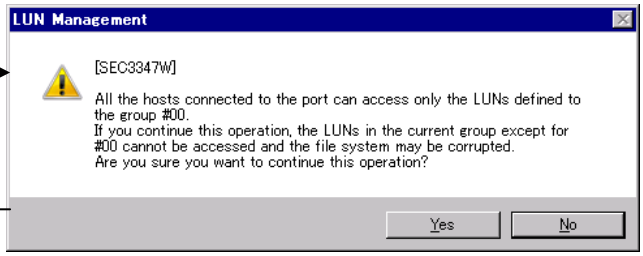


Figure 5.3.1.4-2-4 SEC3347W

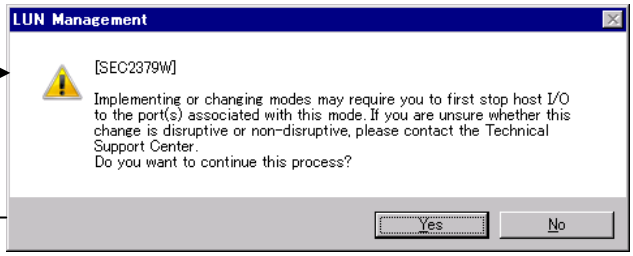


Figure 5.3.1.4-2-5 SEC2379W

When each CHA location in the tree view is selected (CL), installed ports information supported by this function are displayed in the upper right list.

Setting of a Security Switch is made in the following procedure.

① Select (CL) a port for which you want to set the security switch from the upper right list.
② Select (DR) [Security Switch...] from the [Port] menu.
③ Since the Security Switch window (Figure 5.3.1.4-2-2) is displayed, check On or Off box and select (CL) the [OK] button.
When the Security Switch to On, message (Figure 5.3.1.4-2-3) is displayed, select (CL) the [Yes] button.
When the Security Switch to Off, message (Figure 5.3.1.4-2-4) is displayed, select (CL) the [Yes] button.
④ Message (Figure 5.3.1.4-2-5) is displayed, select (CL) the [Yes] button.
⑤ The status of the security switch that has been set is reflected in the Main window (Figure 5.3.1.4-2-1).

Details of the Main window (Figure 5.3.1.4-2-1) and the Security Switch window (Figure 5.3.1.4-2-2) are shown on the following page.

Table 5.3.1.4-2-1 Details and Operation of Main Window (Switch)

Item	Description
Upper list	Displays statuses of the security switches that have been set.
	Provided with a sorting function.
Lower list	Displays nothing.
“Port - Security Switch...” menu	Selectable when an item has been selected from the upper list. Displays the Security Switch window.
Pop-up menu	Enables a clicking of the right mouse button to select “Security Switch” provided that an item has been selected from the upper list.

Table 5.3.1.4-2-2 Details and Operation of Security Switch Window

Item	Description
On/Off radio button	Displays a status setting of the Security Switch that has been selected in the Main window. (If On and Off of the switch have been selected in the Main window, the radio buttons of ON and OFF are not selected in this window, and [OK] button cannot be selected.)
OK button	Closes the window after reflecting the setting that has been made.
	Not selectable when neither of the statuses has been selected.
Cancel button	Closes the window without reflecting the setting that has been made.

(3) Setting Group

(3-1) Adding Group

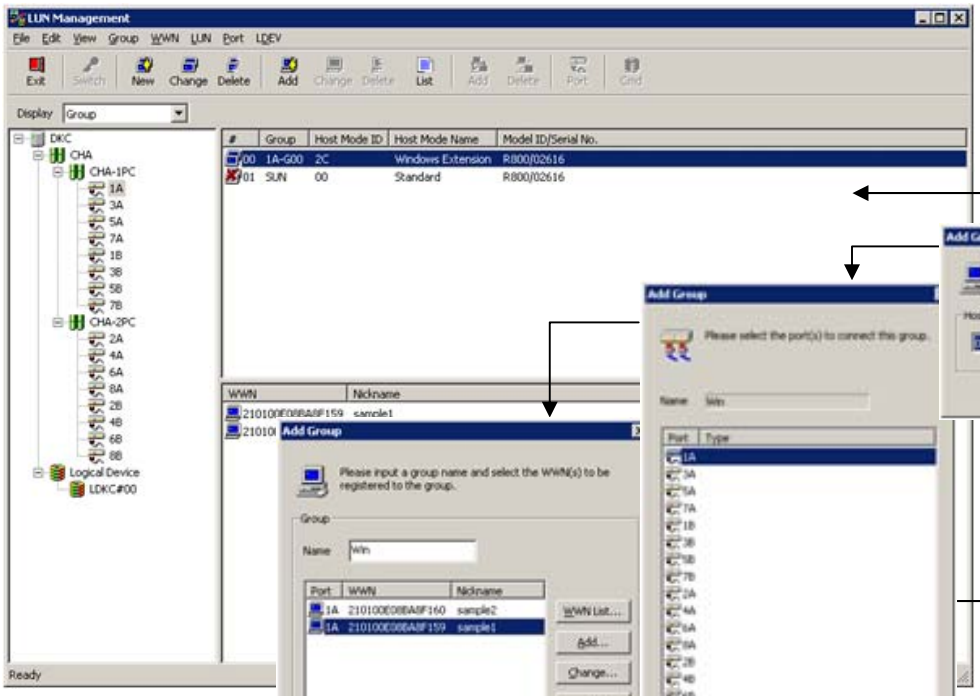


Figure 5.3.1.4-3-1
Main Window

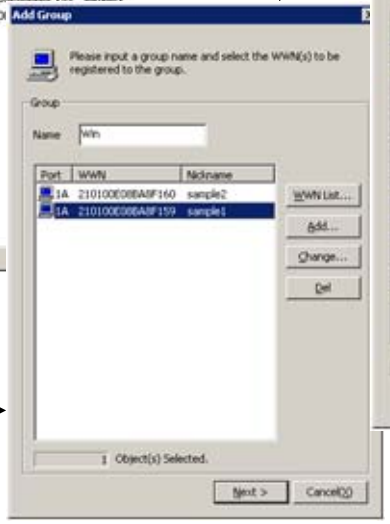


Figure 5.3.1.4-3-2
Add Group Window

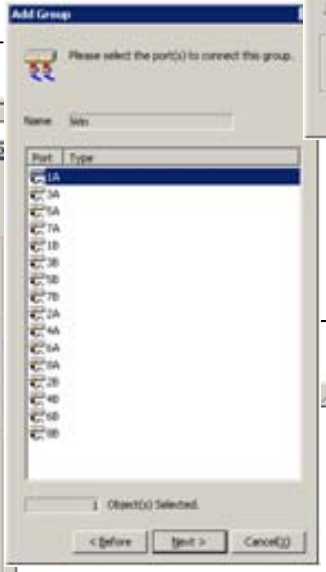


Figure 5.3.1.4-3-3
Port Selection Window

Figure 5.3.1.4-3-4
Host Mode
Selection Window

Figure 5.3.1.4-3-6
Add WWN Window

Figure 5.3.1.4-3-5 Add WWN List Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list.

Addition of a group is done in the following procedure.

① Select (DR) [New...] from the [Group] menu in the Main window (Figure 5.3.1.4-3-1).
② Since the Add Group window (Figure 5.3.1.4-3-2) is displayed, enter a group name.
③ Register a WWN, and select (CL) the [Next>] button.
   a) If you select the [WWN List...] button.
      Since the Add WWN List window (Figure 5.3.1.4-3-5) is displayed, select (CL) a WWN in the list, and select (CL) the [OK] button.
   b) If you select the [Add...] button.
      Since the Add WWN window (Figure 5.3.1.4-3-6) is displayed, input WWN and Nickname, and select (CL) the [OK] button.
④ Since the Port Selection window (Figure 5.3.1.4-3-3) is displayed, select (CL) a port for connecting a new group and select (CL) the [Next>] button.
⑤ Set a host mode for the new group in the Host Mode Selection window (Figure 5.3.1.4-3-4). If you need to select an Option, see INST05-03-630 and set the bit, and then select (CL) the [OK] button.
⑥ Information on the group that has been newly registered is reflected in the Main window (Figure 5.3.1.4-3-1).

Details of the Main window (Figure 5.3.1.4-3-1) and the other windows are shown on the following page.

Table 5.3.1.4-3-1 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
“Group - New...” menu	Selectable when “Port” has been selected from the tree.
	Displays the Add Group window.
Pop-up menu	Makes the “New” menu selectable when the right mouse button is clicked in the upper list.

Table 5.3.1.4-3-2 Details and Operation of Add Group Window

Item	Description
Name	Enter a name of a group to be added in this box (using up to 64 characters).
List	Displays a list of WWNs to be registered.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
Next button	Closes the window and activates a window for selecting a port to which the group concerned is to be connected.
Cancel button	Returns the window to the main window without doing anything.

Table 5.3.1.4-3-3 Details and Operation of Port Selection Window

Item	Description
Name	Displays the group name that has been entered in the preceding window.
List	To be used for selecting a port to be connected.
Before button	Returns you to the preceding window.
Next button	Closes the window and activates a window for selecting a host mode for the group concerned.
Cancel button	Returns you to the Main window without doing anything.

Table 5.3.1.4-3-4 Details and Operation of Host Mode Window

Item	Description
Host Mode	Displays host modes that can be set. If System Option 847 is ON, “Reserve” are displayed and selectable.
Before button	Returns you to the preceding window.
OK button	Closes the window after registering the group and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.
Option button	When this button is set to On, setting of the options from 0 to 127 becomes possible. When the Host Mode is changed, the setting of the option is cleared.

(3-2) Changing Group

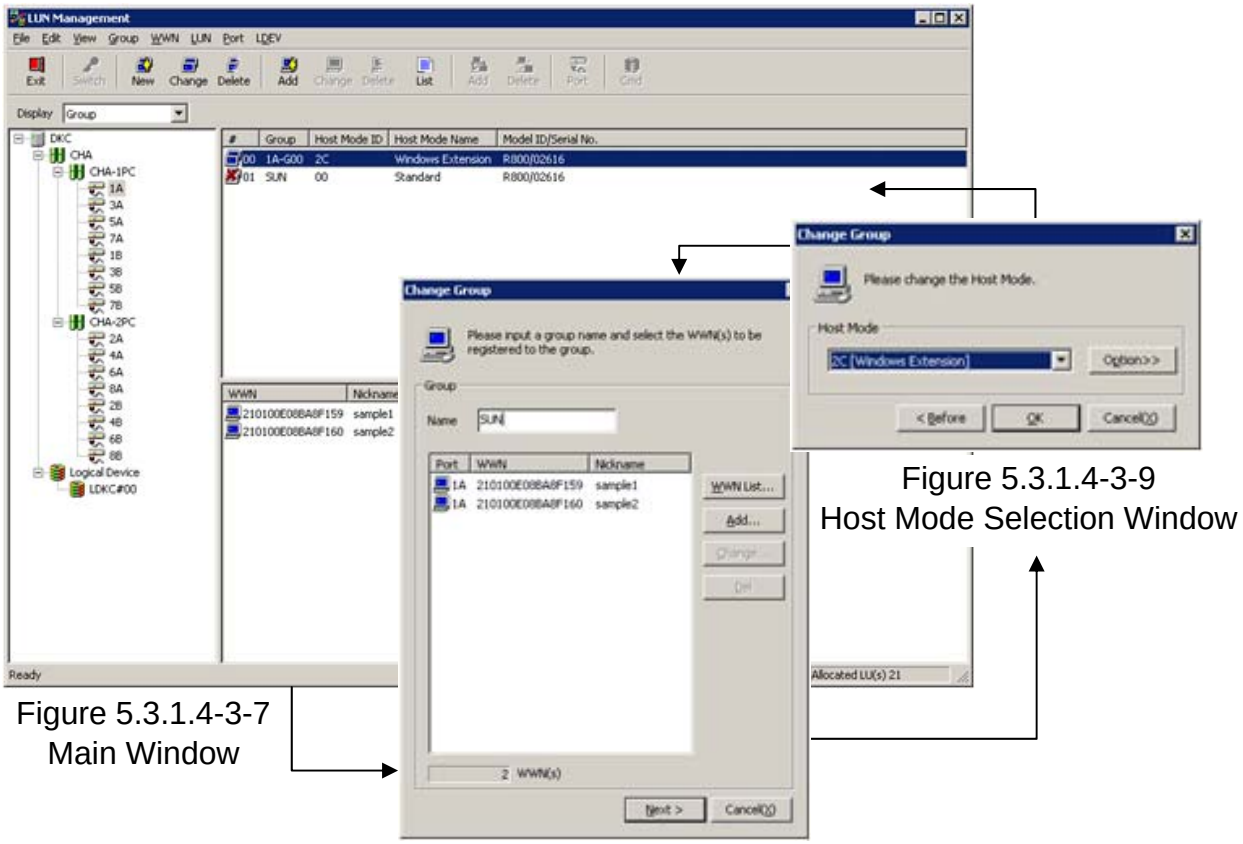


Figure 5.3.1.4-3-9
Host Mode Selection Window

Figure 5.3.1.4-3-7
Main Window

Figure 5.3.1.4-3-8 Change Group Window

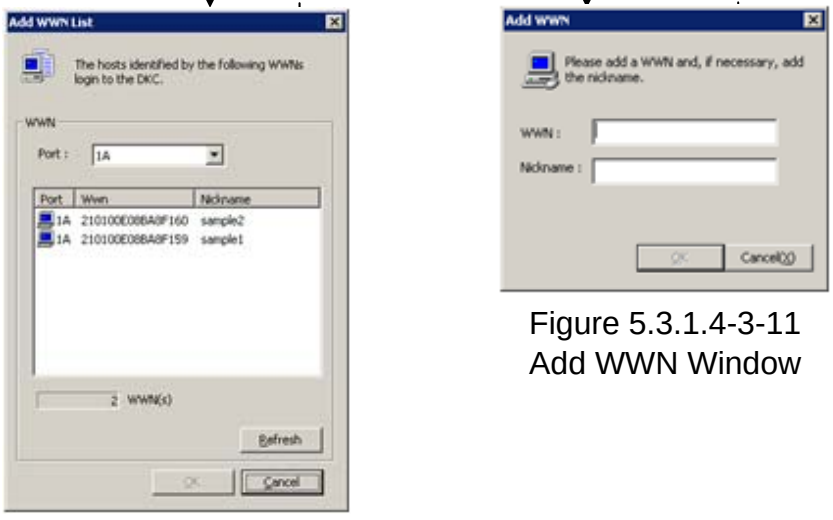


Figure 5.3.1.4-3-11
Add WWN Window

Figure 5.3.1.4-3-10 Add WWN List Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

A change of a group is made in the following procedure.

① Select (CL) one group you want to change from the upper right list.
② Select (DR) [Change...] from the [Group] menu in the Main window (Figure 5.3.1.4-3-7).
③ Since the Change Group window (Figure 5.3.1.4-3-8) is displayed, change the group name.
④ Register a WWN, and select (CL) the [Next>] button.
   a) If you select the [WWN List...] button.
      Since the Add WWN List window (Figure 5.3.1.4-3-10) is displayed, select (CL) a WWN in the list, and select (CL) the [OK] button.
   b) If you select the [Add...] button.
      Since the Add WWN window (Figure 5.3.1.4-3-11) is displayed, input WWN and Nickname, and select (CL) the [OK] button.
⑤ Set a host mode for the group to be changed in the Host Mode Selection window (Figure 5.3.1.4-3-9). If you need to select an Option, see INST05-03-630 and set the bit, and then select (CL) the [OK] button.
⑥ Information on the group that has been changed is reflected in the Main window (Figure 5.3.1.4-3-7).

In case of changing the group against the port of the Security Switch off, the Change Group window (Figure 5.3.1.4-3-8) is not displayed.

Details of the Main window (Figure 5.3.1.4-3-7) and the other windows are shown on the following page.

Table 5.3.1.4-3-5 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“Group - Change...” menu	Selectable when a single group has been selected from the upper list.
	Displays the Change Group window.
Pop-up menu	Makes the “Change” menu selectable when a single group is selected from the upper list and the right mouse button is clicked there.

Table 5.3.1.4-3-6 Details and Operation of Change Group Window

Item	Description
Name	Enter a name of a group to be added in this box (using up to 64 characters).
List	Displays a list of WWNs to be registered.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
Next button	Closes the window and activates a window for selecting a port to which the group concerned is to be connected.
Cancel button	Returns the window to the main window without doing anything.

Table 5.3.1.4-3-7 Details and Operation of Host Mode Selection Window

Item	Description
Host Mode	Displays host modes that can be set. If System Option 847 is ON, “Reserve” are displayed and selectable.
Before button	Returns you to the preceding window.
OK button	Closes the window after changing the group and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.
Option button	When this button is set to On, setting of the options from 0 to 127 becomes possible. When the Host Mode is changed, the setting of the option is cleared.

(3-3) Deleting Group

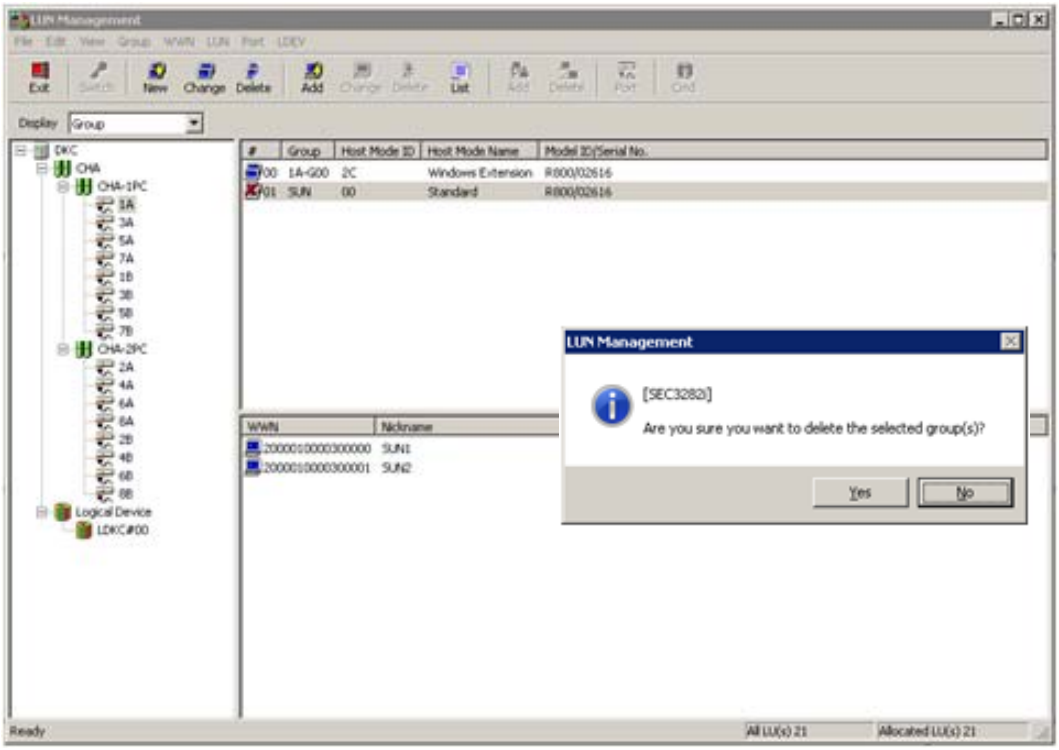


Figure 5.3.1.4-3-12 Main Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a group is done in the following procedure.

① Select (CL) a group you want to delete from the upper right list.
② Select (DR) [Delete] from the [Group] menu in the Main window (Figure 5.3.1.4-3-12).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ Information on the group that has been selected from the upper right list is deleted. Moreover, the details of the group information (WWN/LUN) is also deleted.

Table 5.3.1.4-3-8 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“Group - Delete” tool bar	Selectable when a group has been selected from the upper list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays “Delete” menu when the right mouse button is clicked on the item in the upper list.

(3-4) Set and Change Host Mode Options

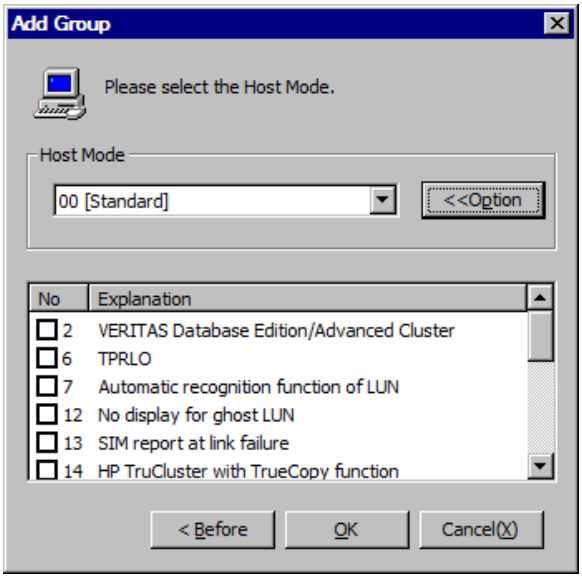


Figure 5.3.1.4-3-13
Host Mode Option window

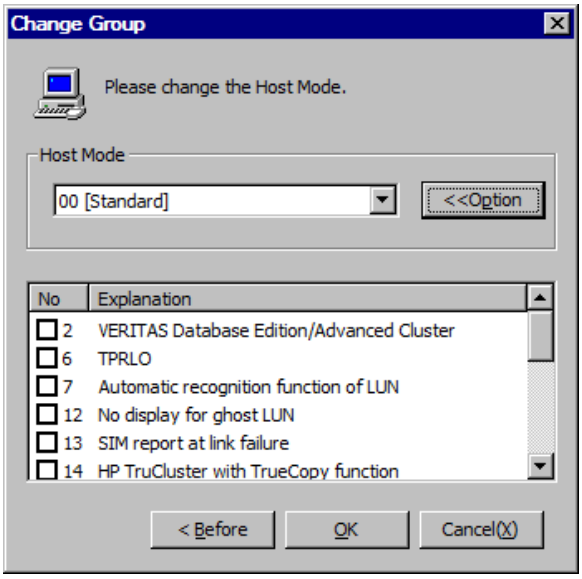


Figure 5.3.1.4-3-14
Host Mode Option window

When adding a new group, set options in the window shown in Figure 5.3.1.4-3-13. When changing a group, set options in the window shown in Figure 5.3.1.4-3-14.
Do not set the check mark to the numbers other than the host mode option in Table 5.3.1.4-3-9.
If System Option 847 is ON, “Reserved” are displayed and selectable.

Table 5.3.1.4-3-9 Names and details of bits for Host Mode Options

Host Mode Option	Feature	Scope	Affected Host Mode	Criteria for Application (*1)
2	For Veritas VCS	Apply this when Veritas DBE/AC for RAC and VCS4.0 or later (I/O Fencing feature) are used.	Common	Mandatory
6	For Windows TPRLO	The Emulex FC adapter is used with SCSI Miniport driver on windows. And the driver parameter is set that TPRLO=2.	0C, 2C	Mandatory
7	For automatic device discovery when adding LUN	Apply this for SUN StorEdge SAN Foundation Software Version 4.2 or later. It makes the host to recognize the increase and decrease of the devices automatically when a SUN generic HBA is connected.	00, 09	Option
12	For deleting Ghost LUN when HP-UX is connected	Apply this when you want to prevent unmounted devices from creating device files in case where HP-UX is connected.	03, 08 (*2)	Option
13	For reporting SIM when a link failure occurs	It reports SIM when a link failure occurs. However, do not set this unless instructed.	Common	Cannot be set (*3)
14	For HP TruCluster	Apply this when you want to use TruCluster to set a cluster to each of P-VOL and S-VOL for TrueCopy or Universal Replicator.	07	Mandatory
15	For HACMP	Apply this when HACMP are used. HACMP5.1 Version 5.1.0.4 or later/ HACMP4.5 Version 4.5.0.13 or later/ HACMP5.2 or later.	0F	Mandatory
22	For Veritas Cluster Server	Apply this when Veritas Cluster Server are used.	0F	Mandatory
23	REC command support	It is applied when shortening the host recovery time at the time of the data transfer failure.	Common	Cannot be set (*3)
33	For a nickname of the device with HP-UX hosts	Apply this when you want to enable commands to assign a nickname of the device with hosts, or to set UUID to identify a logical volume from host.	03, 08 (*2) 05 (*4) (*5)	Option
39	Change the nexus specified in the SCSI Target Reset	This option is used to reset a job and return UA to all the initiators connected to the host group when Target Reset is received.	Common	Option

(To be continued)

(Continued from the preceding page)

Host Mode Option	Feature	Scope	Affected Host Mode	Criteria for Application (*1)
40	V-VOL expansion	When all the following conditions are satisfied: • The host mode 0C Windows or 2C Windows Extension is used. • You want to automate recognition of the DP-VOL capacity after increasing the DP-VOL capacity.	0C, 2C	Option
41	Prioritized device recognition command	When you want to execute commands to recognize the device preferentially.	Common	Option
43	Queue Full Response	When you want to make your VSP G1000 storage system return a “queue full” response (not “busy” response) to HP-UX when the command queue is full.	Common	Option
49	BB Credit Setup Option1	When you hope for the TrueCopy/ global-active device performance gain by BB Credit virtualization, use by combining with Host Mode Option 50.	Common (*6) (*7)	Option
50	BB Credit Setup Option2	When you hope for the TrueCopy/ global-active device performance gain by BB Credit virtualization, use by combining with Host Mode Option 49.	Common (*6) (*7)	Option
51	Round Trip Setup Option	When you hope for the TrueCopy/ global-active device performance gain by Round Trip function.	Common (*7)	Option
54	(VAAI) Support option for the EXTENDED COPY command (*8)	Apply this for VMware ESX/ESXi 4.1 with VAAI function. Change the behavior of the EXTENDED COPY command that conforms to SCSI-4 so that the command corresponds to VMware ESX Server.	Common	Mandatory
60	LUN0 Change Guard	• When HP-UX Version 11.31 is used. • When you want to guard adding or deleting LUN0.	Common	Option

(To be continued)

(Continued from the preceding page)

Host Mode Option	Feature	Scope	Affected Host Mode	Criteria for Application (*1)
63	(VAAI) Support option for vStorage APIs based on T10 standards (*9)	Apply this for VMware ESXi 5.0 or later with VAAI function based on T10 standards.	Common	Option
67	Change of the ED_TOV value	When you want to change ED_TOV value on the target port which is direct connection of Fabric = OFF and FC-AL, this is applied.	Common	Mandatory
68	Support Page Reclamation for Linux	Apply this option when using page reclamation function for Linux.	Common	Option
71	Change the Unit Attention for Blocked pool-VOLs	Apply this option for changing sense key from NOT READY to MEDIUM ERROR when a pool-VOL is blocked.	Common	Option
72	AIX GPFS Support	Apply this option when you use AIX with General Parallel File System (GPFS).	Common	Option
73	Support Option for WS2012	Apply this option when using thin provisioning function or Offload Data Transfer function for Windows Server 2012 (WS2012).	Common	Option
78	The non-preferred path option	In the case that GAD is used in an HDLM environment, apply this option for a host group of a cross path only, to avoid degradation of response performance caused by Round Trip without I/O activities on the cross path when constructing the configuration between datacenters (Metro).	Common	Mandatory

*1: Set the option when the configuration satisfies the description in Scope.

*2: In the XP7 series, it is enabled by Host Mode 08. In other models, it is enabled only by Host Mode 03.

*3: Set this only when you are requested to do so.

NOTE: To obtain the latest detailed information including minimal microcode levels and any restrictions associated with these modes please acquire the latest copy of the Mode List from your support organization's database or contact the support organization directly.

*4: Please reboot OpenVMS when you make Host Mode Option No.33 from turning on to turning off.

*5: Please allocate UUID in all LU when you make Host Mode Option No.33 from turning off to turning on, and reboot OpenVMS.

*6: Please set both Host Mode Option No.49 and No.50 to use TrueCopy performance gain by BB Credit.

*7: Host Mode Option No.49, No.50, and No.51 are applicable to only 8FC16/16FC8.

*8: XCOPY command that copies from one DKC to another DKC does not supported. Therefore, turn off Host Mode Option 54 when you operate the cloning or Storage vMotion between multiple DKCs with the ESX host.

*9: XCOPY command that copies from one DKC to another DKC does not supported. Therefore, turn off Host Mode Option 63 when you operate the cloning or Storage vMotion between multiple DKCs with the ESX host.

(4) Setting WWN

(4-1) Adding WWN

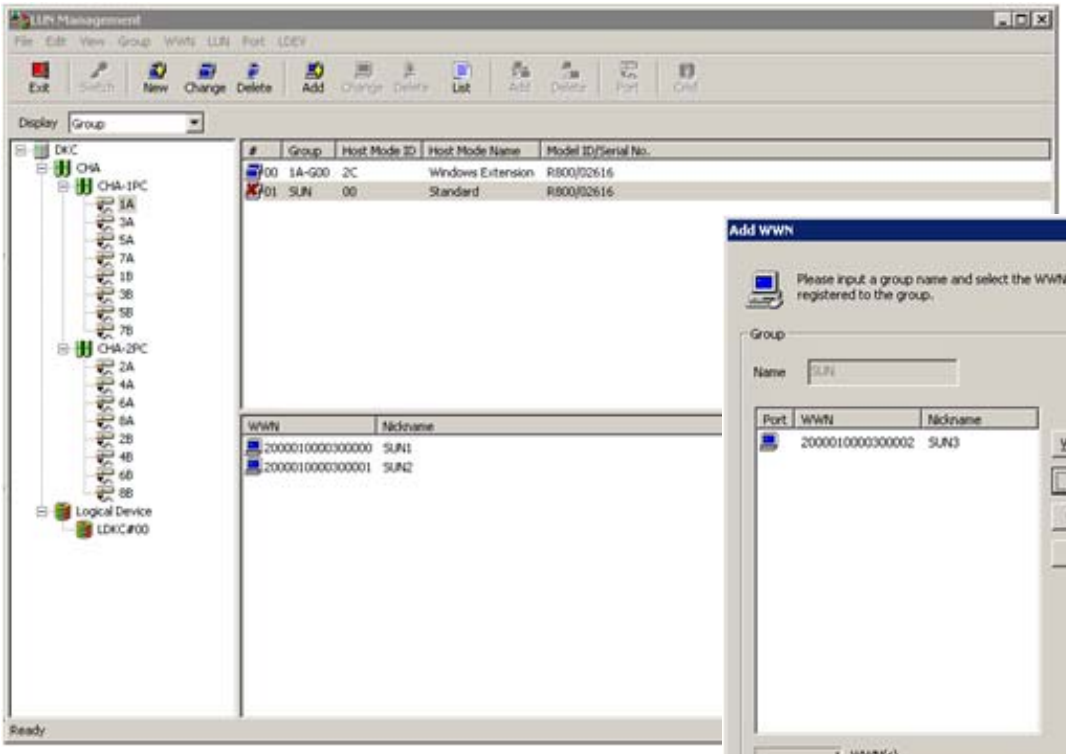


Figure 5.3.1.4-4-1 Main window

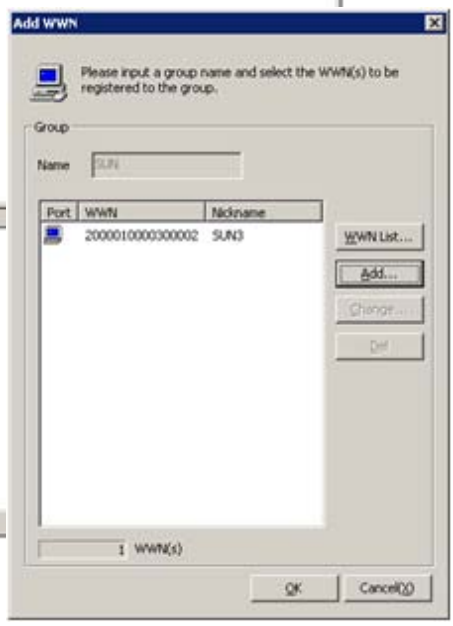


Figure 5.3.1.4-4-2
Add WWN Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Addition of a WWN is made in the following procedure.

① Select (CL) a group to which you want to add a WWN from the upper right list.
② Select (DR) [Add...] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-1).
③ Since the ‘Add WWN’ window (Figure 5.3.1.4-4-2) is displayed, select(CL) “WWN” registering from the list, and select (CL) the [OK] button.
④ The WWN that has been newly added is reflected in the lower right list.

Details of the Main Window (Figure 5.3.1.4-4-1) and the other windows are shown on the following page.

Table 5.3.1.4-4-1 Details and Operation of Main Window (WWN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list.(Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN – Add...” menu	Selectable when a single group has been selected from the upper list.
	Displays the Add WWN window.
Pop-up menu	Displays the “Add” menu when the right mouse button is clicked in the lower list.

Table 5.3.1.4-4-2 Detail and Operation of Add WWN Registration Window

Item	Description
Name	Displays a group name. (The name is not allowed to be changed.)
List	Displays a list of WWNs to be added. (WWNs that have been registered are not displayed.)
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
OK button	Registers a WWN that has been added and you return to the Main window.
Cancel button	Returns the window to the main window without doing anything.

(4-2) Changing WWN

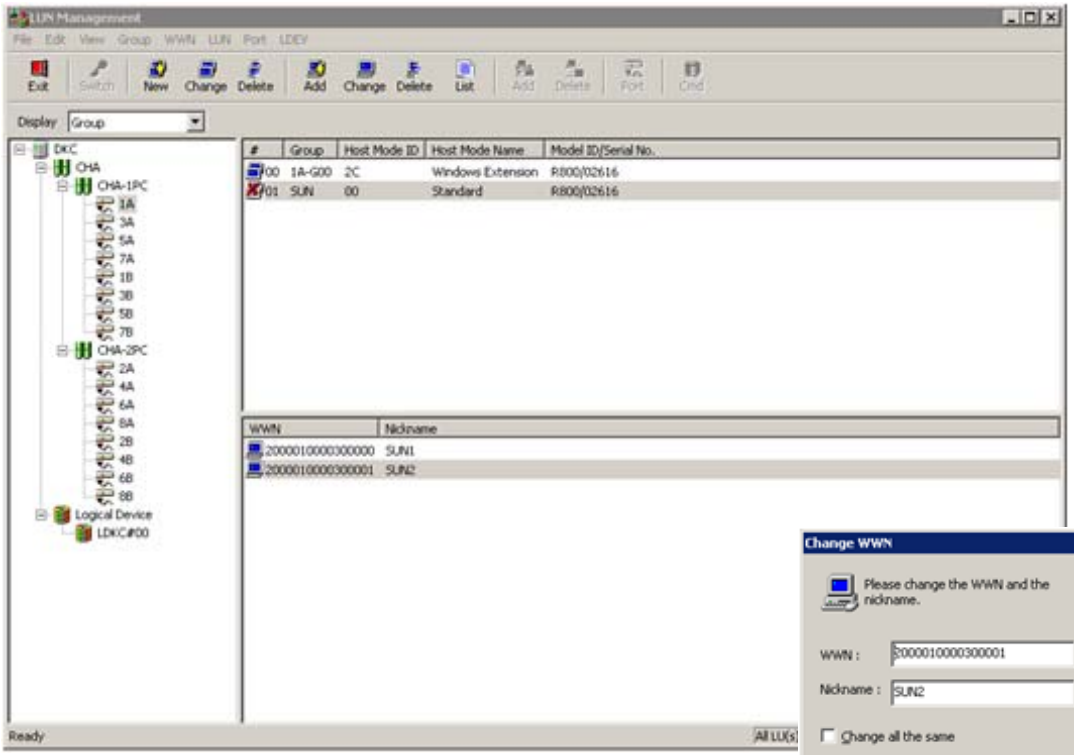


Figure 5.3.1.4-4-3 Main Window

Figure 5.3.1.4-4-4
Change WWN Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

A change of a WWN is made in the following procedure.
① Select (CL) one WWN you want to change from the lower right list.
② Select (DR) [Change...] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-3).
③ Since the ‘Change WWN’ window (Figure 5.3.1.4-4-4) is displayed, change the “WWN” and its “Nickname”, and select (CL) the [OK] button.
④ The WWN that has been changed is reflected in the lower right list.

Details of the Main Window (Figure 5.3.1.4-4-3) and the other windows are shown on the following page.

Table 5.3.1.4-4-3 Details and Operation of Main Window (WWN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN - Change...” menu	Selectable when a single group has been selected from the lower list.
	Displays the Change WWN window.
Pop-up menu	Displays the “Change” menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-4-4 Details and Operation of Change WWN Window

Item	Description
WWN	To be used for entering a WWN (16 hexadecimal digits).
Nickname	Used for entering a nickname (up to 64 characters).
Change all the same button	In case of checking it, the change should be executed for the same WWN including in the group of the other ports.
OK button	Selectable only when the WWN has been entered correctly.
	Closes the window after registering the WWN and nickname, and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.

(4-3) Deleting WWN

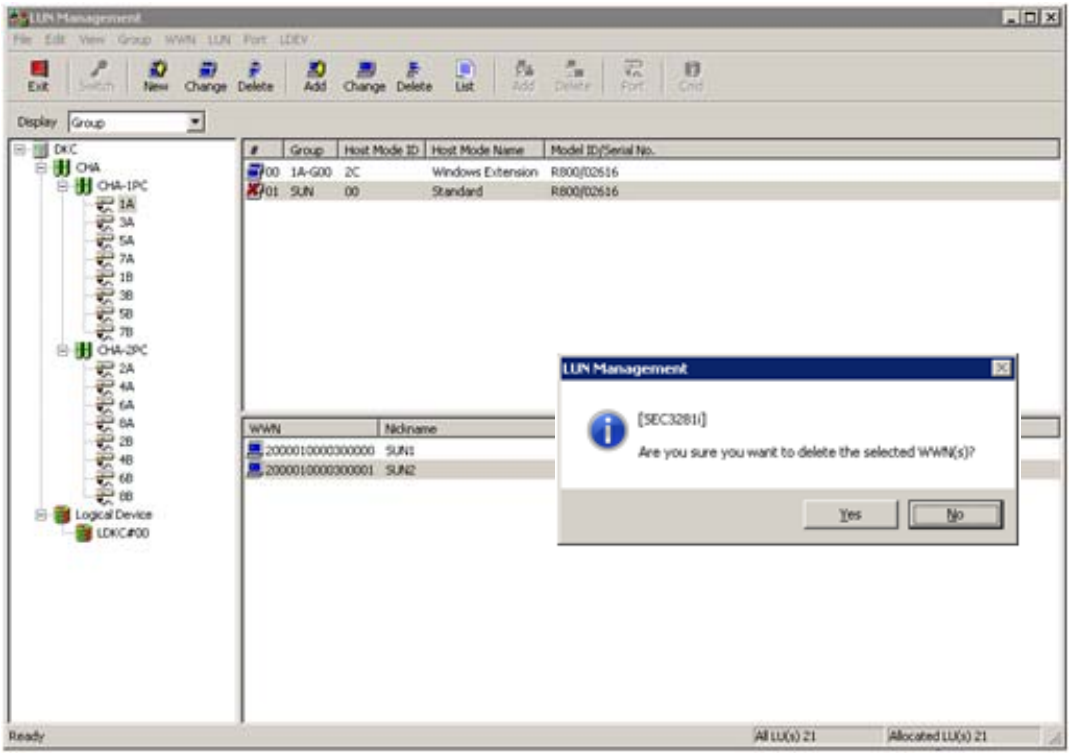


Figure 5.3.1.4-4-5 Main Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a WWN is done in the following procedure.
① Select (CL) a WWN you want to delete from the lower right list.
② Select (DR) [Delete] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-5).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ The WWN that has been selected from the lower right list is deleted.

Table 5.3.1.4-4-5 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN - Delete” menu	Selectable when a WWN has been selected from the lower list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays “Delete” menu when the right mouse button is clicked on the item in the upper list.

(4-4) Deleting WWN of the host linked DKC

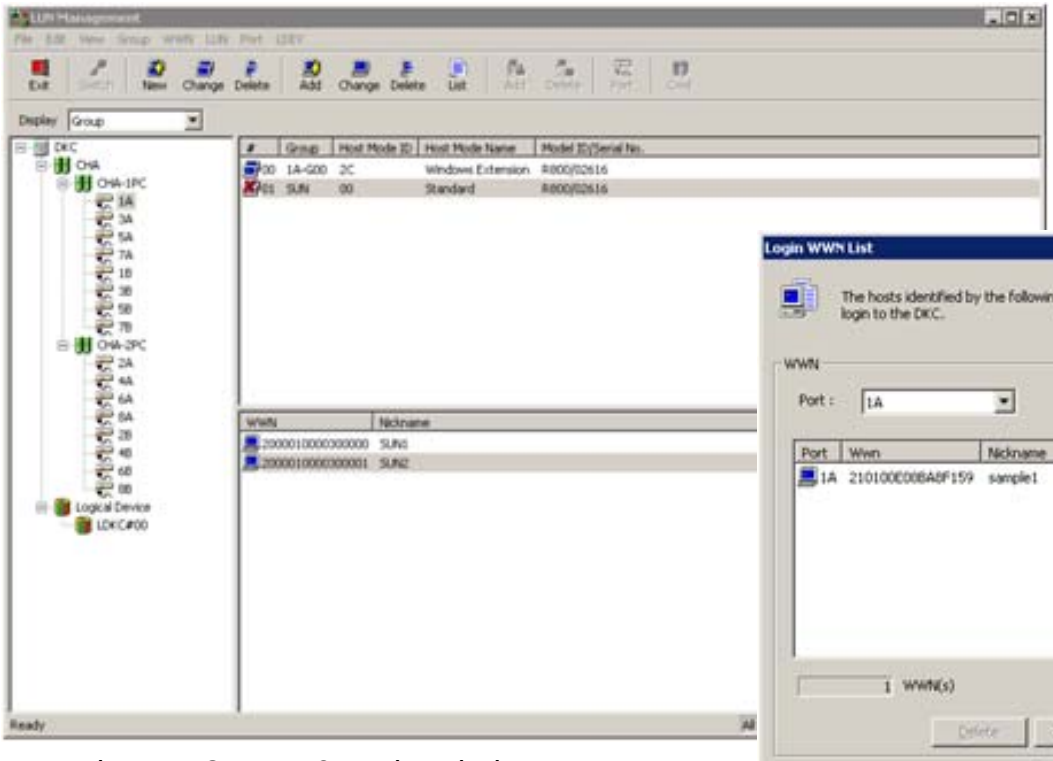


Figure 5.3.1.4-4-6 Main Window

Figure 5.3.1.4-4-7
Login WWN List Window

Deletion of a WWN of the host linked to DKC is done in the following procedure.

① Select (DR) [Login List] from the [WWN] menu in the Main Window (Figure 5.3.1.4-4-6).
② Select (CL) the [Refresh] button on the 'Login WWN List' window (Figure 5.3.1.4-4-7) to refresh the WWN list.
③ Since the 'Login WWN List' window (Figure 5.3.1.4-4-7) is displayed, selected (CL) the WWNs and select (CL) the [Delete] button.
④ Select (CL) the [Close] button is close window returns you to the Main Window.

Table 5.3.1.4-4-6 Details and Operation Login WWN List window

Item	Description
Port	Specifies a port of the WWN to be displayed in the list. When "All Port" is selected, all WWNs in the list are displayed.
List	Displays a WWN list.
Delete button	Deletes a selected WWN.
Refresh button	Redraws the list.
Close button	Returns you the Main window.

(5) Setting LUN

(5-1) Adding LUN

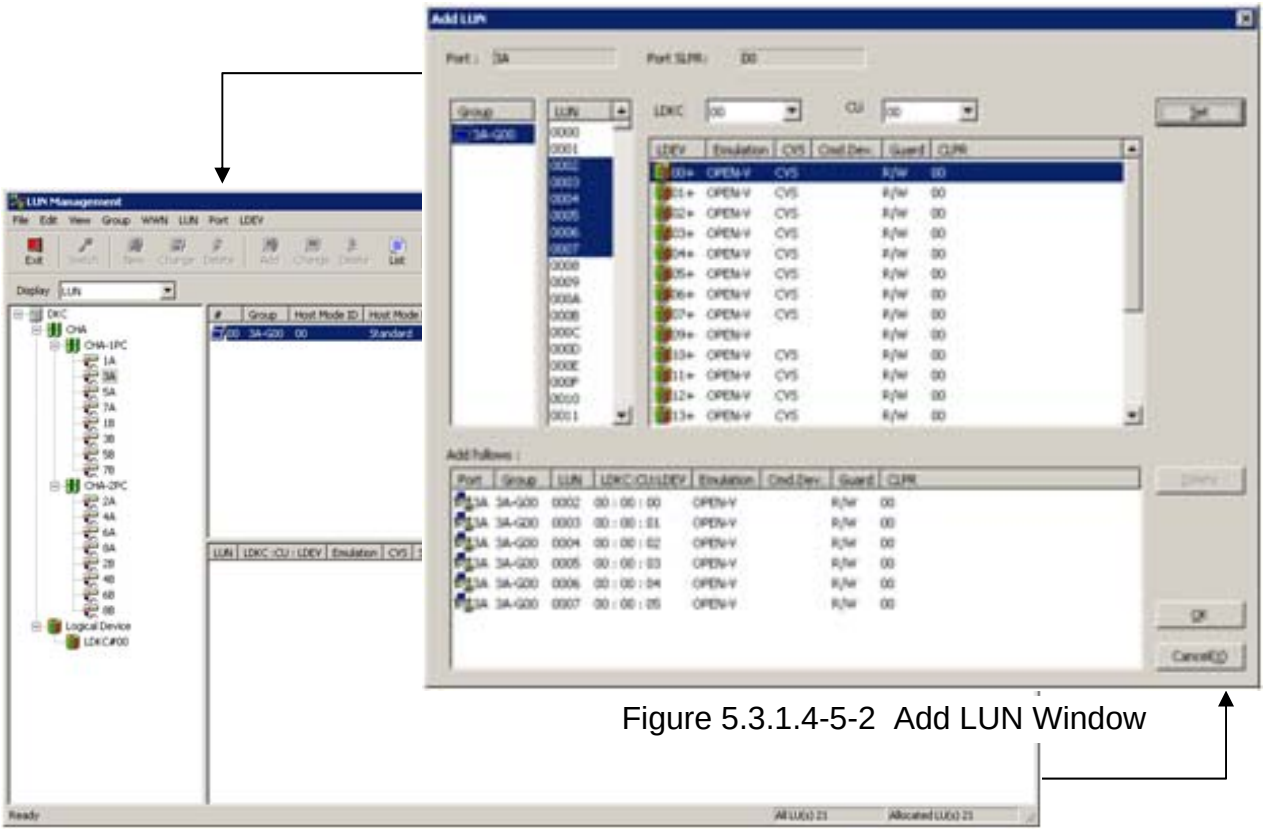


Figure 5.3.1.4-5-2 Add LUN Window

Figure 5.3.1.4-5-1 Main Window

When “Port” in the tree view is selected, “LUN” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Addition of a LUN is done in the following procedure.

① Change the Display to “LUN.”

② Select (CL) a group to which a LUN is to be added from the upper right list.

③ Select (DR) [Add...] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-1).

④ Since the LUN Registration window (Figure 5.3.1.4-5-2) is displayed, select (CL) the LUN and CU:LDEV and select (CL) the [SET] button. The LUN that has been set is displayed in the “Add follows list.”

⑤ When the [OK] button is selected (CL), items displayed in the “Add follows” list is newly registered and the window is changed to the Main window (Figure 5.3.1.4-5-1).

Details of the Main Window (Figure 5.3.1.4-5-1) and the other windows are shown on the following page.

Table 5.3.1.4-5-1 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUN's defined as being contained in the group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) NOTE: The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN - Add..." menu	Selectable when a port subordinate to the LUN has been selected from the tree.
	Displays the Add LUN window.
Pop-up menu	Displays the "Add" menu when the right mouse button is clicked on the item in the upper list.

Table 5.3.1.4-5-2 Details and Operation of Add LUN Window

Item	Description
Port	Displays a name of a port that has been selected from the tree in the Main window.
Port SLPR	Displays the SLPR numbers related with the port.
Group list	Displays all groups registered as being connected with the port concerned.
LUN list	Displays unused LUN's in the group concerned according to the group selection that has been made.
LDKC list	Displays LDKC numbers of all mounted CU's supported this function.
CU list	Displays CU numbers of all mounted LDEV's supported by this function.
LDEV list	Displays unused LDEV's in the group concerned according to the group selection that has been made. NOTE: The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set. '++': Two or more LUNs are set. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
Add follows list	Displays a LUN (path) to be added.
Set button	Selectable only when the group, LUN, and CU:LDEV have been selected.
	The LUN that has been added is displayed in the "Add follows" list.
Delete button	Excepts a LUN from LUNs to be added.
OK button	Selectable only when the LUN'(s) is/are in the "Add follows" list.
	Closes the window after adding the LUN and returns you to the Main window.
Cancel button	Closes the window without doing anything and returns you to the Main window.

(5-2) Deleting LUN

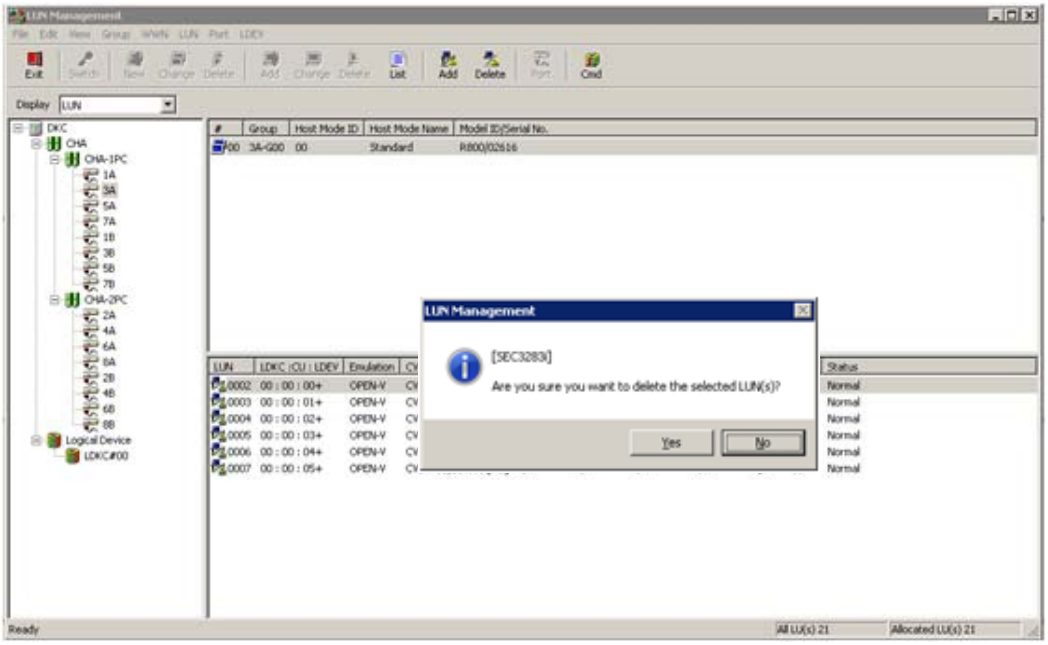


Figure 5.3.1.4-5-3 Main Window

When “Port” in the tree view is selected, groups connected with the port that has been selected from the tree are displayed in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a LUN is done in the following procedure.
① Select (CL) a LUN from the upper right list.
② Select (DR) [Delete] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-3).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ Information on the LUN that has been selected from the lower right list is deleted.

Table 5.3.1.4-5-3 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUNs defined for a group selected from the upper list.(Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) NOTE: The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN - Delete..." menu	Selectable when a LUN has been selected from the lower list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays "Delete" menu when the right mouse button is clicked on the item in the lower list.

(5-3) Changing Command Device from the LUN list

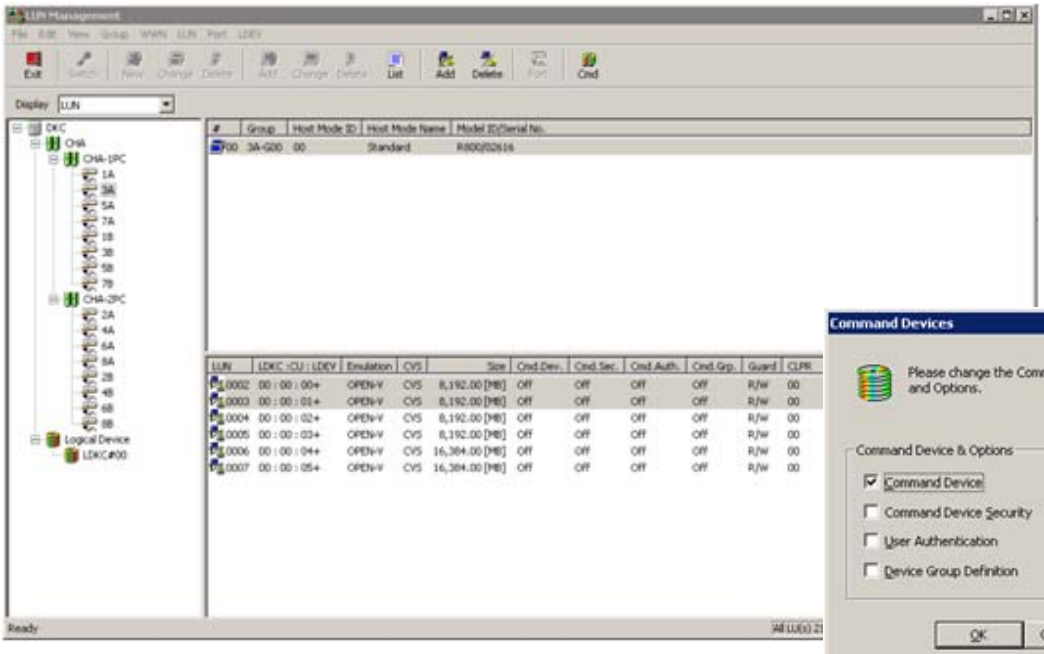


Figure 5.3.1.4-5-4 Main Window

Figure 5.3.1.4-5-5 Command Device Window

When “Port” in the tree view is selected, groups connected with the port that has been selected from the tree are displayed in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Setting of a Command Device from the LUN list is made in the following procedure.

① Select (CL) LUN from the lower right list.
② Select (DR) [Command Device] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-4).
③ Change “Command Device” in the ‘Command Devices’ window (Figure 5.3.1.4-5-5), and select (CL) the [OK] button.
④ Information on the LUN that has been selected from the lower right list is reflected.

When changing the command device from the LDEV list, refer to page INST05-03-850.

NOTE: ‘On*’ shows the remote command device.
It is possible to change for the remote command device.

Table 5.3.1.4-5-4 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUN's defined as being contained in the group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected) NOTE: The following symbols may be added to LDKC:CU:LDEV#. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN - Command Device..." menu	Selectable when a LUN has been selected from the lower list.
	Displays the Command Device window.
Pop-up menu	Displays the "Command Device" menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-5-5 Details and Operation of Add LUN Window

Item	Description
Command Device	Displays the command device of LUN selection.
	When it is checked, the command device is on.
Command Device Security	Displays a status of command device security of the LUN that has been selected.
	Checkable only when [Command Device] is on.
	When it is checked, the security of the command device is on.
User Authentication	When it is checked, the authentication command device is validated.
	Checkable only when [Command Device] is on.
Device Group Definition	When it is checked, the Device Group Definition device is validated.
	Checkable only when [Command Device] is on.
OK button	Closes the window after changing the parameter and returns you to the Main window.
Cancel button	Closes the window without doing anything and returns you to the Main window.

(6) Changing Port

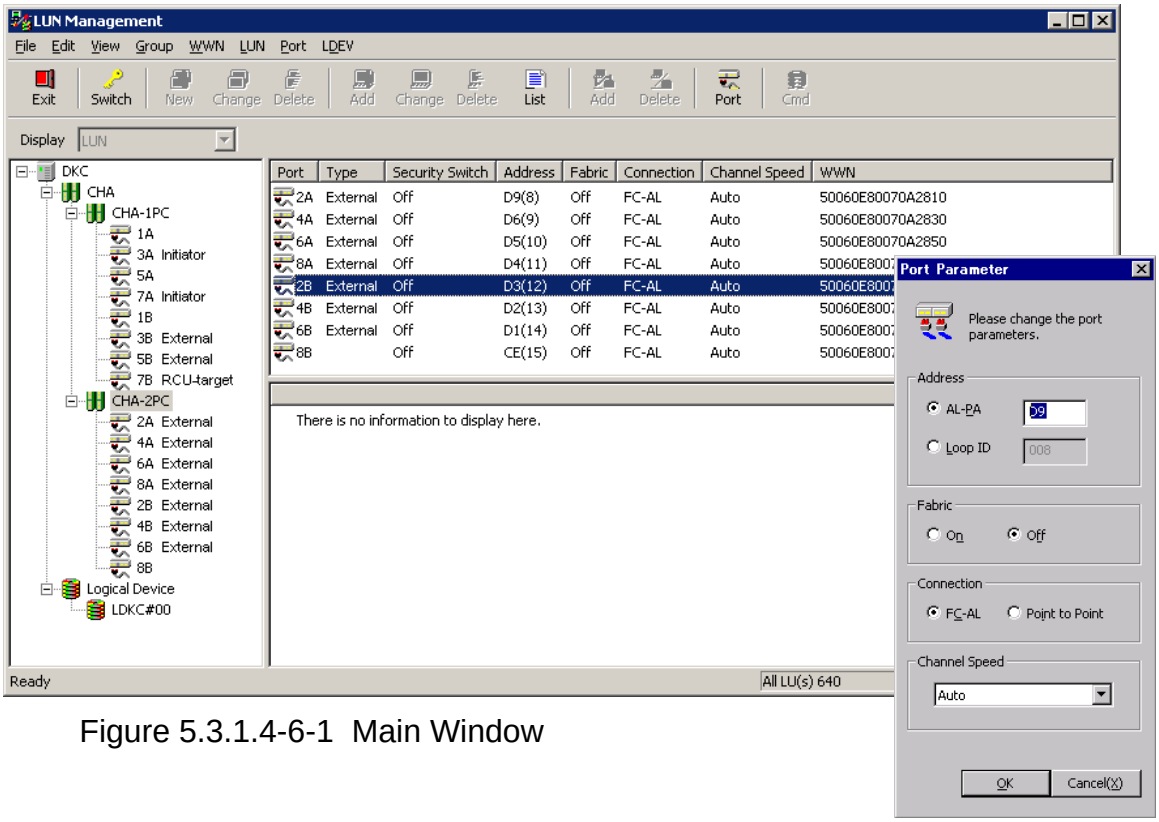


Figure 5.3.1.4-6-1 Main Window

Figure 5.3.1.4-6-2
Port Parameter Window

When “Port” in the tree view is selected (CL), installed ports supported by this function are displayed in the upper right list.

A change of a Port Parameter is made in the following procedure.

① Select (CL) a port from the upper right list.
② Select (DR) [Parameter...] from the [Port] menu in the Main window (Figure 5.3.1.4-6-1).
③ Since the Port Parameter window (Figure 5.3.1.4-6-2) is displayed, set each item and select (CL) the [OK] button.
④ You can change information on the port that has been selected from the upper right list.

Table 5.3.1.4-6-1 Details and Operation of Main Window (Port)

Item	Description
Upper list	Displays installed ports supported by this function.
	Provided with a sorting function.
Lower list	Displays no item.
“Port - Parameter...” menu	Selectable when a port has been selected from the upper list.
	Displays the Port Parameter window.
Pop-up menu	Displays the “Parameter...” menu when the right mouse button is clicked on the item in the upper list.

Table 5.3.1.4-6-2 Details and Operation of Port Parameter Window

Item	Description
AL-PA	Displays an AL-PA value of a fibre port address.
Loop ID	Displays a loop ID value of a fibre port address.
Fabric	Displays whether to use (On) or not to use (Off) the fabric
Connection	Displays which is to be used: FC-AL or Point to Point.
Channel Speed	Displays 2[Gbps], 4[Gbps], 8[Gbps], Auto or 4[Gbps], 8[Gbps], 16[Gbps], Auto according to the CHA PCB type.
OK button	Closes the window after changing the parameter(s), and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.

NOTE: When a 16G FC CHA is used, choose “Point to Point” in the [Connection] radio button to make all the [Channel Speed] options selectable.
If you choose “FC_AL” in [Connection], “16[Gbps]” option in [Channel Speed] is not selectable.

Fibre port addresses (AL-PA's and loop ID's) are shown below.

Table 5.3.1.4-6-3 Fibre Port Addresses (AL-PA's and Loop ID's)

AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID
EF	0	CD	16	B2	32	98	48	72	64	55	80	3A	96	25	112
E8	1	CC	17	B1	33	97	49	71	65	54	81	39	97	23	113
E4	2	CB	18	AE	34	90	50	6E	66	53	82	36	98	1F	114
E2	3	CA	19	AD	35	8F	51	6D	67	52	83	35	99	1E	115
E1	4	C9	20	AC	36	88	52	6C	68	51	84	34	100	1D	116
E0	5	C7	21	AB	37	84	53	6B	69	4E	85	33	101	1B	117
DC	6	C6	22	AA	38	82	54	6A	70	4D	86	32	102	18	118
DA	7	C5	23	A9	39	81	55	69	71	4C	87	31	103	17	119
D9	8	C3	24	A7	40	80	56	67	72	4B	88	2E	104	10	120
D6	9	BC	25	A6	41	7C	57	66	73	4A	89	2D	105	0F	121
D5	10	BA	26	A5	42	7A	58	65	74	49	90	2C	106	08	122
D4	11	B9	27	A3	43	79	59	63	75	47	91	2B	107	04	123
D3	12	B6	28	9F	44	76	60	5C	76	46	92	2A	108	02	124
D2	13	B5	29	9E	45	75	61	5A	77	45	93	29	109	01	125
D1	14	B4	30	9D	46	74	62	59	78	43	94	27	110		
CE	15	B3	31	9B	47	73	63	56	79	3C	95	26	111		

(7) LDEV List

(7-1) Changing Command Device from LDEV list

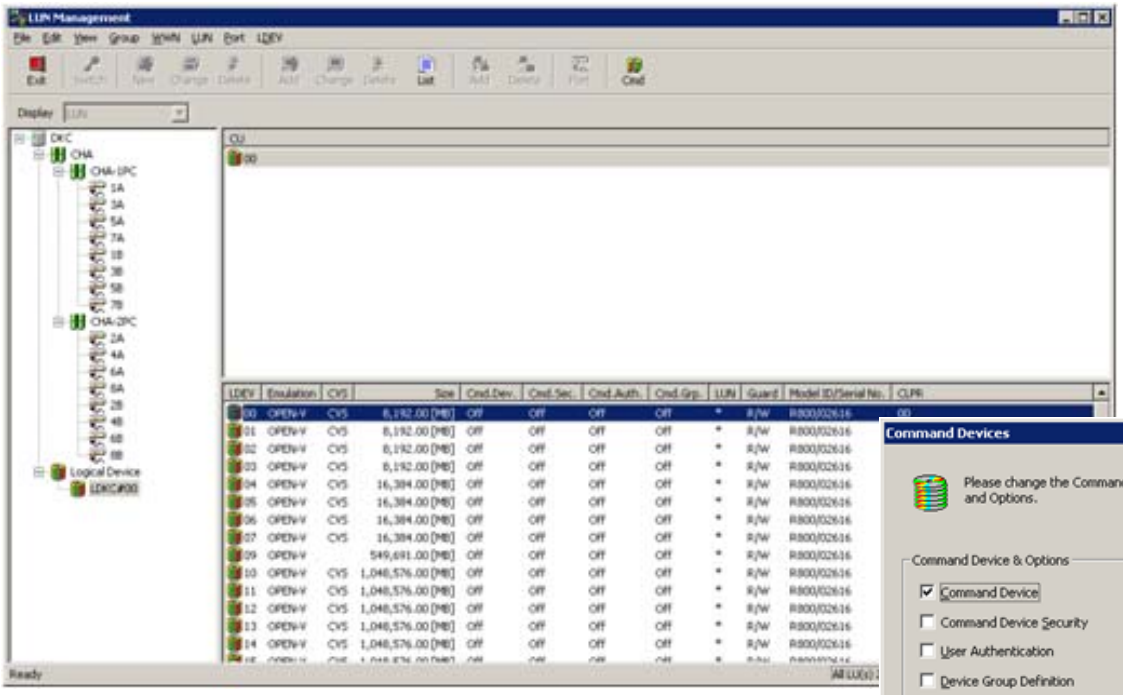


Figure 5.3.1.4-7-1 Main Window

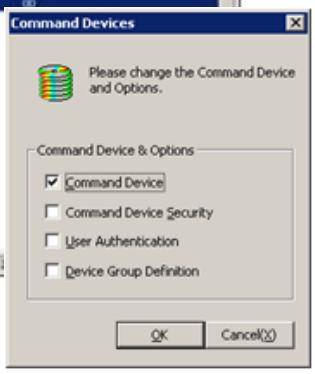


Figure 5.3.1.4-7-2
Command Device Window

When “Logical Device-LDKC#00” in the tree view is selected (CL), CU numbers of installed LDEV’s supported by this function are displayed in the upper right list. In the lower right list, details of a CU selected from the upper right list are displayed.

A change of a command device is made in the following procedure.

① Select (CL) an LDEV you want to change from the lower right list.
② Select (DR) [Change...] from the [Device] menu in the Main window (Figure 5.3.1.4-7-1).
③ Since the ‘Command Device’ window (Figure 5.3.1.4-7-2) is displayed, change the “Command Device” and select (CL) the [OK] button.
④ Information that has been set is reflected in the LDEV that has been selected from the lower right list.

NOTE: ‘On*’ shows the remote command device.
It is not possible to change for the remote command device.

Table 5.3.1.4-7-1 Details and Operation of Main Window (Command Device)

Item	Description
Upper list	Displays CU numbers of installed LDEV's supported by this function.
	Provided with a sorting function.
Lower list	Displays details of a CU selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected) NOTE: The following symbols may be added to LDEV#. Each meaning is shown. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LDEV - Command Device..." menu	Selectable only when an LDEV that is given a definition of LUN has been selected from the lower list.
	Displays the Command Device window.
Pop-up menu	Displays the "Command Device..." menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-7-2 Details and Operation of Command Device Window

Item	Description
Command Device	Displays a status of a command device of the LDEV that has been elected.
	When it is checked, the command device is on.
Command Device Security	Displays a status of command device security of the LDEV that has been selected.
	Checkable only when [Command Device] is on.
	When it is checked, the command device security is on.
User Authentication	When it is checked, the authentication command device is validated.
	Checkable only when [Command Device] is on.
Device Group Definition	When it is checked, the Device Group Definition device is validated.
	Checkable only when [Command Device] is on.
OK Button	Closes the window after changing the parameters, and returns you to the Main window.
Cancel Button	Returns you to the Main window without doing anything.

(7-2) Deleting LUN from LDEV

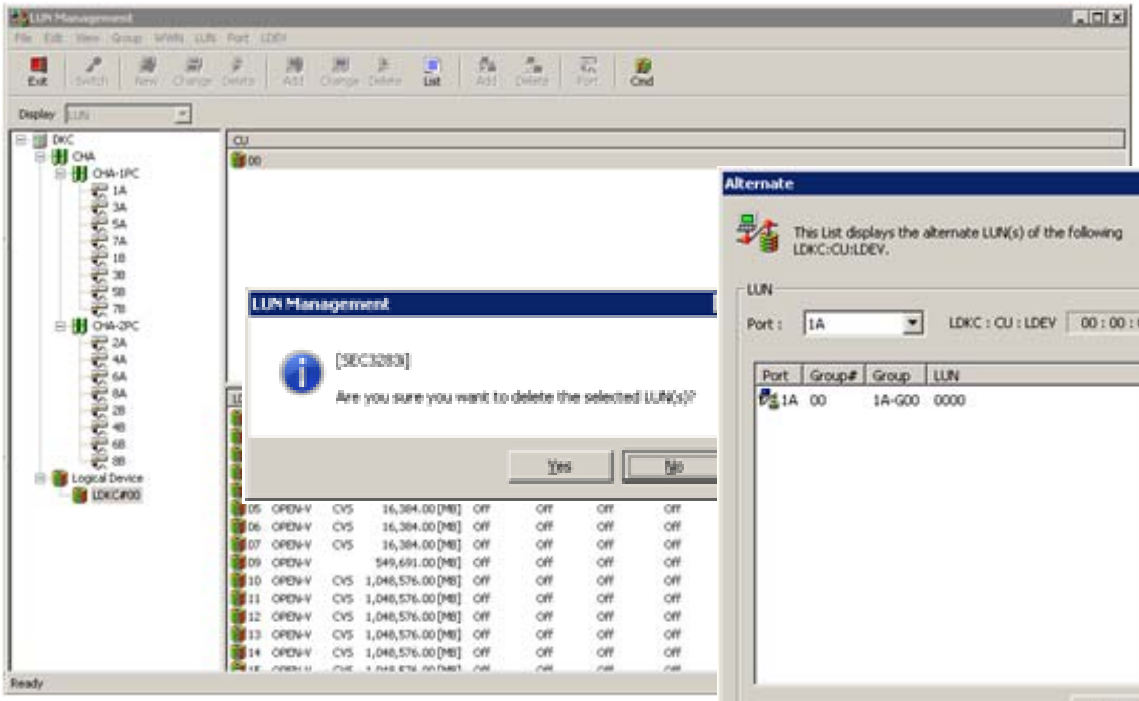


Figure 5.3.1.4-7-3 Main Window

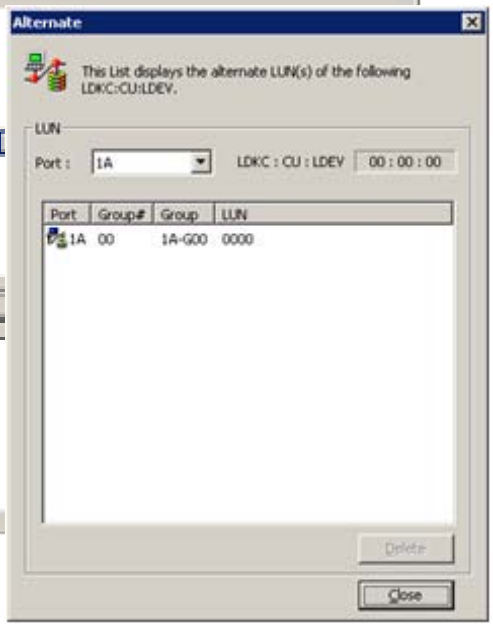


Figure 5.3.1.4-7-4
Alternate LUN Window

When “Logical Device-LDKC#00” is selected (CL) from the tree, CU numbers of the installed LDEV conforming to this function are displayed in the upper right list. In the lower right list, detail of the CU selected from the upper right list is displayed.

Deletion of a LUN from the LDEV list is to be done in the following procedure.

① Select (CL) a single LDEV to which you want to refer for the set information on the LUN from the lower right list.
② Select (DR) [Alternate] from the [LDEV] menu in the main window (Figure 5.3.1.4-7-1).
③ Select the LUN you want to delete from the list in the ‘Alternate’ window (Figure 5.3.1.4-7-2) and select (CL) the [Delete] button.
④ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
⑤ When the [Close] button is selected (CL) in the ‘Alternate’ window (Figure 5.3.1.4-7-2), the window is returned to the main window (Figure 5.3.1.4-7-1).

Table 5.3.1.4-7-3 Detail and Operation of Main Window (Logical Device)

Item	Description
Upper list	Displays CU numbers of the installed LDEV conforming to this function.
	This list has a sorting function.
Lower list	Displays detail of the CU selected from the upper list. (Nothing is displayed when no CU has been selected or two or more CUs have been selected.) NOTE: The following symbols may be added to LDEV #. Each meaning is shown. '#' : An external volume is shown. 'V' : A virtual volume for Thin Image is shown. 'X' : A Dynamic Provisioning volume is shown.
	This list has a sorting function.
"Device - Alternate LUN" menu	This menu is selectable only when a single LDEV has been selected from the lower list.
	Displays the Alternate LUN window.
Pop-up menu	Displays the "Alternate LUN" menu when an item in the lower list is clicked by the right mouse button.

Table 5.3.1.4-7-4 Detail and Operation of Alternate LUN Window

Item	Description
Port combo box	Specify a port you want to display in the LUN list. When All Port is specified, all ports of the LUN are displayed in the LUN list.
LDKC:CU:LDEV	Displays the LDKC:CU:LDEV selected.
LUN list	Displays LUNs assigned to the LDEV concerned.
Delete button	Deletes the LUN that as been selected from the list.
Close button	Closes the window and you return to the Main window.

(8) Closing LUN Management Window

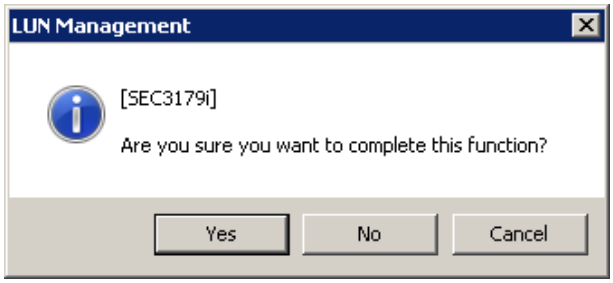
When closing 'LUN Management' window, a message "Are you sure you want to complete this function?" is displayed.

Define Configuration : Go to (8)-1
Refer Configuration : Go to (8)-2
Change Configuration : Go to (8)-3

---

(8)-1 Define Configuration

If you want to apply and finish this function, select [Yes].
If you don't want to apply and finish this function, select [No].
If you close this message, select [Cancel].



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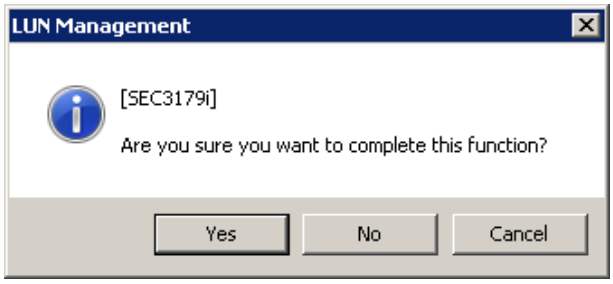
(8)-2 Refer Configuration

If you want to complete this function, select [Yes].
If you don't want to complete this function, select [No].
If you close this message, select [Cancel].



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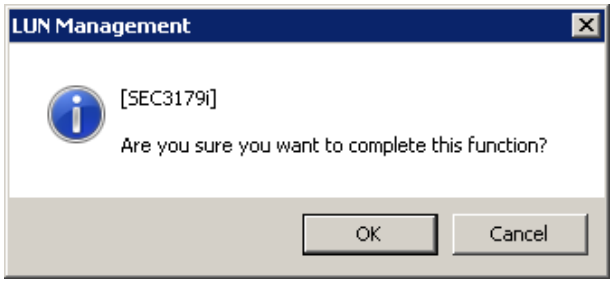
(8)-3 Change Configuration

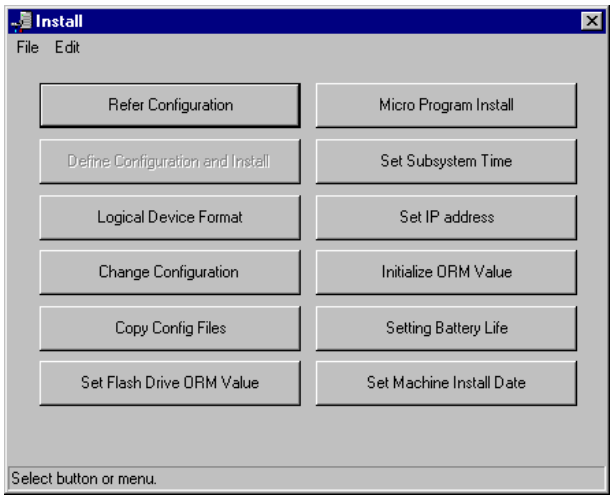
If you want to complete this function, select [OK].
If you close this message, select [Cancel].



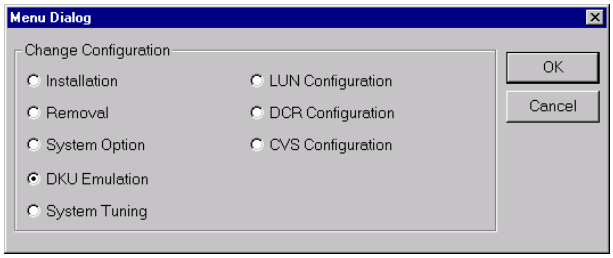
5.3.2 Emulation Type Change

1. <Mode Change>
   Change the mode to Modify Mode.
   Select (CL) [Install].

2. <Start the 'Menu Dialog' screen>
   Select (CL) [Change Configuration].



3. <Start Device Structure Setup screen>
   Select (CL) [DKU Emulation] in the 'Menu Dialog' dialog box and select (CL) [OK].

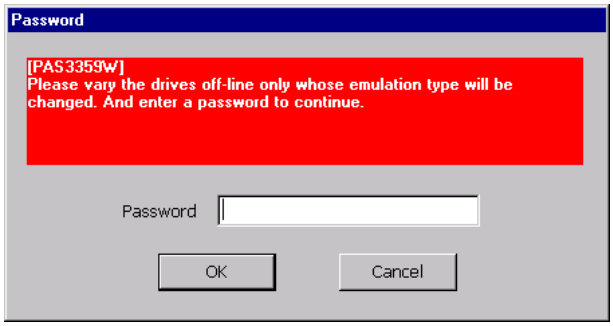


4. <Input password>

⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong drive for which the emulation type is to be changed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

Enter the password and select (CL) [OK].



5. Emulation Change Procedure

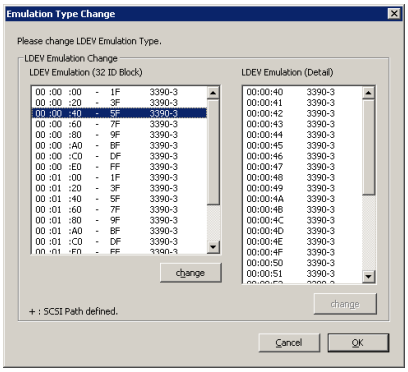
- Emulation Type Change for Single Block ---------- Go to Step 5-1.
- Emulation Type Change for Single LDEV ---------- Go to Step 5-2.
- Emulation Type Change for Multiple Blocks ---------- Go to Step 5-3.
- Individual Emulation Type Change for Multiple LDEVs -------- Go to Step 5-4.

NOTE: When operator tries to change from normal volume to Cross-OS File Exchange volume, operator must clear ALIAS definition if current volume has ALIAS provided by PAV function.

5-1 Emulation Type Change for Single Block

(1)

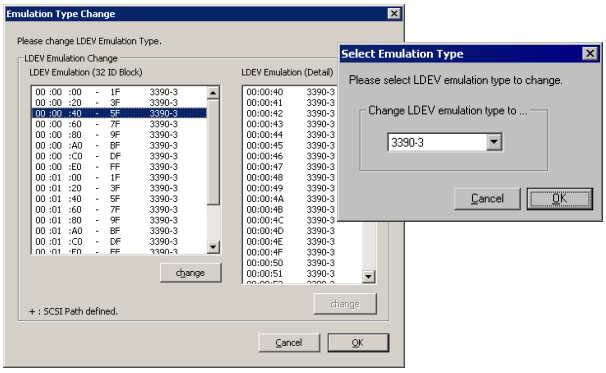
Select (CL) a block including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



(2)

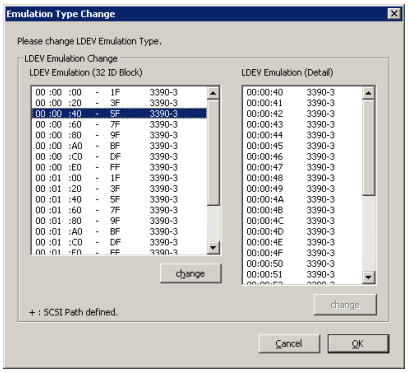
Select (CL) [change] beneath the LDEV Emulation (32 ID Block) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

When a block including an LDEV with the SCSI path (which is indicated with "+" in the list box) is selected, the [change] button is disabled.



(3)

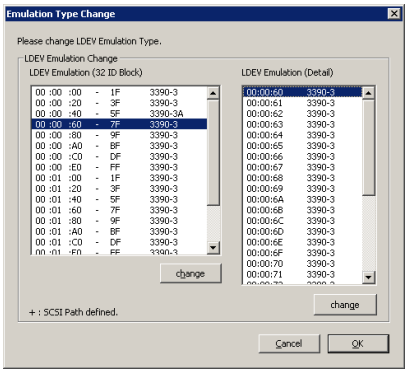
Select (CL) [OK] to set the changed emulation type. Then, the LDEV (selected in Step (1)) having the emulation type to be changed varies to the one specified in Step (2). When selecting the same LDEV block after setting the change, you can check details of the changes in the LDEV Emulation (Detail) list box. Go to Step 6.



5-2 Emulation Type Change for Single LDEV

(1)

Select (CL) a block including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



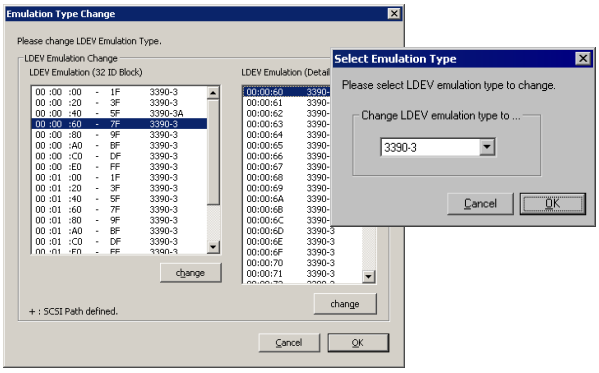
(2)

In the LDEV Emulation (Detail) list box, select (CL) an LDEV whose emulation type to be changed.

(3)

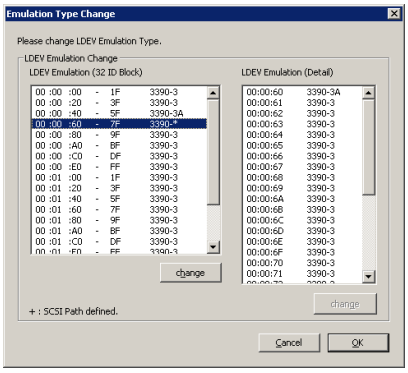
Select (CL) [change] beneath the LDEV Emulation (Detail) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

When a block including an LDEV with the SCSI path (which is indicated with "+" in the list box) is selected, the [change] button is disabled.



(4)

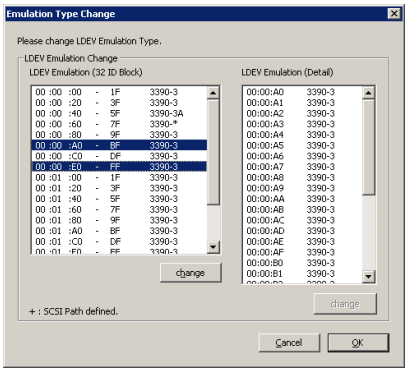
Select (CL) [OK] to set the changed emulation type. Then, the LDEV (selected in step (2)) varies to the one specified in Step (3). Go to Step 6.



5-3 Emulation Type Change for Multiple Blocks

(1)

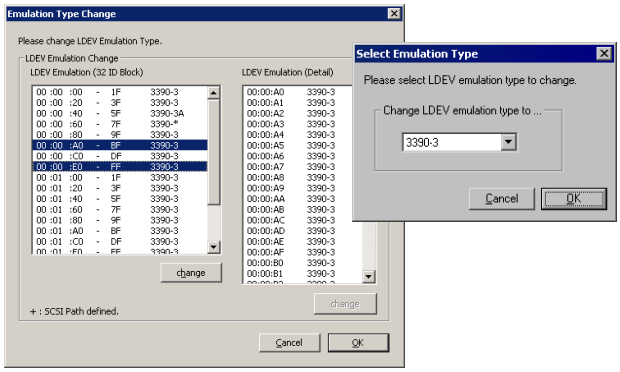
Select (CL) blocks including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



(2)

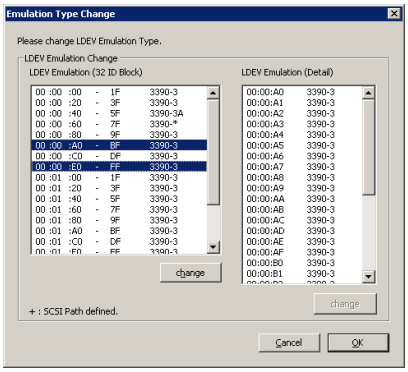
Select (CL) [change] beneath the LDEV Emulation (32 ID Block) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

When a block including an LDEV with the SCSI path (which is indicated with "+" in the list box) is selected, the [change] button is disabled.



(3)

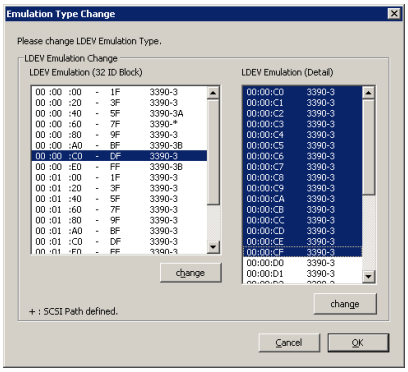
Select (CL) [OK] to set the changed emulation type.
Then, the LDEV (selected in Step (1)) having the emulation type to be changed varies to the one specified in Step (2).
When selecting the same LDEV block after setting the change, you can check details of the changes in the emulation LDEV Emulation (Detail) list box. Go to Step 6.



5-4 Individual Emulation Type Change for Multiple LDEVs

(1)

Select (CL) a block including LDEVs of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



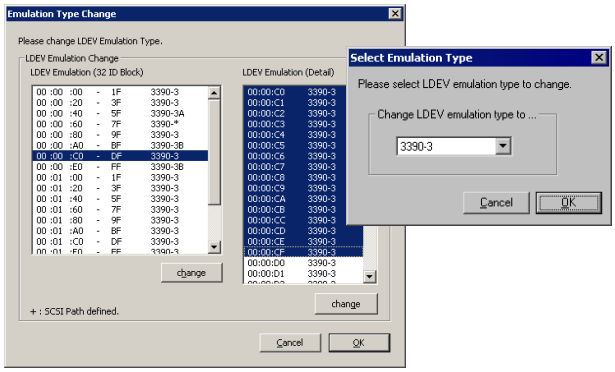
(2)

In the LDEV Emulation (Detail) list box, select (CL) LDEVs whose emulation types are to be changed.

(3)

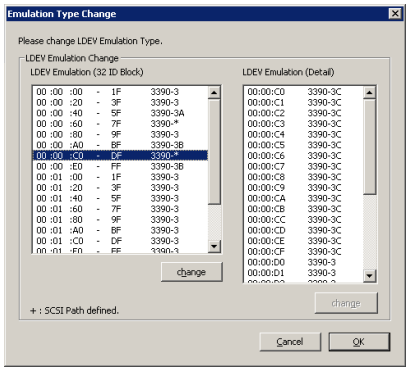
Select (CL) [change] beneath the LDEV Emulation (Detail) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

When a block including an LDEV with the SCSI path (which is indicated with "+" in the list box) is selected, the [change] button is disabled.



(4)

Select (CL) [OK] to set the changed emulation type. Then, the LDEV (selected in Step (2)) varies to the one specified in step (3). Go to Step 6.



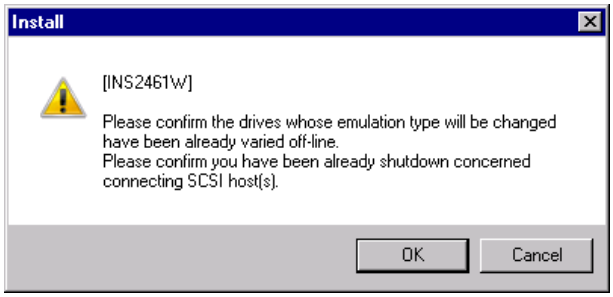
6.

Select (CL) [OK] to fix the emulation type change.
Select (CL) [Cancel] to cancel the operation.

7.

Before changing the emulation type, make sure that the drive has already been set to Vary Off-line and that the host concerned has been shut down, and then select (CL) [OK].

When [Cancel] is selected (CL), the processing is aborted.



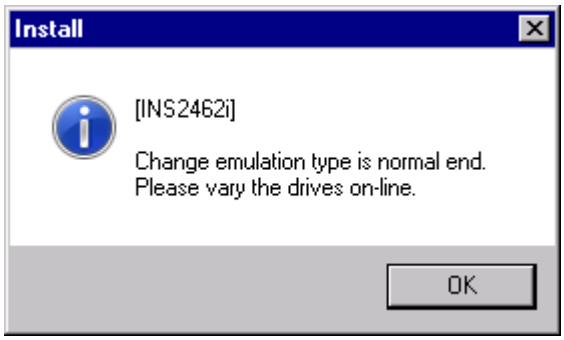
8.

"Changing DKU Emulation" is displayed.

---

9. <Drive Vary On-line>

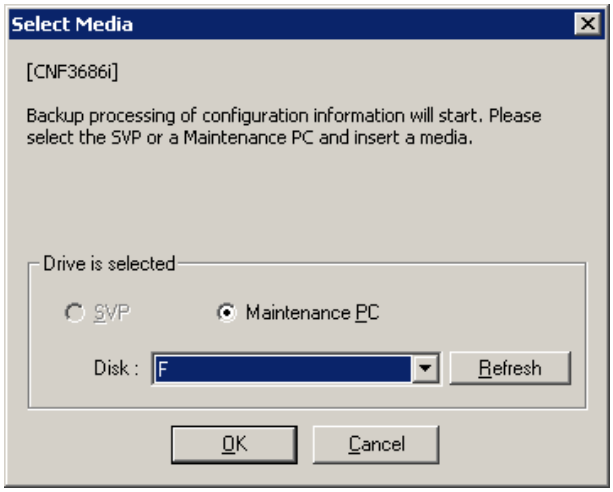
When the emulation type change processing terminates normally, the message "Change emulation type is normal end. Please vary the drives on-line." is displayed.
Vary the drive on-line and select (CL) [OK].



10.

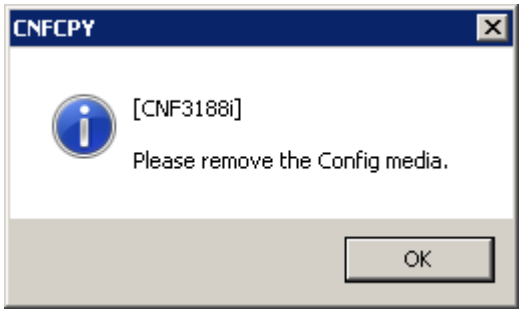
Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Please select (CL) the [Refresh] button, and update drive information.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.

NOTE: For the procedure of backing up the configuration information to a CD-R, see page MICRO07-190.



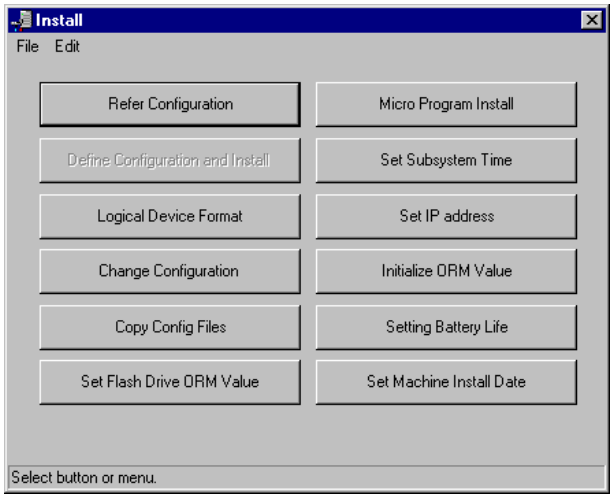
11.

When this procedure is completed, the message "Please remove the Config media." is displayed.
Remove the configuration information media, select (CL) [OK].



12.

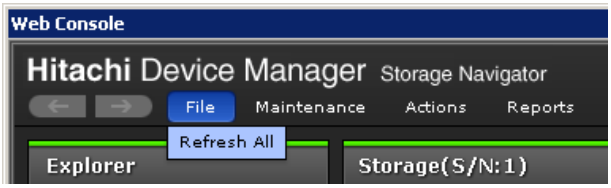
After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



13. <Mode Change>
Change the Mode from [Modify Mode] to [View Mode].

14.

In SVP, select (CL) [Execute]-[Exit].
Please select (CL) [File]-[Refresh All] from the menu and update the information on the Web Console window when the Web Console window is displayed.



5.4 Procedure for connecting external servers

The following describes the procedure for connecting external servers (eg. Authentication Server, Key Management Server) with SVP.

1. Connect SVP by remote desktop.

2. Configure DNS Setting of SVP.

5.4.1 Connect SVP by remote desktop

Connect to SVP from Maintenance PC.

Prerequisite

• It should be performed by a user who belongs to the Support Personnel Group.

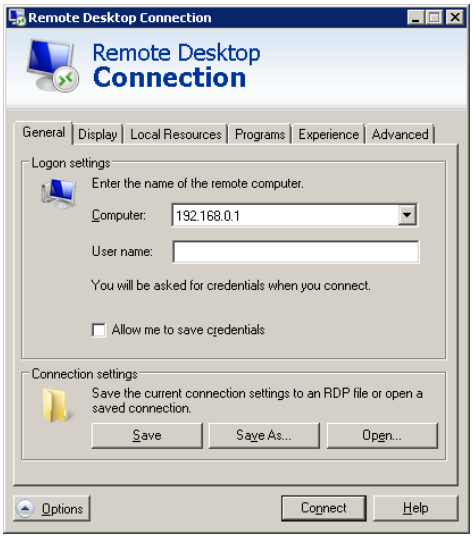
Operation procedure

1.

In Maintenance PC, select (DR) [Start]-[All Programs]-[Accessories]-[Remote Desktop Connection] to start the remote desktop connection.

2.

Enter the IP address of SVP in [Computer].



3.

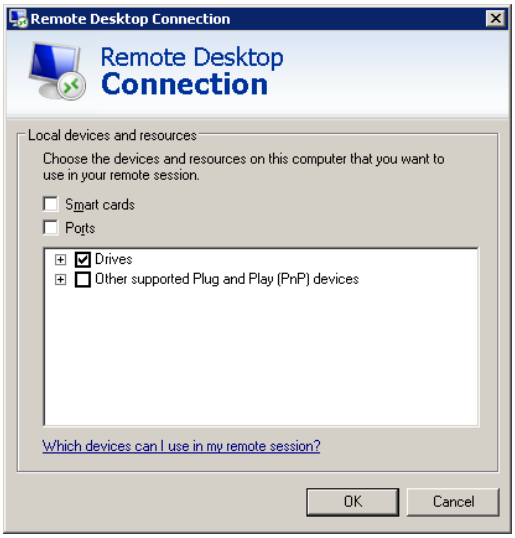
Select (CL) [Local Resources] tab.

4.

Select (CL) [More...].

5.

Select (CL) [Drives] and [OK].



6.

Select (CL) [Connect]. The login window appears.

7.

Enter the user name and the password to log into SVP.

5.4.2 Configure DNS Setting of SVP

DNS setting of SVP is required for connecting external servers.

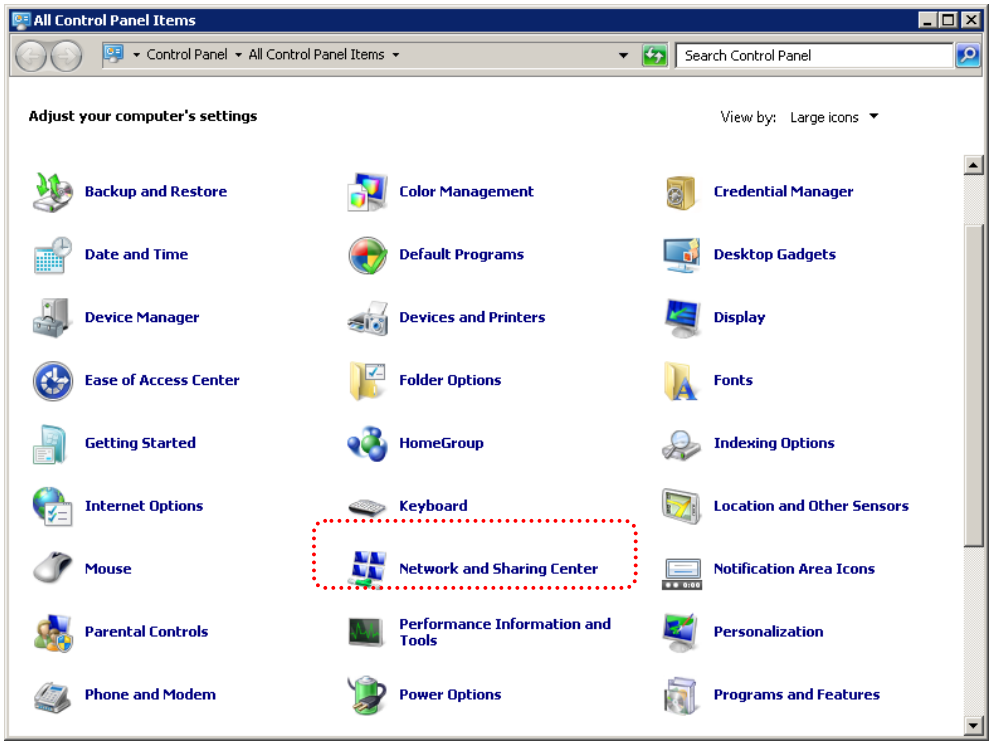
Prerequisite

- It should be performed by a user who belongs to the Support Personnel Group.

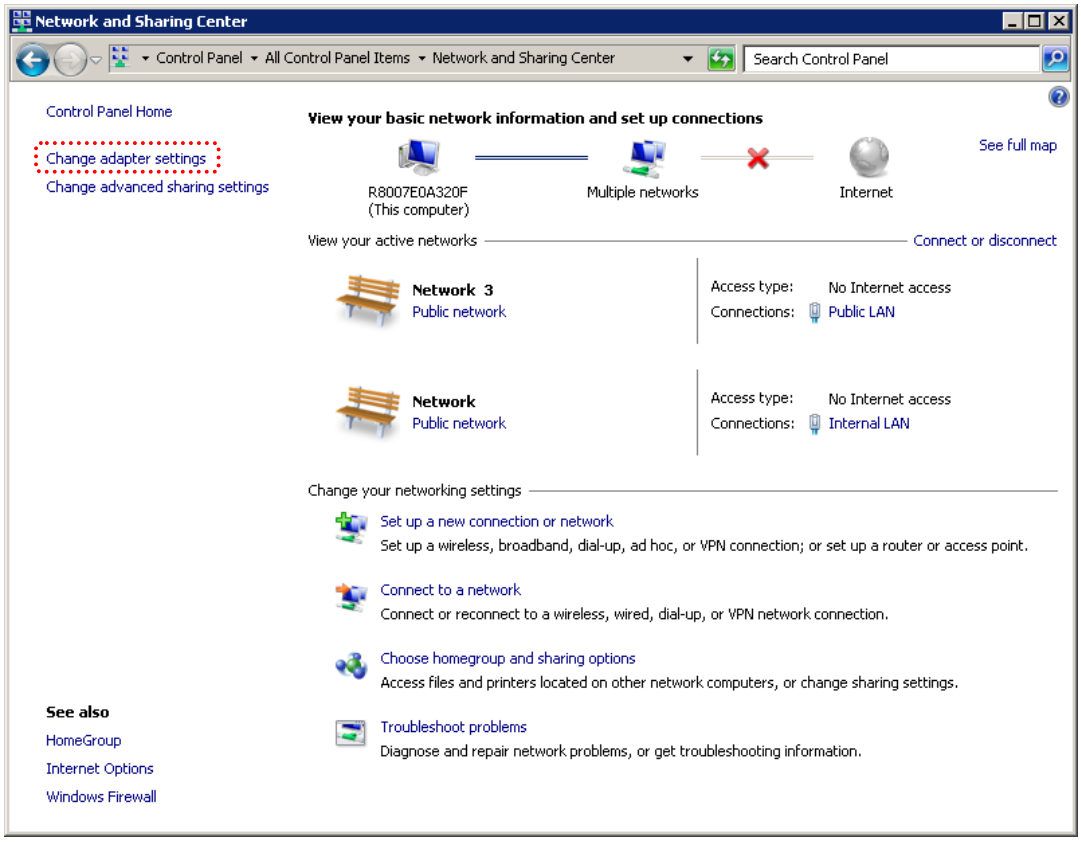
Operation procedure

1. Opening the Control Panel window
   Select (DR) [Control Panel] from the [Start] menu.

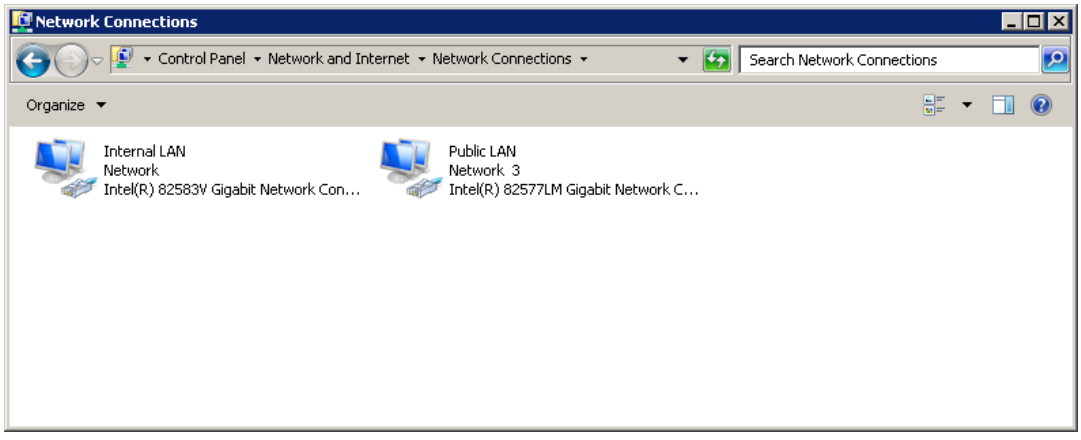
2. Opening the Network and Sharing Center window
   Double-click [Network and Sharing Center] in the 'Control Panel' window.



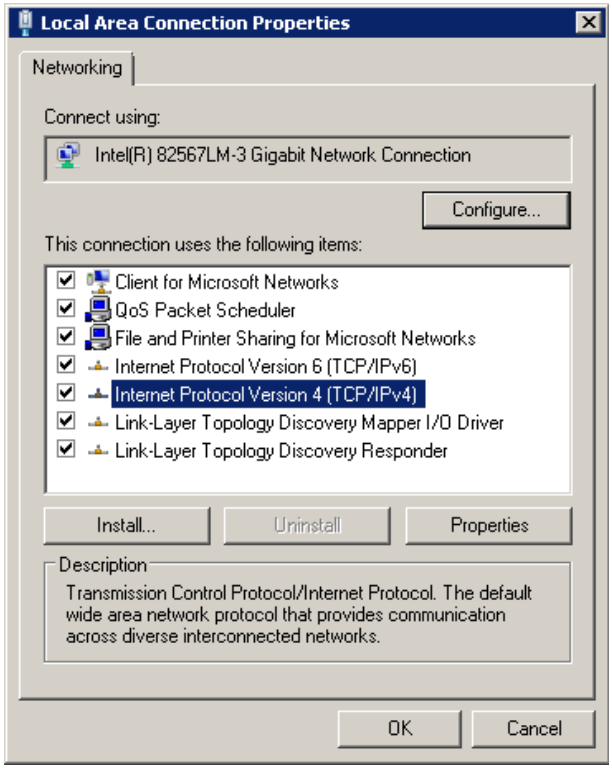
3. Opening the Manage network connections window
   Select (CL) [Change adapter settings] in the left side of 'Network and Sharing Center' window.



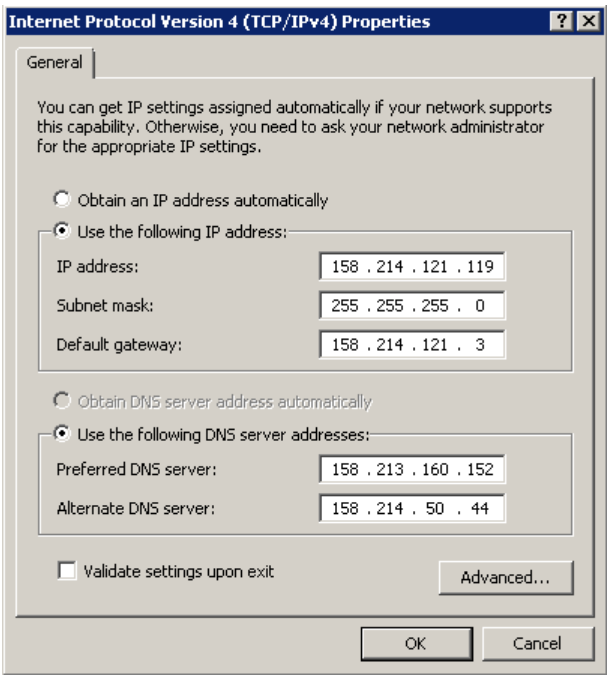
4. Opening the Public LAN Properties window
   Select (CL) [Public LAN] in the 'Network Connections' window and select (CL) [Properties] by clicking the right mouse button.



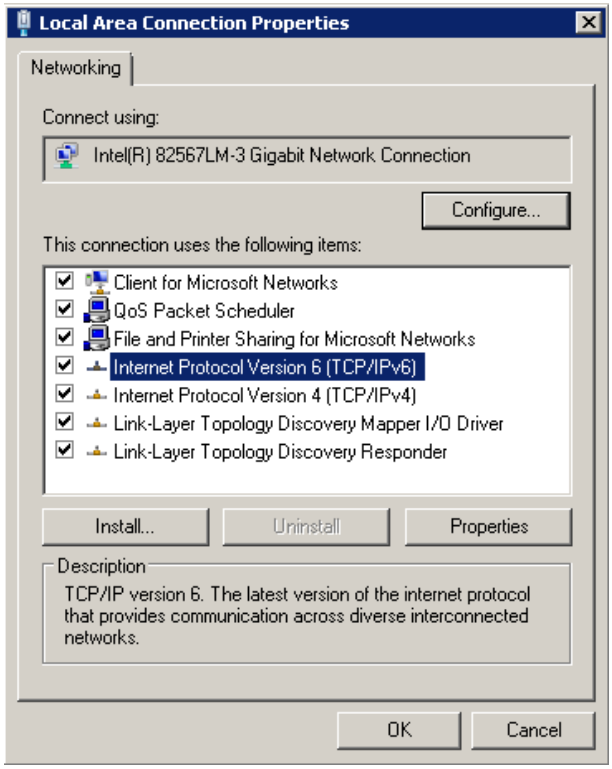
5. Opening the Internet Protocol Version 4 (TCP/IPv4) Properties window
   Select (CL) [Internet Protocol Version 4 (TCP/IPv4)] in the 'Public LAN Properties' window and select (CL) the [Properties] button.



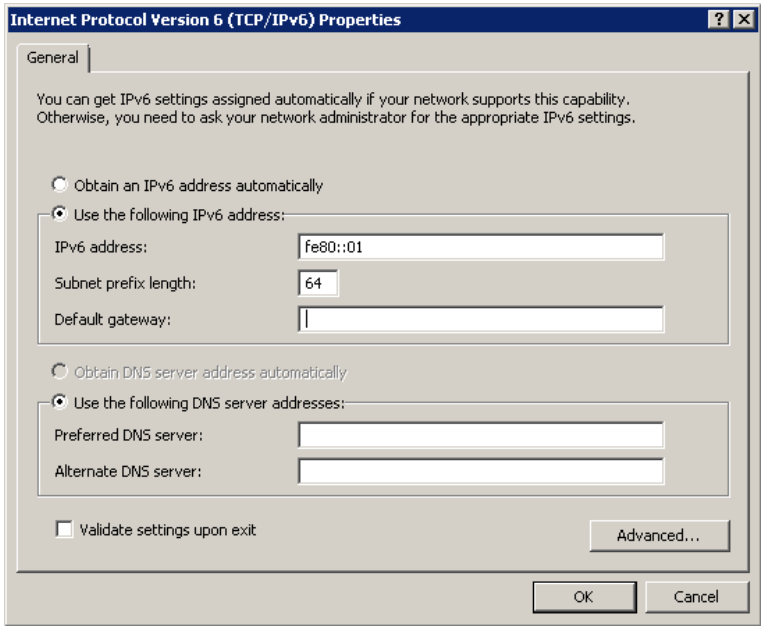
6. Setting the external IP address
   Set the "Preferred DNS server" and "Alternate DNS server" and select (CL) the [OK] button.
   When you do not set IPv6, go to Step 9.



7. Opening the Internet Protocol Version 6 (TCP/IPv6) Properties window
   Select (CL) [Internet Protocol Version 6 (TCP/IPv6)] in the 'Public LAN Properties' window and select (CL) the [Properties] button.



8. Setting the external IP address
   Set the "Preferred DNS server" and "Alternate DNS server" and select (CL) the [OK] button.



9. Closing the window
   After the setting is completed, select (CL) the [OK] button in the "Public LAN Properties" window.

5.5 Switch the Auto Account Lock Function

For the purpose of avoiding password brute force attack, if login to Storage Navigator and SVP failed three times in a row, the account is locked for 60 seconds, and then a message indicating the authentication failure is output.
This section describes the procedure for switching from this function to the method that disables the account when login fails for the specified number of times, and the procedure for switching to the function again.

(1) Procedure for switching to the account disabling function

1. In SVP, select (DR) [Start]-[Run], enter the following command, and select (CL) [OK] to run the batch file.
   "setAccountLock_UnlockedByAdmin X"

   X: Specify a numerical value from 1 to 32 as the number of times login fails until the account is disabled.

2. After the batch file ended normally, the message "All process completed." appears.
   If it ends abnormally, the following message is output. Check the parameter.
   "Parameter is invalid.
   Confirm the execution parameter and try again."

   NOTE: If all accounts registered to SVP are disabled, you cannot log into SVP (Authentication can be done in the authentication server).
   Prevent all accounts from being disabled.

(2) Procedure for switching to the account lock function

1. In SVP, select (DR) [Start]-[Run], enter the following command, and select (CL) [OK] to run the batch file.
   "setAccountLock_UnlockedByTimer"

2. After the batch file ended normally, the message "All process completed." appears.
   If it ends abnormally, the following message is output. Check the extra parameter.
   "Parameter is invalid.
   Confirm the execution parameter and try again."

6. Storage Capacity and Cache Capacity, and the number of required options

6.1 Required CM Capacity

(1) SM Capacity

Required shared memory capacity is determined by the number of LDEV and the kind of program product to apply. Required shared memory capacity is determined with reference to the table indicated at the Table 6.1-1.

Table 6.1-1 Reference Table Shared Memory Capacity (1/2)

No.	Judgment Factor of SM Capacity (*3)										SM Capacity
	Number of CU (Configuration of LDEV)	Program Product (*1)					SI/VM Extension (*6)	DP/HDT/TI Extension (*5)			
		SI/VM	DP/TI/ FC	TPF	TC/ HUR/ GAD	HDT		1	2	3	
1	1-64 (16KLDEV)	○	○	×	×	×	×	×	×	×	16GB
2	1-64 (16KLDEV)	○	○	×	○	×	×	×	×	×	24GB
3	1-64 (16KLDEV)	○	○	×	×	○	×	×	×	×	24GB
4	1-64 (16KLDEV)	○	○	×	×	×	×	○	×	×	24GB
5	1-255 (64KLDEV)	○	○	○	×	×	○	×	×	×	24GB
6	1-64 (16KLDEV)	○	○	×	○	○	×	×	×	×	32GB
7	1-64 (16KLDEV)	○	○	×	○	×	×	○	×	×	32GB
8	1-64 (16KLDEV)	○	○	×	×	○	×	○	×	×	32GB
9	1-255 (64KLDEV)	○	○	○	○	×	○	×	×	×	32GB
10	1-255 (64KLDEV)	○	○	○	×	○	○	×	×	×	32GB
11	1-255 (64KLDEV)	○	○	○	×	×	○	○	×	×	32GB
12	1-64 (16KLDEV)	○	○	×	○	○	×	○	×	×	40GB
13	1-64 (16KLDEV)	○	○	×	×	×	×	○	○	×	40GB
14	1-255 (64KLDEV)	○	○	○	○	○	○	×	×	×	40GB
15	1-255 (64KLDEV)	○	○	○	○	×	○	○	×	×	40GB
16	1-255 (64KLDEV)	○	○	○	×	○	○	○	×	×	40GB

Table 6.1-1 Reference Table Shared Memory Capacity (2/2)

No.	Judgment Factor of SM Capacity (*3)										SM Capacity
	Number of CU (Configuration of LDEV)	Program Product (*1)					SI/VM Extension (*6)	DP/HDT/TI Extension (*5)			
		SI/VM	DP/TI/ FC	TPF	TC/ HUR/ GAD	HDT		1	2	3	
17	1-64 (16KLDEV)	○	○	×	○	×	×	○	○	×	48GB
18	1-64 (16KLDEV)	○	○	×	×	○	×	○	○	×	48GB
19	1-255 (64KLDEV)	○	○	○	○	○	○	○	×	×	48GB
20	1-255 (64KLDEV)	○	○	○	×	×	○	○	○	×	48GB
21	1-64 (16KLDEV)	○	○	×	○	○	×	○	○	×	56GB
22	1-64 (16KLDEV)	○	○	×	×	×	×	○	○	○	56GB
23	1-255 (64KLDEV)	○	○	○	○	×	○	○	○	×	56GB
24	1-255 (64KLDEV)	○	○	○	×	○	○	○	○	×	56GB
25	1-64 (16KLDEV)	○	○	×	○	×	×	○	○	○	64GB
26	1-64 (16KLDEV)	○	○	×	×	○	×	○	○	○	64GB
27	1-255 (64KLDEV)	○	○	○	×	×	○	○	○	○	64GB
28	1-255 (64KLDEV)	○	○	○	○	○	○	○	○	×	64GB
29	1-64 (16KLDEV)	○	○	×	○	○	×	○	○	○	72GB
30	1-255 (64KLDEV)	○	○	○	○	×	○	○	○	○	72GB
31	1-255 (64KLDEV)	○	○	○	×	○	○	○	○	○	72GB
32	1-255 (64KLDEV)	○	○	○	○	○	○	○	○	○	80GB

*1: Program Product

SI : ShadowImage/ ShadowImage for Mainframe
VM : Volume Migration (*2)
DP : Dynamic Provisioning
TI : Thin Image
FC : FlashCopy (R)
TPF : Transaction Processing Facility
TC : TrueCopy/ TrueCopy for Mainframe
HUR : Universal Replicator/ Universal Replicator for Mainframe
GAD : global-active device
HDT : Dynamic Tiering

*2: Volume Migration is a function in Hitachi Tiered Storage Manager.

*3: Marks used in the columns of Judgment Factor of SM Capacity means as follows.

× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.

○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*4))

*4: For installation operation, refer to “Hitachi Command Suite User Guide” or “Hitachi Virtual Storage Platform G1000 Mainframe System Administrator Guide”.

*5: When Dynamic Provisioning/Dynamic Provisioning for Mainframe/Thin Image/ Dynamic Tiering/Dynamic Tiering for Mainframe is used, pool/virtual volume capacity that can be made according to the increase situation of a shared memory is enhanced. When using it exceeding the capacity of pool/ virtual volume of 1.1PB (OPEN) or 1.0PB (MF), it is necessary to increase DP/HDT/TI Extension.
When DP/HDT/TI Extension is decreased, it is necessary to delete all DP, HDT and TI pools.

Table 6.1-2 Pool / Virtual volume Capacity of SM of available

Program Product	OPEN	Mainframe
DP	~ 1.1PB	~ 1.0PB
DP/HDT/TI Extension1	~ 3.4PB	~ 3.0PB
DP/HDT/TI Extension2	~ 7.9PB	~ 7.1PB
DP/HDT/TI Extension3	~ 12.3PB	~ 11.0PB

*6: When using ShadowImage/ShadowImage for Mainframe/VolumeMigration, select either [Base] or [Extension].

The differences between [Base] and [Extension] are as follows:
When creating a pair of ShadowImage or ShadowImage for Mainframe, or creating shifting plan of Volume Migration, resources called a difference table and a pair table is required. When selecting [Extension], more resources become available than selecting [Base], which allows creating more pairs or shifting plan.
The number of pairs that can be created in the ShadowImage or ShadowImage for Mainframe, see THEORY SECTION “3.9 ShadowImage for Mainframe & ShadowImage”
(THEORY03-09-10).
For details of shift plan number on Volume Migration to be created, see THEORY SECTION “3.11 Volume Migration” (THEORY03-11-10).

The following table shows the correspondence of items shown in the ‘SVP’ window and those in the Reference Table. Set the SM in the ‘SVP’ window based on the table below.

Table 6.1-3 SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	64KLDEV, SI/VM Extension, TPF	OFF	Number of CU: 65-255, SI/VM Extension, TPF function not applied
		ON	Number of CU: 65-255, SI/VM Extension, TPF function applied
2	TC/HUR/GAD	OFF	TC/HUR/GAD function not applied
		ON	TC/HUR/GAD function applied
3	HDT	OFF	HDT function not applied
		ON	HDT function applied
4	DP/HDT/TI Extension1	OFF	DP/HDT/TI Extension1 function not applied
		ON	DP/HDT/TI Extension1 function applied
5	DP/HDT/TI Extension2	OFF	DP/HDT/TI Extension2 function not applied
		ON	DP/HDT/TI Extension2 function applied
6	DP/HDT/TI Extension3	OFF	DP/HDT/TI Extension3 function not applied
		ON	DP/HDT/TI Extension3 function applied

(2) Cache Capacity

The cache capacity of VSP G1000 is determined by the number of installed MPB, the RAID level, the drives installed in the disk array system, whether Dynamic Provisioning (DP)/Dynamic Tiering (HDT)/Dynamic Cache Residency (DCR)/Extend Remote Copy (XRC)/Universal Volume Manager (UVM) is applied/not applied etc.
The required cache capacity installed in VSP G1000 depends on the number of MPB as shown in the following table.

Table 6.1-4 Relation between the number of MPB and the required cache memory capacity

Number of MPB	Required cache capacity (*1)
2	8GB or more (*2)
4	16GB or more
6	24GB or more
8	32GB or more
10	40GB or more
12	48GB or more
14	56GB or more
16	64GB or more

*1: The sum of data cache capacity and cache directory capacity

*2: 1GB = $1{,}024^3$Byte

The recommended cache capacity is determined by the number of installed MPB, the drives installed in the disk array system, whether DP/HDT/DCR/XRC/UVM is applied/not applied etc. The calculation process of the recommended data cache capacity is shown below.

The recommended data cache capacity per CLPR =
(CLPR capacity – DCR Extent setting capacity per CLPR)

(i) In case of CLPR to which DP/HDT/DCR/XRC is not applied
Install the recommended data cache capacity (or more) shown in the table below.

Table 6.1-5 Recommended data cache capacity in case DP/HDT/DCR/XRC is not applied

Total logical capacity of External volumes + Internal volumes per CLPR	Recommended data cache capacity per CLPR							
	Number of MPB 2	Number of MPB 4	Number of MPB 6	Number of MPB 8	Number of MPB 10	Number of MPB 12	Number of MPB 14	Number of MPB 16
Less than 4TB	8GB	12GB	20GB	28GB	36GB	44GB	52GB	60GB
4TB or more	16GB	16GB	20GB	28GB	36GB	44GB	52GB	60GB
16TB or more	24GB	24GB	24GB	28GB	36GB	44GB	52GB	60GB
48TB or more	32GB	32GB	32GB	32GB	36GB	44GB	52GB	60GB
96TB or more	40GB	40GB	40GB	40GB	40GB	44GB	52GB	60GB
160TB or more	48GB	48GB	48GB	48GB	48GB	48GB	52GB	60GB
240TB or more	56GB	56GB	56GB	56GB	56GB	56GB	56GB	60GB
360TB or more	64GB	64GB	64GB	64GB	64GB	64GB	64GB	64GB
600TB or more	72GB	72GB	72GB	72GB	72GB	72GB	72GB	72GB

(ii) In case of CLPR to which DP or HDT is applied
Install the recommended data cache capacity (or more) shown in the table below.

Table 6.1-6 Recommended data cache capacity in case DP or HDT is applied

Total logical capacity of External volumes + Internal volumes per CLPR	Recommended data cache capacity per CLPR							
	Number of MPB 2	Number of MPB 4	Number of MPB 6	Number of MPB 8	Number of MPB 10	Number of MPB 12	Number of MPB 14	Number of MPB 16
Less than 4TB	12GB	20GB	28GB	36GB	44GB	52GB	60GB	68GB
4TB or more	16GB	20GB	28GB	36GB	44GB	52GB	60GB	68GB
16TB or more	24GB	24GB	28GB	36GB	44GB	52GB	60GB	68GB
48TB or more	32GB	32GB	32GB	36GB	44GB	52GB	60GB	68GB
96TB or more	40GB	40GB	40GB	40GB	44GB	52GB	60GB	68GB
160TB or more	48GB	48GB	48GB	48GB	48GB	52GB	60GB	68GB
240TB or more	56GB	56GB	56GB	56GB	56GB	56GB	60GB	68GB
360TB or more	64GB	64GB	64GB	64GB	64GB	64GB	64GB	68GB
600TB or more	72GB	72GB	72GB	72GB	72GB	72GB	72GB	72GB

(iii) In case of CLPR to which DCR is applied

It is recommended to install cache capacity according to the number of areas to which the Priority mode of DCR Extent setting is applied. The purpose is to avoid the possible access performance degradation of non-DCR data when DCR is set. In other words, if data is written to the area to which the Priority mode is applied, the data is written to the cache (standard cache) other than the DCR cache. If data is written to the area to which the Priority mode is applied while the standard cache is overloaded (available cache capacity is small), there would be no available capacity in the standard cache, and wait for available standard cache would occur frequently. Consequently access performance of non-DCR data could be degraded.

If the recommended data cache capacity shown in the following table is larger than the recommended data cache capacities calculated in (i) and (ii), install the recommended data cache capacity shown in the following table.

Table 6.1-7 Recommended data cache capacity in case DCR Priority mode is applied

Settings of priority mode	Recommended data cache capacity per CLPR
The specified number of cache extents is 8,192 or less and the specified capacity is 128 GB or less.	16GB or more
The specified number of cache extents exceeds 8,192 or the specified capacity exceeds 128 GB.	32GB or more

(iv) In case of CLPR to which XRC is applied

CLPR to which XRC is applied uses cache for the management information called sidefile. Therefore it is recommended install larger capacity than the recommended data cache capacity calculated in (i) through (iii) by taking “the level-1 threshold” of XRC into account. Use the following formula to calculate it.

Recommended data cache capacity ≥

(Recommended data cache capacity calculated in (i) through (iii)) × 100 ÷ (100 − (the level-1 threshold))

(v) In case of CLPR for UVM

If the configuration of the CLPR meets the conditions described in Table 6.1-8, you can apply the recommended data cache capacity shown in Table 6.1-9.

Table 6.1-8 CLPR for UVM

Conditions of CLPR for UVM
• One CLPR consists of only external volumes • Performance is not important • The cache mode of the mapped volumes is “Disable” • It consists of only volumes for open systems

Table 6.1-9 Recommended cache memory capacity of CLPR for UVM

Total logical capacity of external volumes in CLPR for UVM	Number of MPB	Recommended cache capacity of CLPR for UVM
Less than 128TB	2/4/6/8	8GB
	10/12	12GB
	14/16	16GB
128TB or more	2/4	8GB
	6	12GB
	8	16GB
	10	20GB
	12	24GB
	14	28GB
	16	32GB

(3) Total CM Capacity

Required total CM capacity is determined by the sum of SM capacity, data cache memory (data CM) capacity and cache directory (cache DIR) capacity.

Cache DIR capacity is determined by the amount of memory installed in the CPEX. The relation between cache DIR capacity and data CM capacity is shown in Table 6.1-10 to Table 6.1-12.

Table 6.1-10 Reference Table for Cache DIR Capacity and Data CM Capacity (CPEX0)

CM16G	CM32G	Cache Directory Capacity (GB)	Data CM Capacity (GB)
2	0	1	31 – SM Capacity
4	0	1.25	62.75 – SM Capacity
6	0	1.5	94.5 – SM Capacity
8	0	1.75	126.25 – SM Capacity
10	0	2	158 – SM Capacity
12	0	2.25	189.75 – SM Capacity
14	0	2.5	221.5 – SM Capacity
16	0	2.75	253.25 – SM Capacity
0	2	1	63 – SM Capacity
0	4	1.25	126.75 – SM Capacity
0	6	1.5	190.5 – SM Capacity
0	8	1.75	254.25 – SM Capacity
0	10	2	318 – SM Capacity
0	12	2.25	381.75 – SM Capacity
0	14	2.5	445.5 – SM Capacity
0	16	2.75	509.25 – SM Capacity

Table 6.1-11 Reference Table for Cache DIR Capacity and Data CM Capacity (CPEX1)

CM16G	CM32G	Cache Directory Capacity (GB)	Data CM Capacity (GB)
2	0	1	31
4	0	1.25	62.75
6	0	1.5	94.5
8	0	1.75	126.25
10	0	2	158
12	0	2.25	189.75
14	0	2.5	221.5
16	0	2.75	253.25
0	2	1	63
0	4	1.25	126.75
0	6	1.5	190.5
0	8	1.75	254.25
0	10	2	318
0	12	2.25	381.75
0	14	2.5	445.5
0	16	2.75	509.25

Table 6.1-12 Reference Table for Cache DIR Capacity and Data CM Capacity (CPEX2/CPEX3)

CM16G	CM32G	Cache Directory Capacity (GB)	Data CM Capacity (GB)
2	0	0.5	31.5
4	0	0.75	63.25
6	0	1	95
8	0	1.25	126.75
10	0	1.5	158.5
12	0	1.75	190.25
14	0	2	222
16	0	2.25	253.75
0	2	0.5	63 .5
0	4	0.75	127.25
0	6	1	191
0	8	1.25	254.75
0	10	1.5	318.5
0	12	1.75	382.25
0	14	2	446
0	16	2.25	509.75

When multiple CPEXs are installed, a configuration in which data CM capacity is distributed as evenly as possible to each CPEX is recommended. CPEX0 requires more cache memory capacity than other CPEXs because SM capacity is included in CPEX0.