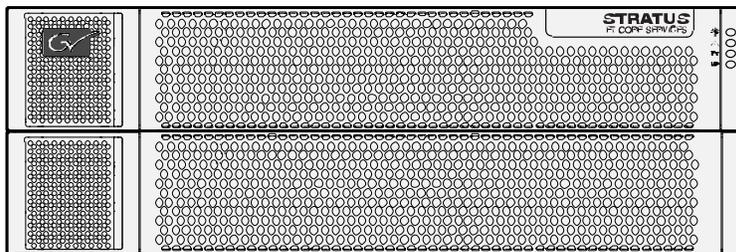


FT Server

Fault Tolerant Server Platform



Instruction Manual

CERTIFICATE

Certificate Number: 510040.001

The Quality System of:

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Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:

The design, manufacture and support of video and audio hardware and software products and related systems.

This Certificate is valid until: June 14, 2015
This Certificate is valid as of: June 14, 2012
Certified for the first time: June 14, 2000



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FT Server

Fault Tolerant Server Platform

Instruction Manual

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Grass Valley Web Site

The <http://www.grassvalley.com/support> web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Download software updates, drivers, and patches.



END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.



For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.grassvalley.com/about/environmental-policy

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About the FT Server

Introduction

The FT server is a fault-tolerant server focusing on high reliability in terms of fault-tolerance, in addition to high performance, scalability, and general versatility. In the event of component failure on one CPU/IO module, its mirrored configuration on the other module will allow system control to be switched instantaneously to the other identical CPU/IO module to assure non-stop operation. This switching occurs seamlessly from the failed CPU/IO module to the other module, minimizing loss of data or application state. You can use the FT server series in a mission-critical system where high availability is required. By the use of the Windows Server 2008 operating system, it also provides outstanding openness for general-purpose applications, etc.

Grass Valley supplies FT servers at two performance levels. At each level, CPU, memory, and drives are configured to provide specified performance characteristics. Based on the performance required to support your small, medium, or large Grass Valley system, the appropriate FT server level is provided.

In addition, there is a Type I FT server and a Type II FT server. Each server type corresponds to a different generation of the base platform. Both the Type I FT server and the Type II FT server are provided at the two performance levels mentioned above.

Related Topics

[Identifying the FT Server model](#) on page 67

Standard features

The FT server system has two CPU/IO modules with dual module redundancy, offering continuous operation in case of a failure. It offers high performance, expansion options, and high reliability outlined in the summary below.

- The system comes ready to use with quick connections for the duplex LAN, USB, and monitor connections.
- The main enclosure is rack-mountable and the main components are easy to install.
- The Fault Tolerant feature includes redundant hardware and software in one system with quick isolation of a failed module.
- The two CPU/IO modules and their hard disk drives come mirrored from the factory.
- High performance features include a powerful central processor and high speed Ethernet interface and disk access from SAS (Serial Attached SCSI) disk drives.
- High reliability is achieved by a memory monitoring feature, bus parity error detection, and error notification.
- Self diagnostics include a Power On Self-Test (POST) and a test and diagnostics utility.
- An off-line maintenance utility is also available.

To make the best use of these features, read this Instruction manual thoroughly to understand how to operate the FT server.

Product component summary

The main components of the FT server are the following:

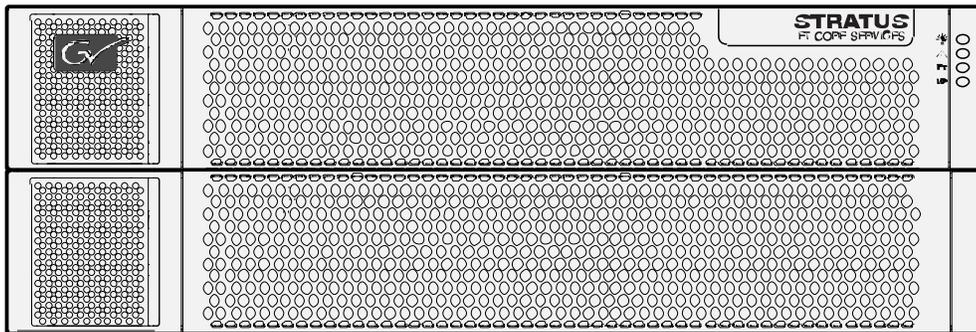
- One 4 RU high rack-mountable chassis.
- Two identical CPU/IO modules (module 0 and module 1).
- Two redundant power supplies, one in each CPU/IO module enclosure.
- Eight hard disk drive bays per CPU/IO module.
- One optical disk drive to read data from disks such as DVDs and CD-ROMs.

Main ports and connectors include:

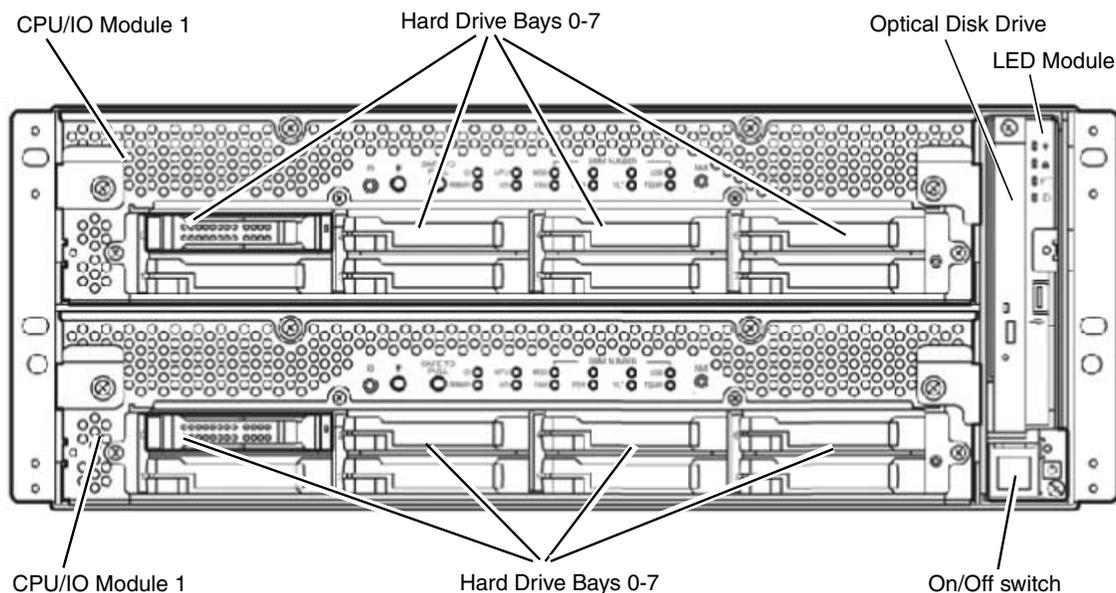
- 3 USB ports on the rear backplane for connecting devices supporting USB interface such as a mouse and keyboard.
- An Ethernet management port.
- Two Gbit Ethernet LAN connectors per CPU/IO module which are configured for teamed LAN control.
- Two COM ports for maintenance (for use with Customer Service only).
- One monitor connector for connecting a display device.

Front view

The front view of the FT server front bezel is shown below. The front bezel comes packaged separately and should be installed after rack mounting the FT server. It should remain installed during normal operation for proper cooling of the unit.



A fully loaded system is shown below with the front bezel removed. Front LED indicator states on the front bezel and on each CPU/IO module and other components visible when the bezel is removed are described in detail in the Monitoring section of this manual.

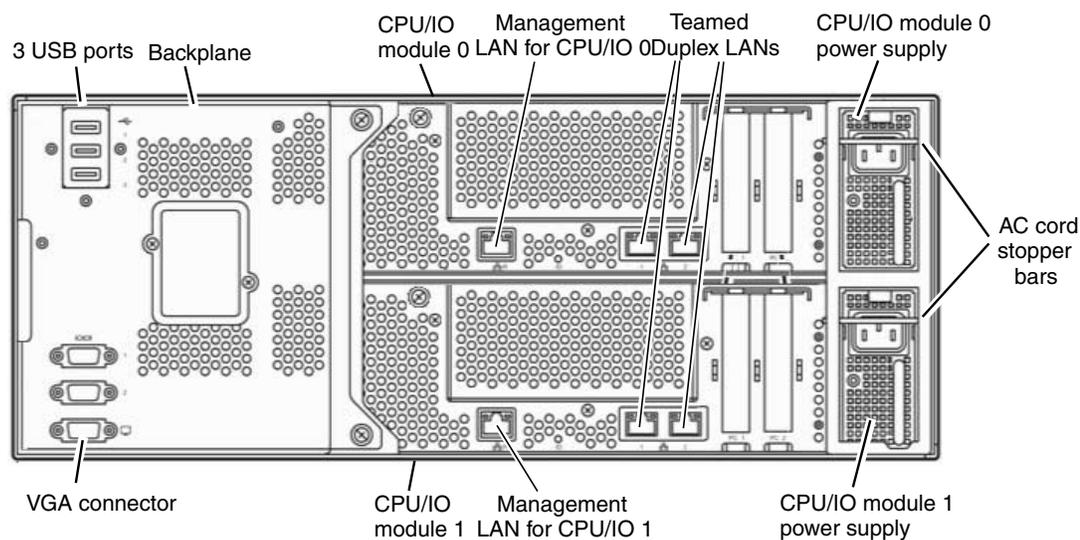


Related Topics

[Front status LEDs \(bezel removed\)](#) on page 59

Rear view components

A rear view of the main components of the FT server is shown below.



The system backplane connects to the left rear of both CPU/IO modules. It provides USB connectors for mouse and keyboard control and serial connectors for maintenance when working with Customer Service and a VGA connector for connecting to a monitor.

The CPU/IO modules each have a separate removable power supply. When an AC cord is installed in the receptacles for each power supply, the AC cord stopper bars will be pushed up. In this position, the CPU/IO modules cannot be removed until the AC cords are removed (no power to CPU/IO modules).

Each CPU/IO module has a Maintenance LAN connector and dual LAN connectors for communication. Three USB ports are available on the system backplane for mouse and keyboard connection. All system cabling is described later in this manual.

Related Topics

[Cable connections](#) on page 26

FT Server Installation Information

Installation overview

The FT server must be rack-mounted. It is a precision device and should be installed only by qualified maintenance personnel.

Observe the following warning and cautions to unpack, install, and use the FT server safely:

- Read and follow the safety section at the beginning of this manual. Failure to do so can pose a risk of a serious injury, such as a burn, personal injury or damage to physical assets.
- A fully loaded FT server chassis is heavy; have at least two people available for installation.
- This unit may be installed in a standard 19 inch tapped or untapped video rack or a standard 19 inch EIA IT rack.
- Install the product in places designated by the specifications only.
- Do not attempt to assemble or disassemble parts of this device alone.
- Use caution to avoid injury to hands and fingers when installing.

Unpacking

The FT server ships packaged as shown below.



You will need two or three people to unpack and rack the FT server safely.

To unpack the shipping box:

1. Cut the plastic bindings holding the outer box to the pallet and lift the outer box vertically to access the contents.

2. Lift off the accessory box and check for the contents listed below:
 - Assorted hardware for installing enclosure and side brackets
 - CD with OS software
 - Front bezel
 - Rack mount side brackets
3. Remove the 4RU enclosure with backplane and optical drive installed.
4. Remove the two identical CPU I/O modules.
5. Install the brackets and 4RU enclosure, then the CPU/IO modules and front bezel as described in the installation instructions for these items.

Related Topics

[Install chassis in rack](#) on page 19

[Install CPU/IO modules](#) on page 23

[Install or remove front bezel](#) on page 34

Rack types

The FT server can be installed in any of the standard 19 inch video or EIA racks listed below.

- A standard 19 inch video rack with 0.281 round untapped holes with universal spacing requires the installation of a front adapter flange and a front plate included in the accessory kit.
- A standard 19 inch video rack with #10-32UNF tapped holes requires the installation of a front adapter flange and a rear adapter flange included in the accessory kit.
- A standard EIA IT rack with square holes uses threaded core nuts to attach the screws hold to the unit in place. No adapters are required.

Procedures for all three types of rack mounting are described in this manual. Use the procedure that matches your rack type.

Installing rack rail brackets in untapped rack

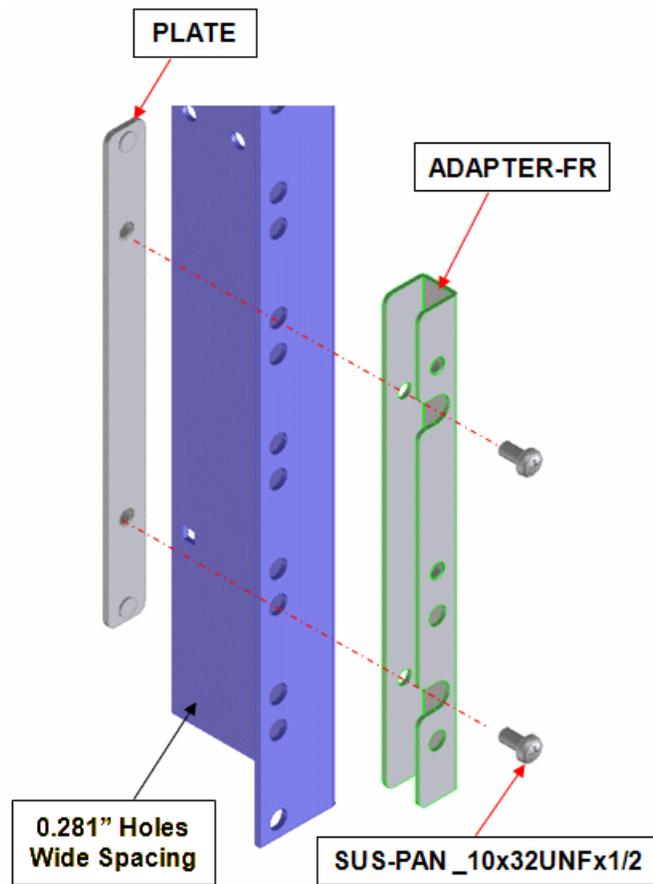
The FT server chassis requires 4RUs of space. Be sure to have another person help you to install the chassis, do not attempt to install it alone.

You will need the following hardware from the accessory kit to install the rack rail brackets to support the chassis in a untapped rack:

- 2 rack rail mounting brackets
- 2 front flange adapters (ADAPTER-FR)
- 2 plate adapters (PLATE)
- 8 panhead screws
- 4 washers

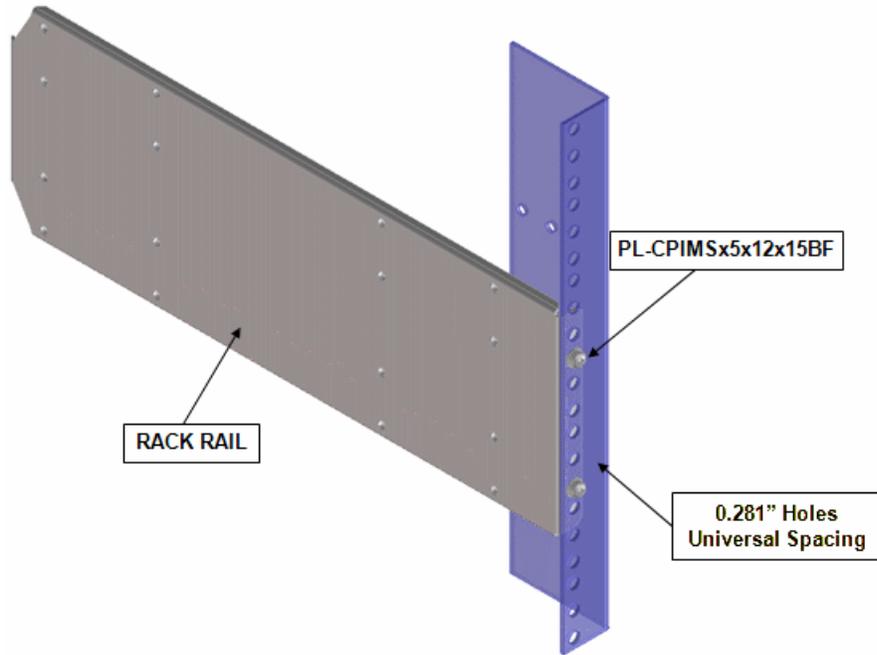
1. Locate the desired positioning of the FT server in the rack.

2. On both sides of the rack, line up the front adapter and plate as shown below.



3. Attach the front adapters and plates to the front of the rack with the panhead screws provided on the left and right sides of the rack front.

4. Now attach the rear of each rack rail bracket to the left and right rear sides of the rack using the 4 remaining panhead screws and washers. No adapters are necessary for this step.



5. Now go to the instructions for installing the FT server chassis.

Installing rack rail brackets in tapped rack

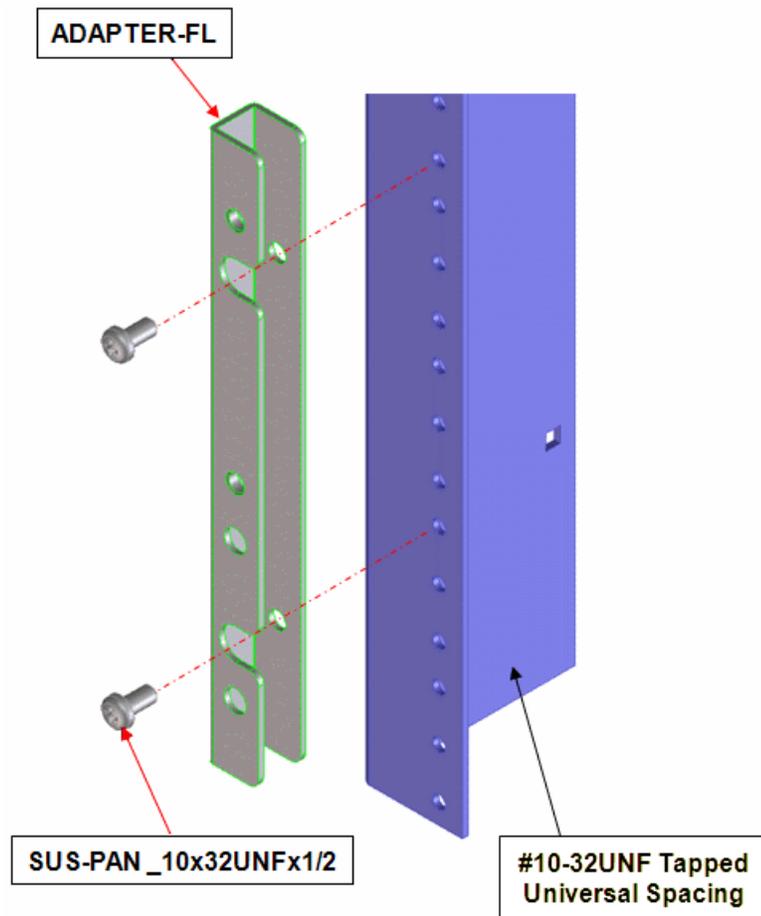
The FT server chassis requires 4RUs of space. Be sure to have another person help you to install the chassis, do not attempt to install it alone.

You will need the following hardware from the accessory kit to install the rack rail brackets to support the chassis in a tapped rack:

- 2 rack rail mounting brackets
- 2 front flange adapters (ADAPTER-FL)
- 2 rear flange adapters (ADAPTER-R)
- 8 panhead screws
- 4 panhead washers

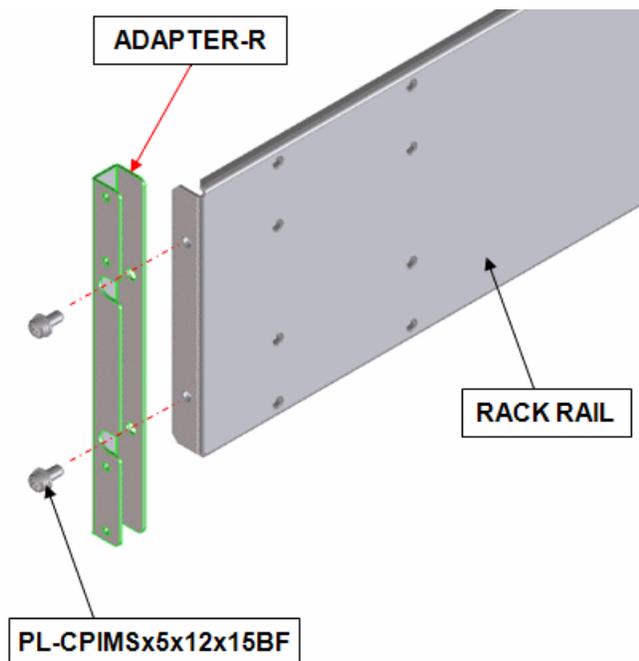
1. Locate the desired positioning of the FT server in the rack.

2. On both sides of the rack front, line up the front adapter as shown below.

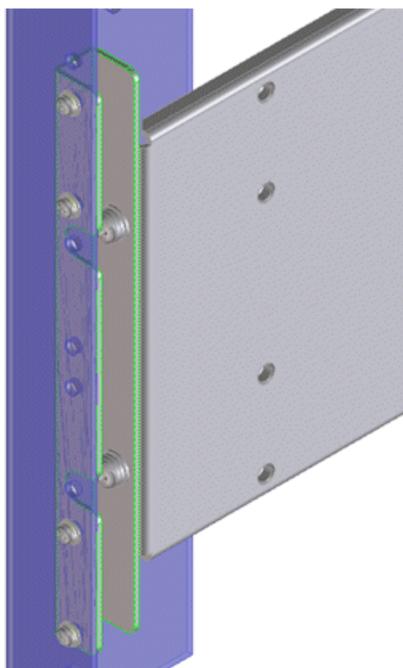


3. Attach the front adapters to the front of the rack with the panhead screws provided on the left and right sides of the rack front.

4. Attach a rear adapter to the rear of each rack rail.



5. Attach the rear of each adapter/rack rail assembly to the left and right rear sides of the rack using the 4 screws and washers.



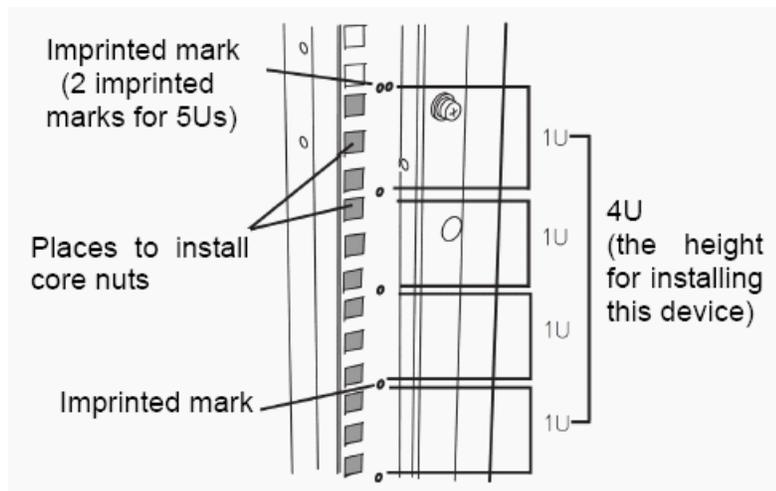
6. Now go to the instructions for installing the FT serverchassis.

Install rack rail brackets in IT rack

The FT server chassis requires 4RU of space. Be sure to have another person help you to install the chassis, do not attempt to install it alone.

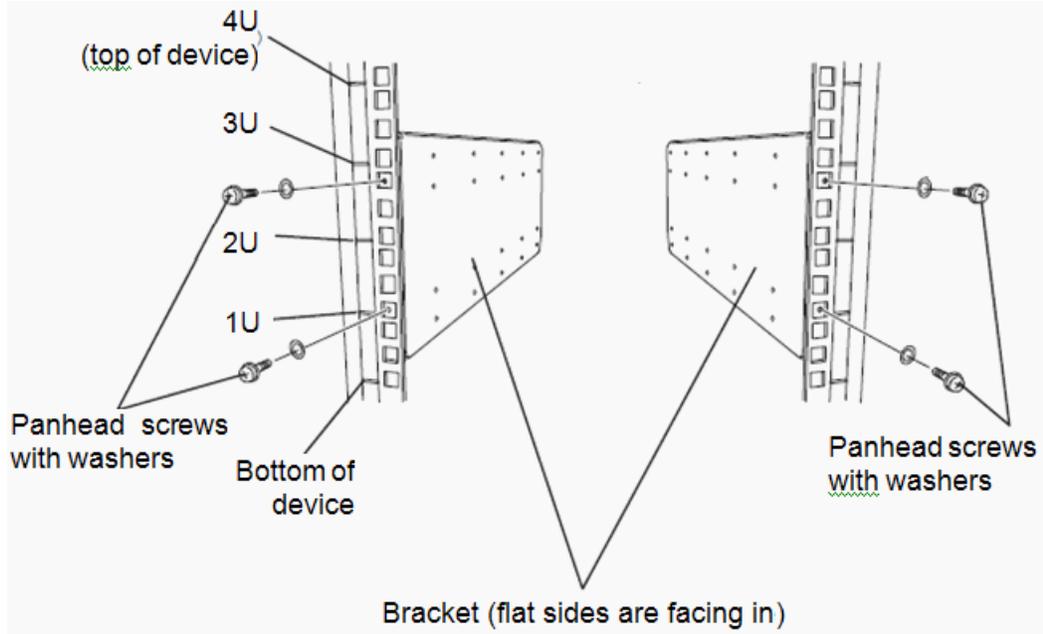
You will need the following hardware from the accessory kit to install the rack rail brackets to support the chassis in an EIA IT rack:

- 2 rack rail mounting brackets
 - 4 washers for panhead screws
 - 8 plate screws
 - 8 panhead screws
 - 4 core nuts (not provided)
1. Determine where in the rack you want to install the FT server chassis. If using an empty rack, install it in a lower position near the bottom of the rack rather than at the top to maintain balance.
 2. Next to a square hole on the rack, an imprinted mark indicates 1RU. This device is 4RU (about 176 mm), so install it between the imprinted marks that indicate the height of 4RU.

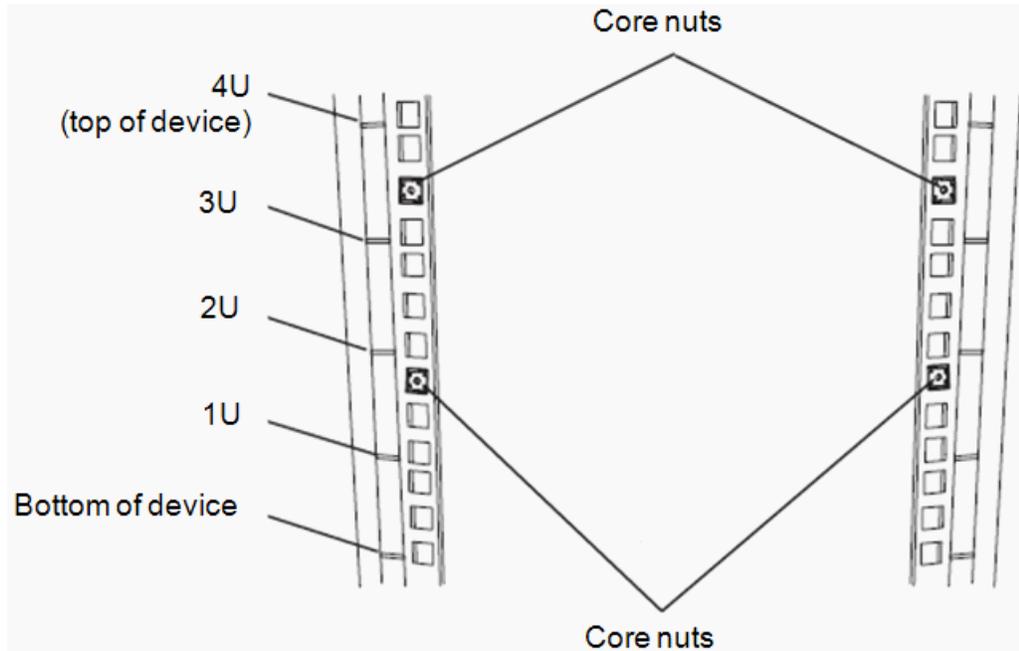


3. If the rack has front and rear doors, read the instruction that comes with the rack, and open them.

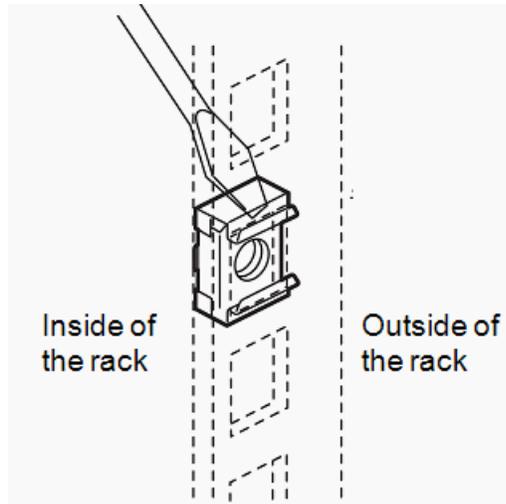
4. Install the rack rail brackets from the rear side of the rack with their flat sides facing in. Attach the brackets to the rack by installing the four panhead screws with washers just above the 1RU mark and just below the 3RU mark as shown below. Fasten the screws just enough to hold the brackets in place. Do not tighten them all the way.



5. Install the four core nuts (not provided) to the front of the rack so the left and right sides are in the same locations as shown below.



6. Install a core nut from inside of the rack. Hook either of the clips of the core nut to a square hole of the rack. then hook the other clip to a hole by a flat-blade screwdriver.



7. Now go to the procedure for installing the FT server chassis.

Temperature requirements for rack installation

The FT server requires good ventilation and proper airflow to operate properly. Make sure you meet the temperature airflow and humidity requirements listed below before installing the FT server in the rack.

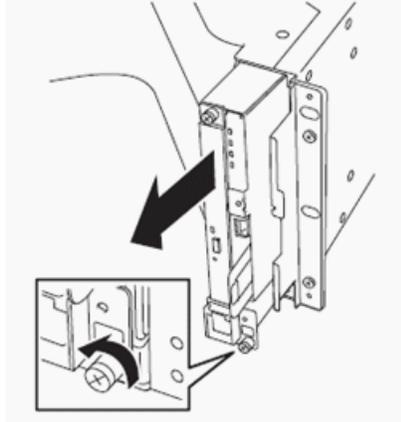
- The operating temperature of the FT server is from 10 degrees C (50 degrees F) to 35 degrees C (95 degrees F). Please take adequate precautions and measures for maintaining the proper airflow inside the rack as well as in the room so that the internal temperature can be kept within this range during operation.
- The recommended operating room temperature range is between 15 degrees C (59 degrees F) and 25 degrees C (77 degrees F).
- Optimum humidity for proper operation should be kept between 20 and 80%.
- Use only the rack installation instructions given in this manual to install the unit and other components as recommended to avoid overheating conditions.

Install chassis in rack

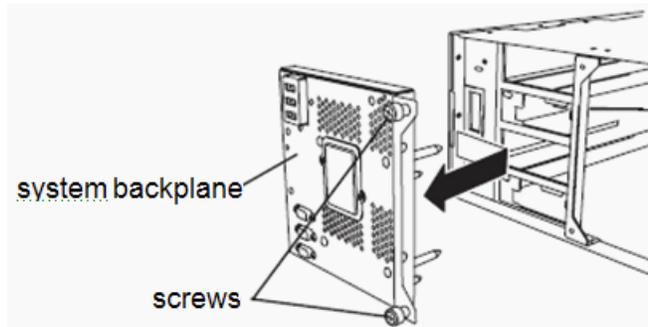
Once you have installed the rack mounting brackets, install the FT server empty chassis enclosure in the rack.

NOTE: Installation will vary slightly according to whether there is an adapter on the front of the rack. A standard EIA IT rack with no adapters is shown.

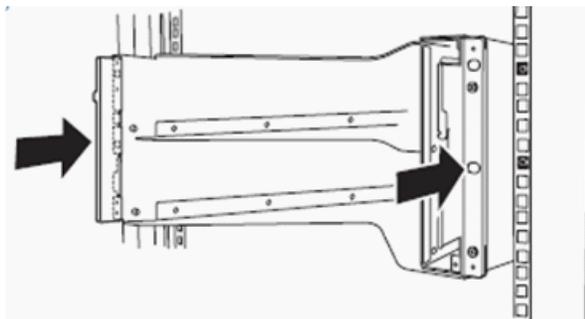
1. Remove the front unit containing the DVD drive and the LED module from the front of the chassis by loosening the screw at the bottom of the unit and pulling it out.



2. At the rear of the chassis, remove the system backplane. Loosen the two thumb screws then move the backplane slightly to the right and pull it straight out from the chassis.

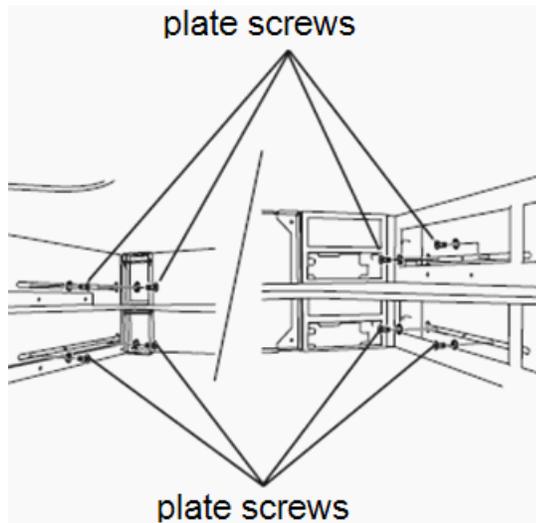


3. Insert the empty chassis into the rack from the front.

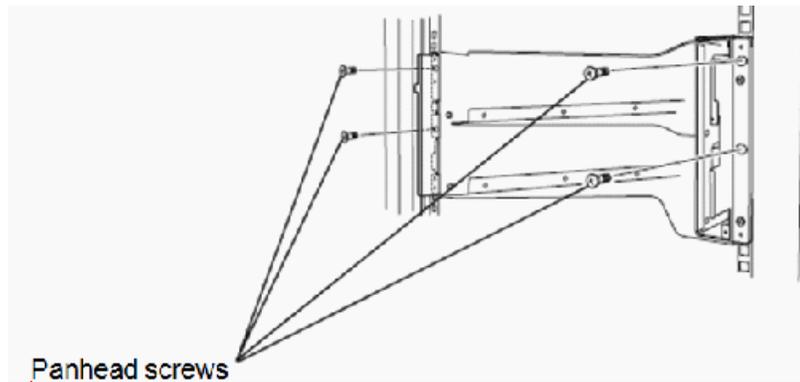


4. Align the empty chassis so it is centered on the side rack mount rails.

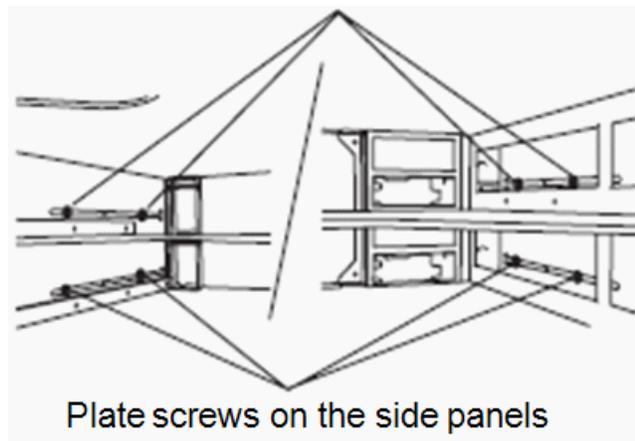
- Loosely install the 8 plate screws through the holes on the inside of the empty chassis, fastening to the threaded holes in the side rack mount rails, as shown below. Tighten just enough to hold them in place.



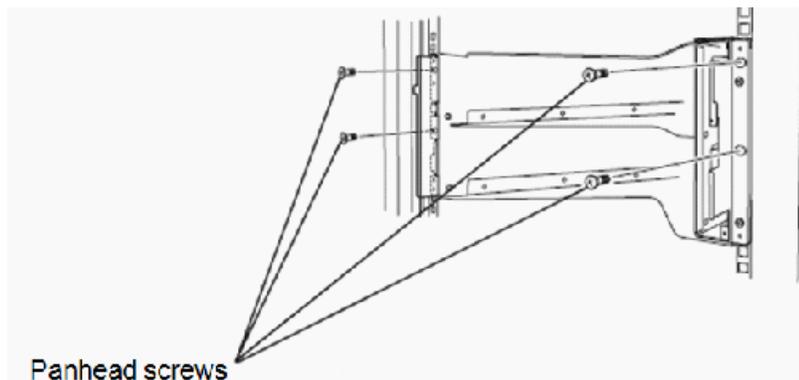
- Securely attach the front of the chassis to the rack front with 4 panhead screws.



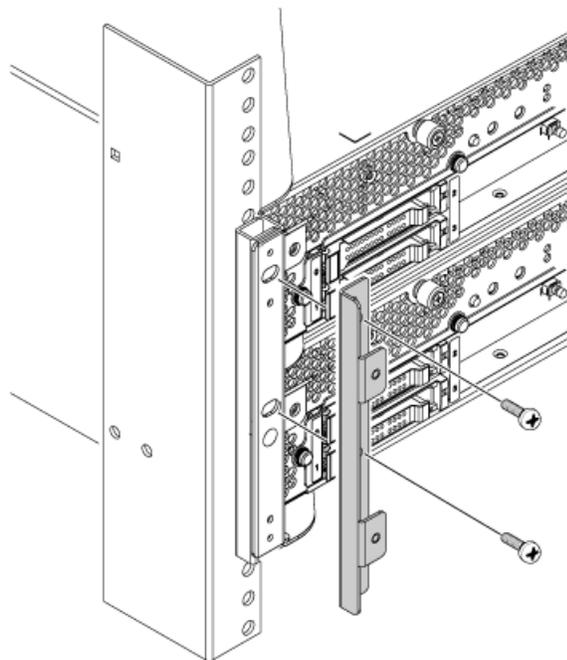
- Tighten the 8 internal plate screws you installed earlier to secure the chassis to the side rack mount rails.



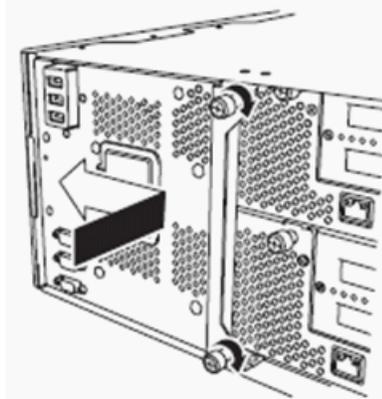
8. Remove the 4 panhead screws you installed earlier.



9. Fasten the bezel brackets to the front of the chassis on each side. Use the 4 panhead screws. Tighten securely.



10. Reinstall the system backplane in the rear of the chassis by inserting it straight into the slot then sliding it all the way to the left. Fasten the thumb screws securely by turning to the right.



11. Reinstall the front unit containing the DVD drive and LED module in the front of the chassis in the reverse order done in Step 1 of this procedure.
12. Now install the two CPU/IO modules as described in the next section.

Install CPU/IO modules

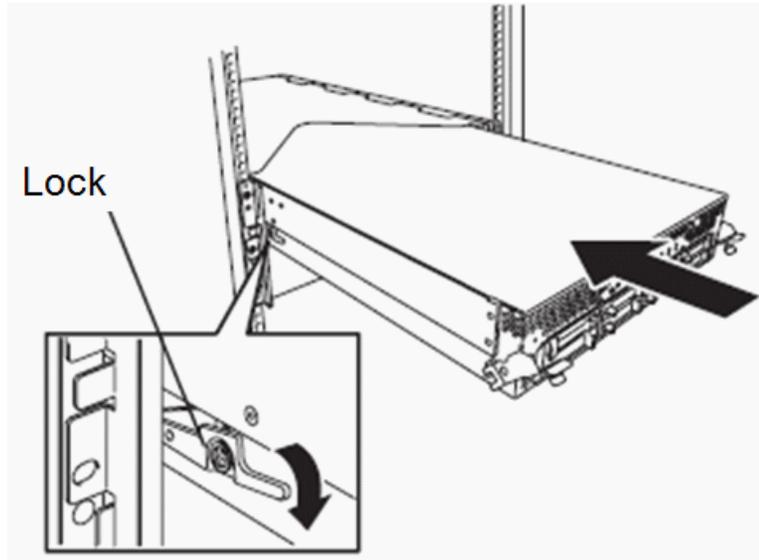
This procedure explains how to install the CPU/IO modules into the chassis enclosure once it is installed in the rack. It is recommended to have two people available to do this procedure.

There are two CPU/IO modules in the system, Module 0 (in the top slot) and Module 1 (in the bottom slot). When you receive these modules from the factory they are identical (mirrored). Either module from the factory may be installed in the top or bottom slot. Both modules have their power supply and all hard drives installed.

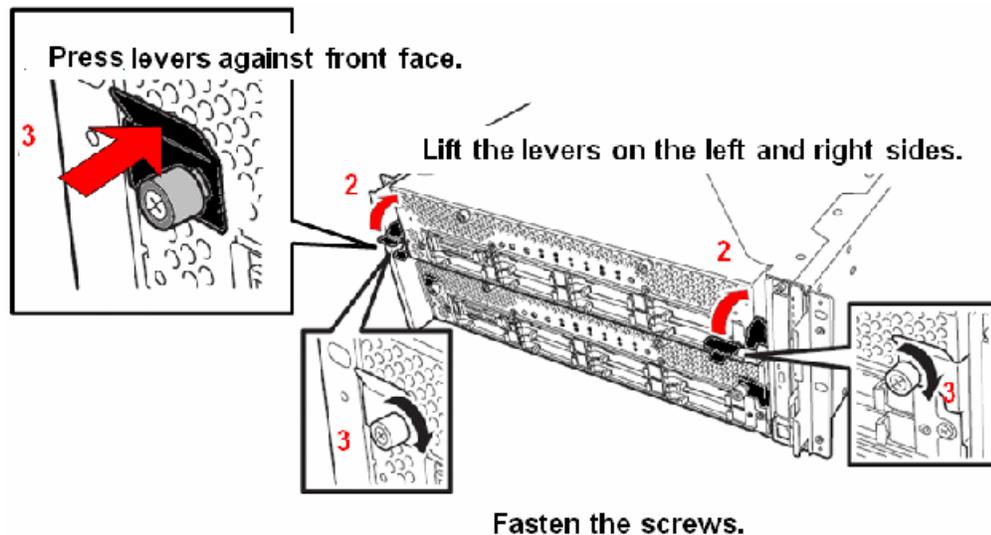
NOTE: *Upon power up, the top module will be automatically designated as the Primary and the module in the bottom slot will be designated as the Secondary. All hard drives installed have been*

mirrored at the factory. Once you have powered up the system, Primary and Secondary modules or any hard drives should not be swapped.

1. Mount either module into the enclosure by sliding it into the top slot. As you slide the module in, press down on the side locking lever on the left side of the module so the module slides in past the locking mechanism. You will hear a click when the side locking lever engages.

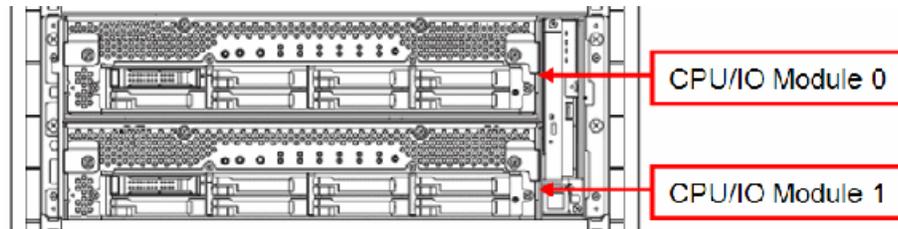


2. Once the module is all the way in, lift the front locking levers into position on both sides of the module up as shown below.
3. Press the side levers firmly against the front face as you turn the screws to the right to secure the module in the frame.



- Repeat this procedure to install the bottom module.

The resulting installation should look like the example below from the front.



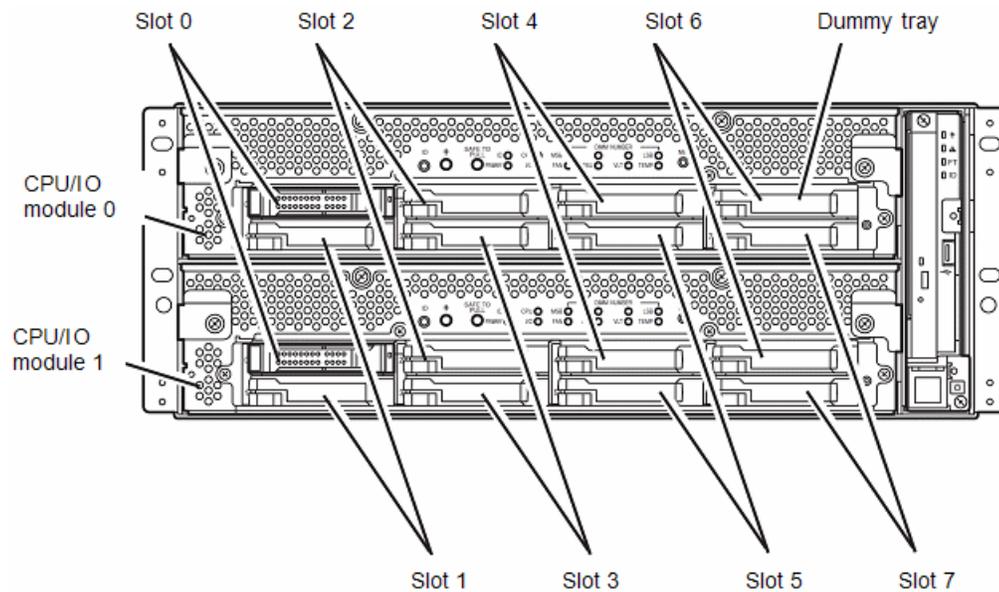
- Install the front bezel as described in the topic describing this procedure.

2.5 inch hard disk drives

The 2.5-inch hard disk drive bays in front of the FT server can mount up to 16 hard disk drives with the 2.5 inch width exclusive trays. All hard disk drives are installed and mirrored at the factory. Do not swap the positions of any hard disk drives.

The operation is executed on the created mirror volume with installed hard disk drive pairs such as slot 0 on CPU/IO module 0/1, slot 1 on CPU/IO module 0/1, slot 2 on CPU/IO module 0/1. (The OS is installed on the mirror volumes that consist of the hard disks in the slot 0.)

Hard disk drive slot locations are shown below.

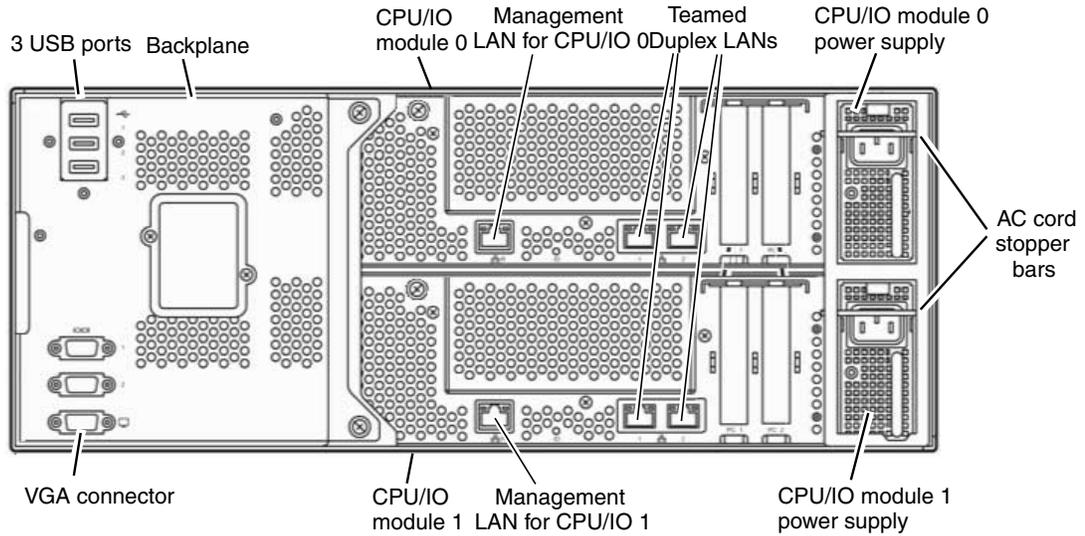


Empty slots in the 2.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect within the device. Always insert the dummy trays in the slots with no hard disk drives installed.

Cable connections

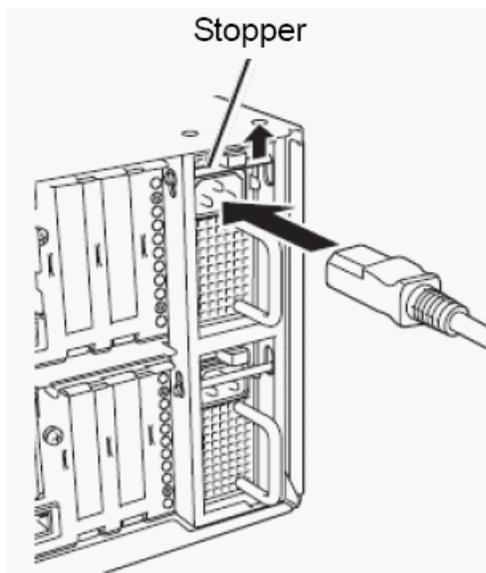
Cable connections to the FT server are made on the rear of the unit to the backplane and to both CPU/IO modules as described here.

Refer to the illustration of the rear module and its cable connections below.



1. Connect a mouse and keyboard to the USB connections on the backplane.
2. Connect a flat screen to the bottom VGA serial connector.
3. Connect the AC cords to each of the CPU/IO AC receptacles but do not power up.

Notice that when the AC cord is inserted, the AC Stopper bars will engage as shown below. The Stopper bars prevent you from removing a CPU/IO module with the AC cord connected (while powered up).



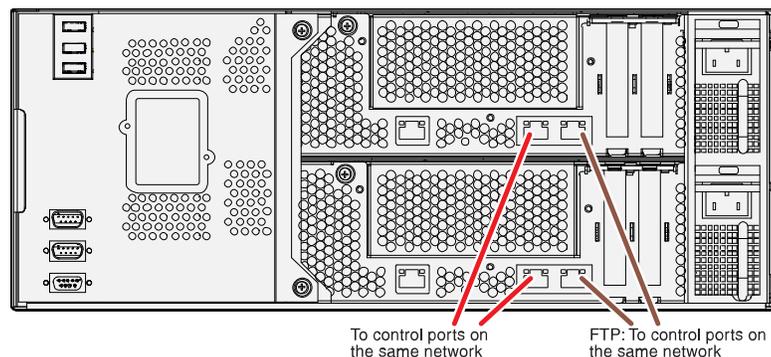
4. The Teamed Duplex LANs connect the FT server to the network as appropriate for the FT server's use as a Grass Valley system device.

STRATUS-CS-FT server: Core (B1, C1)

These cabling instructions apply to GV STRATUS Express server and GV STRATUS Core server, specified as follows:

- Grass Valley FT server with one or more roles from the following list only:
 - GV STRATUS Ingest Services (Required)
 - GV STRATUS Control Panel Service (Required)
 - GV STRATUS Common Services (Required)
 - License Manager (Required)
 - GV STRATUS Data Mover Engine (Required)
 - GV STRATUS Proxy Express Server (Required on Express server)
 - GV STRATUS Control Panel (Required)
 - GV STRATUS Core Services (Required)
 - GV STRATUS Summit MDI (Required)
 - GV STRATUS Diva MDI (Optional)
 - GV STRATUS Event Viewer
 - GV STRATUS FlashNet MDI (Optional)
 - GV STRATUS Generic FTP MDI (Optional)
 - GV STRATUS Proxy Encoder (Optional)
 - GV STRATUS Workflow Engine (Optional)
 - GV STRATUS Rules Engine (Optional)
 - GV STRATUS Xcode Control Engine (Required only on systems with GV STRATUS Rules Engine)
 - GV STRATUS Traffic Gateway (Optional)
 - Aurora Playout Server Components (Optional)
 - GV STRATUS Application (Use for test purposes only)

These roles require a connection to the control network and the FTP/streaming network.



NOTE: Network ports on CPU/IO module 1 and on CPU/IO 2 both connect to the same network. For example, both control ports connect to the same control network. Do not attempt to connect to different networks.

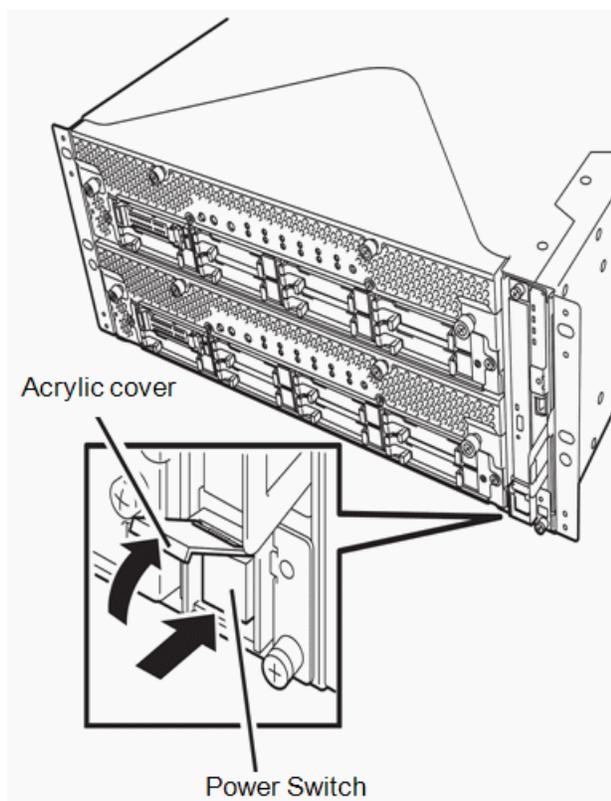
Power up

Power on the display unit and other peripheral devices connected to the server first.

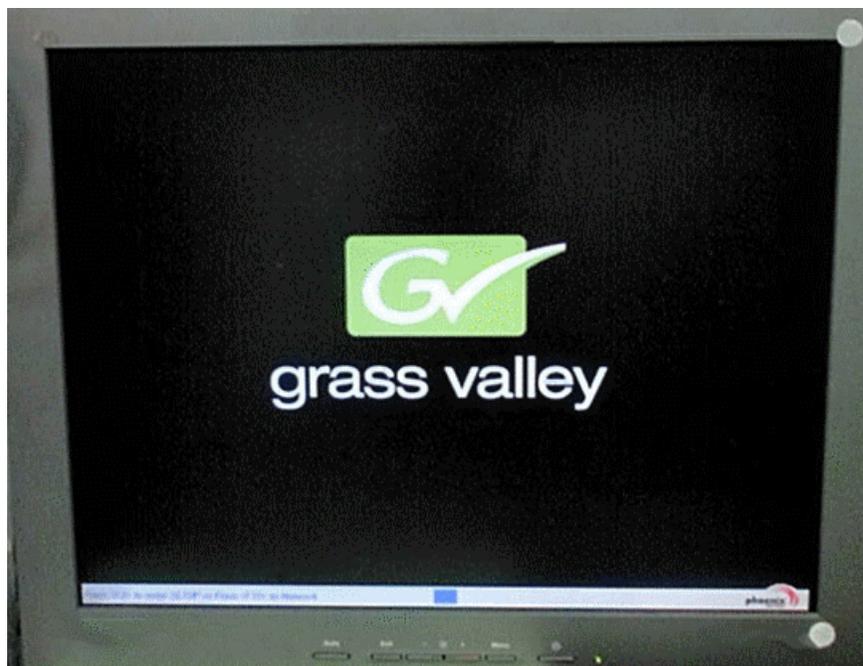
NOTE: *If the power code is connected to a power controller like a UPS, ensure that it is powered on.*

Follow the steps below to turn on the FT server power.

1. With the front bezel removed, press the power switch located on the front panel. Lift up the acrylic cover in front of the power switch, and press the power switch to turn on the FT server.



2. Once the system has booted up, the GV logo should be displayed on the screen of the display unit. While the GV logo is displayed on the screen, the FT server is performing a power-on self test (POST) to check the unit. Upon the completion of POST, the OS will start.



If the server finds errors during POST (power up self test), it will interrupt POST and display an error message.

CPU/IO module status

The CPU/IO module (0 or 1) that is started first is managed as the primary, and the module started later is managed as the secondary. If one CPU/IO module is disconnected because of a failure, the other module becomes the primary.

The CPU/IO module to be started first is selected depending on the primary/secondary status of modules when the server was shut down the last time.

The following devices are connected to the primary CPU/IO module by the connectors on the system backplane and access both CPU/IO modules 0 and 1. When one CPU/IO module is disconnected because of a failure, those are switched to the other module automatically and continue operating.

- VGA (display)
- USB device (keyboard, mouse, optical disk drive)

NOTE: Both CPU/IO modules 0 and 1 can access the optical disk drive. If one CPU/IO module is isolated because of a failure, only the active (Primary) CPU/IO module can access the drive.

NOTE: The drive letter of the optical disk drive is reallocated automatically. The unused letter is allocated to the drive in the order of D to Z. If you want to set the fixed drive letter to the optical disk drive, specify the letter which is not allocated in the order of D to Z after setting the hard disk drive letter.

POST check

POST (Power-On Self Test) is a self-test function stored on the motherboard of the FT server.

When you power on the server, the POST will start automatically to check the motherboard, ECC memory modules, CPU/IO modules, keyboard, mouse, etc. It also shows startup messages for various BIOS setup utilities.

To view details of the POST, do one of the following:

- While the POST is being performed, press the **Esc** key.
- View the POST details from the beginning without pressing the **ESC** key when the BIOS menu appears. To do this, select **System Configuration**, then **Advanced** and set the **Boot-time Diagnostic Screen** to **Enabled**.
- View the test items and details from a management PC where ESMPRO Manager is installed.

You do not always need to check the POST details. You will need to check messages when one of the following conditions exist:

- Installation of a new FT server.
- A failure is suspected.
- Several beeps occur between the time of the power-on and OS start-up.
- The display unit shows an error message.

POST flow details

This topic walks you through how POST is performed.

1. When you power on the system, one selected CPU/IO module will start up.
POST will be performed on this selected CPU/IO module.

2. The memory check starts.

A message appears at the upper left of the screen to show that the basic and expanded memories are being counted. The memory check may take a few minutes to complete depending on the server's memory size. Likewise, it may take about one minute for the screen to appear when the server is rebooted.

3. The server starts the processor check, IO check, and initialization.

Several messages appear showing the ID of the selected CPU/IO modules, information on the processor, detection of the keyboard and mouse, etc

- A message appears at the lower left of the screen (shown below), prompting for startup of the BIOS setup utility SETUP.

Press <F2> to enter SETUP

You will need to start it when you want to modify the configuration for using the server. Unless this message appears together with an error message, you do not need to start the utility to modify the configuration. (If you wait for a few seconds, POST will go on automatically.)

To start the SETUP utility, press **F2** while the above message is displayed.

When SETUP is completed, the server will reboot itself automatically and perform POST.

- A message appears prompting for startup of the SAS BIOS setup utility.

When a built-in SAS controller is detected, a message will appear prompting for startup of the SAS BIOS setup utility. (If you wait for a few seconds, POST will go on automatically.)

If you press **Ctrl + A**, the SAS BIOS setup utility will start. However, you usually do not need to use the setup utility. For setting and parameter functions, see the Configuration section of this manual.

When SETUP is complete, the server will reboot automatically and perform POST from the start again.

- The screen shows the ID numbers of the connected disk drive.
- Upon completion of POST, the password entry screen appears prior to OS startup.

The password entry screen will appear after the normal termination of POST only if you have set a password in the BIOS setup utility SETUP.

You can enter a password up to three times. If you enter an incorrect password three times, the startup will be unsuccessful. In this case, turn off the power and then turn it on again after waiting 30 seconds to boot the server.

IMPORTANT: Set a password after the OS installation.

- Upon completion of POST, the OS will start up.

POST error messages

When the server detects an error during POST, it will notify you of the occurrence in the following manners:

- Displays an error message on the display unit.

Write down the error messages. They will serve as helpful information during maintenance or if you need to contact Customer Service.

POST Message

In a normal situation, the POST Code and BIOS Build Number are displayed on the top side of the Virtual LCD.

The POST running LCD format is shown in the table below.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	X	X	X	X				B	I	O	S	Z	Z	Z	Z	
1																

The POST running LCD format detail is shown in the table below.

Display	Description
XXXX	Normal: Currently executing POST code
ZZZZ	BIOS Build Number

The message displays the state of duplication on the upper row of LCD by software driver after the OS boots.

The Boot message for the Virtual LCD is shown in the table below.

LCD Message	Row	Representation	Comments	Action
CPU broken	Upper	DC ON	If CPU part is broken, LCD is displayed on the broken CPU/IO modules.	The module displayed LCD is broken. Change the broken CPU/IO module.
I/O broken	Upper	DC ON	If IO part is broken, LCD is displayed on the broken CPU/IO modules.	The module displayed LCD is broken. Change the broken CPU/IO module or PCI card.
System Duplex	Upper	DC ON	When the system is under duplex mode, the message is displayed on both CPU/IO modules.	System duplex completed.
System Simplex	Upper	DC ON	When system is not under duplex mode, the message is displayed on the CPU/IO module working normally.	The system is working under simplex mode.

LCD Message	Row	Representation	Comments	Action
Split Mode	Upper	DC ON	The message is displayed on the standby CPU/IO module during Split mode.	Active Upgrade

POST or OS Error behavior

If the POST or OS startup does not finish normally, the server will reboot itself automatically.

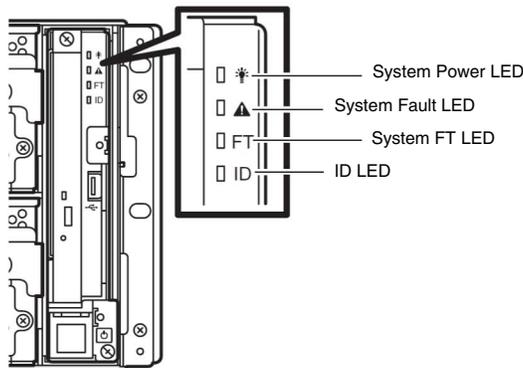
At the time of reboot, it will select the other CPU/IO module and run POST or OS startup.

In this manner, the server retries POST or OS startup with different combinations of CPU/IO modules. If POST does not finish normally with any combinations, the server will stop with the state of DC OFF or POST end with an error message displayed.

While performing retries, the server displays or registers the error types.

Front panel LEDs

On the right side of the front of the unit are four LEDs that show the current system conditions.



The LED meanings are shown in the table below.

LED Name	Function	Description
System Power LED	Indicates Power condition of system.	Green: System DC ON. OFF: System DC OFF or AC OFF.

LED Name	Function	Description
System Fault LED	LED Amber is on or blinking if either CPU/IO module is broken. When LED is on, detail information is displayed on ExpressScope (LED panel that is visible when front bezel is removed).	<p>Amber: Either CPU/IO module has a failure. A CPU/IO module can not be brought up in case that CPU/IO module is not connected to AC.</p> <p>Amber blinking:</p> <p>It is difficult to distinguish a faulty CPU/IO module. For example, indicating a loss of synchronization. In this case, it is possible that both CPU/IO modules will need to be replaced.</p> <p>When analyzing Ringbuffer, there is a possibility that the cause and faulty CPU/IO module can be found out.</p>
System FT LED	Indicates system is duplexing.	<p>Green: Duplexing</p> <p>Green blinking: Split operating by Active Upgrade.</p> <p>Off: Running under simplex.</p> <p>Off: LAN or FC function is not duplexing.</p>
ID LED	Pushing ID Switch, or demanding ID from remote.	<p>Blue: ID switch has been pressed.</p> <p>Blue blinking: Demanded ID from remote.</p> <p>Off: No demand.</p>

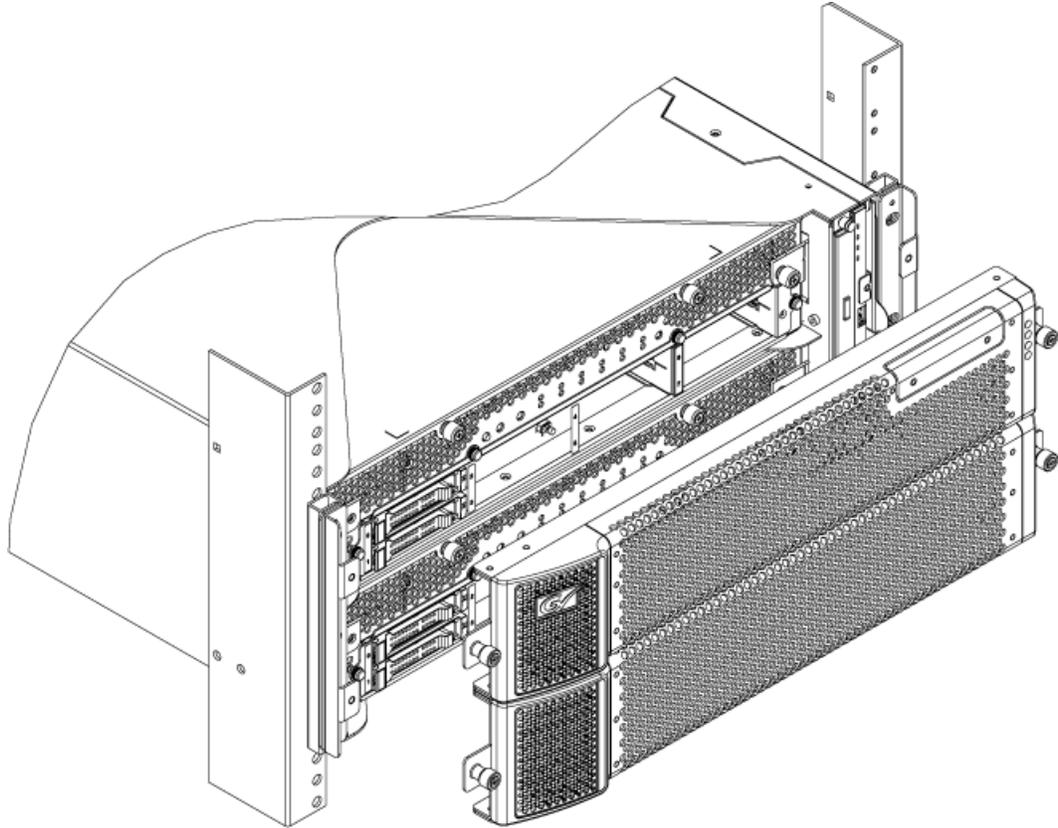
Install or remove front bezel

When your system is up and operating normally, install the front bezel. Mount it on the front of the unit and turn the thumb screws on both sides to the right.

You may remove the front bezel while the unit is powered up to check LED status.

To remove the front bezel:

1. Unscrew the two thumb screws on either side of the front bezel.



2. Remove the front bezel carefully and set in a protected location to prevent damage.

NOTE: *Keep the front bezel installed on the unit during normal operation.*

Power off

Follow the steps below to turn off the power. If the FT server is plugged to a UPS (Uninterrupted Power Supply), refer to the manuals included with the UPS or the application that controls the UPS.

1. Perform a normal shutdown from the OS.
The entire system will be powered off automatically. (Note: the POWER switch on the primary side will remain lit when AC power is supplied.)
2. Power off all peripheral devices.

Configuring the FT Server

Configuration overview

If you have received your FT server from the factory for use in a STRATUS Media Workflow system, it has been configured with all necessary STRATUS software and all server functionality such as duplexed LANs and Rapid Disk Resync (RDR) has been performed at the factory. Once you have installed and powered up your system, refer to the STRATUS documentation for further instructions.

If you have received your FT server from the factory as a replacement for an older server in a STRATUS Media Workflow system, it will require the installation of STRATUS software using SiteConfig. The Discovery Agent utility necessary for SiteConfig has been installed at the factory and all server functionality such as duplexed LANs and Rapid Disk Resync (RDR) has been performed. Once you have installed and powered up your system, refer to the STRATUS Media Workflow documentation for further instructions.

Service Program configuration

The FT server achieves the duplex system using the following service programs which are configured at the factory, in addition to dedicated drivers.

Service program names shown in **Services**:

- ftSys eService (outputs SEL (System Event Log))
- ftSys Maintenance and Diagnostics (MAD) (provides ft control management and diagnostic features)
- ftSys RPC Provider (manages WMI configuration and status)
- Windows Management Instrumentation
- ftSys SSN (controls communication between modules, such as when executing an Active Upgrade)
- SNMP Service
- Alert Manager Main Service
- ESMFSService
- ESMCommonService
- ESRAS Utility Service
- ESMPS
- Virtual Disk Service (vds)
- DHCP Client

The above programs are necessary for the FT server operation. Do not stop these services.

When minimizing the number of operating service programs temporarily is required, the following service programs may be stopped:

- ESRAS Utility Service

Make sure to restart the operations of stopped service programs immediately after the backup processes are completed.

Confirming control software version

This topic describes how to check the version of FT server Control Software, which consists of various types of software for fault tolerance. Perform the procedure when you need to check the FT server Control Software version of the current system before adding units or connecting to other ft servers.

Confirm the version following the steps below:

1. Log on the system as an authorized **Administrator**. Select **ftServer Control Software** from the list of programs to check the Product version.
2. Open **Control Panel** from the **Start** menu.
3. Open **Programs and Features**. If the **Programs and Features** icon is not displayed, open **Programs** and click **Programs and Features**.
4. Select **ftServer Control Software** from the list of programs to check the Product version.

Disk operations

The topics in this section explain disk operation using the RDR (Rapid Disk Resync) function.

The FT server duplicates disks to secure data by using the Rapid Disk Resync (RDR) function. The topics in this section describes operations such as configuration of dual settings to disks and replacement of disks.

Dual disk configuration overview

The FT server secures data by setting the dual disk configuration using the RDR (Rapid Disk Resync) function in the control software. Dual disk configuration procedures differ depending on whether you are configuring the system disk (slot 0) or the data disk (slot 1 to slot 7).

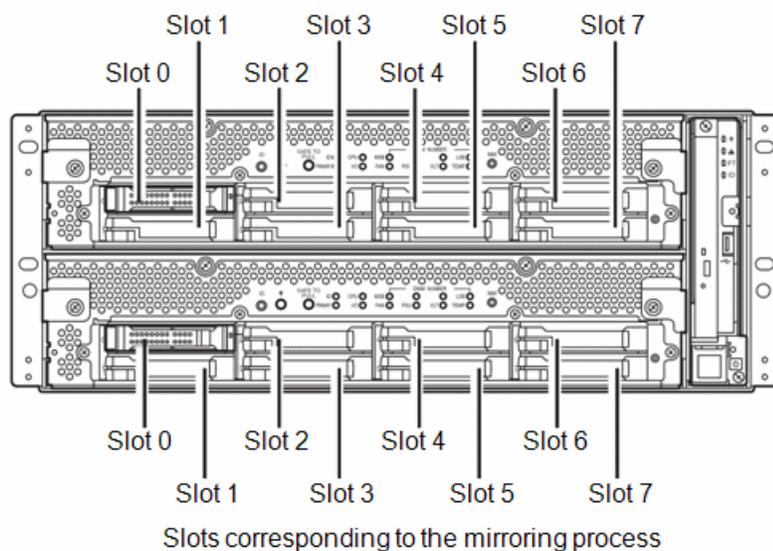
There are two different procedures:

- To configure the dual disk of the system disk, refer to the System Disk Dual Configuration Procedure.
- To configure the dual disk of the data disk, refer to the Data Disk Dual Configuration Procedure.

IMPORTANT: Refer to the following notes:

- The CPU/IO module has a processor function part and an IO function part and monitors and manages each part. The IO function part is referred to as PCI module in this section.
- Hard disk drives mounted in built-in slots need to be duplexed.

By setting RDR, as the following figure and table show, dual configuration is set between the disks of the corresponding slots and then these disks are recognized as one virtual disk by Windows (such as Disk Management and Device Manager).



Corresponding slot	
PCI module 10 Slot 0	⇔ PCI module 11 Slot 0
PCI module 10 Slot 1	⇔ PCI module 11 Slot 1
PCI module 10 Slot 2	⇔ PCI module 11 Slot 2
PCI module 10 Slot 3	⇔ PCI module 11 Slot 3
PCI module 10 Slot 4	⇔ PCI module 11 Slot 4
PCI module 10 Slot 5	⇔ PCI module 11 Slot 5
PCI module 10 Slot 6	⇔ PCI module 11 Slot 6
PCI module 10 Slot 7	⇔ PCI module 11 Slot 7

* In the table above, PCI module names correspond as follows:
 PCI module (for CPU/IO module 0) - PCI module 10
 PCI module (for CPU/IO module 1) - PCI module 11

CAUTIONS: Read the following cautions before using the RDR Utility:

- RDR can only be used on the disks inserted into the built-in slots of the FT server. It cannot be used on the dynamic disk.
- Be sure to use a basic disk as the system disk. Only a data disk can be used for a dynamic disk.
- Be sure to specify RDR to all disks inserted in the built-in slots and make duplex settings.
- Be sure to configure the RDR settings in the same way not only when the OS is installed but also when the disk is added to the PCI module.
- RDR can only be used on basic disks. If a span volume or stripe volume is needed, configure RDR to a basic disk and then change the disk to a dynamic disk using **Disk Management**.
- Before performing physical formatting, change **OS Boot Monitoring** to **Disabled** on **Server Monitoring Configuration** in the BIOS setup utility.

- If the system is shut down (or restarted) while the mirror is broken, or a long time (30 minutes or longer) has passed after the mirror is broken, the mirror resynchronization target will be the entire area of the partition existing on the disk. For example, if the mirroring has been broken due to a PCI module failure, when you shut down the system and replace the PCI module in such a state, the entire area of the partition existing on the disk needs to be resynchronized.
- Create a data disk partition after configuring the RDR. If you create a data disk partition before configuring the RDR, the partition's drive letters may be deleted when the RDR is configured.

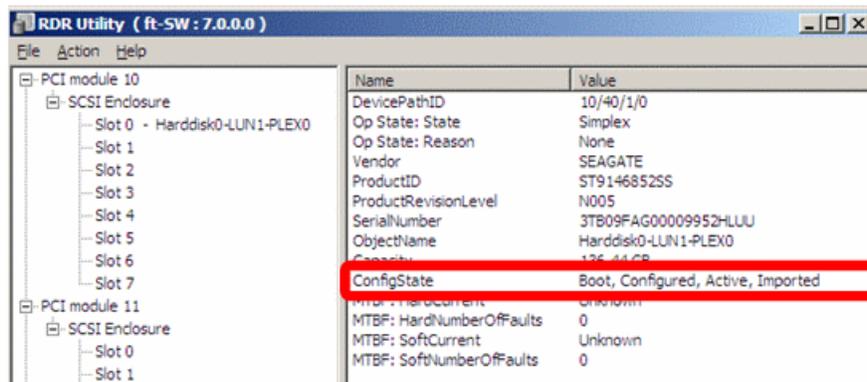
System disk dual configuration procedure

Read the Dual Disk Configuration Overview before performing this procedure.

Configure the dual disk of the system disk with the following procedure.

NOTE: To perform this procedure, you need to log on as an administrator or a member of an administrator group.

1. Go to **Start | All Programs | RDR | RDR Utility** and start the RDR utility. On the left pane of the RDR utility, select **Slot 0** of PCI module 10 under **SCSI Enclosure** and confirm that the **ConfigState** on the right pane reports: **Boot, Configured, Active, Imported**.



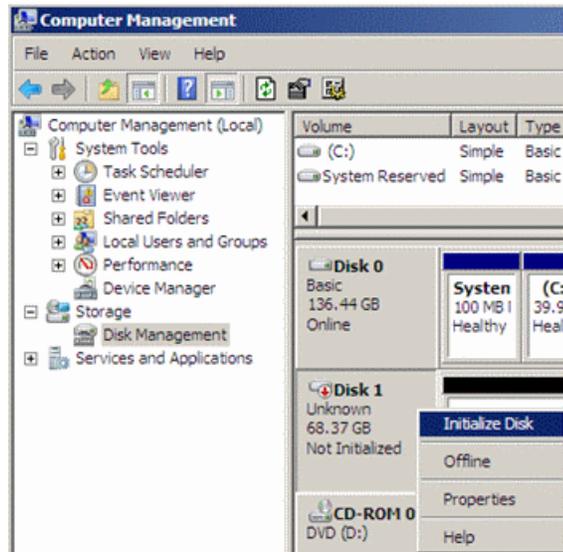
TIPS:

- The RDR Utility display does not refresh automatically. From the menu, go to **Action** and click **Refresh** or press the F5 key every time you conduct disk-related operations such as connecting/disconnecting disks or configuring the RDR.
- On the RDR Utility, PCI module names appear as follows. PCI module (CPU/IO module 0) – PCI module 10 PCI module (CPU/IO module 1) – PCI module 11.

NOTE: Be sure to use new disks or physically formatted ones with the same capacity as the synchronization source disk. If you use other disks, dual configuration will not be correct.

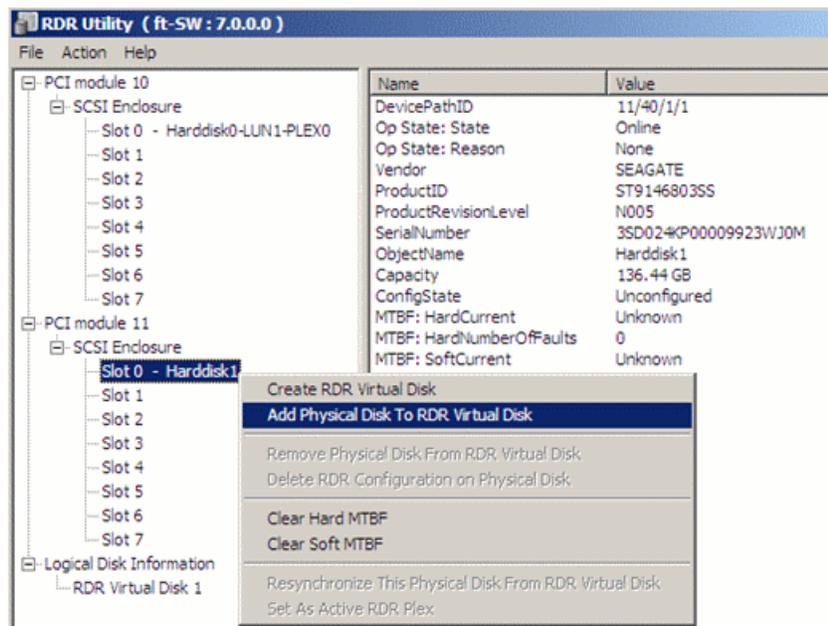
2. Insert the disk for the dual configuration into Slot 0 of PCI Module 11.

3. Start **Computer Management** by going to **Start | Administrative Tools** and select **Disk Management** in the left tree. If the disk reports **Not Initialized** on the right pane, right-click on the relevant disk to initialize.

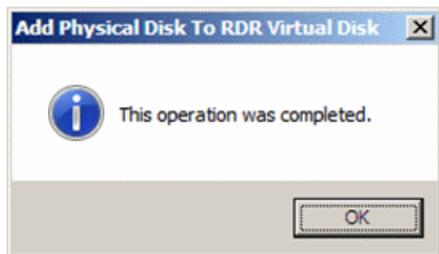


IMPORTANT: A popup window prompting you to reboot appears when inserting or initializing the disk; however, you do not need to reboot the system. Select **Restart Later** to exit the popup window.

4. Right-click on Slot 0 of PCI module 11 from the left pane of the RDR Utility and click **Add Physical Disk To RDR Virtual Disk**.

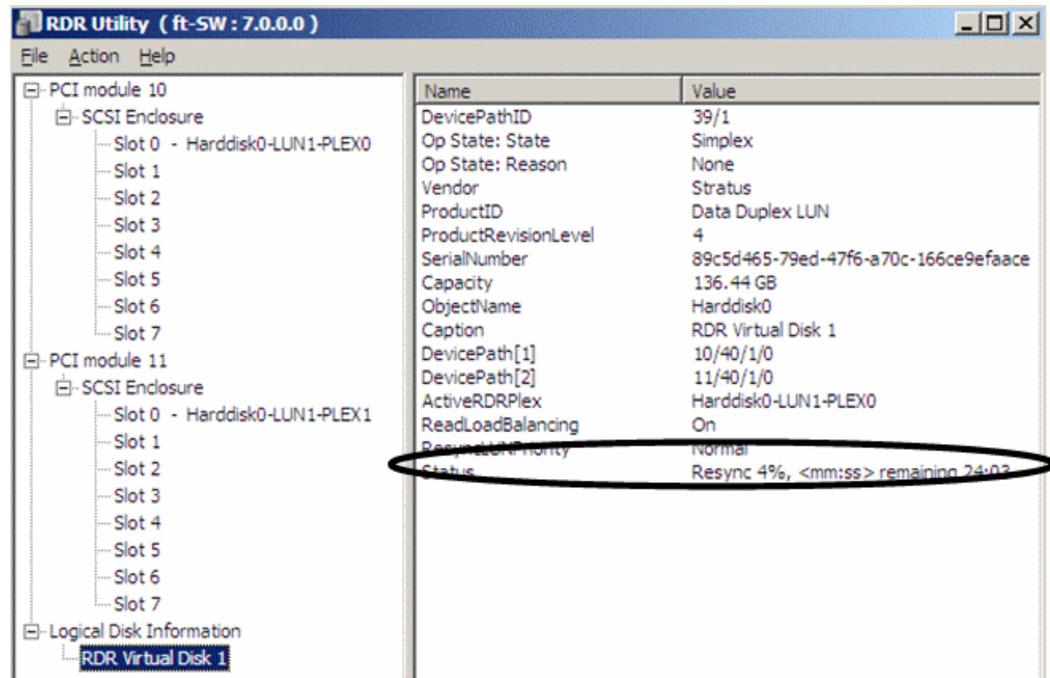


5. Click **OK**.



- Verify that disk synchronization has been started and the status of the DISK ACCESS LED and RDR Utility display changes during synchronization as described in the table and RDR Utility screen below:

During synchronization	Disk Access LED	RDR Utility	
Synchronization source disk	Amber and blinking	Condition: Simplex	Status: N/A
Synchronization destination disk	Amber and blinking	Condition: Syncing	Status: N/A
RDR Virtual disk	N/A	Condition: Simplex	Status: Resync x % (x=0, 4, 8,...96)



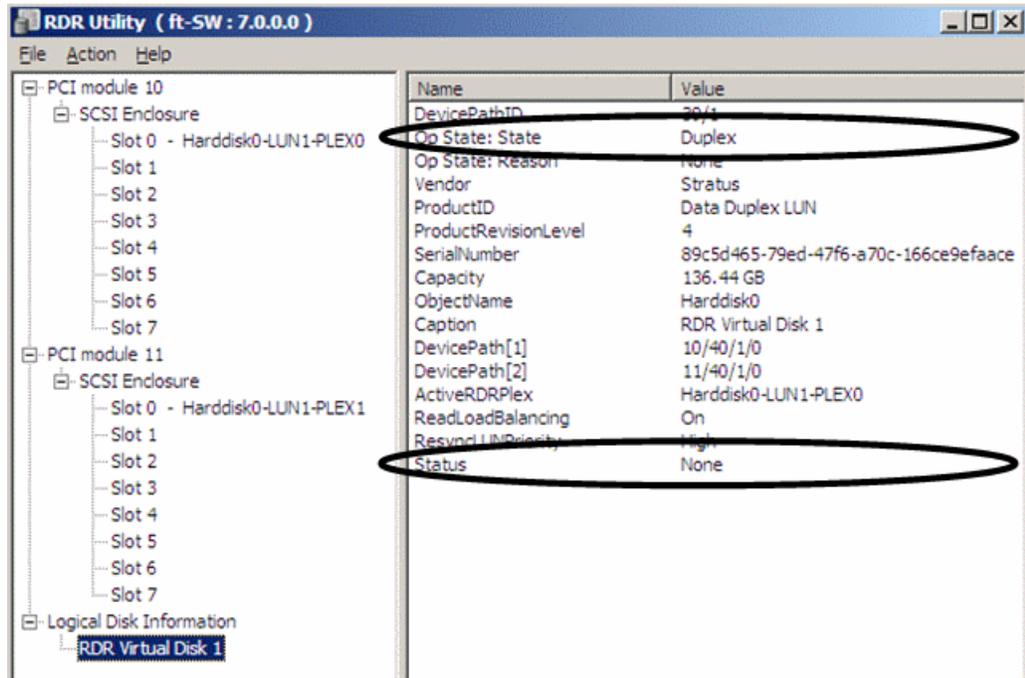
IMPORTANT:

- The time required for synchronization varies depending on the partition size on the disk. For a 40GB partition, it takes about 50 minutes.
- Setting dual disk configuration may not complete if you reboot the system during the synchronization. Do not reboot the system before the synchronization process completes.
- If the system stops by terminating Windows improperly such as pressing the **Power** button, the whole disk area already synchronized will be resynchronized after rebooting the system.

Verify that disk synchronization is complete by noting that the status of the DISK ACCESS LED and RDR Utility display change as described in the table and RDR Utility screen below:

Synchronization completed	Disk Access LED	RDR Utility	
		Condition	Status

Synchronization completed	Disk Access LED	RDR Utility	
Synchronization source disk	Green and blinking	Duplex	N/A
Synchronization destination disk	Green and blinking	Duplex	N/A
RDR Virtual disk	N/A	Duplex	None



Data disk dual configuration procedure

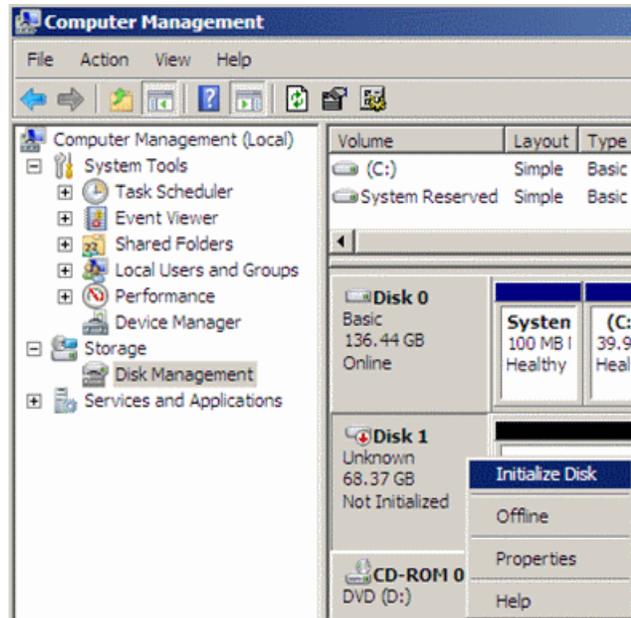
NOTE: Read the Dual Disk Configuration Overview before performing this procedure.

Follow the procedure below to configure dual data disks for slots 1 to 7.

IMPORTANT: The following procedure describes how to configure the dual disk for Slot 1. To configure the dual disks for Slot 2 to Slot 7, follow the same instructions for Slots 2-7 as Slot 1, selecting the proper disk.

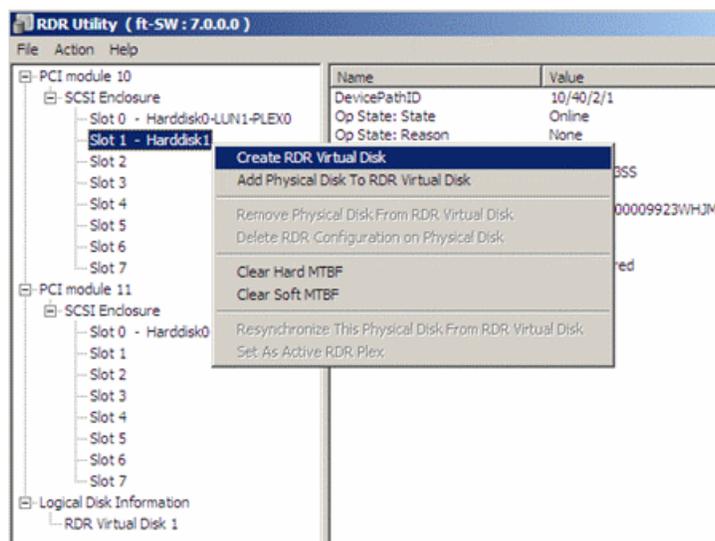
1. Insert a disk for the dual configuration into slot 1 of PCI Module 10. If a disk is already mounted, this procedure is not necessary. Go to step 2.

2. Start **Computer Management** by going to **Start | Control Panel | Administrative Tools**, and select **Disk Management** on the left tree. If the disk which is to be set as dual configuration shows as **Not Initialized** on the right pane, right-click on the relevant disk to initialize.



IMPORTANT: A popup window prompting to reboot appears when you insert or initialize the disk; however, you do not need to reboot the system. Select **Restart Later** to exit the popup window

3. Go to **Start | All Programs | RDR | RDR Utility** and start the RDR Utility. On the left pane of the RDR Utility, right-click on the Slot 1 disk of PCI Module 10 and choose **Create RDR VirtualDisk**.



NOTE: Depending on the disk status, it takes time to set RDR, and the RDR Utility may stop for a few minutes. This is not an error. Allow it to finish.

4. When the dialog box shown below comes up asking you to do a system reboot, click **Yes**.



5. Click **OK** when the operation complete dialog box appears.

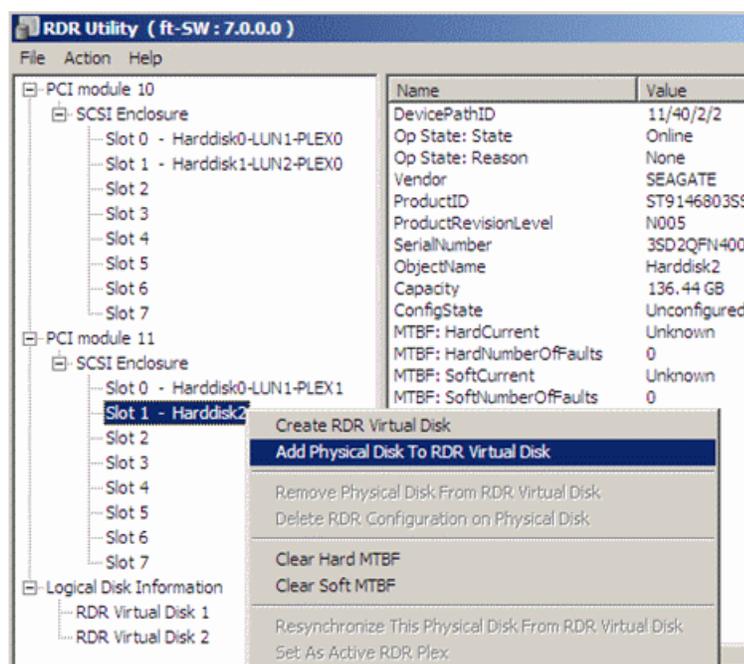


NOTE: *If you set RDR on a disk that includes a system partition disabled to mount, a system restart pop-up message appears. The system reboots after 2 minutes after clicking Yes. After rebooting, perform the procedures starting with step 6 below.*

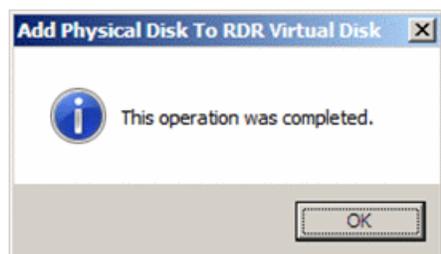
6. Insert the disk to perform dual configuration into the Slot 1 of PCI module 11, and perform the procedure in step 2. If a HDD is already mounted, this procedure is not necessary. Perform the procedure in step 2 only.

NOTE: *Be sure to use new hard drive disks or physically formatted ones with the same capacity as the synchronization source disk. If you use other disks, dual configuration will not work properly.*

- Right-click on Slot 1 of the PCI module 11 from the left pane of the RDR Utility, then click **Add Physical Disk To RDR Virtual Disk**.

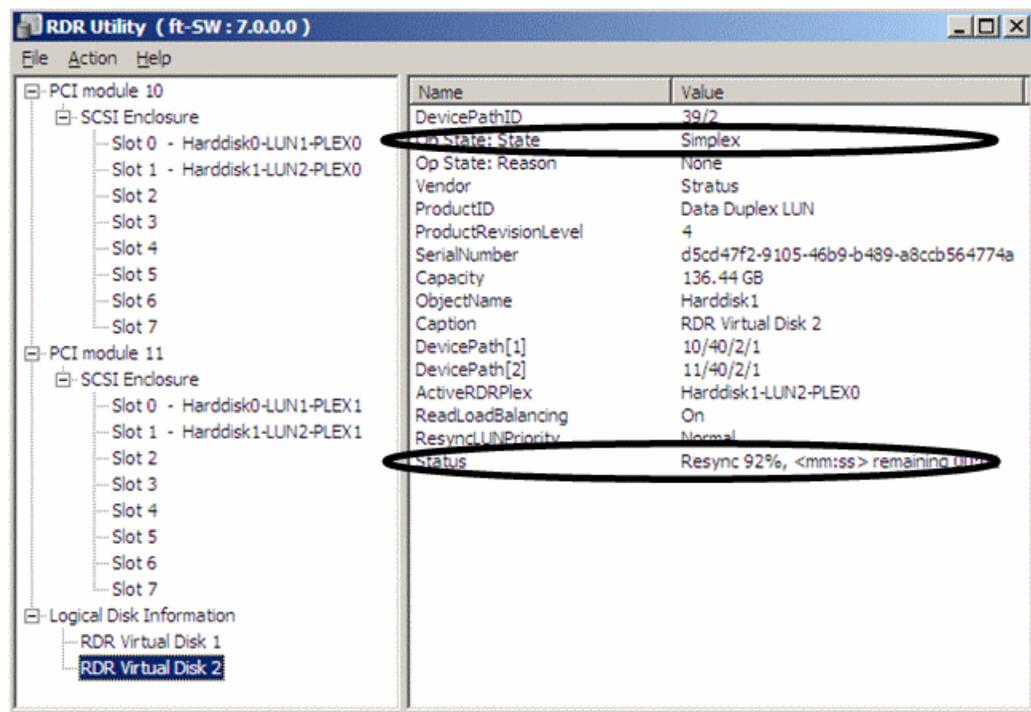


- Click **OK** in the dialog box that appears.



- Verify that disk synchronization has started and the status of the DISK ACCESS LED and RDR Utility display changes as shown in the table and the RDR Utility screen below.

During synchronization	DISK ACCESS LED	RDR Utility	
		Condition	Status
Synchronization source disk	Green and blinking	Online	N/A
Synchronization destination disk	Amber and blinking	Syncing	N/A
RDR Virtual disk	N/A	Simplex	Resync X % (x = 0, 4, 8, ...96)

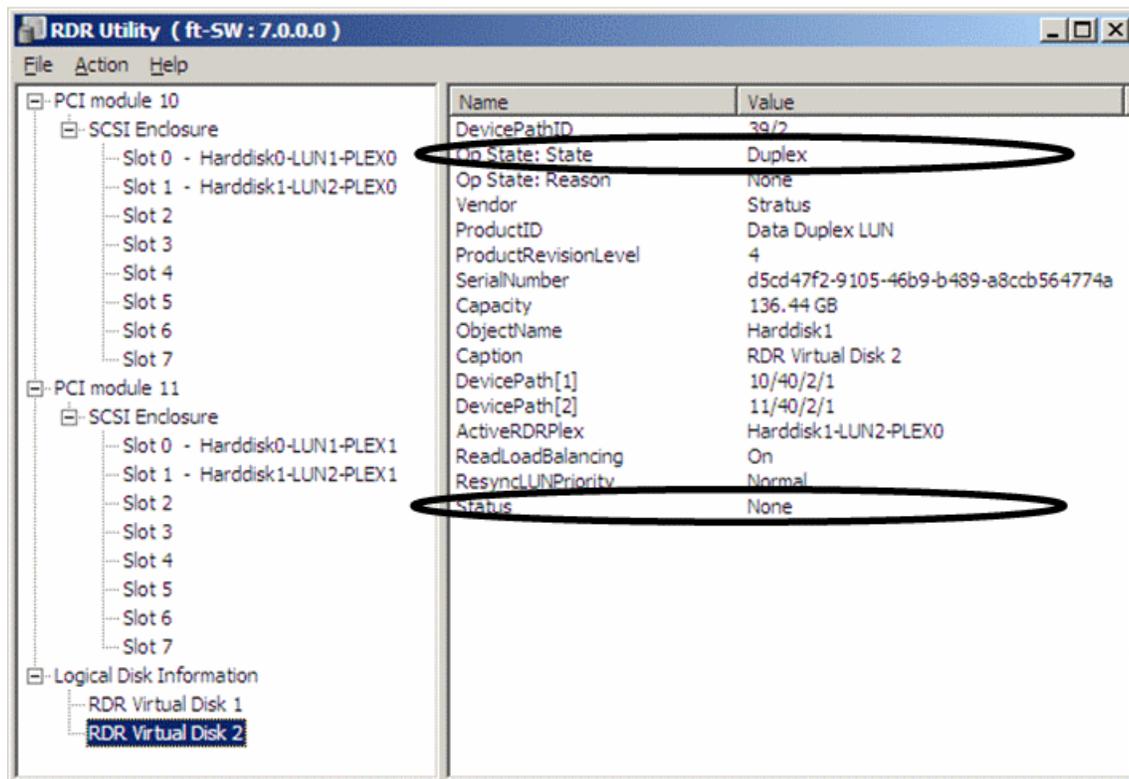


IMPORTANT:

- The time required for synchronization varies depending on the partition size on the disk. For a 73GB partition, it takes about 80 minutes. When the partition does not exist on the disk, the synchronization is completed immediately after the RDR is set, and Op State: State changes to Duplex. However, when the dynamic disk is used, the time required for synchronization depends on the disk size regardless of whether or not the partition exists on the disk.
- Setting dual disk configuration may not complete if you reboot the system during the synchronization. Do not reboot the system before the synchronization process completes.
- If the system stops by improper termination of Windows such as pressing the **Power** button, the entire synchronized disk area will be resynchronized after rebooting the system.

Verify that disk synchronization is complete by noting that the status of the DISK ACCESS LED and RDR Utility display change as described in the table and RDR Utility screen below.

Synchronization completed	Disk Access LED	RDR Utility	
		Condition	Status
Synchronization source disk	Green and blinking	Online	N/A
Synchronization destination disk	Green and blinking	Online	N/A
RDR Virtual disk	N/A	Duplex	None



10. Do this procedure for all hard disk drives.

Re-synchronize physical disk from RDR virtual disk

Disks whose synchronization by RDR is cancelled for reasons including a failure can be re-synchronized using the following procedure:

1. Start the RDR Utility and right-click a target disk in the left pane and click **Resynchronize This Physical Disk From RDR Virtual Disk**.
2. In the **Resynchronize This Physical Disk From RDR Virtual Disk** dialog box, click **OK**.

- Confirm that the re-synchronization starts and the status of disks changes as shown below:

Resynchronizing	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	Amber (Blinking)	Simplex	N/A
Destination disk	Amber (Blinking)	Syncing	N/A
RDR Virtual disk	N/A	Simplex	Resync x percent (x=0, 4, 8, ..., 96)

Synchronization completed	DISK ACCESS LED	RDR Utility	
		Op State: State	Status
Source disk	Green (blinking)	Duplex	N/A
Destination disk	Green (blinking)	Duplex	N/A
RDR Virtual disk	N/A	Duplex	None

Set as active RDR plex

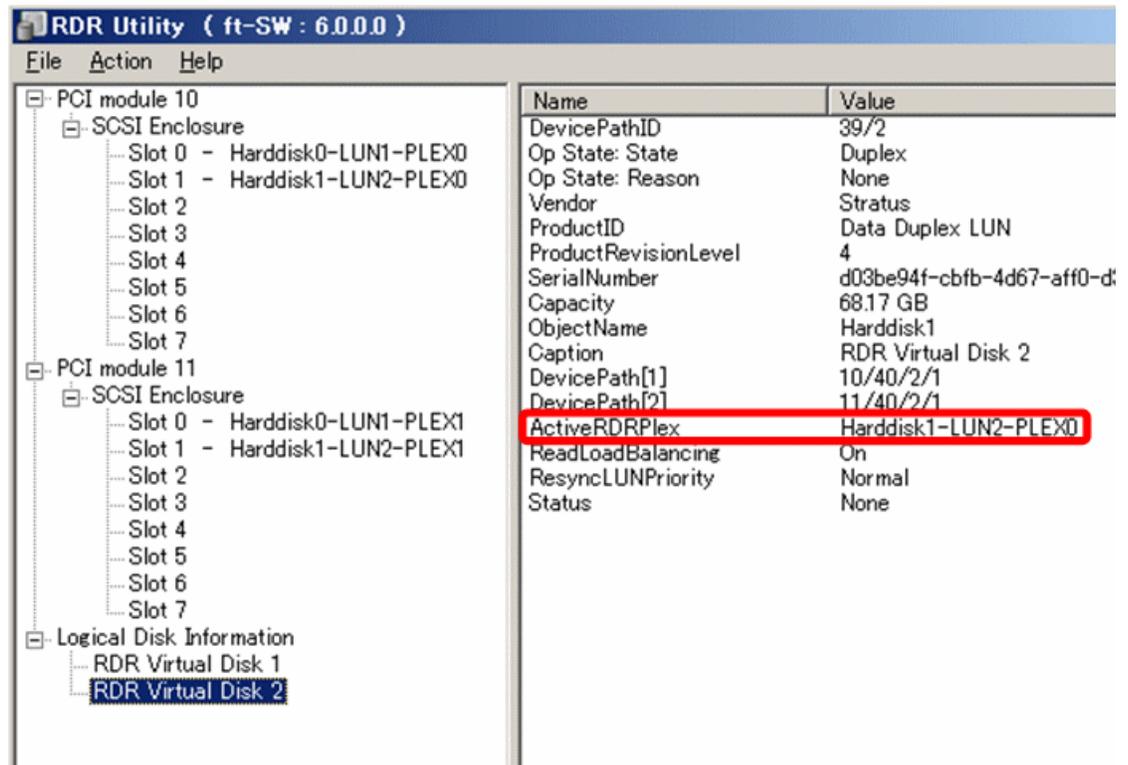
A physical disk can be set as “Active RDR Plex” by a command.

Active RDR Plex is the disk on which the data reading process is performed when Load Balancing of RDR Virtual Disk is off.

- Start the RDR Utility and right-click a target disk in the left pane and click **Set As Active RDR Disk**.

- In the **Set As Active RDR Plex** dialog box, click **OK**.

Active RDR Plex can be viewed from **Active RDR Plex** of the RDR Virtual Disk. (In the image below, the disk in slot 1 of PCI module 10 is set to Active RDR Plex among physical disks constructing RDR Virtual Disk 2.)



Verify RDR virtual disk

To check whether the synchronization by RDR has been performed, use the following steps:

- Start the RDR Utility and right-click on **RDR Virtual Disk x** in the left pane and click **Verify RDR Virtual Disk**.
- In the **Verify RDR Virtual Disk** dialog box, click **OK**. The progress of verification can be viewed using the RDR Utility.

	Verifying	Verification completed
Status of RDR Virutal Disk x	Verify x percent (x=0, 4, 8, ..., None 96)	

Tips:

- The verification process is automatically performed every week.
- The time required for verification depends on the disk size and load. For a 73GB disk, it takes about 90 minutes.

Stop verifying RDR virtual disk

Verification of RDR virtual disk in progress can be stopped with the procedure below:

1. Start the RDR Utility and right-click **RDR Virtual Disk x** in the left pane and click **Stop Verify RDR Virtual Disk**.
2. In the **Stop Verify RDR Virtual Disk** dialog box, click **OK**.

Set resync priority

The priority of synchronization by RDR can be specified. By changing the priority, the I/O load during synchronization can be reduced using the following steps:

1. Start the RDR Utility and right-click on **RDR Virtual Disk x** in the left pane then click **Set Resync Priority**.
2. When a dialog box appears, select **Low**, **Normal**, or **High** (the default is **Normal**) and click **OK**.
3. In the **Set Resync Priority** dialog box, click **OK**.

Set LUN load balancing

Load balancing can be specified as on or off.

When the load balancing is on (default), the read process is performed alternately from two physical disks forming the RDR Virtual Disk to improve performance. When it is off, the read process is performed from the physical disk specified as Active RDR Plex. To set the load balancing on or off, use the following procedure.

1. Start the RDR Utility, right-click on **RDR Virtual Disk x** in the left pane to change the priority and click **Set RDR LUN Load Balancing**.
2. When a dialog box appears, select **On** or **Off** (the default is **On**) and click **OK**.
3. In the **Set RDR LUN Load Balancing** dialog box, click **OK**.

Build dynamic disk

Use Windows utilities and build a Dynamic disk with all the disks except for drive 0.

1. From the Windows desktop, right-click **My Computer** and select **Manage**.
2. Change the CD ROM drive letter to *F:*.
3. Select **Disk Management**.
4. Right-click on one of the unallocated **Disk 1**.
5. Select **New Striped Volume**.
6. Click **Next**.
7. Add disk **2 – 4** to the group in the Selected column.
8. Click **Next**.
9. Assign drive letter **D**.
10. Set file system to **NTFS**.

11. Set Allocation unit size to **default**.
12. Set Volume label to **Data**.
13. Verify that **Perform a quick format** is selected.
14. Click **Finish**.

Duplex LAN configuration overview

The FT server duplex LAN is configured at the factory with Adapter Fault Tolerance (AFT) functionality. This is correct, even for an FT server on a system with multiple control networks, such as a redundant K2 SAN. Since the FT server provides its own "redundancy" it does not participate in the K2 SAN's redundant control networks. AFT is a feature that places more than one LAN controller on the same LAN (same segment), and automatically switches the process of the primary controller to the backup controller when any trouble occurred on the primary.

Instructions are given in this manual for doing the duplex LAN configuration in the unlikely event it is required at the customer site. If you create a system-specific recovery disk image, all server configuration can be restored after a failure.

Set duplex LAN configuration

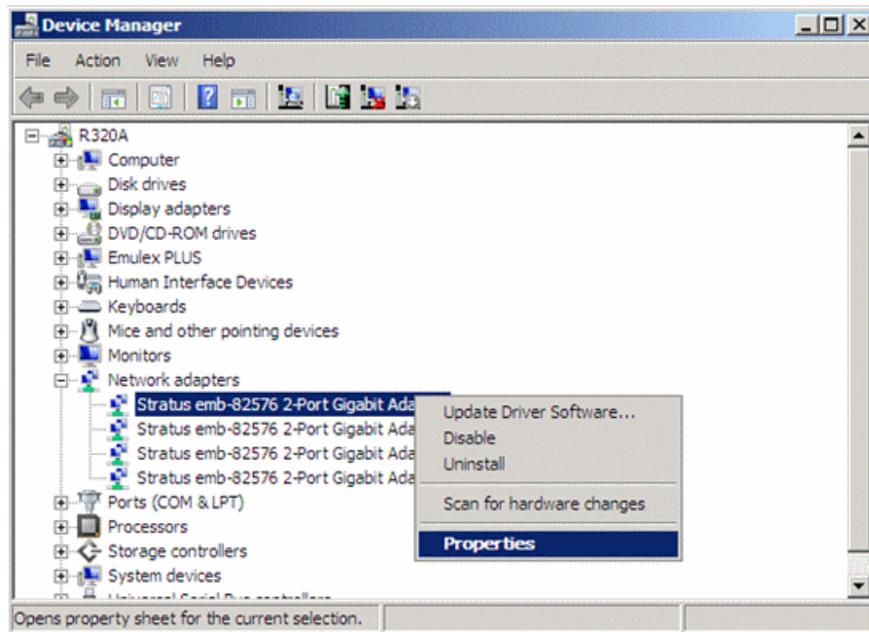
The duplex LAN configuration for the FT server has been done at the factory. There is no need to redo this configuration after installing your server. However, the procedure is provided here in case it is needed on the customer site.

To configure the duplex LAN, log on to the FT server using the factory default login, user **Administrator** and password **adminGV!**, or the username and password you have set.

In this task you team network adapters, which correspond to the Ethernet connectors on the CPU/IO module rear panels. One team includes the top module's left-hand connector and the bottom module's left-hand connector. The other team includes the top module's right-hand connector and the bottom module's right-hand connector.

1. Start **Device Manager**.

2. Select a target Network Adapter. Right-click and select **Properties** from the menu displayed to show the Properties dialog box.



IMPORTANT: The display of Network Adapters may be duplicated as shown below, depending on the status at installation.

- Stratus emb-82576 2-Port Gigabit Adapter
- Stratus emb-82576 2-Port Gigabit Adapter
- Stratus emb-82576 2-Port Gigabit Adapter #2
- Stratus emb-82576 2-Port Gigabit Adapter #2

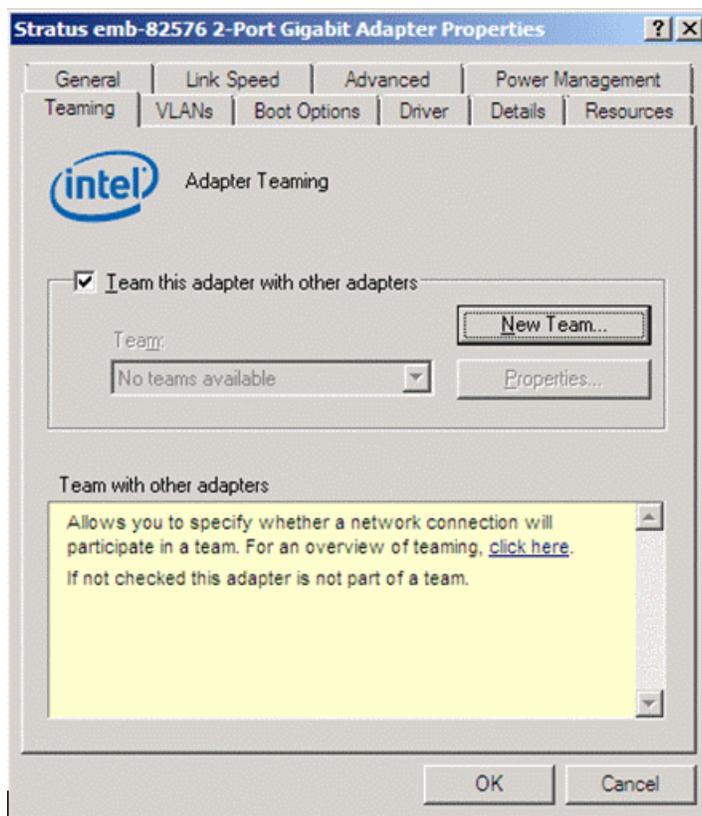
If such a case occurs, perform the following actions:

1. Delete all Network Adaptors from Device Manager.
2. Select **Action Scan for hardware changes**.

The display will be as follows when the actions are performed properly.

- Stratus emb-82576 2-Port Gigabit Adapter
- Stratus emb-82576 2-Port Gigabit Adapter #2
- Stratus emb-82576 2-Port Gigabit Adapter #3
- Stratus emb-82576 2-Port Gigabit Adapter #4

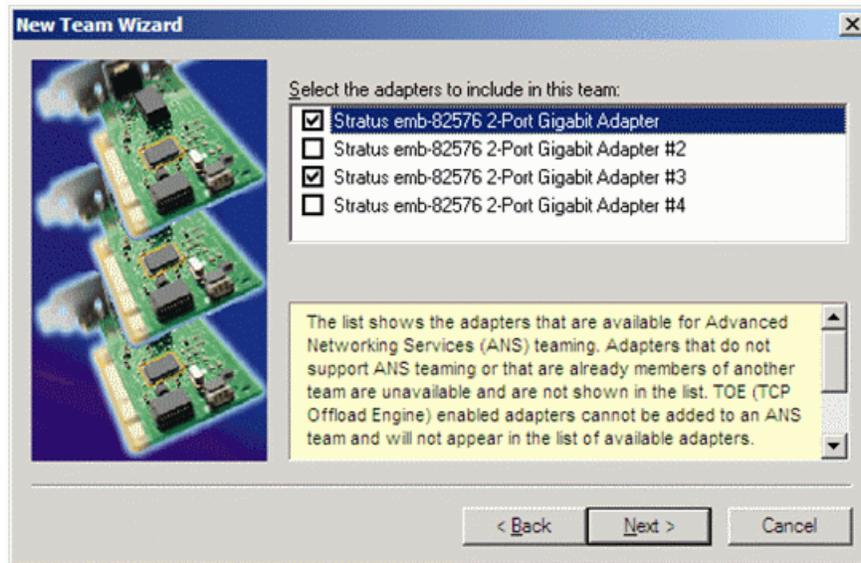
3. Select the **Teaming** tab in the Properties window. Check the **Team with other adapters** button and click **New Team....**



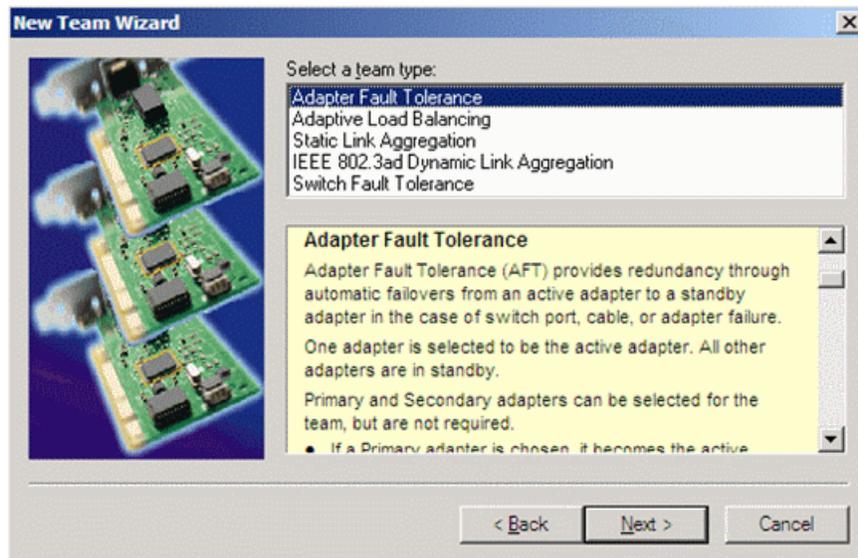
4. Enter team name Control Team and click **Next**.



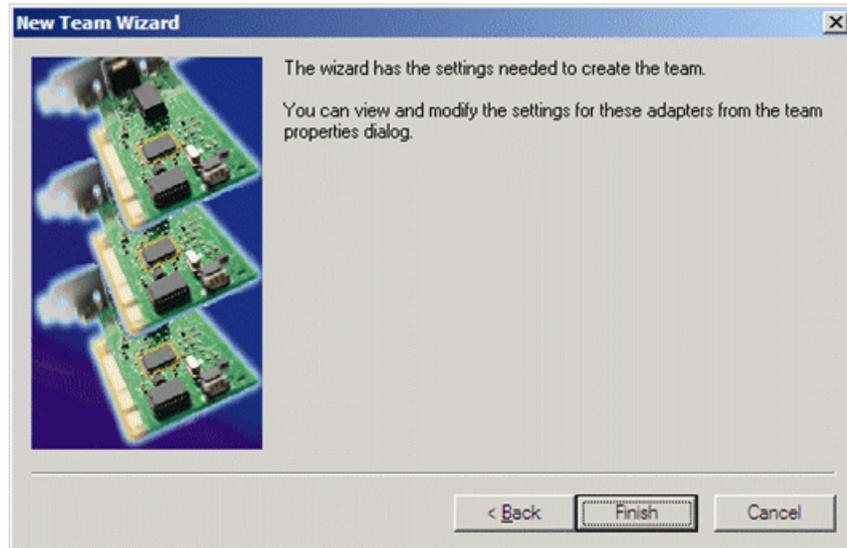
5. Select the adapters that correspond to the two left-hand ports (when facing the rear panel) and click **Next**.



6. Select **Adapter Fault Tolerance** as a team mode. Click **Next**.

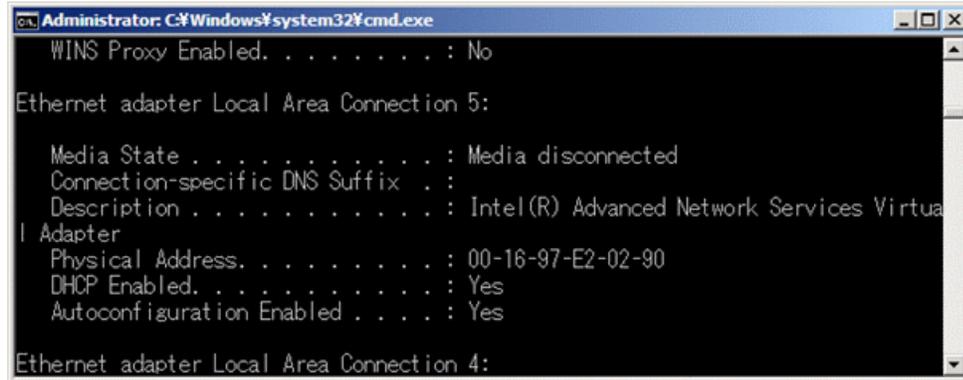


7. Click **Finish**.



8. Open the Modify Team dialog box as follows:
 - a) In **Device Manager | Network Adapters**, right-click **Control Team** and select **Properties**.
The Properties dialog box opens.
 - b) Select the **Settings** tab.
 - c) Click **Modify Team**.
A dialog box opens.
9. On the **Adapters** tab, do the following:
 - a) Select the adapter in the team that corresponds to port the top CPU/IO module, and click **Set Primary**.
 - b) Select the other adapter in the team and click **Set Secondary**.
10. Click **OK** and **OK** to close dialog boxes.
11. Repeat steps to create another team as follows:
 - Name the team **FTP Team**.
 - Team the adapters that correspond to the two right-hand ports (when facing the rear panel) .
 - Make primary and secondary.

12. Start a Command prompt to check the physical MAC address set on ipconfig/all.



Name teams

Before beginning this task, make sure of the following:

- Adapters are named
 - The teams are created
1. Open Windows Network Connections.
 2. Select adapter names in the “Device Name” column and rename them as follows:
 - Local Area 5: Control Team
 - Local Area 6: FTP Team

Reorder adapters

Before beginning this task, make sure of the following:

- Teams are created and named
1. Open Windows Network Connections.
 2. Select **Advanced**, then **Advanced Settings...**
 3. On the **Adapters and Bindings** tab, set the **Control Team** to be the first (top-most) connection and the **FTP Team** to be the second connection.
 4. Click **OK** to close and accept the changes.
 5. Close Network Connections.

Servicing the FT Server

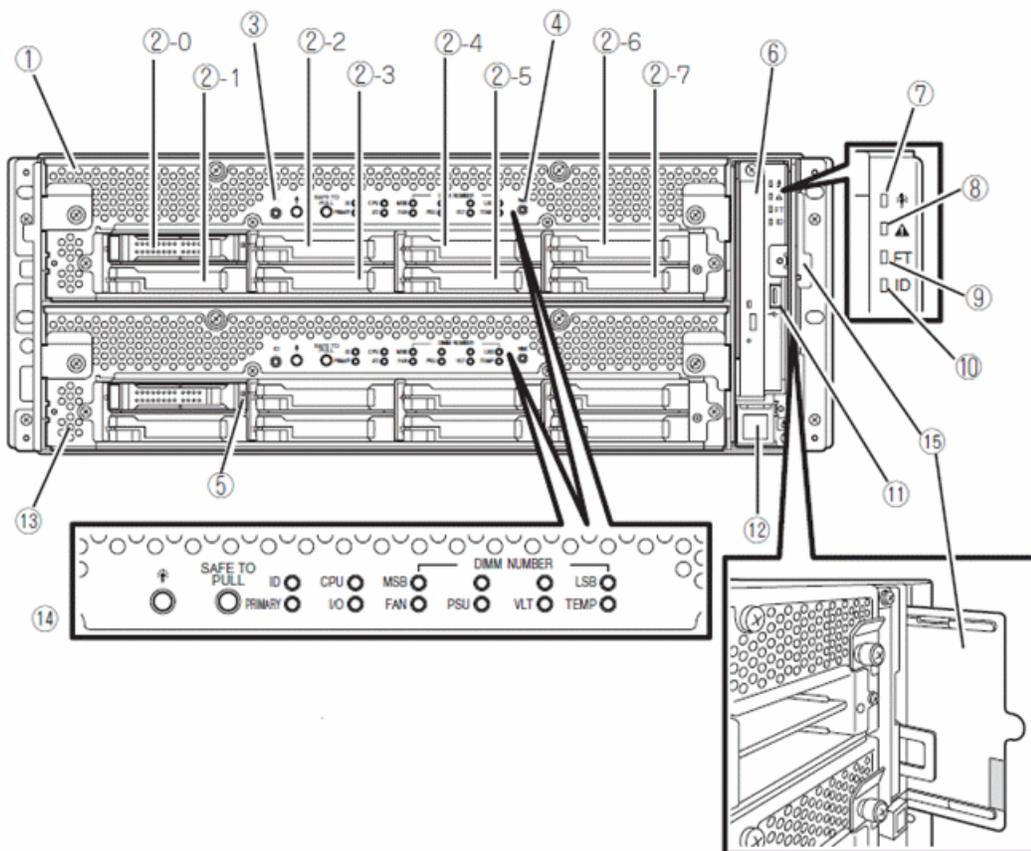
Checking status with LEDs

Use the LED guides in this section to troubleshoot the FT server. All LED indicators are described in detail in this section.

Front status LEDs (bezel removed)

A front view of a fully loaded chassis with two CPU/I/O modules with the front bezel removed is shown below. Numbered pointers indicate the various modules, switches, and LEDs visible when the front bezel is removed.

NOTE: *Keep the front bezel installed at all times during normal operation to maintain cooling requirements.*



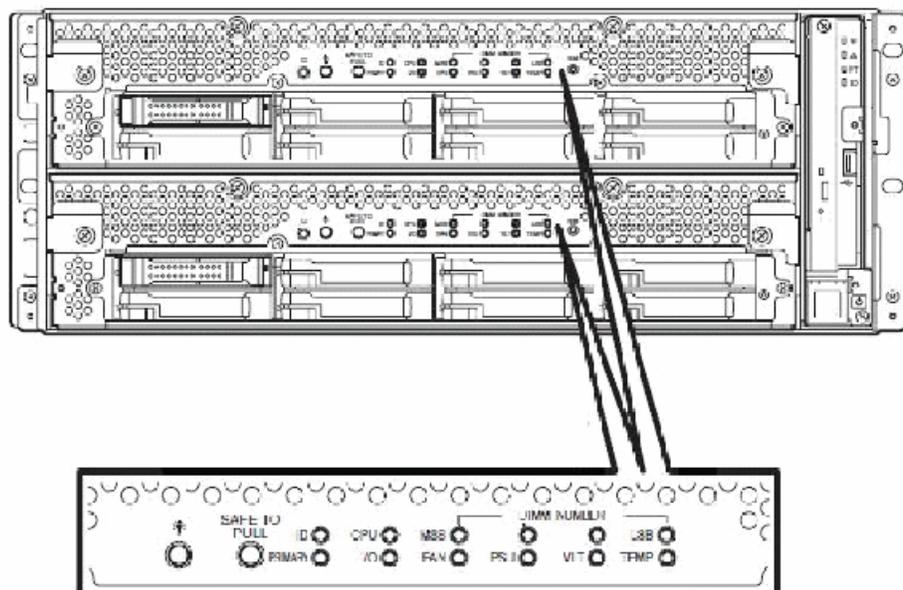
- **(1) CPU/I/O module 0:** This is a module with a set of CPU (processor), memory (DIMM), PCI board, cooling fan unit, and hard disk drive components.
- **(2-0, 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7) Hard disk drive bays:** These are the bays to mount the hard disk drives. The number after the numbers in parentheses indicates a slot number.

- **(3) UID (Unit ID) switch:** Set this switch to ON/OFF to control the UID LED on the front of the device. When processing the switch once, UID LED lights and it goes off when pressing it again.
- **(4) Dump (NMI) switch:** Not used in this application.
- **(5) Disk access LED:** This LED illuminates/blinks while accessing the installed hard disks.
- **(6) Optical disk drive:** This device is used to read data from the disks such as DVDs and CD-ROMs.
- **(7) System POWER LED:** This LED illuminates green when one of the power supplies of the CPU/IO modules is ON. The LED goes off when both power supplies of the CPU/IO module are OFF.
- **(8) System FAULT LED:** When one of the CPU/IO modules has an error, this amber LED lights. Details can be confirmed by checking EXPRESSSCOPE. The amber LED lights when it cannot identify which one of the CPU/IO modules has an error.
- **(9) System FT LED:** This LED displays the device status. This green LED lights when operating under a duplex condition. The LED goes off if it's not duplex. This green LED also lights when executing an Active Upgrade.
- **(10) System ID LED:** The blue system ID LED lights on the front bezel if pressing UID switch when there are multiple devices installed in one rack. This enables the user to identify the device to be maintained. This blue LED blinks when there are remote device identification requests.
- **(11) USB connector:** Connect a device supporting USB interface.
- **(12) Power switch:** Use this switch to turn ON/OFF the power. When pressing it once, the power will be ON. When pressing it again, the power will be OFF. Forced shut down takes place when pressing it for 4 seconds or longer.
- **(13): CPU/IO module 1:** This is a module with a set of CPU (processor), memory (DIMM), PCI board, cooling fan unit, and hard disk drive components identical to CPU/IO module 0.
- **(14) EXPRESSSCOPE various LEDs (green/amber):** This LED indicates the status of CPU/IO modules.
- **(15) SLIDE-TAG:** A Label where N-Code and Serial number are printed is pasted to this tag.

ExpressScope LEDs

On the front of the FT server with the front bezel removed, the EXPRESSSCOPE LEDs (amber) can be accessed to determine if either CPU/IO module has failures. The LEDs on the upper line correspond to the upper names and the LEDs on the lower line correspond to the lower names.

NOTE: *If any component has failed in a CPU/IO module including DIMMs and the power supply, the entire CPU/IO module is replaced. All hard disk drives should be labeled for slot location, then removed from the faulty unit. When a replacement module is received, the hard disk drives should be replaced into the same slots to maintain the mirrored images.*



Name	Meaning	Possible Cause	Action
Module Power LED	Indicates Power condition of module.		<p>Green: Module DC ON</p> <p>Green blinking: Module DC OFF (AC ON)</p> <p>Off: Module AC OFF</p>
PRIMARY LED	Indicates Primary state of IO Module.		<p>Green: IO part of Module is working on priority.</p> <p>Off: Module is working as Secondary.</p>
Module ID LED	Pushing ID Switch, or demanding ID from remote.		<p>Green: Pushed ID Switch</p> <p>Green Blinking: demanded ID from remote</p> <p>Off: No demand</p>

Name	Meaning	Possible Cause	Action
SAFE TO PULL	Showing condition whether a module can be unmounted or not.		<p>Green: duplexing</p> <p>System can work even if a module is pulled out.</p> <p>Green blinking: Simplexing</p> <p>System can not work if a module is pulled out.</p> <p>Off: Some offline parts exist.</p> <p>System can work even if a module is pulled out.</p>
CPU (CPU part error LED)	Amber LED illuminates when a failure occurs in CPU of CPU/IO module.	Processor failure CPU/IO module failure DIMM failure	Replace CPU/IO module.
I/O (I/O part error LED)	Amber LED illuminates when a failure occurs in I/O of CPU/IO module.	CPU/IO module failure PCI Board failure	Replace CPU/IO module.
VLT (Power error LED)	Amber LED illuminates when electric voltage failure occurs in CPU/IO module.	CPU/IO module failure Power Supply Unit failure	Replace CPU/IO module.
MEM NUMBER (Memory slot error LED)	Amber LED illuminates when a failure occurs on the memory of CPU/IO module.	Four LEDs indicate DIMM Slot number. Target DIMM failure CPU/IO Module failure Processor failure	Replace CPU/IO Module.
PSU (Power Supply Unit error LED)	Amber LED illuminates when failure occurs on the power supply unit of CPU/IO module.	Processor failure CPU/IO module failure	<p>Replace CPU/IO module.</p> <p>The LED turns on if DC power is not provided in spite of power on request.</p>

Name	Meaning	Possible Cause	Action
TEMP (Abnormal temperature LED)	Amber LED illuminates when temperature in CPU/IO module becomes abnormal.	Cooling problem (Fan Failure) Processor placement Processor failure CPU/IO Module failure	At first, confirm whether event log is registered by Temperature sensor. Replace CPU/IO module. There is a possibility of sensor failure.
FAN (FAN error LED)	Amber LED illuminates when failure occurs on the cooling fan of CPU/IO module.	FAN failure CPU/IO Module failure	At first, confirm whether event log is registered by FAN sensor. Is fan working? Is there a clog of module? Replace CPU/IO module. There is a possibility of sensor failure.

LAN LEDs

The LED indicators on the Ethernet LAN connectors are described below.

- **LINK/ACT LED:**

The LINK/ACT LED shows the status of a standard network port. It is green if power is supplied to the main unit and hub and they are connected correctly (LINK). It blinks green while the network port sends or receives data (ACT).

When the LED does not illuminate during LINK, check the condition and connection of network cables. If there is nothing wrong with the cables, a defect is suspected in the network (LAN) controller. In this case, contact Customer Service.

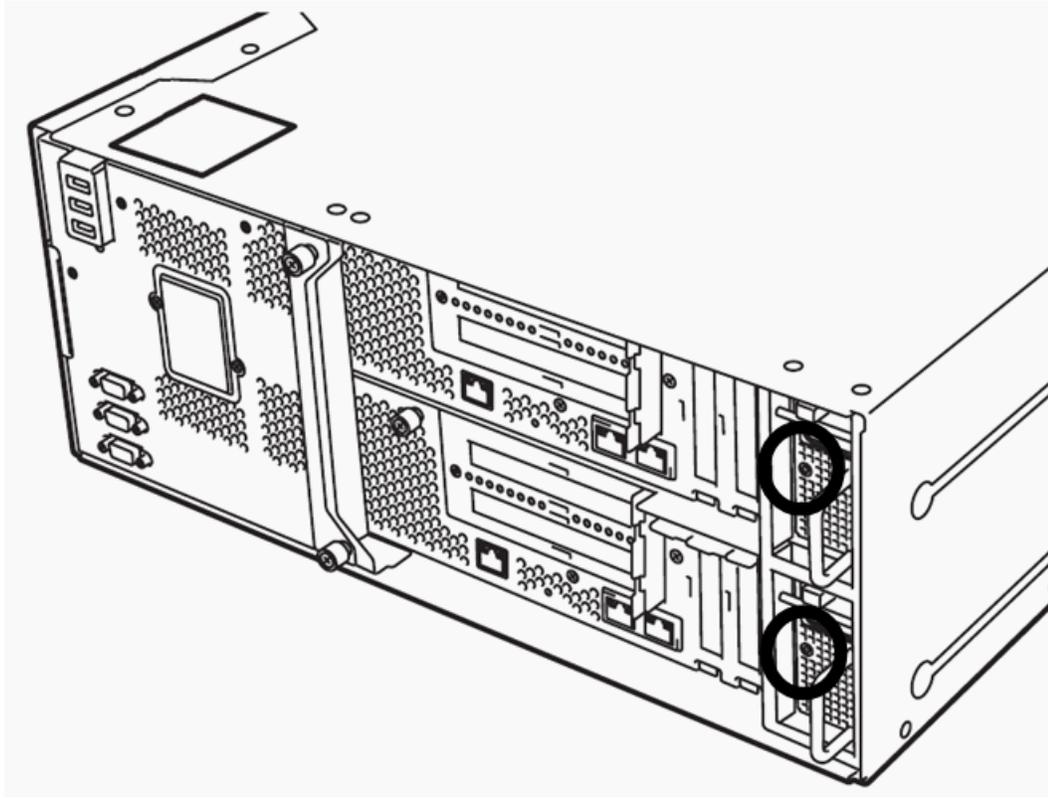
- **Speed LED:**

This LED indicates the network interface of the communication mode used by a network port.

1000BASE-T and 100BASE-TX are the supported LAN port types. When this LED illuminates in amber, the port is operating on 1000BASE-T; when in green, 100BASE-TX; and when not illuminate, 10BASE-T.

Power supply unit LED

When the power supply unit has a failure, the amber LED light will light. There are two power supplies per system.



LED Name	Meaning	Cause	Action
Power Supply Unit LED	When power supply unit has a failure, amber LED will light.	Power Supply Unit CPU/IO module	Replace Power Supply Unit. Replace CPU/IO module.

Diagnostics, logs and error messages

The various diagnostics, logs, and error messages available for the FT server are defined in this section in detail. Use these to aid you in determining what failures have occurred in the system.

BIOS error message

The Virtual LCD Display is the function which displays LCD message information in BMC. They are sent via DianaScope.

In the case of remote operation, each CPU/IO module has a remote connector. It needs to be connected to the CPU/IO module you want to monitor. The Virtual LCD specifications are given in the sections below.

Collecting event logs

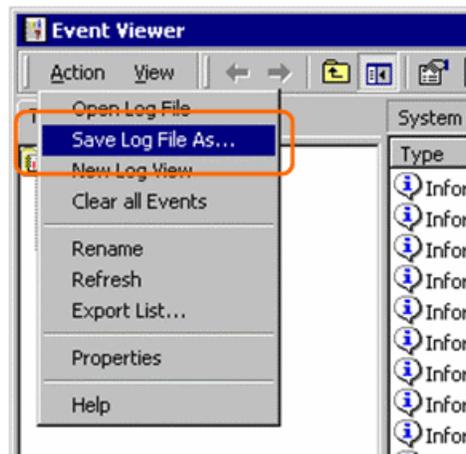
Collect the logs of various events that have occurred in the FT server. It is recommended that you collect all the logs of **Application Log**, **Security Log**, and **System log** using the following procedure.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start collecting event logs.

1. Click [Start | Settings | Control Panel | Administrative Tools | Event Viewer].
2. Select the type of the log to be collected.

The **Application Log** contains events related to the applications that were active at occurrence of the events. The **Security Log** contains security-related events. The **System Log** contains events that occurred in system components of Windows Server 2003, Enterprise Edition.

3. Click **Save Log File As...** in the **Action** menu.



4. Enter the name of the target archive log file in the **File name** box.
5. Select the format of the target log file from the **Save as type** list box, and click **OK**.

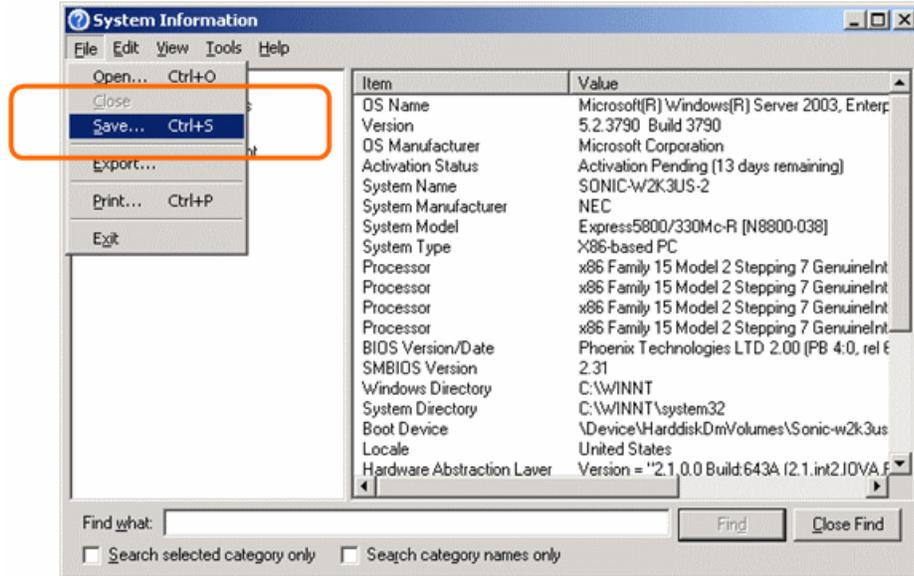
Collecting configuration logs

Collect information such as the hardware configuration and internal setting information for the FT server.

Important: If a STOP error or system error occurs or the system stalls, restart the system, and then start the procedure.

1. Click [Start | All Programs | Accessories | System Tools | System Information].

2. Select **Save...** from the File menu.



3. Enter the name of the target file in the **File name** box.
4. Click **Save**.

Collecting diagnostic information with Dr. Watson

Collect diagnostic information related to application errors by using Dr. Watson. You can designate any destination to save diagnostic information.

For details, see help information. Click **Start | Run...**, execute **drwtsn32.exe**, and click **Help** in the **Dr. Watson for Windows** dialog box.

Backup and recovery strategies

On the FT server, there are three partitions to support backup and recovery strategies as follows:

- The C: drive is for the Windows operating system and applications.
- The D: drive is for a database, such as the GV STRATUS system database. This allows you to restore the Windows operating system on the C: drive, yet keep the files on the D: drive intact. Typically the database is backed up and recovered with database-specific processes, rather than with a disk image.
- The E: drive is for storing a system image of the other partitions. From the E: drive you can restore images to the C: and D: drives.

When you receive a FT server from the factory, the machine has a system-specific image on the E: drive. For the highest degree of safety, you should copy this image to a secure location that is not on the FT device itself.

You receive a recovery CD with your server. This recovery CD does not contain a disk image. Rather, the recovery CD is bootable and contains the Acronis True Image software necessary to create and restore a disk image.

After your server is installed, configured, and running in your system environment, you should create new recovery disk images for the machine to capture settings changed from default. These “first birthday” images are the baseline recovery image for the machine in its life in your facility. You should likewise create new recovery disk images after completing any process that changes system software or data, such as a software upgrade. In this way you retain the ability to restore to a recent “last known good” state.

Identifying the FT Server model

FT server platform types are as following:

- Type I (NEC Draco): Released early 2012. Requires Acronis 8162 for recovery disk image process.
 - Type II (NEC Cygnus): Released mid-2013. Requires Acronis 11.5 for recovery disk image process.
1. On the rear panel, below the PCI card slots, locate the equipment label.
 2. Interpret the model number on the label as follows:
 - R320b-M4 = Type I
 - R320c-M4 = Type II

Acronis 8162: Creating a recovery disk image for storing on E: Type I

Do the following at the local server to create a disk image of the C: partition and the D: partition and store the image file on the E: partition:

1. Disconnect the AC power cabling from the bottom CPU/IO module.
2. Perform the steps in this procedure on the top CPU/IO module.
3. Make sure that media access is stopped and that the system on which you are working is not being used.
4. Startup and in BIOS setup disable OS Boot Monitoring.
Refer to related topics in this document.
5. If you have not already done so, connect keyboard, monitor, and mouse.
6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.
If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.
The system boots from the Recovery CD.
The Acronis program loads.
7. At the startup screen, select **True Image Server OEM (Full Version)**.
The Acronis main window appears.
8. In the Acronis main window, click **Backup**.
The Create Backup Wizard opens.

9. On the Welcome page, click **Next**.
10. On the Partitions Selection page, do the following:
 - a) Select the **(C:)** and the **(D:)** partitions and then click **Next**.
11. On the Backup Archive Location page, do the following:
 - a) In the tree view select the **Backup (E:)** partition and enter the name of the image file you are creating.
Create the file name using the machine hostname and the date. Name the file with the .tib extension.
For example, if the hostname is MySystem1, in the File name field you enter
`E:\MySystem1_20121027.tib`.
 - b) Click **Next**.
12. On the Backup Options page, do not change any settings. Click **Next**.
13. On the Archive Comment page, if desired, enter image comments such as the date, time, and software versions contained in the image you are creating. Click **Next**.
14. On the "...ready to proceed..." page, do the following:
 - a) Verify that you are creating images from the C: and D: partitions and writing to the E: partition, then click **Proceed**.
15. On the Operation Progress page, observe the progress report.
16. When a message appears indicating a successful backup, click **OK**.
17. Click **Operations | Exit** to exit the Acronis True Image program.
The machine restarts automatically.
18. Remove the recovery media while the machine is shutting down.
19. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
20. On the bottom CPU/IO module, connect AC power cabling. The module starts up.
21. Restart and in BIOS setup enable OS Boot Monitoring.
Refer to related topics in this document.

Acronis 11.5: Creating a recovery disk image for storing on E: Type II

This task applies to the Type II FT Server model. Do the following at the local server to create a disk image of the C: partition and the D: partition and store the image file on the E: partition:

1. Disconnect the AC power cabling from the bottom CPU/IO module.
2. Perform the steps in this procedure on the top CPU/IO module.
3. Make sure that media access is stopped and that the system on which you are working is not being used.
4. Startup and in BIOS setup disable OS Boot Monitoring.
Refer to related topics in this document.

5. Manage connections as follows:
 - a) Disconnect the mouse from the USB port, if it is currently connected.

NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
 - b) If not already connected, connect keyboard and monitor.
6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.
The Acronis program loads.
7. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.
The Acronis program loads.
8. On the Acronis Rescue Media page, do the following:
 - a) Use the keyboard arrow keys to select **Acronis Backup and Recovery 11.5 (64-bit...)** and then press **Enter**.
 - b) Wait while Acronis fully loads.

This can take a few minutes. When loaded, the Acronis Backup and Recovery page opens and displays a mouse cursor.
 - c) Connect the mouse to the USB port.

NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
9. On the Acronis Backup and Recovery page, select **Back up now**.

The Back up now page opens.
10. On the Back up now page, under What to back up, select **Item to back up**.

The Select item to back up dialog box opens.
11. On the Select item to back up dialog box, do the following:
 - a) Under Disk 1 select **C** and **D**. Clear other check boxes.
 - b) Click **OK**.

The Select item to back up dialog box closes.
12. On the Back up now page, under Where to back up, select **Location**.

The Select location back up dialog box opens.

13. On the Select location back up dialog box, do the following:
 - a) Expand the tree-view **Local folders** node and select **E:**.
 - b) Enter a name for your backup.
 - c) Click **OK**.The Select location back up dialog box closes.
14. On the Back up now page, under How to back up, do the following:
 - a) Set Backup type to **Full**.
 - b) This is recommended for your first backup. For subsequent backups, you can optionally set this to Incremental or Differential.
 - c) Set Validation to **Validate a backup as soon as it is created**.
15. On the Back up now page, click **OK**.

The backup begins and the Backup Details page opens.
16. On the Backup Details page, select the **Progress** tab to view the progress.
17. Verify when the data is successfully backed up.
18. Close all Acronis pages and the Acronis main window.

The machine restarts automatically.
19. Remove the recovery media while the machine is shutting down.
20. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
21. On the bottom CPU/IO module, connect AC power cabling. The module starts up.
22. Restart and in BIOS setup enable OS Boot Monitoring.

Refer to related topics in this document.

Acronis 8162: Restoring from a system-specific recovery disk image on E: Type I

Use this task to restore a server using an image made from that particular server. If restoring from a generic factory default image, use the appropriate task.

1. Disconnect the AC power cabling from the bottom CPU/IO module.
2. Perform the steps in this procedure on the top CPU/IO module.
3. Make sure that media access is stopped and that the system on which you are working is not being used.
4. Startup and in BIOS setup disable OS Boot Monitoring.

Refer to related topics in this document.
5. If you have not already done so, connect keyboard, monitor, and mouse.
6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.

The Acronis program loads.

7. At the startup screen, select **True Image Server OEM (Full Version)**.
The Acronis main window appears.
8. In the Acronis main window, click **Recovery**.
The Restore Data Wizard opens.
9. On the Welcome page, click **Next**.
10. On the Backup Archive Selection page, in the tree view expand the node for the E: partition and select the image file, then click **Next**.
11. On the Restoration Type Selection page, select **Restore disks or partitions** and then click **Next**.
12. On the Partition or Disk to Restore page, select **(C:)** and then click **Next**.
13. On the Restored Partition Location page, select **(C:)** and then click **Next**.
14. On the Restored Partition Type page, leave the selection at **Active** and then click **Next**.
15. On the Restored Partition Size page, leave settings at their defaults. The size reported in the upper pane is the size detected of the actual C: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.
16. On the Next Selection page, select **No, I do not** and then click **Next**.
17. On the Restoration Options page, do not make any selections. Click **Next**.
18. On the "...ready to proceed..." page, verify that you are restoring the correct image to the correct location. Click **Proceed**.
19. On the Operation Progress page, observe the progress report.
20. When a message appears indicating a successful recovery, click **OK**.
21. Click **Operations | Exit** to exit the Acronis True Image program.
The machine restarts automatically.
22. Remove the recovery media while the machine is shutting down.
23. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
24. On the bottom CPU/IO module, connect AC power cabling. The module starts up.
25. Restart and in BIOS setup enable OS Boot Monitoring.
Refer to related topics in this document.

Acronis 11.5: Restoring from a system-specific recovery disk image on E: Type II

This task applies to the Type II FT Server model. Use this task to restore a server using an image made from that particular server. If restoring from a generic factory default image, use the appropriate task.

1. Disconnect the AC power cabling from the bottom CPU/IO module.
2. Perform the steps in this procedure on the top CPU/IO module.
3. Make sure that media access is stopped and that the system on which you are working is not being used.
4. Startup and in BIOS setup disable OS Boot Monitoring.
Refer to related topics in this document.

5. Manage connections as follows:
 - a) Disconnect the mouse from the USB port, if it is currently connected.

NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
 - b) If not already connected, connect keyboard and monitor.
6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.
The Acronis program loads.
7. On the Acronis Rescue Media page, do the following:
 - a) Use the keyboard arrow keys to select **Acronis Backup and Recovery 11.5 (64-bit...)** and then press **Enter**.
 - b) Wait while Acronis fully loads.

This can take a few minutes. When loaded, the Acronis Backup and Recovery page opens and displays a mouse cursor.
 - c) Connect the mouse to the USB port.

NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
8. On the Acronis Backup and Recovery page, select **Recover**.

The Recover Data page opens
9. On the Recover Data page, under What to Recover page, select **Select Data**.

The Data to Recover Selection dialog box opens.
10. On the Data to Recover Selection dialog box, do the following:
 - a) Select **Browse**.
 - b) In the tree view, expand the **Local Folders** node.
 - c) Select the **E** drive.

Even though your backup is on the E drive, it is not yet visible.
 - d) Click **OK**.

On the Archive View tab, your backup name is listed.
11. On the Archive View tab, select your backup.
12. Under Backup contents, do the following:
 - a) Select **C:** and **D:**.
 - b) Click **OK**.

The Data to Recover Selection dialog box closes.

13. On the Recover data page, under Where to recover, verify the following:

Recover to:	Physical machine
	Clear all
Recover 'NTFS (C:)' to...	Properties....Size:.....Letter: C
	Clear Disk 1/NTFS (C:)
Recover 'NTFS (D:)' to...	Properties....Size:.....Letter: D
	Clear Disk 1/NTFS (D:)

14. On the Recover Data page, click **OK**.
The restore process begins.
15. On the My Recovery Details page, select the **Progress** tab to view the progress.
The image loads in approximately 9 minutes.
16. When the data is successfully restored, click **OK**.
17. Close all Acronis pages and the Acronis main window.
The machine restarts automatically.
18. Remove the recovery media while the machine is shutting down.
19. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
20. On the bottom CPU/IO module, connect AC power cabling. The module starts up.
21. Restart and in BIOS setup enable OS Boot Monitoring.
Refer to related topics in this document.

Restoring a GV STRATUS Core Server on a FT Server platform from a generic image

This is the master task that applies to both Type I and Type II FT Server models. As instructed by the steps in this task, use the appropriate Acronis sub-task specified for the Type I or Type II model.

1. Disconnect network cables.
2. Disconnect power cabling from bottom CPU/IO module.
3. In top CPU/IO module, leave drive 0 in slot, remove all other drives.
4. Provide AC power to top CPU/IO module.
5. Provide access to the disk image file to which you are restoring. For example, connect an external drive containing the image.
6. Startup and in BIOS setup disable OS Boot Monitoring.
Refer to related topics in this document.
7. Using the Acronis recovery disk image process as appropriate for the FT Server Type I or Type II model, restore the generic disk image to the top CPU/IO module using Acronis.
The process to boot into Acronis takes several minutes.
The restore process takes approximately two hours.
Refer to related topics in this document.

8. Restart and log in to Windows as Administrator/adminGV!.
9. When prompted, enter Windows operating system product key and activate later.
10. Restart as prompted.
11. Complete items as prompted by the sysprep process, including the following:
 - Time zone
 - Server name
 - Deselect **Automatic Updates**
 - Select **Don't show again at startup**

The server restarts.

12. If Server Manager opens, select **Don't show again at startup**.
13. In the top CPU/IO module, insert all drives.
14. In the bottom CPU/IO module, insert all drives.
15. Connect power cabling and start up bottom CPU/IO module.
16. Perform dual disk configuration as follows:
 - a) In the RDR Utility, create the first Virtual disk.
 - b) When prompted to reboot, click **No**.
 - c) Manually reboot the system.Refer to related topics in this document.
17. Perform system disk dual configuration as follows:
 - a) Right-click on Slot 0 of PCI Module 11 and select **Add Physical Disk To RDR Virtual Disk**. Refer to related topics in this document.
18. Set resync priority as follows:
 - a) Set Virtual Disk 0 to high priority In the Logical disk section, highlight **RDR Virtual Disk**, right-click and select **Set Resync Priority**, set to **High** and click **OK**.
Disk 0 in each chassis blinks rapidly until the initialization is done.
Refer to related topics in this document.
19. Repeat steps to create Virtual Disks and map to physical disks.
20. Wait until Disk 0 completes the build process.
That takes approximately 3 hours.
21. Use Windows utilities and build a Dynamic disk with all other disks, except for drive 0, using the striped mode rather than the span mode.
Refer to related topics in this document.
22. Set duplex LAN configuration to team the left NICS in each server and the right NICS in each server.
Refer to related topics in this document.
23. Name teams `Control Team` and `FTP Team`.
Refer to related topics in this document.
24. Reorder network adapters so the Control Team is first and the FTP Team is second.
Refer to related topics in this document.

25. Restart and in BIOS setup enable OS Boot Monitoring.
Refer to related topics in this document.
26. Turn off the FT server firewall
Refer to related topics in this document.
27. Remove the GVAdmin account from the Deny log on locally list.
Refer to related topics in this document.
28. Install SiteConfig Discovery Agent.
Refer to related topics in "GV STRATUS Installation and Service Manual".
29. Install SQL.
Before installing SQL, make sure that you copy the correct *StratusSQLConfigurationFile.ini* file onto the system so that the database is installed on the D:\ partition.
Refer to related topics in "GV STRATUS Installation and Service Manual".
30. Activate the Windows operating system.
Refer to related topics in "GV STRATUS Installation and Service Manual".
31. Do any Windows High Priority updates that are not already installed.
32. Install GV STRATUS software.
33. If the FT server has a proxy share, on proxy share security settings make sure the local "Everyone" has read permission.
34. If the FT server has a proxy share, add the internal system account, which by default is GVAdmin, to the local Administrators group and on proxy share security settings give that account full permissions.

Related Topics

[Setting OS Boot Monitoring in BIOS](#) on page 80

[Acronis 8162: Restoring from the generic recovery disk image Type I](#) on page 75

[System disk dual configuration procedure](#) on page 40

[Set resync priority](#) on page 52

[Build dynamic disk](#) on page 52

[Set duplex LAN configuration](#) on page 53

[Name teams](#) on page 58

[Reorder adapters](#)

[Turn off FT server firewall](#) on page 80

[Remove GVAdmin account from Deny log on locally list](#) on page 82

Acronis 8162: Restoring from the generic recovery disk image Type I

Use this sub-task only as directed by the steps in the master task for restoring from a generic recovery disk image.

This task applies to the Type I FT Server model.

This procedure can be used on a server that needs to be restored to its factory default state. For example, if you neglected to make a first birthday image, you might need to use this procedure. If

the image from which you are restoring was made from the specific machine, refer to the appropriate procedure.

NOTE: This procedure restores the server (both C: and D: partitions) to its factory default condition. Passwords and other site-specific configurations are reset to factory defaults.

1. Make sure that media access is stopped and that the system on which you are working is not being used.
2. Disconnect the AC power cabling from the bottom CPU/IO module.
3. Perform the steps in this procedure on the top CPU/IO module.
4. Connect all motherboard NICs to LAN connections.
5. If you have not already done so, connect keyboard, monitor, and mouse.
6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.

The Acronis program loads.

7. At the startup screen, select **True Image Server OEM (Full Version)**.

The Acronis main window appears.
8. In the Acronis main window, click **Recovery**.

The Restore Data Wizard opens.
9. On the Welcome page, click **Next**.
10. On the Backup Archive Selection page, navigate to and select the image file, then click **Next**.
11. On the Restoration Type Selection page, select **Restore disks or partitions** and then click **Next**.
12. On the Partition or Disk to Restore page, select **(C:)** and then click **Next**.
13. On the Restored Partition Location page, select **(C:)** and then click **Next**.
14. On the Restored Partition Type page, leave the selection at **Active** and then click **Next**.
15. On the Restored Partition Size page, leave settings at their defaults. The size reported in the upper pane is the size detected of the actual C: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.
16. On the Next Selection page, select **Yes, I want to restore another partition or hard disk drive** and then click **Next**.
17. On the Partition or Disk to Restore page, select **(D:)** and then click **Next**.
18. On the Restored Partition Location page, select **(D:)** and then click **Next**.

opens.
19. On the Restored Partition Type page, leave the selection at **Primary** and then click **Next**.
20. On the Restored Partition Size page, leave settings at their defaults. The size reported in the upper pane is the size detected of the actual D: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.

21. On the Next Selection page, select **No, I do not** and then click **Next**.
22. On the Restoration Options page, do not make any selections. Click **Next**.
23. On the "...ready to proceed..." page, verify that you are restoring the correct image to the correct location. Click **Proceed**.
24. On the Operation Progress page, observe the progress report.
25. When a message appears indicating a successful recovery, click **OK**.
26. Click **Operations | Exit** to exit the Acronis True Image program.
The machine restarts automatically.
27. Remove the recovery media while the machine is shutting down.
28. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
29. When prompted, enter the machine name.
Make sure the name is identical to the name it previously had.
At first start up after reimage, the system is in Embedded Security Update mode by default.
30. On the bottom CPU/IO module, connect AC power cabling. The module starts up.

Continue with the steps in the master task for restoring from a generic recovery disk image.

Acronis 11.5: Restoring from the generic recovery disk image Type II

Use this sub-task only as directed by the steps in the master task for restoring from a generic recovery disk image.

This task applies to the Type II FT Server model.

This task restores a server to its factory default state. For example, if you neglected to make a first birthday image, you might need to use this procedure. If the image from which you are restoring was made from the same, specific machine to which it is being restored, do not use this task.

NOTE: This procedure restores the server (C:, D:, and E: partitions) to its factory default condition. Passwords and other site-specific configurations are reset to factory defaults.

1. Make sure that media access is stopped and that the system on which you are working is not being used.
2. Disconnect the AC power cabling from the bottom CPU/IO module.
3. Perform the steps in this procedure on the top CPU/IO module.
4. Connect all motherboard NICs to LAN connections.
5. Manage connections as follows:
 - a) Disconnect the mouse from the USB port, if it is currently connected.
NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
 - b) If not already connected, connect keyboard and monitor.

6. Do the following:
 - a) Insert the Recovery CD.
 - b) Restart the machine.

If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

The system boots from the Recovery CD.
The Acronis program loads.
7. On the Acronis Rescue Media page, do the following:
 - a) Use the keyboard arrow keys to select **Acronis Backup and Recovery 11.5 (64-bit...)** and then press **Enter**.
 - b) Wait while Acronis fully loads.

This can take a few minutes. When loaded, the Acronis Backup and Recovery page opens and displays a mouse cursor.
 - c) Connect the mouse to the USB port.

NOTE: A problem with Acronis 11.5 on the FT server requires this workaround. The mouse must be temporarily disconnected before booting into Acronis, then reconnected after Acronis fully loads.
8. On the Acronis Backup and Recovery page, select **Recover**.

The Recover Data page opens
9. On the Recover Data page, under What to Recover page, select **Select Data**.

The Data to Recover Selection dialog box opens.
10. On the Data to Recover Selection dialog box, do the following:
 - a) Select **Browse**.
 - b) In the tree view, select the USB drive that contains the generic recovery disk image.

Even though your backup is on the drive, it is not yet visible.
 - c) Click **OK**.

On the Archive View tab, your backup name is listed.
11. On the Archive View tab, select your backup.
12. Under Backup contents, do the following:
 - a) Select **MBR**.
 - b) Select **Basic**.

This selects all drives.
 - c) Click **OK**.

The Data to Recover Selection dialog box closes.

13. On the Recover data page, under Where to recover, select the correct destination partition for each source partition as follows:
 - a) Select **Recover Disk 1 MBR**.
The MBR Destination dialog box opens.
 - b) In the MBR Destination dialog box, select **Disk 1: Seagate SCSI**.
 - c) Click **OK**.
 - d) Select **Recover System Reserved (C:)**.
The Volume Selection dialog box opens.
 - e) In the Volume Selection dialog box, select **Disk 1: Seagate SCSI**.
 - f) Click **OK**.
 - g) Select **Recover NTFS (C:)**.
The Volume Selection dialog box opens.
 - h) In the Volume Selection dialog box, select **Disk 1: Seagate SCSI**.
 - i) Click **OK**.
 - j) Select **Recover NTFS (D:)**.
The Volume Selection dialog box opens.
 - k) In the Volume Selection dialog box, select **Disk 1: Seagate SCSI**.
 - l) Click **OK**.
 14. On the Recover Data page, click **OK**.
The restore process begins.
 15. On the My Recovery Details page, select the **Progress** tab to view the progress.
The image loads in approximately 9 minutes.
 16. When the data is successfully restored, click **OK**.
 17. Close all Acronis pages and the Acronis main window.
The machine restarts automatically.
 18. Remove the recovery media while the machine is shutting down.
 19. Wait until startup processes are complete on the top CPU/IO module. Leave the module running.
 20. When prompted, enter the machine name.
Make sure the name is identical to the name it previously had.
After start up, one or more device discovery windows can open. Allow processes to complete without interference.
At first start up after reimage, the system is in Embedded Security Update mode by default.
 21. On the bottom CPU/IO module, connect AC power cabling. The module starts up.
- Continue with the steps in the master task for restoring from a generic recovery disk image.

Setting OS Boot Monitoring in BIOS

Use this task as directed by other processes, such as the disk reimage process, or as instructed by Grass Valley Support.

1. Power on one CPU/IO module.
POST will be performed on this CPU/IO module.
2. A message appears at the lower left of the screen (shown below), prompting for startup of the BIOS setup utility SETUP.



Press <F2> to enter SETUP

3. Press **F2** to start the SETUP utility, while the above message is displayed.
4. Select the **Server** tab.
5. Select **Monitoring Configuration** and press **Enter**.
6. Select **OS Boot Monitoring**.
7. Set to Enabled or Disabled, as appropriate.
8. Press **F10** to save and exit.

Turn off FT server firewall

This task applies to the following:

- A GV STRATUS Core server on a FT server platform.

Systems with the Microsoft Windows Server 2008 R2 operating system require special configuration. A server must have its firewall disabled for proper K2 system operation. This includes the Windows firewall that has different profiles for workgroup, domain, etc. You must do the following steps to disable the firewall.

1. Log in to the server with Windows administrator privileges.

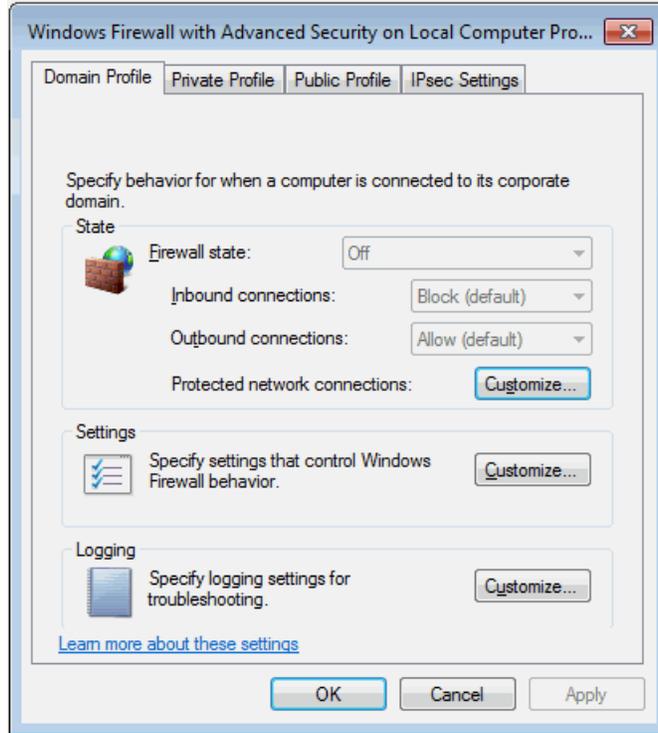
- From the Windows desktop click **Start** and in the **Search programs and files** box type the following and then press **Enter**.

wf . msc

The Windows Firewall with Advanced Security window opens.



3. At the bottom of the Overview section, click **Windows Firewall Properties**.
The Properties dialog box opens.



4. On the **Domain Profile** tab, set **Firewall state** to **Off**.
5. On the **Private Profile** tab, set **Firewall state** to **Off**.
6. On the **Public Profile** tab, set **Firewall state** to **Off**.
7. Click **OK** to save settings and close.

Remove GVAdmin account from Deny log on locally list

1. From the Windows desktop click **Start | Administrative Tools | Local Security Policy**.
The Local Security Policy window opens.
2. In the tree-view select **Local Policies | User Rights Assignment**.
3. In the Policy list, double-click **Deny log on locally**.
The Deny log on locally Properties dialog box opens.
4. On the **Local Security Setting** tab, select **GVAdmin** and then click **Remove**.
5. Click **OK** to save settings and close.

Replacing failed components

The components that can be replaced if a failure occurs in the field, FRUs (Field Replaceable Units), are described in this section. Follow instructions replacement for each type of component as given in this section.

Remove a CPU/IO module

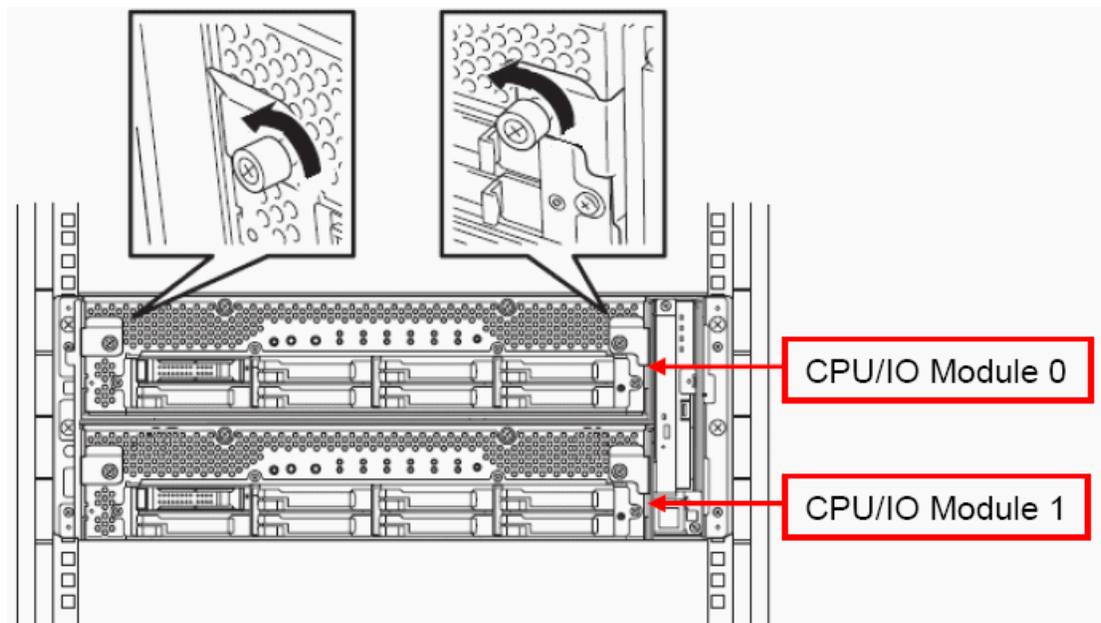
You may remove either CPU/IO module from the rack-mounted enclosure for exchange if required.

Please note the following precautions before doing so:

- Power down the CPU/IO module you are replacing by removing the AC line cord from the rear of that module. When installed, the AC line cords are held in place by stopper bars preventing the removal of the CPU/IO module.
- Have at least two people available to remove a CPU/IO module.
- If you are removing a failed CPU/IO module for exchange, after you have removed the CPU /IO module, you must remove all hard drives in their caddies from the failed module. You must label the hard drives with their drive slot location numbers as you remove them. They must be re-installed in the same hard drive slots when the exchange CPU/IO module is received from the factory. If not, the mirrored hard drives will be out of sync.

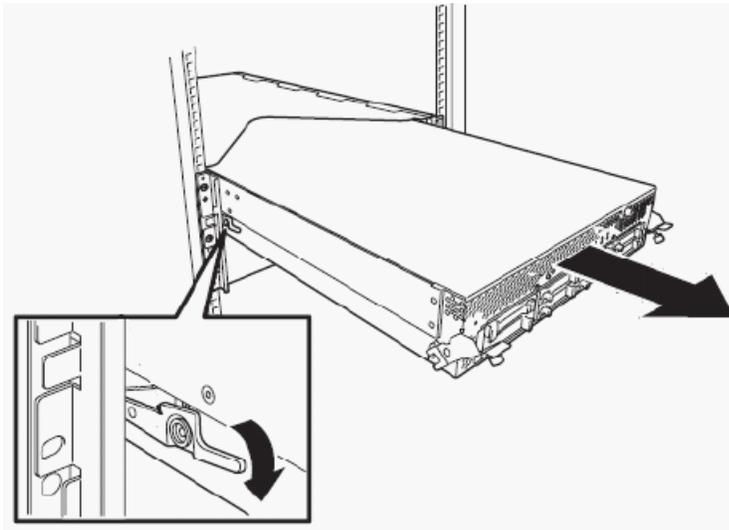
Remove either CPU/IO module as described below.

1. Remove the AC line cord from the module you are removing.
2. Remove the front bezel from the front of the unit by loosening the screws on either side of the bezel.
3. On either side of the module you are removing, loosen the left and right screws to unlock the lock levers holding the module to the sides of the enclosure.



4. Slowly pull out the CPU/IO module until the side lock lever on the left side of the module catches on the lock mechanism.

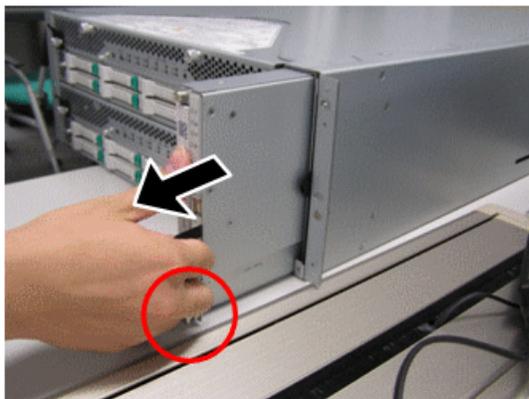
5. Push down on the side lock lever as shown below so it is horizontal and will slide over the lock mechanism, allowing you to pull out the module completely.



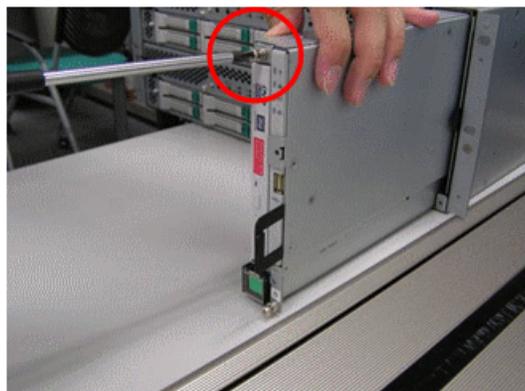
Replacing Optical DVD drive

Use this procedure if you need to replace the optical DVD drive. You may remove this drive while the FT server is powered up.

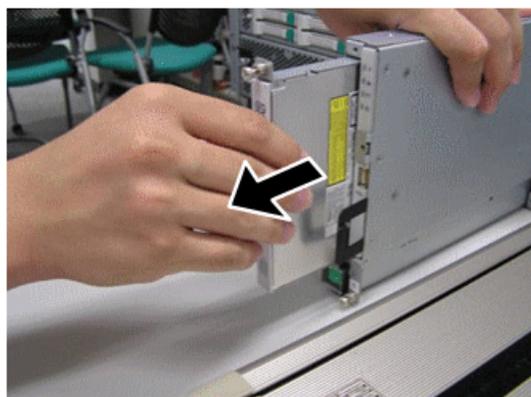
1. Remove the front bezel from the chassis.
2. Remove the entire front unit containing the optical DVD drive by turning the thumb screw on the bottom of the drive unit to the left and pulling out the entire unit.



3. Once the drive unit is free, loosen the top screw holding the DVD drive in the front unit.



4. Pull out the DVD drive.



5. Reverse the steps above to install a replacement DVD drive.

Servicing hard disk drives

The sections given here describe various installation and replacement procedures for the hard disk drives in each CPU/IO module. Refer to the procedure that applies to your condition.

Locating a failed hard drive

Use this procedure to locate a failed hard disk drive. A failed hard disk drive will be indicated by an amber DISK ACCESS LED on the hard drive handle.

To verify a disk failure, do the following:

1. From **Start**, select **All Programs**, **RDR**, and click **RDR Utility** to start the RDR Utility.
2. From the tree on the left pane of the RDR Utility, select each disk and check the values of **MTBF: Current** and **MTBF:NumberOfFaults** in the right pane.

3. Refer to the table below, if either of the values is different from the normal value, the disk has an error.

Property name	Description	Normal value (no error)
MTBF: HardCurrent	Mean time between hardware failures	Unknown
MTBF: SoftCurrent	Mean time between software failures	Unknown

4. If an error is indicated, replace the hard disk drive.

Replacing failed hard drives

Follow the hard disk drive procedures in the order below to replace a failed hard disk drive. The hard disk drive should be replaced with a new device with the server powered on.

1. Locate the failed hard disk. When a hard disk fails, the DISK ACCESS LED on the hard disk drive's handle turns to an amber color.
2. Remove the failed hard drive as described in the related procedure in this manual.
3. Install the new hard drive as described in the related procedure in this manual.
4. Check the following:
 - The hard disk to be installed for replacement must have the same specifications as its mirroring hard disk.
 - Use an unsigned hard disk drive for replacement. To use the signed disk, it is necessary to recover the duplex configuration by referring to Disk Operation in the configuration section of this manual after formatting the disk physically.
 - Before performing physical formatting, change **Option ROM Scan Monitoring** to **Disabled** on **Server Monitoring Configuration** in the BIOS setup utility.
5. Restore the redundant configuration.

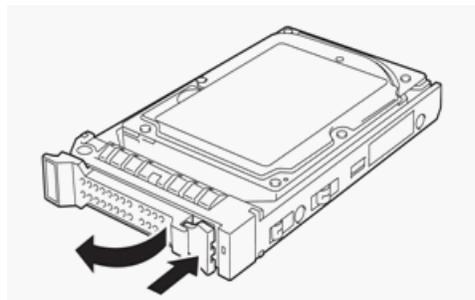
Installing a hard disk drive

Follow the procedure below to install hard disk drives that have been removed from a faulty CPU/IO module and are being installed in the replacement module from the factory.

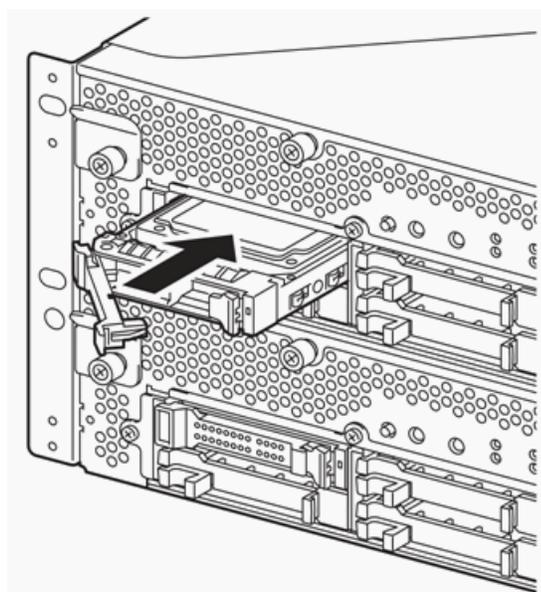
1. Shut down the OS. The system turns off automatically.
2. Remove the front bezel.

NOTE: *When installing hard disk drives into a replacement CPU/IO module, be sure to put the hard disk drive into the same slot that you marked on it when you removed it from the failed CPU/IO module.*

3. Unlock the hard disk drive.



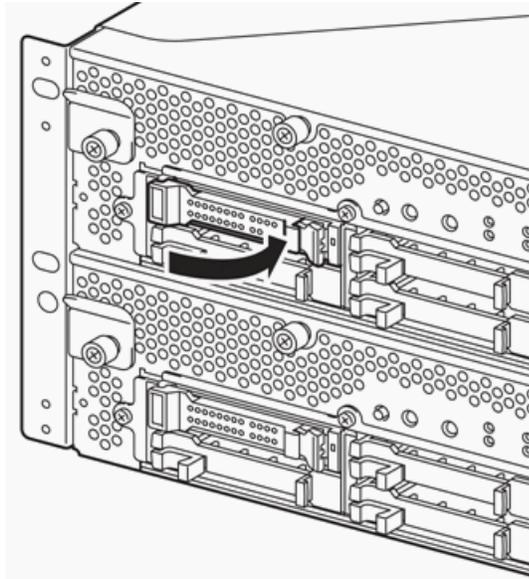
4. Firmly hold the handle of the hard disk drive and insert the drive into the slot.



Follow these tips when installing a hard disk drive. Refer to the illustration above:

- Insert the disk until the lever hook touches the server frame.
- Check the direction of the lever. Insert the hard disk with the lever unlocked.

5. Slowly close the lever. When the lever is locked, you will hear a clicking sound. Check that the hook of the lever is engaged with the frame.



6. Press the POWER switch to power on.
Original drives installed into a replacement CPU/IO module should require no configuration.
7. Install the front bezel.

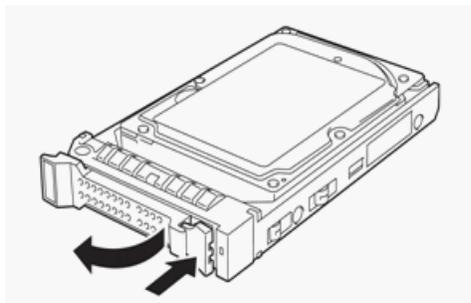
Installing a hard disk drive

Follow the procedure below to install hard disk drives that have been removed from a faulty CPU/IO module and are being installed in the replacement module from the factory.

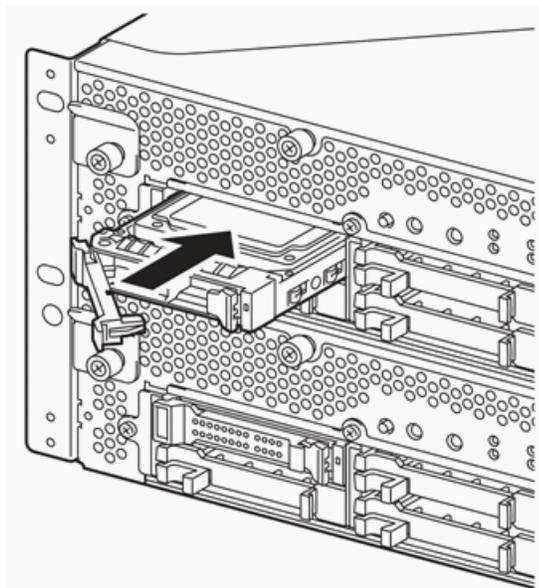
1. Shut down the OS. The system turns off automatically.
2. Remove the front bezel.

NOTE: When installing hard disk drives into a replacement CPU/IO module, be sure to put the hard disk drive into the same slot that you marked on it when you removed it from the failed CPU/IO module.

3. Unlock the hard disk drive.

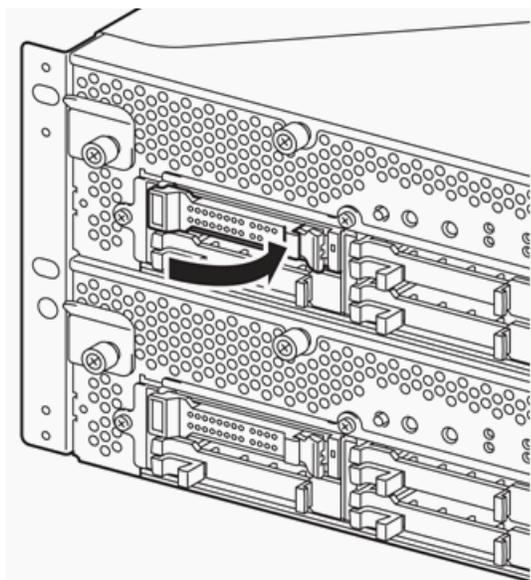


4. Firmly hold the handle of the hard disk drive and insert the drive into the slot.



Follow these tips when installing a hard disk drive. Refer to the illustration above:

- Insert the disk until the lever hook touches the server frame.
 - Check the direction of the lever. Insert the hard disk with the lever unlocked.
5. Slowly close the lever. When the lever is locked, you will hear a clicking sound. Check that the hook of the lever is engaged with the frame.



6. Press the POWER switch to power on.
Original drives installed into a replacement CPU/IO module should require no configuration.
7. Install the front bezel.

Specifications

Storage device specifications

The FT server storage specifications are shown in the tables below:

Hard Disk Drives	Type I and Type II Specification
Type	2.5 inch HDD (SAS 4 8TB, 5 x 600Gbs)
Capacity (maximum)	600GB x 5 in each CPU/IO module. Note that user area is reduced to half of the physical capacity due to software mirroring.
Hot-swappable	Yes
Number of slots	8 (Slots 0-7) per CPU/IO module, 16 total, (number of slots used based on FT server model)
Slot 0, Drive 0	System disk
Slots 1-7, Drives 1-7	Data disks
I/F and RAID	Type I and Type II Specification
Type	SAS 3Gb/s RAID 1 (standard)
Optical Disk Drive	Type I and Type II Specifications
Type	DVD Super Multi x 1

Mechanical specifications

The FT server mechanical specifications are shown in the table below:

Table 1: Mechanical specifications

Characteristic	Type I and Type II Specification
Cabinet Type	Rack-mount
Rack units	4
External Dimensions	483 (w) x 178 (h) x 736 (d) mm, 19.0 in. (w) x 7.0 in. (h) x 28.9 in. (d)
Rack clearance	40 cm or more on top, 1 m or more on the front and rear, 60 cm or more on the right and left.
Weight	Maximum 51.5kg , 113.3 lbs

Power supply specifications

The FT server power supply specifications are shown in the table below:

Table 2: Power specifications

Power Supply	Type I Specifications	Type II Specifications
Type	AC 100V-240V +/- 10%, 50/60Hz +/- 3Hz	AC 100V-240V +/- 10%, 50/60Hz +/- 3Hz
Power Consumption	1400VA, 1390W	1300VA, 1290W

Environmental specifications

The FT server specifications are shown in the following table:

Characteristic	Type I and Type II Specification
Ambient Temperature Non-operating	-10° to +55° C
Ambient Humidity Non-operating	20 to 80% RH (non-condensing)
Ambient Temperature Operating	+10° to +35° C
Ambient Humidity Operating	20 to 80% RH (non-condensing)

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JPEG acknowledgment

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