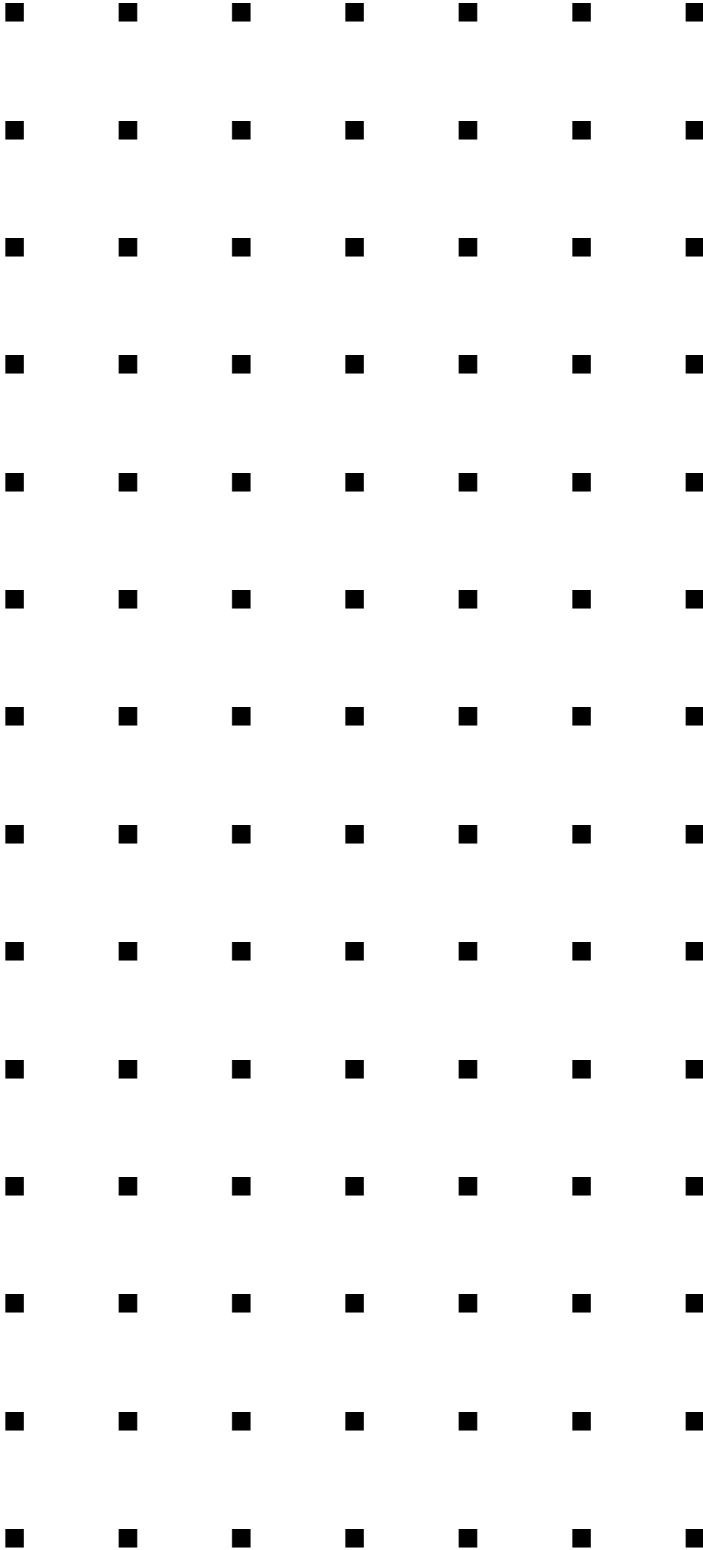


**Battery Backup Unit
for 8480E and 8408E DACs**



User Guide

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Preface

Congratulations on your purchase of the Additional Disk Array Controller Battery, also referred to as Battery Backup Unit (BBU).

This User Guide describes how to install and use the Battery Backup Unit correctly and safely. Read the guide thoroughly before handling it.

Also refer to this manual when you want to know how to use it or if some malfunction occurs. Keep the manual handy for future reference. We recommend you carefully read the "Notes on Use" section before handling the disk array controller.

For more information on the Disk Array Controller (SAS) to which the BBU is connected, refer to the Disk Array Controller User Guide.

Keep this User's Guide handy for quick reference.
Be sure to read this section carefully.

NOTES ON USE - Always read the Notes -

The following includes information necessary for proper and safe operation of the product.

SAFETY INDICATIONS

In the User Guide, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:









Indicates a hazard that may result in death or serious personal injury.







Indicates a hazard that may cause minor personal injury, including burns, or property damage.

Precautions against hazards are presented with the following symbols. The individual symbols are defined as follows:



	Attention	This symbol indicates a hazard. An image in the symbol illustrates the hazard type.	(Example)  Precaution against electric shock
	Prohibited Action	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action.	(Example)  Prohibition of disassembly
	Mandatory Action	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard.	(Example)  Unplug the power cord!

Symbols Used in This Manual and Warning Labels



Cautions

	Indicates a general notice or warning that cannot be specifically identified.
	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause a personal injury.
	Indicates that improper use may cause fumes or fire.

Prohibited Actions

	Indicates a general prohibited action that cannot be specifically identified.
	Do not disassemble, repair, or modify the server. Doing so may cause an electric shock or fire.








Mandatory Action

	Unplug the power cord of the server. Not doing so may cause an electric shock or fire.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

Safety Notes

Read the notes described below carefully to understand them, these will enable you to safely use your product. See "Safety Indications" described earlier for the descriptions of symbols.

General

 WARNING	
	<p>Do not use the product for services involving human lives or requiring high reliability.</p> <p>The product is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. The manufacturer assumes no liability for any accident resulting in personal injury, death, or property damage if the Disk Expansion Unit has been used in the above conditions.</p>
 	<p>Do not use the product if you are aware of any suspect smoke, odour, or noise.</p> <p>If smoke, odour, or noise is present, immediately switch off the unit and disconnect the power plug from the outlet. Contact your sales agent. Using the product in such conditions may cause a fire.</p>
	<p>Keep needles or metal objects away from the server.</p> <p>Do not insert needles or metal objects into the ventilation holes or cartridge slot of the server. Doing so may cause an electric shock.</p>
 	<p>Keep water or foreign matter away from the server.</p> <p>Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the AC outlet. Do not disassemble the server. Contact your service representative.</p>

Power Supply and Power Cord Use

CAUTION



Disconnect the power cord(s) before installing or removing the product in/from the server.

Make sure to power off the server and disconnect the power cord(s) from the power outlet before installing/removing the product in/from the server, or connecting with the peripheral devices. All voltage is removed only when the power cords are unplugged.



Always observe the following to prevent an electric shock or fire that could be caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use a damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your sales agent for replacement.)



Do not hold the power plug if your hands are wet.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.



Do not pull the cable when disconnecting the power cord.

When disconnecting the power cord from the server, hold the plug and pull it straight out. Pulling the cord out by the cable portion could damage the cable to result in an electrical shock hazard or a fire.



Installation, Relocation, Storage, and Connection

CAUTION



Do not connect any interface cable when the power cord of the Disk Expansion Unit is plugged to a power source.



Make sure to power off the server and unplug the power cord from a power outlet before connecting/disconnecting the interface cable. If the server is off-powered but its power cord is plugged to a power source, touching the cable may cause an electric shock or a fire may result from a short circuit. Also, connect/disconnect the interface cable after turning off the power of the destination.



Do not use any unauthorized interface cable.

Use only interface cables authorized by the manufacturer and locate a proper device and connector before connecting a cable. Using an unauthorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.

Also, observe the following notes on using and connecting an interface cable.

- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.
- Do not use any damaged cable connector.

Make sure the cable is securely locked with the relevant screws.



Do not use or store the product in the place where corrosive gases exist.



Make sure not to locate or use the server in the place where corrosive gases (sulphur dioxide, hydrogen sulphide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.





Also, do not set it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulphur, sodium chloride) or conductive metals. There is a risk of a fire due to corrosion and/or short-circuits of an internal printed board.



Avoid installation in extreme temperature conditions.






Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Let the installed components fully cool down before installing/removing anything.

Cleaning and Working with the Product

⚠ WARNING	
  	<p>Do not disassemble, repair, or alter the server.</p> <p>Do not attempt to disassemble, repair, or alter the product in any occasion other than those described in this User's Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the product.</p>
	<p>Disconnect the power plug before accessing inside the server.</p> <p>Make sure to power off the server and disconnect the power plug from the AC outlet before accessing inside the server. Touching any internal device of the server when its power cord connected to a power source may cause an electric shock even if the server is off-powered.</p>

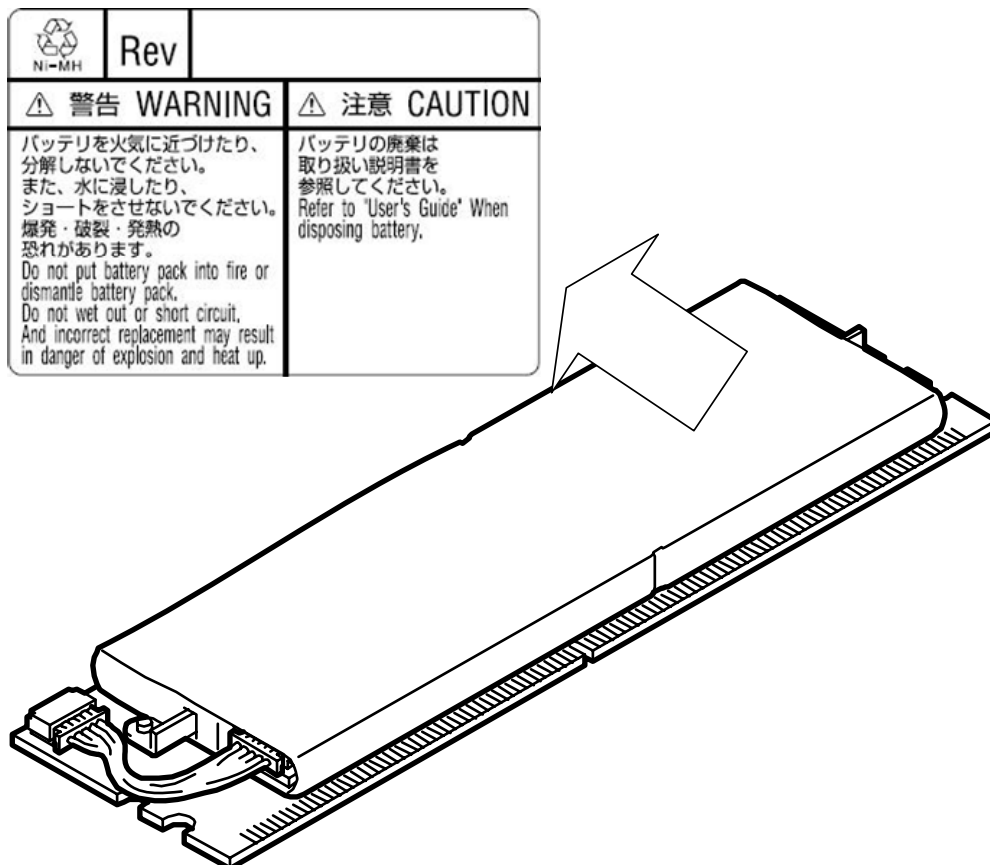
⚠ CAUTION	
	<p>Make sure to complete installation.</p> <p>Always connect the DC cable and/or interface cable firmly. An incompletely connected cable may cause a contact failure, resulting in smoke or fire.</p>

During Operation

⚠ CAUTION	
 	<p>Avoid contact with the server during thunderstorms.</p> <p>Disconnect the power plug from the outlet when a thunderstorm is approaching. If the thunderstorm begins before you can disconnect the power plug, do not touch any part of the server containing the product. Failure to follow this warning may cause an electric shock.</p>
 	<p>Keep animals away from the server.</p>
	<p>Do not use a cellular phone or a pager around the server.</p> <p>Turn off cellular phones or pagers near the server containing the product. Radio interference may cause malfunctions of the server.</p>

Warning Labels

Warning labels are attached to the product to inform the user that a hazardous situation may arise when operating the chassis (do not take off any label or soil it). If you find any label unattached, almost peeled off, or soiled, making the warning illegible, contact your sales agent.



Notes on Use - For correct operation of the BBU -

Note the following when you use the BBU. If you ignore these notes, your assets (including important data and/or other devices) may be damaged.

- The BBU is an additional battery exclusively designed for the Disk Array Controller (SAS) for which you purchased it. It cannot be connected to any other disk array controllers.
- The BBU is an extremely sensitive electronic device. Take all the necessary precautions to avoid electro-static damages before handling the BBU.
- Do not drop the BBU. Do not hit the BBU against other objects.
- To recycle or dispose of the BBU, refer to "Recycling and Disposal" in this chapter.

This Manual

The guide is intended for persons who are familiar with operating systems, including Windows, and fundamental operations of general-purpose I/O devices, including the keyboard and mouse.

Text Conventions

The following conventions are used throughout this User's Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.



Notice

Items to be observed or points to be noted when operating the product.



Check

Items to be checked when operating the product.



Tips

Information useful or convenient for you.

In the Package

Check the package contents.

The package contains various accessories, as well as the product itself. Check with the packing list and make sure you have everything and that individual components are not damaged. If you find any missing or damaged components, contact your sales agent.

Transportation

To transport the BBU, remove it from the server as described in "Chapter 1 Overview" and put the BBU and all the accessories in the package used for the delivery.

Third Party Transfer

Make sure to provide this manual along with the product to a third party.



About data on the hard disk

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

The manufacturer assumes no liability for data leakage if the product is transferred to third party without erasing the data.

To transfer or sell any software application that comes with the product to a third party, the following requirements must be satisfied:

- Transfer all the provided software applications, and keep no backup copies.
- Uninstall software applications before transferring the product.

Recycling and Disposal

The battery pack of the BBU is equipped with a recyclable lithium ion battery. To enable such valuable resources to be reused, contact your service representative or bring it to the nearest recycle agent.

For the removal of the BBU, see "4. Battery Pack Replacement Procedure" in "Chapter 3 Operation and Maintenance."


Dispose of other devices according to all national laws and regulations. For more information, contact the local government or your service representative.

Take sufficient note on the handling of the battery pack following "Chapter 3 Operation and Maintenance."



It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk, backup data cartridge, floppy disk, or any other media (CD-R/CD-RW) so that the data cannot be restored.

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Chapter 1 Overview

Read this chapter if you use the Additional DAC Battery (called BBU below) for the first time.

This chapter describes the characteristics and configuration of the BBU, and outlines the additional battery installation job.

1. BBU Characteristics

The BBU is an additional battery exclusively used for the Disk Array Controller (SAS).

Connecting the BBU to the disk array controller can prevent data from being lost due to an unforeseen accident, including instantaneous power interruption (in the WriteBack mode).

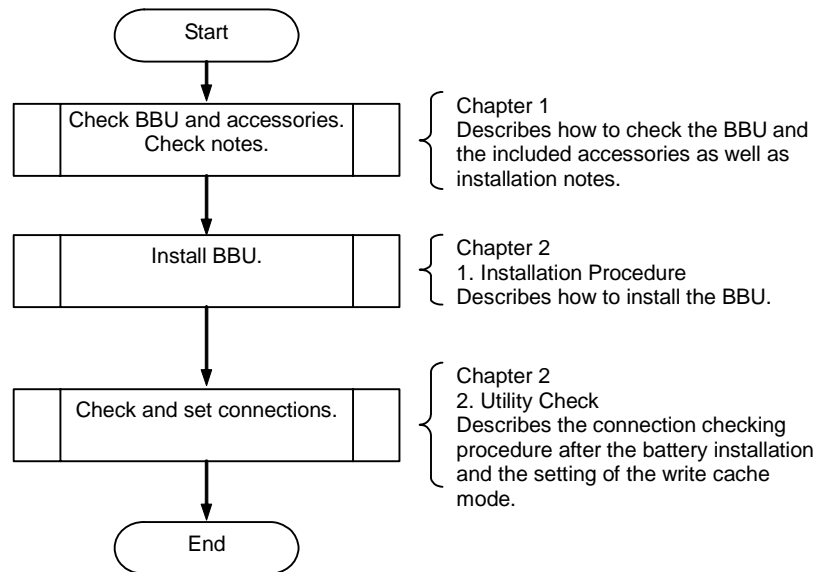
- Backup (up to 72 hours) of the data in the disk array controller cache memory.
- Improvement of reliability in WriteBack mode.
- Use of rechargeable NiMH battery.

2. Specifications

Item		Specifications	Remarks
Maximum data backup time		72 hours	Full charge
Outer dimension (mm)		39 (width) × 133 (depth) × 9 (height)	
Weight		About 0.10 kg	
Battery capacity		4.22 Wh	Normal operation
Operating environment	Temperature	10°C - 35°C	
	Humidity	20% - 80%	Without condensation
Storage environment	Temperature	0°C - 35°C	
	Humidity	20% - 80%	Without condensation
Life (battery back)		About 2 years	Varies depending on the operating environment and the boundary conditions

3. Installation Flow

The following shows the BBU installation flow. For more information, refer to the corresponding chapters.

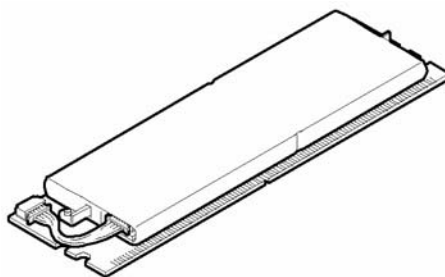


4. Checking the Contents in the Package

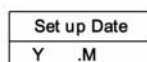
The package contains the following items. Check the contents to confirm you have all the necessary items before starting the installation job.

No.	Item	Qty	Remarks
1	Additional DAC battery	1	This unit
2	User Guide	1	This manual
3	Setup date label	1	

The package contains the following items.



Battery Backup Unit (BBU)

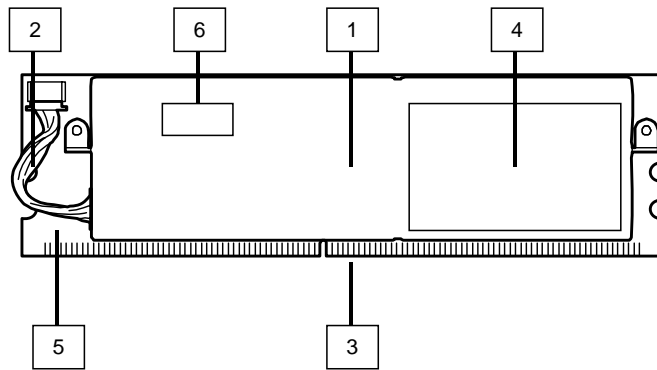


Setup Date label


5. Names and Functions of Sections

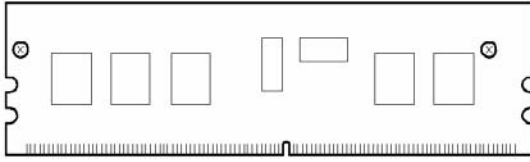
This section describes the sections of the BBU.

Front view



- 1** Battery cell
NiMH battery cell
- 2** Battery cable
Used to connect the battery cell to the memory module.
- 3** Memory connector
Insert the connector into the memory slot of the disk array controller.
- 4** Recycle and caution label
This label is stuck on the battery pack. It displays warning messages, the battery type and the recycle symbol.
- 5** Memory
Memory module connected to the battery cell.

 <small>リサイクル</small>	Rev	XXX
 警告 WARNING	 注意 CAUTION	
<small> バッテリーを火気近づけたり、分解しないでください。また、水に浸したり、ショートさせないでください。爆発・破裂・発熱の恐れがあります。 Do not put battery pack into fire or dismantle battery pack. Do not wet out or short circuit. And incorrect replacement may result in danger of explosion and heat up. </small>		
<small> バッテリーの廃棄は取り扱い説明書を参照してください。Refer to 'User's Guide' When disposing battery. </small>		

Rear view**Accessories**

Set up Date	
Y	.M

7**Setup Date label (accessory)**

The label comes with the BBU. Fill in the year and month when you install the BBU in the disk array controller. Stick the label on the BBU surface for future reference.

6. Installation Notes

- Do not lay the BBU on a metallic plate, including the chassis of the server.
- Do not hold the BBU if your hands are wet.

Failure to follow these recommendations could cause a short-circuit on the battery.

Chapter 2 Installing the BBU

This chapter describes the installation of the BBU in the disk array controller.



Check

The procedure described here is the installation of the BBU in the Internal SAS HDD Disk Array Controller. It is similar to the installation of the BBU in the External SAS HDD Disk Array Controller.

1. Installation Procedure

Install the BBU in the disk array controller as described in the following procedure.



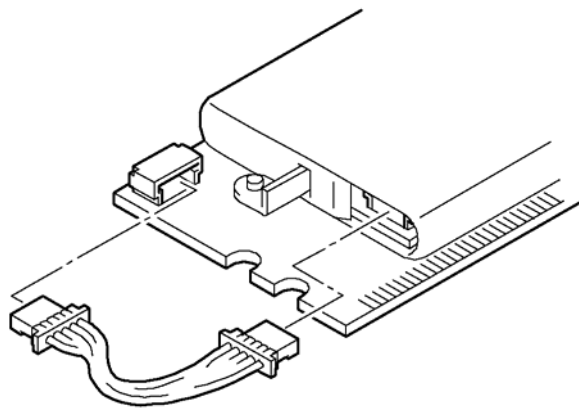
Check

Before starting the installation job, refer to the User Guides of the disk array controller and of the server.

1-1. Checking the Cable

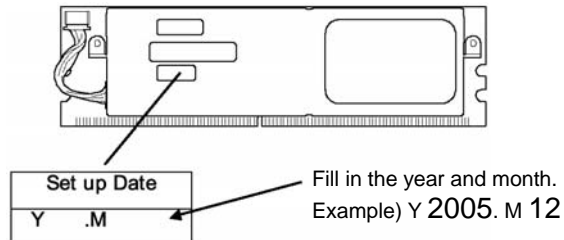
Make sure that the cable is removed from both the battery cell and the memory module.

If the cable is connected, remove it.



1-2. Putting Setup Date Label

Fill in the year and month corresponding to the BBU installation date on the battery label coming with the BBU. Stick the label on the BBU surface.

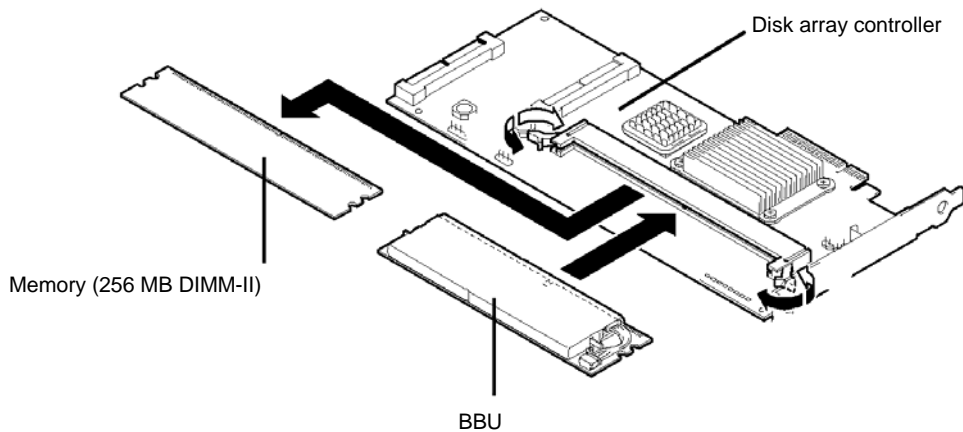


The battery life is about 2 years and varies depending on the environment of use and operating conditions. If the battery pack is used for more than 2 years, we cannot guarantee that the maximum data backup time (72 hours) can still be achieved. Replace the battery pack as described in "Chapter 3 Operation and Maintenance."

1-3. Installing the BBU in the Disk Array Controller

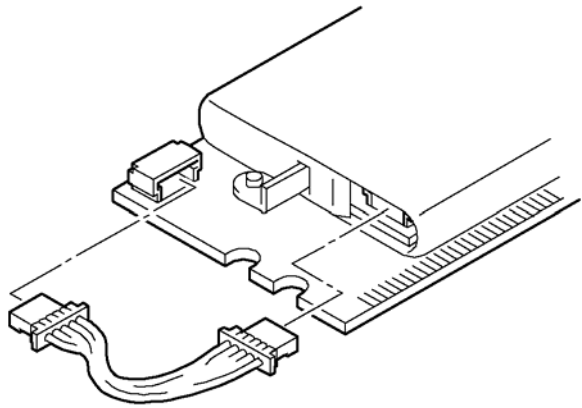
Install the BBU in the disk array controller as described in the following procedure:

1. Open the lever securing the memory module of the disk array controller.
2. Remove the memory module from the disk array controller.
3. Insert securely the BBU into the slot.
4. Close the lever that was opened in Step 1 to fix the BBU.



1-4. Connecting the Cable

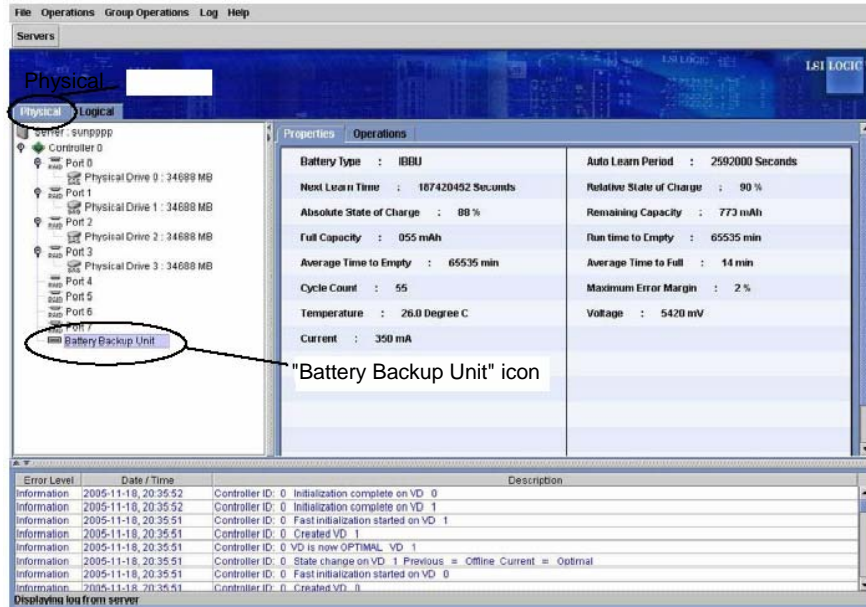
Connect the cable to the battery cell and the memory module.



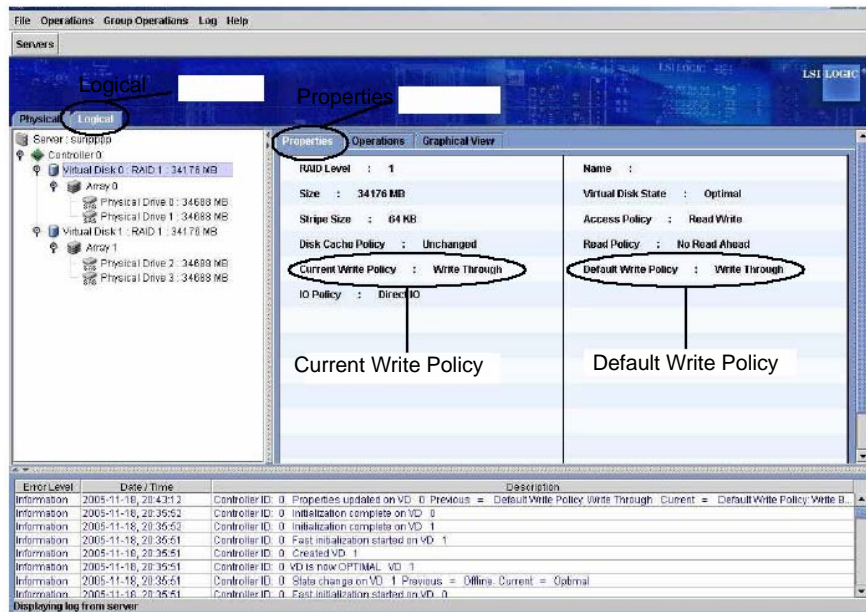
2. Utility Check

After the installation, check the connections and the settings of the BBU using the disk array controller management utility "MegaRAID Storage Manager™" (called MSM hereafter).

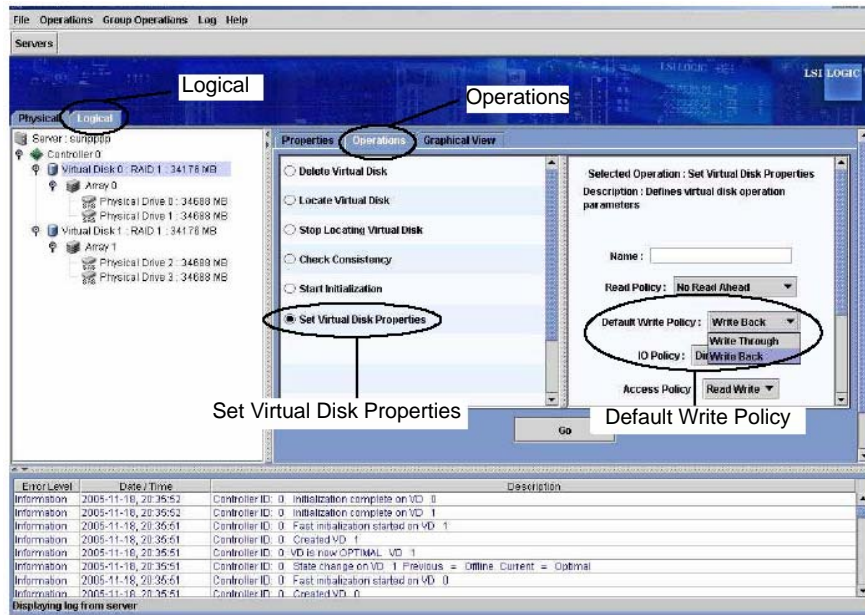
1. Boot the OS and start MSM.
2. Make sure that the "Battery Backup Unit" icon appears in the *Physical tab* of MSM.



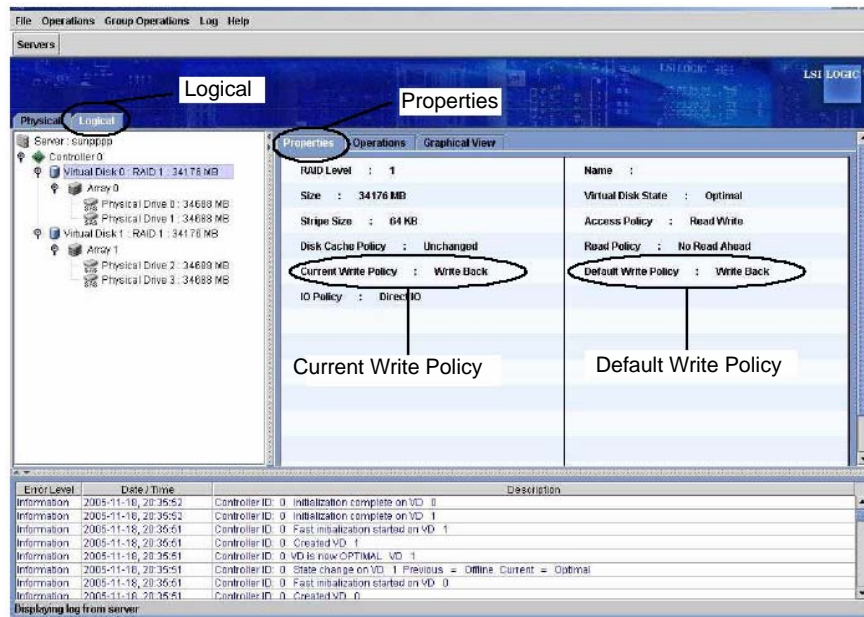
3. Select the *Logical tab* in the left frame of the window, and then select each "Virtual Disk" under the Logical tab.
4. Select the *Properties tab* in the right frame of the window, and confirm the setting for Default Write Policy.



5. Change the Default Write Policy to "Write Back" if not specified.
6. To change the Default Write Policy:
 - 6-1. Select the *Logical* tab in the left frame of the window, and then select each "Virtual Disk" under the *Logical* tab.
 - 6-2. Select the **Set Virtual Disk Properties** under the *Operations* tab in the right frame of the window, and change the **Default Write Policy** to **Write Back**.
 - 6-3. Repeat Steps 6-1 and 6-2 for all Virtual Disk under the Logical tab to change their Default Write Policy to "Write Back".



7. Charge the BBU, and make sure that the Current Write Policy (indicating write cache operation status) is indicated as "Write Back."



Notice

- The battery cell you have purchased is not charged at all. In this case, the [Current Write Policy] in the [Properties] of the [Logical] tab is indicated as "Write Through" on MSM.
- You can check the charge status of the battery cell by selecting [Relative State of Charge] or [Absolute State of Charge] in [Physical] tab → [Properties] on MSM.
- If you changed the Write Policy from [Write Through] to [Write Back], MSM displays the correct message, but the Windows Event Log (application) indicates that the change was made contrarily.



Tips

For more information on the Write Policy, refer to the disk array controller User Guide or to the MSM User Guide (online documentation included on the CD-ROM shipped with the server).

Chapter 3 Operation and Maintenance

1. Maintenance Service

We recommend you ask our Service Representatives for the help of one of our technicians when your BBU requires servicing. They will provide you with genuine parts, and you can rely on their high technical capabilities.

2. Preventive Maintenance

2-1. Preventive Maintenance of BBU

We recommend your regularly check the BBU status (including voltage and temperature) as a preventive maintenance. You can use MegaRAID Storage Manager™ (MSM) to do so.

2-2. BBU Life

The BBU is equipped with a backup battery. The battery life is about 2 years, and varies depending on the environment of use and operating conditions.

Replace the battery with a new one after about two years starting from the installation of the BBU (refer to the battery label put on the server and the BBU). Contact your service representative for the replacement or follow the instructions in "3. BBU Replacement Procedure".



The BBU is a supply/charged warranty device.

3. BBU Replacement Procedure

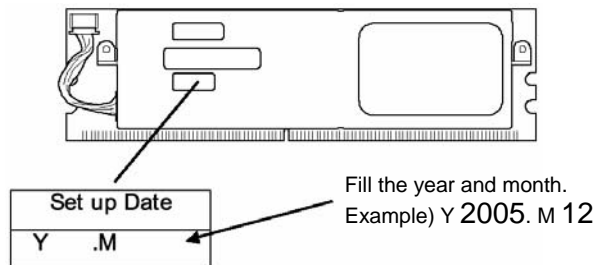
Replace the BBU as described in the following procedure:



Check

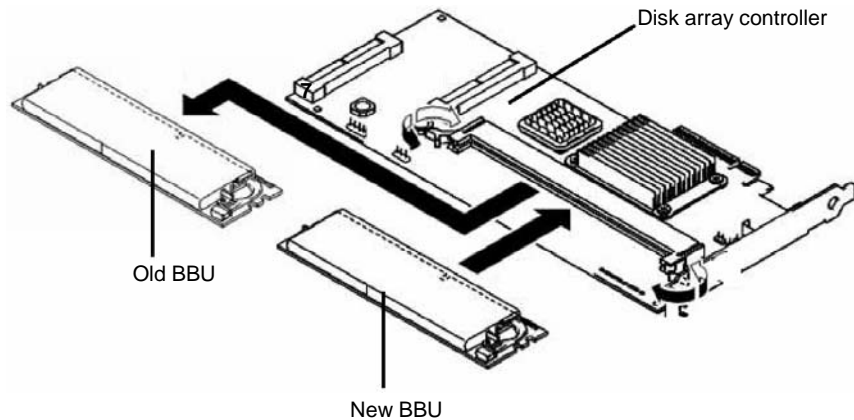
The procedure described here is the replacement of the BBU in the Internal SAS HDD Disk Array Controller. It is similar to the replacement of the BBU in the External SAS HDD Disk Array Controller.

1. Fill in the year and month of replacement on the Setup Date label that comes with the new BBU, and stick the label on the BBU surface. (See Section 1-2 for details.). Remove any existing Setup Date label, or make sure to stick the latest on top of the others.



2. Exit from all applications and shut down the OS.
3. Power off the server and remove all the power cords connected to the power unit from the receptacles.
4. Remove the side cover as described in the server User Guide.
5. Disconnect all the cables from the disk array controller.
6. Remove the disk array controller from the server.
7. Open the lever of the disk array controller to release the BBU.
8. Remove the BBU.
9. Insert the new BBU into the slot.

10. Close the lever that was opened in Step 7 to secure the BBU.



11. Reinstall the disk array controller in the PCI (PCI Express) slot of the server, and secure it with screws.
12. Reconnect all the cables to the disk array controller.
13. Replace the side cover and plug the power cords. Power on the server.
14. Once the OS has booted, check whether the BBU is recognized correctly. Refer to "2. Utility Check" in "Chapter 2 Installing the BBU."



Notice

- The battery cell you have purchased is not charged at all. In this case, the [Current Write Policy] in the [Properties] of the [Logical] tab is indicated as "Write Through" on MSM.
- You can check the charge status of the battery cell by selecting [Relative State of Charge] or [Absolute State of Charge] in [Physical] tab → [Properties] on MSM.



Check

The battery cell is recyclable. Contact your service representative for proper disposal.

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