

# ***[DRIVE REPLACEMENT PROCESSING - RDK1]***

**NOTICE:** The FMD ACTIVE LED on the FMD blinks at a low speed for about 2 to 5 minutes until the charge of the capacitor built in the FMD is completed when replacement of FMD (HAX-QxxxSS) is performed.

## 1. Before Replacing a Drive

### CAUTION

Notes when replacing drives:

- Do not replace drives during “System is locked”. The drive replacement might fail. If the replacement fails because the drives are replaced during “System is locked”, complete the operation that causes the system lock, wait for 20 minutes after the system is unlocked, and then replace the drives again.
- When replacing multiple drives, replace one drive at a time. After completing the drive replacement, confirm the normal completion of the drive replacement in the Maintenance Utility window, and then replace the next drive.

**NOTICE:** Before replacing a drive, check the SIM log (see [\(SVP02-02-70\)](#)).  
When SIMs shown below are reported, pinned tracks occur. Recover all pinned tracks (see “Recovery Procedure for Pinned Track” [\(TRBL03-29-10\)](#)), and then replace a drive.

- ef4xyy
- ff4xyy
- ef5xyy
- ff5xyy

### 1. Connecting the Maintenance PC

Connect the Maintenance PC to the SSVP, and then log in to the SVP.

- “Attachment/Removal Procedure of Maintenance PC” [\(INST\(IN\)13-02-10\)](#)
- “Connection to the SVP” [\(SVP01-30\)](#)

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### 2. Starting the SVP window

From the menu of Web Console, click [Maintenance Components] - [Maintenance Other Components].

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### 3. Changing the operation mode

Change the mode to [View Mode].

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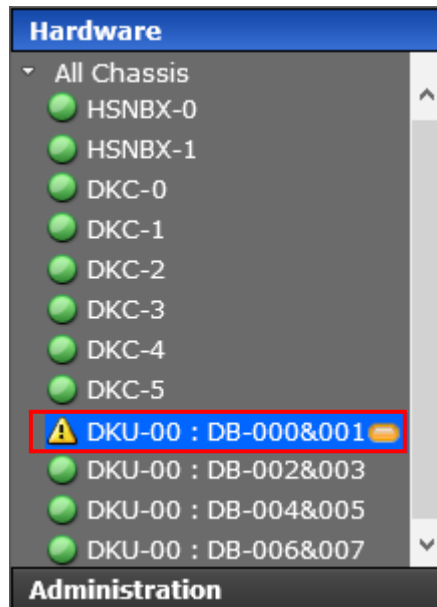
### 4. Starting Maintenance Utility

In the SVP window, click [Maintenance Utility]. (See “Starting Maintenance Utility” [\(MU01-10\)](#).)

## 5. Selecting replacement parts by Maintenance Utility

## (1) &lt;Main window&gt;

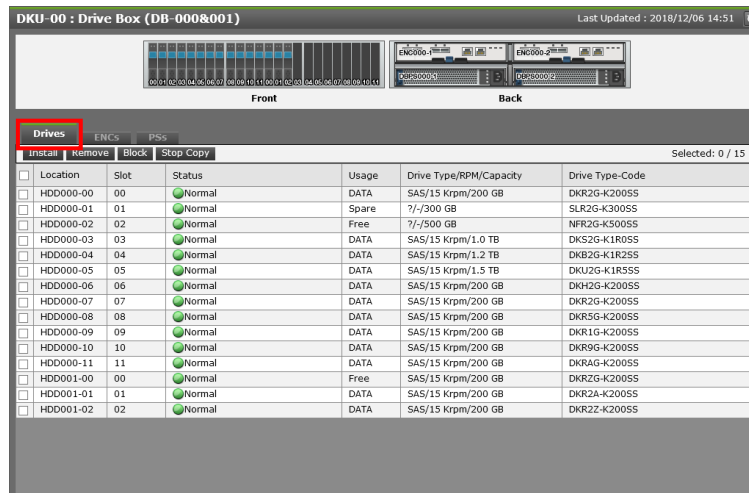
Select [DKU-XX] in the main window.



## (2) &lt;Drive Box Window&gt;

Click the [Drives] tab in the Drive Box window to display a Drive status. See “Alert Display Related to FRU (Field Replacement Unit)” (MU02-10) for the [Status].

Replace a Drive whose Status is “Warning”, “Failed”, “Blocked”, “Copy incomplete”, “Reserved”.



## (3) Check the ALM LED (red) on the Drive

When the ALM LED (red) does not light up, perform [Step \(4\)](#) to [Step \(9\)](#).

When the ALM LED (red) lights up, go to [6. Checking the Drives](#)”.

## (4) &lt;Drive Box Window&gt;

Click the [Drives] tab in the Drive Box window to display a Drive status.

Select a Drive to be blocked and click [Block].

Location	Slot	Status	Usage	Drive Type/RPM/Capacity	Drive Type-Code	
<input type="checkbox"/>	HDD000-00	00	Normal	DATA	SAS/15 Krpm/200 GB	DKR2G-K200SS
<input type="checkbox"/>	HDD000-01	01	Normal	Spare	7-/300 GB	SLR2G-K300SS
<input type="checkbox"/>	HDD000-02	02	Normal	Free	7-/500 GB	NFR2G-K500SS
<input checked="" type="checkbox"/>	HDD000-03	03	Warning	DATA	SAS/15 Krpm/1.0 TB	DKS2G-K1R0SS
<input type="checkbox"/>	HDD000-04	04	Normal	DATA	SAS/15 Krpm/1.2 TB	DKB2G-K1R2SS
<input type="checkbox"/>	HDD000-05	05	Normal	DATA	SAS/15 Krpm/1.5 TB	DKU2G-K1R5SS
<input type="checkbox"/>	HDD000-06	06	Normal	DATA	SAS/15 Krpm/200 GB	DKH2G-K200SS
<input type="checkbox"/>	HDD000-07	07	Normal	DATA	SAS/15 Krpm/200 GB	DKR2G-K200SS
<input type="checkbox"/>	HDD000-08	08	Normal	DATA	SAS/15 Krpm/200 GB	DKR5G-K200SS
<input type="checkbox"/>	HDD000-09	09	Normal	DATA	SAS/15 Krpm/200 GB	DKR1G-K200SS
<input type="checkbox"/>	HDD000-10	10	Normal	DATA	SAS/15 Krpm/200 GB	DKR9G-K200SS
<input type="checkbox"/>	HDD000-11	11	Normal	DATA	SAS/15 Krpm/200 GB	DKR4G-K200SS
<input type="checkbox"/>	HDD001-00	00	Normal	Free	SAS/15 Krpm/200 GB	DKR2G-K200SS
<input type="checkbox"/>	HDD001-01	01	Normal	DATA	SAS/15 Krpm/200 GB	DKR2A-K200SS
<input type="checkbox"/>	HDD001-02	02	Normal	DATA	SAS/15 Krpm/200 GB	DKR2Z-K200SS

## (5) &lt;Block Drive&gt;

 **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.

About “Forcibly restore the drive after replaced”, “Skip drive diagnosis (Effective in case without drive sparing)” and “Skip firmware update of HDD (Effective in case without drive sparing)”:

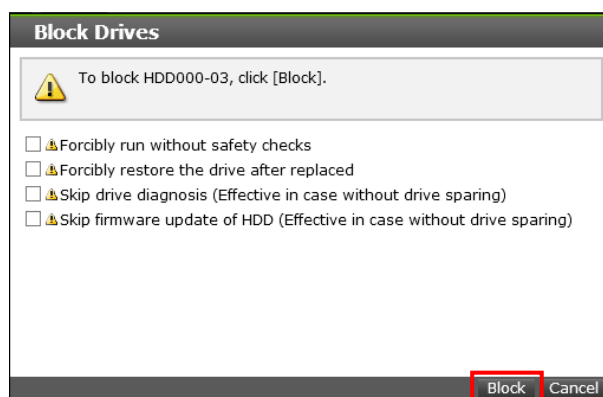
If you check these checkboxes and execute the maintenance, the system may go down. Do not check them unless instructed by the contact described in the manual.

Click [Block] after checking that the Drive to be replaced is correct.

If a message other than the described is displayed, refer to Message Section [\(MSG00-00\)](#).

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

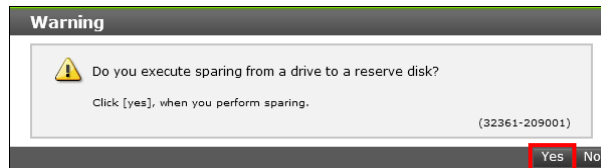
If it is displayed, click the text of “Error Code” and recover the failures or the blockade in accordance with the details of the displayed errors.



## (6) &lt;Saving the spare&gt;

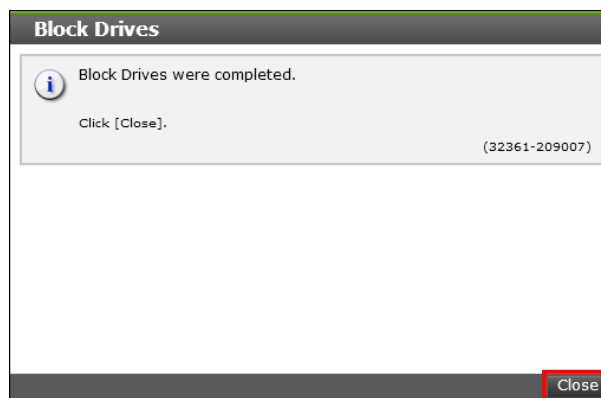
Click [Yes], when you perform sparing.

NOTE : If a spare drive that is available for performing sparing is not set, this window is not displayed. Go to the next procedure. See “Coexistence of Drives” ([THEORY05-02-100](#)) for the conditions of the available spare drives.



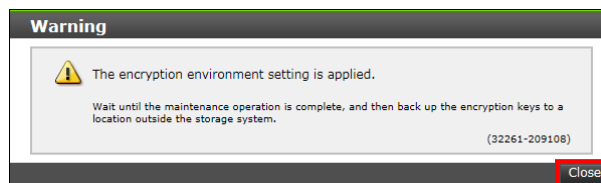
## (7) When the following window is displayed, click [Close].

If a message other than the described is displayed, refer to Message Section ([MSG00-00](#)).



## (8) &lt;Check back up the encryption key Messages&gt;

When the encryption environment is applied, the following message is displayed. Check the message and click [Close].



NOTE: If this message is displayed, complete the drive replacement work, and then ask your customer to back up the encryption key.

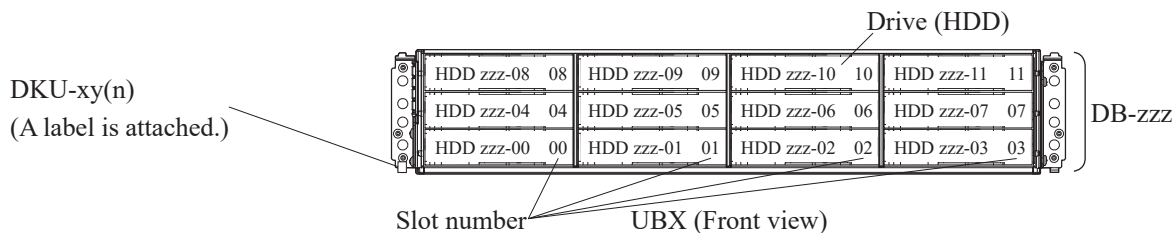
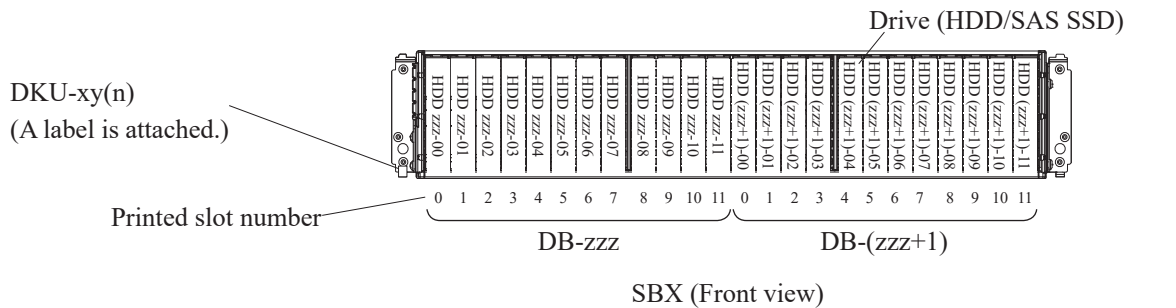
(9) Check that the drive status is “Blocked” or “Failed” in the Drive Box window.  
If the drive status is “Copying”, wait until it changes to “Blocked” or “Failed” .

## 6. Checking the Drives

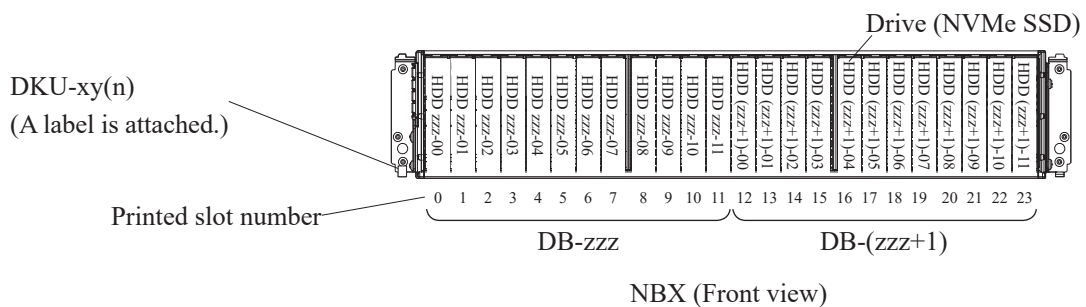
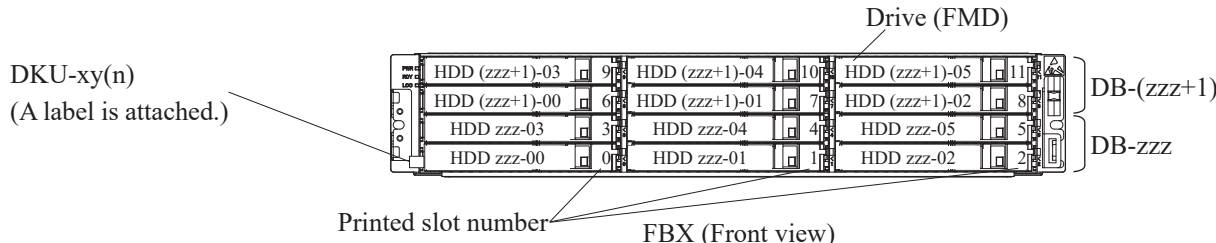
Table 1-1 List of Mountable Drive Model Names

No.	Location	Model Number	Model Name	Remarks
1	SBX	DKC-F810I-2R4JGM DKC-F810I-960MGM DKC-F810I-1T9MGM DKC-F810I-3R8MGM DKC-F810I-7R6MGM DKC-F810I-15RMGM DKC-F810I-30RMGM	Disk Drive	
2	UBX	DKC-F810I-10RH9M DKC-F810I-14RH9M	Disk Drive	
3	FBX	DKC-F810I-7R0FP DKC-F810I-14RFP	Flash Module Drive	
4	NBX	DKC-F910I-1R9RVM DKC-F910I-3R8RVM DKC-F910I-7R6RVM DKC-F910I-15RRVM	Disk Drive	

Figure 1-1 Drive Installation Location



NOTE: For UBX, slot numbers are not printed. Slot numbers for UBX are the same as “nn” in “HDDzzz-nn”.



- \*1 : The name in parentheses in the SVP messages shows HDDzzz-nn here.
- \*2: DKU-xy(n)
  - n: Drive Box number in DKU (0, 1, 2 ..., 7)
  - y: DKU No. (0, 1, 2 ..., 7)
  - x: CBX Pair No. (0, 1, 2)
- \*3: DB-zzz
  - DB No. (000, 001, 002, ....., 191)

- \*4: The slot numbers displayed in the DKU-mm: Drive Box window of Maintenance Utility are the slot numbers printed on each Drive Box. However, for UBX, slot numbers are not printed. Therefore, check the slot locations according to the above figure.

NOTE: Turn on the LOCATE LED by using Maintenance Utility during maintenance work. If you cannot turn on the LOCATE LED, check the number (\*2) shown on the label attached to the lower left part of the front side of Drive Box so that you do not confuse the maintenance target.

For example, numbers shown on the labels (DKU-xy(n)) and DB numbers (DB-zzz) of DKU-00 and DKU-01 are as follows:

For SBX/FBX/NBX:

A smaller number on the label (DKU-xy(n)) corresponds to smaller DB numbers (two in total; (DB-zzz+(2n)) and (DB-zzz+(2n+1))).

DKU-00(0) : DB-000, DB-001

DKU-00(1) : DB-002, DB-003

DKU-00(2) : DB-004, DB-005

DKU-00(3) : DB-006, DB-007

DKU-01(0) : DB-008, DB-009

DKU-01(1) : DB-010, DB-011

DKU-01(2) : DB-012, DB-013

DKU-01(3) : DB-014, DB-015

...

When the location of the target drive for maintenance is HDD013-02, the DB number is DB-013. The DKU in which the target drive is installed is DKU-01(2), and the slot number of the target drive is "2" (right side) for SBX, "14" for NBX, and "8" for FBX.

For UBX:

A smaller number on the label (DKU-xy(n)) corresponds to a smaller DB number (DB-zzz+n).

DKU-01(0) : DB-008

DKU-01(1) : DB-009

DKU-01(2) : DB-010

DKU-01(3) : DB-011

DKU-01(4) : DB-012

DKU-01(5) : DB-013

DKU-01(6) : DB-014

DKU-01(7) : DB-015

...

When the location of the target drive for maintenance is HDD013-02, the DB number is DB-013. The DKU in which the target drive is installed is DKU-01(5), and the slot number of the target drive is "2".

**NOTICE:** To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See “Note on Installing and Removing Parts (REP(GE)01-30)”.

- (1) Remove the Front Bezel. (Refer to “How to Attach/Remove Front Bezel” (REP(GE)08-10).)
- (2) Check that the ALM LED (red) on the Drive to be replaced lights up.

NOTE: When you replace a drive during a failure, no ALM LED (red) might light up, or ALM LEDs (red) of multiple drives might light up, depending on the failure type. Be careful not to remove a different drive. Be sure to check the locations of the target drive and Drive Box (see (LOC02-50)) before performing the procedure in “2. Replacing a Drive”.

Figure 1-2 ALM LED Location (SBX/NBX)

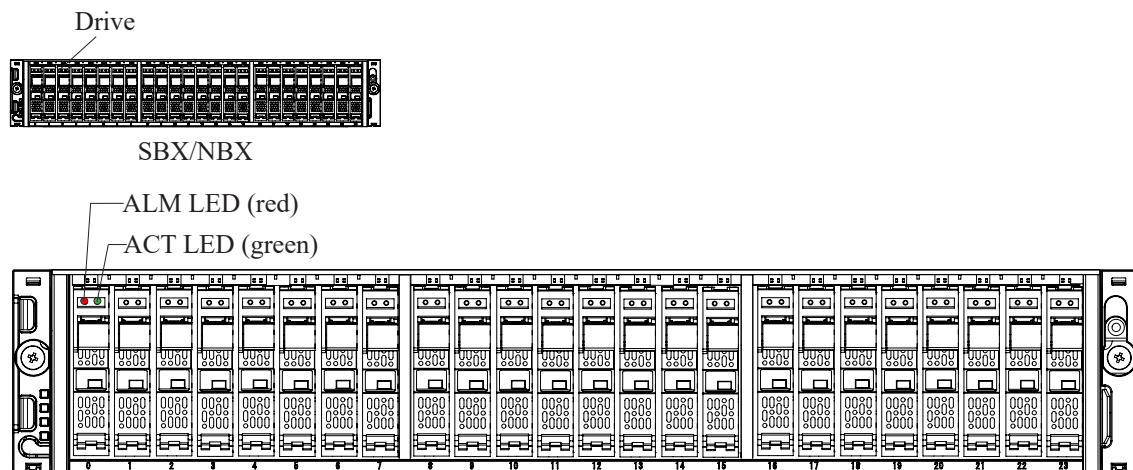


Figure 1-3 ALM LED Location (UBX)

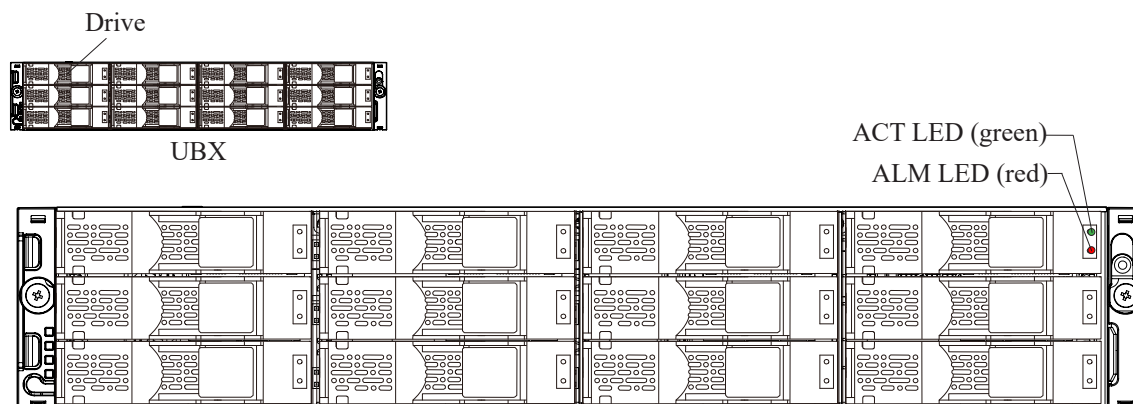
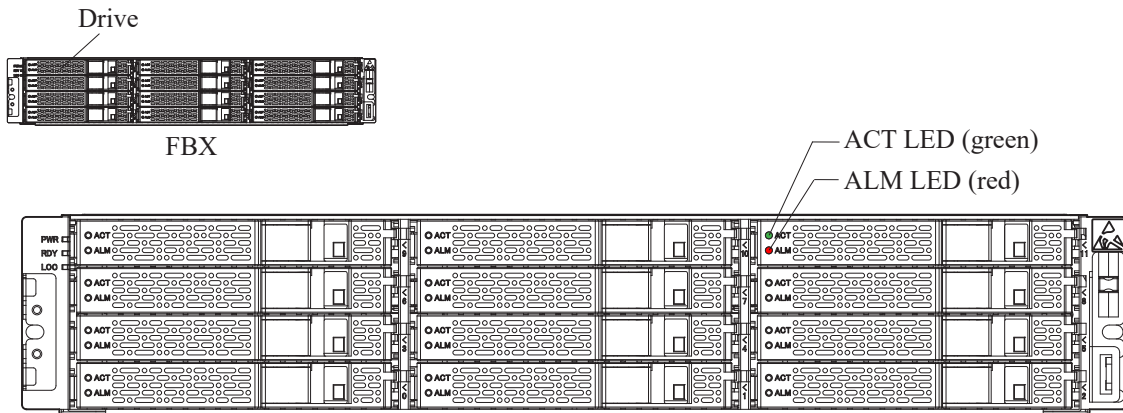


Figure 1-4 ALM LED Location (FBX)



## 2. Replacing a Drive

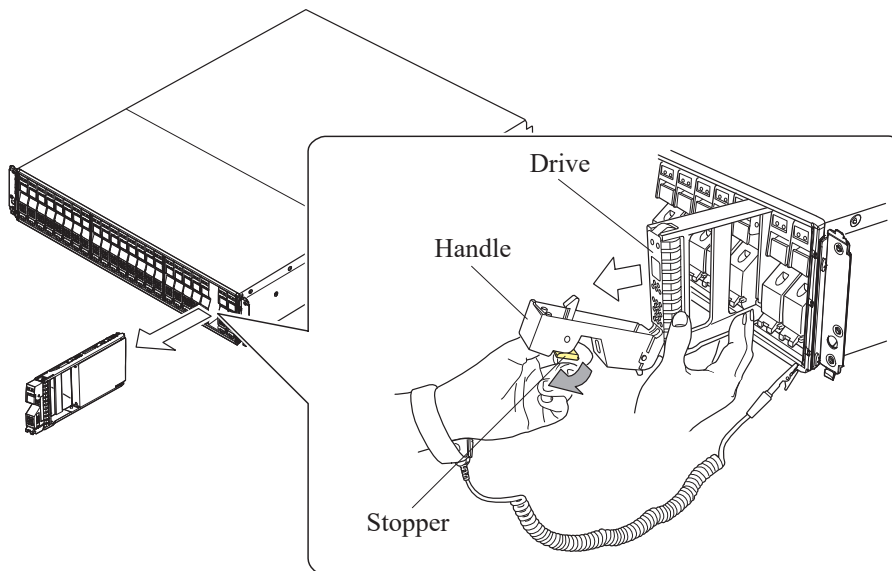
The Drive size and removal or installation operation vary depending on the Storage System to be installed. Check the Storage System and the Drive before starting the work.

### 1. Removing the Drive

#### (1) In case of SBX/NBX

- (a) Pull up the stopper of the Drive handle toward you to release the lock.
- (b) Open the handle, and pull out and remove the Drive to be replaced not to give a shock.

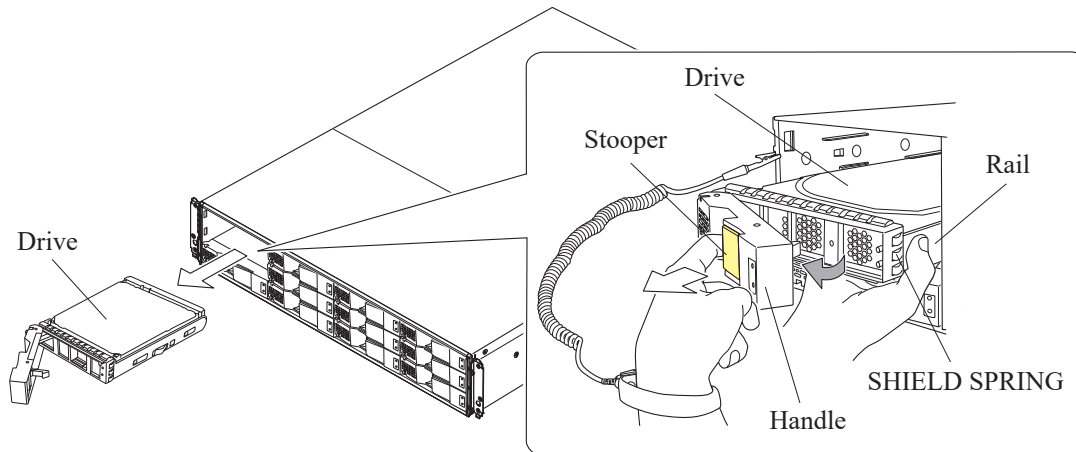
Figure 2-1 Removal of Drive (SBX/NBX)



- (2) In case of UBX
  - (a) Pull up the stopper of the Drive handle lightly to release the lock.
  - (b) Open the handle, and pull out and remove the Drive to be replaced not to give a shock.

NOTE: When handling the Drive, hold the rail side because the SHIELD SPRING is subject to breakage.

Figure 2-2 Removal of Drive (UBX)

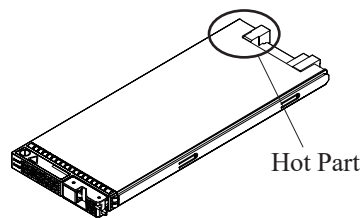


## (3) In case of FBX

**CAUTION**

Be careful of a hot part:

A Flash Module Drive that has been just removed from the system in operation has a hot part on its side surface. Be careful not to touch the hot part.



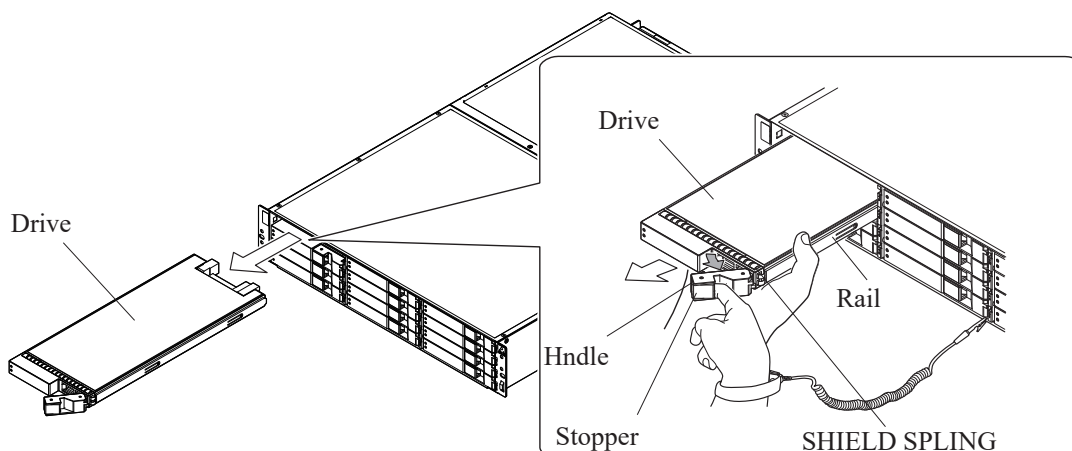
**NOTICE:** Be sure to read "Notes when Handling the Flash Module Drive (FMD)" ([REP\(GE\)01-80](#)) before handling the FMD and perform the procedure following the notes.

**NOTICE:** When the FMD is removed in replacing procedure, the fans of the DBPS installed in the rear of the FBX rotate at the highest speed. When the spare FMD is installed, the fans of the DBPS rotate at the speed suitable for environmental temperature.

- (a) Pull the stopper of the Drive handle lightly to have the lock off.
- (b) Open the handle, and then remove the Drive by pulling it out taking care not to apply a shock to it.

NOTE : When handling the Drive, hold the RAIL side because the SHIELD SPRING is subject to breakage.

Figure 2-3 Removal of Drive (FBX)



## 2. Installing the Drive.

- NOTE:
- Remove the Drive. After 30 seconds or more past, install the Drive.
  - When installing two or more Drives, install the next Drive after elapsing 20 seconds or more after the previous Drive installation.

### (1) In case of SBX/NBX

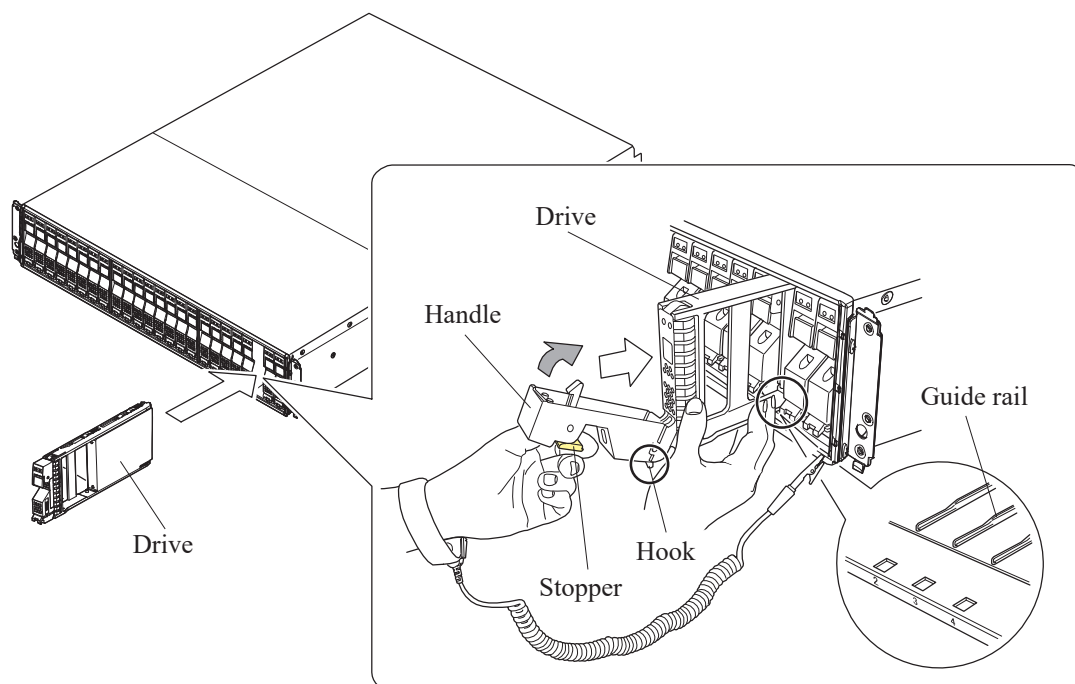
- Fit the Drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.
- Push the Drive in until it reaches the position where a hook of the handle can be entered into the square hole on a frame.
- Close the stopper, which has been opened, and then press the stopper to have the lock on.

NOTE: If the handle is closed in the status where the hook of the handle cannot enter into each hole, the Drive cannot be installed correctly because it runs into the frame of the Storage System.

- Pull the Drive lightly by holding the handle to check that it is not pulled out.

NOTE: At this time, ACT LED (green) of the drive may slightly light. However it is acceptable.

Figure 2-4 Installation of Drive (SBX/NBX)



## (2) In case of UBX

NOTE: When handling the Drive, hold the rail side because the SHIELD SPRING is subject to breakage.

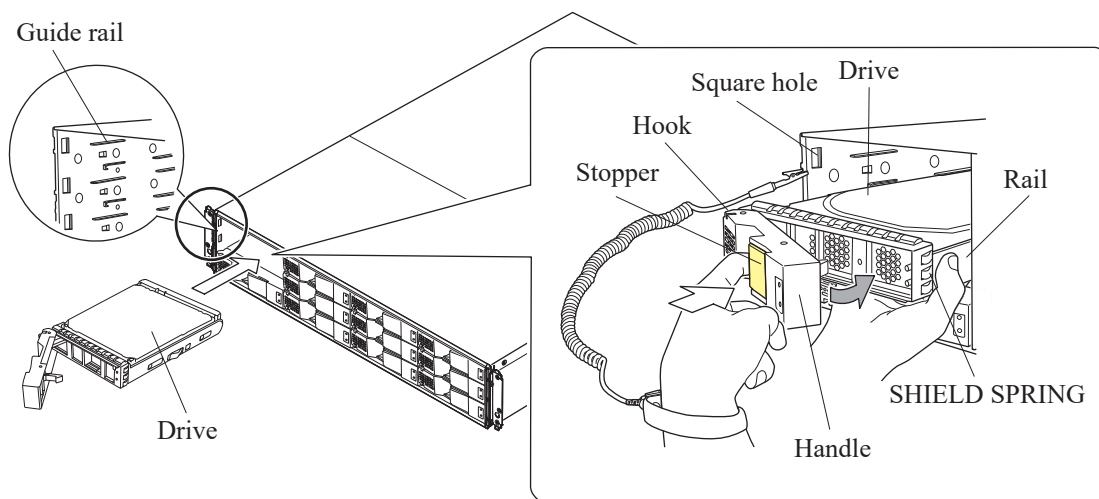
- (a) Open the handle fully and fit the Drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.
- (b) Push the Drive in until it reaches the position where a hook of the handle can be entered into the square hole on a frame.
- (c) Pull the stopper lightly and close the handle, and then press the stopper to have the lock on.

NOTE : If the handle is closed in the state where the hook of the handle cannot enter into the square hole, the Drive cannot be installed correctly because it runs into the frame of the Storage System.

- (d) Pull the Drive lightly by handling the handle to check that it is not pulled out.

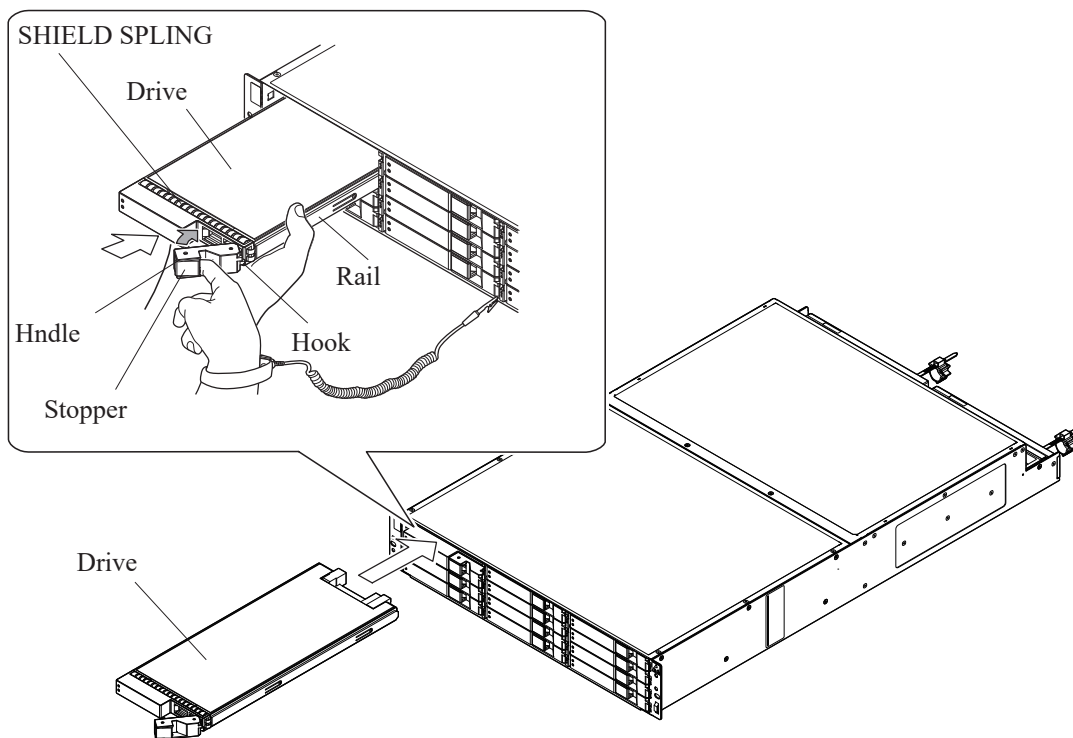
NOTE : At this time, ACT LED (green) of the drive may slightly light. However it is acceptable.

Figure 2-5 Installation of Drive (UBX)



- (3) In case of FBX
- (a) Open the handle fully.
  - (b) Fit the Drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.  
  
NOTE : When handling the Drive, hold the rail side because the SHIELD SPRING is subject to breakage.
  - (c) Push the Drive in until it reaches the position where a hook of the handle can be entered into the square hole on a frame.
  - (d) Pull the stopper lightly and close the handle, and then press the stopper to have the lock on.  
  
NOTE : If the handle is closed in the state where the hook of the handle cannot enter into the square hole, the Drive cannot be installed correctly because it runs into the frame of the Storage System.
  - (e) Pull the Drive lightly by handling the handle to check that it is not pulled out.

Figure 2-6 Installation of Drive (FBX)



3. Check that the ALM LED (red) on the replaced Drive does not light up.

NOTE: When the Drive status is “Normal” and the ALM LED (red) light up, follow TROUBLESHOOTING SECTION “Recovery Procedure when ALM LED (red) is not Turned OFF” ([TRBL02-04-320](#)).

- 
4. Attach the Front Bezel. (See “How to Attach/Remove Front Bezel” ([REP\(GE\)08-10](#)).)

## 5. Restoring replacement parts by Maintenance Utility

### (1) <Check drive restoration>

Click the [Drives] tab in the Drive Box window and check that a Status of the replaced Drive is “Normal”.

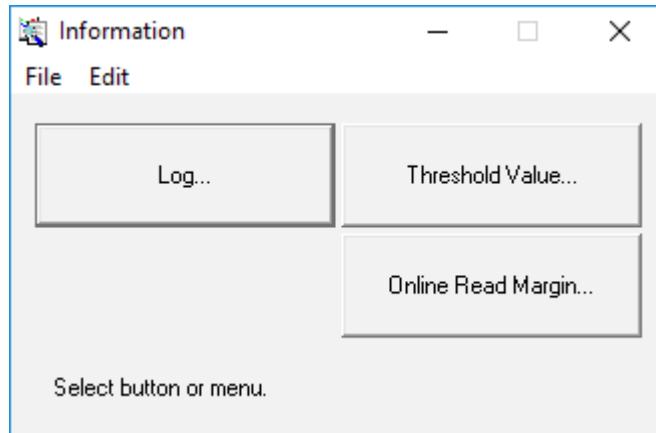
- NOTE :
- Click [refresh] on the upper right of the window to update the window, and then check the replaced Drive status.
  - When replacing the Drive after saving to the Spare Drive, the status changes to “Normal” after executing the copy back processing.
  - When the Drive status is “Copy incomplete”:  
Correction copy cannot be performed because more than one copy processing is operating in the parity group to which the target Drive belongs.  
After completing other copy operations, replace the drive again by following the drive replacement procedure. For the drive replacement, reuse the drive that was removed at the time of replacement instead of using a new drive.  
Refer to “Checking Parity Group” ([WEBCON03-440](#)) for checking the parity group.
  - When the Drive status is “Reserved”:  
Copy back cannot be performed because more than one copy processing is operating in the parity group to which the copy back source Drive of the target Drive belongs.  
After completing other copy operations, replace the drive again by following the drive replacement procedure. For the drive replacement, reuse the drive that was removed at the time of replacement instead of using a new drive.  
Refer to “Checking Parity Group” ([WEBCON03-440](#)) for checking the parity group.
  - When the Drive status is “Normal” and the ALM LED (red) light up, follow TROUBLESHOOTING SECTION “Recovery Procedure when ALM LED (red) is not Turned OFF” ([TRBL02-04-320](#)).

Location	Slot	Status	Usage	Drive Type/SPM/Capacity	Drive Type Code	Notification
HE000-00	00	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-01	01	Normal	DATA	7/200 GB	SLK20-K20055	
HE000-02	02	Normal	DATA	7/200 GB	MPK20-K20055	
HE000-03	03	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20056	
HE000-04	04	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-05	05	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-06	06	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-07	07	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-08	08	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-09	09	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-10	10	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-11	11	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20056	
HE000-12	12	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-13	13	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	
HE000-14	14	Normal	DATA	SAS15 Krpm/200 GB	DKR20-K20055	

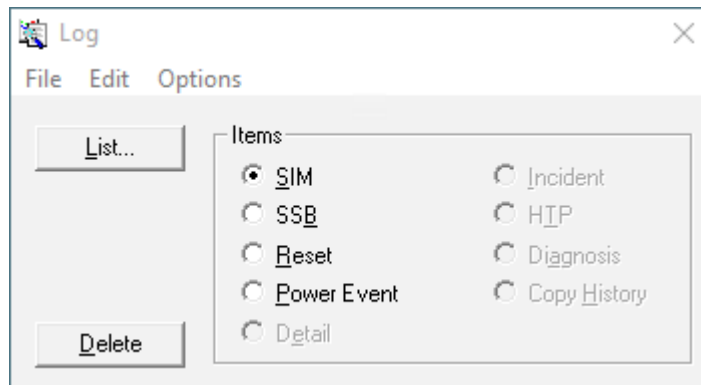
- (2) Click [Logout] to close the window.
- (3) Refer to “Use of OnlineDumpTool” ([SVP02-21-10](#)), please upload the error information.

## 6. Completing the SIM log

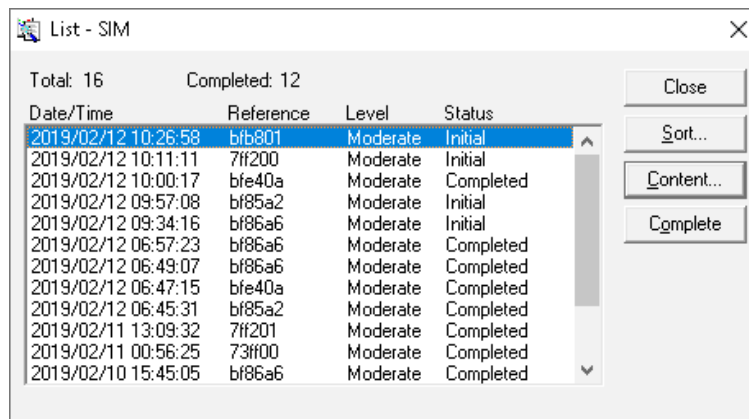
- (1) Change the mode to [Modify Mode], and then select [Information].
- (2) In the Information window, click [Log...].



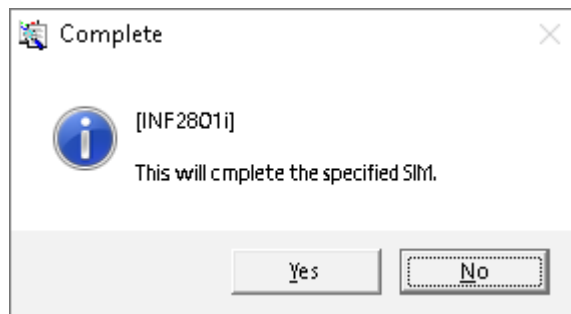
- (3) In the Log window, select [SIM] and then [List...].



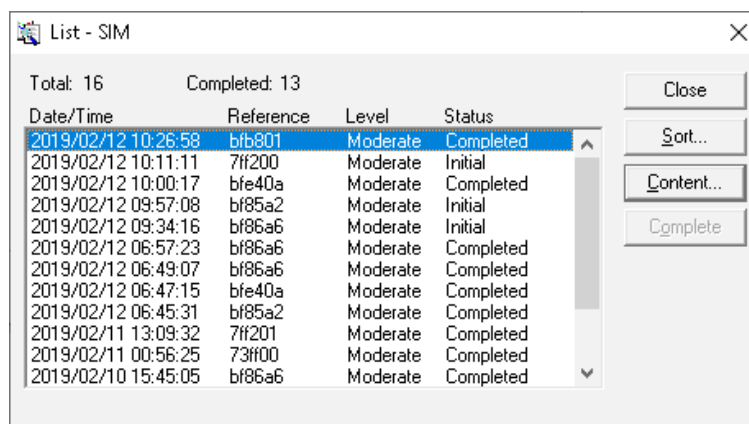
- (4) In the List-SIM window, select the data for which you end the process, and then click [Complete].



- (5) In the Complete window, click [Yes].



- (6) In the List-SIM window, confirm that the “Status” of the data has become “Completed”.



- (7) In the List-SIM window, click [Close].

Close the Log window, then the Information window.

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

NOTE: If the MESSAGE LED is lit on the HSNPANEL after you complete all SIMs, display SIMs to check that SIM statuses are “Completed”. If SIM statuses are not “Completed”, wait for five minutes, and then perform the procedure for completing the SIM log again.

## 7. Checking Normality

Perform the normality check according to “Checking Normality (TRBL02-06-10)”.

## 8. Back up the encryption key

If the message is displayed in [Step 5.\(8\)](#), ask your customer to back up the encryption key using Storage Navigator (refer to Encryption License Key User Guide).

NOTE: When a message is not displayed in [Step 5.\(8\)](#), this procedure is not required.