

FIRMWARE SECTION

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NOTICE: Unless otherwise stated, “firmware version” in this section indicates DKCMAIN firmware.

1. Overview

1.1 Firmware Types

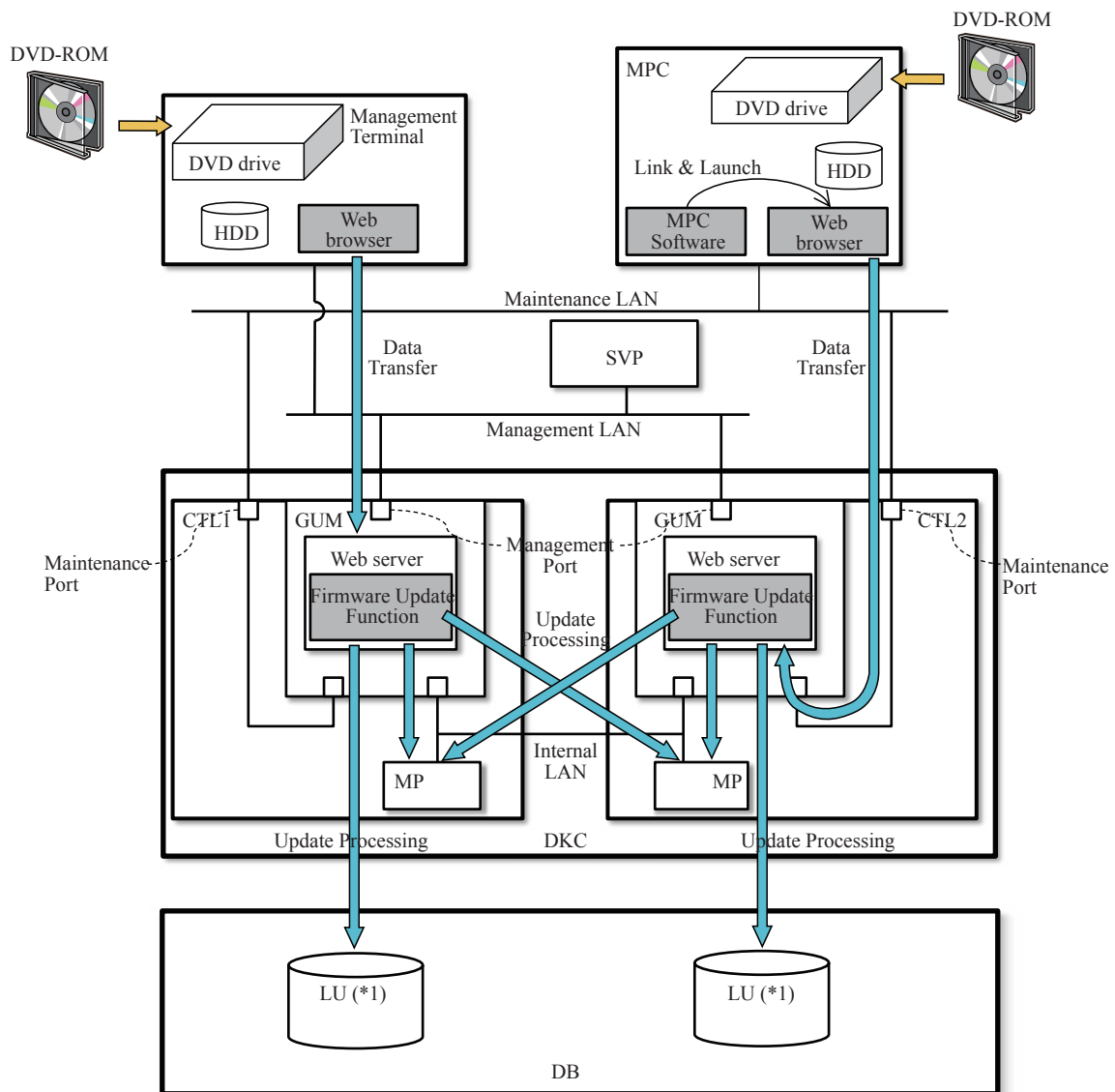
The Firmware listed below can be exchanged via the Maintenance PC. Therefore, the exchange of Firmware requires operational knowledge of the Maintenance PC ([MPC00-00](#)).

Firmware	Written to
DKCMAIN	CFM/MP
CHB (FC16G)	CFM/CHB (FC16G)
CHB (FC32G) (*2)	CFM/CHB (FC32G)
CHB (iSCSI)	CFM/CHB (iSCSI)
DKB	CFM/DKB Port
RAMBOOT	CFM/MP
Expander	DB (ENC)
CONFIG	CFM/SM
CFM	CFM
HDD	DB (HDD)
GUM	CFM/GUM
Unified Hypervisor (*1)	CFM
NASFWINST (*1)	CFM/GUM
NASFW (*1)	LU

*1: This is supported by the firmware version 83-03-21-x0/xx or later and installable only when NAS Modules are installed (when “NASAllFirmware.mda” is used)

*2: This is supported by the firmware version 83-04-01-x0/xx or later, and GUM firmware version 83-04-00/01 or later.

1.2 Update Firmware Flow



NOTE: The DVD-ROM used for the Firmware update includes the OSS media.

*1: Write the firmware in the LU only when installing NASFW.

1.3 Update Firmware

Firmware can be exchanged off-line or on-line.

1. Off-line

The storage system is blocked. → Firmware are rewritten. → The storage system is recovered.

2. On-line

Transfer firmware to the DKC



The processor is blocked for maintenance. → Firmware are rewritten. → The processor is recovered.



This is performed for each exchanging unit.

3. GUM Only

The Firmware is transferred to GUM → The Firmware is rewritten

NOTE: GUM Only is used only for initial installation and GUM failure occurrence. For normal Firmware update, specify offline or online.

NOTE: Check version of the Firmware to be substituted before rewriting it. When the Maintenance PC determines that the Firmware cannot be rewritten, it displays an error message and cancels the exchange of the Firmware.

NOTICE: In case of ShadowImage/Volume Migration/Thin Image, the differential bitmap data on the Shared Memory of DKC is volatilized by the offline Update Firmware operation. Also, in case of Thin Image, the pool is blocked.

Execute the online Update Firmware operation not to volatilize the differential bitmap data on the Shared Memory of DKC and the Pool information on Thin Image.

2. Preprocessing Firmware

2.1 Connecting Maintenance PC

Install Maintenance PC referring to MAINTENANCE PC SECTION “[1.5 Maintenance PC Initial Installation/Update Installation](#)”.

Connect Maintenance PC referring to MAINTENANCE PC SECTION “[1.6 Connecting to the Storage System](#)” and then execute following process.

NOTICE: When operating “Storage Navigator” by SVP, terminate the operation and request customers to stop the service from Storage Device List by reference to the user guide “Stop the service in an each storage system”.

3. Update Firmware

3.1 Processing before Exchange (Offline)

- Check the Storage System status through the “Maintenance Utility” display (Check the versions of the all programs through the version display.).
- Make sure that correction copy and other processing are not in progress.
- Check that the PIN data does not exist in the “Maintenance” window of the maintenance PC. If it exists, perform post-processing of the PIN data.
- Check that the Storage System operates normally.
- Check that all channel paths to the Storage System are off-line (to block all Firmware).
- DKCMAIN, Unified Hypervisor, NASFWINST, NASFW, RAMBOOT, DKB, and CHB Firmware can be also exchanged off-line.
- In case that the off-line Update Firmware operation is executed when there is a pair of Thin Image, it is necessary to delete all Thin Image pairs.
- In case of performing the off-line Update Firmware for UR pairs, please make sure not to perform on the MCU and RCU simultaneously.
- In some primary Storage Systems and in some secondary Storage Systems, when off-line Update Firmware is executed under the Universal Replicator’s remote copy configuration, please suspend the pairs that were previously registered in EXCTG.
Furthermore, please do not exchange Firmware on the supervisor-side Storage System & subordinate-side Storage System at the same time.
- When exchanging the Firmware offline in the remote copy configuration using multiple primary and secondary Storage Systems of Universal Replicator, first suspend all the pairs in this configuration.
- When downgrading the DKCMAIN firmware version to less than 83-03-xx-x0/xx using Accelerated Compression, see [“3.3.3 Procedure for Downgrading the Firmware Version to a Version that Does Not Support Accelerated Compression”](#), and then perform the procedure for disabling the Accelerated Compression setting.
- When downgrading the HDD firmware version of NFHxx-QxxxSS to less than C0-xx using Accelerated Compression, see [“3.3.3 Procedure for Downgrading the Firmware Version to a Version that Does Not Support Accelerated Compression”](#), and then perform the procedure for disabling the Accelerated Compression setting.
- To update the firmware off-line when global-active device pairs exist, suspend all the pairs.

NOTICE: If the status of LDEV which is created by external device mapping function is “Maintenance blockade” status and Update Firmware is operated, the maintenance blockaded LDEV status is resorted and the status is changed to the normal status.

NOTICE: When off-line Update Firmware is executed, monitor information on the collection on Dynamic Tiering/active flash is annulled. Therefore, the next relocation is not executed for the automatic execution mode. Please execute the termination processing of the monitor if necessary for the manual execution mode.
After off-line Update Firmware, the relocation executed before off-line Update Firmware is restarted regardless of the execution mode.

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NOTICE: Please do not open the 'Maintenance' window during Update Firmware. If the window is opened, Update Firmware may end abnormally.
In the case that the 'Maintenance' window needs to be opened due to an error and so on, contact T.S.D. for help.

NOTICE: If the firmware that was not replaced by the offline firmware update should be replaced, replace it by the online firmware update.

NOTICE: When updating the NAS Module firmware "Unified Hypervisor, NASFW", make sure to update the DKCMAIN firmware.

NOTICE: To add a DW-F800-4HF32R after updating the firmware version 83-03-21-x0/xx or earlier to 83-04-01-x0/xx or later, install CHB (FC32G) firmware by following the procedure for Adding Channel Board (CHB).

NOTICE: When the NASFW version in the media is the same as the current version or a later version than the current one, "Warning" is displayed in the message column and the checkmark might be cleared.
If the NASFW version in the media is same as the current version, leave the checkbox unchecked because NASFW update is not necessary.
If the NASFW version in the media is a later version than the current one, check the checkbox because the NASFW needs to be updated.

Table 3-1 Off-line Update Firmware availability and Update Firmware time (approximate)

(unit : minutes)

Firmware	Firmware Transfer time (Uploading status)	Update Firmware time (Updating status) (*1)
DKCMAIN	5	25
CHB (FC16G)	1 (*4)	30
CHB (FC32G) (*6)		30
CHB (iSCSI)		30
DKB		30
RAMBOOT		25
Expander	- (*3)	- (*3)
CONFIG		
CFM		
HDD		
GUM		
Unified Hypervisor (*2)	30 (*7)	60
NASFWINST (*2)	35 (*5) (*8)	0 (*5)
NASFW (*2)	30	60
Total	101 (*9)	290

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- *1: This is the standard Update Firmware time. The Update Firmware time varies depending on the use situation, and is especially affected by the amount of write pending. When the amount of write pending is large, longer time than those shown in the above table might be required.
- *2: This is supported by the firmware version 83-03-21-x0/xx or later and installable only when NAS Modules are installed (when "NASAllFirmware.mda" is used).
- *3: Offline update is not available.
- *4: Firmware Transfer time except for DKCMAIN is about one minute in total.
- *5: NASFWINST performs transfer and update at the transfer destination concurrently, the Update Firmware is only the transfer time.
- *6: This is supported by the firmware version 83-04-01-x0/xx or later, and GUM firmware version 83-04-00/01 or later.
- *7: For firmware version less than 83-04-01-x0/xx, the firmware transfer time for Unified Hypervisor is about 40 minutes.
- *8: For firmware version less than 83-04-01-x0/xx, the firmware transfer time for NASFWINST is about 100 minutes.
- *9: For firmware version less than 83-04-01-x0/xx, the total of the firmware transfer time is about 176 minutes.

3.2 Processing before Exchange (Online)

- Check the Storage System status through the entire status display. Check the versions of all the programs through the version display. See [“3.4 Procedure for Checking Firmware Version”](#) for how to check the versions.
- Check that no processing is running. See MAINTENANCE PC SECTION [“4.7.3.3 Checking the Progress in the Task”](#) for how to check the state.
In case Dynamic Sparing, Correction Copy, or Copy Back is running, the Update Firmware can be performed if HDD Firmware is not included. For details, refer to [“3.3 Notes on Maintenance during LDEV Format/Drive Copy Operations”](#) on THEORY OF OPERATION SECTION.
- Check that the PIN data does not exist in the “Maintenance” window of the maintenance PC. If it exists, perform post-processing of the PIN data. See MAINTENANCE PC SECTION [“5.13.3 Pin Data Indication”](#) for how to check them.
- Check that the Storage System operates normally. See MAINTENANCE SECTION [“5.12 Maintenance Screen”](#) for how to check the state.
- When downgrading the DKCMAIN firmware version to less than 83-03-xx-x0/xx using Accelerated Compression, see [“3.3.3 Procedure for Downgrading the Firmware Version to a Version that Does Not Support Accelerated Compression”](#), and then perform the procedure for disabling the Accelerated Compression setting.
- When downgrading the HDD firmware version of NFHxx-QxxxSS to less than C0-XX using Accelerated Compression, see [“3.3.3 Procedure for Downgrading the Firmware Version to a Version that Does Not Support Accelerated Compression”](#), and then perform the procedure for disabling the Accelerated Compression setting.

NOTICE: It is recommended to execute this function in the status of all MP's utilization rates less than 50% because there is a possibility of receiving the influence of I/O processing at the processing time of this function.

NOTICE: If the status of LDEV which is created by external device mapping function is “Maintenance blockade” status and Update Firmware is operated, the maintenance blockaded LDEV status is restored and the status is changed to the normal status.

NOTICE: Please do not use the newly supported function until all Update Firmware operations are completed.

NOTICE: Please do not open the “Maintenance” window during Update Firmware. If the window is opened, Update Firmware may end abnormally. In the case that the “Maintenance” window needs to be opened due to an error and so on, contact T.S.D. for help.

NOTICE: If the firmware is downgraded from the SNMP v3 supported version (firmware version 83-01-21-x0/xx or later) to SNMP v3 unsupported version (firmware version 83-01-21-x0/xx or earlier), and then upgraded to the SNMP v3 supported version (firmware version 83-01-21-x0/xx or later) again, set SNMP in the “Alert Notifications” window.

NOTICE: Before downgrading the firmware version, ask the technical support division about the appropriateness of the operation.

- Do not perform the version downgrade during initial copy and resynchronization of TrueCopy, Universal Replicator, and global-active device. If it is performed, the firmware update might fail.
- You cannot downgrade a revision number (RR of 83-RR-XX-XX/XX) of the DKCMAIN firmware when the firmware version of the DKC in operation is as follows: If the version is as follows, update the firmware offline.
 - 83-03-30-x0/xx or less
 - 83-04-01-x0/xx or later and 83-04-28-x0/xx or less
 - 83-04-41-x0/xx or later and 83-04-44-x0/xx or less

NOTICE: When updating the firmware for NAS Module (Unified Hypervisor and NASFW), the I/O processing by CIFS through NAS Modules is disconnected. Update the firmware for NAS Module in the state that the I/O processing is not running through NAS Modules or retry the I/O Processing.

NOTICE: When updating the NAS Module firmware "Unified Hypervisor, NASFW", make sure to update the DKCMAIN firmware.

NOTICE: To add a DW-F800-4HF32R after updating the firmware version 83-03-21-x0/xx or earlier to 83-04-01-x0/xx or later, install CHB (FC32G) firmware by following the procedure for Adding Channel Board (CHB).

NOTICE: When the NASFW version in the media is the same as the current version or a later version than the current one, "Warning" is displayed in the message column and the checkmark might be cleared.

If the NASFW version in the media is same as the current version, leave the checkbox unchecked because NASFW update is not necessary.

If the NASFW version in the media is a later version than the current one, check the checkbox because the NASFW needs to be updated.

Table 3-2 On-line Update Firmware time (approximate) (When the firmware version is 83-04-41-x0/xx or later)

(unit : minutes)

Firmware	Firmware Transfer time (Uploading status)	Update Firmware time (Updating status)	Special instruction
DKCMAIN	5	10	The time is that when "By 1/4" is selected for reboot processors.
CHB (FC16G)	1	10	The update time is 15 minutes when the CHB Flash data is also updated.
CHB (FC32G)		10	The update time is 15 minutes when the CHB Flash data is also updated.
CHB (iSCSI) (*2)		15	The update time is 20 minutes when the CHB Flash data is also updated.
DKB		10	
RAMBOOT		10	
CFM		5	
Expander		5	The update time per Expander. Two Expanders are mounted in each Drive Box. Therefore, the update time is calculated as follows: $5 \times 2 \times$ the number of Drive Boxes
CONFIG		2	
HDD		2	The update time depends on the storage system configuration.
GUM	20	0	The update time is essentially zero because the update is performed in parallel with the update of the firmware other than GUM.
Unified Hypervisor	30	60	
NASFWINST	35	0	The update time is essentially zero because the transfer and the update are performed in parallel.
NASFW	30	60	
Total	121	199 (*1)	

*1: The total update time depends on the storage system configuration and selected options at the time of update. If the update of the firmware other than GUM is already completed or if only the GUM firmware is updated, the total firmware update time is 50 minutes. (It might take a longer time, about ten minutes longer at a maximum, depending on the usage conditions of the SVP/ Maintenance PC.).

*2: It takes up to 1 minute to connect the host per CHB. Add 1 minute (or less) $\times$ the number of mounted CHB (iSCSI) to the firmware update time.

Table 3-3 On-line Update Firmware time (approximate) (When the firmware version is less than 83-04-41-x0/xx)

(unit : minutes)

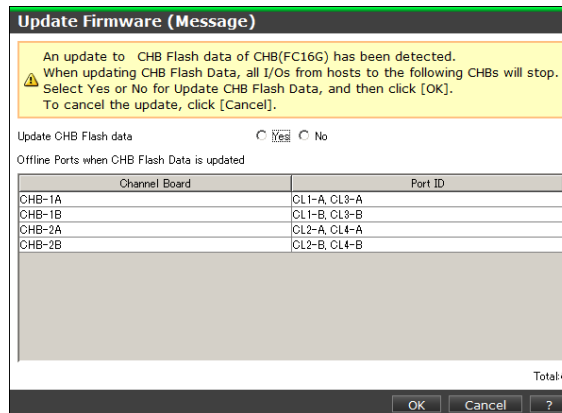
Firmware	Firmware Transfer time (Uploading status)	Update Firmware time (Updating status)
DKCMAIN	5	10(*1)
CHB (FC16G)	1	10 (15 (*7) (*8))
CHB (FC32G) (*8)		10 (15 (*7))
CHB (iSCSI) (*13)		15 (20 (*7) (*8))
DKB		10
RAMBOOT		10
CFM		5
Expander		5 (*6)
CONFIG		2
HDD		2 (*2)
GUM	20 (*9)	65 (*3)
Unified Hypervisor (*4)	30 (*10)	60
NASFWINST (*4)	35 (*5) (*11)	0 (*5)
NASFW (*4)	30	60
Total	121 (*12)	264 (279 (*7) (*8))

- *1: The time is that when “By 1/4” is selected for reboot processors.
- *2: It depends on the storage system configuration.
- *3: It might take a longer time, about ten minutes at a maximum, depending on the usage conditions of the SVP/Maintenance PC.
- *4: This is supported by the firmware version 83-03-21-x0/xx or later and installable only when NAS Modules are installed (when “NASAllFirmware.mda” is used).
- *5: NASFWINST performs transfer and update at the transfer destination concurrently, the Update Firmware is only the transfer time.
- *6: It takes five minutes for each Expander.
Four expanders are mounted on DBS/DBL/DB60/DBF.
It takes time for the number of installed Drive Boxes.
Example: When two DBF are installed, it takes about 20 minutes (about 10 minutes for each × two DBF).
- *7: The time is that when “Yes” is selected for “Update CHB Flash Data” processors.
- *8: This is supported by the firmware version 83-04-01-x0/xx or later, and GUM firmware version 83-04-00/01 or later.
- *9: For firmware version less than 83-04-01-x0/xx, the firmware transfer time for GUM is about 25 minutes.
- *10: For firmware version less than 83-04-01-x0/xx, the firmware transfer time for Unified Hypervisor is about 40 minutes.
- *11: For firmware version less than 83-04-01-x0/xx, the firmware transfer time for NASFWINST is about 100 minutes.
- *12: For firmware version less than 83-04-01-x0/xx, the total of the firmware transfer time is about 201 minutes.
- *13: For the firmware version 83-03-30-x0/xx or more and less than 83-04-01-x0/xx, or 83-04-28-x0/xx or later, it takes up to 1 minute to connect the host per CHB. Add 1 minute (or less) × the number of mounted CHB (iSCSI) to the firmware update time.

3.3 Operating Procedure

The online firmware update and the offline firmware update are available for the firmware update.
For the online firmware update, see the following table to update the firmware.

NOTICE: If the following window is displayed during the firmware update procedure, the CHB Flash data update is required.



The CHB Flash data update must be performed.

To perform the CHB Flash data update, stop I/O to the path to the Storage System for the firmware update.

Consult your customer about stopping I/O when the window above is displayed and create a procedure plan before starting the work.

If a CHB Flash data update is necessary, XX part of the CHB (FC16G/FC32G/iSCSI) firmware version (83-00-XX-YY) will change.

CHB (FC16G) 83-00-XX-YY

CHB (FC32G) 83-03-XX-YY

CHB (iSCSI) 83-01-XX-YY

	When the firmware version in the installation media is 83-01-21-x0/xx or earlier	When the firmware version in the installation media is 83-01-21-x0/xx or later
When the firmware version of the running Storage System is 83-01-21-x0/xx or earlier	See the MAINTENANCE PC SECTION “3.18 Rebooting GUM” to update the firmware separately after rebooting GUM of the both controllers. (FIRM03-69A)	See the MAINTENANCE PC SECTION “3.18 Rebooting GUM” to update the firmware separately after rebooting GUM of the both controllers. (FIRM03-69A) (*1)
When the firmware version of the running Storage System is 83-01-21-x0/xx or later	It is version down of the Firmware. It is necessary to contact TSD (Technical support Division) for approval.	See When updating firmware collectively. (FIRM03-51) (*1)

*1: If NAS modules are added, perform INSTALLATION SECTION [“3.6 Adding NAS Module”](#).

For the offline firmware update, or only selected firmware update, see When updating firmware separately ([FIRM03-69A](#)).

NOTICE: When the firmware version of the Storage System in operation is less than 83-01-04-x0/xx and the JRE whose version is 1.8.45 or later is installed, the firmware update window is not displayed correctly.

3.3.1 Procedure for Updating Firmware

CAUTION

Use the installation media corresponding to the PC (Maintenance PC/SVP) for the installation/update.

If incorrect installation media is used, the Maintenance PC or the SVP does not operate correctly. In that case, see MAINTENANCE PC SECTION ["10.2 Maintenance PC Software Uninstallation"](#) to remove it (The procedure for remove the SVP software is the same).

Then, use the correct installation media and install it again. Once the media is removed, the set information is initialized. Therefore, set the information that was set before the removal again.

NOTICE: If the window indicating the expiration of the electronic certificate is displayed at the start-up of the Maintenance window when the installed Java version is Java 1.7.0_55 or later or Java 1.8.0_5 or later, the Java security settings must be changed. For the details, see MAINTENANCE PC SECTION ["3.29. Changing Java Security Settings When Electronic Certificate is Expired"](#).

[When updating firmware collectively]

1. Checking and recording EVS status to deal with NAS Modules

When the firmware version is 83-03-21-x0/xx or later and NAS Modules are already installed, follow the procedure below to update the firmware (Unified Hypervisor, NASFWINST, and NASFW) for NAS Module.

Go to [Step 2](#) for other than the above-mentioned status.

Before starting the firmware update, check and record the running EVS status in the NAS Module. See [Step 1](#) to [Step 5](#) in MAINTENANCE PC SECTION ["6.4.1 Migration before the Maintenance Operations"](#) for the procedure for checking EVS.

2. Clearing the cache of the browser

(1) Clear the cache of the browser.

(a) When using Internet Explorer

- (i) Open [Start] - [Control Panel] - [Internet Options].
- (ii) Click the [Delete] button of [Browser History] in the [General] tab.
- (iii) Check that the check box of [Internet Temporary File] is checked and click the [Delete] button.

(b) When using Firefox

- (i) Select the [Network] tab of [Details] in the "Option" window and click the [Erase Immediately] of [Cached Web Page].

(2) Close all the open browsers

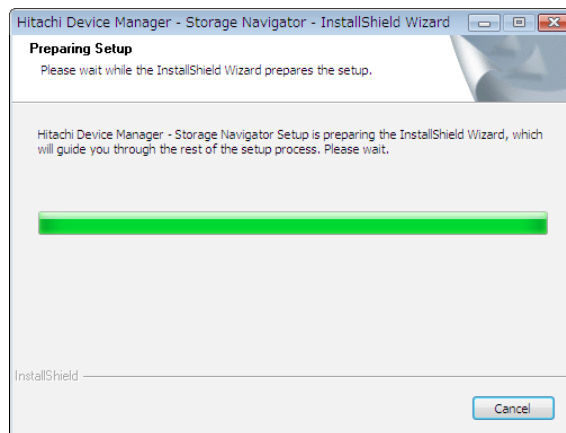
3. Insert [Installation Media for Maintenance PC] into the DVD Drive of the Maintenance PC.

4. Right-click Setup.exe immediately under the drive to select [Execute as Administrator].

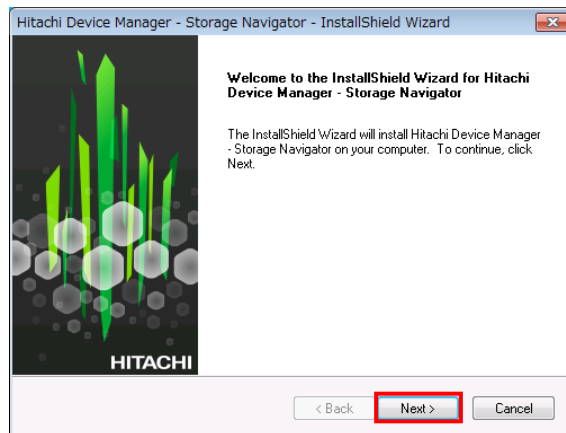
NOTE: If a DVD drive is not mounted on a PC, copy all the files of installation media for the Maintenance PC to “work folder”. For a “work folder” name, do not use a double-byte character because Setup.exe might not start if a double-byte character is included in the name.

Then, use the files in “work folder”.

5. The “Preparing Setup” window is displayed. Wait until the preparation is completed.



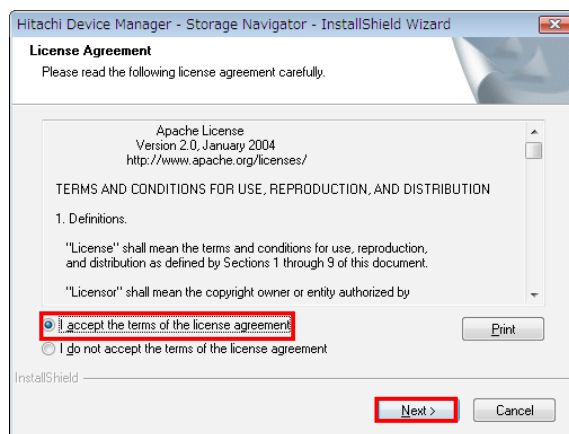
6. The “Welcome” window is displayed when the preparation is completed. Click the [Next] button.



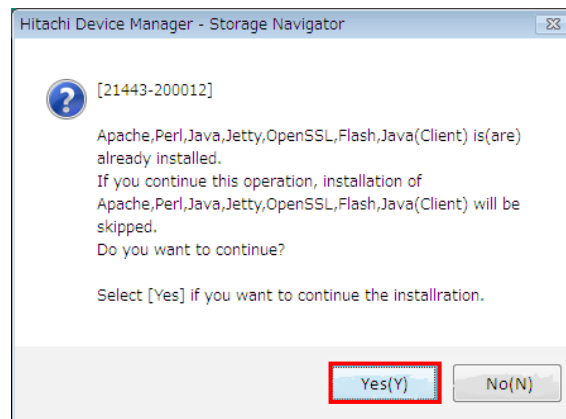
7. The “Confirmation” window of the “JRE”, “Perl”, “Apache”, “Jetty”, “Openssl” and “Flash licenses” is displayed.

If the firmware version is 83-03-21-x0/xx or later, Putty is also displayed in addition to the above licenses.

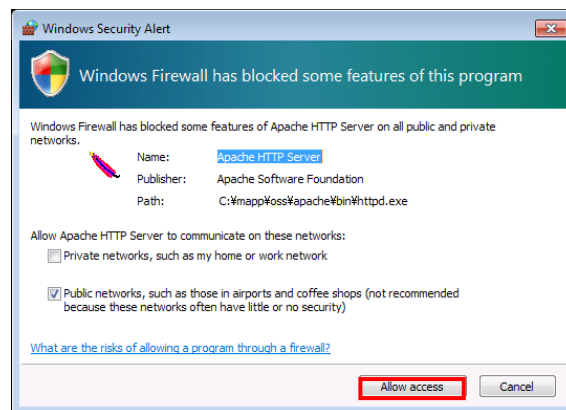
Select [I accept the terms of the license agreement] and click the [Next] button.



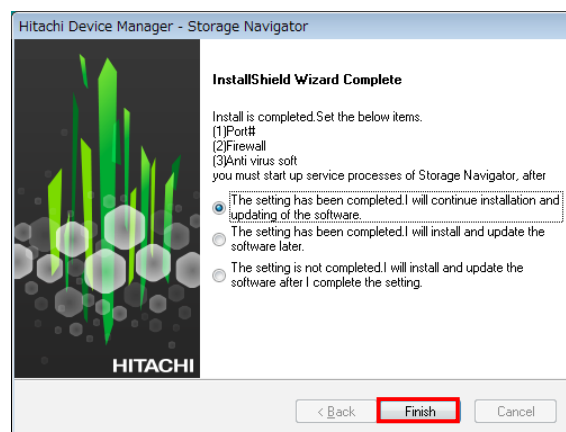
8. The skip confirmation message is displayed. Click the [Yes] button.



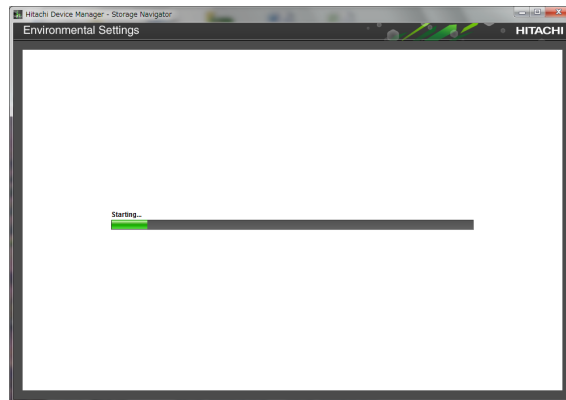
NOTE: When the “Windows Security Alert” window is displayed, click [Allow access] button.



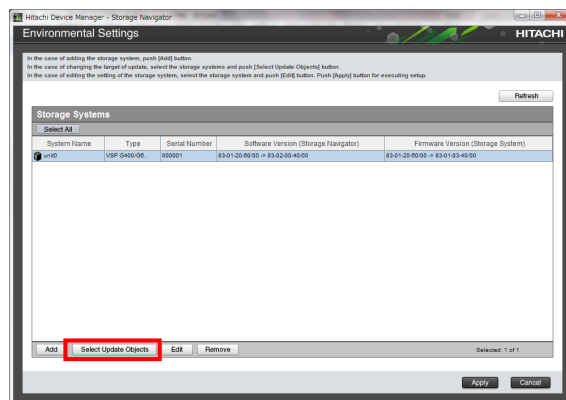
9. The installation completion message is displayed. Select [The setting has been completed. I will continue installation and updating of the software.] and click the [Finish] button.



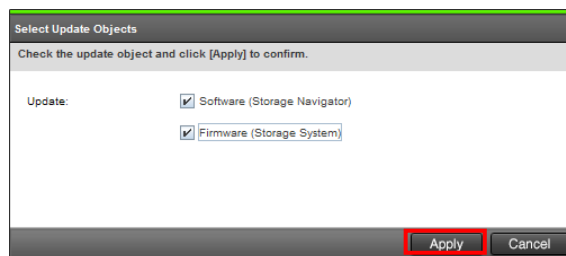
10. Prepare update processing. The Preparing update window is displayed. Wait until the preparation is complete.



11. Select whether to update the firmware and add the storage system simultaneously. Select the storage systems that change the state whether to update and click the [Select Update Objects] button.



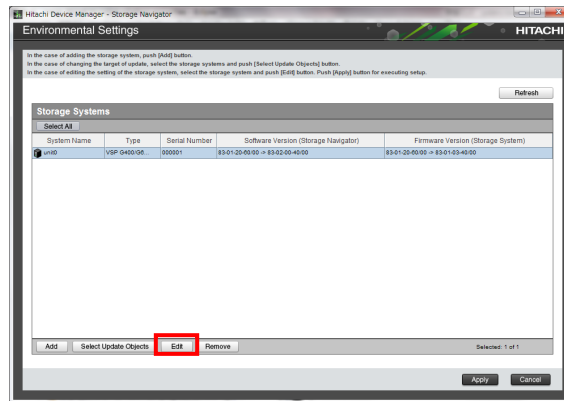
12. The “Select Update Objects” window is displayed. To update the software, check the check box of Software (Storage Navigator). If not, uncheck the check box. Check the Firmware (Storage System) to update the firmware. If not, uncheck it and click the [Apply] button.



13. When the [Apply] button is clicked, the display is returned to the [Environmental Settings] window.

To update the firmware, perform the following operations.

- (1) Select the target storage system and click the [Edit] button.



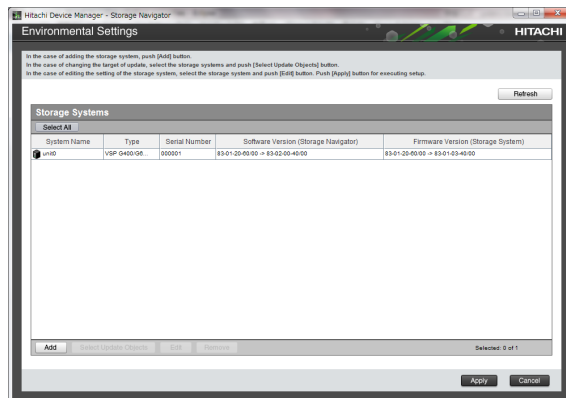
- (2) Confirm that the checkbox of “Start service automatically, when the MPC is rebooted.” is unchecked. If the checkbox is checked, uncheck it.

- (3) When the confirmation and the input are completed, click the [Apply] button.

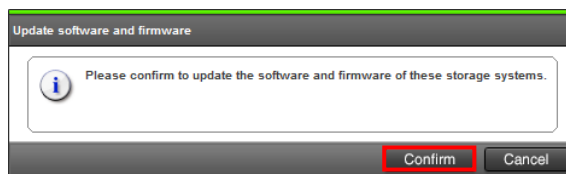
14. Repeat [Step 11](#) to [Step 13](#) for all the storage systems.

Check whether the current software version/firmware version and the new software version/firmware version are correct.

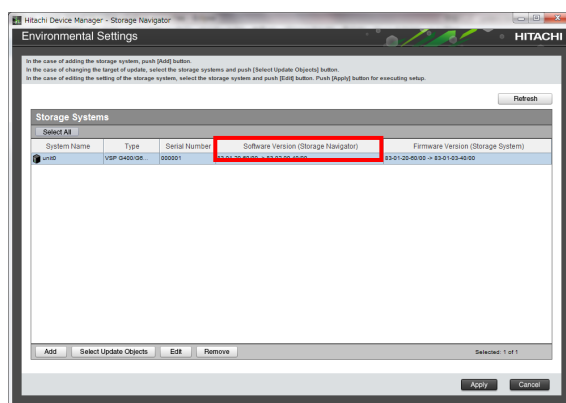
When the settings and version confirmation are completed for all the storage systems, click the [Apply] button in the target storage system list window.



15. The “Update software and firmware” window is displayed. Click the [Confirm] button.



16. The Run update window is displayed and the software update of the storage system starts automatically. You can check the software update status in the Software (Storage Navigator) row.

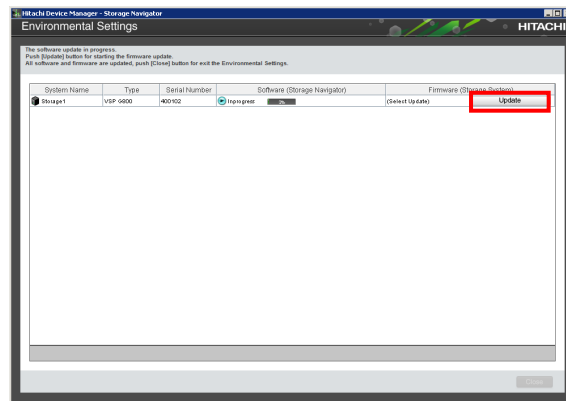


The software update status is as shown below.

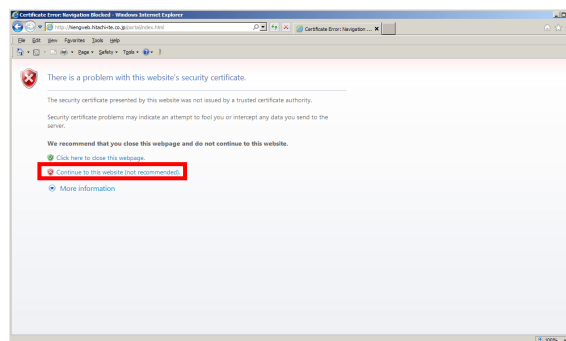
Status	Description
Waiting	Software is not updated. Software is updated one by one. If the software of a storage system is already updated, the other storage systems are in this state.
In Progress	Software update is running.
Completed	Software update is complete.
Failed	Software update failed. If storage systems were added, the addition might not be complete. Click and follow the message.
(Not Update)	This is not selected as a software update target. If storage systems were added, this state does not appear.

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17. Access the storage system and update the firmware. To update the firmware, click [Update] in the Firmware (Storage System) row. This procedure is required only when the Firmware is selected as an update target.



- (1) If the Security warning window is displayed, click [Continue to this website] to display the Update Firmware window. Then, close the browser.

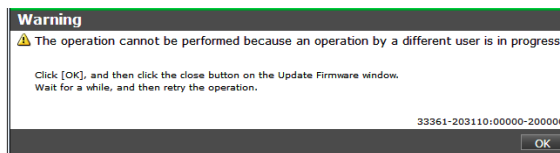


- NOTE:
- If Firmware was not selected as an update target, this step is not required. Perform it again from “[3.3.1 Procedure for Updating Firmware](#)”.
 - If the window of [Internet Explorer cannot display the webpage] or [Unable to launch the application] is displayed in this procedure, close the window. Then, see ([FIRM03-69A](#)) and update the firmware again.

(2) Java start

- NOTICE:**
- While running the application, do not terminate it forcibly (PC shutdown or others). If such operation is performed, the message [32061-208063] might be displayed when logging into Maintenance Utility. When the message is displayed, perform the following procedure from [Step 1.](#) through [Step 3.](#)
 - If the application suddenly disappears while running it, click the [Close] button in the Run update window to close the window. Confirm that the message [32061-208063] is displayed when logging into Maintenance Utility that is newly opened. Then, perform the procedure from [Step 1.](#) through [Step 3.](#)
 - When the message “A time-out error occurred during communication with the web server.” is displayed, refresh the Maintenance Utility and confirm that the message [32061-208063] is displayed. Then, perform [Step 1.](#) through [Step 3.](#)

1. Open the “Update Firmware” window from the newly opened “Maintenance Utility” window.
2. Confirm that the message “The operation cannot be performed because an operation by a different user is in progress.” is displayed.



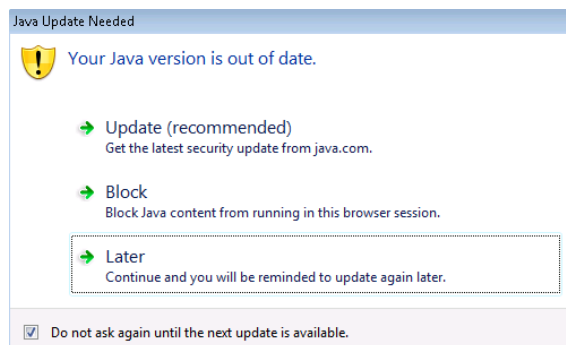
(If the progress window appears, the firmware is being updated. Then, wait until the firmware update is complete.)

3. Execute [Force Release System Lock]. (See MAINTENANCE PC SECTION [“3.17 Force Release System Lock”](#).)

The displayed windows differ according to the JRE (Java Runtime Environment) versions. In the case of JRE7 or JRE8, go to [Step \(a\)](#). In the case of JRE6, go to [Step \(b\)](#).

(a) In the case of JRE7 or JRE8

(a-1) The update of the Java application may be promoted.



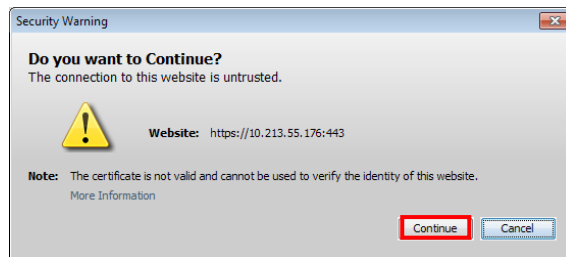
When using Maintenance Utility with the Java you are using, click [Later]. If you check the checkbox of [Do not ask again until the next update is available.] once and click [Later], this window is not displayed from now on. When clicking [Update(recommended)] and [Block], close the window of the Web browser and restart Maintenance Utility. When checking the checkbox of [Do not ask again until the next update is available.] and selecting [Update(recommended)] or [Block], Maintenance Utility cannot update the firmware. To allow Maintenance Utility to update the firmware, execute the following procedures.

- (i) Click [All Programs ([All apps] for Windows 10)] - [Java] - [Configure Java] from the [Start] menu of Windows and start [Java Control Panel].
- (ii) Click the [Security] tab of [Java Control Panel].
- (iii) If the checkbox of [Enable Java content in the browser] in the [Security] tab is checked, uncheck it once and click the [Apply] button.
- (iv) Check the checkbox of [Enable Java content in the browser] and click the [Apply] button.
- (v) Click the [OK] button of [Java Control Panel] to close the window.
- (vi) Restart Maintenance Utility.

NOTE: When changing the Java setting in [Java Control Panel], a message like “Java Plugin settings changed” may be displayed. If such message is displayed, click the [OK] button.

(a-2) When the message “Do you want to Continue?” is displayed, click the [Continue] button.

NOTE: This window may not be displayed.



NOTE: If you press the [Cancel] button in the window, the firmware update is not complete. Perform it again from “[3.3.1 Procedure for Updating Firmware](#)”.

(a-3) When the message “Do you want to run this application?” is displayed, check [I accept the risk and want to run this application.] and click the [Run] button. Go to [Step \(3\)](#).

NOTE: This window may not be displayed.



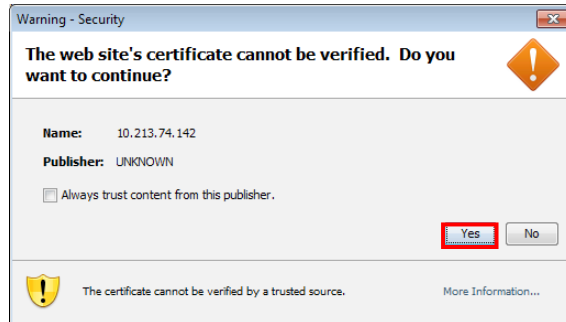
NOTE: If you press the [Cancel] button in the window, the firmware update is not complete. Perform it again from “[3.3.1 Procedure for Updating Firmware](#)”.

NOTE: When the “Application Blocked by Java Security” or “Application Blocked by Security Settings” window is displayed, refer to TROUBLESHOOTING SECTION “[3.28.1.1 Troubleshooting Related to Installation and Upgrade](#)” and register the storage system in the exception site. After the registration, perform the procedure of “[3.3.1 Procedure for Updating Firmware](#)” again.

(b) In the case of JRE6

(b-1) When the message “The web site’s certificate cannot be verified. Do you want to continue?” is displayed, click the [Yes] button.

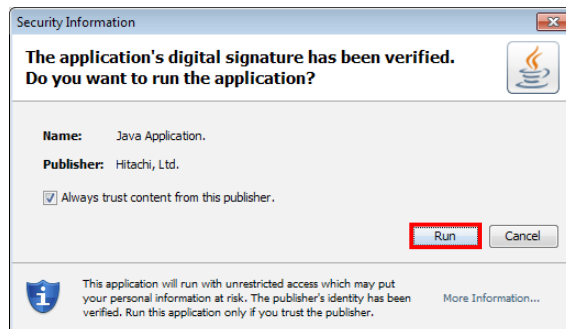
NOTE: This window may not be displayed.



NOTE: If you press the [No] button in the window, the firmware update is not complete.
Perform it again from [“3.3.1 Procedure for Updating Firmware”](#).

(b-2) When the message “Do you want to run this application?” is displayed, check [I accept the risk and want to run this application.] and click the [Run] button. Go to [Step \(3\)](#).

NOTE: This window may not be displayed.



NOTE: If you press the [Cancel] button in the window, the firmware update is not complete.
Perform it again from [“3.3.1 Procedure for Updating Firmware”](#).

(3) Update Firmware

The Update Firmware window is displayed. Click the [Apply] button.

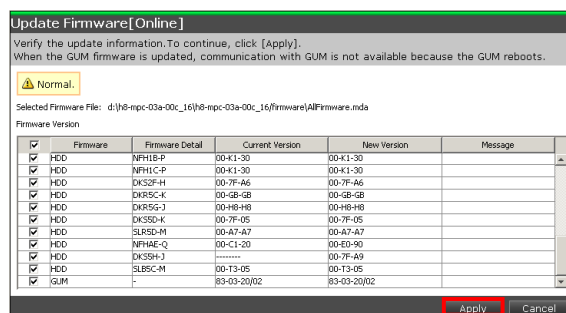
NOTE: The following firmware might be displayed.

Firmware	Display conditions
Unified Hypervisor	When NAS Modules are installed.
NASFWINST	
NASFW	
CHB (FC32G)	The Storage System firmware before update is 83-04-01-x0/xx or later.

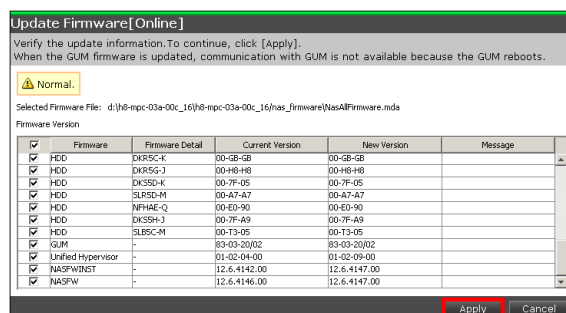
NOTE: The update window varies whether NAS Modules are installed or not.

“Unified Hypervisor”, “NASFWINST” and “NASFW” are displayed only when NAS Modules are installed.

(a) When NAS Modules are not installed



(b) When NAS Modules are installed



(3-1) When the CHB Flash data update is required, the following window is displayed. Update the firmware by following the procedure.

NOTE: The CHB Flash data update requires stopping I/O to the path to the Storage System for the update. Ask your customer and check that I/O to the target Storage System has been stopped. Then, select [Yes] and click the [OK] button.

If I/O cannot be stopped, select [No] and click the [OK] button. The CHB Flash data update is skipped and the firmware is updated. In this case, perform the CHB Flash data update immediately based on the procedure created by you and your customer for when I/O cannot be stopped.

If a CHB Flash data update is necessary, XX part of the CHB (FC16G/FC32G/iSCSI) firmware version (83-00-XX-YY) will change.

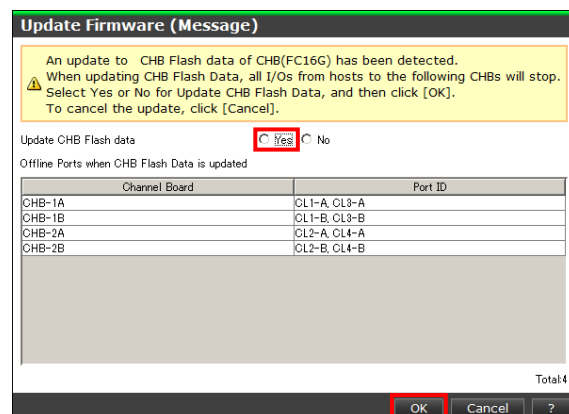
CHB (FC16G) 83-00-XX-YY

CHB (FC32G) 83-03-XX-YY

CHB (iSCSI) 83-01-XX-YY

- NOTE
- All channel paths used for updating the CHB Flash data need to be offline. Ask the customer to perform the following tasks before updating the CHB Flash data.
 - When any channel paths are connected to the host server, stop all I/O operations.
 - When updating the CHB Flash data with external paths for Universal Volume Manager, stop I/O operations to all external volumes over the external paths.
 - When updating the CHB Flash data with paths for TrueCopy, suspend all TrueCopy pairs over the remote paths.
 - When updating the CHB Flash data with paths for Universal Replicator, suspend all Universal Replicator pairs over the remote paths.
 - When updating the CHB Flash data with paths for global-active device, suspend all global-active device pairs over the remote paths.
 - Make sure to confirm that the firmware update is complete, and then resynchronize the pairs or restart I/O operations to the storage volumes/external volumes.

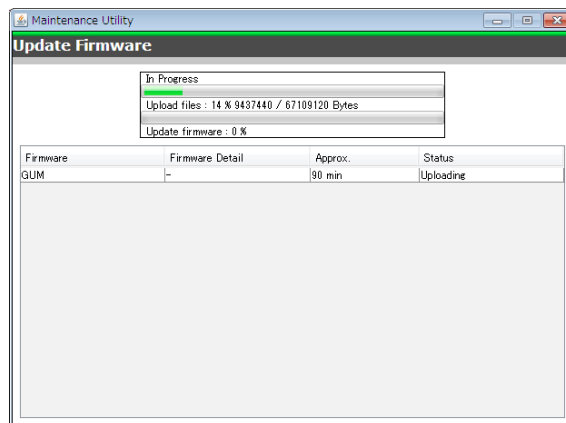
(a) Select [Yes] and click [OK]. Follow instructions in the window to update the CHB Flash data.



- (b) If storage volumes over the channel path cannot be recognized from the host server after the Update CHB Flash data is complete, see [“4. Recovery from Open Platform Failure”](#) in the TROUBLESHOOTING SECTION and perform necessary procedures.
- (c) Check the path status referring to the user guide for each program product (P.P.) after the Update CHB Flash data is complete. If the status of a path is not normal, restore the path status referring to the user guide for each program product (P.P.).

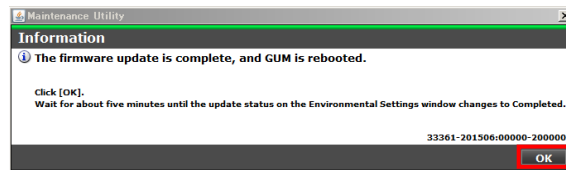
P.P.	Reference for checking the path status
UR	See “Monitoring UR remote connections and path status” in the Hitachi Universal Replicator User Guide. See “Remote path status problems” in the Hitachi Universal Replicator User Guide and restore the path status if necessary.
TC	See “Monitoring and maintaining remote connections and paths” in the Hitachi TrueCopy® User Guide to check the path status. Then, see “Remote path status problems” and restore it if necessary.
UVM	See “Monitoring external volumes and paths” in the Hitachi Universal Volume Manager User Guide to check the path status. Then, see “Troubleshooting external path status” and restore it if necessary.
GAD	See OnlineHelp. Then, see “Troubleshooting related to remote path status” in the Global-Active Device User Guide and restore it if necessary.

- (4) The progress of the firmware update is displayed.

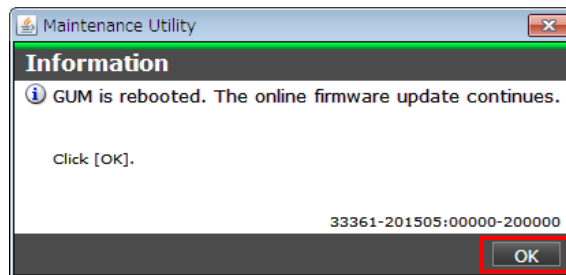


- (5) The procedure varies depending on the conditions.
- (a) When all the following conditions are met.
- The DKCMAIN firmware version before the update is 83-04-41-x0/xx or later.
 - The GUM firmware version before the update is 83-04-41/xx or later.
 - The DKCMAIN firmware version in the media is 83-04-41-x0/xx or later.

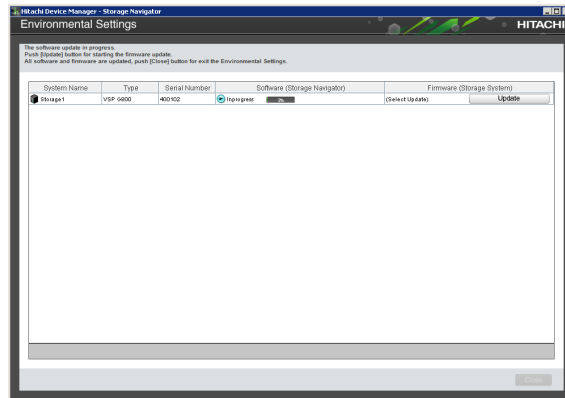
- (i) When the following message appears, click [OK] button.



- (ii) Click [×] button in the progress rate window.
- (iii) Wait for about 5 minutes until GUM reboot is completed and the update status of the Environmental Settings window becomes completed.
- (b) When the conditions of (a) are not met.
Update window will be closed, when click [OK] button for messages.



18. You can check the firmware update status in the Firmware (Storage System) row.
Wait until the firmware update is complete.

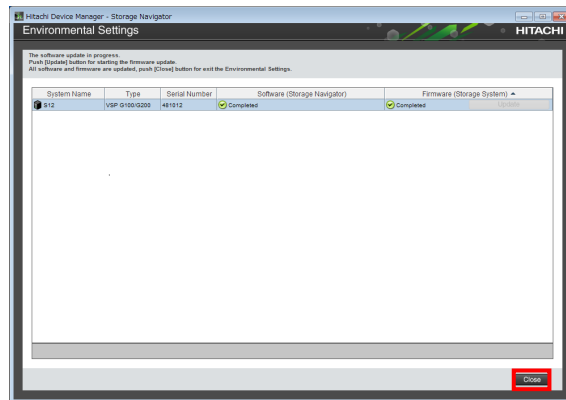


The firmware update status is as shown below.

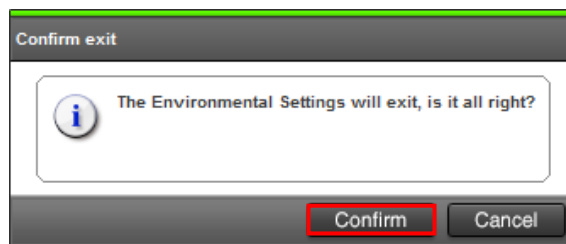
Status	Description
(Select Update)	Wait for starting the [Update Firmware] window. Click [Update] to display the [Update Firmware] window.
In Progress	The [Update Firmware] window started and the firmware update is not complete. This state appears even if the firmware update is cancelled.
Completed	Firmware update is complete.
Failed	Firmware update failed. Click [Update] to display the [Update Firmware] window and check the error details. When an error occurs, see (FIRM03-69A) and update the firmware again.
Communication Timeout	The completion of the firmware update in time (*1) is not confirmed. Check the state in the [Update Firmware] window.
(Not Update)	This is not selected as a firmware update target.

*1: When NAS Modules are not installed:200 minutes
When NAS Modules are installed:540 minutes

19. After completing the update of the software and the firmware, click the [Close] button.



20. Click the [Confirm] button to terminate the tool.



21. Restoring EVS to deal with NAS Modules

When the firmware (Unified Hypervisor, NASFWINST, and NASFW) for NAS Module was updated in the state that the firmware version is 83-03-21-x0/xx or later and NAS Modules are already installed, follow the procedure below.

Go to [Step 22](#) for other than the above-mentioned status.

After completing the firmware update, check the running EVS status in the NAS Module.

See [Step 1](#) to [Step 5](#) in MAINTENANCE PC SECTION “[6.4.1 Migration before the Maintenance Operations](#)” for the procedure for checking EVS.

If the checked EVS status is different from the information recorded in [Step 1](#), migrate the EVS to return to the recorded status.

See MAINTENANCE PC SECTION “[6.4.2 Migration after the Maintenance Operations](#)” for the procedure for EVS migration.

22. Start the service of the storage system in accordance with the procedure of MAINTENANCE PC SECTION “[1.6.4.2 Starting the Service of Storage System](#)”.

23. If the setting of “Start service automatically, when the MPC is rebooted.” is changed, restore the setting.

24. Clearing the cache of the browser

Perform the following procedure only when the firmware version is less than 83-03-0x-x0/xx.

- (1) Clear the cache of the browser.
 - (a) When using Internet Explorer
 - (i) Open [Start] - [Control Panel] - [Internet Options].
 - (ii) Click the [Delete] button of [Browser History] in the [General] tab.
 - (iii) Check that the check box of [Internet Temporary File] is checked and click the [Delete] button.
 - (b) When using Firefox
 - (i) Select the [Network] tab of [Details] in the "Option" window and click the [Erase Immediately] of [Cached Web Page].
- (2) Close all the open browsers

[When updating firmware separately]

1. Updating Software of SVP.

- (1) Update the SVP Storage Device List by reference to MAINTENANCE PC SECTION "[1.5.5 Storage Device List Update](#)".
- (2) Update the SVP software by reference to MAINTENANCE PC SECTION "[1.6.5 Changing Storage System Information and Updating Software of Web Console](#)".
- (3) Start the SVP service by reference to MAINTENANCE PC SECTION "[1.6.4.2 Starting the Service of Storage System](#)".

2. Updating Software of Maintenance PC

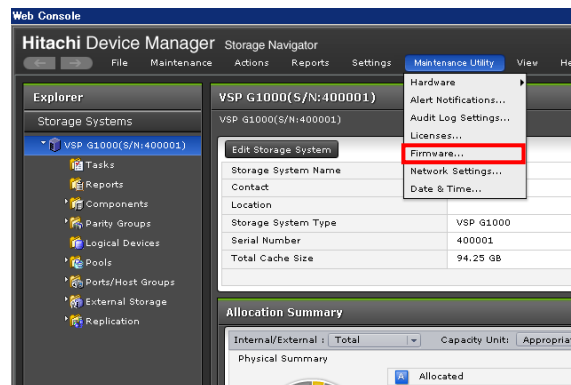
- (1) Update the Maintenance PC Storage Device List by reference to MAINTENANCE PC SECTION "[1.5.5 Storage Device List Update](#)".
- (2) Update the Maintenance PC software by reference to MAINTENANCE PC SECTION "[1.6.5 Changing Storage System Information and Updating Software of Web Console](#)".
- (3) Start the Maintenance PC service by reference to MAINTENANCE PC SECTION "[1.6.4.2 Starting the Service of Storage System](#)".

3. Updating Firmware of the Storage System

4. Updating Firmware of the Storage System by reference to "[3.3.2 Updating Firmware of the Storage System](#)".

3.3.2 Updating Firmware of the Storage System

1. Connect the maintenance PC to the storage system.
Connect the maintenance PC to the maintenance LAN of the storage system.
2. Clearing the cache of the browser
 - (1) Clear the cache of the browser.
 - (a) When using Internet Explorer
 - (i) Open [Start] - [Control Panel] - [Internet Options].
 - (ii) Click the [Delete] button of [Browser History] in the [General] tab.
 - (iii) Check that the check box of [Internet Temporary File] is checked and click the [Delete] button.
 - (b) When using Firefox
 - (i) Select the [Network] tab of [Details] in the “Option” window and click the [Erase Immediately] of [Cached Web Page].
 - (2) Close all the open browsers
3. Starting "Firmware" window
 - (1) Start the Web Console referring to MAINTENANCE PC SECTION “1.6 Connecting to the Storage System”.
 - (2) Select [Maintenance Utility] - [Firmware...] in the “Web Console” window.



6. Java start

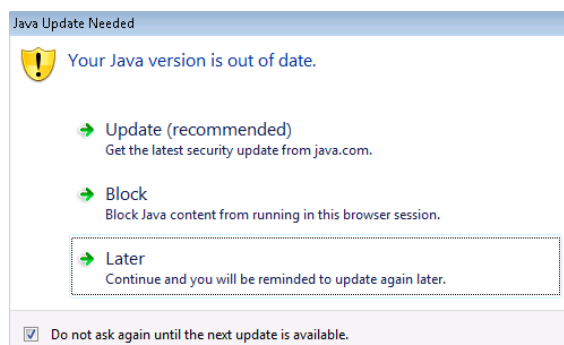
- NOTICE:**
- While running the application, do not log out of the original Maintenance Utility that opened the firmware window or do not terminate the application forcibly (PC shutdown or others). If such operation is performed, the message [32061-208063] might be displayed at the time of logging next time. When the message is displayed, perform the following procedure from [Step 1.](#) through [Step 3.](#)
 - If the application suddenly disappears while running it, click the refresh button to confirm that the message [32061-208063] is displayed. Then, perform the procedure from [Step 1.](#) through [Step 3.](#)
 - When the message “A time-out error occurred during communication with the web server.” is displayed, refresh the Maintenance Utility and confirm that the message [32061-208063] is displayed. Then, perform [Step 1.](#) through [Step 3.](#)
1. Open the “Update Firmware” window from the newly opened “Maintenance Utility” window.
 2. Confirm that the message “The operation cannot be performed because an operation by a different user is in progress.” is displayed.
-
- (If the progress window appears, the firmware is being updated. Then, wait until the firmware update is complete.)
3. Execute [Force Release System Lock]. (See MAINTENANCE PC SECTION [“3.17 Force Release System Lock”](#).)

The displayed windows differ according to the JRE (Java Runtime Environment) versions.

In the case of JRE7 or JRE8, go to [Step \(1\)](#).

In the case of JRE6, go to [Step \(2\)](#).

- (1) In the case of JRE7 or JRE8
 - (a) The update of the Java application may be promoted.



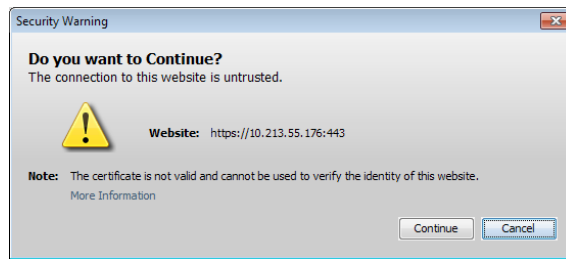
When using Maintenance Utility with the Java you are using, click [Later]. If you check the checkbox of [Do not ask again until the next update is available.] once and click [Later], this window is not displayed from now on. When clicking [Update(recommended)] and [Block], close the window of the Web browser and restart Maintenance Utility. When checking the checkbox of [Do not ask again until the next update is available.] and selecting [Update(recommended)] or [Block], Maintenance Utility cannot update the firmware. To allow Maintenance Utility to update the firmware, execute the following procedures.

- (i) Click [All Programs ([All apps] for Windows 10)] - [Java] - [Configure Java] from the [Start] menu of Windows and start [Java Control Panel].
- (ii) Click the [Security] tab of [Java Control Panel].
- (iii) If the checkbox of [Enable Java content in the browser] in the [Security] tab is checked, uncheck it once and click the [Apply] button.
- (iv) Check the checkbox of [Enable Java content in the browser] and click the [Apply] button.
- (v) Click the [OK] button of [Java Control Panel] to close the window.
- (vi) Restart Maintenance Utility.

NOTE: When changing the Java setting in [Java Control Panel], a message like “Java Plugin settings changed” may be displayed. If such message is displayed, click the [OK] button.

- (b) When the message “Do you want to Continue?” is displayed, click the [Continue] button.

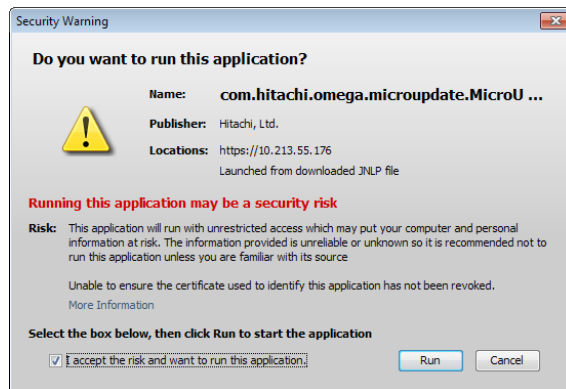
NOTE: This window may not be displayed.



- (c) When the message “Do you want to run this application?” is displayed, check [I accept the risk and want to run this application.] and click the [Run] button.

Go to [Step 7](#).

NOTE: This window may not be displayed.

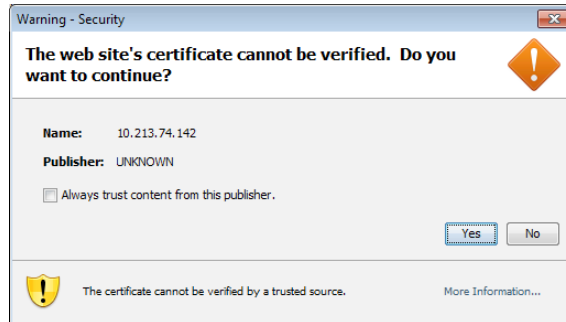


NOTE: When the “Application Blocked by Java Security” or “Application Blocked by Security Settings” window is displayed, refer to [TROUBLESHOOTING SECTION “3.28.1.1 Troubleshooting Related to Installation and Upgrade”](#) and register the storage system in the exception site.

After the registration, perform the procedure of [“3.3.2 Updating Firmware of the Storage System”](#) again.

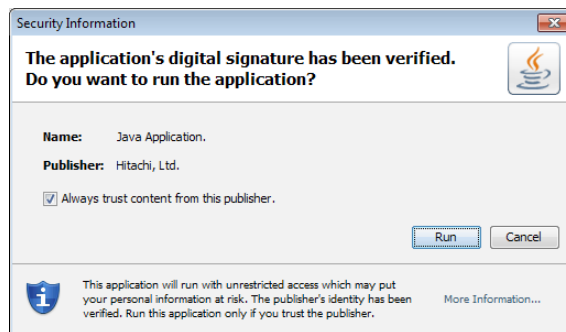
- (2) In the case of JRE6
- (a) When the message “The web site’s certificate cannot be verified. Do you want to continue?” is displayed, click the [Yes] button.

NOTE: This window may not be displayed.



- (b) When the message “The application’s digital signature has been verified. Do you want to run the application?” is displayed, check [Always trust content from this publisher.] and click the [Run] button.
- Go to [Step 7](#).

NOTE: This window may not be displayed.



FIRM03-100**7. Configuring update**

When the firmware version is less than 83-03-21-x0/xx, select "firmware\AllFirmware.mda" from the media as a firmware file.

When the firmware version is 83-03-21-x0/xx or later, select an appropriate firmware file depending on the Storage System configuration.

When NAS Modules are not installed: Select "firmware\AllFirmware.mda" from the media.

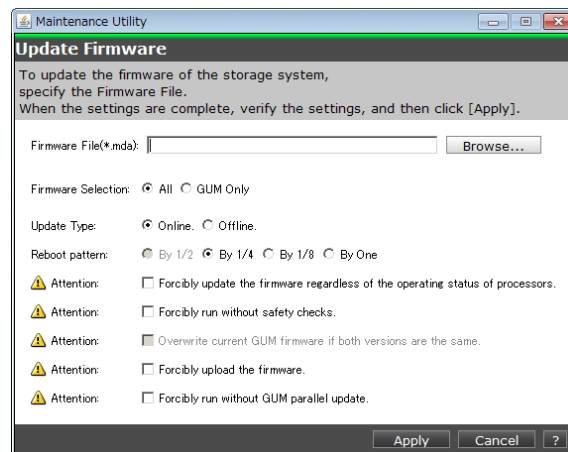
When NAS Modules are installed: Select "nas_firmware\NASAllFirmware.mda" from the media.

To update the firmware for adding NAS Modules, select "nas_firmware\NASAllFirmware.mda".

NOTE: If "firmware\AllFirmware.mda" is selected at the time of NAS Module installation, a warning message is displayed. Take an appropriate action in accordance with the message content.

Specify Firmware selection or others. After completing the settings, click the [Apply] button.

NOTICE: When the firmware version of the Storage System in operation is less than 83-01-04-x0/xx and the window is not displayed correctly, change the JRE version to less than 1.8.45. Go back to [Step 4](#) in "[3.3.2 Updating Firmware of the Storage System](#)" and follow the procedure again.



To update Firmware of GUM only, select [GUM Only] in the Firmware selection.

Updating Firmware of GUM in other CTLs is also required. Selecting [GUM Only] inactivates other options.

NOTE: The operations which can select [GUM Only] are only new installation and restoration from a failure. Do not select [GUM Only] in other operations.

Table 3-4 Details of Update Firmware

Item		Description			
Firmware file		Select a file to be uploaded to the Storage System. • Select only one file. • One file includes information per model. The Storage System recognizes the models and only reads necessary information.			
Firmware Selection	All	Update all including GUM			
	GUM Only	Update only the GUM of the Storage System connected to the Maintenance PC. The operations which can select [GUM Only] are only new installation and restoration from a failure. Do not select [GUM Only] in other operations.			
Update Type	Online (default)	Update online • Entire Firmware can be updated online.			
	Offline	Update offline • DKCMAIN, Unified Hypervisor, NASFWINST, NASFW, RAMBOOT, DKB and CHB Firmware are replaceable offline			
Reboot Pattern	Reboot pattern	Description	Standard	Replacement time	Effect on performance of DKC
	By 1/2 (*1)	Reboot half of all MPs at once.	Approx. 10 minutes	Short	Big
	By 1/4 (default)	Reboot a quarter of all MPs at once.	Approx. 15 minutes	:	:
	By 1/8.	Reboot 1/8 of all MPs at once.	Approx. 20 minutes	:	:
	By One	Reboot by minimum reboot unit.	Approx. 30 minutes	Long	Small
Attention: Forcibly update the firmware regardless of the operating status of processors.		If checked, it ignores the MP operation rate and updates the Firmware. (Unchecked by default)			
Attention: Forcibly run without safety checks.		If checked, it updates the Firmware without the safety check. (Unchecked by default)			
Attention: Overwrite current GUM firmware if both versions are the same.		If checked, the GUM firmware is updated even when the already installed GUM firmware version is the same as the GUM firmware version of the firmware file. (Unchecked by default)			
Attention: Forcibly upload the firmware.		If checked, the firmware is forcibly transferred. (Unchecked by default)			
Attention: Forcibly run without GUM parallel update.		If checked, the GUM firmware is updated after the completion of the update of the firmware other than GUM. The GUM firmware update takes 65 minutes. (It might take a longer time, about ten minutes longer at a maximum, depending on the usage conditions of the SVP/ Maintenance PC.) (Unchecked by default)			

*1: The item cannot be selected when NAS Modules are installed in CBLM/CBLH and in the case of CBSS/CBSL.

Table 3-5 Details of the Operation Rate of MPs that Firmware Update is Possible

Reboot Pattern	Operation Rate of MPs that Firmware Update Is Possible (*1)		
	VSP G200	VSP G400, G600	VSP G800
By 1/2	—	Less than 50%	Less than 50%
By 1/4	Less than 50%	Less than 50%	Less than 50%
By 1/8	Less than 50%	Less than 65%	Less than 65%
By One	Less than 50%	Less than 65%	Less than 75%

*1: The average availability of the past 60 seconds of one or more MPs should not exceed the specified value at the start of the firmware update.

FIRM03-120**8. Version confirmation**

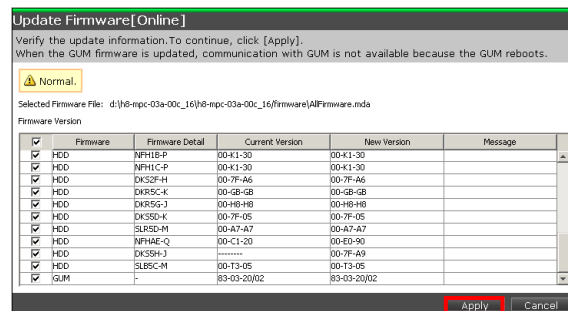
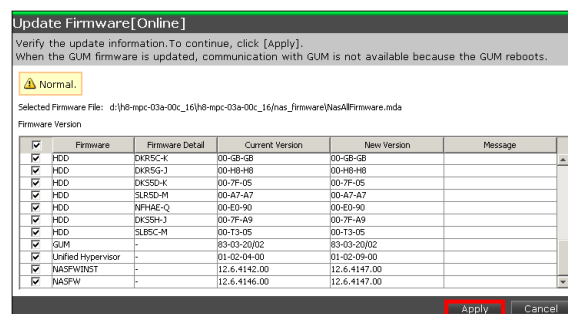
Displays each firmware version.

Firmware	Description
With a checkmark	The version can be updated.
Without a checkmark	The version cannot be updated due to version down and others. Check the contents and actions to be taken in Table 3-6 .

When the version confirmation is completed, click the [Apply] button.

NOTE: To update the firmware version 83-03-21-x0/xx or earlier to 83-04-01-x0/xx or later, CHB (FC32G) firmware is not displayed. If the Storage System firmware before update is 83-04-01-x0/xx or later, it is displayed,

NOTE: When the firmware version is 83-03-21-x0/xx or later, the content of the window differs depending on selected firmware files. "Unified Hypervisor", "NASFWINST" and "NASFW" are displayed only when selecting "NASAllFirmware.mda". When the firmware version is less than 83-03-21-x0/xx, the window of (1) is displayed.

(1) When selecting "AllFirmware.mda"**(2) When selecting "NASAllFirmware.mda"**

NOTE: When updating the firmware for adding NAS Modules, Unified Hypervisor and NASFWINST need to be installed newly. Because the checkboxes of Unified Hypervisor and NASFWINST are not checked by default, check them, and then click [Apply].

NASFW is not displayed before adding NAS Modules.

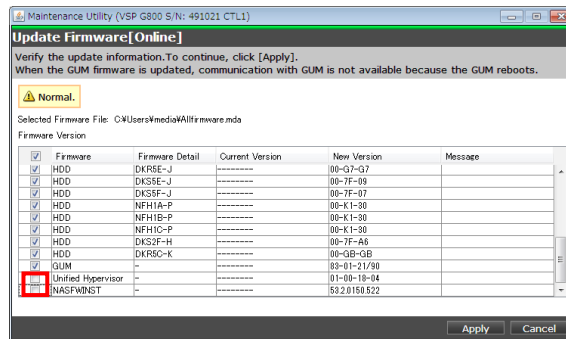


Table 3-6 Version Check Message Table

No.	Message	Contents and Maintenance
1	Version error	Incorrect version. Confirm the Firmware version. (See “3.4 Procedure for Checking Firmware Version” .)
2	Revision error	Incorrect revision. Confirm the Firmware revision.
3	Warning	Because the checkbox of the firmware to be updated is unchecked, checking the checkbox again is required to downgrade the version.
4	Error	The firmware cannot be updated because the version check failed. Follow the displayed error message.

NOTE: There is no problem if SIM=7d0900 is output when performing the offline firmware update.

Furthermore, there is no problem if the Storage System status of the “Maintenance Utility” window becomes Failed.

The Storage System status changes to Ready when the offline firmware update is completed.

NOTE: When “Can’t GUM parallel update.” is displayed in the message column, the GUM firmware is updated after the completion of the update of the firmware other than GUM.

The GUM firmware update is processed but takes a longer time because the update is not performed in parallel.

8.1 When the CHB Flash data update is required, the following window is displayed.

NOTE: The CHB Flash data update requires stopping I/O to the path to the Storage System for the update. Ask your customer and check that I/O to the target Storage System has been stopped. Then, select [Yes] and click the [OK] button.

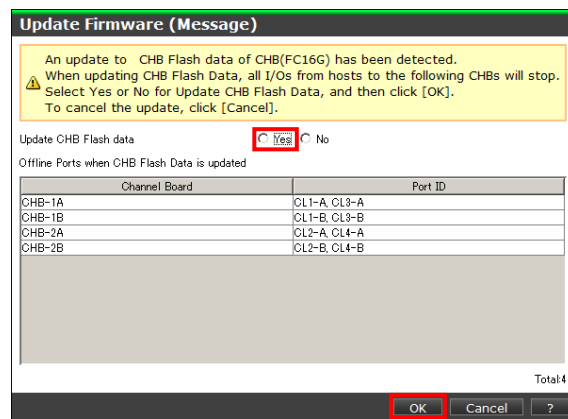
If I/O cannot be stopped, select [No] and click the [OK] button. The CHB Flash data update is skipped and the firmware is updated. In this case, perform the CHB Flash data update immediately based on the procedure created by you and your customer for when I/O cannot be stopped.

If a CHB Flash data update is necessary, XX part of the CHB (FC16G/FC32G/iSCSI) firmware version (83-00-XX-YY) will change.

CHB (FC16G) 83-00-XX-YY

CHB (FC32G) 83-03-XX-YY

CHB (iSCSI) 83-01-XX-YY



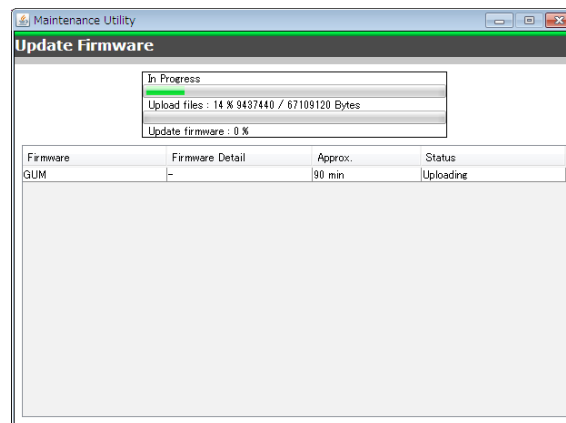
FIRM03-130

9. Starting update

The Firmware update progress is displayed.

NOTE: While displaying the progress window, do not close the window by the [×] button or log out of “Maintenance Utility” window. If the window is closed, perform the procedures from [Step 3.](#) to [Step 6](#) and restart the work.

- When the window of [Step 9](#) is displayed after [Step 6.](#):
The firmware update is in progress.
Keep the window open and wait to terminate it.
- When the window of [Step 7](#) is displayed after [Step 6.](#):
The firmware update is suspended or completed. Display the firmware window and check the target firmware version.
(See “[3.4 Procedure for Checking Firmware Version](#)”.)
When the version is not changed, update the firmware again.



Item	Description
In Progress	Display the progress by “Progress Bar” and “Progress Display (xx%)”
Firmware	Display the Firmware name
Firmware Detail	Display the detail of the Firmware.
Approx	Display the standard update time
Status	Display the update status by “Waiting for Upload”, “Uploading”, “Updating”, and “Finished”

10. Reboot GUM

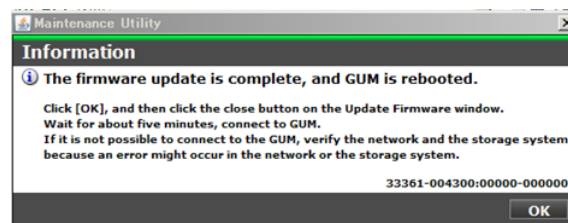
When the GUM firmware is not selected to be updated (when GUM is unchecked in the version confirmation window ([Step 8](#))), go to [Step 11](#).

When the GUM firmware is selected to be updated (when GUM is checked in the version confirmation window ([Step 8](#))), the GUM reboots.

Follow the procedure below. The procedure varies depending on the conditions.

- (1) When all the following conditions are met (when GUM firmware is updated in parallel).
 - Forcibly run without GUM Parallel Update is unchecked in the firmware update window ([Step 7](#)).
 - The DKCMAIN firmware version before the update is 83-04-41-x0/xx or later.
 - The GUM firmware version before the update is 83-04-41/xx or later.
 - The DKCMAIN firmware version in the media is 83-04-41-x0/xx or later.

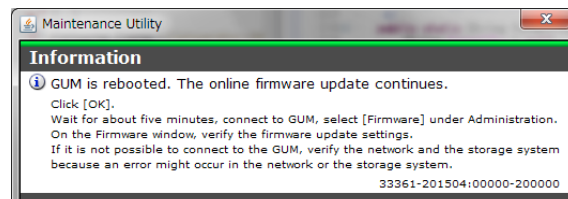
- (a) When the following message appears, click [OK].



- (b) Wait for about five minutes until GUM starts up.
 - (c) If the EVS status was checked and recorded ([Step 5](#)), go to [Step 12](#).
If not, go to [Step 13](#).

- (2) When the conditions of (1) are not met (when GUM firmware is not updated in parallel).

- (a) When the following message appears, click [OK].



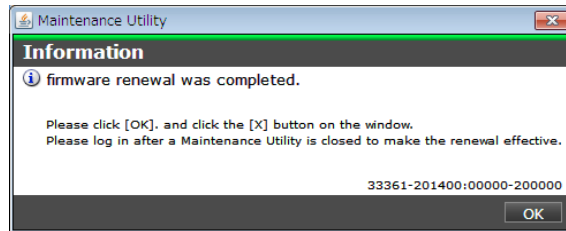
- (b) The “firmware” window ([Step 4](#)) opens, and then click the [×] button on the browser to close the window without clicking the [logout] button.
 - (c) IWait for about five minutes until GUM starts up.
 - (d) Perform the procedures of [Step 3](#), [Step 4](#) and [Step 6](#). In [Step 6](#), the firmware update progress window shown in [Step 9](#) appears and the status of the firmware update on the other CTL can be viewed in the window.
 - (e) Go to [Step 11](#).

11. Completing update

A message is displayed.

If the EVS status was checked and recorded ([Step 5](#)), go to [Step 12](#).

If not, click the [OK] button, and then go to [Step 13](#).



12. Restoring EVS to deal with NAS Modules

When the firmware (Unified Hypervisor, NASFWINST, and NASFW) for NAS Module was updated in the state that the firmware version is 83-03-21-x0/xx or later and NAS Modules are already installed, follow the procedure below.

Go to [Step 13](#) for other than the above-mentioned status.

After completing the firmware update, check the running EVS status in the NAS Module.

See [Step 1](#) to [Step 5](#) in MAINTENANCE PC SECTION "[6.4.1 Migration before the Maintenance Operations](#)" for the procedure for checking EVS.

If the checked EVS status is different from the information recorded in [Step 5](#), migrate the EVS to return to the recorded status.

See MAINTENANCE PC SECTION "[6.4.2 Migration after the Maintenance Operations](#)" for the procedure for EVS migration.

13. Completing the update work

When updating GUM by checking [GUM] in the version confirmation window ([Step 8.](#)), go to [Step \(1\)](#).

(1) The progress window ([Step 9.](#)) is displayed. Click the [X] button to close the window.

(2) The firmware window ([Step 4.](#)) is displayed. Click the [Log-out] button.

(3) The login window is displayed. Click the [X] button to close the window.

Go to [Step 14](#).

14. Clearing the cache of the browser

Perform the following procedure only when the firmware version is less than 83-03-0x-x0/xx.

- (1) Clear the cache of the browser.
 - (a) When using Internet Explorer
 - (i) Open [Start] - [Control Panel] - [Internet Options].
 - (ii) Click the [Delete] button of [Browser History] in the [General] tab.
 - (iii) Check that the check box of [Internet Temporary File] is checked and click the [Delete] button.
 - (b) When using Firefox
 - (i) Select the [Network] tab of [Details] in the “Option” window and click the [Erase Immediately] of [Cached Web Page].
- (2) Close all the open browsers

15. Reconnection

- (1) Start the Web Console referring to MAINTENANCE PC SECTION [“1.6 Connecting to the Storage System”](#).
- (2) Select [Maintenance Utility] - [Firmware...] in the “Web Console” window.

16. Version confirmation

The firmware window is displayed, and then check the target firmware version.

(See [“3.4 Procedure for Checking Firmware Version”](#).)

- NOTE: The versions of Unified Hypervisor and NASFWINST might be displayed in the Firmware window even if NAS Modules are not installed.
(Including the time of the update from the version less than 83-03-21-x0/01 to 83-03-21-x0/01 or later)
When NAS Modules are not installed, Unified Hypervisor and NASFWINST are out of update targets, and therefore the checking is not required.
- NOTE: When the firmware version 83-03-21-x0/xx or earlier is updated to 83-04-01-x0/xx or later, CHB (FC32G) firmware is not displayed. To add a DW-F800-4HF32R, install the CHB (FC32G) firmware by following the procedure for Adding Channel Board (CHB).
- NOTE: When a message for the version update is not displayed in [Step 8](#), or “CHB Flash Data is not updated.” is displayed even if [Yes] is selected for Update CHB Flash data in [Step 8.1](#), see [“4. Trouble Recovery Procedure in Firmware Update”](#).

3.3.3 Procedure for Downgrading the Firmware Version to a Version that Does Not Support Accelerated Compression

When using Accelerated Compression, downgrading to the DKCMAIN firmware version that does not support Accelerated Compression and the HDD firmware is disabled.

Perform the following procedure, and then replace the firmware.

1. TROUBLESHOOTING SECTION “[10.10 Disabling Procedure for Accelerated Compression Setting of Parity Group](#)” and disable the Accelerated Compression setting for all parity groups.
2. When spare drives and free drives of NFHxx-QxxxSS are installed, release the spare assignment to remove them. See INSTALLATION SECTION “[4.3 Removing Drives](#)”.
3. Add the removed spare drives and free drives again.
See INSTALLATION SECTION “[3.3 Adding Drives](#)”.

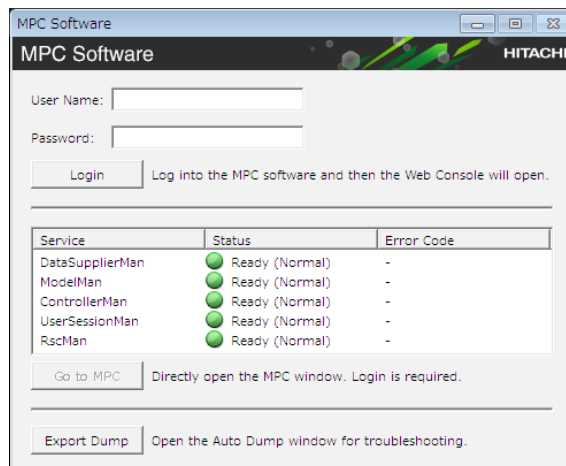
3.4 Procedure for Checking Firmware Version

1. Click the Storage System icon in the Storage Device List.

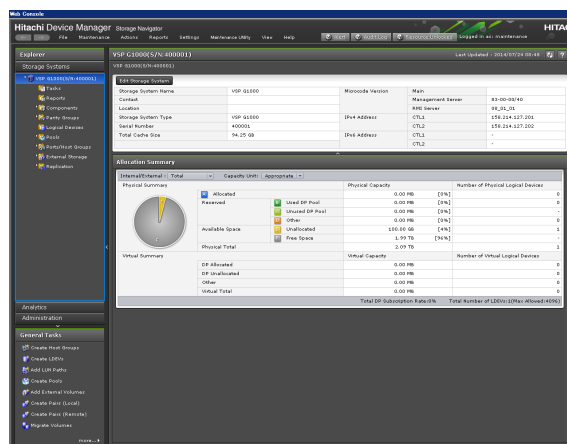


2. "MPC Software" is displayed and the service status is checked automatically.
Enter a user name and password and click the [Login] button.
When all become [Ready (Normal)], go to [Step 3](#).

NOTE: If not logged in, the "Web Console" window is not displayed. Check that the [Login] button is inactive.

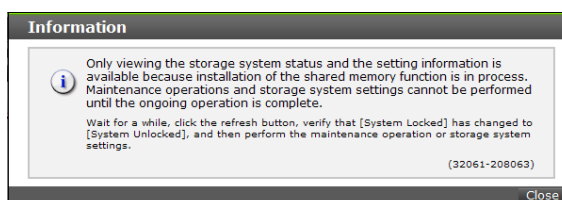


3. Web Console starts.

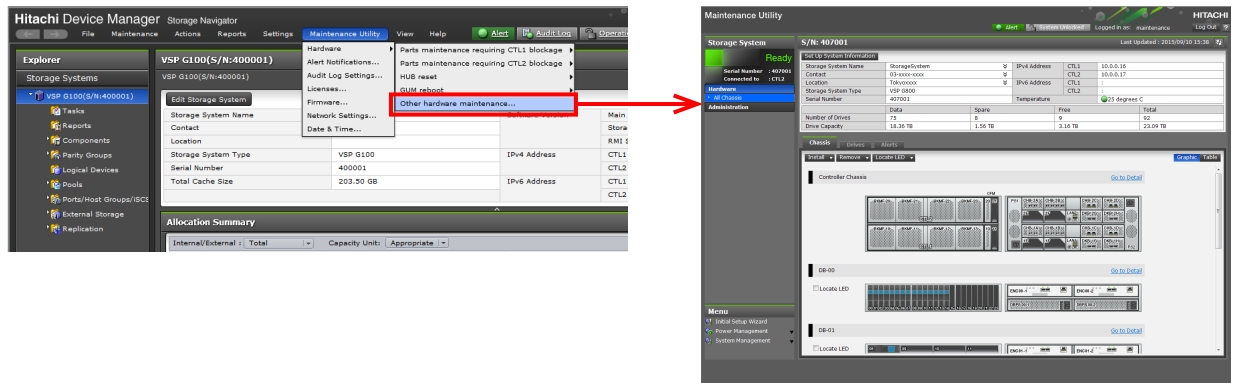


4. Selecting a menu from the toolbar [Maintenance Utility]-[Hardware]-[Other hardware maintenance...] in the “Web Console” window displays the “Maintenance Utility” window.

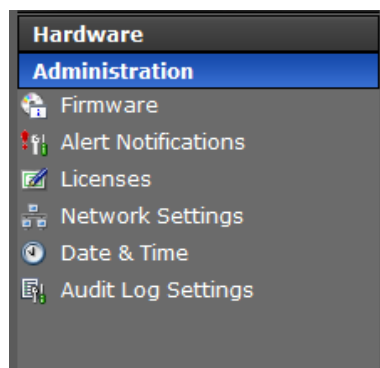
NOTICE: When running the maintenance operation in the other window, the part status might be displayed differently from the actual status. (Example: The Shared Memory function status before completing the addition is displayed as the status after the addition.). In that case, complete the maintenance operation running in the other window, and then refresh the display information by clicking the [Refresh] button (). While running the maintenance operation or the maintenance processing, the messages like the following examples are displayed when logging into Maintenance Utility or refreshing the window.



NOTICE: Do not use the Web browser menu. If you use the browser menu ([Back], [Forward]) or shortcut keys and function keys, you are logged out of Maintenance Utility forcibly and the settings that are operated in the window are discarded. To use Maintenance Utility again, close the Web browser window, and then start Maintenance Utility again.



5. In the “Maintenance Utility” window, select [Administration] - [Firmware].



6. In the “Firmware” window, check the firmware version of each component.

Firmware		Last Updated : 2016/08/12 20:18	
Update			
		Current Version	
DKCMAN		83-00-03-60/FF	
FOHF		83-00-01-04	
ISCSI		83-01-01-03	
DKB		83-03-00	
RAMBOOT		83-00-04	
Expander		90-07-03	
CONFIG		83-00-02/00	
CFM		01-29-00-00	
	MI1	J3-HT-01-02	
	TO1	00-7F-53	
HDD	DK55C-K300SS	00-7F-53	
	DK52E-H4R0SS	00-7F-A5	
	SLB5B-H200SS	00-T2-N4	
	DKR3D-J600SS	00-GC-GC	
	DKR5E-J1R2SS	00-07-07	
	DKR3E-J600SS	00-7F-06	
	DKS5F-J1R2SS	00-7F-04	
	DKR2E-H4R0SS	00-03-03	
	NPH1A-P	00-02-38	
	NPH1B-P	00-K0-20	
	NPH1C-P	00-K0-20	
GUM		83-00-00/05	

4. Trouble Recovery Procedure in Firmware Update

4.1 Recovery Procedure in Online Menu Was Selected

If trouble occurs while the firmwares are being exchanged, symptoms [Step 1](#) to [Step 8](#). below can be observed apparently. In these cases, use the recovery procedures shown in flowcharts [A] to [F].

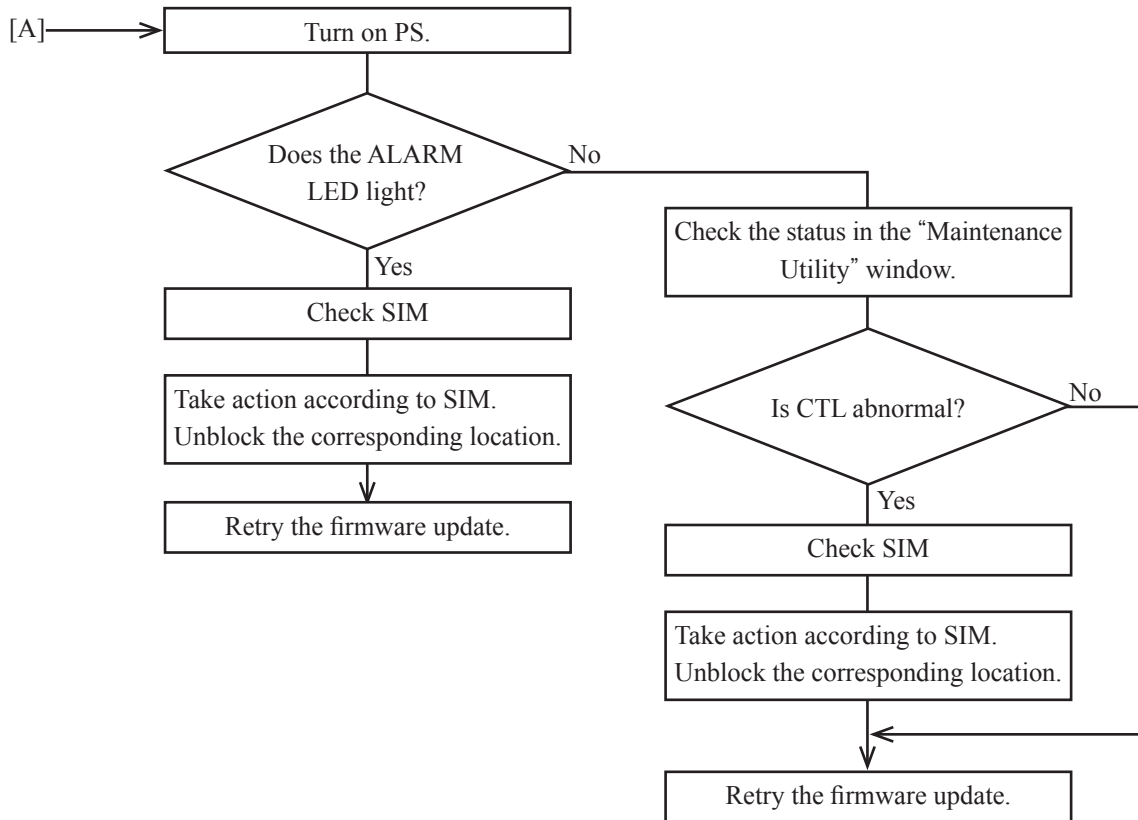
NOTICE: Firmware update may fail when GUM is under heavy load. In that case, wait for one minutes, and then update the firmware again.
If the Firmware update operation failed again, perform the recovery operation by following the procedures in this section.

1. A power failure occurs.
→ Go to [A]. ([FIRM04-30](#))
2. In the case of incorrect version display ("??-??..." or incompatibility). (The disagreement of a binary version (Internal administrative information) contains it.) (See "[3.4 Procedure for Checking Firmware Version](#)".)
→ Go to [B]. ([FIRM04-40](#))
3. When the message is "A time-out error occurred during communication with the web server."
→ Go to [C]. ([FIRM04-50](#))
4. When the GUM firmware update fails.
→ Take an action in accordance with the message
5. When the NASFW update fails.
→ See INSTALLATION SECTION "[7.1.2 Restoration Procedure When a Failure Occurs During New Installation](#)" to restore it.
6. When the DKB firmware update fails.
→ Go to [D]. ([FIRM04-51](#))
7. When an error occurs during Java program startup.
→ Go to [E]. ([FIRM04-52](#))
8. When it fails for other factors.
→ Go to [F]. ([FIRM04-60](#))

[Sections to be referenced for recovery procedure]

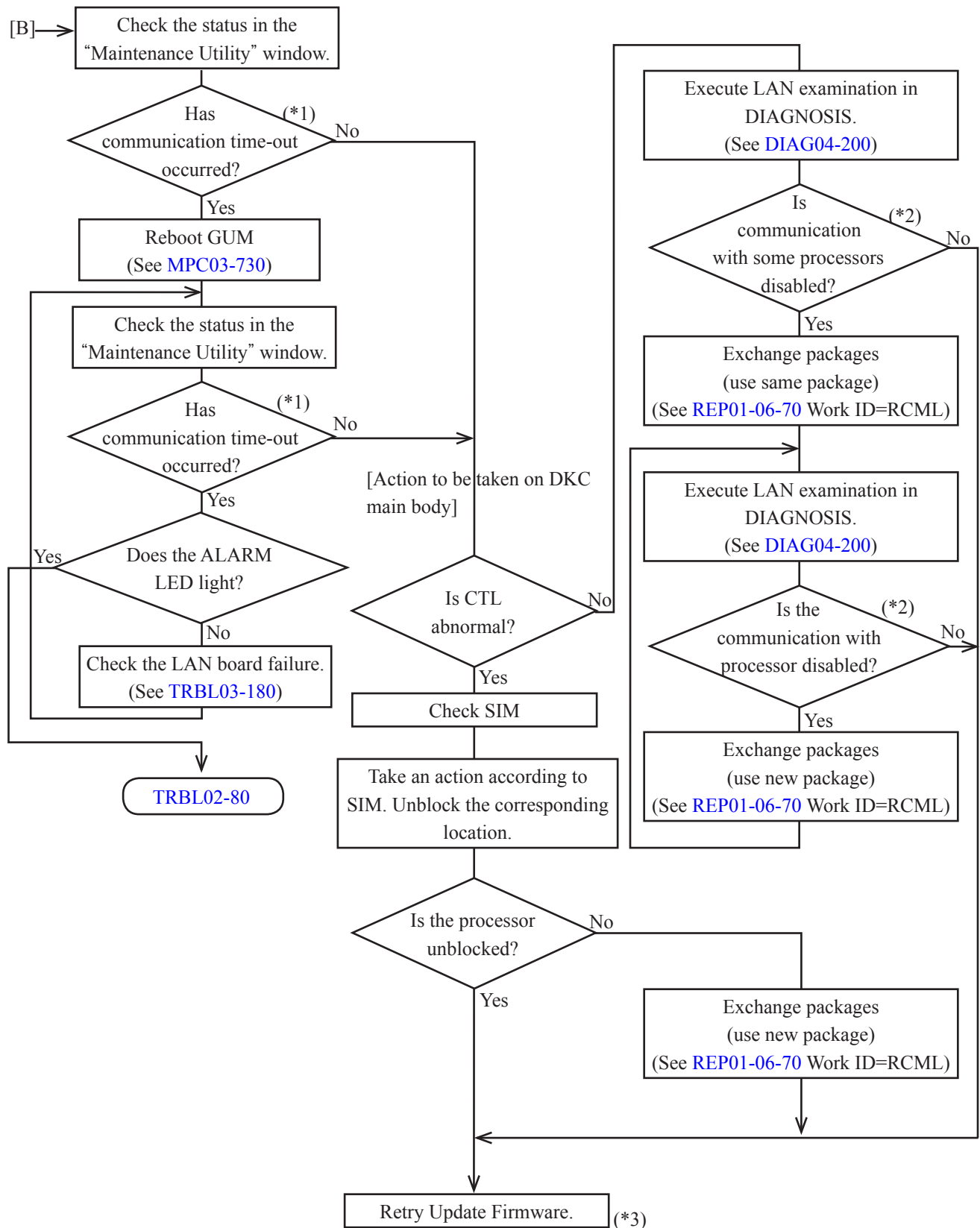
- (1) Status display : “Maintenance Screen” ([MPC05-960](#))
- (2) Version display : “Version of Firmware” ([FIRM03-170](#))
- (3) Package exchange: “Hot Replace” ([REP01-02-10](#))

[Recovery Procedure for Power Failure]



NOTE: When firmware update is performed collectively, the update state of "Environmental Settings" window may be changed to Completed. However, disregard the notice.

[Recovery Procedure for Communication Time-out/PC Trouble in Downloading Firmware /Version incompatibility]



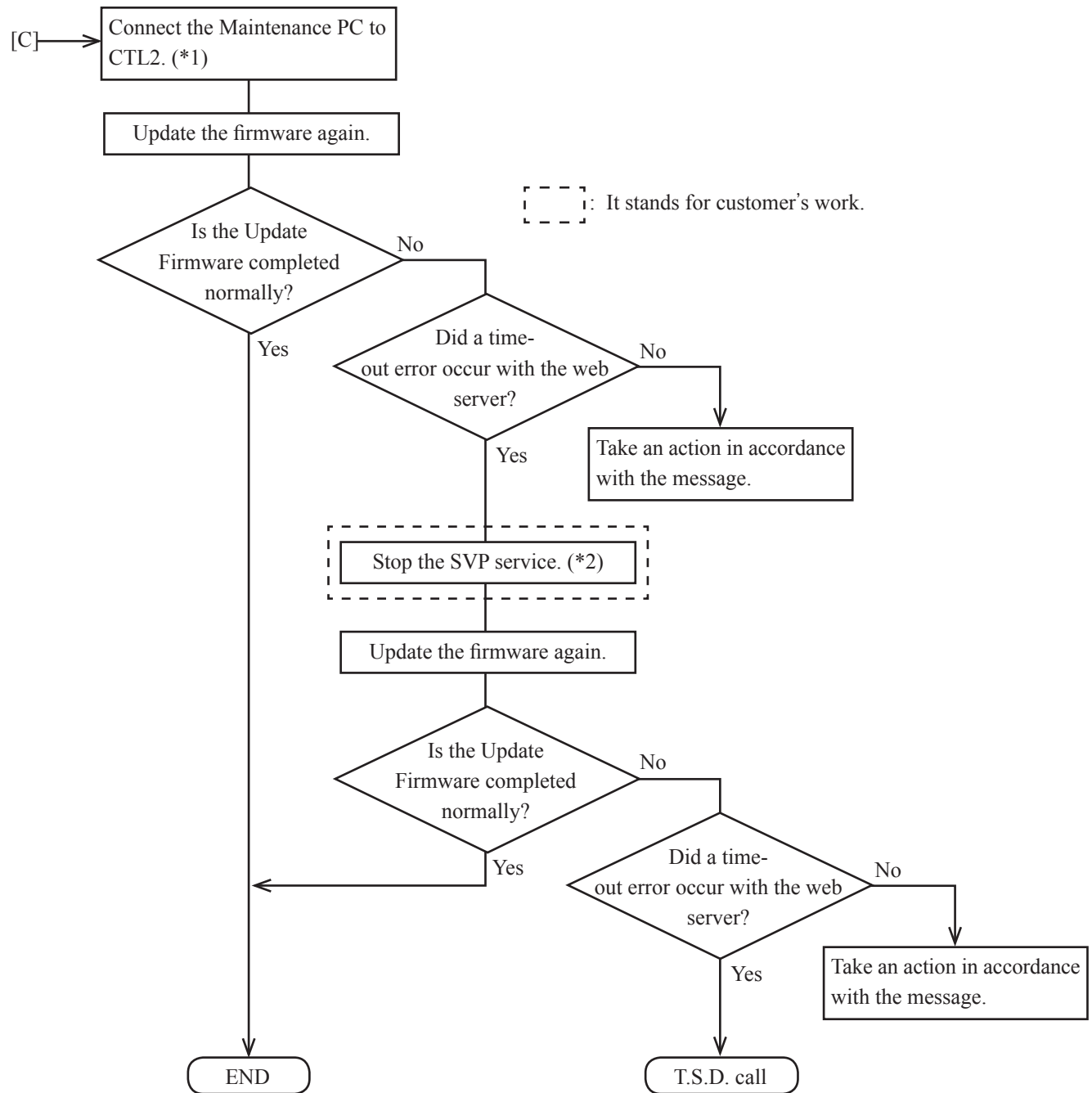
FIRM04-41

- *1: An error message is displayed and the hardware status cannot be referred to.
- *2: Each LAN error processor button blinks.
- *3: If this problem persists, contact the Technical Support Division.

The error code of initialization function is shown in 5C-5Fth byte of the SSB. The recovery procedures are as follows.

Error code of initialization function	Procedures	Note
56000041	Package Replace	Use the same package.
others	Package Replace	Use the same package.

[Recovery procedure when a time-out error occurred during communication with the web server]

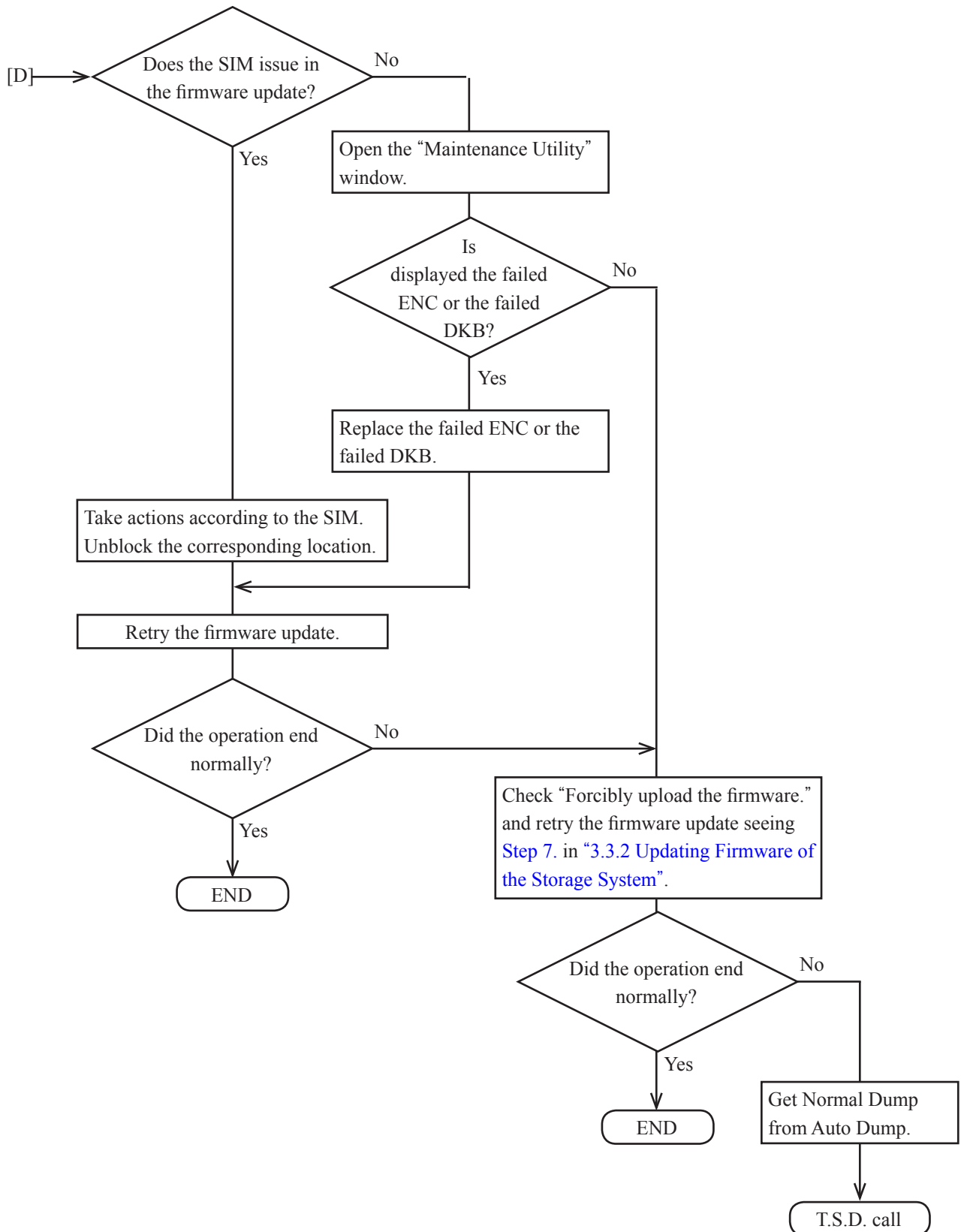


*1: Connect the Maintenance PC and CTL2 through the LAN cable. When the Maintenance PC is connected to CTL1 and CTL2 through HUB, remove the LAN cable connecting to the maintenance LAN port of CTL1 to keep only CTL2 connected.

After completing the work, put the LAN cable back to the original connection status. (See MAINTENANCE PC SECTION “[1.2 Attachment / Removal Procedure of Maintenance PC](#)”.)

*2: Request the customer to perform the operation in accordance with the User Guide. (See “Stop the service in an each storage system” in the User Guide.)

[Recovery procedure when a HDD error occurs during a downloading of the firmware (DKB firmware)]



[Procedure for collecting information when an error occurs during Java program startup]

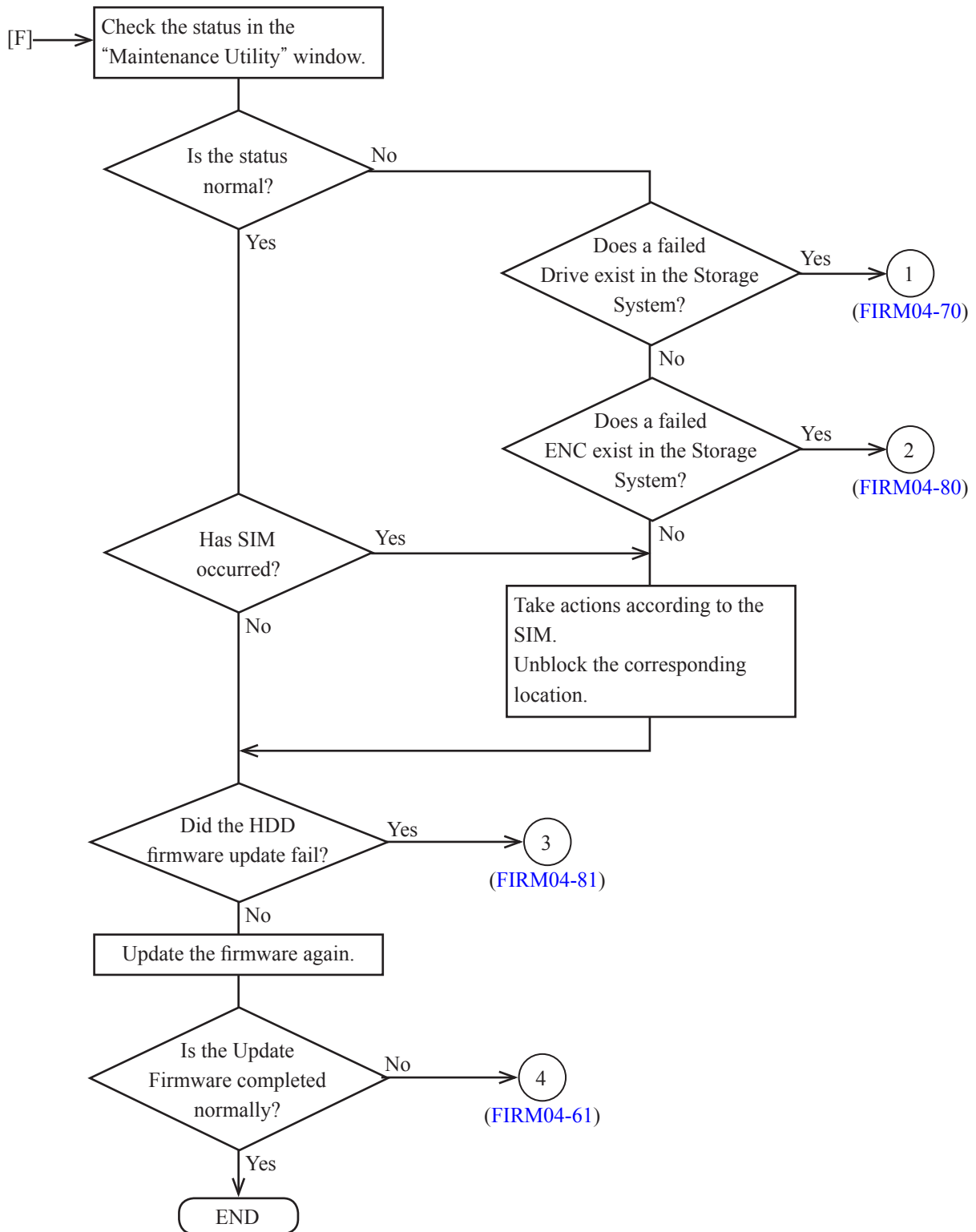
[E] →

If an error re-occurs during Java program startup, collect information by following the procedure below.

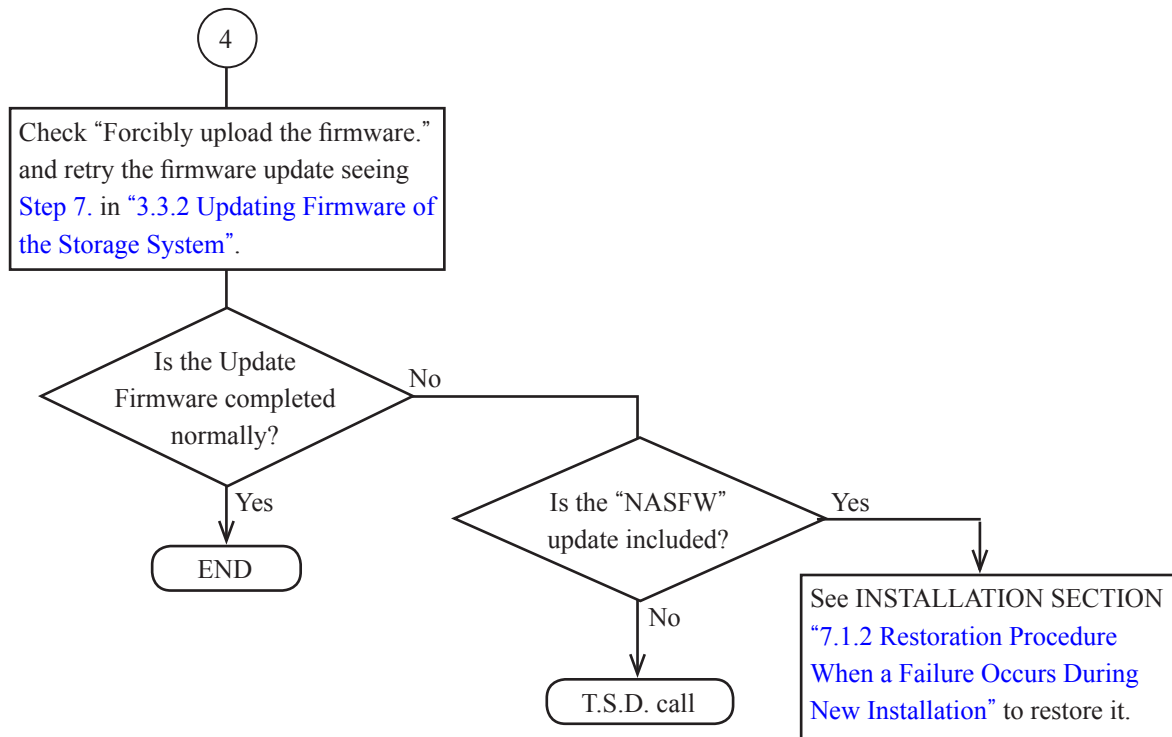
- (1) To start Java Console:
 - (a) Click the Windows [Start] menu to open.
 - (b) Click [All Programs].
 - (c) Look for [Java] program/list.
 - (d) Click [Configure Java] to start the Java Control Panel.
 - (e) Click the [Advanced] tab in the Java Control Panel.
 - (f) Select [Show console] from the [Java console] options, and then click [OK] button.The Java Console opens at the Java startup by performing the procedure above.
Update the firmware again with the Java Console open.
- (2) To collect logs:
 - (a) After updating the firmwares, click the [Copy] button in the "Java Console" window.
 - (b) Start a text editor or any other text editing program, paste it, and then save the file with any name.
- (3) To disable the Java Console view:
 - (a) Select [Hide console] in the [Java console] option, and then click [OK] button.

FIRM04-60

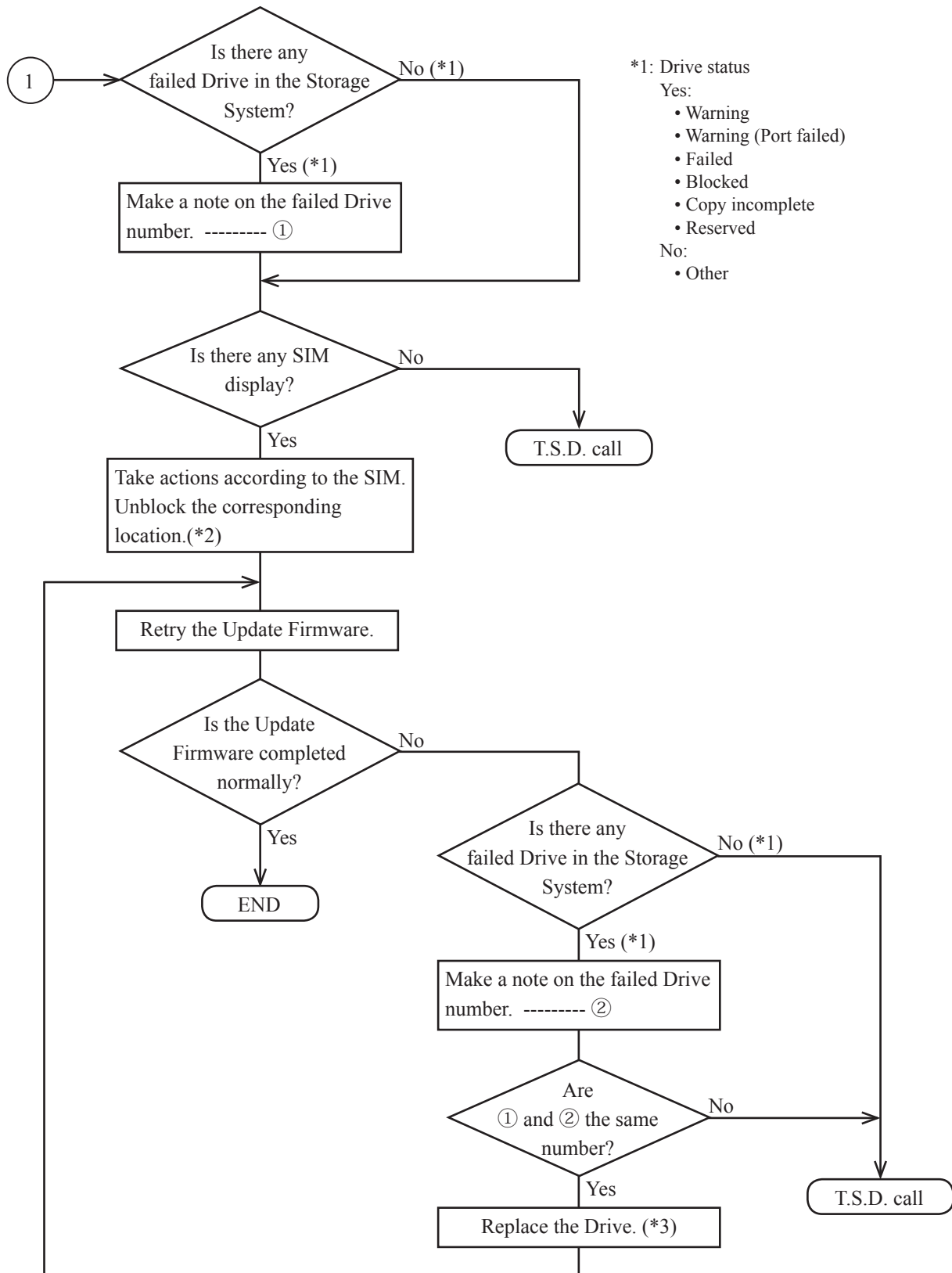
[Recovery procedure when the firmware update is failed.]



[Recovery procedure when the firmware update is failed.]



[Recovery procedure when a DB error occurs during a downloading of the Firmware (Drive Firmware)]

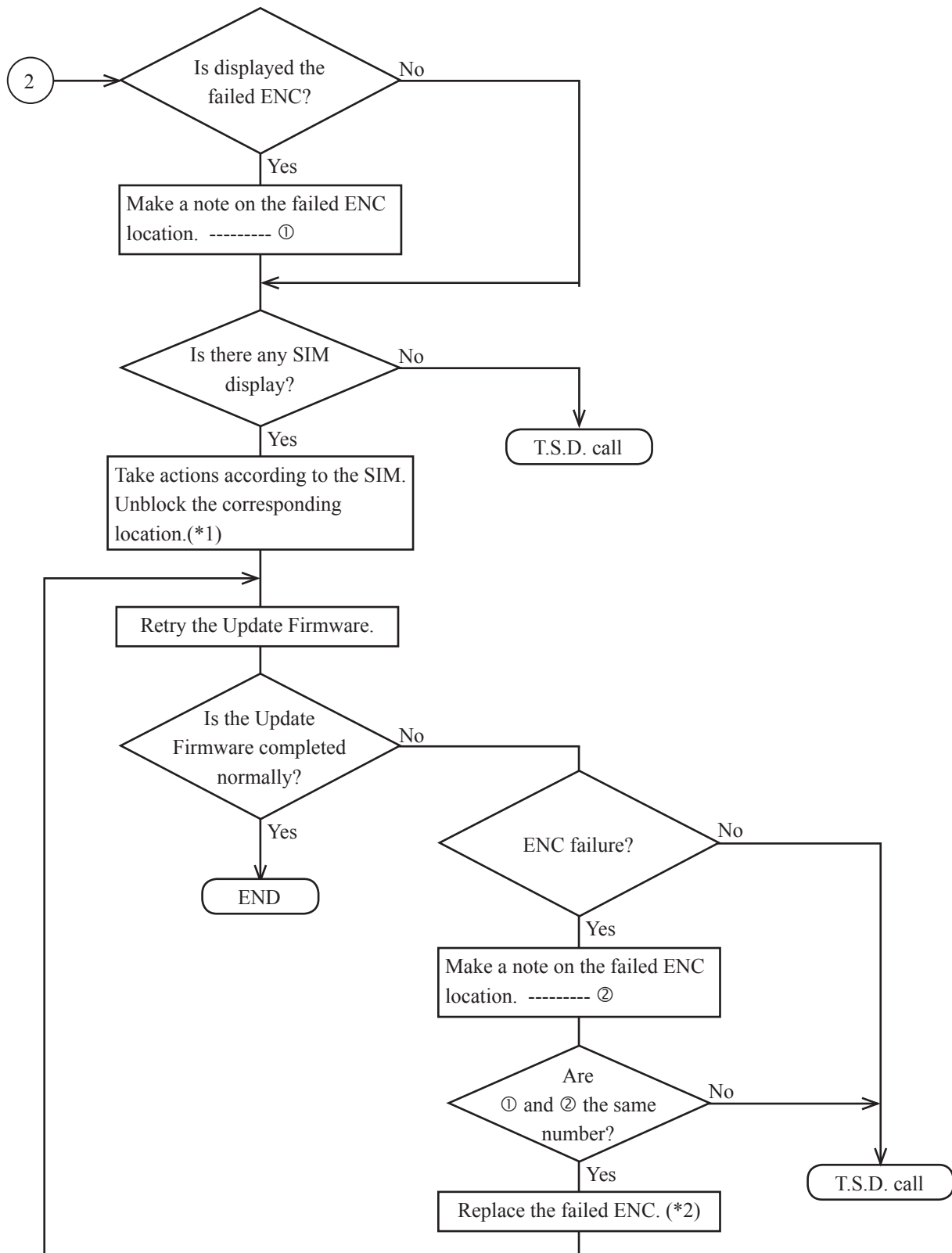


*2: If it is still blocked, contact the Technical Support Division.

*3: If this occurs twice or more, contact the Technical Support Division.

FIRM04-80

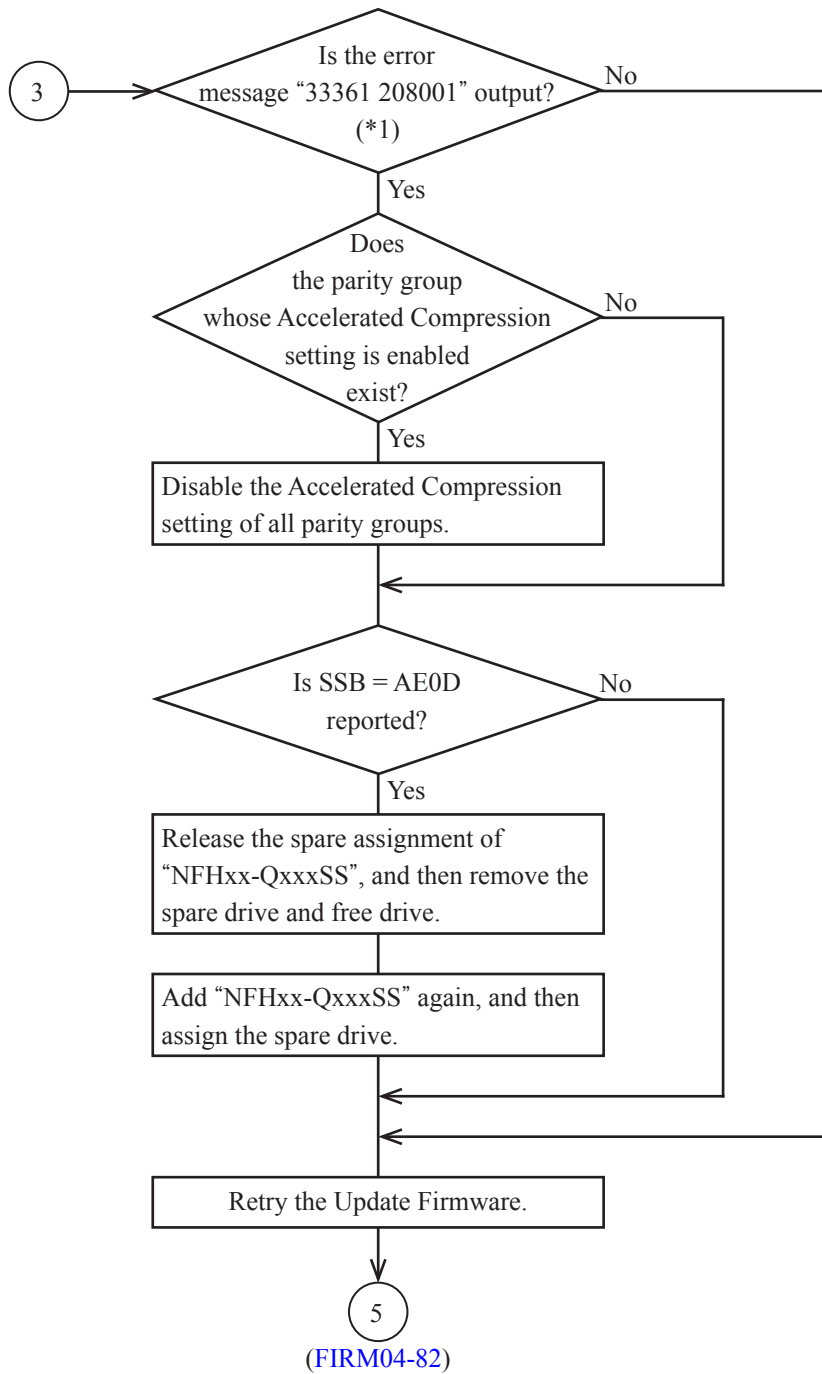
[Recovery procedure when a DB error occurs during a downloading of the Firmware (Expander/ Expander(FMU) Firmware)]



*1: If it is still blocked, contact the Technical Support Division.

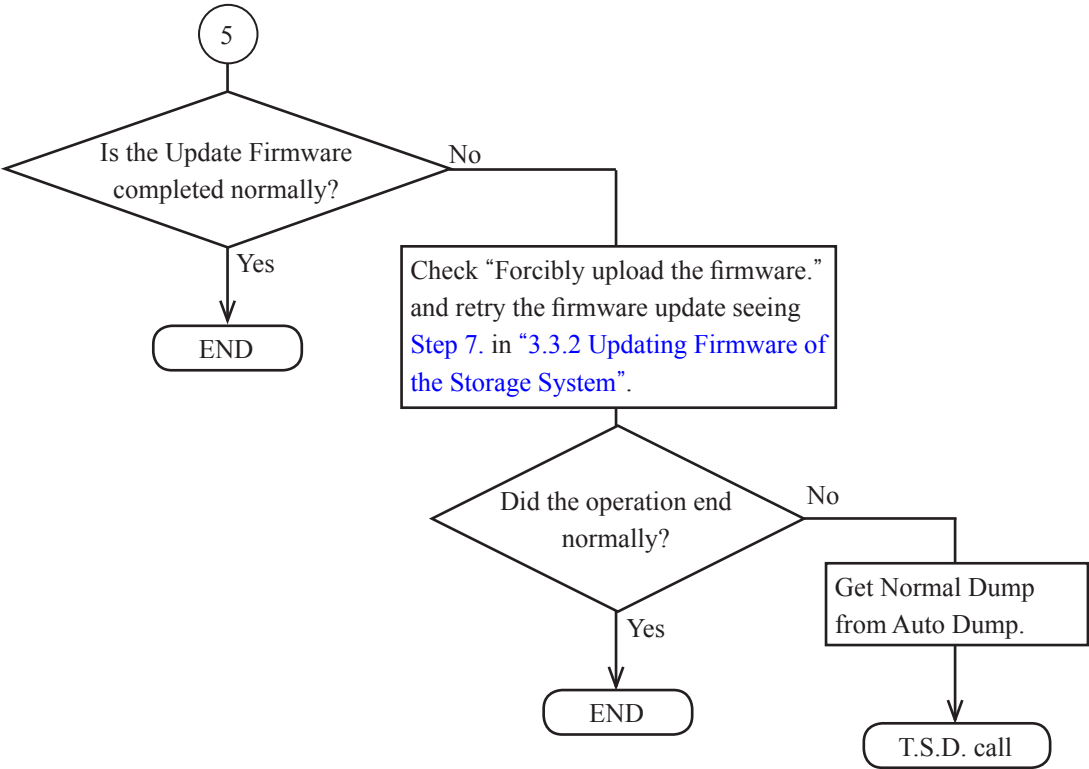
*2: If this occurs twice or more, contact the Technical Support Division.

[Recovery procedure when the firmware download (HDD firmware) fails]



*1: When the parity group whose Accelerated Compression setting is enabled, an upgrade to the firmware that does not support the Accelerated Compression cannot be performed. Therefore, disabling the Accelerated Compression setting of all parity groups is required.

[Recovery procedure when the firmware download (HDD firmware) fails]



4.2 Recovery Procedure in Offline Menu Was Selected

If trouble occurs while the Firmware are being exchanged, symptoms [Step 1](#) to [Step 5](#) below can be observed apparently. In these cases, use the recovery procedures shown in flowcharts [A] to [C].

NOTICE: When Virus Checker, Monitor, etc. are in operation so that the Maintenance PC is in the heavy load state, the Update Firmware may fail. In this case, please wait for a while, and then perform the Update Firmware again.
If the Update Firmware operation still fails, please perform the recovery operations by following the procedures in this section.

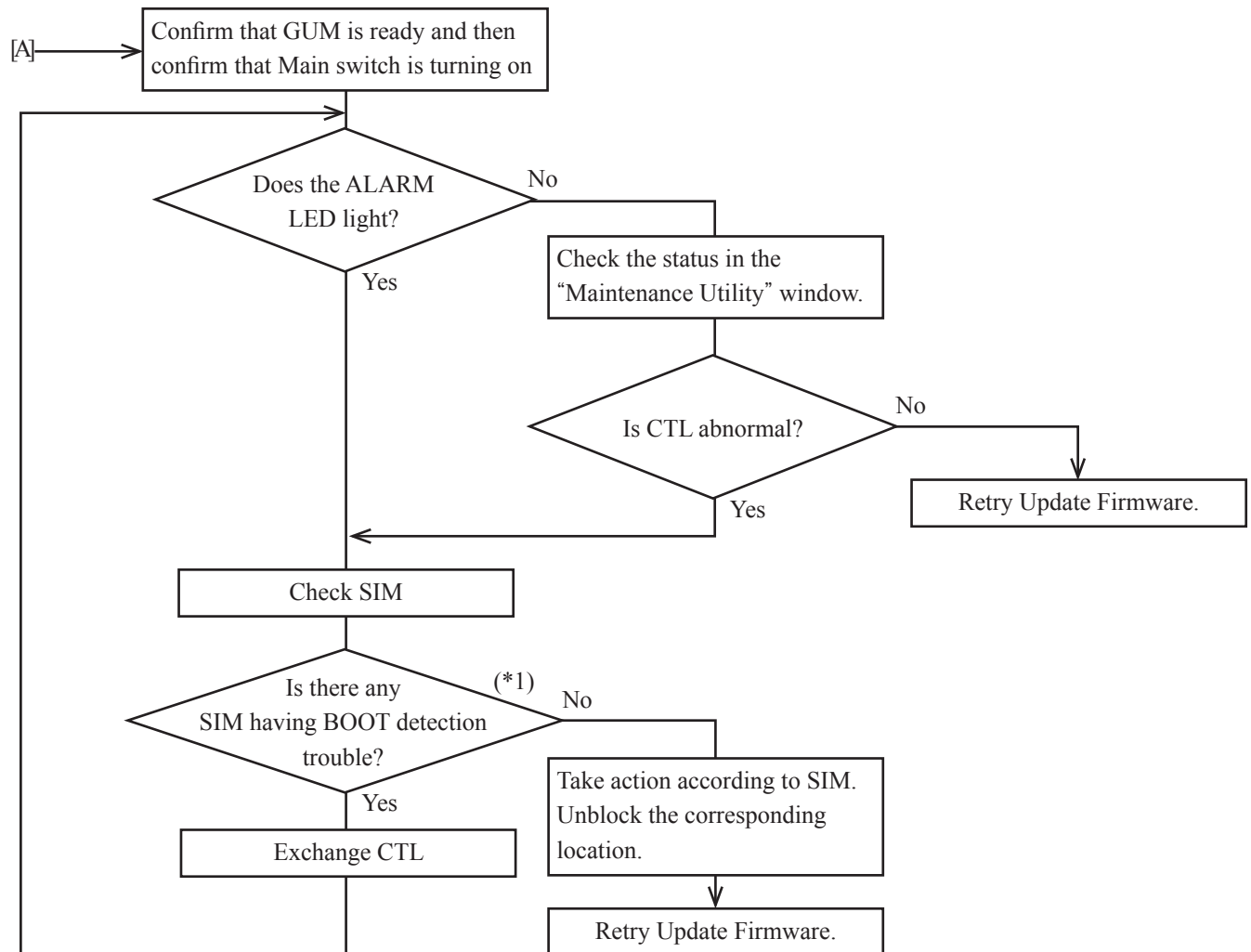
1. A power failure occurs.
→ Go to [A]. ([FIRM04-100](#))
2. Recovery of a cache failure during the Update Firmware of DKCMAIN Action.
→ Go to [C]. ([FIRM04-130](#))
3. In the case of incorrect version display ("??-??..." or incompatibility). (The disagreement of a binary version (Internal administrative information) contains it.) (See "[3.4 Procedure for Checking Firmware Version](#)".)
→ Go to [B]. ([FIRM04-110](#))
4. When the NASFW update fails.
→ See INSTALLATION SECTION "[7.1.2 Restoration Procedure When a Failure Occurs During New Installation](#)" to restore it.
5. When it fails for other factors.
→ Go to [C]. ([FIRM04-130](#))

[Sections to be referenced for recovery procedure]

- | | |
|----------------------|--|
| (1) Status display | : "Maintenance Screen" (MPC05-960) |
| (2) Version display | : "Version of Firmware" (FIRM03-170) |
| (3) Package exchange | : "Hot Replace" (REP01-02-10) |

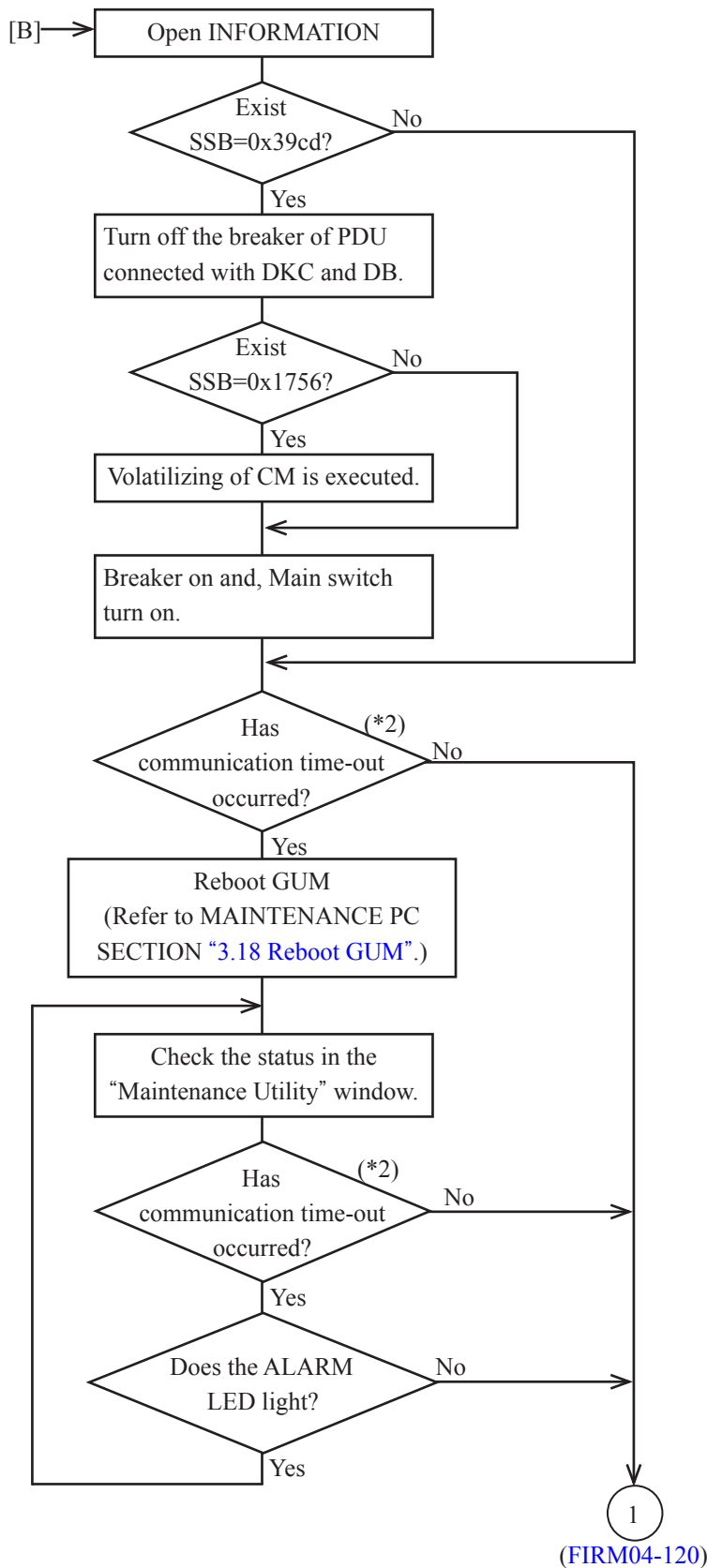
FIRM04-100

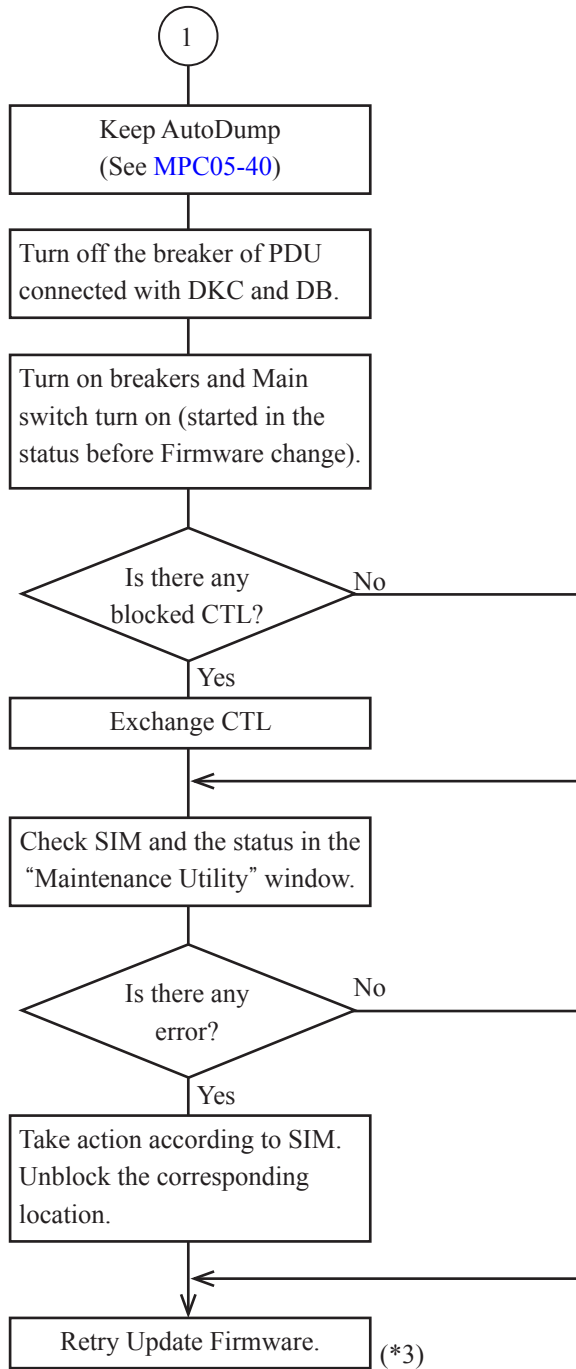
[Recovery Procedure for Power Failure]



FIRM04-110

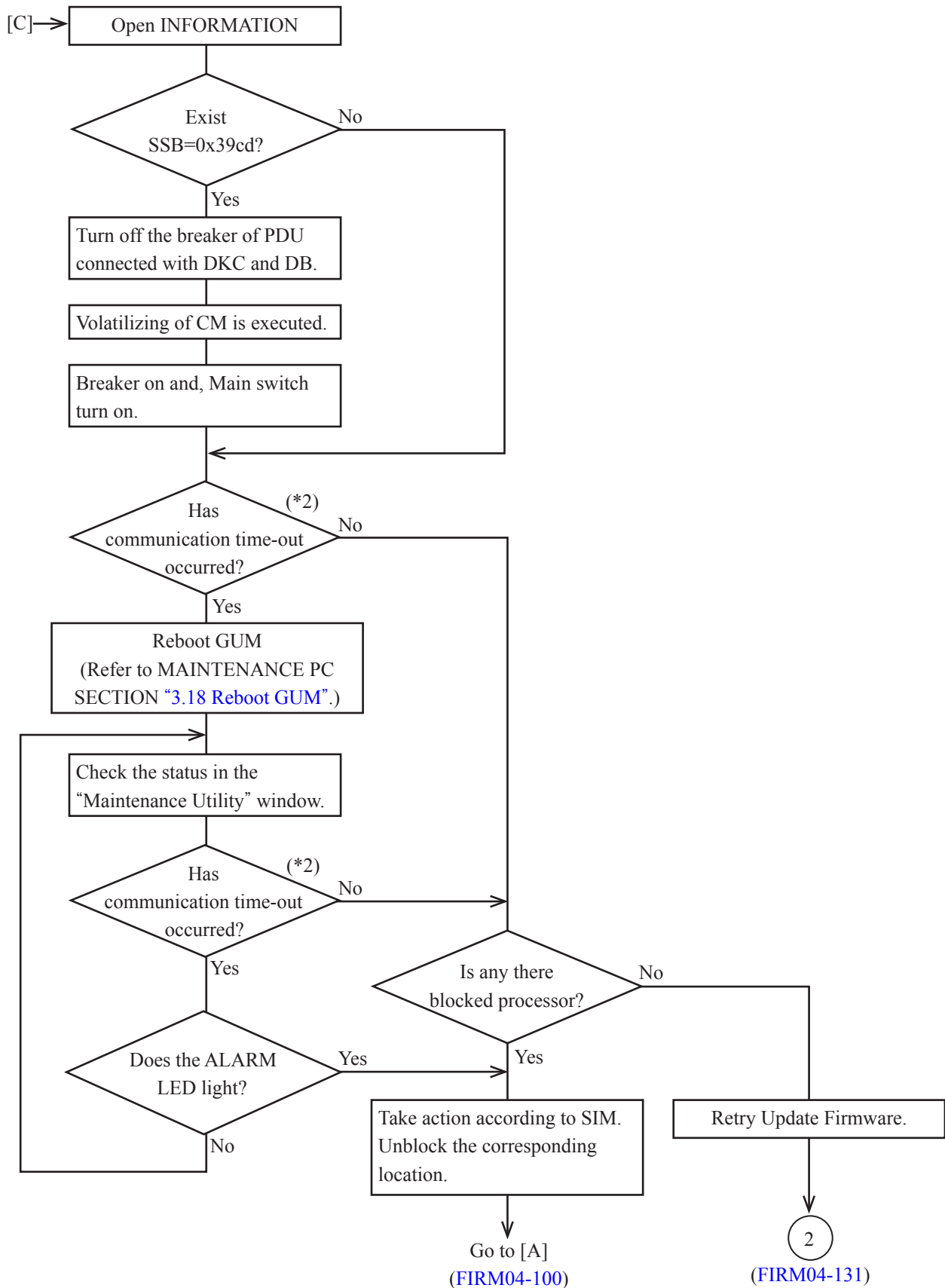
[Recovery procedure for communication time-out during system block processing/Firmware downloading/
Version incompatibility]

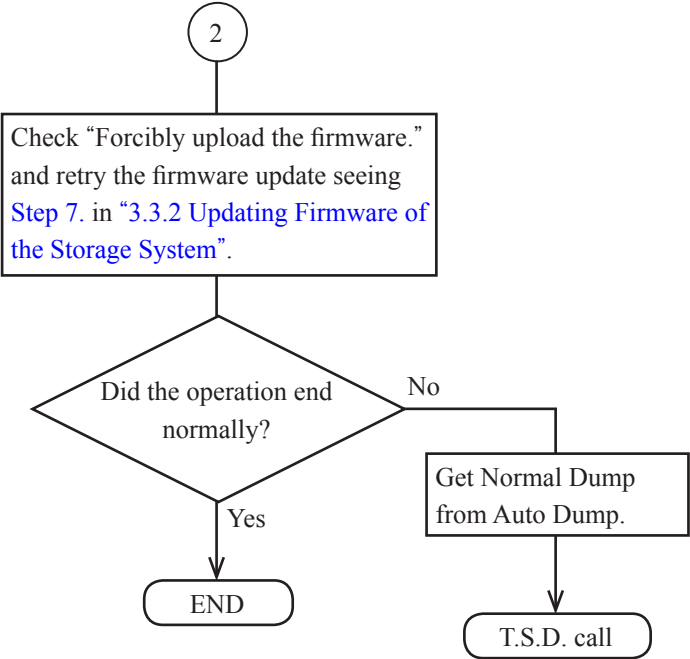




FIRM04-130

[Recovery Procedure for an error in data transferred to the DKC/AP error/MPC Software error]





[Recovery Procedure for I/O Error on Maintenance PC Hard Disk]

- *1: Reference code “7900xy”
xy: Shows processor id. (See [SIMRC02-320](#))
For details of the trouble, refer to the explanation about the BOOT detected error at SSB (Byte27=8c).
(See [SSBLOG05-620](#))
- *2: The message “connection error occurred MPC-GUM” and “connection error occurred GUM-DKC” are displayed.
- *3: If this problem persists, contact the Technical Support Division.

<Recovery of a cache failure during the Update Firmware of DKCMAIN Action>

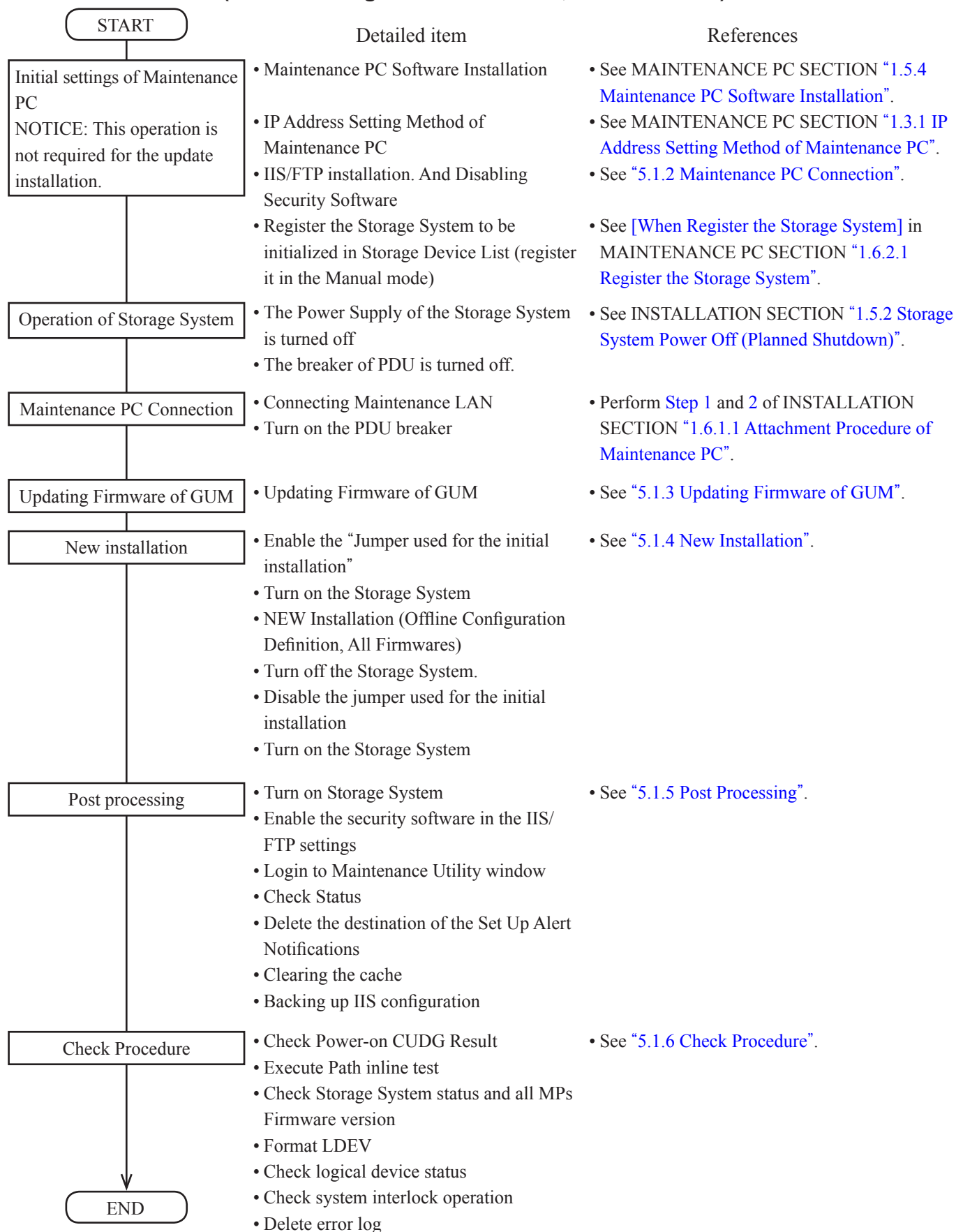
1. Retry Update Firmware of DKCMAIN program.

- NOTE:
- The processors which had finished the Update Firmware to new version will be skipped.
 - Password is necessary. Please call Technical Support Division for asking the password.

2. Replace the blocked part in accordance with the SIM message and ACC (ACTION CODE) SECTION ([ACC00-00](#)).

5. Config Exchange Procedure

5.1 New Installation (Offline Configuration Definition, All Firmwares)



 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.

Initialize the storage system using the firmware in the firmware media, and the configuration information created by the Offline Configuration Definition Tool.

However, firmware of HDD, ENC (Expander) and CNF are not initialized.

Perform the online firmware update after the Storage System is initialized completely.

When NAS Modules are installed, new installation of NAS Unified Firmware is required after completing all procedures. See INSTALLATION SECTION [“7.1 New Installation of the NAS Unified Firmware”](#), and then perform new installation of NAS Unified Firmware.

Also, the new installation of NAS Unified Firmware might fail depending on the configuration information that is used. In that case, perform [Step 1](#) to [Step 4](#) of INSTALLATION SECTION [“7.2 Removing the NAS Unified Firmware”](#), and then perform the new installation of NAS Unified Firmware again.

See [Restoring the NAS Unified Firmware configuration information] of User Guide to perform Procedure for New Installation (Restore Configuration) on the NAS Module side.

When the configuration information for the NAS Module is provided by the system administrator, see MAINTENANCE PC SECTION [“6.7 Restoring the NAS Unified Firmware Configuration Information”](#) and restore the configuration information on the NAS Module side.

5.1.1 Prerequisites

- The software of the Maintenance PC is installed and the Storage System to be initialized is registered.
(See MAINTENANCE PC SECTION “[1.5.4 Maintenance PC Software Installation](#)” and “[1.6.2.1 Register the Storage System](#)”)
- The Power Supply of the Storage System is turned off.
- The breaker of PDU is turned off.

5.1.2 Maintenance PC Connection

The procedure below is that used when a operation terminates abnormally, see “[5.4 Troubleshooting of Config Exchange Procedure](#)”.

1. <IIS/FTP installation>

Set IIS and FTP of the Maintenance PC.

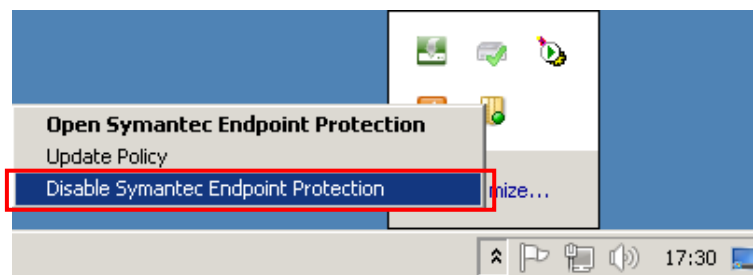
See MAINTENANCE PC SECTION “[1.7 Setting the IIS/FTP server](#)”. (It is described to Windows 7.)

2. Disabling Security Software

When using the FTP (IIS), disable the security software because it may have an effect on the communication.

- Security software: Example of Symantec Endpoint Protection

For Symantec Endpoint Protection, right-click the [Symantec Endpoint Protection] icon on the desktop and select [Disable Symantec Endpoint Protection].



3. <Connecting LAN>

Connect the Maintenance PC and the Controller Board 1 with the LAN cable.

See INSTALLATION SECTION “[1.6.1 Attachment/Removal Procedure of Maintenance PC](#)” to connect the LAN cable.

4. <Turn on the PDU breaker>

Turn on the breaker of the PDU installed in the rack frame.

Wait for two or three minutes after turning on the breaker.

NOTE: Do not turn on the Power Supply of the Storage System here.

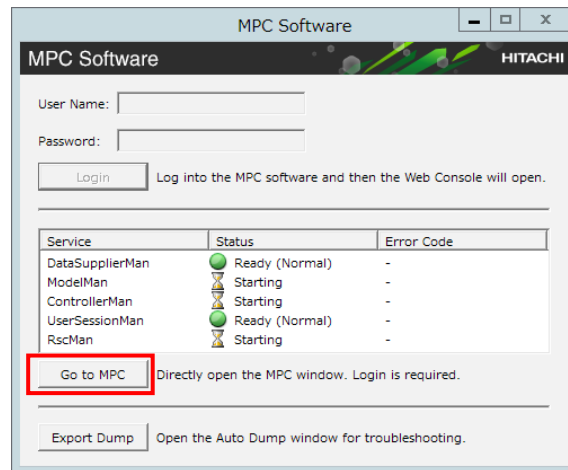
5.1.3 Updating Firmware of GUM

Update the Firmware for the GUMs of both Controller Board 1 and Controller Board 2.

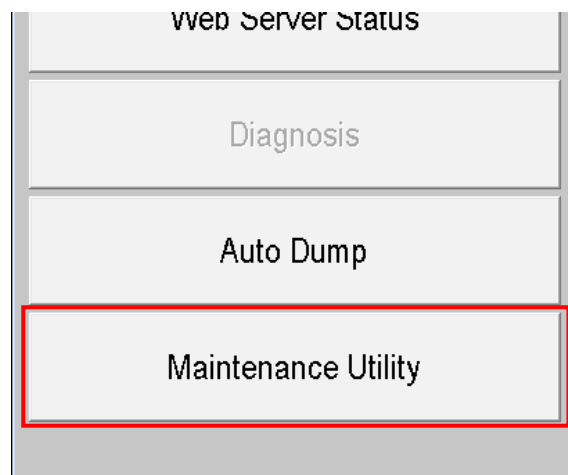
1. Update the Firmware of Controller Board 1.

- (1) Check that a LAN cable connects the Maintenance PC and Controller Board 1.
- (2) Right-click the connection icon “Storage Device List” on the desktop of the Maintenance PC and select [Run as administrator].
- (3) Click the Storage System icon to be operated in the “Storage Device List” window. Then, the “MPC Software” window opens. Enter the user name and the password.
- (4) Click the [Go to MPC] button in the “MPC Software” window.

Then, the “MPC” window opens.

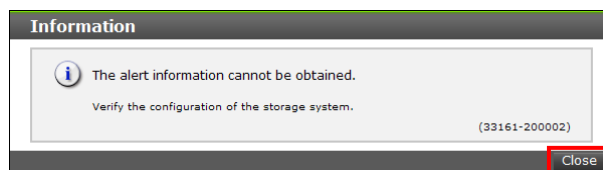


- (5) Click the [Maintenance Utility] button in the “MPC” window.
- Then, the “Maintenance Utility” window opens.



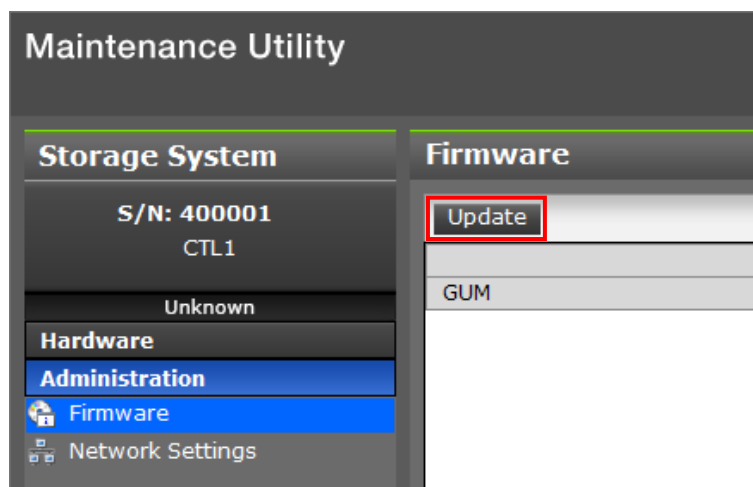
- (6) The alert information cannot be acquired by the Storage System because the Storage System is turned off.

Then, click the [Close] button.



- (7) Display of the Firmware update window

Select [Firmware] from [Administration] and click the [Update] button.



(8) Display of the confirmation window

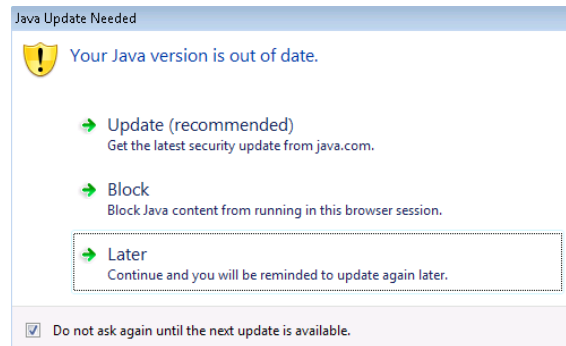
The displayed windows differ according to the JRE (Java Runtime Environment) versions.

In the case of JRE7 or JRE8, go to [Step \(a\)](#).

In the case of JRE6, go to [Step \(b\)](#).

(a) In the case of JRE7 or JRE8

- The update of the Java application may be promoted.



When using Maintenance Utility with the Java you are using, click [Later].

If you check the checkbox of [Do not ask again until the next update is available.] once and click [Later], this window is not displayed from now on.

NOTE: When clicking [Update(recommended)] and [Block], close the window of the Web browser and restart Maintenance Utility.

When checking the checkbox of [Do not ask again until the next update is available.] and selecting [Update(recommended)] or [Block], Maintenance Utility cannot update the firmware.

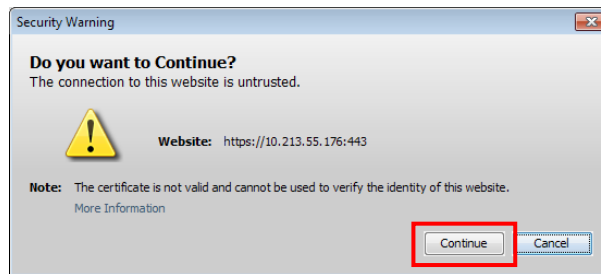
To allow Maintenance Utility to update the firmware, execute the following procedures.

- Click [All Programs ([All apps] for Windows 10)]-[Java]-[Configure Java] from the [Start] menu of Windows and start [Java Control Panel].
- Click the [Security] tab of [Java Control Panel].
- If the checkbox of [Enable Java content in the browser] in the [Security] tab is checked, uncheck it once and click the [Apply] button.
- Check the checkbox of [Enable Java content in the browser] and click the [Apply] button.
- Click the [OK] button of [Java Control Panel] to close the window.
- Restart Maintenance Utility.

NOTE: When changing the Java setting in [Java Control Panel], a message like “Java Plug-in settings changed” may be displayed. If such message is displayed, click the [OK] button.

- When the message “Do you want to Continue?” is displayed, click the [Continue] button.

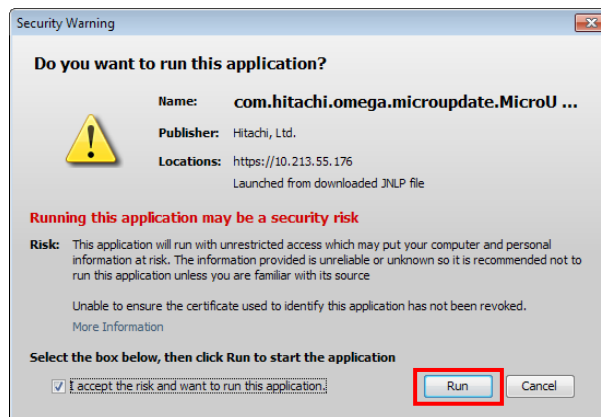
NOTE: This window may not be displayed.



- When the message “Do you want to run this application?” is displayed, check [I accept the risk and want to run this application.] and click the [Run] button.

Go to [Step \(9\)](#).

NOTE: This window may not be displayed.



NOTE: When the “Application Blocked by Java Security” or “Application Blocked by Security Settings” window is displayed, see TROUBLESHOOTING SECTION [“3.28.1.1 Troubleshooting Related to Installation and Upgrade”](#) and register the storage system in the exception site.

After the registration, perform the procedure of [“5.1 New Installation \(Offline Configuration Definition, All Firmwares\)”](#) again.

(b) In the case of JRE6

- When the message “The web site’s certificate cannot be verified. Do you want to continue?” is displayed, click the [Yes] button.

NOTE : This window may not be displayed.



- When the message “The application’s digital signature has been verified. Do you want to run the application?” is displayed, check [Always trust content from this publisher.] and click the [Run] button.

Go to [Step \(9\)](#).

NOTE : This window may not be displayed.

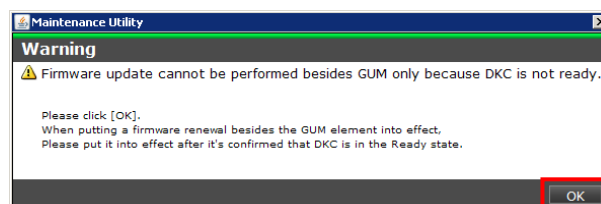


(9) Displaying the Warning Window

If the existing firmware version is 83-01-21-x0/xx or later, a message to indicate that other than the single GUM firmware cannot be updated.

Click the [OK] button.

If the existing firmware version is 83-01-21-x0/xx or less, this message is not displayed. In this case, go to [Step \(10\)](#).



(10) Inserting the media

! CAUTION

Use the installation media corresponding to the PC (Maintenance PC/SVP) for the installation/update.

If incorrect installation media is used, the Maintenance PC or the SVP does not operate correctly. In that case, see MAINTENANCE PC SECTION ["10.2 Maintenance PC Software Uninstallation"](#) to remove it (The procedure for remove the SVP software is the same).

Then, use the correct installation media and install it again. Once the media is removed, the set information is initialized. Therefore, set the information that was set before the removal again.

Insert [Installation Media for Maintenance PC] into the DVD Drive of the Maintenance PC.

NOTE: If a DVD drive is not installed in a PC, copy all the files of installation media for the Maintenance PC to "work folder". For a "work folder" name, do not use a double-byte character because Setup.exe might not start if a double-byte character is included in the name.

Then, use the files in "work folder".

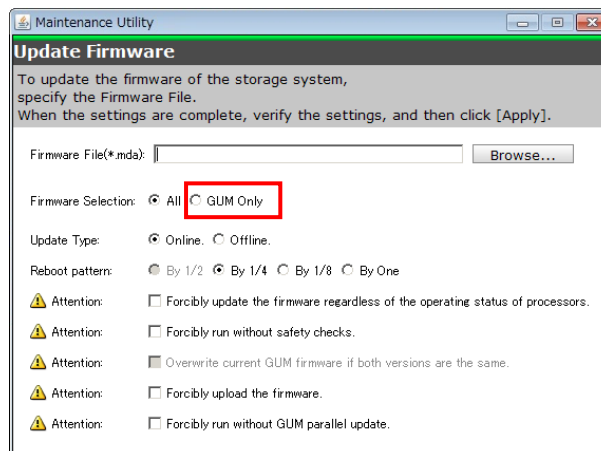
(11) Specifying the firmware update of single GUM

When the existing firmware version is 83-01-21-x0/xx or less:

Select "GUM Only" in the "Firmware Selection" of the "Firmware Update" window.

When the existing firmware version is 83-01-21-x0/xx or later:

Go to [Step \(12\)](#).



(12) Selecting the firmware file

 CAUTION

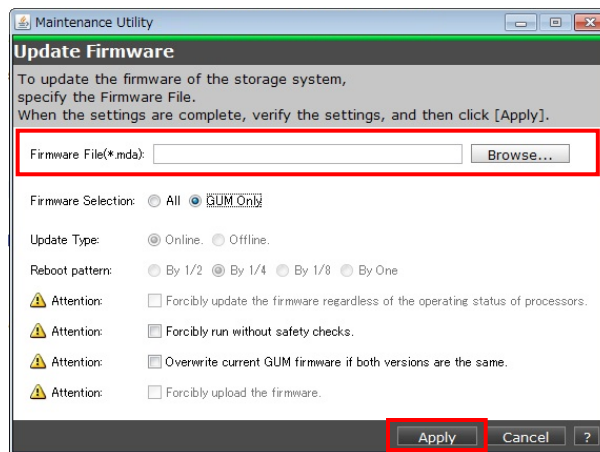
About “Forcibly run without safety checks”.

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

In the “Firmware file (*.mda)” of the “Update Firmware” window, select the “AllFirmware.mda” file from the “firmware” folder in the media.

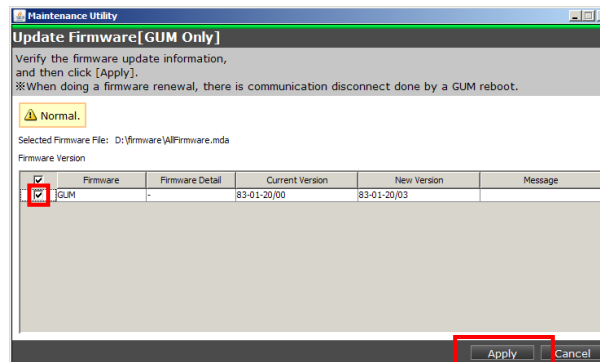
After selecting the file, click the [Apply] button.

NOTE: If the existing firmware version is 83-01-21-x0/xx or later, the Storage System type, serial number, and the controller number to be operated are displayed in the window title.



(13) Performing the firmware update

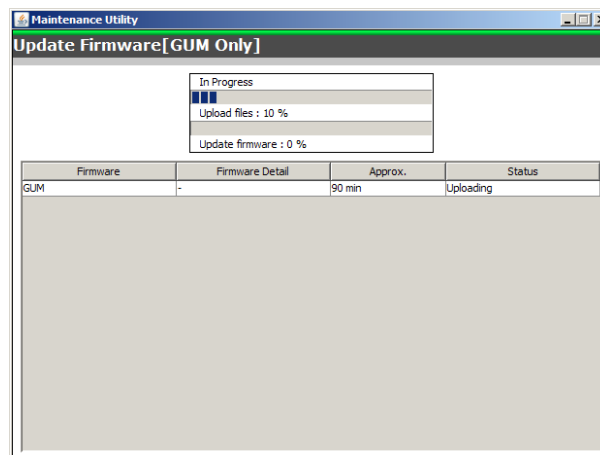
Check “GUM” in the firmware column of the “Update Firmware” window, and click the [Apply] button.



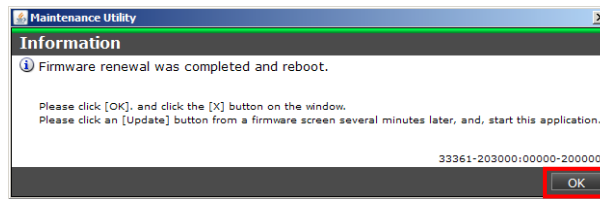
(14) Display the progress

NOTE : While displaying the progress window, do not close the window by the [×] button or log out of “Maintenance Utility” window. If the window is closed, perform the procedures from [Step \(2\)](#) to [Step \(8\)](#) and restart the work.

- When the window of [Step \(14\)](#) is displayed after [Step \(8\)](#):
The firmware update is in progress.
Keep the window open and wait to terminate it.
- When the window of [Step \(11\)](#) is displayed after [Step \(8\)](#):
The firmware update is suspended or completed. Select [Firmware] from the [Management] menu in the “Maintenance Utility” window and check the firmware version.
When the version is not changed, update the firmware again.

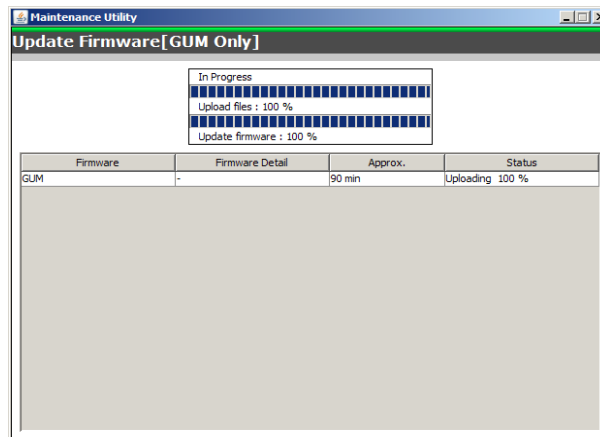


(15) Completion message



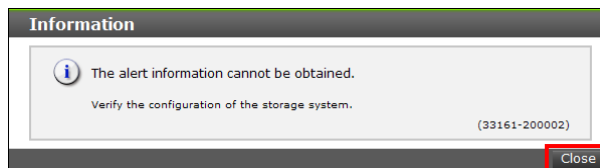
(16) Close the window.

Click the [×] button in the window to close the window.



(17) Restarting the "Maintenance Utility" window

- Connection between the Maintenance PC and the Storage System is disconnected by rebooting. Close the window of Maintenance Utility.
- Start the "Maintenance Utility" window in the "MPC" window.
- When restarting the "Maintenance Utility" window, the "Information" window is displayed. Then, click the [Close] button.



(18) Confirming the firmware version

Select [Firmware] from the [Management] menu of the "Maintenance Utility" window, and confirm the firmware version. If the firmware is not changed, update the firmware again.

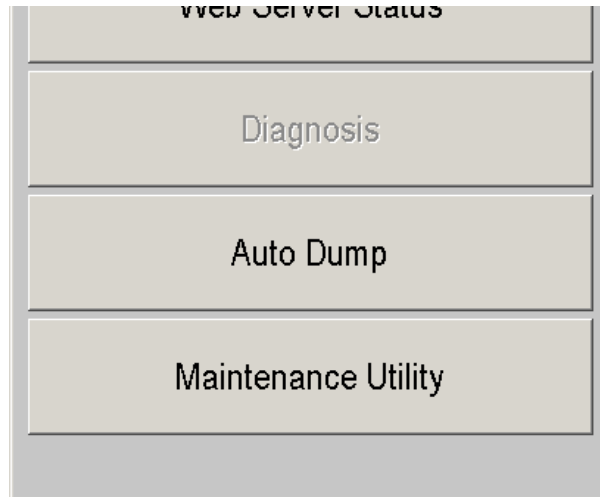
(19) Update the Firmware of the GUM of Controller Board 2.

- Connect the Maintenance PC and the Controller Board 2 with the LAN cable. (See INSTALLATION SECTION "1.6.1.1 Attachment Procedure of Maintenance PC".)
- Execute [Step \(5\)](#) to [Step \(18\)](#).

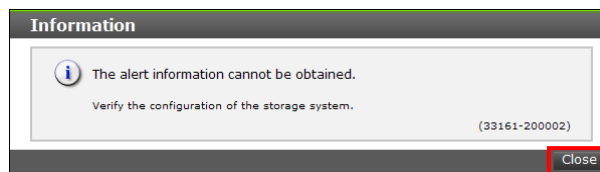
5.1.4 New Installation

1. <Enable a jumper used for initial installation>

- (1) Connect the Maintenance PC and the Controller Board 1 with the LAN cable.
- (2) Click the [Maintenance Utility] button in the “MPC” window.



- (3) When the “Information” window is displayed, click the [Close] button.



- (4) Enable the “Jumper used for the initial installation (CEMD)” using the system parameter edit function. For the details, see [“3.16 Edit System Parameters”](#) in the MAINTENANCE PC SECTION.
- (5) Click the [Log Out] button in the “Maintenance Utility” window. The “Log Out” window is displayed. Close the “Maintenance Utility” window.

2. <Turn on Storage System>

- (1) Press the main switch on the front of the Controller Chassis for about three seconds to turn it on.
- (2) Check that the POWER LED (green) on the front of the Controller Chassis lights up. Wait for about five minutes after the POWER LED lit to perform the following operation.

3. NEW Installation (Offline Configuration Definition, All Firmwares)

(1) <Mode Change>

- (a) Change the mode to [Initial Setting] on the “MPC” window.

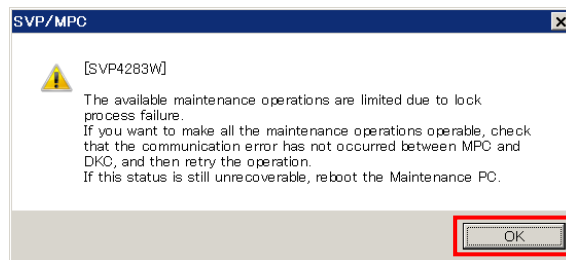
Select “Shift” + “Ctrl” + “I”.

Enter the password and click the [OK] button.

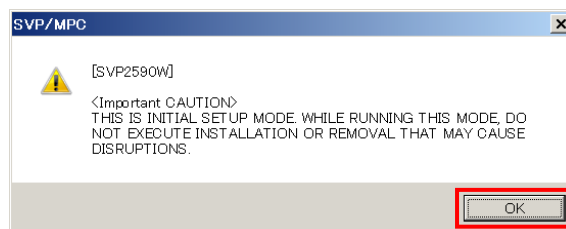
NOTE: Please call Technical Support Division for asking the password.

- (b) The mode is shown as [Initial Setting(Unlocked)].

NOTE: If the Storage System was started with the state that the jumper used for the initial installation is enabled, the confirmation message “[4283] 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 MPC and DKC, and then retry the operation. If this status is still unrecoverable, reboot the Maintenance PC.” is displayed. Then, click the [OK] button.



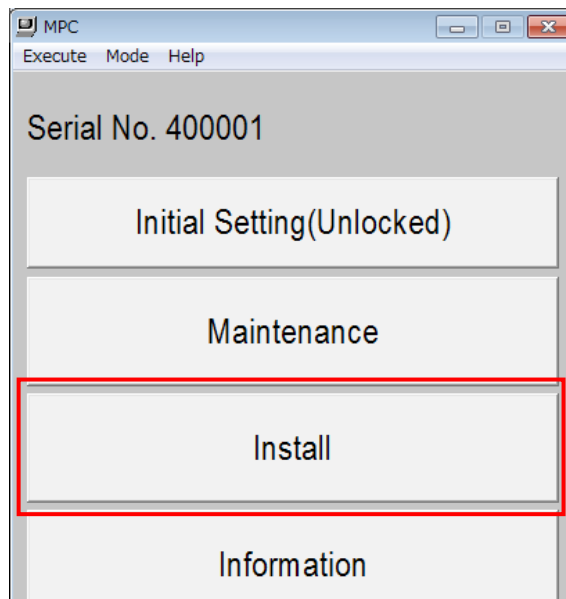
- (c) Click the [OK] button in response to the confirmation message, “[2590] <Important CAUTION> THIS IS INITIAL SETUP MODE. WHILE RUNNING THIS MODE, DO NOT EXECUTE INSTALLATION OR REMOVAL THAT MAY CAUSE DISRUPTIONS.”



(2)

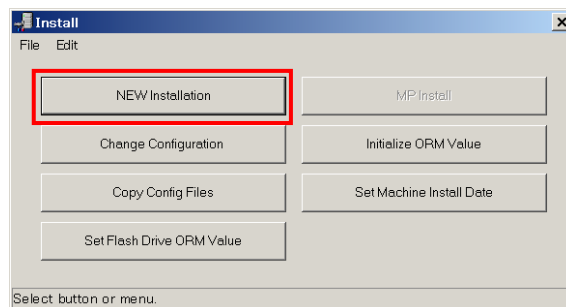
Click the [Install] button.

The “Install” window opens.



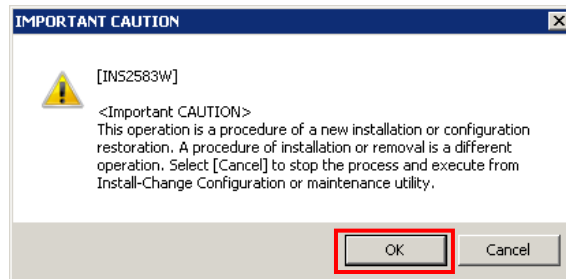
(3)

Click [NEW Installation] in the “Install” window.



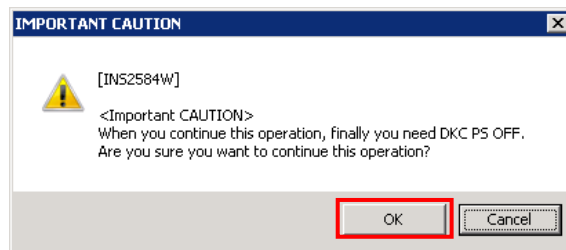
(4)

Click the [OK] button in response to the confirmation message, “[2583] <Important CAUTION> This operation is a procedure of a new installation or configuration restoration. A procedure of installation or removal is a different operation. Select [Cancel] to stop the process and execute from Install-Change Configuration or maintenance utility.”.



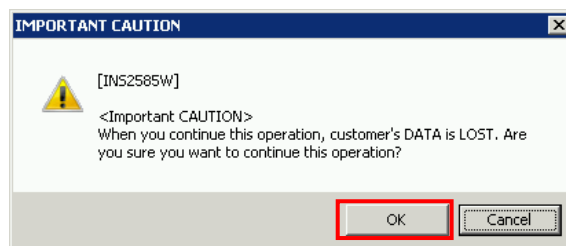
(5)

Click the [OK] button in response to the confirmation message, “[2584] <Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



(6)

Click the [OK] button in response to the confirmation message, “[2585] <Important CAUTION> When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?”.

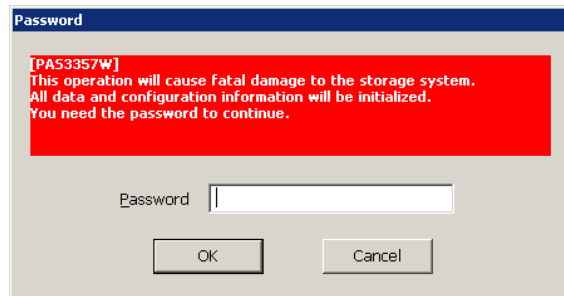


(7)

“Password”[3357] window is displayed.

Enter a password and click the [OK] button.

To perform this operation, an entry of a password is required. For the password, ask the Technical Support Division.



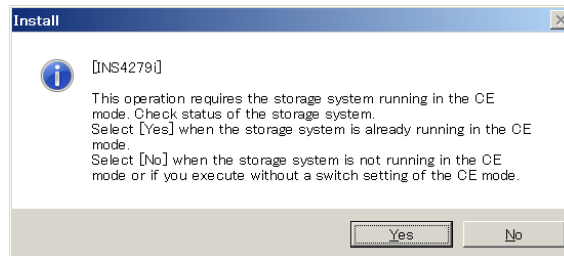
(8)

Response to the message “[4279] This operation requires the storage system running in the CE mode. Check status of the storage system.

Select [Yes] when the storage system is already running in the CE mode.

Select [No] when the storage system is not running in the CE mode or if you execute without a switch setting of the CE mode.”.

Click the [Yes] button.



(9)

Check that the installed CTL matches the displayed CTL and click the [Yes] button in response to the message,

“[4466] The displayed CTLs are the ones in the CE mode.

Confirm that all CTLs are displayed.

[CTLs in the CE mode]

CTL1

CTL2

NOTE: CTL1 and CTL2 are displayed when they are in the normal CE mode.

When all CTLs are displayed, select [Yes] to continue the processing.

When all CTLs are not displayed, select [No] to terminate the processing, and retry the NEW Installation after waiting for 20 minute.

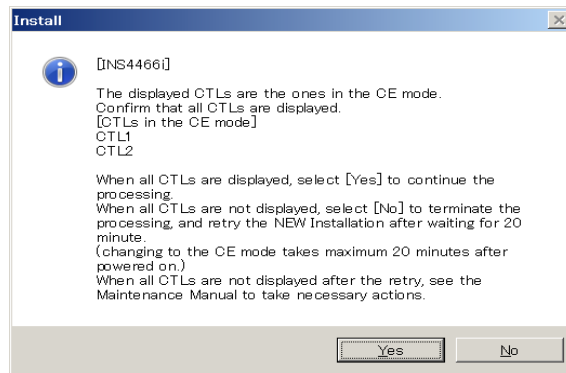
(changing to the CE mode takes maximum 20 minutes after powered on.)

When all CTLs are not displayed after the retry, see the Maintenance Manual to take necessary actions.”.

When the [Yes] button is selected, go to [Step \(10\)](#).

When the [No] button is selected, go back to [Step \(3\)](#).

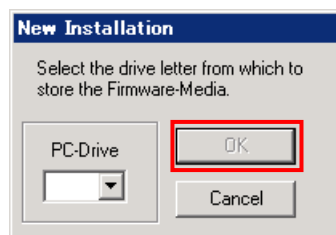
NOTE: The CTL displayed in the message is a CTL whose jumper used for initial installation is enabled at the time of displaying the message. When none of the installed CTLs is displayed, click the [No] button and retry it from [Step \(3\)](#).



(10)

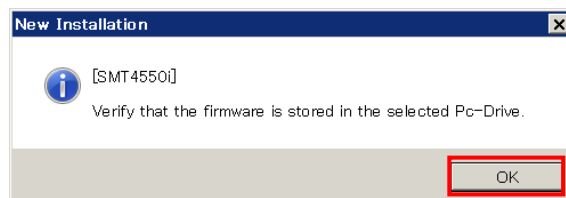
Select a drive to store the Firmware Media and click the [OK] button.

NOTICE: Do not use the configuration information media.



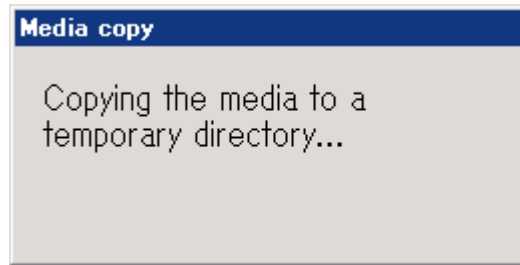
(11)

Store the media in the drive and click the [OK] button in response to the message “[4550] Verify that the firmware is stored in the selected Pc-Drive.”.



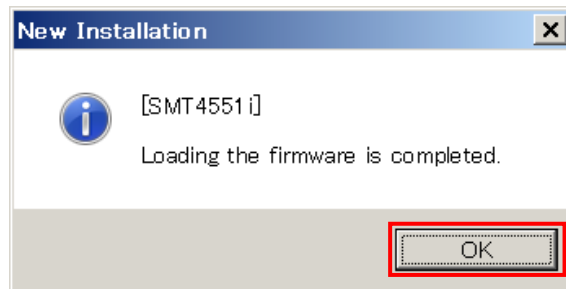
(12)

A message of copying from the Media is displayed.



(13)

Remove the Media and click the [OK] button in response to the "[4551] Loading the firmware is completed."

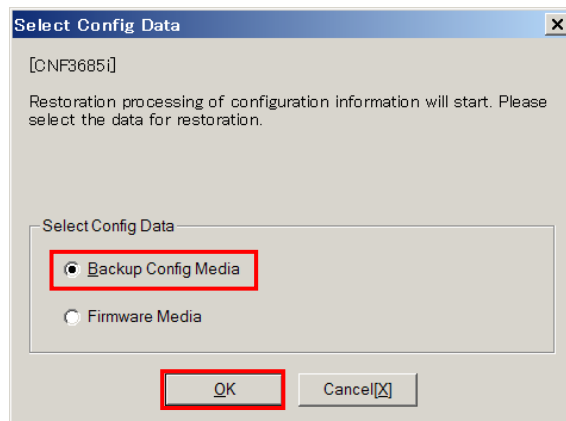


(14) <Select Configuration Information of Restoration Targets>

The "Select Config Data"[3685] window is displayed.

Select [Backup Config Media], and click the [OK] button.

Go to [Step \(15\)](#).



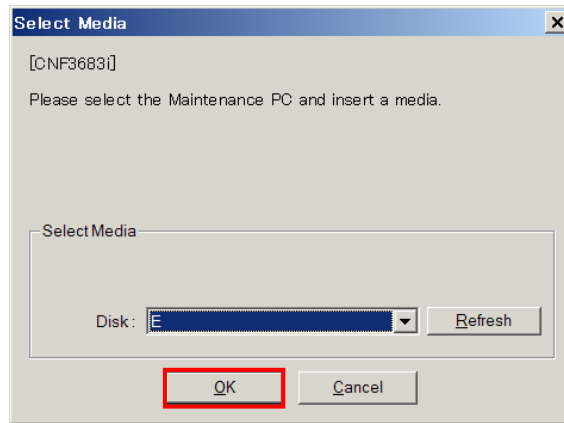
(15) <Select Drives>

The "Select Media"[3683] window is displayed.

Select a drive storing the configuration information and click the [OK] button.

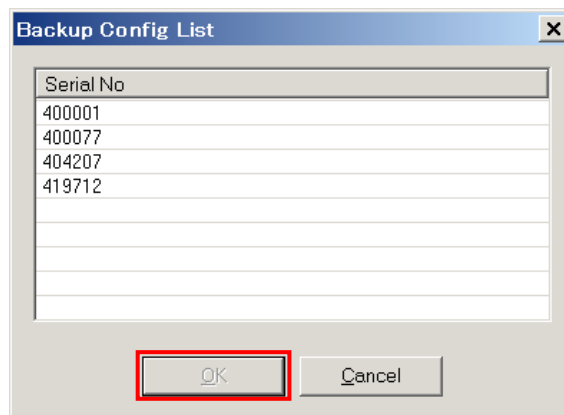
When a lot of configuration information exists, go to [Step \(a\)](#).

When a piece of configuration information exists, go to [Step \(16\)](#).



(a) <Selecting configuration information>

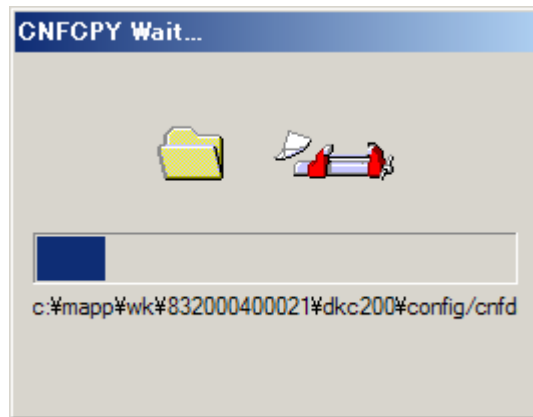
A lot of configuration information is displayed. Select a piece of configuration information to be used and click the [OK] button.



(16)

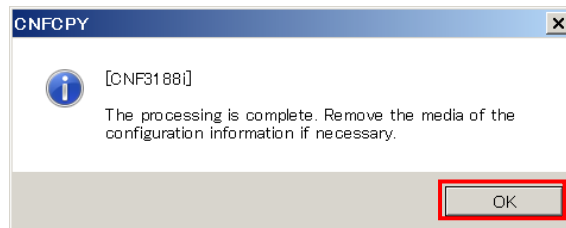
Make a copy of the configuration information.

During the copying, the “CNFCPY Wait...” window is displayed.



(17)

A message, “[3188] The processing is complete. Remove the media of the configuration information if necessary.” is displayed. Remove the configuration information media as needed, and then click the [OK] button.



(18)

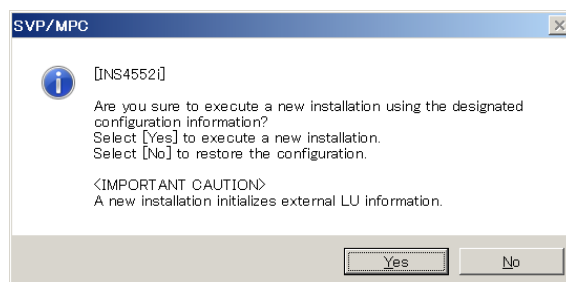
Click the [Yes] button in response to the confirmation message, “[4552] Are you sure to execute a new installation using the designated configuration information?”

Select [Yes] to execute a new installation.

Select [No] to restore the configuration.

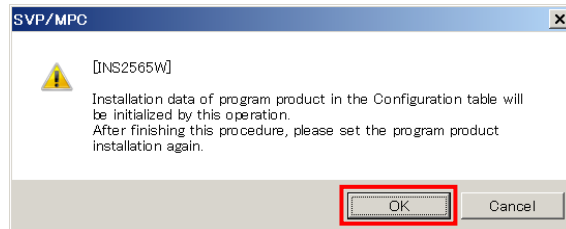
<IMPORTANT CAUTION>

A new installation initializes external LU information.”.

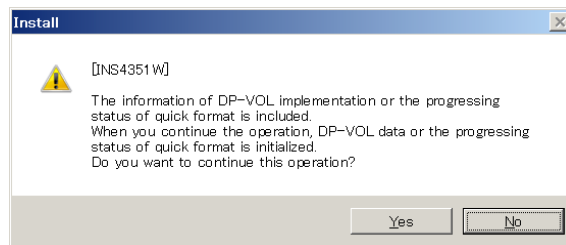


- (19) Click the [OK] button in response to the confirmation message “[2565] Installation data of program product in the Configuration table will be initialized by this operation. After finishing this procedure, please set the program product installation again.”.

NOTE: When information of DP-VOL implementation or progressing status of quick format is not included, go to [Step \(21\)](#).



- (20) Response to the message “[4351]The information of DP-VOL implementation or the progressing status of quick format is included. When you continue the operation, DP-VOL data or the progressing status of quick format is initialized. Do you want to continue this operation?”. When you continue this operation, click the [Yes] button. When [No] is selected, this processing will be stopped. Return to [Step \(3\)](#).



- (21) <DKC Configuration window>

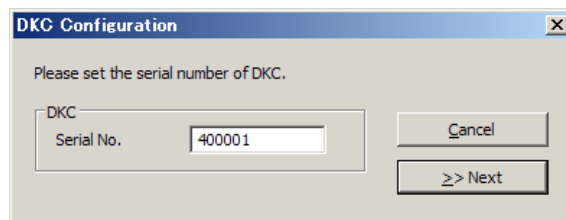
NOTE: Check the nameplate of the Storage System, and then enter the serial number.

The “DKC Configuration” window is displayed.

Change the serial number if needed.

Click the [>>Next] button.

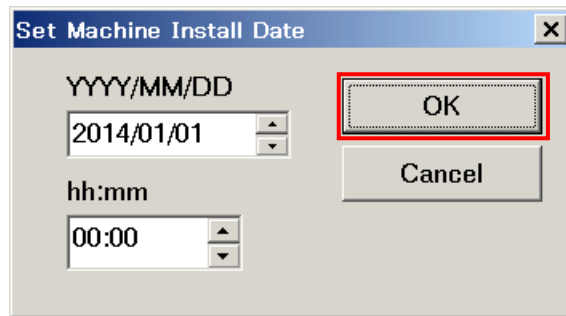
This procedure is completed when the [Cancel] button is clicked.



NOTICE: When the serial number is changed and it is different from the serial number registered in the Storage Device List, register the Storage System in the Storage Device List with the changed serial number after completing the maintenance operation.

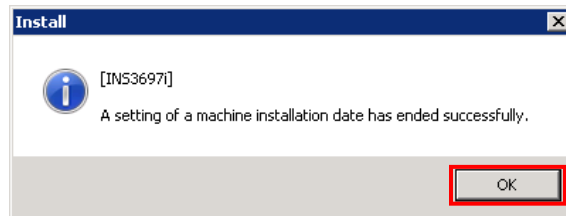
(22)

Set the current date and time on which New Installation is performed in the “Set Machine Install Date” window, and then click the [OK] button.



(23)

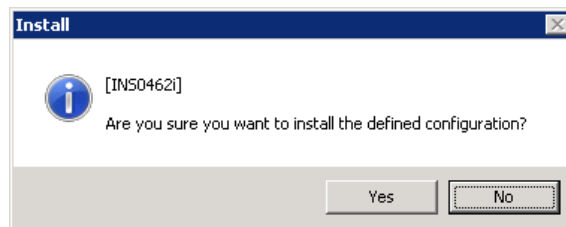
Click the [OK] button in response to “[3697] A setting of a machine installation date has ended successfully.”.



(24)

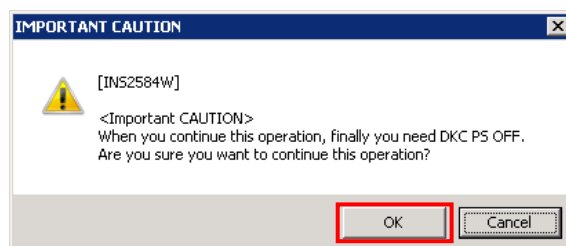
Click the [Yes] button in response to the confirmatory message, “[0462] Are you sure you want to install the defined configuration?”.

Selecting [No] cancels the configuration change processing and terminates the installation procedure.



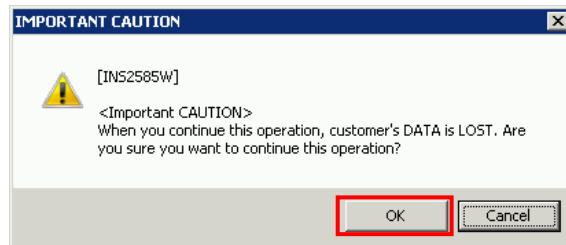
(25)

Click the [OK] button in response to the confirmatory message, “[2584] <Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



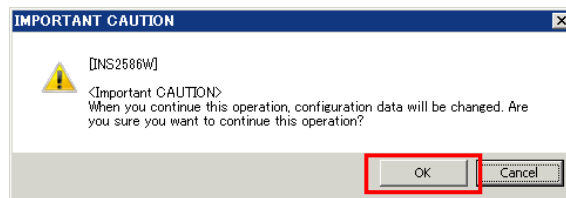
(26)

Click the [OK] button in response to the confirmatory message, “[2585] <Important CAUTION> When you continue this operation, customer’s DATA is LOST. Are you sure you want to continue this operation?”.



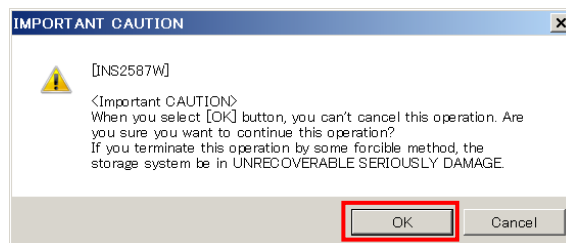
(27)

Click the [OK] button in response to the confirmation message, “[2586] <Important CAUTION> When you continue this operation, configuration data will be changed. Are you sure you want to continue this operation?”.



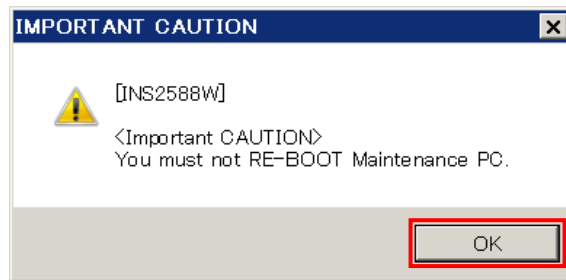
(28)

Click the [OK] button in response to the confirmatory message, “[2587] <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.”.



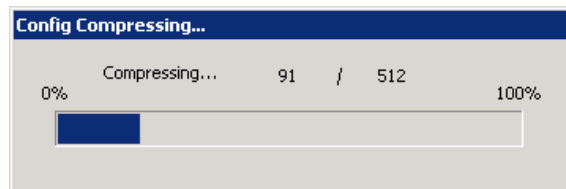
(29)

Click the [OK] button in response to the cautionary message, “[2588] <Important CAUTION> You must not RE-BOOT Maintenance PC.”.



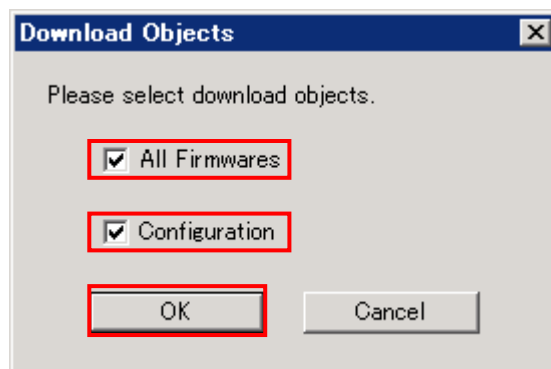
(30) <Compressing of the configuration information>

The configuration information is compressed. The dialog of Config Compressing... is displayed. After the compressing is completed, go to [Step \(31\)](#).



(31) <Download Objects window>

Select the [All Firmwares] and the [Configuration] buttons, and click the [OK] button.

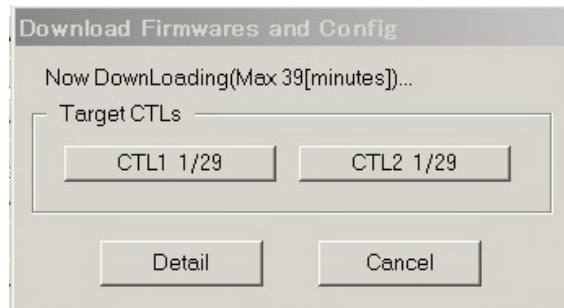


(32) <Configuration information transfer>

The configuration information is forwarded.

After the forward is completed, go to [Step \(33\)](#).

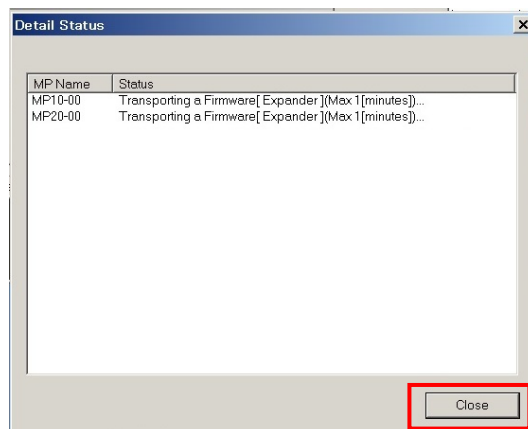
Click the [Detail] button to confirm the detail of the transfer status. Go to [Step \(a\)](#).



(a) Details of transfer situation are confirmed on the “Detail Status” window.

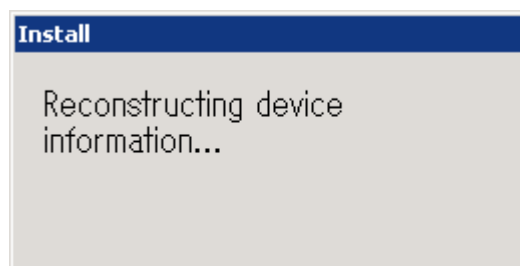
When you close the “Detail Status” window, click the [Close] button.

NOTE: Be sure to close the “Details Status” window after the confirmation. If the window is left open, the transfer of the configuration information does not complete.



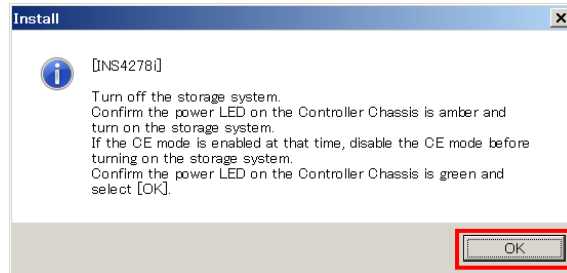
(33)

“Reconstructing device information...” is displayed.



4. Disable the jumper used for the initial installation

- (1) When the following message is displayed, perform the following works from [Step \(a\)](#) to [Step \(d\)](#).
When the message “[4278]Turn off the storage system. Confirm the power LED on the Controller Chassis is amber and turn on the storage system. If the CE mode is enabled at that time, disable the CE mode before turning on the storage system. Confirm the power LED on the Controller Chassis is green and select [OK].” is displayed, perform the followings.



- (a) Press the main switch on the front of the Controller Chassis for about three seconds to turn off the Storage System.
- (b) Open the “Maintenance Utility” window from the “MPC” window and disable the jumper used for the initial installation (CEMD).
- How to set the jumper for initial installation: See MAINTENANCE PC SECTION [“3.16 Edit System Parameters”](#).
- (c) Confirm that the POWER LED of the Controller Chassis is amber, and then turn on the Storage System.
- (d) Confirm that the POWER LED of the Controller Chassis is green, and then select the [OK] button.
- (2) Close the “Install” window.
- (3) Change the mode from [Initial Setting(Unlocked)] to [View Mode].

5.1.5 Post Processing

1. <Turn on Storage System>

Check that the READY LED (green) on the front of the Controller Chassis lights up.

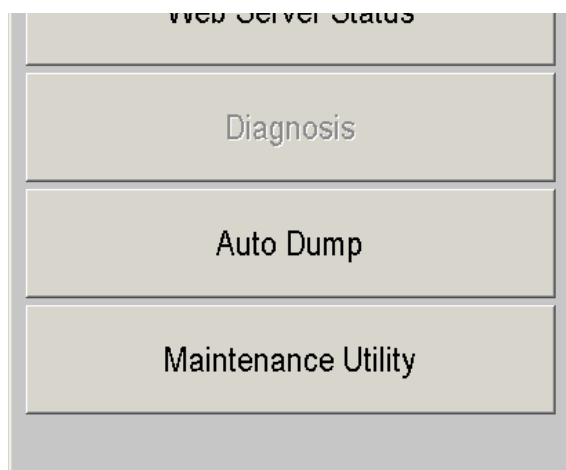
NOTE: It takes about 30 minutes until the READY LED changes to green.

2. <Enable Security Software>

Return the security software disabled in setting IIS to the “Enabled” status. (See [Step 2.](#) on “[5.1.2 Maintenance PC Connection](#)”.)

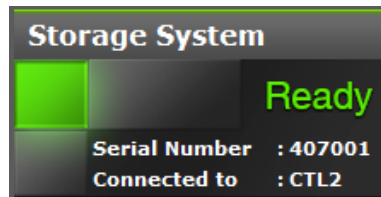
3. <Login to Maintenance Utility window>

Click the [Maintenance Utility] button in the “MPC” window.



4. <Check Status>

Please make sure that it is displayed as the “Ready” status of the Storage System in the “Maintenance Utility” window.



Status	Procedure
Ready	The processing is not required.
Information	Some SIMs are not checked. Check the SIM contents. (After checking the SIMs, refreshing the window changes the status to “Ready”.) (*1)
Warning	There is a failed part. Check the “MAIN” window and the SIM, and then take a necessary action. (*1) (*2)
Power-on in progress	The Storage System power-on is in progress. Log out of it once, and log in to the “Maintenance Utility” window after a while.

*1: Refer to MAINTENANCE PC SECTION [“3.21 Alert Display”](#) for how to check SIMs.

*2: Refer to SIM RC SECTION ([SIMRC00-00](#)) for the contents of SIMs.

5. <Confirming the Set Up Alert Notifications>

See MAINTENANCE PC SECTION [“3.4.1.2 Procedure”](#) and check that the information different from the contents to be configured is not set by the [Email], [Syslog] and [SNMP] tabs in the “Set Up Alert Notifications” window. If it is set, delete or reset it as needed.

6. <Clear Cache>

When the firmware version is less than 83-03-01-x0/xx, clearing the cache of Internet Explorer and Java is required.

Clear the cache in the following procedure. If the cache is not cleared, some failures such as the function newly added by the version upgrade cannot be used and the firmware update window cannot start up.

- Clearing the cache of Internet Explorer (In case of Internet Explorer11)

- (1) Click [Internet Options] from the [Start] menu.
- (2) Click the [Delete] button in [Browsing history] in the [General] tab.
- (3) Check only the following items in the “Delete Browsing History” window.
 - Temporary Internet files and website files
 - Cookies and website data
 - History
- (4) Click the [Delete] button.

- Clearing the cache of Java (In case of JRE7, JRE8)

- (1) Click the [Start] button of the Windows to open [Control Panel].
- (2) Click the [Java] icon.
- (3) Open [General] in the “Java Control Panel” window and click the [Settings] button of [Temporary Internet Files].
- (4) Click [Delete Files] in the “Temporary Files Settings” window.
- (5) Confirm that the checkboxes of “Trace and Log Files”, “Cached Applications and Applets” and “Installed Applications and Applets” are checked in “Delete Files and Applications”, and then click the [OK] button.

7. <Back up IIS configuration>

NOTE: When the IIS configuration is already backed up, skip this procedure. The procedure can be performed in the Windows command prompt only as an administrator.

- Backing up/restoring MPC IIS configuration

%systemroot%\system32\inetsrv\appcmd restore BACKUP “NAME_OF_BACKUP_B”

For “NAME_OF_BACKUP_B”, specify the name obtained in MAINTENANCE PC SECTION [“1.7.2 Setting IIS/FTP”](#), [“7. Backing up MPC IIS configuration”](#).

5.1.6 Check Procedure

1. <Check Power-on CUDG Result>

Perform the power-on procedure.

(See INSTALLATION SECTION [“1.5.1 Storage System Power On”](#).)

Power-on CUDG is automatically executed on the DKC logic circuitry.

If an error occurs, SIM Log, SSB Log has logging.

(See MAINTENANCE PC SECTION [“5.3.1 Log Indication”](#).)

2. <Execute Path inline test>

Perform Path inline tests on all DKBs 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 [“4.2 PATH INLINE Test Procedures”](#) for the test procedure.

3. <Check Storage System status and all MPs Firmware version>

Check the Storage System Status and all MPs Firmware version.

(See [“3.4 Procedure for Checking Firmware Version”](#).)

4. <Format LDEV>

Format the LDEV. (See MAINTENANCE PC SECTION [“4.2.3 Managing Logical Device”](#).)

5. <Check logical device status>

Check if Logical Devices are normal by with referring to the [LDEV] tab.

6. <Check system interlock operation>

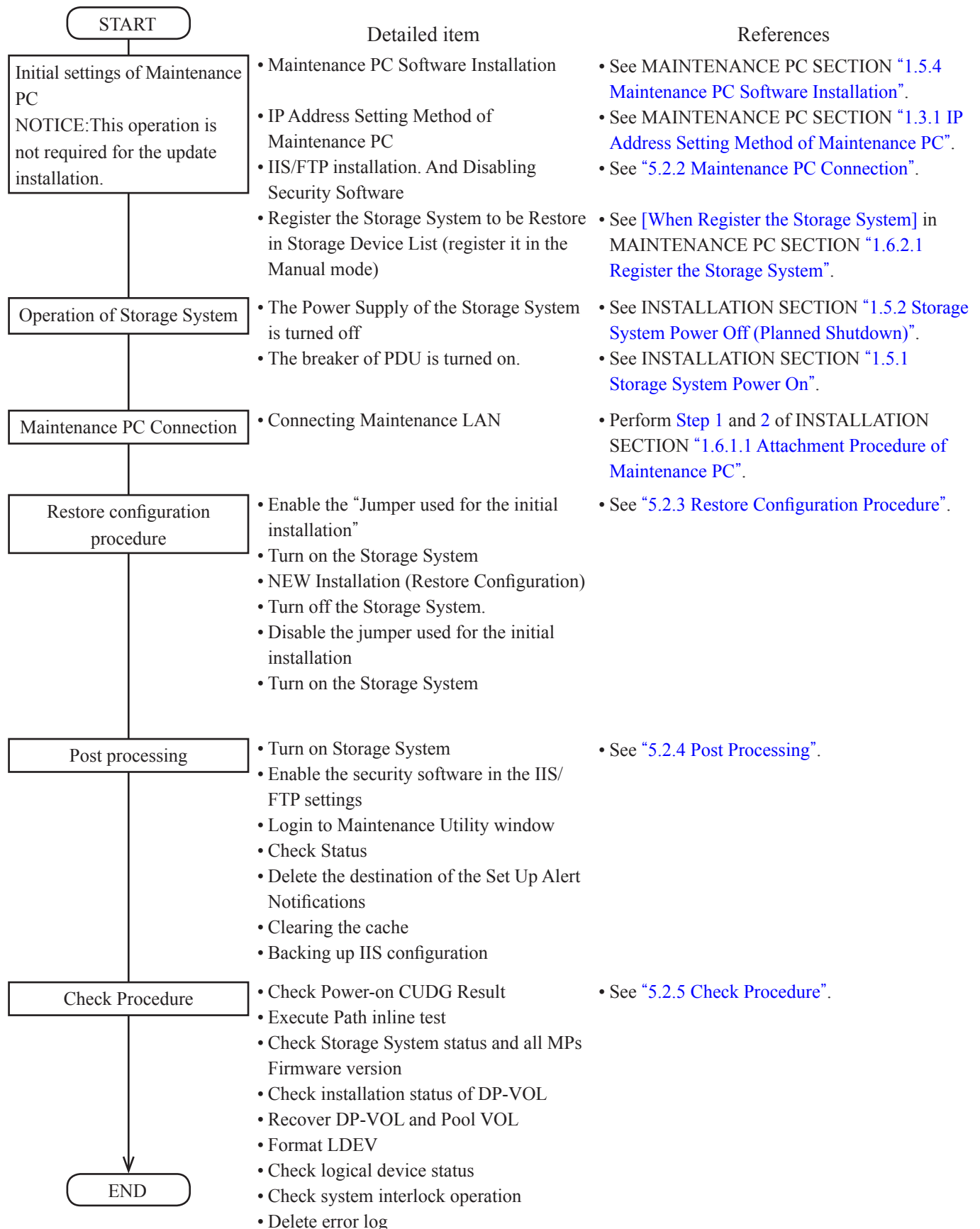
Start the test program from the host to check for normal Storage System's interlocked operation with the host.

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 Maintenance PC and transfer the Storage System to the user.
See MAINTENANCE PC SECTION [“5.3.2 Log Delete”](#).

5.2 Procedure of New Installation (Restore Configuration)



 CAUTION

This is the procedure for setting the configuration of the Storage System again based on the backed up configuration information. Performing the procedure incorrectly causes system down or data loss.

Start up the storage system using the configuration information acquired by Config Backup.

When NAS Modules are installed, new installation of NAS Unified Firmware is required after completing all procedures. See INSTALLATION SECTION [“7.1 New Installation of the NAS Unified Firmware”](#) and then perform new installation of NAS Unified Firmware.

Also, the new installation of NAS Unified Firmware might fail depending on the configuration information that is used. In that case, perform [Step 1](#) to [Step 4](#) of INSTALLATION SECTION [“7.2 Removing the NAS Unified Firmware”](#) and then perform the new installation of NAS Unified Firmware again.

See [Restoring the NAS Unified Firmware configuration information] of User Guide to perform Installation (Offline Configuration Definition, All Firmwares) on the NAS Module side.

When the configuration information for the NAS Module is provided by the system administrator, see MAINTENANCE PC SECTION [“6.7 Restoring the NAS Unified Firmware Configuration Information”](#) and perform Installation (Offline Configuration Definition, All Firmwares) on the NAS Module side.

NOTE: Performing this procedure initializes a part of setting information. Therefore, the initialized part of the information needs to be set again after this procedure is performed.

Ask your customer to set the information again following the user guides.

For the information to be set again, see [“6.3 Effect on the information due to configuration restoration”](#).

5.2.1 Prerequisites

- The software of the Maintenance PC is installed and the Storage System to be initialized is registered.
(See MAINTENANCE PC SECTION [“1.5.4 Maintenance PC Software Installation”](#) and [“1.6.2.1 Register the Storage System”](#))
- The Power Supply of the Storage System is turned off.
- The breaker of PDU is turned on.

5.2.2 Maintenance PC Connection

The procedure below is that used when a operation terminates abnormally, refer to [“5.4 Troubleshooting of Config Exchange Procedure”](#).

1. <IIS/FTP installation>

Set IIS and FTP of the Maintenance PC.

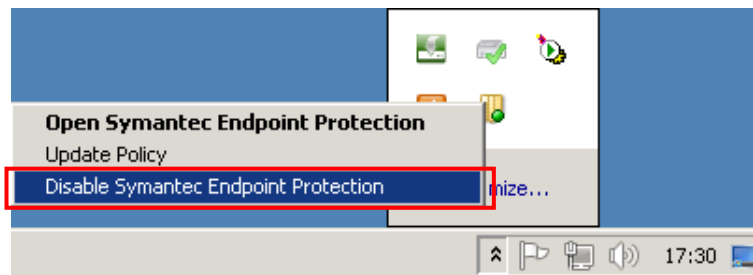
See MAINTENANCE PC SECTION [“1.7 Setting the IIS/FTP server”](#). (It is described to Windows 7.)

2. Disabling Security Software

When using the FTP (IIS), disable the security software because it may have an effect on the communication.

- Security software: Example of Symantec Endpoint Protection

For Symantec Endpoint Protection, right-click the [Symantec Endpoint Protection] icon on the desktop and select [Disable Symantec Endpoint Protection].



3. <Connecting LAN>

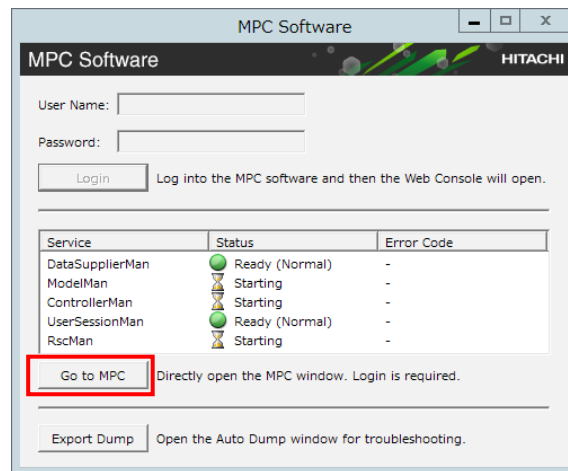
Connect the Maintenance PC and the Controller Board 1 with the LAN cable.

See INSTALLATION SECTION [“1.6.1 Attachment/Removal Procedure of Maintenance PC”](#) to connect the LAN cable.

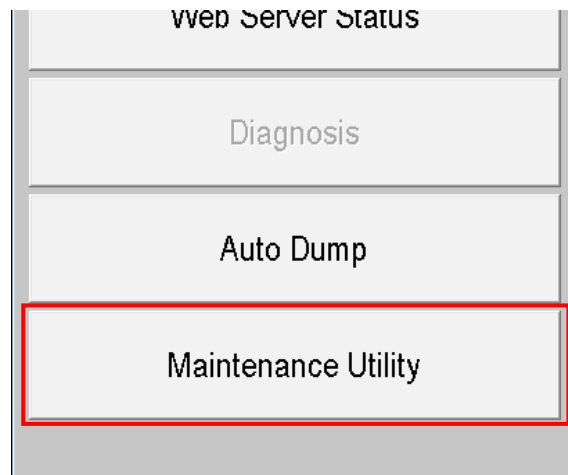
5.2.3 Restore Configuration Procedure

1. <Enable A jumper used for initial installation>

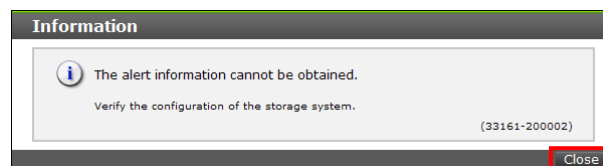
- (1) Connect the Maintenance PC and Controller Board 1.
- (2) Right-click the connection icon “Storage Device List” on the desktop of the Maintenance PC and select [Run as administrator].
- (3) Click the Storage System icon to be operated in the “Storage Device List” window. Then, the “MPC Software” window opens. Enter the user name and the password.
- (4) Click the [Go to MPC] button in the “MPC Software” window. Then, the “MPC” window opens.



- (5) Click the [Maintenance Utility] button in the “MPC” window. Then, the “Maintenance Utility” window opens.



- (6) If the Power Supply of the Storage System is turned off, alert information cannot be retrieved. In this case, the next "Information" window is displayed. Then, click the [Close] button.



- (7) Enable the “Jumper used for the initial installation (CEMD)” using the system parameter edit function. For the details, see [“3.16 Edit System Parameters”](#) in the MAINTENANCE PC SECTION.
- (8) Click the [Log Out] button in the “Maintenance Utility” window. The “Log Out” window is displayed. Close the “Maintenance Utility” window.

2. <Turn on Storage System>

- (1) Press the main switch on the front of the Controller Chassis for about three seconds to turn it on.
- (2) Check that the POWER LED (green) on the front of the Controller Chassis lights up. Wait for about five minutes after the POWER LED lit to perform the following operation.

3. <New Installation (Restore Configuration)>

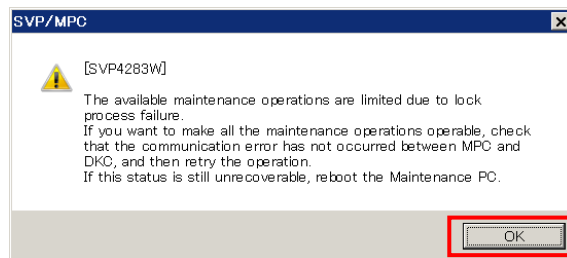
(1) Mode Change

- (a) Change the mode to [Initial Setting] on the “MPC” window.
Select “Shift” + “Ctrl” + “I”.
Enter the password and click the [OK] button.

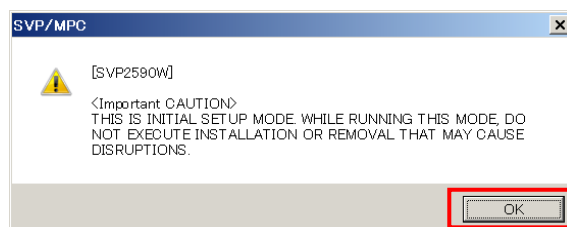
NOTE: For the password, contact the technical support division.

- (b) The mode is shown as [Initial Setting(Unlocked)].

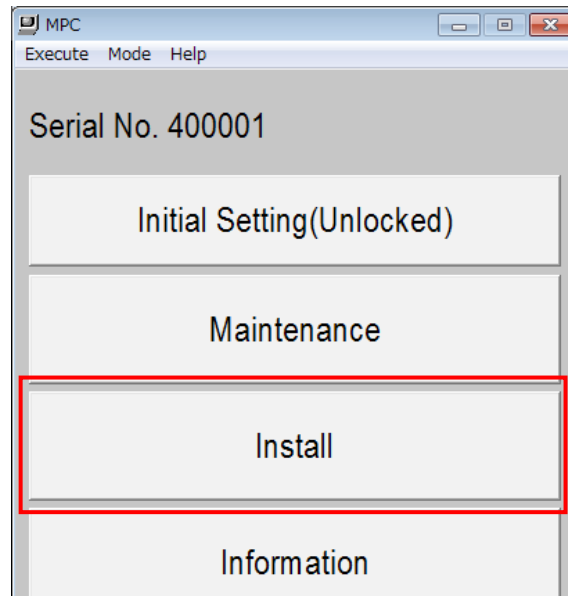
NOTE: If the Storage System was started with the state that the jumper used for the initial installation is enabled, the confirmation message “[4283] The available maintenance operations are limited due to lock process failure. If you want to make all the maintenance operations operable, check that the communication error has not occurred between MPC and DKC, and then retry the operation. If this status is still unrecoverable, reboot the Maintenance PC.” is displayed. Then, click the [OK] button.



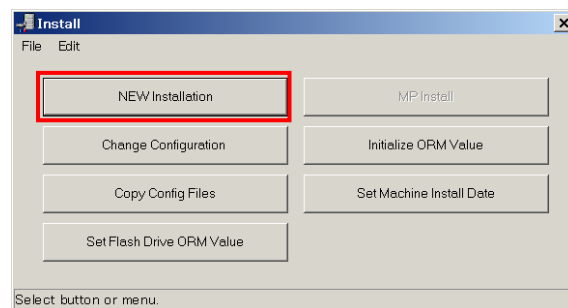
- (c) Click the [OK] button in response to the confirmation message, “[2590] <Important CAUTION> THIS IS INITIAL SETUP MODE. WHILE RUNNING THIS MODE, DO NOT EXECUTE INSTALLATION OR REMOVAL THAT MAY CAUSE DISRUPTIONS.”



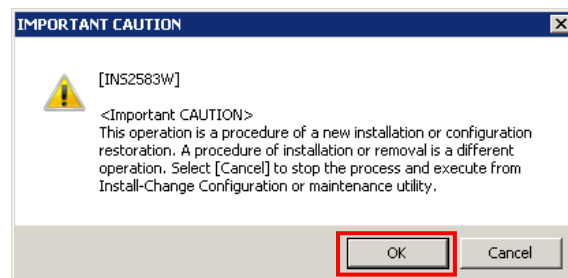
- (2) Click the [Install] button.
The “Install” window opens.



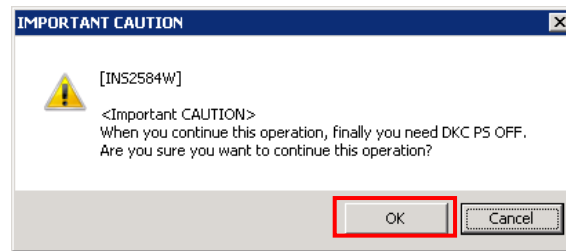
- (3) Click [NEW Installation] in the “Install” window.



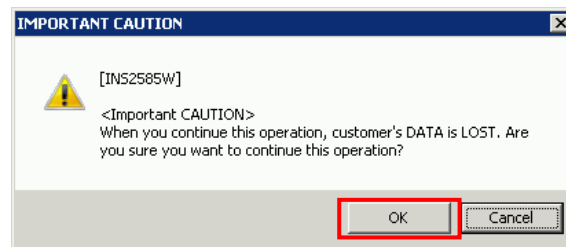
- (4) Click the [OK] button in response to the confirmation message, “[2583] <Important CAUTION>”.
This operation is a procedure of a new installation or configuration restoration. A procedure of installation or removal is a different operation. Select [Cancel] to stop the process and execute from Install-Change Configuration or maintenance utility.”.



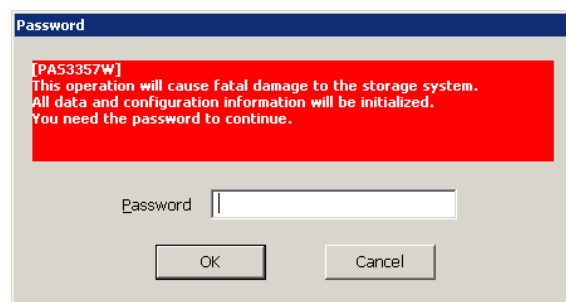
- (5) Click the [OK] button in response to the confirmation message, “[2584] <Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



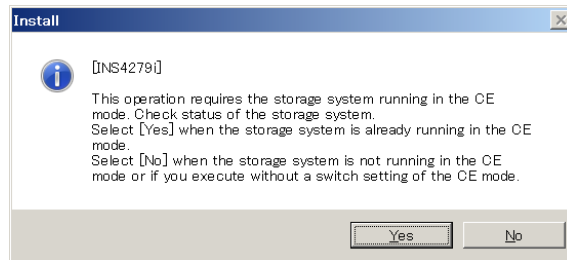
- (6) Click the [OK] button in response to the confirmation message, “[2585] <Important CAUTION> When you continue this operation, customer’s DATA is LOST. Are you sure you want to continue this operation?”.



- (7) “Password”[3357] window is displayed.
Enter a password and click the [OK] button.
For the password, ask the Technical Support Division.



- (8) Response to the message “[4279] This operation requires the storage system running in the CE mode. Check status of the storage system. Select [Yes] when the storage system is already running in the CE mode. Select [No] when the storage system is not running in the CE mode or if you execute without a switch setting of the CE mode.”.
- Click the [Yes] button.
- If you click [No] button, the storage system starts in the same condition as when it starts with jumper used for initial installation (CEMD) enable. (It goes in CE mode and the IP address is not initialized.)



- (9) Check that the installed CTL matches the displayed CTL and click the [Yes] button in response to the message,

"[4466] The displayed CTLs are the ones in the CE mode.

Confirm that all CTLs are displayed.

[CTLs in the CE mode]

CTL1

CTL2

NOTE: CTL1 and CTL2 are displayed when they are normal.

When all CTLs are displayed, select [Yes] to continue the processing.

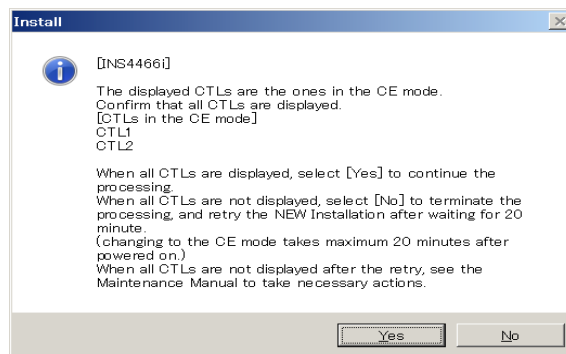
When all CTLs are not displayed, select [No] to terminate the processing, and retry the NEW Installation after waiting for 20 minute.

(changing to the CE mode takes maximum 20 minutes after powered on.)

When all CTLs are not displayed after the retry, see the Maintenance Manual to take necessary actions."

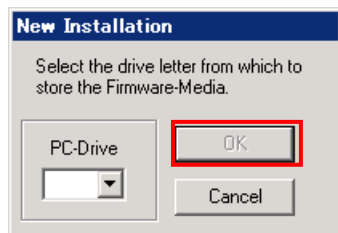
When [Yes] button is selected, go to [Step \(10\)](#). When the [No] button is selected, go back to [Step \(3\)](#).

NOTE: The CTL displayed in the message is a CTL whose jumper used for initial installation is enabled at the time of displaying the message. When none of the installed CTLs is displayed, click the [No] button and retry it from [Step \(3\)](#).

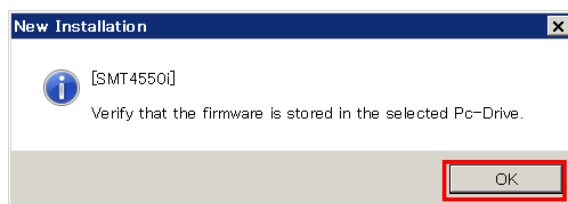


- (10) Select a drive to store the Firmware Media and click the [OK] button.

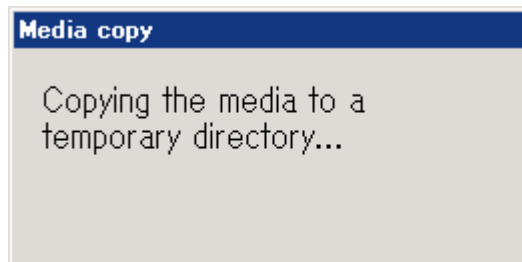
NOTICE: Do not use the configuration information media.



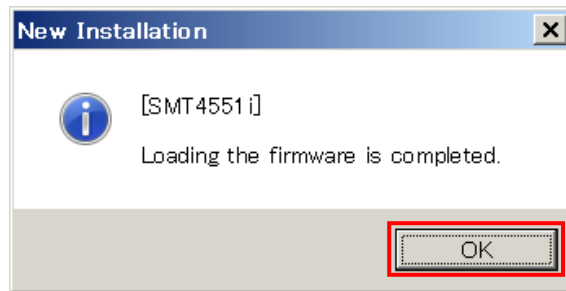
- (11) Store the media in the drive and click the [OK] button in response to the message “[4550] Verify that the firmware is stored in the selected Pc-Drive.”.



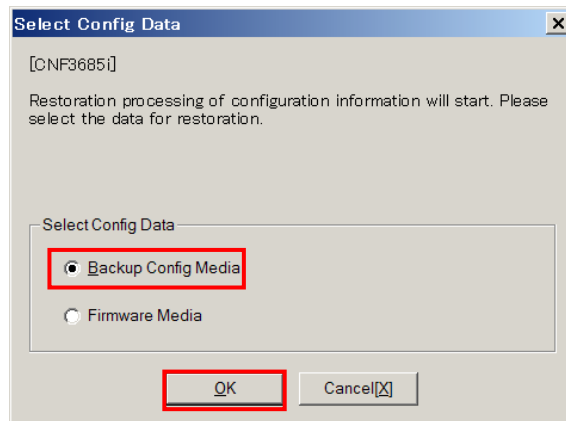
- (12) A message of copying from the Media is displayed.



- (13) Remove the Media and click the [OK] button in response to the “[4551] Loading the firmware is completed.”.



- (14) <Select Configuration Information of Restoration Targets>
“Select Config Data”[3685] window is displayed.
Select [Backup Config Media], and click the [OK] button.
Go to [Step \(15\)](#).



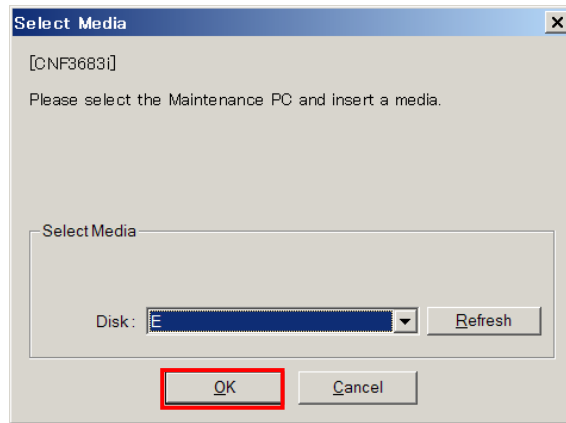
(15) <Select Drives>

“Select Media”[3683] window is displayed.

Select a drive storing the configuration information and click the [OK] button.

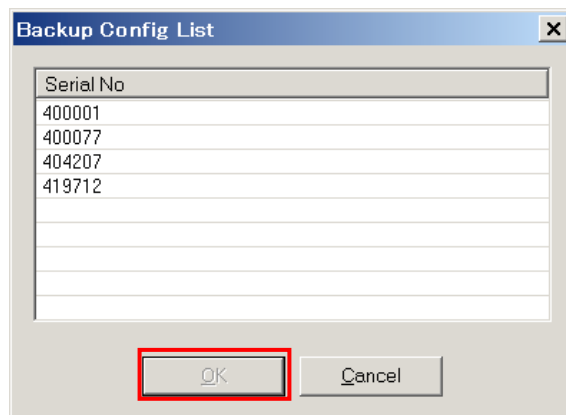
When a lot of configuration information exists, go to [Step \(a\)](#).

When a piece of configuration information exists, go to [Step \(16\)](#).

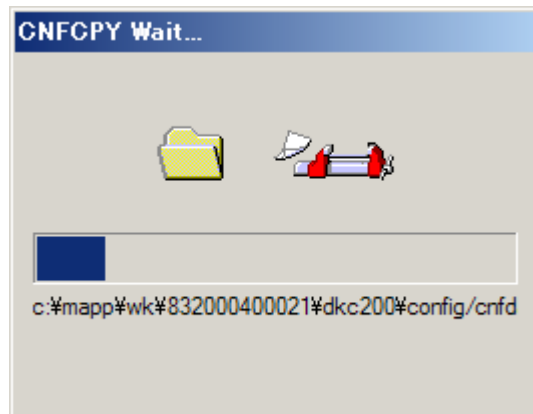


(a) <Selecting configuration information>

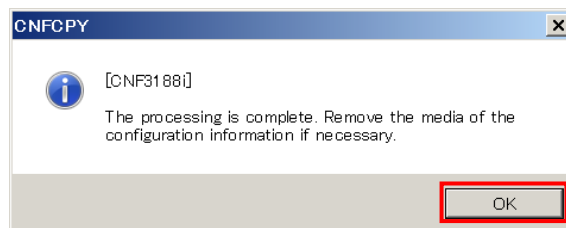
A lot of configuration information is displayed. Select a piece of configuration information to be used and click the [OK] button.



- (16) Make a copy of the configuration information.
During the copying, the “CNFCPY Wait...” window is displayed.

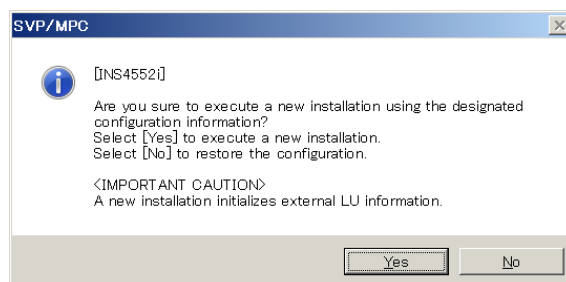


- (17) A message, “[3188] The processing is complete. Remove the media of the configuration information if necessary.” is displayed. Remove the configuration information media as needed, and then click the [OK] button.



- (18) Click the [No] button in response to the confirmation message, “[4552] Are you sure to execute a new installation using the designated configuration information?”
Select [Yes] to execute a new installation.
Select [No] to restore the configuration.
<IMPORTANT CAUTION> A new installation initializes external LU information.”.

NOTE: When the information of DP-VOL implementation or the progressing status of quick format is not included in backup data of the specified configuration information, go to [Step \(20\)](#).



(19)

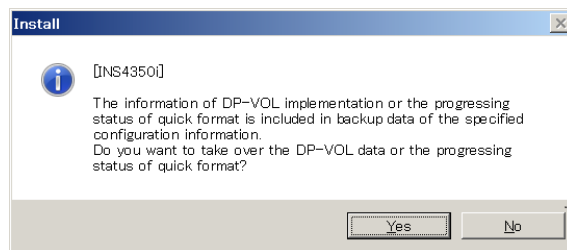
NOTICE:

- If you select the [No] button, the data stored in the DP-VOL is lost.
- To select the [Yes] button, follow the instructions by the Technical Support Division. The configuration information of the current Storage System and the configuration information selected in [Step \(15\)](#) need to be identical.

Response to the message “[4350] The information of DP-VOL implementation or the progressing status of quick format is included in backup data of the specified configuration information. Do you want to take over the DP-VOL data or the progressing status of quick format?”.

When you take over the data, click the [Yes] button.

When you do not take over the data, click the [No] button.

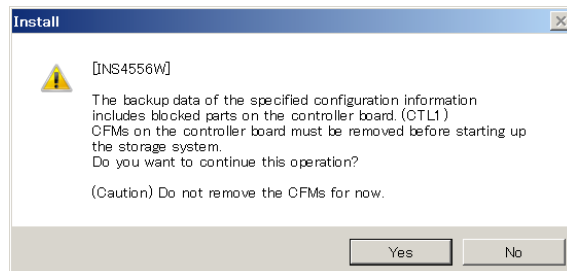


(20) When the backup data of the specified configuration information includes blocked parts on the Controller Board, the message “[4556] The backup data of the specified configuration information includes blocked parts on the controller board. (CTLn) CFMs on the controller board must be removed before starting up the storage system. Do you want to continue this operation? (Caution) Do not remove the CFMs for now.” is displayed.

To continue the processing, click the [Yes] button. Go to [Step \(21\)](#).

To suspend the processing, click the [No] button. The installation procedure terminates.

NOTE: When there is not a blocked part in Controller Board, this message is not displayed.



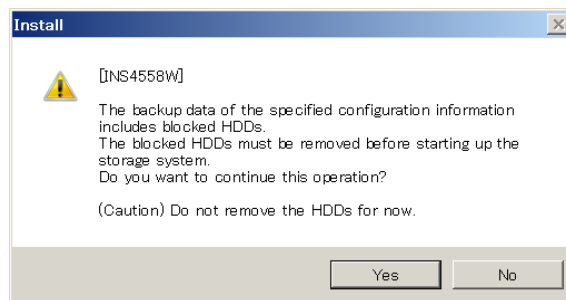
- (21) When the backup data of the specified configuration information includes blocked HDDs, the message “[4558] The backup data of the specified configuration information includes blocked HDDs. the blocked HDDs must be removed before starting up the storage system. Do you want to continue this operation?”

(Caution) Do not remove the HDDs for now.” is displayed.

To continue the processing, click the [Yes] button. Go to [Step \(22\)](#).

To suspend the processing, click the [No] button. The installation procedure terminates.

NOTE: When there is not a blocked HDD, this message is not displayed.

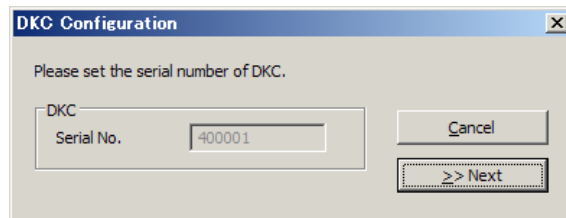


- (22) <DKC Configuration window>

The “DKC Configuration” window is displayed. Check the serial number.

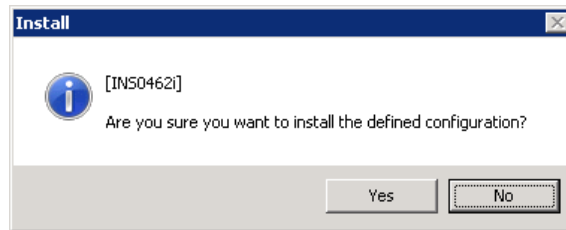
When the [>>Next] button is clicked, go to [Step \(23\)](#).

This procedure is completed when the [Cancel] button is clicked.

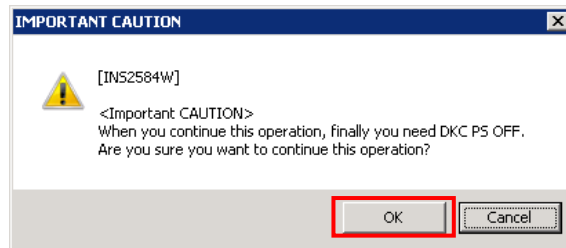


- (23) Click the [Yes] button in response to the confirmatory message, “[0462] Are you sure you want to install the defined configuration?”.

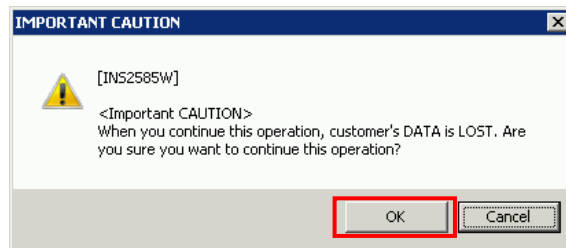
Selecting [No] cancels the configuration change processing and terminates the installation procedure.



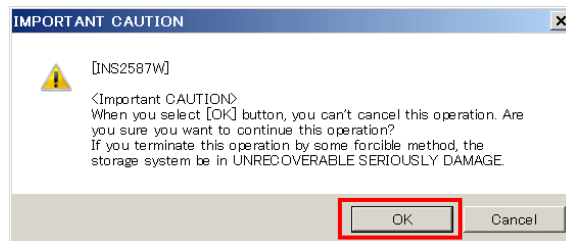
- (24) Click the [OK] button in response to the confirmatory message, “[2584] <Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



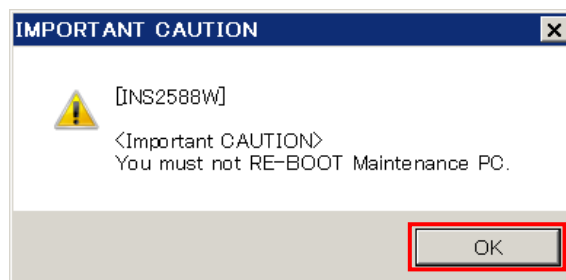
- (25) Click the [OK] button in response to the confirmatory message, “[2585] <Important CAUTION> When you continue this operation, customer’s DATA is LOST. Are you sure you want to continue this operation?”.



- (26) Click the [OK] button in response to the confirmatory message, “[2587] <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.”.

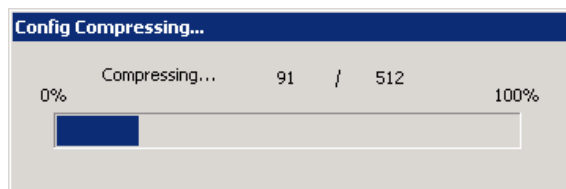


- (27) Click the [OK] button in response to the cautionary message, “[2588] <Important CAUTION> You must not RE-BOOT Maintenance PC.”.



(28) <Compressing of the configuration information>

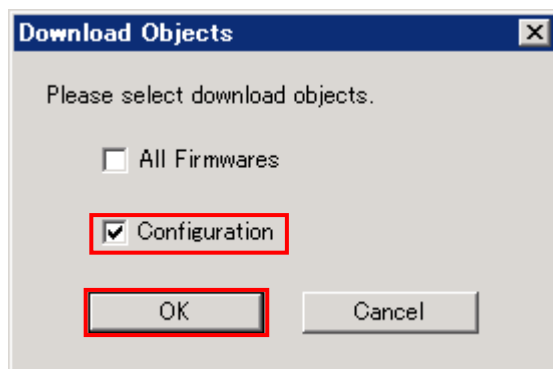
The configuration information is compressed. The dialog of “Config Compressing...” is displayed. After the compressing is completed, go to [Step \(29\)](#).



(29) <Download Objects window>

Confirm that [Configuration] is checked and click the [OK] button.

NOTE: Please do not click [All Firmwares].

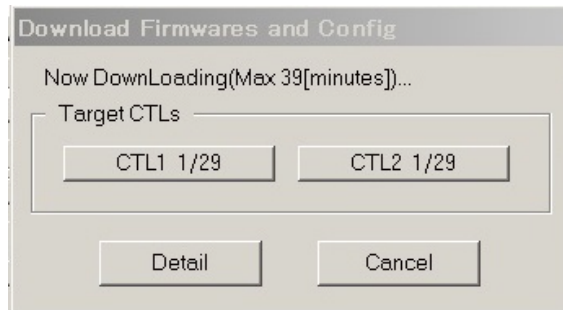


(30) <Configuration information transfer>

The configuration information is forwarded.

After the forward is completed, go to [Step \(31\)](#).

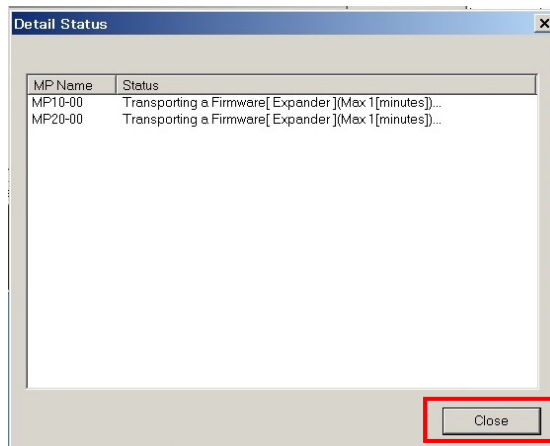
Click the [Detail] button to confirm the detail of the transfer status. Go to [Step \(a\)](#).



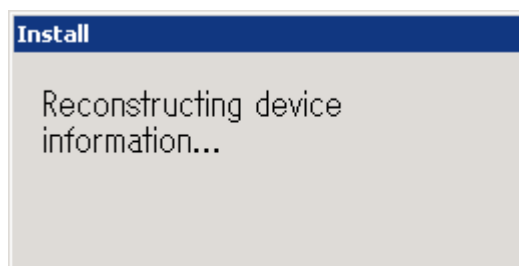
(a) Details of transfer situation are confirmed on “Detail Status” window.

When you close the “Detail Status” window, click the [Close] button.

NOTE: Be sure to close the “Details Status” window after the confirmation. If the window is left open, the transfer of the configuration information does not complete.



(31) “Reconstructing device information...” is displayed.

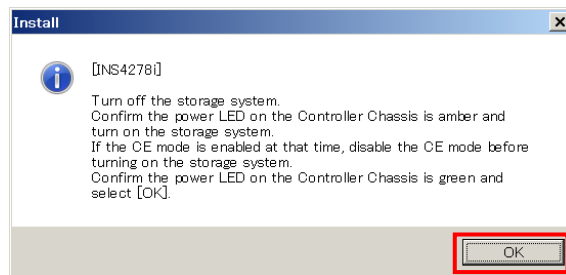


- (32) The On/Of procedure of the Storage System power differs depending on the availability of blocked parts.

When [4556] in [Step \(20\)](#) and [4558] in [Step \(21\)](#) are not displayed, the backup data of the specified configuration information does not include blocked parts. Go to [Step \(a\)](#).

When [4556] in [Step \(20\)](#) or [4558] in [Step \(21\)](#) is displayed, the backup data of the specified configuration information includes blocked parts. Go to [Step \(b\)](#).

- (a) When blocked parts do not exist



Click the [OK] button for the message "[4278] Turn off the storage system. Confirm the power LED on the Controller Chassis is amber and turn on the storage system. Disable the CE mode before turning on the storage system. Confirm the power LED on the Controller Chassis is green and select [OK].".

When the jumper for initial installation is enabled, open the "Maintenance Utility" window from the "MPC" window and disable the jumper used for the initial installation (CEMD).

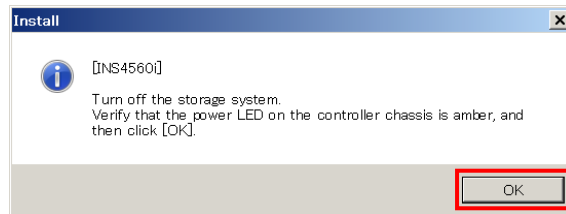
- How to set the jumper for initial installation: Refer to MAINTENANCE PC SECTION "[3.16 Edit System Parameters](#)".

Go to [Step \(c\)](#).

(b) When blocked parts exist

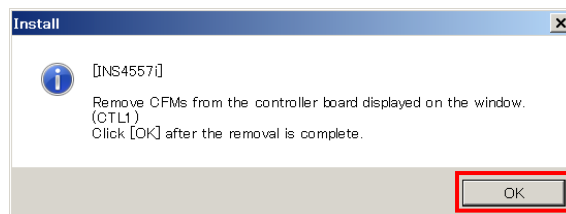
- (i) The message “[4560] Turn off the storage system. Verify that the power LED on the controller chassis is amber, and then click [OK].” is displayed. Check that the POWER LED on the front of the Controller Chassis is amber.

Click the [OK] button. Go to [Step \(ii\)](#).

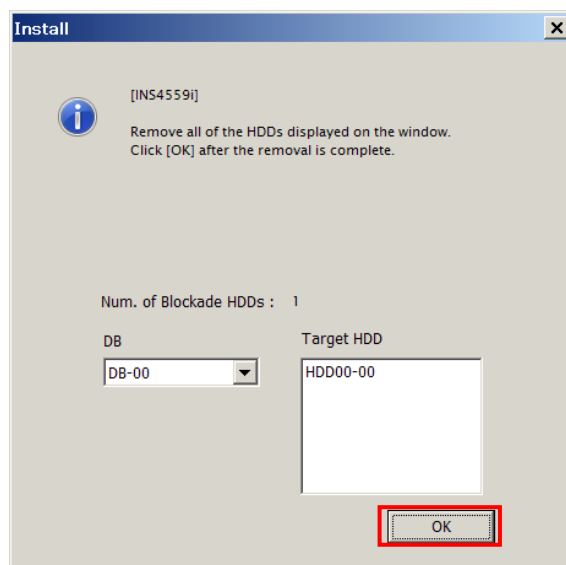


- (ii) When the backup data of the specified configuration information includes blocked parts on the Controller Board, the message “[4557] Remove CFMs from the controller board displayed on the window. (CTLn) Click [OK] after the removal is complete.” is displayed. Remove the CFMs of the displayed Controller Board.

Click the [OK] button. Go to [Step \(iii\)](#).



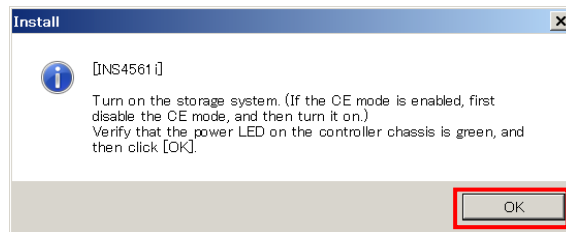
- (iii) When the backup data of the specified configuration information includes blocked HDDs, the message “[4559] Remove all of the HDDs displayed on the window. Click [OK] after the removal is complete.” is displayed. Remove the displayed HDDs. Multiple DBs may be the targets. Operate the [DB] list to remove the targets. Click the [OK] button. Go to [Step \(iv\)](#).



- (iv) The message “[4561] Turn on the storage system. (If the CE mode is enabled, first disable the CE mode, and then turn it on.) Verify that the power LED on the controller chassis is green, and then click [OK].” is displayed. Click the [OK] button.

When the jumper for initial installation is enabled, open the “Maintenance Utility” window from the “MPC” window and disable the jumper used for the initial installation (CEMD).

- How to set the jumper for initial installation: See MAINTENANCE PC SECTION “[3.16 Edit System Parameters](#)”.



- (c) Close the “Install” window.
- (d) Change the mode from [Initial Setting(Unlocked)] to [View Mode].

This page is for editorial purpose only.

5.2.4 Post Processing

1. <Turn on Storage System>

Check that the READY LED (green) on the front of the Controller Chassis lights up.

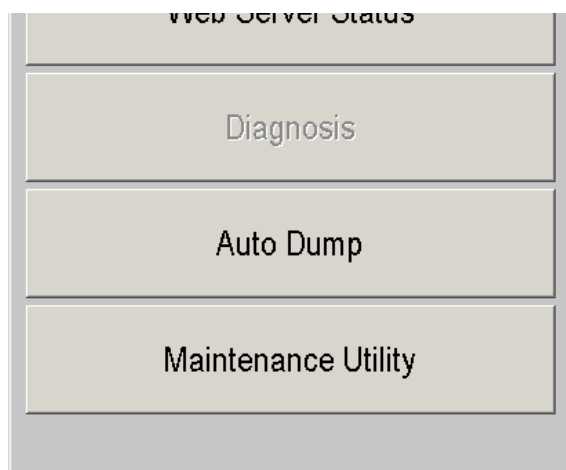
NOTE: It takes about 30 minutes until the READY LED changes to green.

2. <Enable Security Software>

Return the security software disabled in setting IIS to the “Enabled” status. (See [Step 2.](#) on “[5.2.2 Maintenance PC Connection](#)”.)

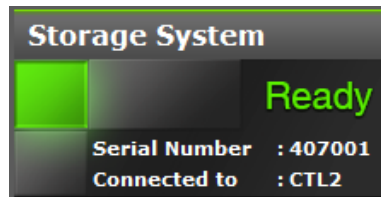
3. <Login to Maintenance Utility window>

Click the [Maintenance Utility] button in the “MPC” window.



4. <Check Status>

Please make sure that it is displayed as, “Ready” status of the Storage System in the “Maintenance Utility” window.



Status	Procedure
Ready	The processing is not required.
Information	Some SIMs are not checked. Check the SIM contents. (After checking the SIMs, refreshing the window changes the status to “Ready”.) (*1)
Warning	There is a failed part. Check the “MAIN” window and the SIM, and then take a necessary action. (*1) (*2)
Power-on in progress	The Storage System power-on is in progress. Log out of it once, and log in to the “Maintenance Utility” window after a while.

*1: Refer to MAINTENANCE PC SECTION [“3.21 Alert Display”](#) for how to check SIMs.

*2: Refer to SIM RC SECTION ([SIMRC00-00](#)) for the contents of SIMs.

5. <Confirming the Set Up Alert Notifications>

See MAINTENANCE PC SECTION [“3.4.1.2 Procedure”](#) and check that the information different from the contents to be configured is not set by the [Email], [Syslog] and [SNMP] tabs in the “Set Up Alert Notifications” window. If it is set, delete or reset it as needed.

6. <Clear Cache>

When the firmware version is less than 83-03-01-x0/xx, clearing the cache of Internet Explorer and Java is required.

Clear the cache in the following procedure. If the cache is not cleared, some failures such as the function newly added by the version upgrade cannot be used and the firmware update window cannot start up.

- Clearing the cache of Internet Explorer (In case of Internet Explorer11)

- (1) Click [Internet Options] from the [Start] menu.
- (2) Click the [Delete] button in [Browsing history] in the [General] tab.
- (3) Check only the following items in the “Delete Browsing History” window.
 - Temporary Internet files and website files
 - Cookies and website data
 - History
- (4) Click the [Delete] button.

- Clearing the cache of Java (In case of JRE7, JRE8)

- (1) Click the [Start] button of the Windows to open [Control Panel].
- (2) Click the [Java] icon.
- (3) Open [General] in the “Java Control Panel” window and click the [Settings] button of [Temporary Internet Files].
- (4) Click [Delete Files] in the “Temporary Files Settings” window.
- (5) Confirm that the checkboxes of “Trace and Log Files”, “Cached Applications and Applets” and “Installed Applications and Applets” are checked in “Delete Files and Applications”, and then click the [OK] button.

7. <Back up IIS configuration>

NOTE: When the IIS configuration is already backed up, skip this procedure. The procedure can be performed in the Windows command prompt only as an administrator.

- Backing up/restoring MPC IIS configuration

%systemroot%\system32\inetsrv\appcmd restore BACKUP “NAME_OF_BACKUP_B”

For “NAME_OF_BACKUP_B”, specify the name obtained in MAINTENANCE PC SECTION “[1.7.2 Setting IIS/FTP](#)”, “[7. Backing up MPC IIS configuration](#)”.

5.2.5 Check Procedure

1. <Check Power-on CUDG Result>

Perform the power-on procedure.

(See INSTALLATION SECTION [“1.5.1 Storage System Power On”](#).)

Power-on CUDG is automatically executed on the DKC logic circuitry.

If an error occurs, SIM Log, SSB Log has logging.

(See MAINTENANCE PC SECTION [“5.3.1 Log Indication”](#).)

2. <Execute Path inline test>

Perform Path inline tests on all DKBs 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 [“4.2 PATH INLINE Test Procedures”](#) for the test procedure.

3. <Check Storage System status and all MPs Firmware version>

Check the Storage System Status and all MPs Firmware version.

(See [“3.4 Procedure for Checking Firmware Version”](#).)

4. <Check installation status of DP-VOL>

When you select the [No] button in [Step \(19\)](#) of [“5.2.3 Restore Configuration Procedure”](#), perform the procedure in [Step 6](#).

When you select the [Yes] button in [Step \(19\)](#) of [“5.2.3 Restore Configuration Procedure”](#), confirm the SSB logs.

- When SSB=2C90 is reported, perform the check procedure in [Step 5](#).
- When SSB=2C90 is not reported, stop the check procedure and contact the Technical Support Division.

5. <Recover DP-VOL and Pool VOL>

Recover the pool-VOL forcibly. Then, recover the DP-VOL forcibly.

See MAINTENANCE PC SECTION [“4.4.4 Force Restore LDEVs”](#) for forcible recovery procedure.

6. <Format LDEV>

Format the blocked LDEVs. (See MAINTENANCE PC SECTION [“4.2.3 Managing Logical Device”](#).)

7. <Check logical device status>

Check if Logical Devices are normal by with referring to the [LDEV] tab.

8. <Check system interlock operation>

Start the test program from the host to check for normal Storage System's interlocked operation with the host.

9. <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 Maintenance PC and transfer the Storage System to the user.
See MAINTENANCE PC SECTION [“5.3.2 Log Delete”](#).

5.3 Automatic Configuration Definition Mode (System Configuration Initialization)

CAUTION

Executing this procedure initializes all the configuration information and all the encryption key including the user data in the Storage System. Never use it except the Storage System initialization. Furthermore, the system information such as the system option mode is initialized to the default value. If needed, set it again after executing this procedure. The system option modes to be turned on by default are 142, 144, 449, 467, 506, 867, 872, 990 and 1086.

CAUTION

Check whether [Internal Network] of the network setting is changed from the initial value (126.255.0.15/4.15). If it is changed, refer to MAINTENANCE PC SECTION [“3.6 Network Setting”](#) and return [Internal Network] to the initial value (126.255.0.15/4.15) before starting this work.

5.3.1 Procedure for Automatic Configuration Start

1. Check that the Storage System is powered on and its status is normal.
2. Refer to MAINTENANCE PC SECTION [“3.16 Edit System Parameters”](#) and enable [Automatic Configuration Definition Mode].
3. Wait until the POWER LED on the Controller Chassis changes from green lighting (Logic power-on status) to amber lighting (Sub power-on status).
4. After checking that the POWER LED changes to amber lighting, refer to MAINTENANCE PC SECTION [“3.10 Power on Storage System”](#) and power on the Storage System (DKC).
5. Check that the READY LED (green) in the front of the Controller Chassis lights up.

NOTE:

- It takes about 30 minutes until the READY LED changes to green.
- When the Storage System does not start (cannot connect to Web Console or others) in [Step 5](#), the internal network setting may have been changed from the initial value. Refer to MAINTENANCE PC SECTION [“3.6 Network Setting”](#) and set [Internal Network] to the initial value (126.255.0.15/4.15)).

5.4 Troubleshooting of Config Exchange Procedure

No	Failure	Recovery action
1	When it displayed the “Media copy” dialog , The error occurred the “INS3005E”	It is not setting correct Maintenance PC. (1) Confirm to match “MPC IP Address” and “1.3.1 IP Address Setting Method of Maintenance PC” of MAINTENANCE PC SECTION. If it is not match IP Address, it changes IP Address. (a) Click the text of [MPC IP Address] on the top right of the screen of Storage Device List, and set the IP Address of Maintenance PC on the [Change MPC IP Address] dialog. (b) Reboot Maintenance PC. (2) Confirm a firmware media name of the drive that you appointed in PC-Drive D:\firmware\AllFirmware.mda D changes by the drive name that I appointed in PC-Drive.
2	When it displayed the “Download Firmwares and Config” dialog, The “FTP Communication error” occurred	It is not setting correct ftp server. (1) Open [User Accounts] from [Start] - [Control Panel]. Click the [Manage another account]. If “Manage Accounts” window is not display [bakeduser], Perform “1.5.2 Maintenance PC Installation” after starting the MAINTENANCE PC SECTION of “10.2 Maintenance PC Software Uninstallation”. (2) Confirm “1.7.2 Setting IIS/FTP” of MAINTENANCE PC SECTION. (3) Confirm the GUM IP address. Confirm whether the Storage System icon is the maintenance LAN address in “Table 1-3 Icon Display Item” of MAINTENANCE PC SECTION. (4) Failed to connect to the Storage System. (a) Execute “1.5.2 Storage System Power Off (Planned Shutdown)” and “1.5.1 Storage System Power On” of INSTALLATION SECTION. (b) Reboot the Maintenance PC. (c) Execute “5. Config Exchange Procedure” again.
3	When it displayed the “Download Firmwares and Config” dialog, The “Communication error has occurred.” occurred	The Maintenance PC and the Storage system cannot communicate (1) Execute “1.5.2 Storage System Power Off (Planned Shutdown)” and “1.5.1 Storage System Power On” of INSTALLATION SECTION. (2) Reboot the Maintenance PC. (3) Execute “5. Config Exchange Procedure” again.

(To be continued)

(Continued from the preceding page)

No	Failure	Recovery action
4	The error other than the above has occurred in the “Download Firmwares and Config” dialog.	(1) Execute “ 1.5.2 Storage System Power Off (Planned Shutdown) ” and “ 1.5.1 Storage System Power On ” of INSTALLATION SECTION. (2) Reboot the Maintenance PC. (3) Execute “ 5. Config Exchange Procedure ” again.
5	It displayed [SMT4555E].	The Maintenance PC and the Storage System unmatched “System type”. (1) Confirm whether the Storage System model name matches “Type” (Storage System type) of the Storage System icon in “ Table 1-3 Icon Display Item ” of MAINTENANCE PC SECTION. (2) If it matched “System type”, it executes “ 2.4 Replacing a Controller Board ” of REPLACEMENT SECTION again.

6. Appendixes

6.1 Function ID Table

Function ID	Function	Contents	Action
00 : 00	global storage virtualization Support	Version Down from support firmware for global storage virtualization to unsupported firmware is controlled.	Perform the update firmware after doing the following. • Please set virtual-LDEV ID same as actual-LDEV ID in all LDEV. • Please delete all Virtual Storage Machine except Default Virtual Storage Machine. • Please release TC-pair and UR-Pair where is different from actual-LDEV ID in virtual-LDEV ID of Secondary-Volume. • Please delete external volumes for nondisruptive migration.
00 : 01	iSCSI Initiator function support	The iSCSI Target information necessary for creating TC/UR/UVM paths in the iSCSI Port is registered.	Please execute the update firmware again after deleting the remote path of iSCSI connection, UVM external path and iSCSI Target information.
00 : 02	Channel Board (iSCSI 10 Gbps Copper) Support	Channel Board (iSCSI 10 Gbps Copper) is installed.	Please execute the update firmware again after removing Channel Board (iSCSI 10 Gbps Copper).
00 : 03	Support for global-active device	Suppress version downgrade to the global-active device unsupported firmware version.	Please execute the update firmware again after deleting all the global-active device Pair and Quorum Disk.

(To be continued)

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(Continued from the preceding page)

Function ID	Function	Contents	Action
00 : 04	DC power supply/NEBS standard support	Prohibits the downgrading of firmware that support NEBS-compliant DC power supply to those not supporting it.	None. (For Storage Systems equipped with DC power supply, firmware that support NEBS-compliant DC power supply cannot be downgraded to those not supporting it.)
00 : 07	NAS Module Support	When NAS Modules are installed, suppresses the version downgrade from the NAS Module supported firmware to the unsupported firmware.	Remove the NAS Modules, and then downgrade the version to the unsupported firmware.
00 : 08	FC16 TC Round Trip set up option Support	Round Trip set up option is enabled on 2HF16 CHB port.	Cancel Host Mode Option 51 in the host mode setting of all the 2HF16 CHB ports to be mounted on the Controller Board and in the host mode setting of the connected port on the remote storage side in the "Remote Connection" window. Then, update the firmware again.
00 : 10	Monitoring data recalculation support	Suppresses the version downgrade from the firmware that supports the monitoring data recalculation to the unsupported firmware.	Wait until the monitoring data recalculation is completed, and then perform the firmware update again.
00 : 11	Support for the over 4 TB VOL of TC/UR/GAD.	Version downgrade from the support firmware for the over 4 TB Volume of TC/UR/GAD to unsupported firmware is prevented.	Delete pairs that use the over 4 TB Volume of TC/UR/GAD, and then retry the firmware exchange.
00 : 12	Extension support for the number of CBLM Ports	Suppress the version downgrade from the firmware that supports the extension of the number of CBLM Ports to the unsupported firmware.	Remove the CHBs of the slots 1E, 1F, 1G, 2E, 2F and 2G, and then update the firmware.

(To be continued)

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Function ID	Function	Contents	Action
00 : 13	Creating 4 TB over SI/VM pairs Support	Suppress version downgrade to the Creating 4 TB over SI/VM pairs unsupported firmware version.	Please execute the update firmware again after deleting all the SI/VM pairs that used over 4 TB Volume.
00 : 14	Creating 4 TB over TI pairs Support	Suppress version downgrade to the Creating 4 TB over TI pairs unsupported firmware version.	Please execute the update firmware again after deleting all the TI pairs that used over 4 TB Volume.
00 : 15	Channel Board Box support	Suppress version downgrade from the Channel Board Box supported firmware to the unsupported firmware.	Remove the Channel Board Box, and then update the firmware again.
00 : 20	active flash	Suppress version downgrade to the active flash unsupported Firmware version.	Delete all HDT (active flash) pools or change them to HDP or HDT pools, and then update the firmware again.
00 : 21	GAD + UR Support	Version Down from support firmware for GAD + UR to unsupported firmware is controlled.	Please execute the firmware update again after deleting the UR pair to be coordinated with the GAD pair or coordinated with the GAD pair (At the GAD pair force delete).
00 : 22	Full Allocation Support	Prevents the support firmware for Full Allocation Support from downgrading to unsupported firmware.	Please execute the firmware update again after disable Full Allocation for all V-VOLs which "Page Reservation" are enable.
00 : 23	GAD (Global Active Device) - Support for CTG (Consistency Group)	Suppress version downgrade to the GAD-CTG unsupported firmware version.	Please execute the firmware update again after deleting the GAD pair registered into GAD-CTG.
00 : 24	Logical Unit Conglomerate Support	Suppress version downgrade to the Logical Unit Conglomerate unsupported firmware version.	If the LDEV attribute in the Controller Chassis is set to ALU or SLU, cancel the attribute, and then retry the update firmware.
00 : 26	Port Consolidation Support	There are some host groups that Host Mode Option 88 is ON.	Set Host Mode Option 88 to OFF, and then update the firmware again.

(To be continued)

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Function ID	Function	Contents	Action
01 : 01	NDM Reserved Volume (Non-Cluster) Support	During nondisruptive Migration (NDM) is running, downgrading the firmware of NDM Reserved Volume supported version to an unsupported version is prevented.	Please execute the firmware update again after confirming that data migration using.
01 : 03	DP-VOL Control Page Support	Suppress version downgrade to the DP-VOL control page unsupported firmware version.	For procedures of version down, please refer to TROUBLESHOOTING SECTION “ 3.52 Workflow for Lowering the Firmware Version to the Version not Supporting the Control Pages Inside the DP-VOL ”.
01 : 04	NDM Reserved Volume Support	Suppress version downgrade from the firmware of NDM Reserved Volume supported version to an unsupported version is prevented.	Please call T.S.D.
01 : 06	Keep PAIR when Quorum Disk blocked	Suppress version downgrade to the Keep PAIR when Quorum Disk blocked function unsupported firmware version.	Please the firmware update again after suspend or delete the GAD pair.
01 : 08	Custom Policy 1% Granularity Support	Suppress version downgrade from the 1% granularity of the custom policy supported firmware to the unsupported firmware version.	Change the setting value of the custom policy to the value that is evenly divisible by 10, and then perform the firmware update again.
01 : 09	Asymmetric Logical Unit Access Support	Suppress version downgrade to the Asymmetric Logical Unit Access unsupported firmware version.	Perform the firmware update after setting the Asymmetric Logical Unit Access status of all LDEVs to disable.

(To be continued)

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Function ID	Function	Contents	Action
01 : 10	UVM/NDM 4 TB over LDEV support	Suppress version downgrade to the function's unsupported version.	Perform the firmware update after the following actions: • Delete all external volume groups whose Data Direct Mapping attribute is enabled. • Delete all DP pools whose Data Direct Mapping attribute is enabled. • Release all TC/UR pairs that P-VOLs or S-VOLs are configured by LDEV whose Data Direct Mapping attribute is enabled.
01 : 11	pAnchor command support	Suppress version downgrade to the pAnchor command unsupported Firmware version.	To downgrade the version to the unsupported firmware, perform the following before updating the firmware. 1. Record the LDEV# of the DPVOL under the host group that has ever turned on Host Mode Option 97 before. 2. Turn off Host Mode Option 97 of all the host groups. 3. Perform the Reclaim Zero Pages from SN2/CL1 for the DPVOL recorded in Step 1. 4. Set the system option mode "1079" to ON. 5. Downgrade the version. 6. After the version downgrade is complete, turn OFF the system option mode "1079".

(To be continued)

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Function ID	Function	Contents	Action
01 : 12	Accelerated Compression	Suppress version downgrade to the Accelerated Compression unsupported firmware version.	Perform the firmware replacement after doing the following procedures. (*1) 1. Shrink all Pool VOLs that belong to the parity group whose Accelerated Compression is enabled. 2. Delete LDEV that exists in the expanded space. 3. Select the parity group whose Accelerated Compression is enabled, and then format parity group. 4. Disable the Accelerated Compression in the parity group.
01 : 13	256 TB DP-VOL Support	Suppress version downgrade to the 256 TB DP-VOL unsupported firmware version.	Update the firmware again after deleting DP-VOL that exceeds 60 TB volume.
01 : 14	The early stage copy movement improvement support which can be put in the Pool non-allocation state	An early stage copy of TC/UR/GAD functions, when improvement was moving, a version down by On-line is restrained.	Update the firmware again after suspending the pair status that is being copied.

*1: If the firmware update fails and SSB = AE0D is reported, remove NFHxx-QxxxSS of the spare drive and free drive, and then update the firmware again. Add the spare drive after updating the firmware.

When the Accelerated Compression setting is enabled and the data is saved in the spare drive, the compressed data still remains in the spare drive. In this case, "SSB = AE0D" is output and the version downgrade to the firmware that does not support Accelerated Compression is suppressed.

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Function ID	Function	Contents	Action
01 : 15	Drive support of NFHxx-QxxxSS	Suppress the version downgrade from the firmware that supports the NFHxx-QxxxSS mount on the DBF to the unsupported firmware. • NFHab-QcccSS - a:system generation (1 or A) - b:generation (A to Z) - c:capacity (TB)	Remove the NFHxx-QxxxSS mounted on the DBF and update the firmware again after elapsing two or more minutes.
01 : 16	Line speed of JNL Group option is 3 Mbps support	Port is registered or “3” is set for the transfer rate of the mirror option edit.	When “3” is set for the transfer rate of the mirror option edit, set “10” or more, and then retry the firmware update.
01 : 22	T10-PI Support	• If the port whose T10 PI setting is enabled exists, suppress the version downgrade. • If the LDEV to which the T10 PI attribute is given exists in the Controller Chassis, suppress the version downgrade.	• If the port whose T10 PI setting is enabled exists, disable the T10 PI setting. • If the LDEV to which the T10 PI attribute is given exists in the Controller Chassis, delete the appropriate LDEV.
01 : 24	Migration Consistency Support	Suppress version downgrade to the unsupported firmware version from the Migration Consistency supported firmware version.	In the “Local Replica Option Edit” window, set the system option [Non-disruptive Migration Data Consistency] to [Disable], and then perform the firmware update again. For how to set the system option to [Disable], see “Enabling system options” in “ShadowImage User Guide”.
01 : 27	Snap on Snap Support (*2)	Suppress downgrade of the firmware that supports the clone and cascade attributes of TI pairs to a version that does not support them.	Delete all TI pairs with the cascade and clone attribute, and then update the firmware again.

*2: Snap on Snap is the function for the cascaded and clone attribute of Thin Image (TI) pairs.

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Function ID	Function	Contents	Action
02 : 00	NDM Data Migration Support from DF	• If the volume of the DF which mapped with NDM attribute by Controller Chassis is existing, suppress the version downgrade. • If the virtual storage machine of DF in Controller Chassis is existing, suppress the version downgrade.	• If the volume of the DF which mapped with NDM attribute by Controller Chassis is existing, confirm that data migration is not performed and delete the volume. • If the virtual storage machine of DF in Controller Chassis is existing, confirm that data migration is not performed and delete virtual storage machine of DF.
02 : 02	SI Split/Reverse Copy multiplexing Support	Suppress version downgrade from the SI Split/Reverse Copy multiplexing supported firmware version to the unsupported firmware version.	Perform the following procedure, and then update the firmware again. 1. In the “Local Replica Option Edit” window, [Disable] the system option #24 “Quick/Steady Split multiplexing (ShadowImage)” and #25 “Reverse Copy multiplexing (ShadowImage)”. 2. Wait until all Quick/Steady Split and Reverse Copy being performed by the ShadowImage pair are complete. Otherwise suspend them. For how to set the system option to [Disable], see “Enabling system options” in “ShadowImage User Guide”.

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Function ID	Function	Contents	Action
02 : 04	DKC Compression/ Deduplication Support	Suppress version downgrade from the firmware of DKC Compression/Deduplication supported version to an unsupported version.	Perform the firmware update again after doing the following procedures. 1. Disable the compression/deduplication for all DP-VOLs in the DKC. 2. Disable the deduplication for all POOL VOLs in the DKC. 3. If DP-VOL in DKC is used as the primary volume of TrueCopy, Universal Replicator, and global-active device pairs and DP-VOL with Compression/Deduplication enabled is used as the secondary volume in the initial copy or resync operation, wait until the operation is complete, or split or delete all the pairs. If Compression/Deduplication functions are disabled on the secondary volume, the version downgrade cannot be performed during the initial copy or resync operation. 4. If DP-VOL in DKC with Compression/Deduplication enabled is used as the secondary volume of TrueCopy, Universal Replicator, and global-active device pairs with DP-VOL used as the primary volume in the initial copy or resync operation, wait until the operation is complete, or split or delete all the pairs. If the Compression/Deduplication functions are disabled on the secondary volume, the version downgrade cannot be performed during the initial copy or resync operation.

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Function ID	Function	Contents	Action
02 : 08	iSCSI SPM Support	Suppress the version downgrade to the iSCSI SPM unsupported firmware in the Storage System in which the SPM information is set by specifying LDEV.	When the SPM information is set by specifying LDEV, delete all the SPM information set to LDEV.
02 : 09	Active/Active mode with blocked Quorum Support	Suppress the version downgrade from the supported firmware version for the Active/Active mode with blocked Quorum to the unsupported firmware version.	Perform the update firmware again after suspending or deleting all Active/Active mode GAD pairs with blocked Quorum.
02 : 11	FC 32G Ready PK Support	Suppress the version downgrade from the firmware corresponding to FC 32G Ready PK to the unsupported firmware.	Remove all Channel Boards (32G Ready 4Port FC), and the update the firmware again.

(To be continued)

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Function ID	Function	Contents	Action
02 : 13	Correction of pool saving rate	Suppress version downgrade from the correction of pool saving rate supported firmware version to the unsupported firmware version.	Set the System Option Mode 1093 to ON, and then update the firmware after waiting for three minutes or more.
02 : 14	Round trip set up option enhancement	Suppress version downgrade from the Round Trip reduction start condition improvement supported firmware to the unsupported firmware version.	Cancel Host Mode Option 51 in the host mode setting of all the CHB ports to be mounted on the Controller Board, and then update the firmware again.
02 : 18	UNH IPv6 Certification	Suppress version downgrade from the UNH IPv6 Certification supported firmware to the unsupported firmware version.	If a value other than "0:0:0:0:0:0:0:0" is set for the IPv6 global address 2 of the iSCSI port (except for set automatically), set "0:0:0:0:0:0:0:0" manually, and then update the firmware again.
02 : 21	NFHxx-Q13RSS Support	Suppress the version downgrade from the supported firmware version for installing NFHxx-Q13RSS in DBF to the unsupported firmware version. • NFHab-Q13RSS a: system generation (1 to 9 or A to Z) b: generation (A to Z)	Remove NFHxx-Q13RSS from DBF, wait for two minutes or longer, and then update the firmware again.
02 : 22	High Capacity Drive Quick Format Support	Suppress the version downgrade from the supported firmware version for installing a drive with capacity of more than 8 TB to the unsupported firmware version.	Remove a drive with capacity of 8 TB or more, wait for two minutes or longer, and then update the firmware again.

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Function ID	Function	Contents	Action
02 : 25	Support for NAS Unified Firmware installation on DP-VOL	Suppress version downgrade from support firmware for installing the NAS Unified Firmware on a DP-VOL to the unsupported firmware version when the NAS Unified Firmware is installed on the DP-VOL.	Remove the NAS Unified Firmware, and then update the firmware again.
02 : 26	URxUR Support	Suppress version downgrade from support firmware for URxUR to unsupported firmware is controlled.	1. In case System Option Mode 1067 is OFF, please confirm if UR pairs which are being used are included in the URxUR 3DC configuration. If they are included in the URxUR 3DC configuration, please remove the 3DC configuration. If they are not included in it, please execute the firmware update after setting System Option Mode 1067 to ON. 2. In case System Option Mode 1067 is ON, if there are volumes which are shared by pairs of 2 mirrors as URxUR 3DC, please delete one of the pairs and execute the firmware update again.
02 : 27	iSCSI port virtualization function support	Suppress version downgrade from the supported firmware for iSCSI port virtualization function, which can add up to 16 virtual ports per physical iSCSI port, to an unsupported firmware version.	Perform the following on all iSCSI ports to which virtual ports are added, and then update the firmware again. 1. Delete virtual ports whose iSCSI port ID is other than 0. 2. Disable the iSCSI virtual port mode.
02 : 30	Support for mounting 32G SFP on FC 32G Ready PK	Suppress version downgrade from support firmware for mounting 32G SFP on FC 32G Ready PK to the unsupported firmware version.	Remove all channel boards with 32G SFP (32G Ready 4Port FC) or change the type of all 32G SFPs to 16G SFP (downgrade), and then update the firmware again.

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Function ID	Function	Contents	Action
03 : 00	Support for deleting DP-VOLs with Capacity Saving enabled (without blocking or formatting operation)	Suppress version downgrade from support firmware for this function to the unsupported firmware version while DP-VOLs with the capacity saving enabled are being deleted without blocking or formatting them.	Wait until the deletion processing is complete, in which no DP-VOLs whose [Capacity Saving Status] is Deleting Volume exist in the “Logical Devices” window, and then update the firmware again. If updating the firmware before the deletion processing is complete, perform any of the following procedures. • When deduplication system data volumes exist in the pool (When DP-VOLs with the compression and deduplication enabled are being deleted): 1. Back up all DP-VOLs, whose [Deduplication Data] is “Enabled”, not to be deleted in the pool through the host. (Ask the user to do.) 2. Perform the LDEV format on the deduplication system data volume in the pool, which makes it impossible to use DP-VOLs, whose [Deduplication Data] is “Enabled”, not to be deleted in the pool. For Command Control Interface, run the [raidcom initialize pool] command instead of formatting the deduplication system data volume. 3. Delete DP-VOLs to be deleted. For DP-VOLs to be deleted whose [Capacity Saving Status] is Deleting Volume, perform the LDEV format, and then delete them.

(To be continued)

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Function ID	Function	Contents	Action
			4. Perform the LDEV format on the DP-VOLs, whose [Deduplication Data] is "Enabled", not to be deleted in the pool. 5. Restore the DP-VOLs, whose [Deduplication Data] is "Enabled", not to be deleted in the pool from the backup. (Ask the user to do.). 6. Update the firmware again. • When deduplication system data volumes exist in the pool (When DP-VOLs with only the compression enabled are being deleted): 1. Perform the LDEV format on DP-VOLs to be deleted, and then delete them. 2. Update the firmware again. • When no deduplication system data volumes exist in the pool (When DP-VOLs with only the compression enabled are being deleted): 1. Perform the LDEV format on DP-VOLs to be deleted, and then delete them. 2. Update the firmware again.
03 : 01	DKC Compression/ Deduplication UNMAP Improvement Support	Suppress version downgrade from the firmware of DKC Compression/Deduplication UNMAP Improvement supported version to an unsupported version.	Perform the firmware update again after doing the following procedures. 1. Disable the compression/deduplication for all DP-VOLs in the DKC. 2. Disable the deduplication for all POOLS in the DKC.

(To be continued)

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Function ID	Function	Contents	Action
03 : 02	Support for HDP pool sharing	Suppress the version downgrade from the firmware that supports the HDP pool sharing to the unsupported version.	Execute the firmware update again after performing the following. 1. Delete all TI pairs that use the HDP pool. 2. Set System Option Mode 1120 to ON. 3. Change [Modify Mode] to [View Mode] in the "MPC" window. 4. Wait for about 30 seconds.
03 : 03	Support for dedupe and compression improvement	Version Down from support firmware for dedupe and compression improvement to unsupported firmware is controlled.	When you are displayed with function ID (02:04), please carry out an action of (02:04). When you are displayed with function ID (03:01), please carry out an action of (03:01). When not so, execute the following procedure. 1. Set the System Option Mode 1119 to ON. 2. If SSB = 13fa is reported, retry the firmware update. (*) 3. Set the System Option Mode 1119 to OFF. *: If 30 minutes have passed without SSB = 13fa reported, perform dummy replacement of both Controller Boards and then retry the firmware update.

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Function ID	Function	Contents	Action
03 : 07	Replacing external disk or external storage as quorum disk with another external disk or external storage while keeping GAD pairs	Suppress version downgrade from the supported firmware for the quorum disk replacement to the unsupported firmware.	Execute the firmware update again after completing the quorum disk replacement by following the steps below. For details, refer to Global-Active Device User Guide “Recovering the quorum disk after replacing a faulty external storage system” or “Replacing the external storage system while keeping GAD pairs”. 1. Perform the quorum disk replacement according to the status by executing the [raidcom get quorum] command through CLI for the target quorum disk ID. • Status is “REPLACING”: Perform the quorum disk replacement ([raidcom replace quorum] command through CLI) on the other DKC where GAD pairs are formed. • Status is “FAILED”: The own DKC and the other DKC where GAD pairs are formed use the different external disk as quorum disk. Perform the quorum disk replacement ([raidcom replace quorum] command through CLI) so that both the DKCs use the same external disk. 2. Perform the procedure for GAD pairs. • When GAD pairs whose operation mode at the time of quorum disk blockade is A/A (*) exist: Wait until the status automatically changes to NORMAL (usually within five minutes).

(To be continued)

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Function ID	Function	Contents	Action
			• When GAD pairs whose operation mode at the time of quorum disk blockade is A/A (*) do not exist: Re-synchronize GAD pairs. If GAD pairs cannot be re-synchronized (pairs are not suspended), suspend the operation and perform the re-synchronization. Then, wait until the status automatically changes to NORMAL (usually within five minutes). • When GAD pairs do not exist: Delete the target quorum disk. *: The operation mode at the time of quorum disk blockade can be checked through GUI ("GAD Pair tab" in "Remote Replication window" in Global-Active Device User Guide) or CLI ([pairedisplay -fe] command). If the mode is A/A, "Pair kept (both the primary and the secondary are accessible)" is displayed in "Operation mode at the time of quorum disk blockage" in the GAD Pair tab for GUI and "QM:AA" is displayed for CLI.

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Function ID	Function	Contents	Action
03 : 08	Release of physical capacity of FMC pool volumes during pool shrink	Function to release physical capacity of FMC pool volumes during pool shrink. Suppress version downgrade from the supported firmware to the unsupported firmware.	Complete or interrupt pool shrink, and then execute the update firmware again.
03 : 11	Inline Compression/Deduplication support	Suppress the version downgrade to the unsupported firmware version during Inline Compression/Deduplication operation.	Change all DP-VOLs enabled of the capacity saving function that are set to the inline mode to the post-process mode, wait for about five minutes, and then retry the firmware update.
03 : 13	Change of the OPEN HUR process sequence	Suppress version downgrade from support firmware for change of the OPEN HUR process sequence to unsupported firmware is controlled.	Please execute the update firmware again after suspending all UR pairs within Controller Chassis.
07 : 01	Delta resync without TC-UR 3DC COPY status	Delta resync processing whose the pair status does not change to the COPY status is performed in the 3DC multi target configuration corresponding to the delta resync.	Perform the firmware update again after completing the delta resync. Also, if the delta resync is not performed, suspend the Universal Replicator pairs and perform the firmware update.
07 : 04	Nondisruptive Migration Support	Suppress version downgrade from the firmware of NDM supported version to an unsupported version is prevented.	If destination NDM volumes exist in the storage system, delete them then execute the firmware update again.
07:08	Atomicity of Writes operation support	Suppress version downgrade from support firmware for Atomicity of Writes to unsupported firmware.	Cancel Host Mode Option107 of the host group and System Option Mode 1117, and then retry the firmware version downgrade.
15 : 07	Data-at-Rest Encryption	Suppress version downgrade from support firmware for Encryption Controller Board to unsupported firmware is controlled.	Please “Replace Controller Board (Type Change)” to “Normal Controller Board” and execute the update firmware again.

6.2 Function ID Table for GUM

NOTE: Even if the function ID (GXX:XX) is displayed in the Update Firmware window and the firmware update processing is suspended, each of firmware might be updated at the time of the maintenance other than the firmware update if the data transfer is completed.

If the function ID (GXX:XX) is displayed, perform any of the following.

- Perform the contents described in the Action column of the GUM function ID table, and then select the same firmware type as the one that the error occurred and update the firmware.
- Select the same firmware type as the one that the error occurred and update the firmware by the media of the version before the update.

Function ID	Function	Contents	Action
G00 : 01	SNMPv3 support	This firmware supports the versions v1, v2c, and v3 of the SNMP function. The SNMP function is enabled.	Disable the SNMP function, and then update the firmware. After completing the firmware update, set the SNMP function again.

6.3 Effect on the information due to configuration restoration

Performing New Installation (Restore Configuration) initializes the following setting information of the Storage System.

Ask your customer to set the information again following the user guides.

No	P.P. Name	Effect on the information due to configuration restoration		User guide to refer to
		Information to remain the same	Information to be initialized	
1	Performance Monitor	—	All monitor setting information	Performance Manager (Performance Monitor, Server Priority Manager) User Guide
2	Server Priority Manager	—	All	Performance Manager (Performance Monitor, Server Priority Manager) User Guide
3	Data Retention Utility	—	DRU attribute	System Administrator Guide
4	Volume Shredder	—	LDEV status of Shredding	Volume Shredder User Guide
5	Dynamic Provisioning	*1 Pool information DP-VOL information Data stored in DP-VOL	—	—
		*2 Pool information DP-VOL information	Data stored in DP-VOL (*3)	—
6	TrueCopy	—	Pair information Remote path information Differential bitmap data CT group information Option information (remote replication option)	TrueCopy User Guide
7	Universal Replicator	—	Pair information Remote path information Differential bitmap data Option information (journal option, mirror option) JNL information	Universal Replicator User Guide
8	ShadowImage	—	Pair information Differential bitmap data CT group information Option information (ShadowImage option)	ShadowImage User Guide

(To be continued)

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No	P.P. Name	Effect on the information due to configuration restoration		User guide to refer to
		Information to remain the same	Information to be initialized	
9	Thin Image		TI pool configuration information (The all pages are unallocated.) Pair information CT group information Snapshot group information Secondary volume data	Thin Image User Guide
10	Dynamic Tiering	*1	DP information HDT information of Pool HDT information of DP-VOL Data stored in DP-VOL	Monitoring information (The number of I/Os received per page) (*3)
		*2	DP information HDT information of Pool HDT information of DP-VOL	Monitoring information (The number of I/Os received per page) (*3) Data stored in DP-VOL (*3)
11	Volume Migration V2		— Pair information Option information (ShadowImage option)	Universal Volume Manager User Guide
12	active flash	*1	HDT information Setting (enable or disable) of active flash of pool Data stored in DP-VOL	Monitoring information (The number of I/Os received per page)
		*2	HDT information Setting (enable or disable) of active flash of pool	Monitoring information (The number of I/Os received per page) (*3) Data stored in DP-VOL (*3)
13	Encryption License Key		Encryption License Key information is not changed and remains the same after DCI/configuration restoration because it is not uploaded to the configuration. Only the information of the PDEV that existed but does not exist now is initialized. The information of the PDEV that exists remains the same after DCI/configuration restoration.	Encryption License Key User Guide
14	Disaster Recovery Extended		— Pair information Remote path information Differential bitmap data CT group information Option information JNL information Quorum information	TrueCopy User Guide Universal Replicator User Guide Global-Active Device User Guide
15	global-active device		Virtual ID information (virtual storage machine, virtual LDEV# and so on) Pair information Remote path information Differential bitmap data CT group information Option information Quorum information	Global-Active Device User Guide

- *1: When the [Yes] button is selected to take over the DP-VOL data in Step 19 in [“5.2 Procedure of New Installation \(Restore Configuration\)”](#).
- *2: When the [No] button is selected not to take over the DP-VOL data in Step 19 in [“5.2 Procedure of New Installation \(Restore Configuration\)”](#).
- *3: Not setting information. Not required to be set again.