

Maintenance Guide

NEC Express Server
Express5800 Series

Express5800/R120g-2E, T120g EXP330A, EXP331A, EXP332A

Chapter 1 Maintenance

Chapter 2 Useful Features

Chapter 3 Appendix

Manuals

Manuals for this product are provided as booklets () and electronic manuals () in EXPRESSBUILDER.



Safety Precautions and
Regulatory Notices

Describes points of caution to ensure the safe use of this server.
Read these cautions before using this server.



Getting Started

Describes how to use this server, from unpacking to operations.
See this guide first and read the outline of this product.

EXPRESSBUILDER



User's Guide

Chapter 1: General Description	Overviews, names, and functions of the server's parts
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server
Chapter 3: Setup	System BIOS configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications and other information



Installation Guide (Windows)

Chapter 1: Installing Windows	Installation of Windows and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, Universal RAID Utility, and other bundled software



Maintenance Guide

Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2: Useful Features	Useful features and the detail of system BIOS settings, RAID Configuration Utility, and EXPRESSBUILDER
Chapter 3: Appendix	Error messages and Windows Event Logs



Other manuals

The detail of NEC ESMPRO, Universal RAID Utility, and other features

Contents

Manuals	2
Contents	3
Conventions Used in This Document	7
Signs and symbols for safety	7
Notations used in the text	8
Optical disk drive	8
Hard disk drive	8
Removable media	8
Abbreviations of Operating Systems (Windows)	9
Trademarks	10
License Notification	11
Warnings and Additions to This Document	14
Latest editions	14
Chapter 1 Maintenance	15
1. Relocation and Storage	16
2. Daily Maintenance	18
2.1 Checking and Applying Updates	18
2.2 Checking Alerts	18
2.3 Checking STATUS LED	19
2.4 Backup	19
2.5 Cleaning	19
2.5.1 Cleaning the server	20
2.5.2 Cleaning the tape drive	20
2.5.3 Cleaning the keyboard and mouse	20
3. User Support	21
3.1 Maintenance Services	21
3.2 Before Asking for Repair	21
4. Collecting Failure Information	22
4.1 Collecting Event Logs	22
4.1.1 Windows Server 2012 R2 / Windows Server 2012	22
4.1.2 Windows Server 2008 R2	25
4.2 Collecting Configuration Information	26
4.2.1 Windows Server 2012 R2 / Windows Server 2012	26
4.2.2 Windows Server 2008 R2/ Windows Server 2008	27
4.3 Collecting User-Mode Process Dump	27
4.4 Collecting Memory Dump	27

5.	Troubleshooting	28
5.1	Problem of Powering On	28
5.2	Problem of Starting EXPRESSBUILDER	29
5.3	Problem of Installing OS	31
5.4	Problem of Starting OS	35
5.5	Problem of Operating a RAID System	37
5.6	Problem of Using Internal Devices and Other Hardware	40
5.7	Problem of OS Operation	42
5.8	Problem of Starting EXPRESSBUILDER on Windows	43
5.9	Problem of Bundled Software	44
5.10	Problem of Optical Disk Drive	45
5.11	Problem of Powering Off	45
6.	Windows System Recovery	46
6.1	Recovery of Windows Server 2012 R2 and Windows Server 2012	46
6.2	Recovery of Windows Server 2008 R2	47
7.	Resetting and Clearing the Server	48
7.1	Software Reset	48
7.2	BMC Reset	48
7.3	Forced Shutdown	51
7.4	Clearing BIOS Settings (NVRAM(CMOS Memory))	53
8.	System Diagnostics	56
8.1	Tests	56
8.2	Usage of System Diagnostics	56
9.	Offline Tools	59
9.1	Starting Offline Tools	59
9.2	Features of Offline Tools	60
9.3	Console-less feature	61
9.3.1	How to remotely control	61
9.3.2	Preparation	61
Chapter 2	Useful Features	62
1.	System BIOS	63
1.1	Starting SETUP	63
1.2	Parameter Descriptions	63
1.2.1	Main	64
1.2.2	Advanced	65
1.2.3	Security	92
1.2.4	Server	99
1.2.5	Boot	105
1.2.6	Save & Exit	108
2.	Server Configuration	109
2.1	Starting Server Configuration	109
2.2	EXPRESSSCOPE Engine 3	111
2.3	Configuration Menu	112
2.3.1	Network	113
2.3.2	User Management	115
2.3.3	Mail Alert	117
2.3.4	SNMP Alert	119
2.3.5	System Operation	120
2.3.6	ECO	121
2.3.7	Miscellaneous	123
2.4	Clear SEL	124
2.5	Reset	124
2.6	Initializing Configuration	125

3.	Flash FDD	126
3.1	Notes on Using Flash FDD	126
3.1.1	Compensation for recorded data	126
3.1.2	Handling Flash FDD	126
3.1.3	Use in EXPRESSBUILDER	127
4.	Power Control Feature	128
4.1	Supported OS	128
4.2	Notes on Using Windows Server 2008	128
4.3	Notes on Using Windows Server 2008 R2 / 2012 / 2012 R2	129
5.	RAID System Configuration	130
5.1	Running LSI Software RAID Configuration Utility in the Legacy Mode	130
5.1.1	Quitting LSI Software RAID Configuration Utility	131
5.2	Menu Tree of the Legacy Mode	132
5.3	Procedures for Using Configuration Utility in the Legacy Mode	134
5.3.1	Create/add configuration	134
5.3.2	Manual Rebuild	139
5.3.3	Configure HotSpare	140
5.3.4	Check Consistency	142
5.3.5	Others	143
5.4	Running LSI Software RAID Configuration Utility in the UEFI Mode	144
5.4.1	Starting SETUP	144
5.4.2	Advanced menu	145
5.4.3	Quitting LSI Software RAID Configuration Utility	146
5.5	Menu Tree of UEFI Mode	147
5.6	Procedures for Using Configuration Utility in UEFI Mode	150
5.6.1	Create/add configuration	150
5.6.2	Manual Rebuild	166
5.6.3	Configure HotSpare	168
5.6.4	Check Consistency	172
5.6.5	Others	176
5.7	LSI Software RAID Configuration Utility and Universal RAID Utility	177
5.8	Off-line Utility and Universal RAID Utility	179
6.	Details of EXPRESSBUILDER	181
6.1	Starting EXPRESSBUILDER	181
6.2	Menus of EXPRESSBUILDER	182
6.3	Utilities in EXPRESSBUILDER	185
6.4	CLI for EXPRESSBUILDER	185
7.	EXPRESSSCOPE Engine 3	186
8.	NEC ESMPRO	187
8.1	NEC ESMPRO ServerAgentService (for Windows)	187
8.2	NEC ESMPRO Manager	188
8.3	NEC ESMPRO Agent Extension	189
8.4	Server Configuration Utility	189
8.5	NEC ExpressUpdate Agent	189
9.	NEC Product Info Collection Utility	190
9.1	Usage	190
10.	Ezclct Viewer	191
11.	Universal RAID Utility	192
11.1	Creating Logical Drive of RAID 6	192
12.	Express Report Service / Express Report Service (HTTPS)	193
13.	Express Report Service (MG)	194

Chapter 3	Appendix	195
1.	POST Error Message	196
2.	List of Windows Event Logs	212
3.	Accessing Data for Electric Power, Temperature, and Processor Utilization	224
3.1	Windows	224
3.1.1	Power consumption	224
3.1.2	Intake air temperature	225
3.1.3	Processor utilization	228
4.	Glossary	229
5.	Revision Record	230

Conventions Used in This Document

Signs and symbols for safety

WARNING and CAUTION are used in this guide as the following meaning.



WARNING







Indicates there is a risk of death or serious personal injury



CAUTION

Indicates there is a risk of burns, other personal injury, or property damage

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:


	Attention	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type.	(Example)  (Electric shock risk)
	Prohibited Action	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action.	(Example)  (Do not disassemble)
	Mandatory Action	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard.	(Example)  (Disconnect a plug)

(Example in this guide)



Symbol to draw attention

Description of a warning

Term indicating a degree of danger



WARNING

Use only the specified outlet

Use a grounded outlet with the specified voltage. Use of an improper power source may cause a fire or a power leak.

Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this manual. These notations have the following meanings.

Important	Indicates critical items that must be followed when handling hardware or operating software. If the procedures described are not followed, <u>hardware failure, data loss, and other serious malfunctions could occur.</u>
Note	Indicates items that must be confirmed when handling hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Optical disk drive

This server is equipped with one of the following drives. These drives are referred to as *optical disk drive* in this manual.

- DVD-ROM drive
- DVD Super MULTI drive

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this manual refer to both of the following.

- Hard disk drive (HDD)
- Solid state drive (SSD)

Removable media

Unless otherwise stated, *removable media* described in this manual refer to both of the following.

- USB flash drive
- Flash FDD

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

See Chapter 1 (1.2 Supported Windows OS) in Installation Guide (Windows) for detailed information.

Notations in this document	Official names of Windows
Windows Server 2012 R2	Windows Server 2012 R2 Standard
	Windows Server 2012 R2 Datacenter
Windows Server 2012	Windows Server 2012 Standard
	Windows Server 2012 Datacenter
Windows Server 2008 R2	Windows Server 2008 R2 Standard
	Windows Server 2008 R2 Enterprise

Trademarks

EXPRESSSCOPE and ExpressUpdate are registered trademark of NEC Corporation.

Microsoft, Windows, and Windows Server are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.

Intel, Pentium, and Xeon are registered trademarks of Intel Corporation of the United States.

Avago, LSI, and the LSI & Design logo are trademarks or registered trademarks of Avago Technologies in the United States and/or other countries.

PCI Express is a trademark of Peripheral Component Interconnect Special Interest Group.

QLogic is a registered trademark of Qlogic Corporation.

Broadcom, NetXtreme, LiveLink, Smart Load Balancing are registered trademarks or trademarks of the Broadcom Corporation in the U.S. and other countries.

InfiniBand is a trademark or service mark of InfiniBand Trade Association.

Mellanox, and its logo, and Connect-X, Switch-X, MLNX-OS products are trademarks or registered trademarks of Mellanox Technologies in Israel and other countries.

All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

License Notification

Open source software of following license is included in the part of this product (system BIOS).

- EDK • EDKII
- UEFI Network Stack II and iSCSI
- Crypto package using WPA Supplicant

Open source software of following license is included in the part of this product (Off-line Tools).

- EDK/EDKII

EDK/EDKII

BSD License from Intel

Copyright (c) 2012, Intel Corporation

All rights reserved.

Copyright (c) 2004, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the Intel Corporation nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

UEFI NETWORK STACK II and iSCSI

OpenSSL License

Copyright (c) 1998-2011 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit
(<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

CRYPTO PACKAGE USING WPA SUPPLICANT

WPA Supplicant

Copyright (c) 2003-2012, Jouni Malinen <j@w1.fi> and contributors
All Rights Reserved.

This program is licensed under the BSD license (the one with advertisement clause removed).
If you are submitting changes to the project, please see CONTRIBUTIONS file for more instructions.

License

This software may be distributed, used, and modified under the terms of
BSD license:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name(s) of the above-listed copyright holder(s) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Warnings and Additions to This Document

1. Unauthorized reproduction of the contents of this document, in part or in its entirety, is prohibited.
2. This document is subject to change at any time without notice.
3. Do not make copies or alter the document content without permission from NEC Corporation.
4. If you have any concerns, or discover errors or omissions in this document, contact your sales representative.
5. Regardless of article 4, NEC Corporation assumes no responsibility for effects resulting from your operations.
6. The sample values used in this document are not actual values.

Keep this document for future use.

Latest editions

This manual was created based on the information available at the time of its creation. The screen images, messages and procedures are subject to change without notice. Substitute as appropriate when content has been modified.

The most recent version of this guide, as well as other related documents, is also available for download from the following website.

<http://www.nec.com/>

NEC Express5800 Series Express5800/R120g-2E, T120g

1

Maintenance

This chapter explains maintenance of server, and what actions are to be taken in case of trouble when operating this server.

1. Relocation and Storage

Describes how to relocate and store this server.

2. Daily Maintenance

Describes what you confirm for daily use, how to manage files, and how to clean the server.

3. User Support

Describes various services on this product.

4. Collecting Failure Information

Describes how to collect information about the location where a failure occurred and its cause if the server malfunctions. See this section in case of a failure.

5. Troubleshooting

Describes how to identify the causes of problems and what actions are to be taken to address them. See this section if you suspect a failure.

6. Windows System Recovery

Describes Windows recovery setup. See this section if Windows is corrupt.

7. Resetting and Clearing the Server

Describes how to reset or clear the server. See this section if the server is not working or if you want to restore BIOS settings to the factory settings.

8. System Diagnostics

Describes the system diagnostics of this server.


9. Offline Tools

Describes tools for preventive maintenance of this product.

1. Relocation and Storage

Follow the steps below if you want to relocate or store this server.


⚠ WARNING



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices*.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery, NiMH, or Li-ion battery.
- Disconnect the power plug before installing or removing the server.

⚠ CAUTION



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices*.

- Make sure to complete installation.
- Do not get your fingers caught.
- Be careful of handling internal components that may be at high temperatures.

Note

- If the server has hard disk drives, move the server while being careful not to damage the drive.
- When storing the server, monitor the environmental conditions of the storage area.
Temperature: –10°C to 55°C, Humidity: 20% to 80%
(No dew condensation is permitted)

Tips

- Make backup copies of important data stored in the hard disk drive.

1. Remove the disc from the optical disk drive.
2. Power off the server (POWER LED goes off).
3. Unplug the power cord of the server from the power outlet.
4. Disconnect all the cables from the server.
5. Pack the server securely to protect from damage, shock, and vibration.

Important

If this server and internal optional devices are suddenly moved from a cold place to a warm place, condensation will occur. Wait for a sufficient period of time before using the server and other components.

Note

Check and adjust the system clock before operating after relocating or storing the server.

2. Daily Maintenance

To use this server under good conditions at all times, periodically check and maintain as follows. If failures are found, ask your sales representative, avoiding impossible operation.

2.1 Checking and Applying Updates

Express5800 Series posts update information for BIOS, firmware (FW), driver, and others of the server and peripheral devices on our website. We recommend you to apply the latest update always.

NEC corporate site: <http://www.nec.com/>

[Support & Downloads]

NEC also provides *ExpressUpdate* that helps you to download and install the updates that must be applied to BIOS and FW of the server.

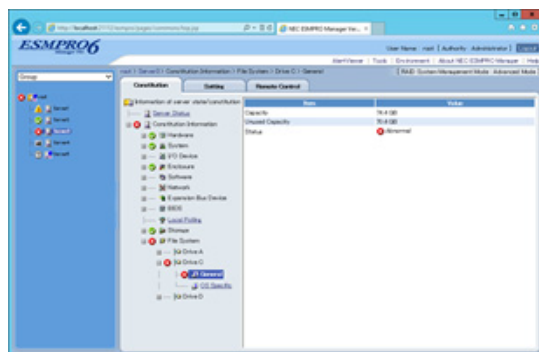
Tips

NEC recommends that you back up data before applying the latest update.

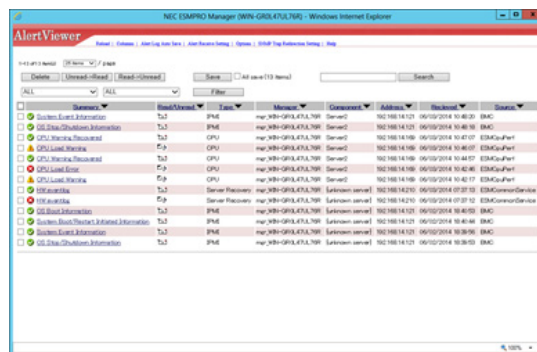
2.2 Checking Alerts

Use NEC ESMPRO Manager (for Windows) to constantly verify that no abnormalities are discovered on the monitored server and that no alerts have been issued.

Example image of NEC ESMPRO Manager



NEC ESMPRO Manager



AlertViewer

2.3 Checking STATUS LED

After powering on the server or before shutting down the system and powering off the server, check STATUS LED on the front of the server. For the functions and descriptions of the LED, see *Chapter 1 (4. Names and Functions of Parts)* in *User's Guide*. If the indicator shows the server abnormality, contact your sales representative.







2.4 Backup

We recommend that you periodically back up the data on HDD.

If a RAID array has been configured on your system, back up the RAID configuration data. We also recommend that you back up it after a rebuilding process required due to HDD failure. See *Chapter 2 (6. Details of EXPRESSBUILDER)* for details.

2.5 Cleaning

Regularly clean the server to keep it in good condition.

 WARNING	
    	<p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see <i>Safety Precautions and Regulatory Notices</i>.</p> <ul style="list-style-type: none">• Do not disassemble, repair, or alter the server.• Disconnect the power plug before cleaning the server.

2.5.1 Cleaning the server

Wipe the external surfaces of the server with a dry soft cloth. Follow the steps below if stains remain on the surfaces.

Important

- Do not use thinner, benzene, and other volatile solvents to clean the server.
- The power outlet, cables, connectors on the rear panel of the server, and the inside of the server must be kept dry.

1. Confirm that the power is OFF (POWER LED is OFF).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in step 4.
6. Soak a soft cloth in water, squeeze it firmly, and wipe the server with it once again.
7. Wipe the server with a dry cloth.

2.5.2 Cleaning the tape drive

A dirty tape drive head causes unsuccessful file backup and damages the tape cartridge. Periodically clean the tape drive with the designated cleaning tape.

For the cleaning interval and method, the estimated usable period and lifetime of the tape cartridge, refer to the instructions attached to the tape drive.

2.5.3 Cleaning the keyboard and mouse

Wipe the surface of the keyboard with a dry cloth after confirming that the whole system, including the server and the peripherals, are shut down and POWER LED is off.

An optical mouse does not work properly if the lens area is not clean. Wipe the sensor with a dry cloth to remove any dirt or dust.

3. User Support

Before getting after-sales service, check the contents of the warranty and service.

3.1 Maintenance Services

Service representatives from NEC subsidiary companies or companies authorized by NEC provide maintenance services. For the services, contact your sales representative.

3.2 Before Asking for Repair

If you think that a failure occurred, follow the steps below:

1. Check if the power cord and cables to other products are properly connected.
2. See *Chapter 1 (5. Troubleshooting)*. If you find a symptom similar to your problem, take the action as instructed.
3. Confirm that the required software has been properly installed.
4. Scan for viruses using a commercial Antivirus Software.

If the problem persists after taking the measures above, contact your sales representative. Take notes on LED indications and the display on the screen at the failure, which will be useful information for the repair.

For repair within the warranty period, be sure to apply with your warranty.

4. Collecting Failure Information

If the server does not work normally, you can collect failure information by using the following way.
The failure information to be described is to be collected only at the request of your sales representative.

Important

Do not reset during dumping memory or restarting the server even if the message of virtual memory shortage appears.

4.1 Collecting Event Logs

To collect the various event logs of the server, follow the steps below.

Tips

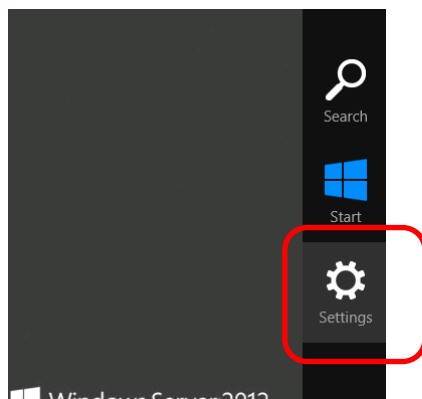
If a STOP error, system error, or system stall occurs, restart the system and follow the steps below.

4.1.1 Windows Server 2012 R2 / Windows Server 2012

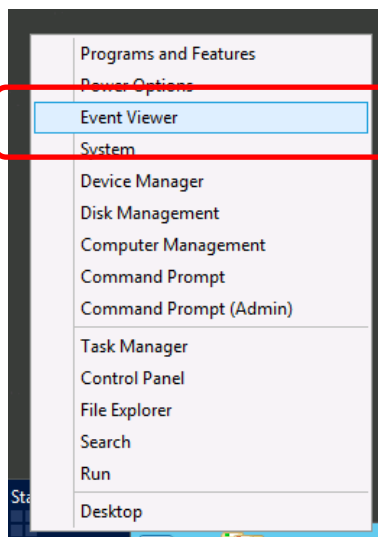
1. Click **Settings** on Charms Bar.

To go to the step 4, you can directly choose **Event Viewer** by right-clicking on the lower left corner of the screen.

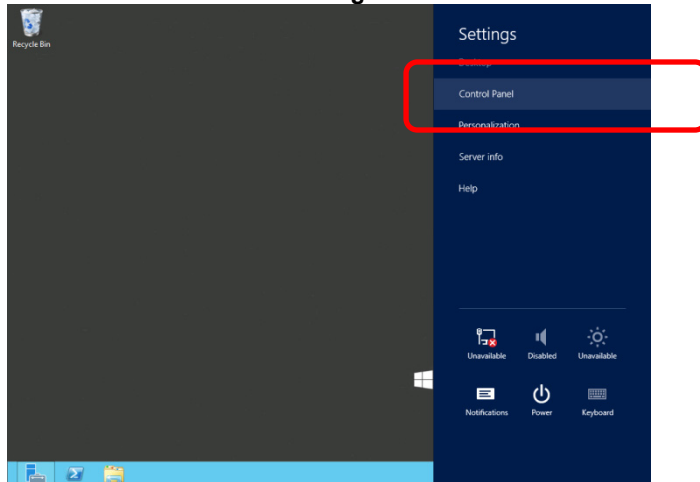
[Settings]



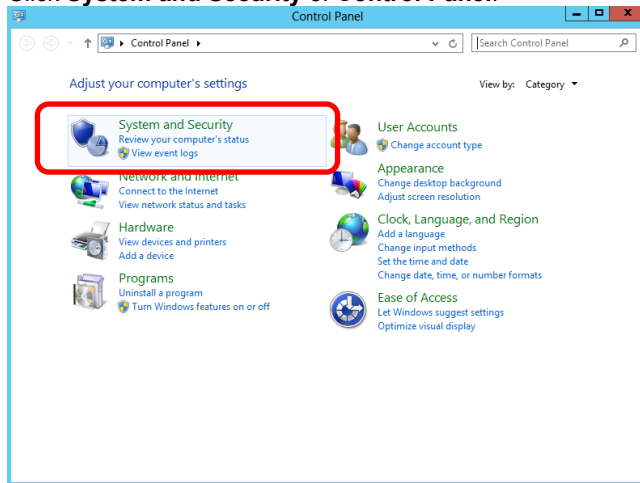
[Event Viewer]



2. Click **Control Panel** from **Settings**.



3. Click **System and Security** of **Control Panel**.

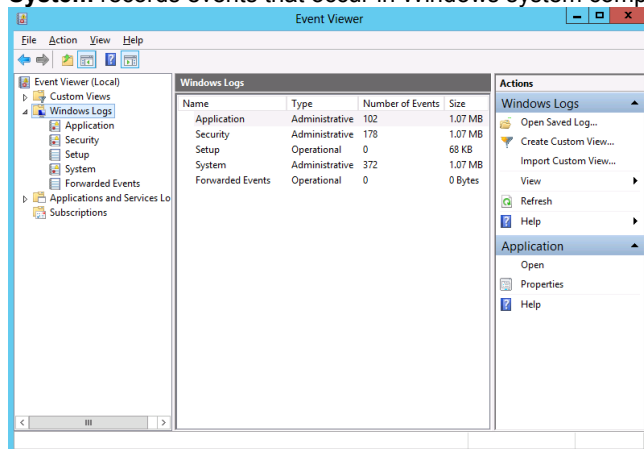


4. Select the type of log in **Windows Logs**.

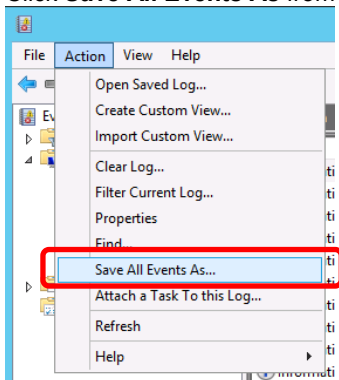
Application records events related to running applications.

Security records events related to security.

System records events that occur in Windows system components.



5. Click **Save All Events As** from **Action** menu.

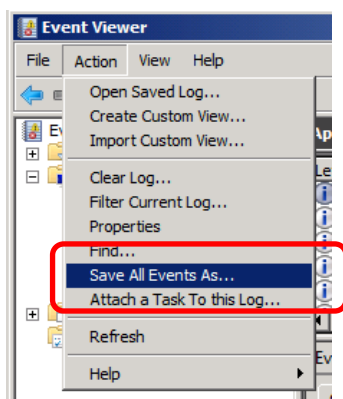


6. Type the file name of the log file in **File name**.

7. Select the type of the log file you want to save in **Save as type**, and then click **Save**.

4.1.2 Windows Server 2008 R2

1. Click **Administrative Tool** and then click **Event Viewer** from **Control Panel**.
2. Select the type of log in **Windows Logs**.
Application records events related to running applications.
Security records events related to security.
System records events that occur in Windows system components.
3. Click **Save All Event As** from **Action** menu.



4. Type the file name of the log file in **File name**.
5. Select the type of the log file you want to save in **Save as type**, and then click **Save**.

4.2 Collecting Configuration Information

This section describes how to collect hardware information or configuration.

Tips

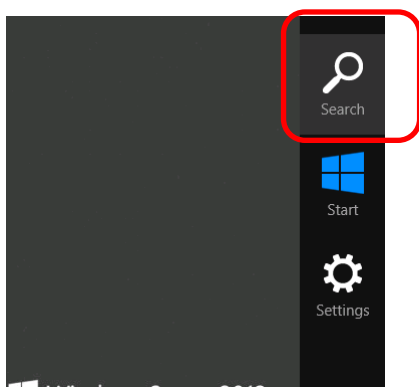
If a STOP error, system error, or stall occurs, restart the system and then follow the procedure below.

4.2.1 Windows Server 2012 R2 / Windows Server 2012

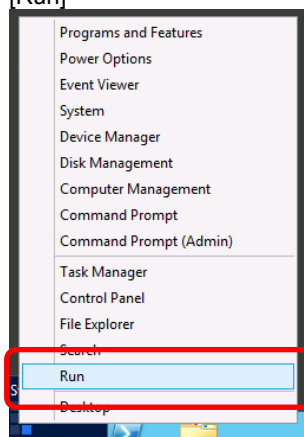
1. Click **Search** on Charms Bar.

You can also use **Run** feature by right-clicking on the lower left corner of the screen.

[Search]

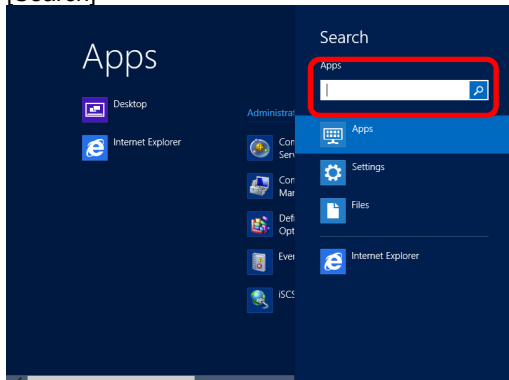


[Run]

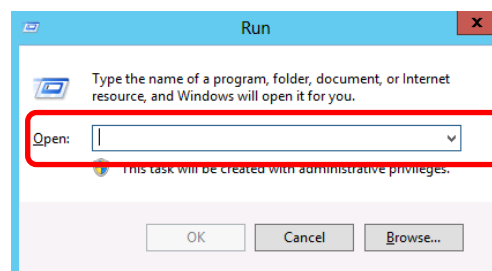


2. Type `msinfo32.exe` in the text box, and then press <Enter> key.

[Search]



[Run]



3. System Information starts.
4. Click **Export** from **File** menu.
5. Type a file name to save in **File Name**, and then Click **Save**.

4.2.2 Windows Server 2008 R2/ Windows Server 2008

1. Click **Run** from **Start** menu.
2. Type `msinfo32.exe` in **Open**, and then click **OK**.
3. System Information starts.
4. Click **Export** from **Files** menu.
5. Type a file name to save in **File Name**, and then Click **Save**.

4.3 Collecting User-Mode Process Dump

The user-mode process dump is the failure information related to application errors.

For details, see *Chapter 1 (6.2 How to Create a User-Mode Process Dump File)* in "*Installation Guide (Windows)*".

4.4 Collecting Memory Dump

If an error occurs, the dump file will be saved to acquire necessary information. You can specify any path for saving the diagnostic information. For details, see *Chapter 1 (6.1 Specifying Memory Dump Settings (Debug Information))* in "*Installation Guide (Windows)*".

Consult with your sales representative before dumping the memory. Dumping the memory while the server is in operating normally will affect the system operation.

Important

Do not reset during dumping memory or restarting the server even if the message of virtual memory shortage appears.

5. Troubleshooting

If this system does not operate as intended, check it according to the contents of the following checklist before sending it for repair. If an item in the checklist corresponds with a problem you are experiencing, follow the subsequent check and processing instructions.

If the system still does not operate normally, write down the messages displayed on the screen and then contact your sales representative.

5.1 Problem of Powering On

[?] Fail to power on the server

- ☐ Is the server properly supplied with power?
 - Check if the power cord connects to the power outlet (or UPS) that meets the power specifications for the server.
 - Use the power cord that comes with the server. Additionally, check the power cord for broken shield or bent plugs.
 - Make sure the power breaker for the connected power outlet is on.
 - If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. Refer to the manual that comes with the UPS for details.
Power supply to the server may be linked with UPS using the BIOS Setup utility.
- ☐ Did you press the POWER switch after the STATUS LED turned off?
 - When the power cord is connected, the initialization of EXPRESSSCOPE Engine 3 (BMC) starts. During initialization, the STATUS LED lights green and amber simultaneously. After the STATUS LED turns off, press the POWER switch on the front of the server to power on the server (the POWER LED lights green).
- ☐ Is **Standby Power Save** set to **Enabled** in BIOS settings?
 - When **Standby Power Save** is **Enabled**, remote power on is not allowed, and you can only power on the server by using the POWER switch. If the AC Link setting is changed from this state, press POWER Switch twice to start up the server.

[?] The screen is not displayed

- Wait until the NEC logo appears.

[?] The screen is sometimes changed to the black screen during POST process

- ☐ Are the BIOS settings of option ROM scan for plural on-board LANs specified to **Enabled**?
 - Ignore the black screen and wait until POST ends.

[?] POST does not complete

- ❑ Is memory installed correctly?
 - Check if memory is installed correctly.
- ❑ Is the memory size large?
 - Wait for a while. The memory check takes longer than usual when the installed memory size is large.
- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?
 - Restart the server and do not perform any keyboard or mouse operation until the BIOS start-up message appears.
- ❑ Are memory and PCI devices supported for use with this server?
 - Operation of the server with unauthorized devices is not supported.
- ❑ Check if "Shutdown System" is enabled on ECO menu.
 - Confirm the ECO settings from remote machine. If remote environment is unavailable, remove the option devices from the server to reduce power consumption of overall system, and then restart the server.
 - Check if the value specified for "Power Threshold (Pa)" is appropriate for normal startup. To operate the server with "Shutdown System" being enabled, the value of "Power Threshold (Pa)" must be fully considered.

5.2 Problem of Starting EXPRESSBUILDER

[?] Unable to start EXPRESSBUILDER from Internal Flash Memory

- ❑ Did you press <F3> key during POST process?
 - Press <F3> key during displaying the following message at POST.
Press <F2> Setup, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network
- ❑ Is a CD/DVD or removal media inserted to the server?
 - Before pressing the <F3> key to start, remove the CD/DVD or removal media from the server.
- ❑ Is the data in Internal Flash Memory damaged?
 - Run EXPRESSBUILDER DVD, perform **Update of Internal Flash Memory** in Utility menu, and try again.
- ❑ Is an error message displayed at text-based startup?
 - Take the following action according to the message displayed.

Error [Message ID:Z3001]:
Unable to start EXPRESSBUILDER. Virtual Drive (VD) is incorrect.

Action: Check if the files for recovery are uploaded in the following site. If they are uploaded, recover the files according to the given instructions.
<http://www.nec.com/>

Error [Message ID:Z3002]:
Failed to detect a DVD drive or a flash drive.

Action: Check if hardware is properly connected.

Error [Message ID:Z3003]:
Failed to read a file.

Action: Check if DVD has stains or cracks.

Is a message such as the following displayed?

→ Check the error and take the appropriate action according to the table below.

Message	Action
EXPRESSBUILDER does not support this computer. Insert EXPRESSBUILDER disc for the computer and click OK to restart the computer.	Update Internal Flash Memory by using EXPRESSBUILDER DVD that supports this server.
Failed to get the hardware parameters on the motherboard. Check if EXPRESSBUILDER is for this computer or if the motherboard has failed.	Contact your sales representative.
Failed to find a file.	Update Internal Flash Memory by using EXPRESSBUILDER DVD that supports this server.
Failed to open a file.	
Failed to get the parameters of a file.	
Failed to write a file.	
Failed to copy a file.	
An undefined error occurred.	Contact your sales representative.

[?] While running EXPRESSBUILDER, the server reboots after a certain time has elapsed

- ☐ Is **Boot Monitoring** enabled?

→ **Boot Monitoring** option of BIOS SETUP must be disabled while running EXPRESSBUILDER.

[?] Unable to start EXPRESSBUILDER DVD

- ☐ Are BIOS settings correct?

→ Check **Boot** of BIOS Setup Utility, and then change the boot order of CD/DVD drive to the first.

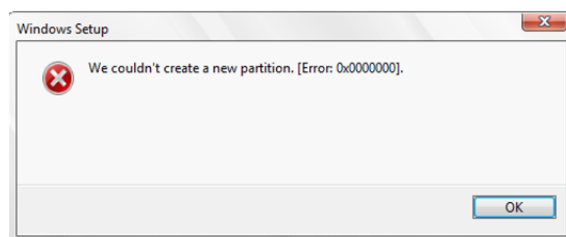
- ☐ Is the DVD media damaged?

→ Prepare a new DVD-R media, re-create an EXPRESSBUILDER DVD, and try again.

5.3 Problem of Installing OS

[?] Unable to create a partition when installing Windows Server 2012 R2 or Windows Server 2012

- ❑ Is the following message displayed?



→ Delete the partition created, and then create a new partition again.

partition you are going to remove. For details, refer to the Microsoft website below:

Windows Server 2012 R2

<https://technet.microsoft.com/en-us/library/dn387077.aspx>

Windows Server 2012

<https://technet.microsoft.com/en-us/library/jj574225.aspx>

[?] Unable to install OS

- ❑ Is the hard disk drive properly installed?

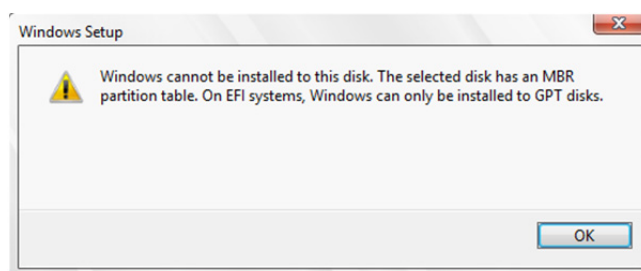
→ Make sure that the hard disk drive is installed securely and that cables are properly connected.

- ❑ Is the disk format correct?

→ Follow the table below to create a partition depending on the boot mode.

Boot mode	Disk format
UEFI Mode	GPT (GUID partition table)
Legacy Mode	MBR (master boot record)

For example, the following message appears if an MBR disk is specified as the system drive of Windows on UEFI boot mode.



→ To change the disk format, clear the partition configuration and create a new partition. All of the data on the hard disk drive will delete. Back up necessary data before clearing the partition configuration.

- ❑ Did you configure the RAID controller?

→ For a RAID system, use EXPRESSBUILDER or RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility) to properly configure the RAID controller before installing OS.

- ❑ Did you create a logical drive?

→ For a RAID system, create a logical drive using EXPRESSBUILDER or RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility) to install OS.

[?] Unable to install Windows

- ❑ Did you check the precautions for installation?
→ For installing OS, see "*Installation Guide (Windows)*".

[?] A product key is not requested

- ❑ Did you use the backup DVD-ROM?
→ You do not need to type the product key when installing Windows with the backup DVD-ROM.

[?] The following devices are indicated as faulty devices in a Windows Server 2012 R2 / Windows Server 2012 Server Core installation environment

- SM Bus Controller
 - Base System Device
 - System Interrupt Controller
 - Performance Counters
 - PCI Device
- There is no operational problem.

[?] The keyboard or mouse does not work

- When the keyboard or mouse is connected to the USB 3.0 port, this error occurs. Connect them to the USB 2.0 port. See *Chapter 1 (4. Names and Functions of Parts)* in *User's Guide*.

[?] The following message appears when installing OS, and cannot proceed

- The USB optical disk drive is connected to USB 3.0 port. Connect an optical disk drive to USB 2.0 port. See *Chapter 1 (4. Names and Functions of Parts)* in *User's Guide*.

[?] Unable to access the partition which was previously created after reinstalling while several disks are connected

- For details, refer to the Microsoft website below:
<http://support.microsoft.com/kb/2497048/ja> (Japanese only)

[?] When Windows Server 2008 R2 is installed while several disks are connected, the system partition and the boot partition (100 MB) are created in another disk

- For details, refer to the Microsoft website below:
<http://support.microsoft.com/kb/2530901/ja> (Japanese only)

- [?] **When Starter Pack is installed on Windows Server 2008 R2, the following message appears for a moment upon shutdown**

```
1 program still needs to close:
(Waiting for) Task Host Window
```

- No problems for system operation.
For details, refer to the Microsoft website below:
<http://support.microsoft.com/kb/975777/en-us>

- [?] **Windows has been installed as "Workgroup" although the installation option was "Join the domain"**

- ❑ Is the LAN cable properly connected?
- If the LAN cable is not connected, Windows is installed in workgroup setting, not in domain setting. After the OS is started, join the domain by using Control Panel.

- [?] **The following features are installed when installing IIS in Windows Server 2008 R2 using EXPRESSBUILDER**

- ❑ Windows Process Activation Service
 - Process Model
 - Configuration APIs
- ❑ Remote Server Administration Tool
 - Role Administration Tools
 - Web Server (IIS) Tools
- The features listed above are activated because they are required for the installation of IIS basic features.

- [?] **The Telnet Service is not installed**

- Adjust the computer name to 14 characters or less (*), and then install the Telnet Service according to the following procedure:

- (1) Click **Run** on Start menu.
- (2) Enter `tlntsvr/service` in **Open**, and then click **OK**.
- (3) Click Start menu, point to **Control Panel**, click **Administrative Tools**, and then click **Services** to confirm whether the Telnet Service is registered.

* You can specify the computer name at 15 characters or more after installing the telnet service.

- [?] **Unable to run "Create a parameter file for Windows OS"**

- **"Create a parameter file for Windows OS"** must be run using Microsoft HTML Application Host. If it does not start, associate the file type with Microsoft HTML Application Host by using the following steps.

- (1) Click **Run** on Start menu.
- (2) Enter `%windir%\system32\mshta.exe/register`.

[?] An error message appears after the graphics accelerator is installed

- ❑ Is the Server Core installation of Windows Server 2012 R2?

→ An application error is recorded in event log after restarting. Ignore this event log because it does not affect system operation.

[?] Unable to start from OS Installation Disc of Windows Server 2008 R2

- ❑ Is X2APIC feature of the processor disabled?

→ Disable X2APIC feature of the processor by using BIOS Setup Utility.

Advanced → Processor Configuration → X2APIC → Disabled

[?] The screen turns solid black or processing stops with 0x0000005C error while installing Windows Server 2008 R2:

- ❑ Is X2APIC feature of the processor disabled?

→ Disable X2APIC feature of the processor by using BIOS Setup Utility.

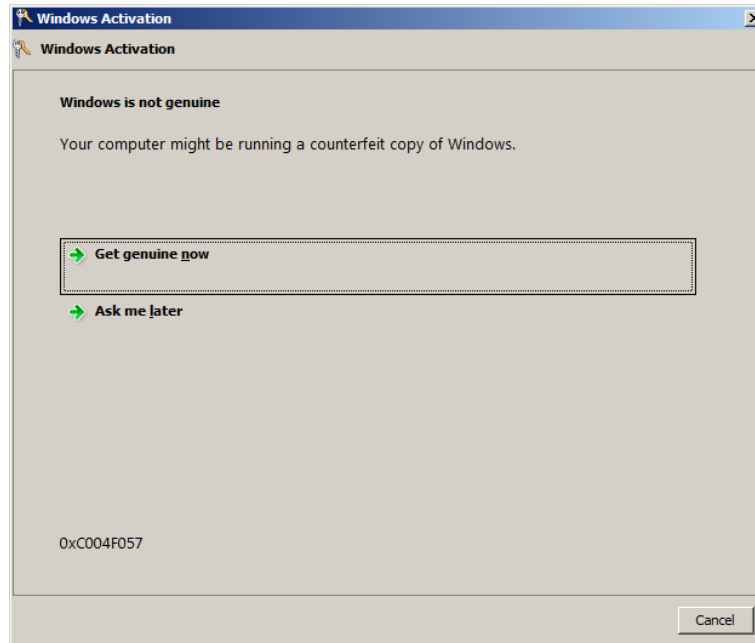
Advanced → Processor Configuration → X2APIC → Disabled

5.4 Problem of Starting OS

[?] Unable to start OS

- ☐ Have the settings of the RAID controller changed?
 - Specify the correct settings with RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility).
- ☐ Is the RAID controller found by POST?
 - Be sure to connect the RAID controller correctly and retry.
- ☐ Is the RAID controller installed firmly straight into the PCI slot?
 - Install the RAID controller properly.
- ☐ Is the RAID controller mounted on the PCI slot for which the mounting is restricted?
 - Check the mounting restrictions of the server and then mount the RAID controller on the correct slot.
- ☐ Are the hard disk drives properly installed?
 - Install the hard disk drives properly.
- ☐ Is the SAS cable connected to the hard disk drive correctly?
 - Connect the SAS cable properly.
- ☐ Is the EXPRESSBUILDER DVD inserted?
 - Remove the EXPRESSBUILDER DVD and restart.
- ☐ Is a cartridge inserted into N8151-86 with built-in RDX (USB)?
 - Either remove the cartridge or change the boot order in BIOS Setup.
- ☐ Is a disk array unit connected to the PCI card?
 - Change the boot order from BBS Priorities of the BIOS Setup Utility.

[?] The following message appears when logging in the system on Windows Server 2008 R2



- ❑ Have you finished license authentication for Windows product?
 - The above message will appear if you use Windows Server 2008 R2 with the unauthenticated license. Choose **Get genuine now** and proceed license authentication.
 - The above message is an example of request for license authentication. The message displayed on screen is subject to change depending on the license.

5.5 Problem of Operating a RAID System

[?] Unable to rebuild the RAID array

- ☐ Is the capacity of the hard disk drive to be rebuilt correct?
 - Use a hard disk drive with the same capacity as that of the faulty hard disk drive.
- ☐ Is the logical drive RAID0?
 - RAID0 cannot be rebuilt because it has no redundancy. Replace the failed hard disk drive, reconfigure the RAID array, and recover the drive using backup data.

[?] Unable to automatically rebuild the RAID array

- ☐ Did you wait for sufficient time until the hard disk drive was replaced?
 - Follow the steps below to use the auto-rebuilding feature.
 - (1) Remove a failure HDD.
 - (2) Wait for at least 90 seconds.
 - (3) Install a new HDD.
- ☐ Is configuration correct?
 - Run LSI Software RAID Configuration Utility and confirm settings for Auto Rebuild.
TOP menu → **Objects** → **Adapter** → **Auto Rebuild**

[?] The hard disk drive failed

- Contact your sales representative.

[?] Unable to perform Consistency Check

- ☐ Is the logical drive **Critical** or **Degraded**?
 - Replace the failed hard disk drive with new one, and then perform **Rebuild**.
- ☐ Is the logical drive RAID0?
 - RAID0 has no data redundancy and Consistency Check is disabled in the RAID0 array.

[?] Cannot set Write-Back for Cache Mode

- On **Virtual Disks – Properties – Policies** screen of Web BIOS, **Default Write** shows set value of cache mode of RAID controller, and **Current Write** shows the current write policy. Accordingly, if battery is not connected, failed, or insufficiently charged, indication of **Current Write** changes to **Write Through** even if you specify **Write Back with BBU** for **Default Write**.

Indication of Reason for Diff in Write	Action
BBU not installed	Displayed when battery is disconnected. (1) Check if battery control cable (cable used to connect RAID controller with battery) is properly connected. → Connect cable properly. (2) Is it displayed immediately after the battery was connected? → The battery may not be found if it is insufficiently charged. If the battery is not found even after 24 hours have elapsed, restart the server.
BBU is failed	Displayed when battery is failed. Contact your sales representative.
BBU is discharged	Displayed when battery voltage is low. Check the cache mode (current value) about 12 hours later.
BBU in re-learn cycle	Displayed when battery is being refreshed. Check cache mode (current value) about 12 hours later.
Reconstruction	Displayed when battery is being reconstructed. Check cache mode (current value) after reconstruction completes.

If the battery is not found in spite of actions taken, the battery may be faulty.
Consult with your sales representative.

[?] Additional battery is not found or the following message appears in POST

The battery hardware is missing or malfunctioning, or the battery is unplugged, or the battery could be fully discharged. If you continue to boot the system, the battery-backed cache will not function.

If battery is connected and has been allowed to charge for 30 minutes and this message continues to appear, then contact technical support for assistance.

Press 'D' to disable this warning (if your controller does not have a battery).

- ☐ Are the cable between the battery pack and battery board and the control cable between the battery board and battery connector connected correctly?
→ Connect the cables correctly.
- ☐ Is this message displayed after the battery is connected?
→ If the battery charging status is low, the battery is not found. If the battery is not found although 24 hours has passed, restart the system once. If the battery is not found although the above action has been taken, the additional battery may be faulty. Contact your sales representative.

[?] **Event ID510: The following event to prompt battery refresh is logged if additionally battery for RAID Controller has not been refreshed for about 1 year from beginning of use. (W, X: Number of RAID Controller)**

Event source : raidsrv

Event ID : 510

Type : Warning

Description : [CTRL: W (ID=X)]
Battery needs to be refreshed.

→ Additional battery for RAID controller is not refreshed automatically except for the first time. However, it is recommended to perform battery refresh once a year as guideline for stable operation of battery. Use Universal RAID Utility to perform battery refresh manually. See *Universal RAID Utility User's Guide* in EXPRESSBUILDER for more information.

[?] **DISK LED flashes**

- ☐ Does DISK LED flash frequently even while the hard disk drive is not accessed?

→ Ignore the flashing. When Patrol Read is running, the DISK LED flashes even if the hard disk drive is not being accessed. If a SATA hard disk drive is used, the DISK LED stays on.

5.6 Problem of Using Internal Devices and Other Hardware

[?] Unable to access the internal or external devices

- ☐ Are cables properly connected?
 - Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.
- ☐ Is the power-on order correct?
 - When the server has any external devices connected, power on the external devices first, then the server.
- ☐ Did you install drivers for connected optional devices?
 - Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.
- ☐ Is option board setting correct?
 - Refer to the manual that comes with the board for details to specify I/O port address, and other settings correctly.

[?] The keyboard or mouse does not work

- ☐ Is the cable properly connected?
 - Make sure that the cable is connected to the connector on the front or rear of the server.
- ☐ Is BIOS configuration correct?
 - Check the BIOS settings with BIOS Setup Utility.
- ☐ Are the server drivers installed?
 - Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed.

[?] Unable to access the hard disk drive

- ☐ Is the hard disk drive supported by the server?
 - Operation of any device that is not authorized by NEC is not supported.
- ☐ Is the hard disk drive properly installed?
 - Check the hard disk drive installation status and the cable connections.

[?] When N8190-157A/158A/159/160 is used, the names of the Fibre Channel controllers appear with different names on Device Manager

- When N8403-034/034F is used on Windows, a different controller name may be displayed per controller in Device Manager. It is not a problem in operating the system.
To display the correct controller name, please perform the following.

Start command prompt and run the following file in the system drive (usually, drive C:).

Windows Server 2012 R2:

```
C:\Program Files(x86)\EXPRESSBUILDER\Repository\015\win\winnt\drivers  
\01_storage\1_ao_03\friendlyname.exe
```

Windows Server 2012:

```
C:\Program Files(x86)\EXPRESSBUILDER\Repository\015\win\winnt\drivers  
\01_storage\1_ao_02\friendlyname.exe
```

Windows Server 2008 R2:

```
C:\Program Files(x86)\EXPRESSBUILDER\Repository\015\win\winnt\drivers  
\01_storage\1_ao_01\friendlyname.exe
```

If the above path does not exist, run the following file in the EXPRESSBUILDER DVD.

Windows Server 2012 R2:

```
\015\win\winnt\drivers\01_storage\1_ao_03\friendlyname.exe
```

Windows Server 2012:

```
\015\win\winnt\drivers\01_storage\1_ao_02\friendlyname.exe
```

Windows Server 2008 R2:

```
\015\win\winnt\drivers\01_storage\1_ao_01\friendlyname.exe
```

5.7 Problem of OS Operation

[?] Windows operation is unstable

- ☐ Have you installed Starter Pack?

→ See "*Installation Guide (Windows)*" to install Starter Pack.

If you restore the Windows from a backup tool, Starter Pack is needed to install again.

[?] Cannot turn the power OFF at the blue screen (STOP error screen)

→ Perform the forced shutdown (continue to press the power switch at least four seconds) to turn off the server.

[?] Unable to connect to a network

- ☐ Is the cable connected properly?

→ Securely connect the proper cable to the network port on the rear of the server. Additionally, make sure that the cable conforms to the network interface standards.

- ☐ Are BIOS settings correct?

→ Check the BIOS settings with BIOS Setup Utility.

- ☐ Have you completed protocol and services settings?

→ Confirm that the network driver for the server has been installed and various settings, such as TCP/IP protocol, have been properly specified.

- ☐ Are transfer rate settings correct?

→ Confirm that the transfer rate and duplex mode are the same as those of the connecting hubs.

5.8 Problem of Starting EXPRESSBUILDER on Windows

[?] Cannot read instruction manuals

- ☐ Do you have Adobe Reader installed correctly in your computer?
 - To read PDF files, install Adobe Reader in your computer.
- ☐ Is an error message “Internet Explorer has stopped” displayed?
 - If so, close the dialog box and continue the operation. When the same error message appears again, double-click “version.xml” under the root directory of the DVD, and choose Yes in the dialog box that follows. When the link to the manual is then clicked again, the file opens.

[?] The menu does not appear even when EXPRESSBUILDER DVD is inserted.

- ☐ Is the OS in the proper state?
 - The menu does not appear depending on the system registry setting or the timing to insert the DVD/CD. Select **Computer** from Explorer and double-click the icon of the set DVD drive.

[?] Some menu items are grayed out

- ☐ Is your system environment correct?
 - Some software requires administrator privilege or needs to be operated on the server. Run on the appropriate environment.

[?] Unable to create the repository

- ☐ Are there free four drive letters?
 - Free at least four drive letters except A and B when creating the repository. If the drive letters from C to W are already assigned, drive letters cannot be assigned to four temporary drives and the repository cannot be created.

[?] Unable to launch EXPRESSBUILDER on Windows

- ☐ Did you uninstall EXPRESSBUILDER?
 - EXPRESSBUILDER is usually installed at the Starter Pack installation. If you uninstall EXPRESSBUILDER after the Starter Pack installation, EXPRESSBUILDER cannot be launched on Windows. In that case, install Starter Pack again or run the following installer in EXPRESSBUILDER DVD.
\\015\\ar_menu\\setup.exe
The following message may appear, but automatically disappears, and operation is unnecessary:
“Device driver software has not been installed correctly.”

5.9 Problem of Bundled Software

[?] **The installer is displayed by a wrong language or resulted in an error**

❑ Is your system environment correct?

→ Confirm the settings of **Regional and Language Options**. Set the language settings of each tab to **English (US)**.

[?] **The problem of NEC ESMPRO ServerAgentService (for Windows)**

→ For details of NEC ESMPRO ServerAgentService (for Windows), see “*NEC ESMPRO ServerAgentService Installation Guide (Windows)*” in EXPRESSBUILDER.

[?] **The problem of NEC ESMPRO Manager**

→ For details of NEC ESMPRO Manager, see “*NEC ESMPRO Manager Installation Guide*” in EXPRESSBUILDER or its help.

5.10 Problem of Optical Disk Drive

[?] Unable to access or play CD, DVD and other optical disks

- ❑ Is the disk properly set in the optical disk drive tray?
 - There is a holder in the tray to secure the disk. Make sure that the disk is securely placed in the holder.

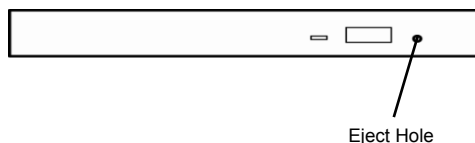
[?] Unable to access or play DVD/CD-ROMs

- ❑ Is the DVD/CD-ROM supported by the server?
 - For a CD with copy guard which does not conform to the CD standard, the playback of such a disk with the optical disk drive is not supported.
 - The DVD/CD-ROM for Macintosh is not supported.

[?] Unable to eject a disk using the eject button

→ Eject the disk in the following steps.

1. Press the power switch to turn off the server (POWER/SLEEP LED is off).
2. Use a 100 mm long metal pin that is 1.2 mm in diameter (or uncoil a thick paper clip) and insert it into Eject Hole at the front of the tray. Keep pressing slowly until the tray comes out.



Important

- Do not use toothpicks, plastic, and other fragile pins.
- If you still cannot eject the disk, contact your sales representative.

3. Pull the tray out with your hands.
4. Remove the disk.
5. Push the tray back to its original position.

5.11 Problem of Powering Off

[?] The power is not turned off

- ❑ Is the suppression feature of the power switch enabled?
 - Restart the server once and start BIOS Setup Utility. Disable the setting of **Power Switch Inhibit**.
The menu to be confirmed: **Server** → **Power Switch Inhibit**

[?] The server does not operate in Standby Power Save mode after enabling this mode using BIOS Setup Utility (SETUP)

[Server]-[Power Control Configuration]-[Standby Power Save]

- This feature is enabled by turning off the power after OS is started. If the power is turned off during execution of POST or BIOS Setup Utility, the feature may not work.

6. Windows System Recovery

Recover the Windows system by using the following instructions if the system does not work normally.

Note

- Install each driver and Starter Pack after recovering Windows. See "*Installation Guide (Windows)*" to install Starter Pack and drivers.
- If hard disk drives cannot be found by Windows, you cannot recover Windows.

6.1 Recovery of Windows Server 2012 R2 and Windows Server 2012

If Windows does not start normally, you can recover it by using the feature of the Windows installation disc. To run this feature, start the installation disc, and then choose **Repair your computer** in **Windows Setup** wizard.

We recommend that this option is performed by the system administrator.

If the RAID controller driver is required, take the following steps:

1. Turn on the power to the display and this server in that order or restart.
2. When "Press <F2> Setup, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network" appears on the lower left of the POST screen, press the <F3> key.
3. Start the OS from the OS installation media.
The message "Press any key to boot from CD or DVD..." appears on the upper part of the screen.
To boot from the media, press the <Enter> key.
While boot-up proceeds, the message "Loading files..." appears.
4. Choose **Repair your computer** in **Windows Setup** wizard.
5. Click **Troubleshoot**.
6. Click **Advanced options**.
7. Click **Command Prompt**.
8. Execute the following command to load the driver:
Specify the drive whose volume label is INTER-FLASH.

For on-board RAID controller (LSI Embedded MegaRAID):

Windows Server 2012 R2 :

```
drvload < drive-letter >:\015\win\winnt\drivers\01_storage\1_al_05\megasr1.inf
```

Windows Server 2012 :

```
drvload < drive-letter >:\015\win\winnt\drivers\01_storage\1_al_04\megasr1.inf
```

Tips

The volume label for each drive can be checked from the display result of the dir command.

Example: dir C:\

9. Exit the command prompt.

This completes recovery.

6.2 Recovery of Windows Server 2008 R2

If Windows does not start normally, you can recover it by using the system recovery option. We recommend that this option is performed by the system administrator. For details, refer to Windows Help.

If the RAID controller driver is required, take the following steps:

1. Turn on the power to the display and this server in that order or restart.
2. When "Press <F2> Setup, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network" appears on the lower left of the POST screen, press the <F3> key.
3. Start the OS from the OS installation media.
The message "Press any key to boot from CD or DVD..." appears on the upper part of the screen.
To boot from the media, press the <Enter> key.
While boot-up proceeds, the message "Windows is loading files..." appears.
4. Choose **Repair your computer** in **Windows Setup** wizard.
5. Click **Load Drivers**, and then choose **OK**.
6. Specify the following and click **Add Drivers**:
Specify the drive labeled INTER-FLASH.
(When using EXPRESSBUILDER DVD, specify the optical disk drive.)

For N8103-176/177/178 RAID controller:

\015\win\winnt\drivers\01_storage\1_an_01\megasas2.inf

For on-board RAID controller (LSI Embedded MegaRAID):

\015\win\winnt\drivers\01_storage\1_al_03\megasr1.inf

This completes recovery.

7. Resetting and Clearing the Server

See this section if the server does not work or if you want to set the BIOS settings back to the factory settings.

7.1 Software Reset

If the server halts before starting the OS, press <Ctrl> + <Alt> + <Delete> keys. Resetting the server clears the data in memory and restarts the server.

Note

Make sure that no processing is in progress when resetting the server.

7.2 BMC Reset

Press BMC RESET Switch only if a problem occurs in EXPRESSSCOPE Engine 3 (BMC).

Do not press this switch usually.

To reset the BMC, press BMC RESET Switch at least five seconds. The remote management feature is disabled for about three minutes after the BMC is reset. While the BMC is being initialized, STATUS LED 1 and 2 light green and amber simultaneously.

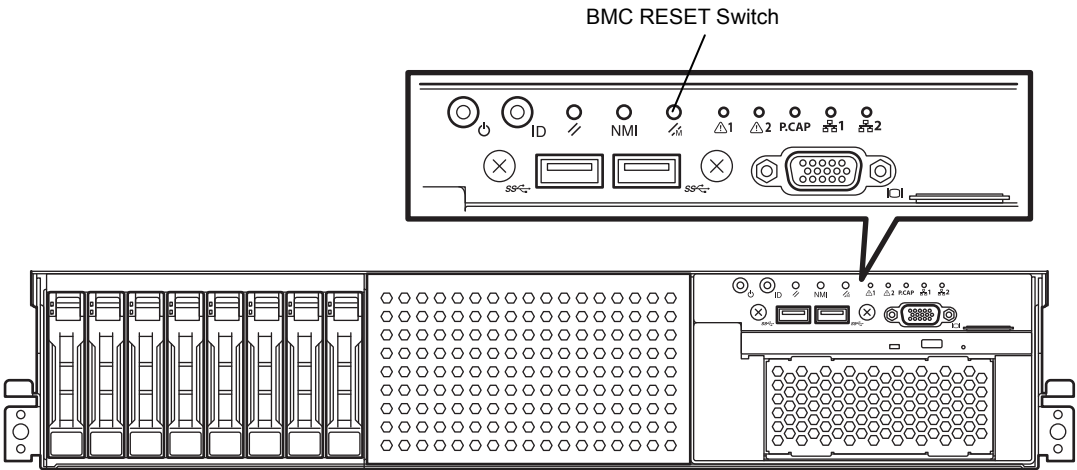
Note

Do not shut down, restart the server, or perform any switch operation after pressing BMC RESET Switch for at least three minutes.

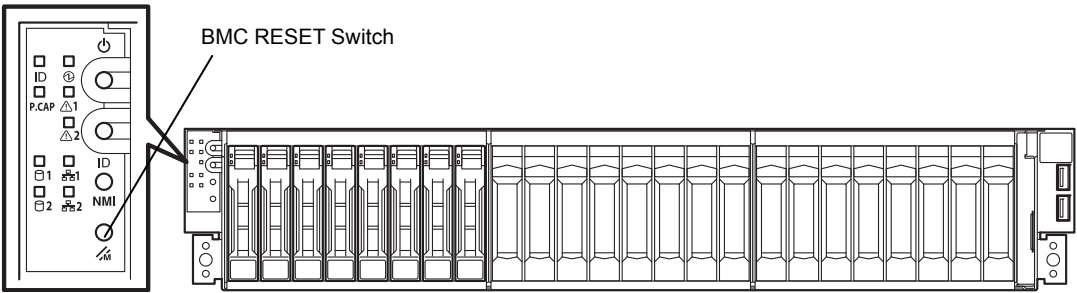
Tips

BMC RESET Switch only resets the BMC and does not restart the server.

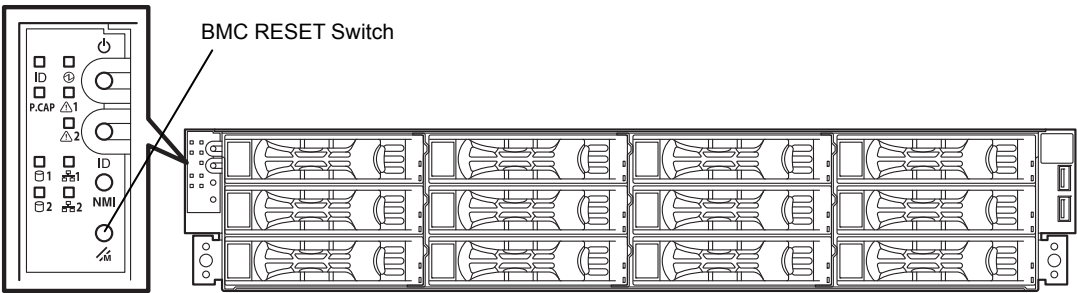
R120g-2E
16x 2.5-inch Drive Model



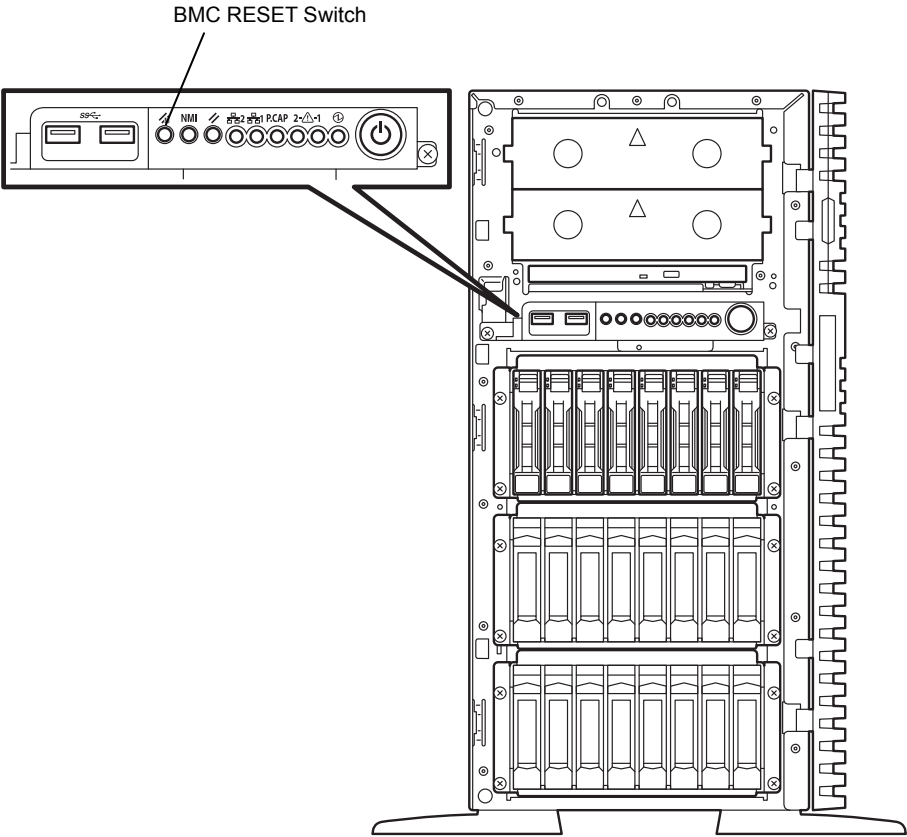
26x 2.5-inch Drive Model



12x 3.5-inch Drive Model



T120g



7.3 Forced Shutdown

Use this feature when an OS command does not shut down the server, POWER Switch does not turn off the server, or software reset does not work.

Continue to hold POWER Switch of the server for at least four seconds. The power is forcibly turned off.

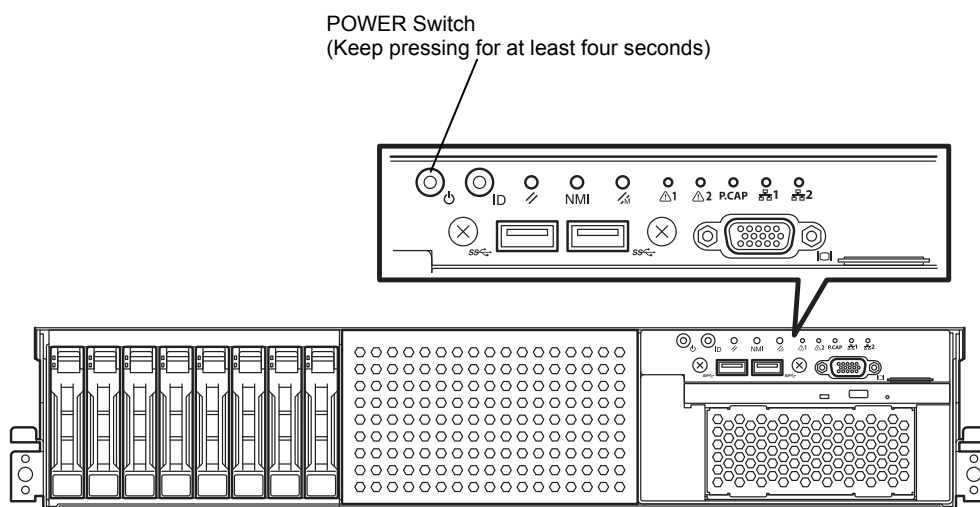
To turn on the power back again, wait at least 30 seconds after turning off the power.

Note

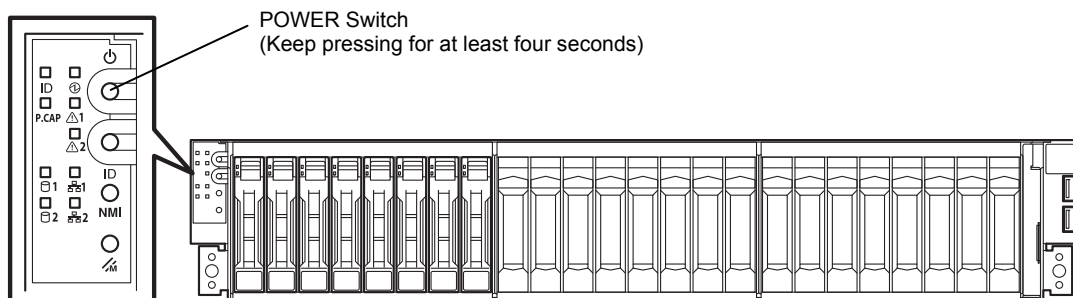
If the remote power-on feature is used, cycle the power once to load the OS after the power has been forcibly turned off, and then turn off the power again by shutting down the OS.

R120g-2E

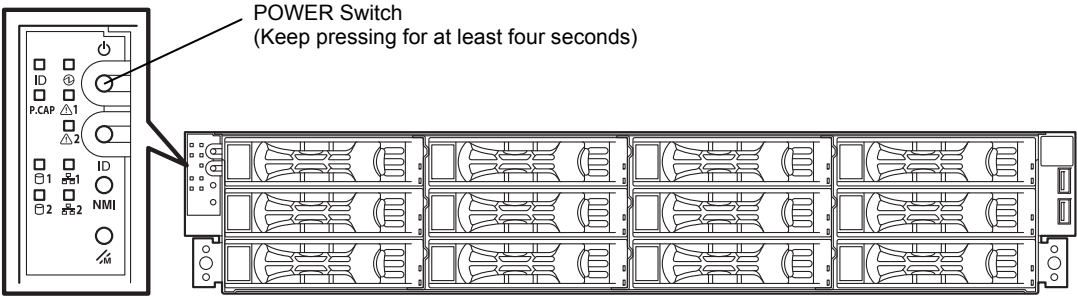
16x 2.5-inch Drive Model



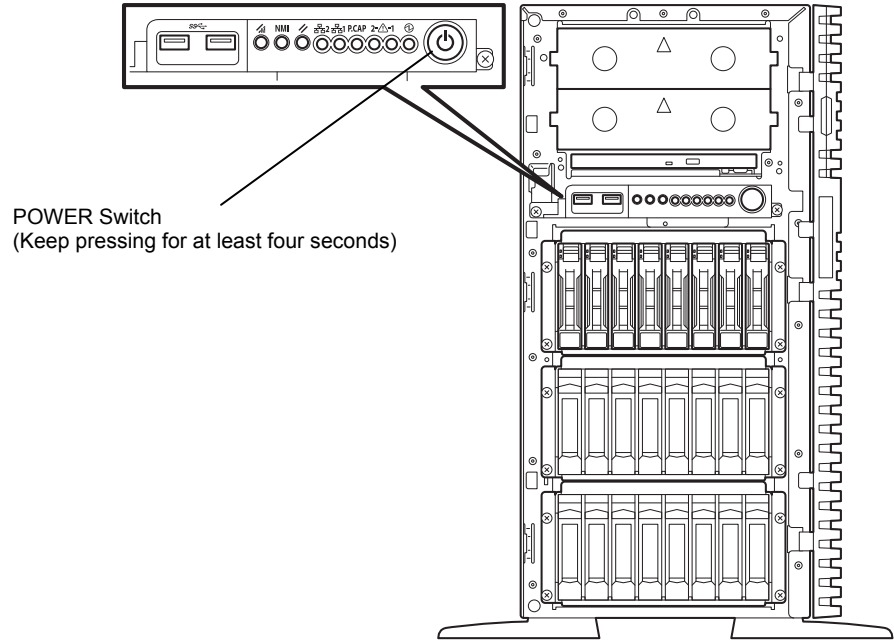
26x 2.5-inch Drive Model



12x 3.5-inch Drive Model



T120g



7.4 Clearing BIOS Settings (NVRAM(CMOS Memory))

To set the BIOS settings back to the factory settings (clearing NVRAM(CMOS memory)), use the jumper switch.

You can also clear the password of BIOS Setup Utility (SETUP) by using the jumper switch.

Tips

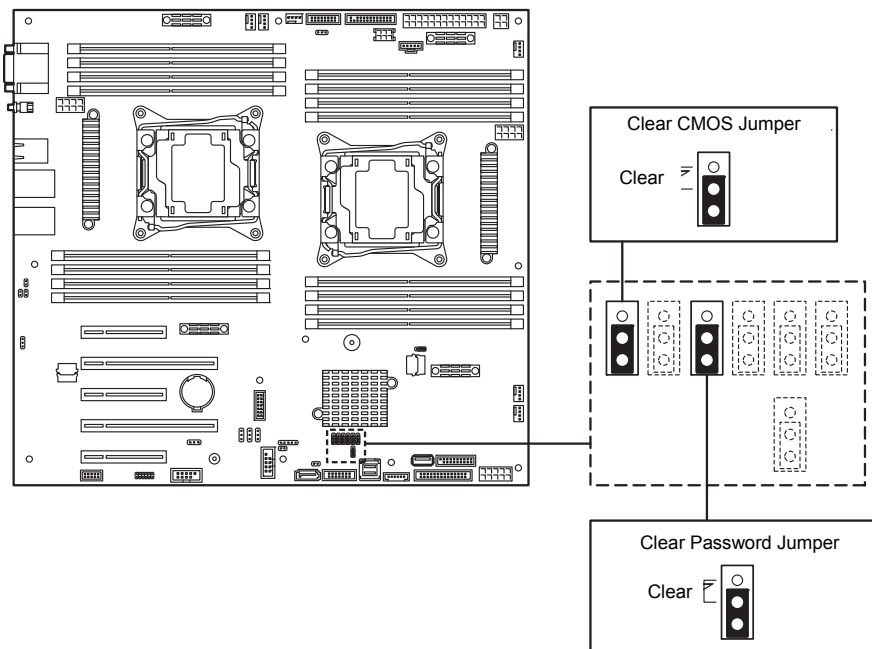
Use BIOS Setup Utility (SETUP) usually to return the settings to the factory settings.

To clear the password or the NVRAM(CMOS memory), use the corresponding jumper switch illustrated in the figure below.

To clear the password, use the password clear jumper switch. To clear the NVRAM (CMOS memory), use the CMOS clear jumper switch.


Important

Do not change any other jumper switch. Any change will cause the server to fail or malfunction.



The following instructions show how to clear the CMOS memory and the password.


⚠ WARNING



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices*.

- Do not disassemble, repair, or alter the server.
- Do not remove lithium, NiMH, or Li-ion batteries.
- Disconnect the power plug before installing or removing the server.

⚠ CAUTION



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices*.

- Make sure to complete installation.
- Do not get your fingers caught.
- Avoid installing under extreme temperature conditions.

Important

Take anti-static measures before operating the server. For details, see *Safety Precautions and Regulatory Notices*.

- **Clearing NVRAM(CMOS memory)**

1. Turn off the server, and disconnect the AC power cord from outlet.
See *Getting Started* or *Chapter 2 (1. Installing Internal Optional Devices)* in *User's Guide* to remove Top Cover or Side Cover.
2. Confirm the position of Clear CMOS Jumper.
3. Change the jumper switch from **Protect** to **Clear**.
4. Wait at least five seconds and then return the jumper switch to **Protect**.
5. Reassemble the server.
6. Plug in the power cord and turn on the server.
7. POST halts with the following error message.

```

ERROR
8006: System configuration data cleared by Jumper.
Press<F1> to resume, <F2> to Setup

```
8. Press <F2> key to start BIOS Setup Utility, and then run **Load Setup Defaults** from **Save & Exit** menu.

Tips

After the NVRAM data is cleared, the server may reboot before the OS starts.

- **Clearing a password**

1. Turn off the server, and disconnect the AC power cord from outlet.
See *Getting Started* or *Chapter 2 (1. Installing Internal Optional Devices)* in *User's Guide* to remove Top Cover or Side Cover.
2. Confirm the position of Clear Password Jumper.
3. Change the jumper switch from **Protect** to **Clear**.
4. Reassemble the server and press POWER Switch to turn on the server.
5. POST halts with the following error message.
ERROR
8007: Password Cleared By Jumper.
Press<F1> to resume, <F2> to Setup
6. Turn off the server and return the jumper switch to **Protect** by following steps 1 and 2.
7. Reassemble the server.

8. System Diagnostics

System Diagnostics runs several tests on the server.

8.1 Tests

The following items are tested in System Diagnostics

- Memory
- CPU cache memory
- Hard disk drive

Important

To avoid affecting a network and storage system, disconnect a LAN cable, Fibre Channel, NEC Storage, and other external storage before running System Diagnostics.

Tips

No data is written to the disk on checking hard disk drives.

8.2 Usage of System Diagnostics

After turning off the server or restarting the server, run System Diagnostics as follows.

1. Run EXPRESSBUILDER and choose **Tool menu** from Boot Selection Menu.
See *Chapter 2 (6. Details of EXPRESSBUILDER)* for details.

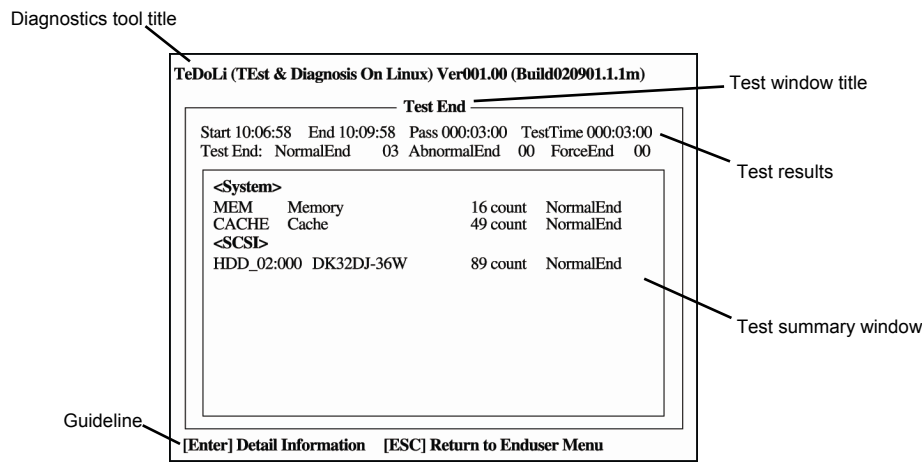
Note

Choose **English** if Language Selection Menu appears.
Press <Y> key if "Hit key to continue. [y|Y]" appears in Redirection Mode.

2. From Tool menu, choose **Test and diagnostics**.
3. From Test and diagnostics, choose **End-User Mode (Basic)** to run System Diagnostics. This process takes about three minutes.
When the diagnostics is completed, the screen changes as shown on the next page.

See *eupro_ug_en.pdf* in the \isolinux\diag folder of EXPRESSBUILDER for the **End-User Mode (Professional)** feature.

Supervisor-Mode is intended for maintenance personnel.



Diagnostics tool title
Shows the name and version of the diagnostic tool.

Test window title
Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

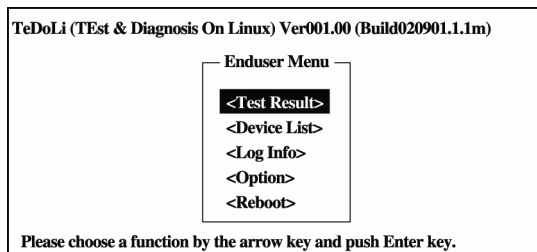
Test results
Shows the start, end, and elapsed time and completion status of the diagnostics.

Guideline
Shows the details of the keys to operate window.

Test summary window
Shows the results of each test. Move the cursor and press <Enter> key on the cursor line to display the details of the test.

If an error is detected by System Diagnostics, the relevant test result in the Test summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side. Move the cursor to the test that detected the error, and press <Enter> key. Take notes about the error message that has been shown to the Detail Information screen and contact your sales representative.

- Follow the guideline shown at the bottom of the screen, and press <Esc> key.
Enduser Menu below is displayed.

**<Test Result>**

Shows the diagnostics completion screen of the above diagnostics.

<Device List>

Shows a list of connected devices.

<Log Info>

Shows the log information of the diagnostics.

To save it, connect FAT formatted removable media, and then choose **Save(F)**.

<Option>

Optional features can be used from this menu.

<Reboot>

Reboots the server.

- Choose **Reboot** in **Enduser Menu**.
The server restarts. Remove EXPRESSBUILDER DVD from the drive.

System Diagnostics is now completed.

9. Offline Tools

Offline tools are used for maintenance, failure analysis, and the settings of the server.

9.1 Starting Offline Tools

Start up the offline tools at the following steps.

- 1. Turn on a display, and other peripheral devices, and then turn on the server.
- 2. Press <F4> key while the message below is displayed.
Press <F2> SETUP, <F3> Internal flash memory, <F4> ROM Utility, <F12> Network.
- 3. Keyboard Selection Menu appears after POST completion.
The following menu appears after choosing a keyboard type.

Off-line TOOL MENU
Maintenance Utility Server Configuration Utility Exit

- 4. Choose a feature from the menu.
See *Chapter 1 (9.2 Features of Offline Tools)* for more information.

9.2 Features of Offline Tools

Offline Tools offer the following features.

Note

Disable RDX by setting RDX to hibernate mode before starting the offline tools.

- **Off-line Maintenance Utility**

Off-line Maintenance Utility is started when **Maintenance Utility** is selected. Off-line Maintenance Utility is used for preventive maintenance and failure analysis for this product. If you are unable to start NEC ESMPRO due to a failure, Off-line Maintenance Utility can be used to check the cause of the failure.

Note

Off-line Maintenance Utility is intended for maintenance personnel. Consult with your sales representative if a trouble that requires Off-line Maintenance Utility occurs.

After starting up Off-line Maintenance Utility, the following features are available to run.

- IPMI Information Viewer
Displays System Event Log (SEL), Sensor Data Record (SDR), and Field Replaceable Unit (FRU) in Intelligent Platform Management Interface (IPMI) and also back up such logs.
Using this feature, system errors and events can be investigated to locate the parts to be replaced.
You can also clear the SEL area, and specify the operation when the SEL area becomes full.
 - System Information Viewer
Displays information on processor (CPU), BIOS.
Also saves the information to a text file.
 - System Information Management
Sets the information specific to your server (Product information, Chassis information)
- **Server Configuration Utility**
 - Use this utility to configure the alert notification feature by EXPRESSSCOPE Engine 3 and use the remote management feature by "PC for management".

9.3 Console-less feature

Off-line Tools can be remotely controlled from "PC for Management" without a keyboard or other consoles.

9.3.1 How to remotely control

Control from a LAN connected PC for Management using the remote KVM of EXPRESSSCOPE Engine 3.

For details of the remote KVM, see *EXPRESSSCOPE Engine 3 User's Guide* in EXPRESSBUILDER.

Note

- Connect the LAN cable to the connector on management LAN port.
If Shared BMC LAN feature is used, connect the LAN cable to the corresponding LAN connector.
- To use the remote KVM, Remote Management Extension License (N8115-04) is mandatory.

You can also control Off-line Tools remotely by using BIOS Console Redirection.

Tips

In console redirection connection, if the corrupted text is displayed on terminal screen, change font type (character code) appropriate to your environment.

9.3.2 Preparation

Set the remote management feature of EXPRESSSCOPE Engine 3 in advance to check hardware error information during console-less operation.

For settings information, see *EXPRESSSCOPE Engine 3 User's Guide* or *NEC ESMPRO Manager online help*.

NEC Express5800 Series

Express5800/R120g-2E, T120g

2

Useful Features

This chapter describes convenient features for using the server. Refer to this chapter according to your purpose and need.

1. System BIOS

Describes how to configure the BIOS and its parameters.

2. Server Configuration

Describes Server Configuration.

3. Flash FDD

Describes the Flash FDD.

4. Power Control Features

Describes the power control feature.

5. RAID System Configuration

Describes the RAID configuration utility installed in the server.

6. Details of EXPRESSBUILDER

Describes the EXPRESSBUILDER.

7. EXPRESSSCOPE Engine 3

Describes EXPRESSSCOPE Engine 3.

8. NEC ESMPRO

Describes NEC ESMPRO used to manage and monitor the server.

9. NEC Product Info Collection Utility

Describes the NEC Product Info Collection Utility.

10. Ezclct Viewer

11. Universal RAID Utility

Describes Universal RAID Utility, an application to manage or monitor the RAID Controller.

12. Express Report Service / Express Report Service (HTTPS)

Describes about Express Report Service / Express Report Service (HTTPS).

13. Express Report Service (MG)

Describes about Express Report Service (MG).

1. System BIOS

You can check and change the parameters using the BIOS Setup utility (SETUP).

1.1 Starting SETUP

Turn on the server and proceed with POST.

Wait until the following message appears at the bottom left of the screen.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network
(* a different message may appear depending on the environment)

If you press <F2>, SETUP will start after POST, and the Main menu appears.
(You can also start SETUP by pressing <F2> key while expanding option ROM.)

1.2 Parameter Descriptions

The SETUP utility has the following six major menus.

- Main menu
- Advanced menu
- Security menu
- Server menu
- Boot menu
- Save & Exit menu

These menus have submenus for relevant items. Selecting submenus allows you to configure further detailed parameters.

1.2.1 Main

If you start up the SETUP utility, the **Main** menu is displayed first.



For details about the options, see the table below.

Option	Parameter	Description
BIOS Information	—	—
BIOS Version	(Display only)	Shows the BIOS version.
Build Date	(Display only)	Shows the BIOS build date.
Access Level	(Display only)	Shows the current access level (Administrator or User). If no password is set, Administrator is shown.
UEFI Spec Version	(Display only)	Shows the UEFI Spec version that BIOS supports.
Memory Information	—	—
Total Memory	(Display only)	Shows the total capacity of installed memory.
System Language	[English] Français Español Deutsch Italiano	Select a display language for SETUP. If you run SETUP with BIOS Redirection Port enabled (other than Disabled), English is automatically selected. At that time, you cannot change setting of System Language . If BIOS Redirection Port is set to Disabled , the language set in this option is used at the next startup of SETUP, and you can change the language setting.
System Date	WWW MM/DD/YYYY	Set the system date.
System Time	HH:MM:SS	Set the system time

[]: Factory setting

Tips

Be sure to confirm that the date and time in the BIOS parameters are correctly configured.

Check the system clock monthly. Additionally, if you implement the server in a system that requires highly accurate time, use of a time server (an NTP server) is recommended.

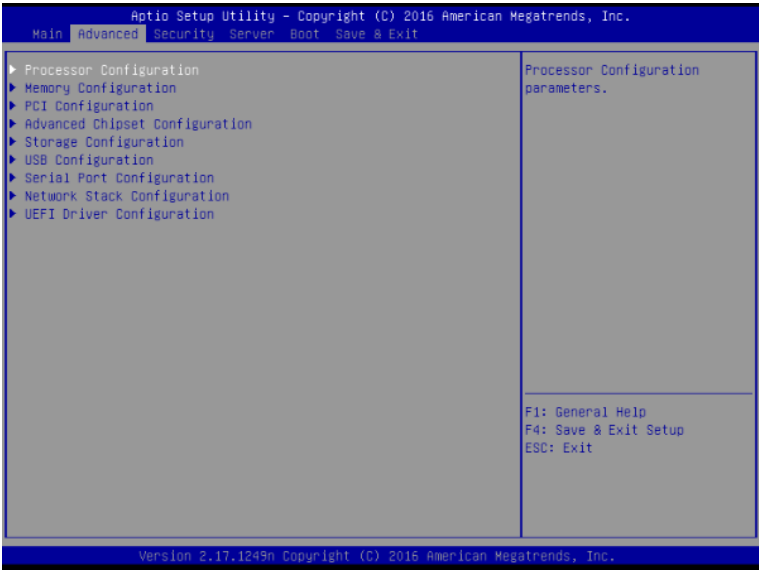
If the system time becomes considerably slow or fast over time even though you regularly adjust it, contact the dealer where you purchased the server or the maintenance service company for maintenance.

1.2.2 Advanced

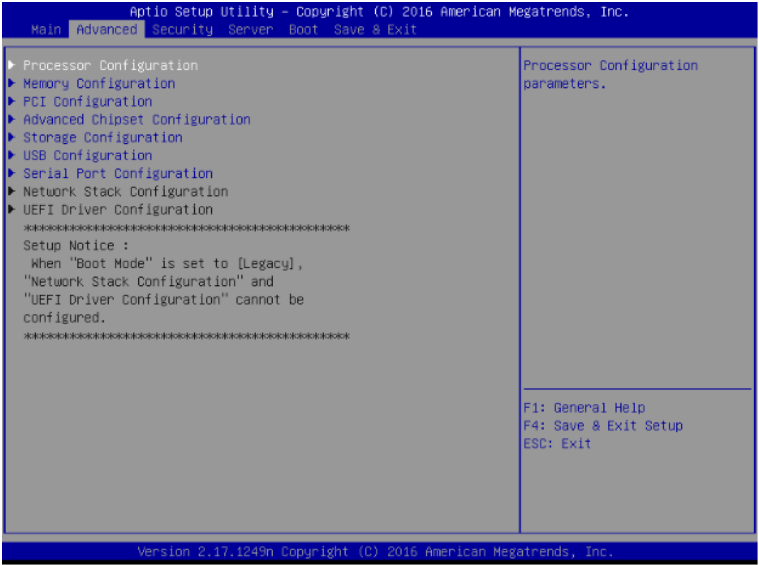
If you move the cursor to **Advanced**, the **Advanced** menu appears.

For the menus that show a “▶” to their left, select a menu and press the <Enter> key to display its submenu.

When [UEFI] is selected for Boot Mode



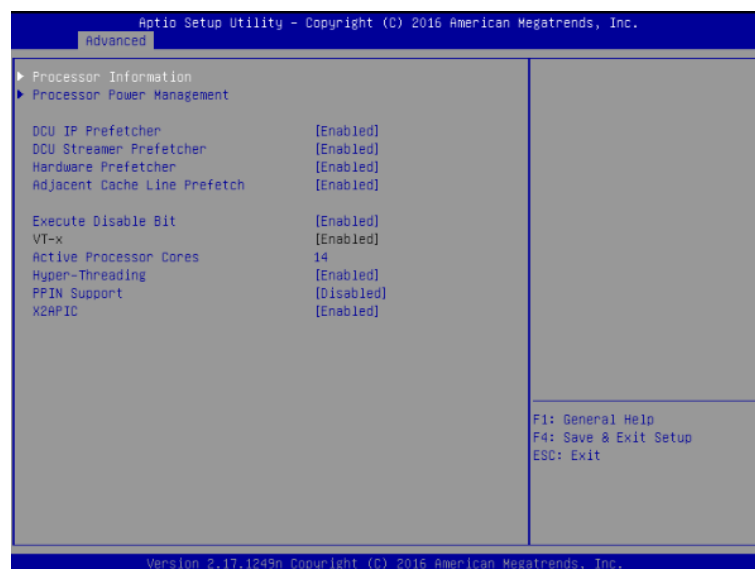
When [Legacy] is selected for Boot Mode



Note The **Network Stack Configuration** submenu and **UEFI Driver Configuration** submenu cannot be selected if **Legacy** is specified for **Boot Mode**. They can be selected only when **UEFI** is selected for **Boot Mode**.

(1) Processor Configuration submenu

From the **Advanced** menu, select **Processor Configuration** and then press the <Enter> key to display the menu screen shown below. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus.



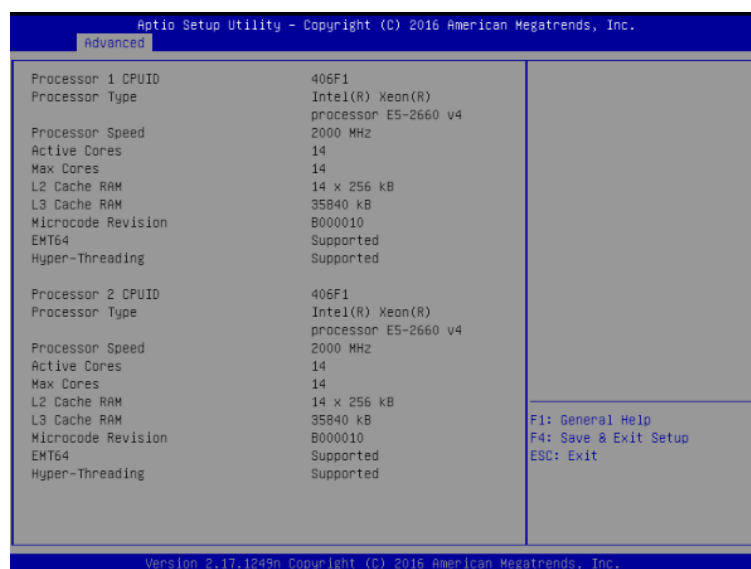
For details about the options, see the table below.

Option	Parameter	Description
Processor Information	—	—
Processor Power Management	—	—
DCU IP Prefetcher	Disabled [Enabled]	Enable or disable DCU (Data Cache Unit) IP Prefetcher of processor.
DCU Streamer Prefetcher	Disabled [Enabled]	Enable or disable DCU Streamer Prefetcher of processor.
Hardware Prefetcher	Disabled [Enabled]	Enable or disable Hardware Prefetcher.
Adjacent Cache Line Prefech	Disabled [Enabled]	Set the optimal access from memory to cache to either Enabled or Disabled.
Execute Disable Bit	Disabled [Enabled]	Enable or disable Execute Disable Bit feature. This option is displayed only when the installed processor supports this feature.
VT-x	Disabled [Enabled]	Enable or disable Intel(R) Virtualization Technology (feature to virtualize processor).
Active Processor Cores	1-[X]	Specify the number of active cores in each processor package. The number of cores that can be specified depends on the processor installed. X denotes the maximum number of cores.
Hyper-Threading	Disabled [Enabled]	Enable or disable the feature to execute two threads with only one core. This option is displayed only when the installed processor supports this feature.
PPIN Support	[Disabled] Enabled	Enable or disable Protected Processor Inventory Number (PPIN). This option is displayed only when the installed processor supports this feature.

Option	Parameter	Description
X2APIC	Disabled [Enabled]	<p>Enable or disable X2APIC feature.</p> <p>This item is selectable when Enabled is selected for VT-x and VT-d.</p> <ul style="list-style-type: none"> The X2APIC feature must be enabled when using an OS shown below: <ul style="list-style-type: none"> – Windows Server 2012 – Windows Server 2012 R2 The X2APIC feature must be disabled when using an OS shown below: <ul style="list-style-type: none"> – Windows Server 2008 R2 <p>See <i>Chapter 1 Installing Windows</i> in <i>Installation Guide</i>, and determine whether this feature is enabled or disabled according to description in "<i>Before Starting Setup</i>" appropriate to your OS.</p>

[]: Factory setting

(a) Processor Information submenu

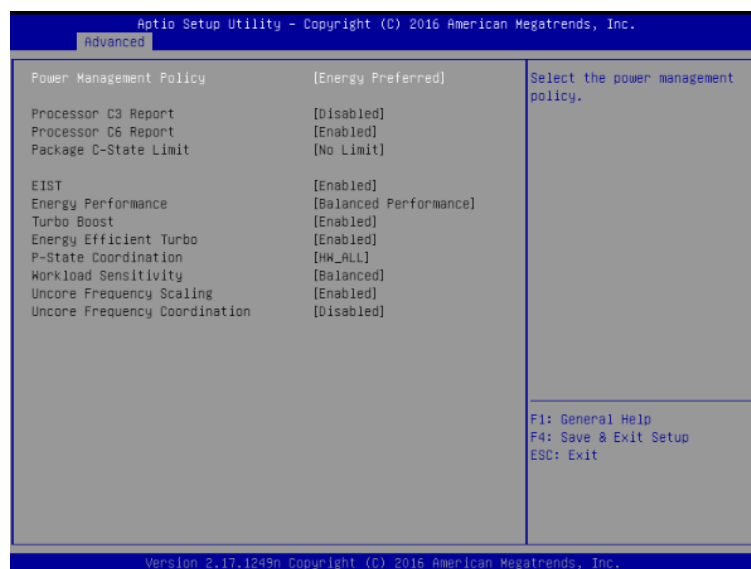


For details about the options, see the table below.

Option	Parameter	Description
Processor 1 CPUID	(Display only)	Shows the ID of Processor 1.
Processor Type	(Display only)	Shows the type of Processor 1.
Processor Speed	(Display only)	Shows the clock speed of Processor 1.
Active Cores	(Display only)	Shows the number of active cores in Processor 1.
Max Cores	(Display only)	Shows the maximum number of cores in Processor 1.
L2 Cache RAM	(Display only)	Shows the secondary cache size of Processor 1.
L3 Cache RAM	(Display only)	Shows the tertiary cache size of Processor 1.
Microcode Revision	(Display only)	Shows the revision of the microcode applied to Processor 1.
EMT64	(Display only)	"Supported" is shown when the processor 1 supports Intel 64 architecture.
Hyper-Threading	(Display only)	"Supported" is shown when the processor 1 supports Hyper-Threading Technology.
Processor 2 CPUID	(Display only)	Shows the ID of Processor 2. "Not Installed" indicates that no processor is installed in processor socket 2.
Processor Type	(Display only)	Shows the type of Processor 2.
Processor Speed	(Display only)	Shows the clock speed of Processor 2.
Active Cores	(Display only)	Shows the number of active cores in Processor 2.
Max Cores	(Display only)	Shows the maximum number of cores in Processor 2.
L2 Cache RAM	(Display only)	Shows the secondary cache size of Processor 2.
L3 Cache RAM	(Display only)	Shows the tertiary cache size of Processor 2.
Microcode Revision	(Display only)	Shows the revision of the microcode applied to Processor 2.
EMT64	(Display only)	"Supported" is shown when processor 2 supports Intel 64 architecture.
Hyper-Threading	(Display only)	"Supported" is shown when processor 2 supports Hyper-Threading Technology.

[]: Factory setting

(b) Processor Power Management submenu



For details about the options, see the table below.

Option	Parameter	Description
Power Management Policy	Performance Preferred [Energy Preferred] Custom	Specify the Power Management Policy. Menu items below are selectable when "Custom" is specified.
Processor C3 Report	[Disabled] Enabled	Enable or disable the feature to report Processor C3 State to OS.
Processor C6 Report	Disabled [Enabled]	Enable or disable the feature to report Processor C6 State to OS.
Package C State Limit	C0/C1 C2 C6 (non Retention) C6 (Retention) [No Limit]	Specify the upper limit for Package C State of processor.
EIST	Disabled [Enabled]	Enable or disable the Enhanced Intel SpeedStep(R) Technology feature. This option is displayed only when the installed processor supports this feature.
Energy Performance	Performance [Balanced Performance] Balanced Energy Energy Efficient	Specify whether the performance is preferred or energy-saving is preferred while processor is running. This option is displayed only when EIST is set to "Enabled".
Turbo Boost	Disabled [Enabled]	Enable or disable the Turbo Boost Technology feature. This option is displayed only when EIST is set to "Enabled". This option is displayed only when the installed processor supports this feature.
Energy Efficient Turbo	Disabled [Enabled]	Enable or disable Energy Efficient Turbo feature. This option is displayed when EIST is set to "Enabled" and Turbo Boost is set to "Enabled".
P-STATE Coordination	[HW_ALL] SW_ALL SW_ANY	Specify the type for P-STATE coordination. This option is displayed only when EIST is set to "Enabled".

Option	Parameter	Description
Workload Sensitivity	[Balanced] I/O sensitive	Select "I/O sensitive" when system performance should take precedence over the I/O workload.
Uncore Frequency Scaling	Disabled [Enabled]	Enable or disable the feature that adjusts the Uncore operating frequency dynamically.
Uncore Frequency Coordination	[Disabled] Enabled	Enable or disable the feature that adjusts the operating frequency of Uncore in each processor. This option is displayed when Uncore Frequency Scaling is set to "Enabled".

[]: Factory setting

(2) Memory Configuration submenu

From the **Advanced** menu, select **Memory Configuration** and then press the <Enter> key to display the menu screen shown below. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus.



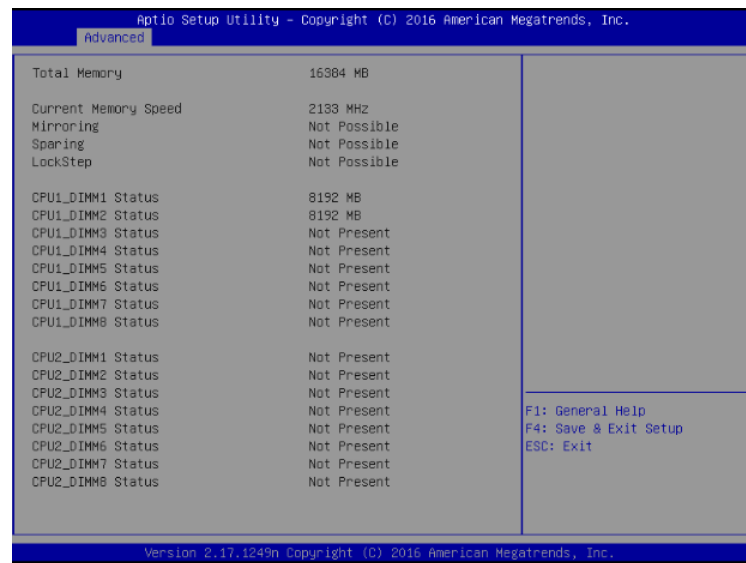
For details about the options, see the table below.

Option	Parameter	Description
Memory Information	–	–
Hardware Memory Test	[Disabled] Enabled	Enable or disable execution of memory test during POST. If a memory error is detected while this option is set to "Enabled", the relevant memory resource is degraded.
Memory Retest	[No] Yes	When this option is set to "Yes", error information on memory is cleared, and all DIMMs are reconfigured at the next startup. "No" is automatically selected after DIMMs are reconfigured.
Memory Frequency Limit	[Auto] 1333 MHz 1600 MHz 1866 MHz 2133 MHz 2400MHz	Specify the upper limit of operating frequency of memory. The operating frequency may be lowered than the specified value depending on memory configuration.
NUMA	Disabled [Enabled]	Enable or disable the Non-Uniform Memory Access feature. This option is displayed only in multi-processor configuration.
Cluster On Die	[Disabled] Enabled	Enable or disable the Cluster On Die feature. This option is available when Enabled is selected for NUMA and the installed processor supports this feature. Note: If you are using VMware ESXi 5, this option must be Disabled .

Option	Parameter	Description
Snoop Mode	Home Snoop [Early Snoop] Home Snoop with Directory	Enable or disable the Snoop Mode feature. This option is available when Disabled is selected for Cluster On Die .
Memory RAS Mode	[Independent] Mirroring Lock Step Sparing	Specify the memory RAS mode. See <i>Chapter 2 (Memory RAS Feature)</i> in <i>User's Guide</i> .
Patrol Scrub	Disabled [Enabled]	Enable or disable a memory RAS feature (Patrol Scrubbing).
Demand Scrub	Disabled [Enabled]	Enable or disable a memory RAS feature (Demand Scrubbing).

[]: Factory setting

(a) Memory Information submenu



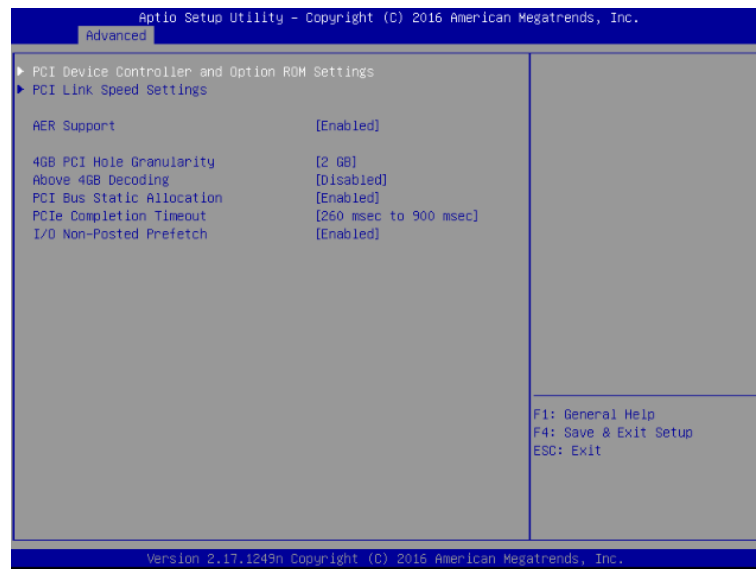
For details about the options, see the table below.

Option	Parameter	Description
Total Memory	(Display only)	Shows the physical capacity of the installed memory.
Current Memory Speed	(Display only)	Shows the current memory operating frequency.
Mirroring	(Display only)	"Supported" is shown when the mirroring feature is available in the current memory configuration and "Mirroring" is specified for Memory RAS Mode .
Sparing	(Display only)	"Supported" is shown when the sparing feature is available in the current memory configuration and "Sparing" is specified for Memory RAS Mode .
Lock Step	(Display only)	Supported is shown when the Lock Step feature is available in the current memory configuration and "Lock Step" is specified for Memory RAS Mode .
CPU1_DIMM1-8 Status CPU2_DIMM1-8 Status	(Display only)	Shows the capacity and status of each DIMM. Number : Indicates the memory capacity and that the DIMM is working normally. Number (Mirrored / Lock Step / Spared) : Indicates the memory capacity and specified mode (Mirrored / Lock Step / Spared) in memory RAS mode. Number (Error) : Indicates the memory capacity and failed DIMM. Disabled : Indicates the DIMM has been degraded due to a memory error. Not Present : Indicates that no DIMM is installed.

[]: Factory setting

(3) PCI Configuration submenu

From the **Advanced** menu, select **PCI Configuration** and then press the <Enter> key to display the menu screen as shown below.

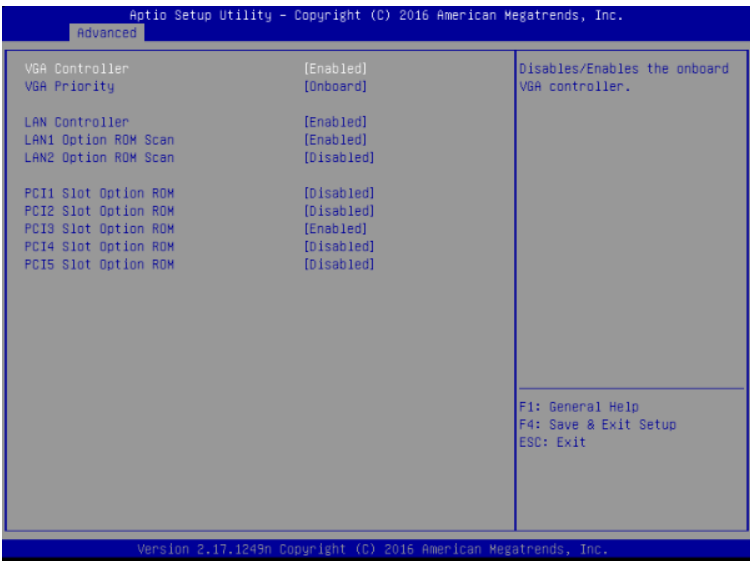


For details about the options, see the table below.

Option	Parameter	Description
PCI Device Controller and Option ROM Settings	–	–
PCI Link Speed Settings	–	–
AER Support	Disabled [Enabled]	Enable or disable the feature that allows the OS to control PCIe Advanced Error Reporting. Onboard LAN/VGA is excluded.
4GB PCI Hole Granularity	3 GB [2 GB] 1 GB	Specify the size of the address space for the PCI device.
Above 4GB Decoding	Disabled [Enabled]	Enable or disable static allocation of the PCI bus number.
MMIO High Base	[56TB] 3TB	Specify the base address of memory mapped I/O space allocated to an address space that is more than 4GB. This option is displayed when Above 4GB Decoding is set to Enabled.
PCI Bus Static Allocation	Disabled [Enabled]	Enable or disable static allocation of the PCI bus number.
PCIe Completion Timeout	50 µsec to 10 msec 16 msec to 55 msec 65 msec to 210 msec [260 msec to 900 msec] 1 sec to 3.5 sec 4 sec to 13 sec 17 sec to 64 sec	Specify completion timeout time for PCIe devices.
I/O Non-Posted Prefetch	[Disabled] Enabled	Enable or disable the I/O Non-Posted Prefetch function.

[]: Factory setting

(a) PCI Device Controller and Option ROM Settings submenu



For details about the options, see the table below.

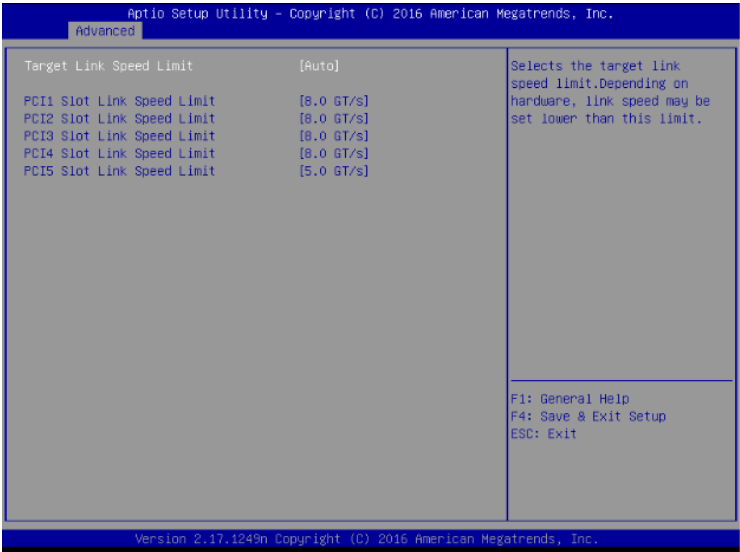
Option	Parameter	Description
VGA Controller	Disabled [Enabled]	Enable or disable the onboard VGA controller. This option is automatically set to "Enabled" if only the onboard VGA controller is valid.
VGA Priority	[Onboard] Offboard	Specify priority to expand ROM of VGA controller. This option can be selected only when "Legacy" is specified for Boot Mode .
LAN Controller	Disabled [Enabled]	Enable or disable the onboard LAN controller. This option is fixed to "Enabled" if Shared LAN is set to "Enabled" for off-line tools.
LANX Option ROM Scan	Disabled [Enabled]	Enable or disable the option ROM SCAN for onboard LAN. This option is displayed according to the number of LAN ports. "Disabled" is selected for any other LAN ports than LAN1.
PCIXX Slot Option ROM	Disabled [Enabled]	Enable or disable the option ROM on each PCI slot. "Enabled" is selected for PCI3 only. XX:1/2/3/4/5

[]: Factory setting

Note

If no hard disk drive on which an OS is installed is connected to a RAID Controller, LAN card (network boot), or Fibre Channel controller, set the option ROM for that slot to "Disabled".

(b) PCI Link Speed Settings submenu



For details about the options, see the table below.

Option	Parameter	Description
Target Link Speed Limit	[Auto] 2.5 GT/s 5.0 GT/s	Specify the upper limit of the link speed of onboard PCI devices.
PCIXX Slot Link Speed Limit	2.5 GT/s 5.0 GT/s [8.0 GT/s]	Specify the upper limit of the link speed of the PCI device in each PCI slot. XX:1/2/3/4
PCI5 Slot Link Speed Limit	2.5 GT/s [5.0 GT/s]	Specify the upper limit of the link speed of the PCI slot 5. The speed must not exceed the one specified in Target Link Speed Limit .

[]: Factory setting

(4) **Advanced Chipset Configuration submenu**

From the **Advanced** menu, select **Advanced Chipset Configuration** and then press the <Enter> key to display the menu screen as shown below.



For details about the options, see the table below.

Option	Parameter	Description
Current QPI Link Freq	(Display only)	Shows the current QPI link speed. This option is displayed only in multiple processor configuration.
QPI Frequency Limit	[Auto] 6.4 GT/s 8.0 GT/s 9.6 GT/s	Specify the upper limit of the QPI link speed.
VT-d	Disabled [Enabled]	Enable or disable Intel(R) Virtualization Technology for Directed I/O feature (Virtualization of I/O feature). This option is displayed only when the installed processor supports this feature.
I/OAT	Disabled [Enabled]	Enable or disable Intel I/O Acceleration Technology feature.
Wake On LAN/PME	[Disabled] Enabled	Enable or disable the feature that remotely powers on the server.
Wake On RTC Alarm	[Disabled] Enabled	Enable or disable the feature that remotely powers on the server based on the real time clock.

[]: Factory setting

(5) Storage Configuration submenu

From the **Advanced** menu, select **Storage Configuration** and then press the <Enter> key to display the menu screen shown below. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus.



For details about the options, see the table below.

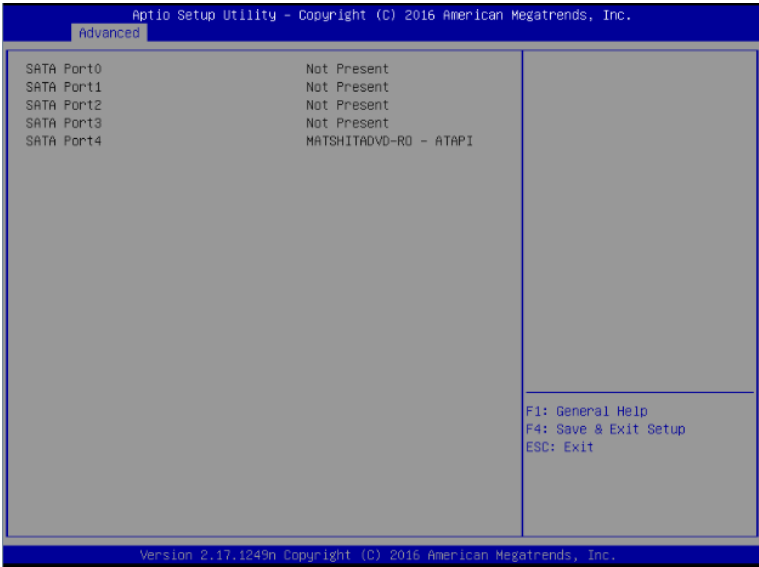
Option	Parameter	Description
SATA Information	—	
SATA Mode	Disabled IDE Mode [AHCI Mode]	Set SATA mode.
Hard Disk Pre-Delay	[Disabled] 3 Seconds 6 Seconds 9 Seconds 12 Seconds 15 Seconds 21 Seconds 30 Seconds	Specify the delay time before HDD is accessed during POST.

[]: Factory setting

Note

NEC has not verified the operation in IDE mode.

(a) SATA Information submenu



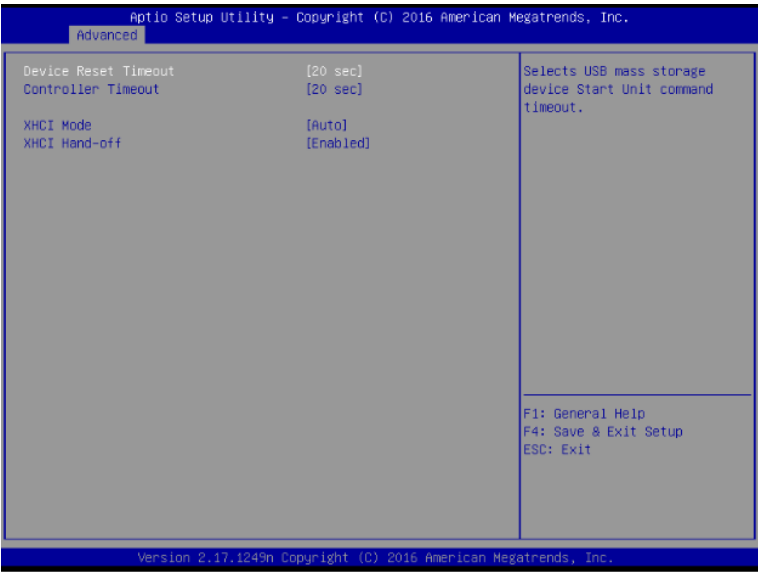
For details about the options, see the table below.

Option	Parameter	Description
SATA Port0	(Display only)	Shows a device connected to each port. "Not Present" is shown when no device is connected to the SATA port.
SATA Port1		
SATA Port2		
SATA Port3		
SATA Port4		

[]: Factory setting

(6) USB Configuration submenu

From the **Advanced** menu, select **USB Configuration** and then press the <Enter> key to display the menu screen shown below.



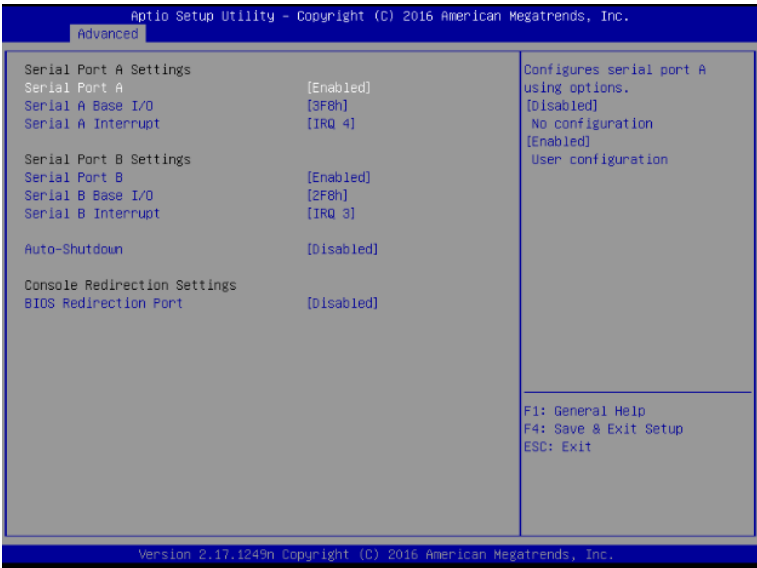
For details about the options, see the table below.

Option	Parameter	Description
Device Reset Timeout	10 sec [20 sec] 30 sec 40 sec	Specify the timeout period when the Start Unit command is issued to a USB device.
Controller Timeout	1 sec 5 sec 10 sec [20 sec]	Specify the timeout period when the Control, Bulk, or Interrupt Transfer command is issued to the USB Controller.
XHCI Mode	Smart Auto [Auto] Enabled Disabled	Specify the operation mode of the USB 3.0 controller. Smart Auto: Takes over the USB 3.0 settings at POST according to the supported OS. Auto: Enables USB 3.0 after the OS that supports USB 3.0 is started. Enabled: Enables USB3.0. Disabled: Disables USB3.0.
XHCI Hand-off	Disabled [Enabled]	Enable or disable the XHCI hand-off feature.

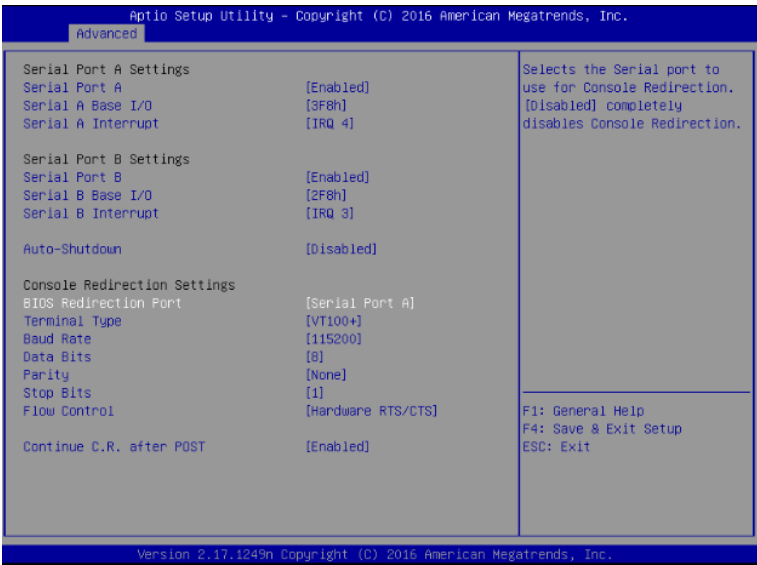
[]: Factory setting

(7) **Serial Port Configuration submenu**

From the **Advanced** menu, select **Serial Port Configuration** and then press the <Enter> key to display the menu screen shown below.



From **BIOS Redirection Port**, select **Serial Port A** or **Serial Port B** and then press the <Enter> key to display the menu screen shown below.



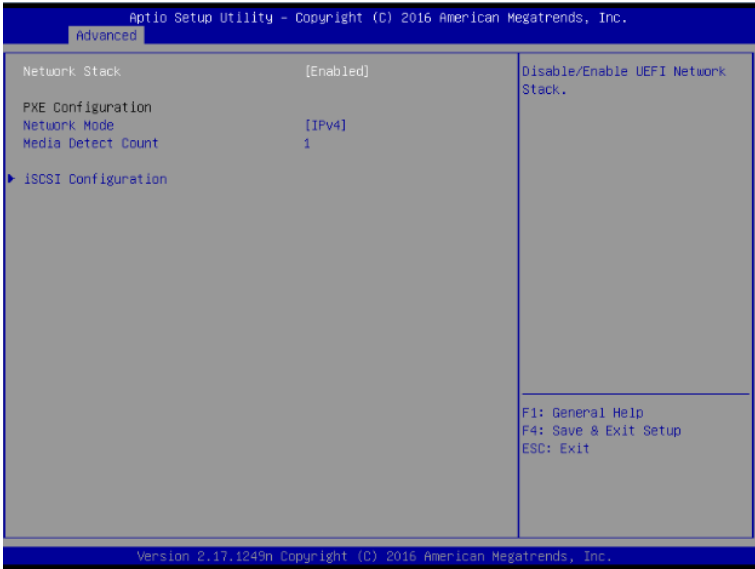
For details about the options, see the table below.

Option	Parameter	Description
Serial Port A Settings	–	–
Serial Port A	Disabled [Enabled]	Enable or disable serial port A
Serial A Base I/O	[3F8h] 2F8h 3E8h 2E8h	Specify the base I/O address for serial port A.
Serial A Interrupt	[IRQ 4] IRQ 3	Specify the interrupt for serial port A
Serial Port B Settings	–	–
Serial Port B	Disabled [Enabled]	Enable or disable serial port B
Serial B Base I/O	3F8h [2F8h] 3E8h 2E8h	Specify the base I/O address for serial port B
Serial B Interrupt	IRQ 4 [IRQ 3]	Specify the interrupt for serial port B
Auto-Shutdown	[Disabled] Enabled	Enable or disable auto shutdown for the serial port. To specify "Enabled", a device that supports this feature must be connected. If the connected device does not support this feature, the serial ports will fail to return from halt state.
Console Redirection Settings	–	–
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Enable or disable console redirection for a specified serial port. Specifying "Serial Port A" or "Serial Port B" allows direct connection via a terminal unit such as NEC ESMPro Manager. The screen size of the terminal unit must be 80 x 25. The option items shown below are displayed.
Terminal Type	[VT100+] VT-UTF8 PC-ANSI	Select the terminal type.
Baud Rate	9600 19200 57600 [115200]	Specify the baud rate.
Data Bits	7 [8]	Specify the data bit width.
Parity	[None] Even Odd	Specify the parity type.
Stop Bits	[1] 2	Specify the number of stop bits.
Flow Control	None [Hardware RTS/CTS]	Specify the flow control method.
Continue C.R. after POST	Disabled [Enabled]	Select whether to continue console redirection after completion of POST.

[]: Factory setting

(8) Network Stack Configuration submenu

From the **Advanced** menu, select **Network Stack Configuration** and then press the <Enter> key to display the menu screen shown below.

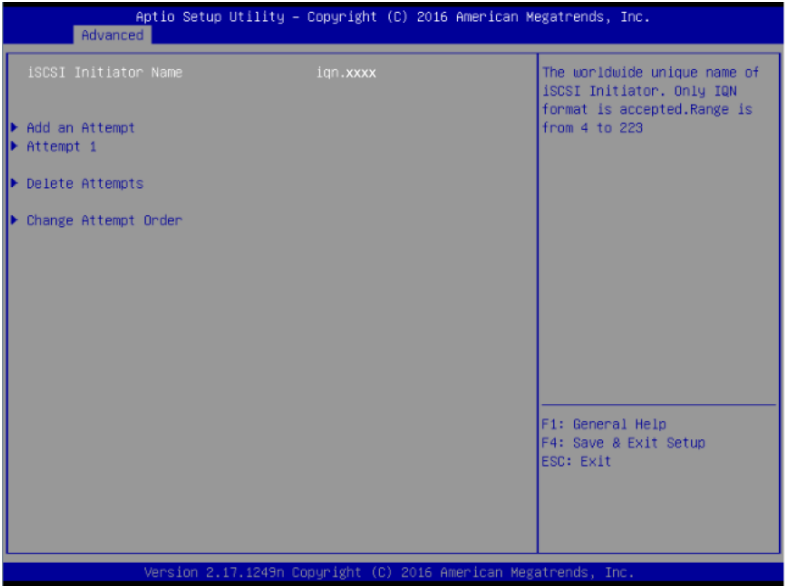


For details about the options, see the table below.

Option	Parameter	Description
Network Stack	Disabled [Enabled]	Enable or disable UEFI Network Stack. If this option is set to "Enabled", the menu items below appear.
PXE Configuration	—	—
Network Mode	Disabled [IPv4] IPv6	Specify the PXE network mode.
Media Detect Count	[1]-50	Specify the number of times trying to detect media at PXE connection.
iSCSI Configuration	—	—

[]: Factory setting

(a) iSCSI Configuration submenu



Option	Parameter	Description
iSCSI Initiator Name	Alphanumeric character between 4 and 223	Specify the name of the iSCSI Initiator. The initiator name must be IQN format (iSCSI Qualifier Name). The menu items below can be selected when "iSCSI Initiator Name" is specified.
Add an Attempt	—	—
Attempt [XX]	—	—
Delete Attempts	—	—
Change Attempt Order	—	—

[]: Factory setting

<1> Add an Attempt submenu

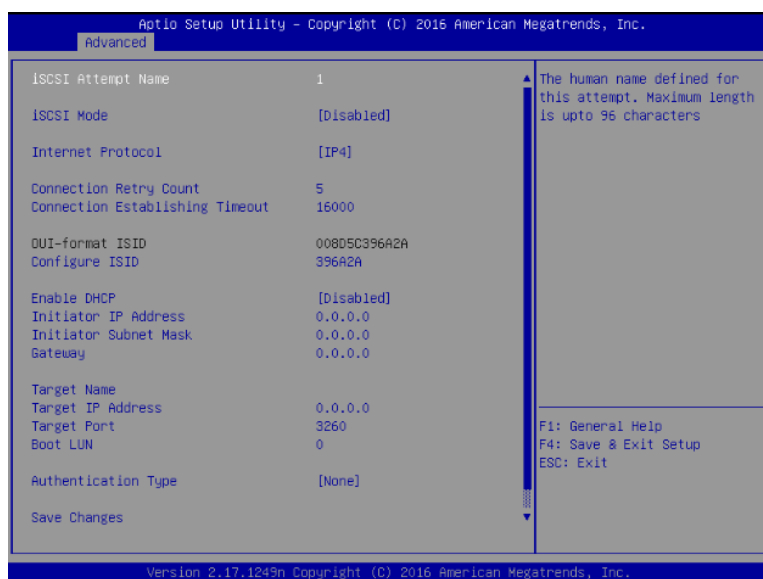


Note

A MAC address is displayed when the onboard LAN controller or the UEFI driver for the PCI device is loaded.

Option	Parameter	Description
MAC [XX:XX:XX:XX:XX:XX]	—	—

i. MAC [XX:XX:XX:XX:XX:XX] submenu



Option	Parameter	Description
iSCSI Attempt Name	Up to 96 Alphanumeric characters	Specify an attempt name of iSCSI.
iSCSI Mode	[Disabled] Enabled Enabled for MPIO	Specify iSCSI mode.
Internet Protocol	[IP4] IP6	Specify IP mode of iSCSI.
Connection Retry Count	0-[5]-16	Specify the retry count for iSCSI connection.
Connection Establishing Timeout	100-[16000]-20000	Specify the timeout time in msec for iSCSI connection.
OUI-format ISID	(Display only)	Displays the OUI-format ISID.
Configure ISID	6-digit numerics	Specify the lower 3 bytes of the OUI-format ISID. The MAC address is stored by default.
Enable DHCP	[Disabled] Enabled	Enable or disable the DHCP server.
Initiator IP Address	IP Address	Specify the IP address of the initiator. This item is not displayed when "Enabled" is selected for Enable DHCP or "IP6" is selected for Internet Protocol .
Initiator Subnet Mask	IP Address	Specify subnet mask of initiator. This item is not displayed when "Enabled" is selected for Enable DHCP .

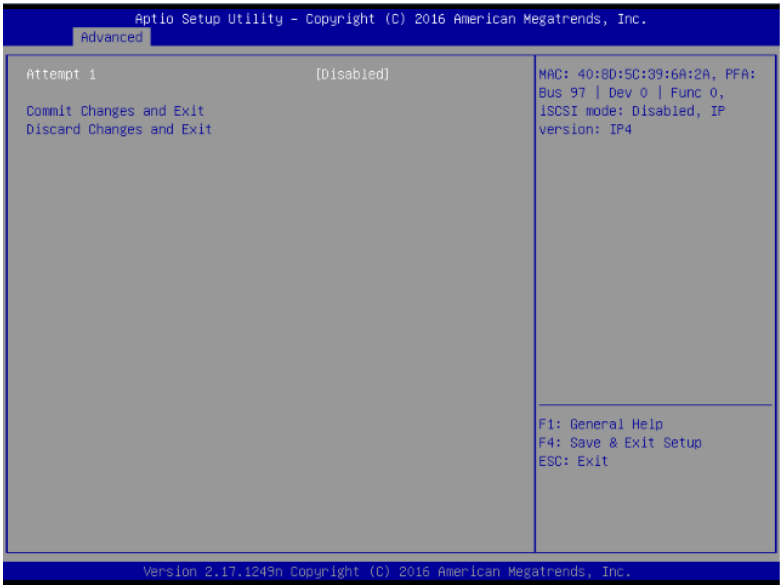
Option	Parameter	Description
Gateway	IP Address	Specify a gateway. This item is not displayed when "Enabled" is selected for Enable DHCP .
Get target info via DHCP	[Disabled] Enabled	Enable or disable the feature to obtain information of the target device via the DHCP server. This item is not displayed when "Disabled" is selected for Enable DHCP .
Target Name	Alphanumeric characters between 4 and 223	Specify the target name with IQN (iSCSI Qualifier) format. This item is not displayed when "Enabled" is selected for Get Target info via DHCP .
Target IP Address	IP Address	Specify the IP address of the target device. This item is not displayed when "Enabled" is selected for Get Target info via DHCP .
Target Port	0-65535	Specify the target port. This item is not displayed when "Enabled" is selected for Get Target info via DHCP .
Boot LUN	Up to 20 Alphanumeric characters	Specify the LUN. This item is not displayed when "Enabled" is selected for Get Target info via DHCP .
Authentication Type	CHAP [None]	Specify the authentication type.
CHAP Type	One way [Mutual]	Specify the CHAP type. This item is displayed when "CHAP" is selected for Authentication Type .
CHAP Name	Up to 126 Alphanumeric characters	Specify the CHAP name. This item is displayed when "CHAP" is selected for Authentication Type .
CHAP Secret	Alphanumeric characters between 12 and 16 digits	Specify the CHAP secret. This item is displayed when "CHAP" is selected for Authentication Type .
CHAP Status	(Display only)	Displays the status of the CHAP secret. This item is displayed when "CHAP" is selected for Authentication Type .
Reverse CHAP Name	Up to 126 Alphanumeric characters	Specify the reverse CHAP name. This item is displayed when "CHAP" is selected for Authentication Type and "Mutual" is selected for CHAP Type .
Reverse CHAP Secret	Alphanumeric characters between 12 and 16 digits	Specify the reverse CHAP secret. This item is displayed when "CHAP" is selected for Authentication Type and "Mutual" is selected for CHAP Type .
Reverse CHAP Status	(Display only)	Displays the status of the reverse CHAP secret. This item is displayed when "CHAP" is selected for Authentication Type and "Mutual" is selected for CHAP Type .
Save Changes	—	Save the current settings.
Back to Previous Page	—	Return to the iSCSI Configuration submenu.

[]: Factory setting

<2> Attempt[XX] submenu

Options and parameters are same as those in MAC [XX:XX:XX:XX:XX:XX] submenu.
See *MAC [XX:XX:XX:XX:XX:XX] submenu*.

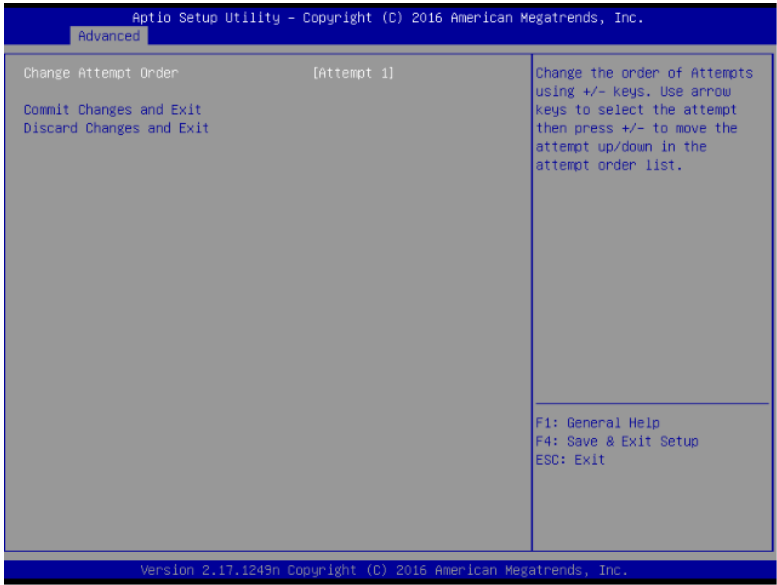
<3> Delete Attempts submenu



Option	Parameter	Description
Attempt [XX]	[Disabled] Enabled	Select "Enabled" for an iSCSI attempt you want to delete.
Commit Changes and Exit	–	Save the current setting and return to the iSCSI Configuration submenu.
Discard Changes and Exit	–	Discard the current setting and return to the iSCSI Configuration submenu.

[]: Factory setting

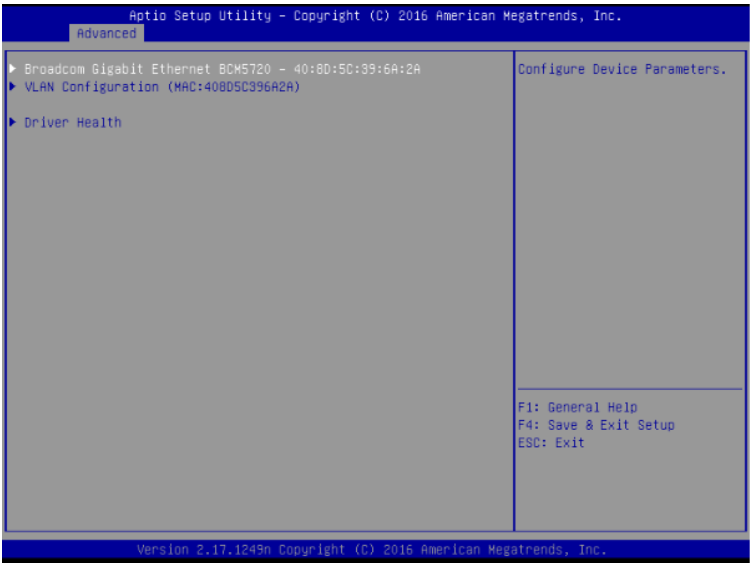
<4> Change Attempt Order submenu



Option	Parameter	Description
Change Attempt Order	–	Specify the priority of iSCSI attempt. Press the <Enter> key to open the pop-up window, and specify the priority by using <+> or <-> key.
Commit Changes and Exit	–	Save the current setting and return to the iSCSI Configuration submenu.
Discard Changes and Exit	–	Discard the current setting and return to the iSCSI Configuration submenu.

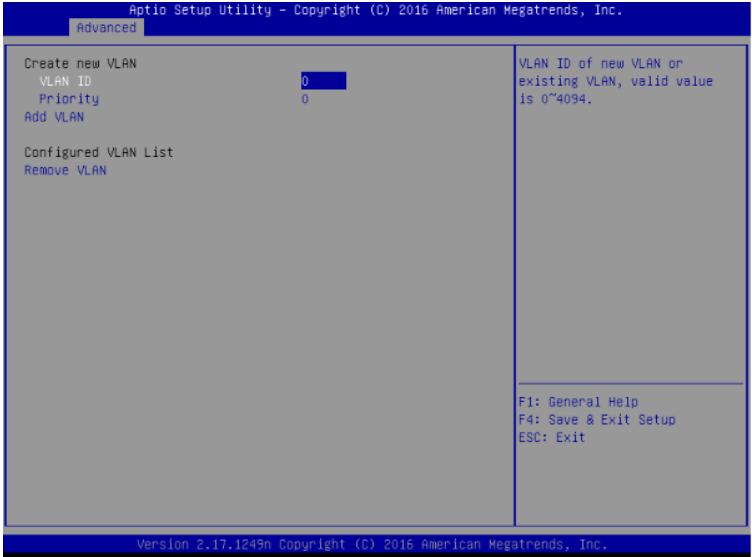
[]: Factory setting

(9) UEFI Driver Configuration submenu



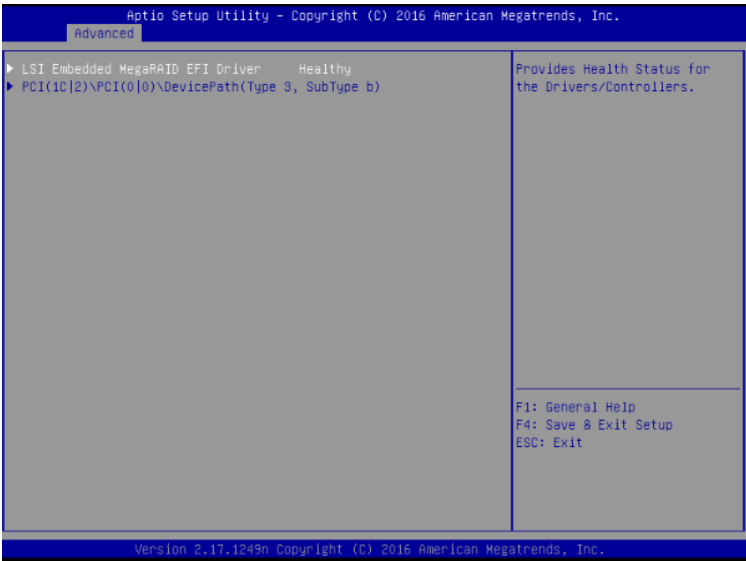
Option	Parameter	Description
(UEFI Driver Name)	—	This item is displayed when the onboard LAN controller or a UEFI driver for a PCI device is loaded. The on-screen menu depends on the specified UEFI driver.
VLAN Configuration (MAC:XXXXXXXXXX)	—	—
Driver Health	—	—

(a) VLAN Configuration (MAC:XXXXXXXXXX) submenu



Option	Parameter	Description
Create new VLAN	—	—
VLAN ID	[0]-4094	Specify VLAN ID.
Priority	[0]-7	Specify VLAN Priority.
Add VLAN	—	Add VLAN.
Configured VLAN List	—	—
VLAN ID: [x], Priority:[x]	[Disabled] Enabled	Set VLAN to be deleted to [Enabled].
Remove VLAN	—	Delete the specified VLAN.

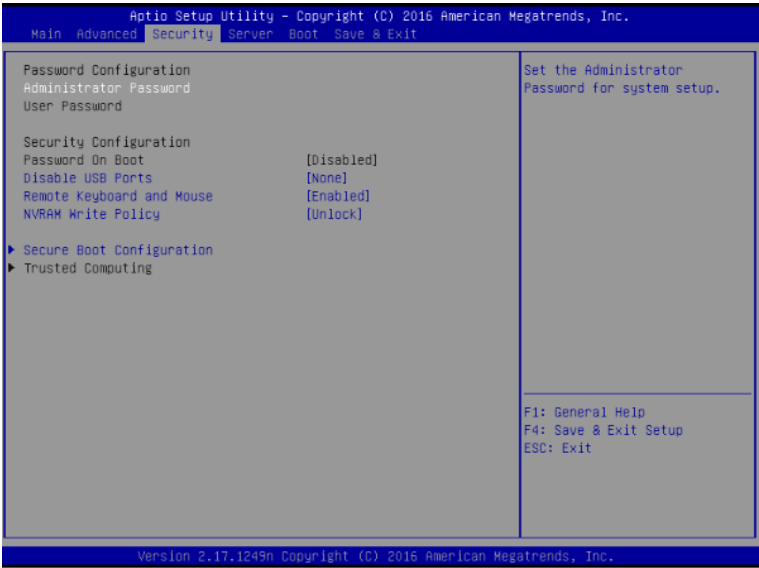
(b) Driver Health submenu



Option	Parameter	Description
(UEFI Driver Name)	(Display only)	Display the status of the UEFI driver. This item is displayed when the onboard LAN controller or a UEFI driver for a PCI device is loaded, and the UEFI driver supports the Driver Health Protocol.

1.2.3 Security

If you move the cursor to **Security**, the **Security** menu appears. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus. Then configure the settings.



Select **Administrator Password** or **User Password**, and then press the <Enter> key to display the screen where you can register/change the password.

Tips

- Administrator Password must be set before setting User Password.
- Do not set any password before installing OS.
- If you have forgotten any password, contact the store where you purchased the product or your maintenance service company.

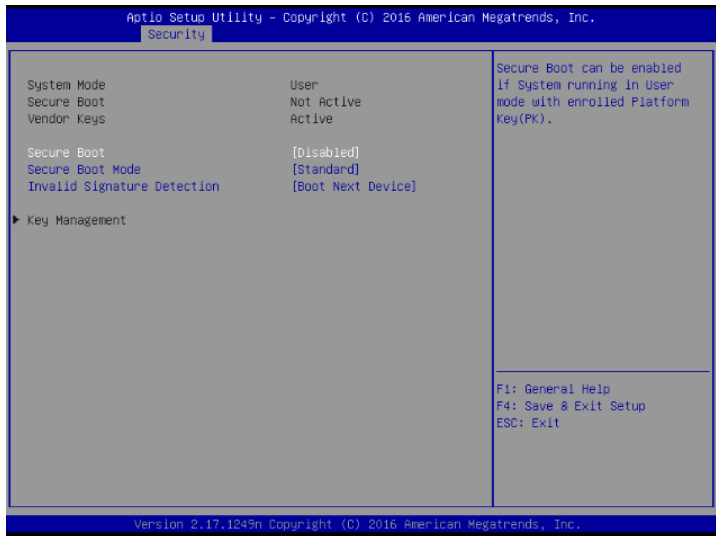
For details about the options, see the table below.

Option	Parameter	Description
Password Configuration	—	—
Administrator Password	Up to 20 alphanumeric characters	When the <Enter> key is pressed, the password entry screen to set administrative right is displayed. This password can be used to access all SETUP menus. Password can be set only when SETUP is started by administrative right. If no password is set, SETUP starts with administrative right.
User Password	Up to 20 alphanumeric characters	When the <Enter> key is pressed, the password entry screen to set user right is displayed. With this password, access to SETUP menus is limited. The user password can be set when SETUP is started by administrative right or user right.
Security Configuration	—	—
Password On Boot	[Disabled] Enabled	Enable or disable the feature that requires a password entry on boot. This option can be selected when "Administrator Password" is set.
Disable USB Ports	[None] Front Rear Internal Front + Rear Front + Internal Rear + Internal Front + Rear + Internal	Select a port to be disabled. Note that the USB keyboard is enabled only while POST is running.
Remote Keyboard and Mouse	Disabled [Enabled]	Enable or disable the remote keyboard and mouse supported by BMC.
NVRAM Write Policy	[Unlock] Lock	Set the operation policy to write to the BIOS setting (NVRAM). If "Lock" is specified, writing from the OS to NVRAM is restricted. This function can be selected only when "Secure Boot" is set to "Disabled."
Secure Boot Configuration	—	This option can be selected only when "Boot Mode" is set to "UEFI."
Trusted Computing	—	This option is displayed only when the optional TPM kit is installed and can be selected when an administrator password has been set.

[]: Factory setting

(1) Secure Boot Configuration submenu

When “Secure Boot” is selected and the <Enter> key is pressed in the Security menu, the following screen is displayed.



For details about the options, see the table below.

Option	Parameter	Description
System Mode	(Display only)	Display the status of registration of Platform Key (PK). Platform Key (PK) is not registered if the status is [Setup]. It is registered if the status is [User].
Secure Boot	(Display only)	When SETUP is activated with the Secure Boot function enabled, the status becomes [Active].
Vendor Keys	(Display only)	When the default key is registered, the status becomes [Active].
Secure Boot	[Disabled] Enabled	Enable or disable the Secure Boot function. It can be enabled when the key is registered.
Secure Boot Mode	[Standard] Custom	To add/delete the key, specify [Custom].
Invalid Signature Detection	[Boot Next Device] Halt	Specify the operation when an illegal signature data is detected by the Secure Boot function. If “Halt” is specified, a pop-up message is displayed during POST. If OK is specified, the device with the next highest priority is booted. If “Boot Next Device” is specified, the device with the next highest priority is booted without displaying a message.
Key Management	—	This option can be selected only when “Secure Boot Mode” is set to “Custom.”

[]: Factory setting

Tips

- We recommend that you set “Administrator Password” to enable “Secure Boot.”
- When “Secure Boot” is enabled and in order to have the option card recognized as a bootable device, the UEFI driver of the option card needs to be signed by the Microsoft key.

(a) Key Management submenu

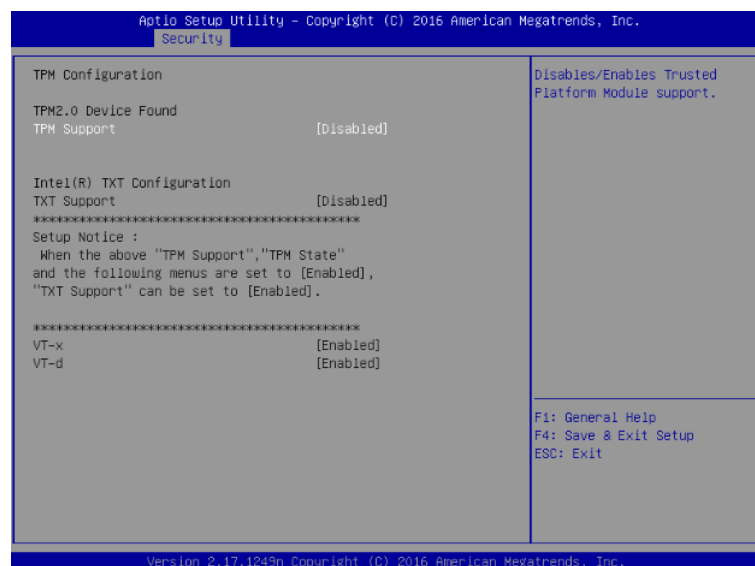


Option	Parameter	Description
Provision Factory Default keys	Disabled [Enabled]	Enable/disable the function to automatically register the default key if you do not have Platform Key (PK).
Delete All Secure Boot Variables	—	Set "System Mode" to [Setup]. In that case, disable "Secure Boot." All keys and signature databases (PK, KEK, DB, DBX and DBT) are deleted. This option can be executed only when "Provision Factory Default keys" is set to [Disabled].
Enroll All Factory Default Keys	—	Set "System Mode" to [User]. Register the default key and signature databases (PK, KEK, DB, DBX and DBT). This option can be executed only when "Provision Factory Default keys" is set to [Enabled].
Save All Secure Boot Variables	—	Save all keys and signature databases (PK, KEK, DB, DBX and DBT) in an external media. This option can be executed only when PK, KEK, db, dbx and dbt keys have been registered.
Secure Boot variable Size Key# Key source	(Display only)	Display the status of keys and signature databases (PK, KEK, DB, DBX and DBT).
Platform Key(PK)	—	Display the status of Platform Key (PK). Register/delete PK.
Key Exchange Keys	—	Display the status of Key Exchange Keys (KEK). Register/delete KEK.
Authorized Signatures	—	Display the status of Authorized Signatures (DB). Register/delete DB.
Forbidden Signatures	—	Display the status of Forbidden Signatures (DBX). Register/delete DBX.
Authorized TimeStamps	—	Display the status of Authorized TimeStamps (DBT). Register/delete DBT.

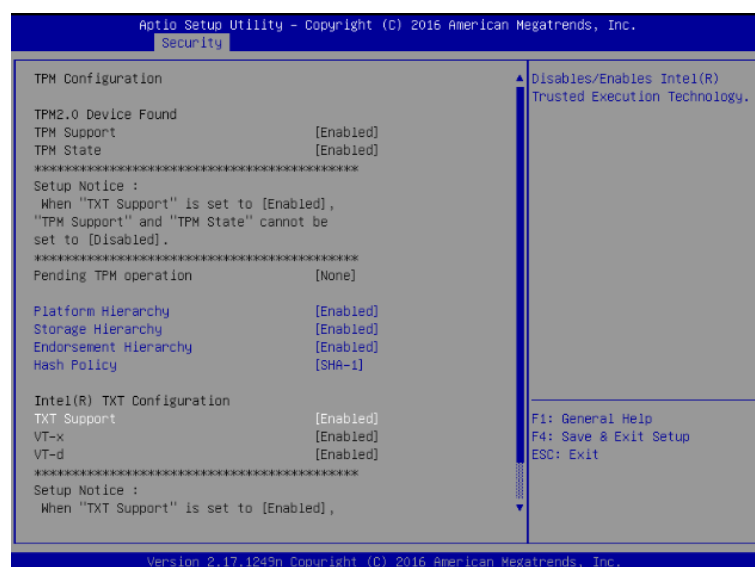
[]: Factory setting

(2) Trusted Computing submenu

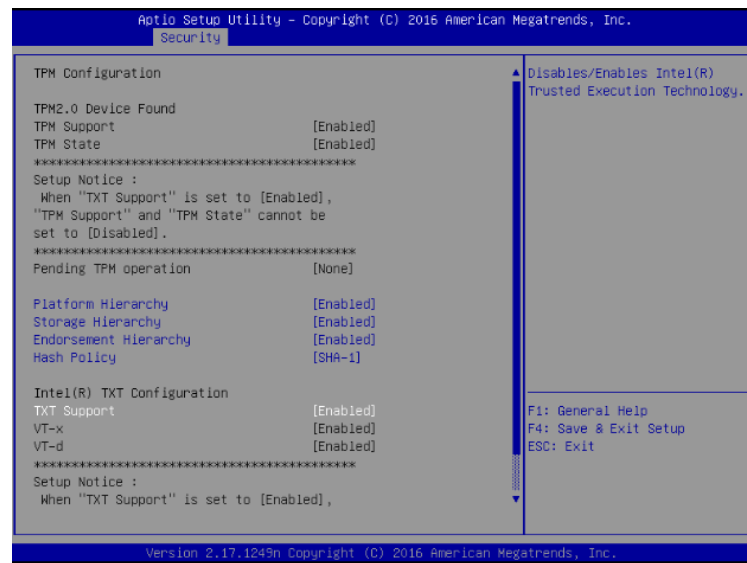
From the **Security** menu, select **Trusted Computing** and then press the <Enter> key to display the menu screen shown below.



If you enable **TPM Support**, the following menu screen appears.



If **TXT Support** is enabled, the following screen is displayed.



For details about the options, see the table below.

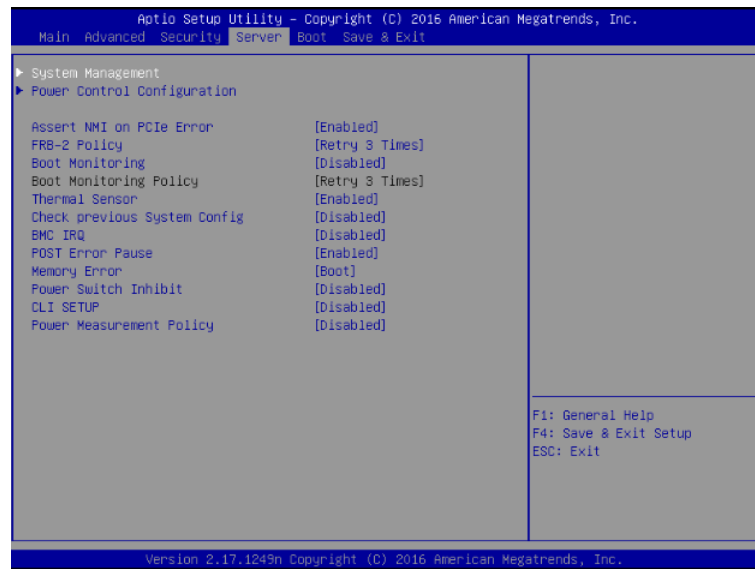
Option	Parameter	Description
TPM Configuration	—	—
TPM20 Device Found	—	—
TPM Support	[Disabled] Enabled	Enable or disable Trusted Platform Module features. When "Enabled" is set, Current TPM Status Information is displayed.
TPM State	[Disabled] Enabled	Enable or disable TPM features. This option can be selected when TPM Support is set to "Enabled".
Platform Hierarchy	Disabled [Enabled]	Enable/disable Platform Hierarchy. This option can be selected when TPM Support is set to "Enabled."
Storage Hierarchy	Disabled [Enabled]	Enable/disable Storage Hierarchy. This option can be selected when TPM Support is set to "Enabled."
Endorsement Hierarchy	Disabled [Enabled]	Enable/disable Endorsement Hierarchy. This option can be selected when TPM Support is set to "Enabled."
Hash Policy	SHA-1 [SHA-2]	Specify Hash Policy. This option can be selected when TPM Support is set to "Enabled."
Intel(R) TXT Configuration	—	—

Option	Parameter	Description
TXT Support	[Disabled] Enabled	Enable or disable Trusted Execution Technology features. This option can be selected when VT-x , VT-d , and TPM State are set to "Enabled".
VT-x	Disabled [Enabled]	Enable or disable Intel(R) Virtualization Technology (feature to virtualize processor).
VT-d	Disabled [Enabled]	Enable or disable Intel(R) Virtualization Technology for Directed I/O feature (Virtualization of I/O feature). This option is displayed only when the installed processor supports this feature.

[]: Factory setting

1.2.4 Server

If you move the cursor to **Server**, the **Server** menu screen appears. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus.



The **Server** menu screen shows the options you can configure and their features. For the menu **System Management**, move the cursor to it and then press the <Enter> key to show its submenus.

Option	Parameter	Description
System Management	—	—
Power Control Configuration	—	—
Assert NMI on PCIe Error	Disabled [Enabled]	Enable or disable the NMI assert feature. An NMI is asserted when a PCIe Uncorrectable error is detected and PCI PERR or SERR is detected.
FRB-2 Policy	[Retry 3 Times] Disable FRB2 Timer Always Reset	Specify how the system should operate if an FRB level 2 error occurs.
Boot Monitoring	[Disabled] 5-60 minutes	Enable or disable the boot monitoring feature and specify the timeout period. To use this feature, NEC ESMPRO ServerAgentService must be installed. If starting up an OS on which NEC ESMPRO ServerAgentService is not installed, disable this feature.
Boot Monitoring Policy	[Retry 3 times] Always Reset	Specify the processing to be done when a time-out is enforced during boot monitoring and the server is automatically reset. Retry 3 times: Attempts to boot OS up to three times. Always Reset: Retries booting the OS repeatedly. This option can be selected only when boot monitoring is enabled.

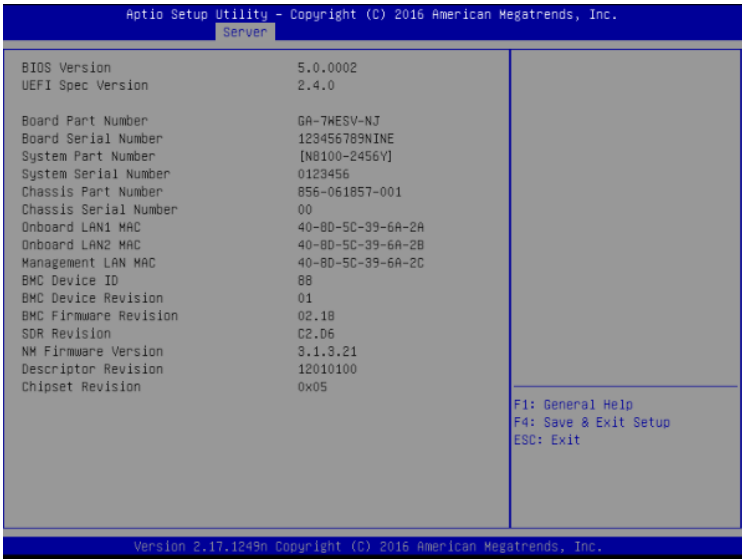
Option	Parameter	Description
Thermal Sensor	Disabled [Enabled]	Enable or disable the thermal sensor monitoring feature. If this option is set to "Enabled" and when abnormal temperature is detected, POST stops before the OS starts and the system waits until the temperature becomes normal.
Check previous System Config	[Disabled] Enabled	Enable or disable the feature to detect system configuration change. If this option is set to "Enabled" and the system configuration differs from the previous boot, the system stops before booting the OS and displays a message for confirming whether to continue booting. At this time, POST pauses until user's response is made.
BMC IRQ	[Disabled] IRQ11	Specify whether to allocate interrupt lines for BMC (Baseboard Management Controller).
Post Error Pause	Disabled [Enabled]	Enable or disable the feature to suppress OS booting when POST detects an error, until user's response is made. If this option is set to "Disabled", OS booting continues regardless of user's response even if an error is detected during POST.
Memory Error	Halt [Boot]	Enable or disable the feature to suppress OS booting when POST detects a memory degradation error, until user's response is made. This option is valid only when POST Error Pause is set to "Enabled". Even if this option is set to "Boot", the system halts at the end of POST if all of the memory resources are degraded.
Power Switch Inhibit	[Disabled] Enabled	Enable or disable the POWER switch inhibit feature.
CLI SETUP	[Disabled] Enabled	Enable or disable the Command Line Interface SETUP feature. When this option is set to "Enabled", the operation of SETUP is changed to use Command Line Interface (CLI). To switch back to the menu operation, set this option to "Disabled". For details of the command, run HELP command after prompt of CLI SETUP is displayed. If the number of bootable devices exceeds a certain number, a message "Failed to get Boot Variable data" is displayed on the command line, and you are unable to open or change the Boot menu. Reduce the number of bootable devices by disconnecting unused USB device, or change Option ROM Scan for onboard devices or PCI slots to "Disabled".

Option	Parameter	Description
Power Measurement Policy	Disabled [One Time] Always	<p>Specify the operation policy of the Power Measurement feature.</p> <p>One time: The power is measured only at the next POST execution. This parameter is automatically changed to "Disabled" after the measurement.</p> <p>Always: The power is measured at every POST execution.</p> <p>"One Time" is selected when Load Setup Defaults is executed.</p> <p>If you intend to measure the power by this setting, do not use the power control feature that limits power consumption. See <i>Chapter 2 (4. Power Control Feature)</i> for more information.</p>

[]: Factory setting

(1) System Management submenu

From the **Server** menu, move the cursor to **System Management** and then press the <Enter> key to show its submenus.



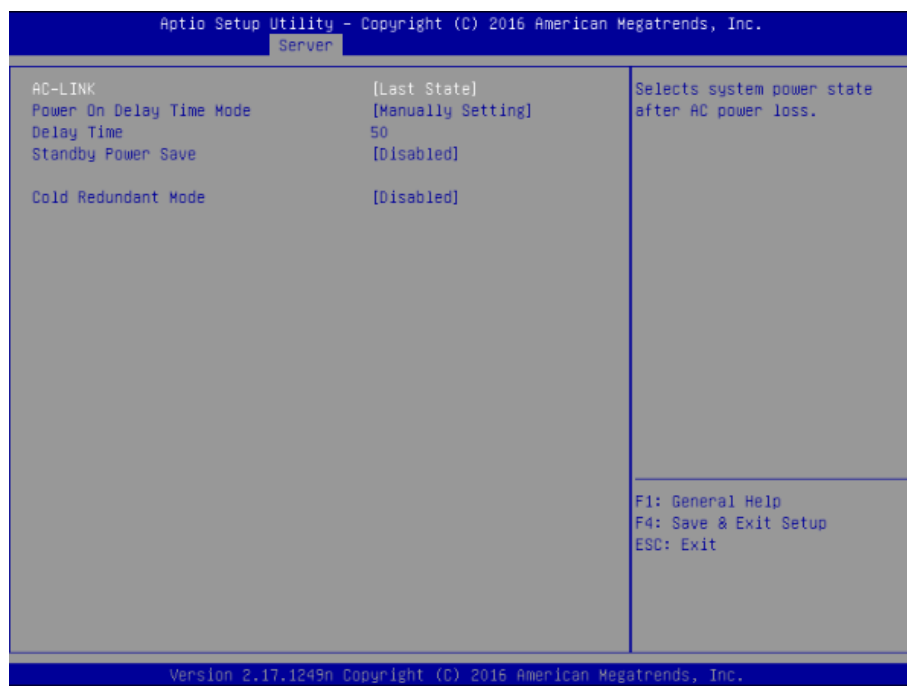
For details about the options, see the table below (display only).

Option	Parameter	Description
BIOS Version	(Display only)	Shows the current BIOS version.
UEFI Spec Version	(Display only)	Shows the current version of UEFI Spec that BIOS supports.
Board Part Number	(Display only)	Shows the part number of the motherboard.
Board Serial Number	(Display only)	Shows the serial number of the motherboard.
System Part Number	(Display only)	Shows the part number of the system.
System Serial Number	(Display only)	Shows the serial number of the system.
Chassis Part Number	(Display only)	Shows the part number of the chassis.
Chassis Serial Number	(Display only)	Shows the serial number of the chassis.
Onboard LAN1 MAC	(Display only)	Shows the MAC address of onboard LAN1.
Onboard LAN2 MAC	(Display only)	Shows the MAC address of onboard LAN2.
Management LAN MAC	(Display only)	Shows the MAC address of the management LAN port.
BMC Device ID	(Display only)	Shows the device ID of the BMC.
BMC Device Revision	(Display only)	Shows the revision of the BMC.
BMC Firmware Revision	(Display only)	Shows the firmware revision of the BMC.
SDR Revision	(Display only)	Shows the revision of Sensor Data Record.
NM Firmware Version	(Display only)	Shows the firmware version of Intel Node Manager.
Descriptor Revision	(Display only)	Shows the revision of the descriptor.
Chipset Revision	(Display only)	Shows the revision of the chipset.

[]: Factory setting

(2) Power Control Configuration submenu

From the **Server** menu, move the cursor to **Power Control Configuration** and then press the <Enter> key to show its submenus.



For details about the options, see the table below.

Option	Parameter	Description
AC-LINK	Stay Off [Last State] Power On	Specify the AC linking feature. Specify how the DC power state should be when the AC power is supplied again after loss of power. (See the table below)
Power ON Delay Time Mode	[Manually Setting] Random	Select a method to specify the delay time before powering on DC power. Available options are: "User-specified value" or "random value". This option is selectable when AC-LINK is set to "Power On" or "Last State".
Delay Time	[45]-600	Specify the delay time in unit of seconds. The minimum configurable time may be changed from the factory-set value. The minimum configurable time is displayed when executing Load Setup Defaults . This menu appears when Power ON Delay Time Mode is set to "Manually Setting".
Standby Power Save	[Disabled] Enabled	Enable or disable the feature that saves the standby power on standby. If this option is set to "Enabled", the AC-LINK setting is fixed to "Power On" automatically and cannot be changed. When the AC power is off, management, monitoring, and power-on of the server are disabled on a remote site. Powering on the server is available only by pressing the POWER switch on the server. If the AC-LINK setting is changed on a remote site with this option being set, you need to press the POWER switch twice to power on the server.

Option	Parameter	Description
Cold Redundant Mode	[Disabled] Enabled	Enable or disable the cold redundant feature. For details, see the <i>User's Guide</i> . R120g-2E: <i>Chapter 2 (1.25.1 Cold Redundant Feature)</i>

[]: Factory setting

The table below shows the operation of DC power when the AC power is turned off once and then back on, in accordance with the **AC LINK** setting.

System status before AC power was turned off	AC LINK setting		
	Stay Off	Last State	Power On
Operating (DC power is ON)	Off	On	On
Halting (DC power is also OFF)	Off	Off	On
Forced shutdown*	Off	On	On

* Continue pressing the POWER switch for at least 4 seconds to forcibly turn off the power.

Tips

- If an uninterruptible power supply (UPS) is used for automatic operation, set the **AC-LINK** to "Power On".
- **AC-LINK** option becomes valid when next time POST is running.

1.2.5 Boot

If you move the cursor to **Boot**, the **Boot** menu where you can configure the boot order appears.



For details about the options, see the table below.

Option	Parameter	Description
Boot Configuration	—	—
Quiet Boot	Disabled [Enabled]	Enable or disable the feature to display the NEC logo during POST. When this option is set to "Disabled", the results of POST execution are displayed instead of the NEC logo. If BIOS Redirection Port is enabled, this option is shown as Unavailable and inaccessible (run with "Disabled" state automatically)
Bootup Numlock State	On [Off]	Enable or disable the Numlock feature of the keyboard.
Setup Prompt Timeout	[0] - 65535	Specify the time until <F2> is pressed to launch SETUP.
Boot Mode	Legacy [UEFI]	Specify the boot mode. This option can be selected only when Secure Boot is set to Disabled. Select "UEFI" for the following OS: – Windows Server 2012 or Windows Server 2012 R2 Select "Legacy" for the following OS: – Windows Server 2008 R2 See <i>Chapter 1 Installing Windows</i> in <i>Installation Guide</i> , and determine the Boot Mode according to description in " <i>Before Starting Setup</i> " appropriate to your OS.
Boot Option Priorities	—	—
Boot Option #1	—	These items show the priority of boot devices.
Boot Option #2	—	If all of the boot options are set to "Disabled", SETUP starts running upon completion of POST.
Boot Option #3	—	
Boot Option #4	—	If the Boot Mode setting is changed, the devices are displayed after the system reboots.
CD/DVD Priorities	—	Specify the boot priority for each device type.
HDD Priorities	—	
Network Priorities	—	

[]: Factory setting

How to change the boot priority

1. When BIOS detects a bootable device, it displays device information in the designated area.
2. Move the cursor to a device using the <↑>/<↓> keys, and change the priority (first to fourth) using the <+>/<-> keys.

Rules on boot priority**(1) When multiple bootable devices are connected**

The devices are booted in descending order of the priority set in Boot Option. If the boot has failed, the device that is the next one in the Priorities of the same device type is booted. When the device that is the lowest in the Properties of the same device type has failed to be booted, a device of the Priorities of the next device type is booted.

For example, if there are two Priorities for each device type, the priority of Boot Option and the Priorities of each device type are as follows:

- Priority of Boot Option and the Priorities of each device type (<1> to <8>)

1. Boot Option #1 : CD/DVD
 CD/DVD Priorities Boot Option #1 : CD/DVD device 1 ...<1>
 CD/DVD Priorities Boot Option #2 : CD/DVD device 2 ...<2>
2. Boot Option #2 : Removable
 Removable Priorities Boot Option #1 : Removable device 1 ...<3>
 Removable Priorities Boot Option #2 : Removable device 2 ...<4>
3. Boot Option #3 : HDD
 HDD Priorities Boot Option #1 : HDD device 1 ...<5>
 HDD Priorities Boot Option #2 : HDD device 2 ...<6>
4. Boot Option #4 : Network
 Network Priorities Boot Option #1 : Network device 1 ...<7>
 Network Priorities Boot Option #2 : Network device 2 ...<8>

(2) When a bootable device is added

If a bootable device is newly connected, the added device is registered as the device that has the lowest priority in the Priorities of each device type.

(3) When a bootable device is removed

If a bootable device is removed from this server, the subject device is deleted from the Priorities of each device type.

(4) When “Load Setup Defaults” is executed

If “Load Setup Defaults” in the Save & Exit menu is executed, the settings of Boot Option and the Priorities of each device type are as follows:

a) Priority of Boot Option

1. Boot Option #1 : CD/DVD
2. Boot Option #2 : Removable
3. Boot Option #3 : HDD
4. Boot Option #4 : Network

b) Priorities of each device type

- The priority of non-USB devices (SATA device, RAID, etc.) becomes higher, and USB devices are registered after them.

c) Bootable devices

- For disabled devices, the disabled state is released, and they are registered in the Priorities of each device type again.

(5) When remote Management Advanced License (*1) is registered

If Remote Management Advanced License is registered, remote media are registered as a bootable device. Remote media operate as follows:

- AMI Remote CD/DVD devices are registered as the device with the highest priority in “CD/DVD Priorities.”
- If “Load Setup Defaults” in the Save & Exit menu is executed, AMI Remote CD/DVD devices are registered as the device with the highest priority in “CD/DVD Priorities.”

(*1) See *EXPRESSSCOPE Engine 3 User's Guide* for details of Remote Management Extended License.

Tips

- If the boot mode is UEFI, information about the device that the installed OS has registered is displayed in “HDD Priorities.” The model number of the hard disk may be granted. The partition information storing EFI boot image may be granted to “Removable Priorities.”
- When the BIOS settings (NVRAM) are cleared when the boot mode is UEFI, BIOS registers the device information that is displayed in “HDD Priorities” again. For this reason, the device information may be different from the one that the installed OS has registered. However, booting can be done successfully.
- If the boot mode is “Legacy,” the model number of the hard disk is displayed in “HDD Priorities.”
- Change bootable devices not by the bcdedit command of Windows or efibootmgr command of Linux, but from SETUP.

1.2.6 Save & Exit

If you move the cursor to **Save & Exit**, the **Save & Exit** menu appears.



The options of this menu are described below.

(a) Save Changes and Exit

The SETUP utility closes with all the changes saved in NVRAM (Non-volatile memory). After the SETUP utility closes, the system automatically reboots.

(b) Discard Changes and Exit

The SETUP utility closes without saving the changes in NVRAM. The setting at startup of SETUP utility is retained.

After the SETUP utility closes, the system automatically reboots.

(c) Save Changes and Power Off

The SETUP utility closes with all the changes saved in NVRAM.

After the SETUP utility closes, the power of the server is automatically turned off.

(d) Discard Changes and Power Off

The SETUP utility closes without saving the changes in NVRAM. The setting at startup of SETUP utility is retained.

After the SETUP utility closes, the power of the server is automatically turned off.

(e) Load Setup Defaults

This option resets all values in the SETUP utility to the default settings.

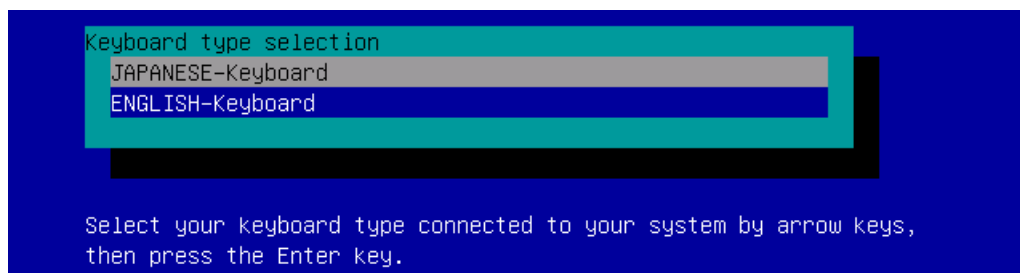
Note

- The factory-set value may differ from the default value depending on your server model. Reconfigure each item according to your environment by referring to the list of settings in this section.
- The values of iSCSI Configuration submenu and UEFI Driver Configuration submenu do not return to the default value.

2. Server Configuration

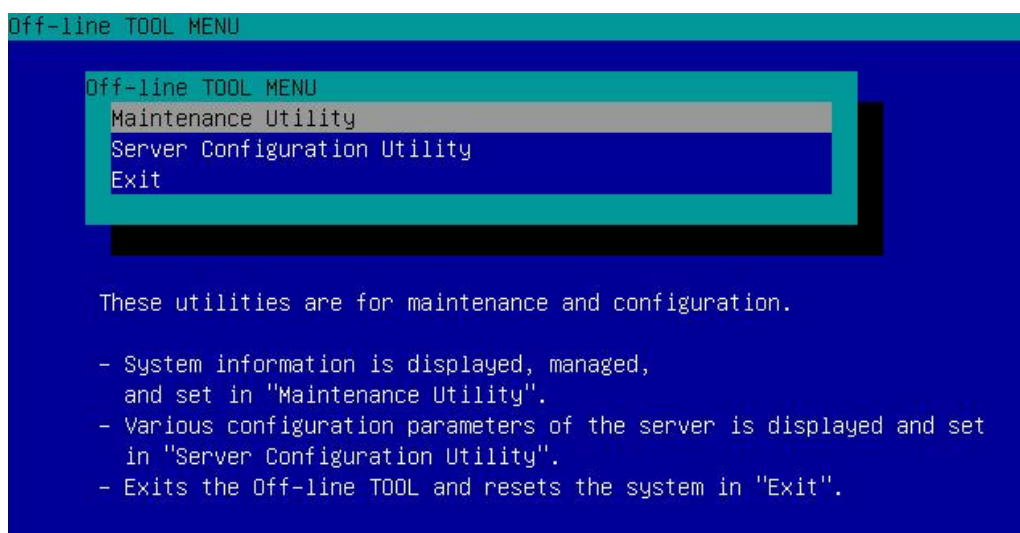
2.1 Starting Server Configuration

1. If you press the <F4> key while the POST is running, the **Keyboard type selection** menu appears.



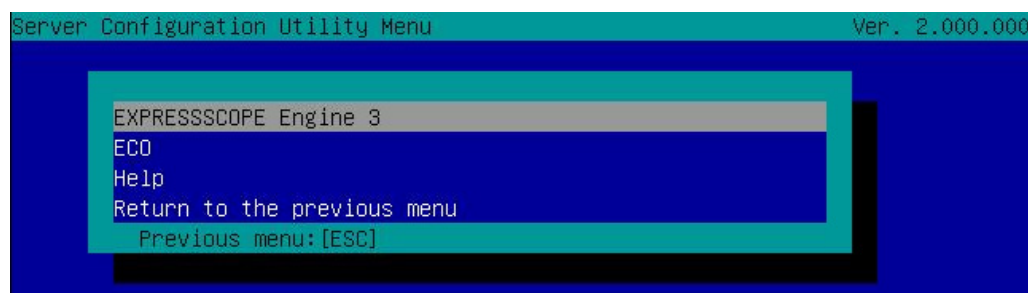
Keyboard type selection menu

2. When you select a type of keyboard that is connected to the server, the **Off-line TOOL MENU** appears.



Off-line TOOL menu

3. Selecting **Server Configuration Utility** in **Off-line TOOL MENU** starts Server Configuration Utility.



(a) EXPRESSSCOPE Engine 3

You can view or set configuration information concerning BMC.

After you change parameter value for each item, select **OK** to apply the new value to BMC.

See *Chapter 2 (2.2 EXPRESSSCOPE Engine 3)* for details.

(b) ECO

You can view or set information concerning ME (Management Engine).

See *Chapter 2 (2.3.6 ECO)* for details.

(c) Help

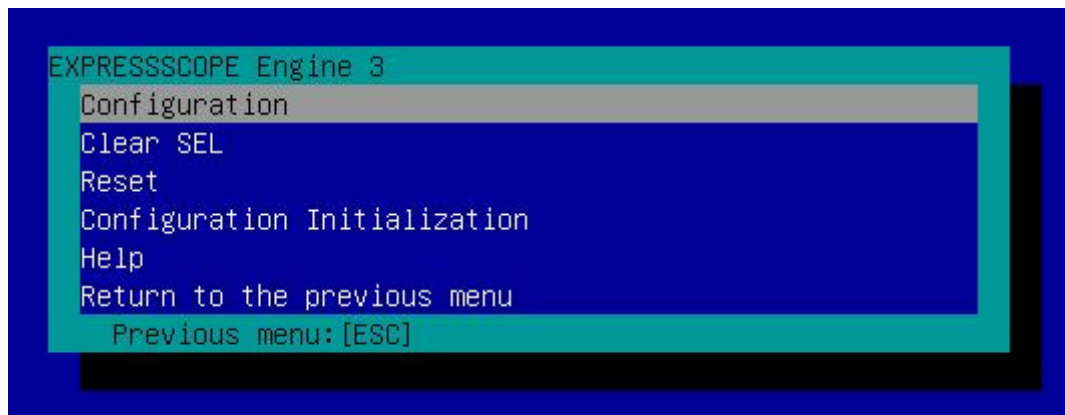
You can open help screen of Server Configuration Utility.

(d) Return to the previous menu

You can exit Server Configuration Utility, and return to Off-line TOOL MENU.

2.2 EXPRESSSCOPE Engine 3

The following menu appears when you select **EXPRESSSCOPE Engine 3** on **Server Configuration Utility**.



EXPRESSSCOPE Engine 3 menu

(a) Configuration

You can set configuration information to BMC.

After you change parameter value for each item, select **OK** to apply the new value to BMC.

See *Chapter 2 (2.3 Configuration Menu)* for details.

(b) Clear SEL

You can erase SEL (System Event Log) of BMC.

See *Chapter 2 (2.4 Clear SEL)* for details.

(c) Reset

You can reset BMC without changing configuration information.

See *Chapter 2 (2.5 Reset)* for details.

(d) Configuration Initialization

You can initialize BMC configuration information to restore the default settings.

See *Chapter 2 (2.6 Initializing Configuration)* for details.

(e) Help

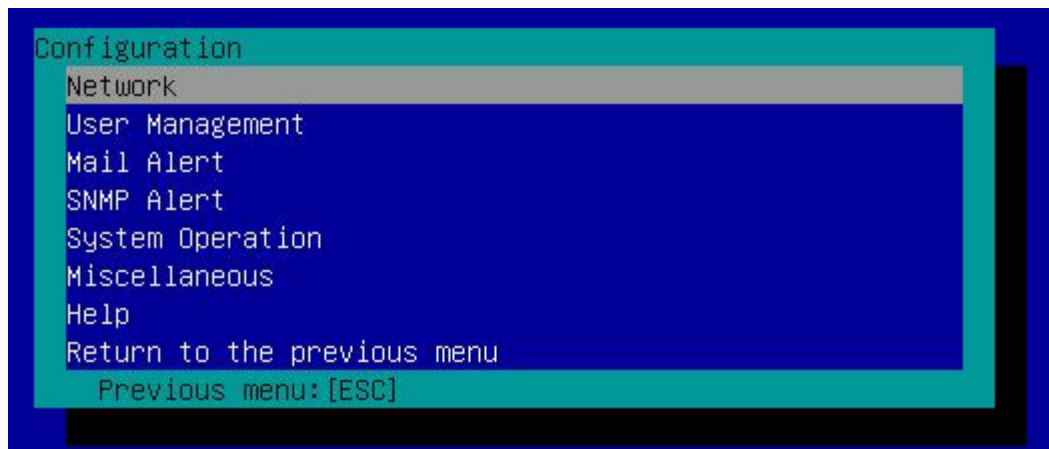
You can open help screen of EXPRESSSCOPE Engine 3.

(f) Return to the previous menu

You can exit EXPRESSSCOPE Engine 3, and return to Server Configuration Utility menu.

2.3 Configuration Menu

The following menu appears when you select **Configuration** on EXPRESSSCOPE Engine 3 menu.

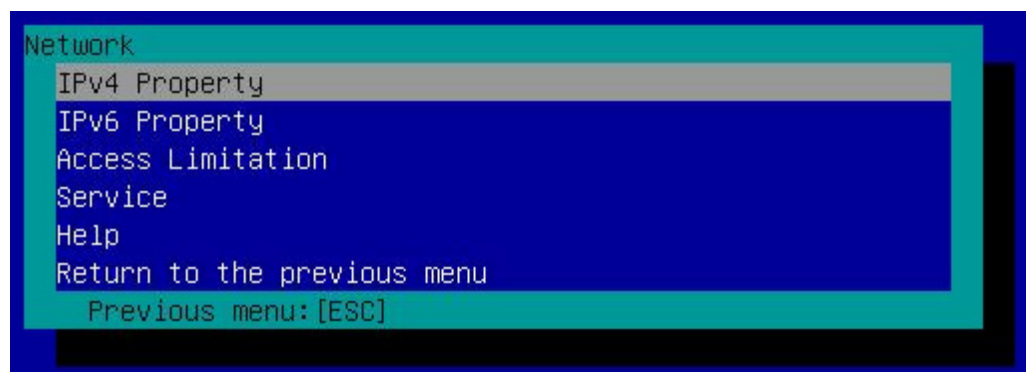


BMC Configuration menu

- (a) Network
You can view network environment and services of BMC LAN and change parameter setting.
See *Chapter 2 (2.3.1 Network)* for details.
- (b) User Management
You can manage users who use BMC.
See *Chapter 2 (2.3.2 User Management)* for details.
- (c) Mail Alert
You can view E-mail alert issued from BMC and change parameter setting.
See *Chapter 2 (2.3.3 Mail Alert)* for details.
- (d) SNMP Alert
You can view SNMP alert issued from BMC and change parameter setting.
See *Chapter 2 (2.3.4 SNMP Alert)* for details.
- (e) System Operation
You can set parameters for remote KVM console and remote media.
See *Chapter 2 (2.3.5 System Operation)* for details.
- (f) Miscellaneous
You can set various features of BMC.
See *Chapter 2 (2.3.7 Miscellaneous)* for details.

2.3.1 Network

The following menu appears when you select **Network** on **Configuration** menu.



Network menu

(1/2)

Item	Description	Default Value
IPv4 Property		
Management LAN	Specify and display LAN port to communicate with BMC. ^{*1} ^{*2} Management LAN : LAN port for BMC exclusive use. Shared BMC LAN : LAN port of System (OS) is shared and used. NOTE: Before using this feature, make sure and LAN Controller is set to Enabled.	Management LAN
Connection Type	Specify and display the connection type of BMC LAN. ^{*1} Auto Negotiation : Connecting by suitable setting. 100Mbps Full : Connecting by Full Duplex at speed of 100 Mbps. 100Mbps Half : Connecting by Half Duplex at speed of 100 Mbps. 10Mbps Full : Connecting by Full Duplex at speed of 10 Mbps. 10Mbps Half : Connecting by Half Duplex at speed of 10 Mbps.	Auto Negotiation
BMC MAC Address	Display MAC Address of BMC.	—
DHCP	Determine whether to dynamically obtain an IP address from a DHCP server. If this item is set to Enable, BMC set the value obtained from DHCP server on "IP Address", "Subnet Mask" and "Default Gateway".	Disable
IP Address	Specify the BMC LAN IP address. ^{*4}	192.168.1.1
Subnet Mask	Specify the Subnet Mask of BMC LAN. ^{*3} ^{*4}	255.255.255.0
Default Gateway	Specify the Default Gateway IP address of the BMC LAN. ^{*4} If you set this item, it is necessary for applying configuration information that the gateway is connected on network.	0.0.0.0
DNS Server	Specify the DNS Server.	0.0.0.0
Host Name	Specify the Host Name. ^{*6}	Blank
Domain Name	Specify the Domain Name. ^{*7}	Blank

(2/2)

Item	Description	Default Value
IPv6 Property		
IPv6	Enable or disable IPv6.	Disable
Address Assignment Mode	Specify the mode to assign IPv6 address (Static or Dynamic). ^{*12}	Dynamic
Link Local Address	Display link local address. ^{*12}	—
Global Address	Display IPv6 address when Dynamic is specified for assignment mode. ^{*12 *13}	—
Static Address	Specify IPv6 address when Static is specified for assignment mode. ^{*12}	0::0
Prefix Length	Specify the prefix length when Static is specified for assignment mode. ^{*12}	64
Gateway Address	Specify the gateway address when Static is specified for assignment mode. ^{*12}	0::0
Access Limitation		
Limitation Type	Select the Access Limitation Type. Allow All : Access to BMC is not limited. Allow Address : Specify the IP Address that is allowed to access BMC. Deny Address : Specify the IP Address that denies accessing BMC.	Allow All
IP Address	Specify the IP Address (IPv4) to allow or deny accessing BMC. ^{*8 *9}	Blank
Service		
HTTPS	Enable or disable HTTPS service. ^{*10}	Enable
HTTPS Port Number	Specify the HTTPS port number. ^{*11}	443
HTTP	Enable or disable HTTP service. ^{*10}	Enable
HTTP Port Number	Specify the HTTP port number. ^{*11}	80
SSH	Enable or disable SSH service.	Enable
SSH Port Number	Specify the SSH port number. ^{*11}	22

*1: Can be specified if the server supports this feature.

*2: When set to "Shared BMC LAN", the BMC LAN port is disabled. When set to "Shared BMC LAN", the system (OS) LAN port also transmits or receives data. Thus, the network performance may be reduced due to load of system LAN (or BMC LAN).

*3: If an illegal value is specified for subnet mask, an error message is displayed and setting is disabled.

*4: Can be changed only when DHCP is set to "Disable".

*5: Can be changed only when DHCP is set to "Enable".

*6: Host Name should be within 63 characters.

Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

*7: Host Name and Domain Name should be within total of 255 characters.

Acceptable characters are: alphanumeric, hyphen (-), underscore (_), and period (.).

8: The range of IP address to "Allow" or "Deny" access is delimited by ",(Comma)". With regard to the setting of "Deny" access, "" (Asterisk) can be described as a wild-card. (ex: 192.168.1.*, 192.168.2.1, 192.168.2.254)

*9: Can be specified when Access Limitation Type is "Allowed Address" or "Deny Address". The length must not exceed 255 characters.

*10: If HTTP is set to "Enable", HTTPS is changed to "Enable" automatically. You are not allowed to set "Enable" to HTTP only.

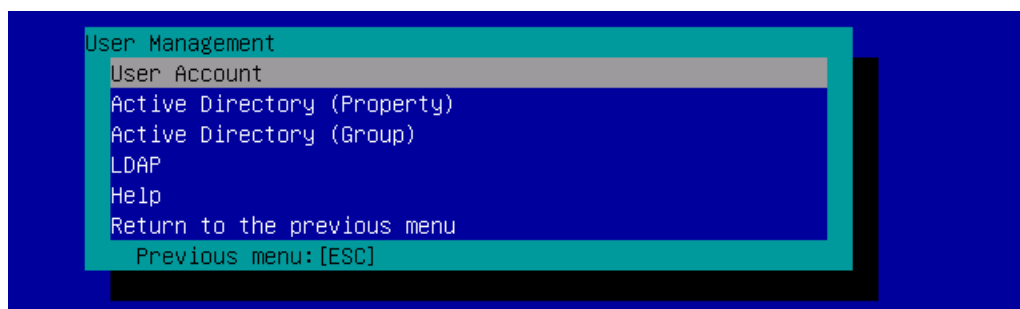
*11: Port number can be specified only when the relevant port is set to "Enable". The port number must be unique.

*12: Can be specified only when IPv6 is set to "Enable".

*13: Displayed only when "Dynamic" is specified for Address Assignment Mode.

2.3.2 User Management

The following menu appears when you select **User Management** on BMC Configuration menu.



User Management menu

(1/2)

Item	Description	Default Value
User Account		
User	Enable or disable the user. ^{*1}	Enable
User Name	Specify user name. ^{*2}	Blank
Password	Specify password. ^{*3}	Blank
Confirm Password	Specify the same character string used for "Password". ^{*3}	Blank
Privilege	Specify the privilege of the user. ^{*4} Administrator Operator User	Administrator
Active Directory (Property)		
Active Directory Authentication	Enable or disable Active Directory authentication.	Disable
User Domain Name	Specify the user domain name. ^{*5 *6}	Blank
Timeout	Specify timeout period for connection with Domain Controller. ^{*5}	120
Domain Controller Server1	Enable or disable Domain Controller Server 1. ^{*5 *7}	Enable
Server Address1	Specify IP address of Domain Controller Server 1. ^{*5 *8}	Blank
Domain Controller Server2	Enable or disable Domain Controller Server 2. ^{*5 *7}	Disable
Server Address2	Specify IP address of Domain Controller Server 2. ^{*5 *8}	Blank
Domain Controller Server3	Enable or disable Domain Controller Server 3. ^{*5 *7}	Disable
Server Address3	Specify IP address of Domain Controller Server 3. ^{*5 *8}	Blank
Active Directory (Group)		
Group Name	Specify group name of Active Directory. ^{*8}	Blank
Group Domain	Specify group domain of Active Directory. ^{*6}	Blank
Privilege	Specify privilege of group of Active Directory. ^{*4} Administrator Operator User	Administrator

(2/2)

Item	Description	Default Value
LDAP		
LDAP Authentication	Enable or disable LDAP authentication.	Disable
IP Address	Specify the IP address. ^{*9}	0.0.0.0
Port Number	Specify the LDAP port number. ^{*9}	389
Search Base	Specify the search base used in LDAP authentication. ^{*9 *10}	Blank
Bind Domain Name	Specify the bind domain used in LDAP authentication. ^{9 *10}	Blank
Bind Password	Specify the bind password used in LDAP authentication. ^{*9*11}	Blank

*1: Can be specified if a user exists.

*2: Up to 15 characters including alphanumeric, hyphen (-), and underscore (_) can be used. Note, however, User Name must not start with hyphen (-). In addition, "InternalUseOnly", "null", "MWA", "AccessByEM-Poem", and names which are already assigned for other number are not allowed.

*3: Up to 19 ASCII characters can be used excluding " " (blank), " (quotation), & (ampersand), ? (question mark), = (equal sign), #, and ¥.

*4: Privileges are defined as follows:

Administrator : User who has administrator right. All operations are allowed.

Operator : User who can operate the machine. Session management, license registration, remote KVM/media, configuration, and update are not allowed.

User : General user. Viewing IPMI information only is allowed.

*5: Can be specified only when Active Directory authentication is set to "Enable".

*6: Up to 255 characters including alphanumeric, hyphen, underscore, and period can be used.

*7: If Active Directory authentication is set to "Enable", at least one domain controller server must be enabled.

*8: Can be specified only when domain controller server is set to "Enable"

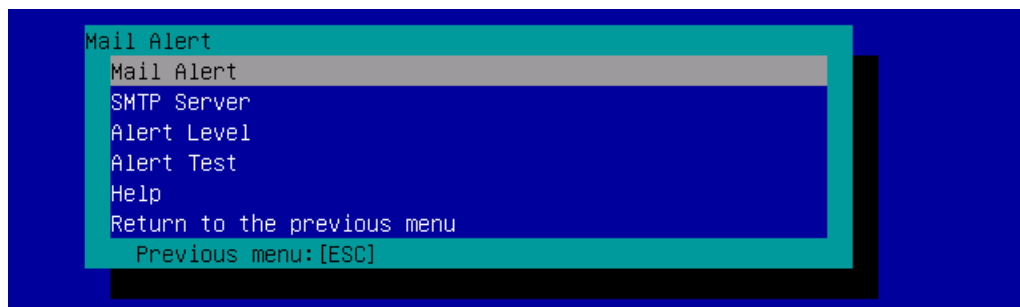
*9: Can be specified only when LDAP authentication is set to "Enable".

*10: Characters in the range between 4 and 62 including alphanumeric, hyphen, underscore, period, comma, and equal sign can be used.

*11: Alphanumeric characters in the range between 4 and 31 excluding " , #, and ¥ can be used.

2.3.3 Mail Alert

The following menu appears when you select **Mail Alert** on BMC Configuration menu.



Mail Alert menu

(1/2)

Item	Description	Default Value
Mail Alert		
Mail Alert	Enable or disable Mail Alert.	Disable
Response of SMTP Server	Specify the timeout period until when the connection to SMTP server succeed by E-mail transmission.	30
To:1	Select Enable/Disable of To:1. ^{*1}	Enable
To:1 E-Mail Address	Specify the mail address of To:1. ^{*2 *3}	Blank
To:2	Select Enable/Disable of To:2. ^{*1}	Disable
To:2 E-Mail Address	Specify the mail address of To:2. ^{*2 *3}	Blank
To:3	Select Enable/Disable of To:3. ^{*1}	Disable
To:3 E-Mail Address	Specify the mail address of To:3. ^{*2 *3}	Blank
From:	Specify the mail address of From. ^{*3}	Blank
Reply-To:	Specify the mail address of Reply-To. ^{*3}	Blank
Subject:	Specify the Subject. ^{*4}	Blank
SMTP Server		
SMTP Server	Specify the SMTP Server. ^{*5}	0.0.0.0
SMTP Port Number	Specify the SMTP port number.	25
SMTP Authentication	Select Enable/Disable of SMTP Authentication.	Disable
CRAM-MD5	Select Enable/Disable of CRAM-MD5. ^{*6 *7}	Enable
LOGIN	Select Enable/Disable of LOGIN authentication. ^{*6 *7}	Enable
PLAIN	Select Enable/Disable of PLAIN authentication. ^{*6 *7}	Enable
User Name	Specify the SMTP User Name. ^{*6 *8}	Blank
Password	Specify the SMTP Password. ^{*6 *9}	Blank

(2/2)

Item	Description	Default Value
Alert Level		
Alert Level	Specify the kind of event to alert. Error : When "Error" is detected in each sensor type, the alert is sent to the selected address among To1 to To3. Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the selected address among To1 to To3. Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the selected address among To1 to To3. Separate Setting : You can arbitrarily select the event and the address (To:X) to alert in each sensor type.	Error, Warning
Alert Test	Execute test by sending an alert by mail. ^{*10}	—

*1: When Mail Alert is enabled, at least one address should be enabled.

*2: Can be specified only when To:X is set to "Enable".

*3: Up to 255 characters including alphanumeric, hyphen, underscore, period, and @ (at mark) can be used.

*4: Up to 63 alphanumeric characters excluding +, ", ?, =, <, >, #, and ¥ can be used.

*5: Up to 255 alphanumeric characters, hyphen, and period can be used for full domain name or IP address.

*6: Can be specified only when SMTP Authentication is set to "Enable".

*7: When SMTP Authentication is set to "Enable", at least one of the authentic methods should be enabled.

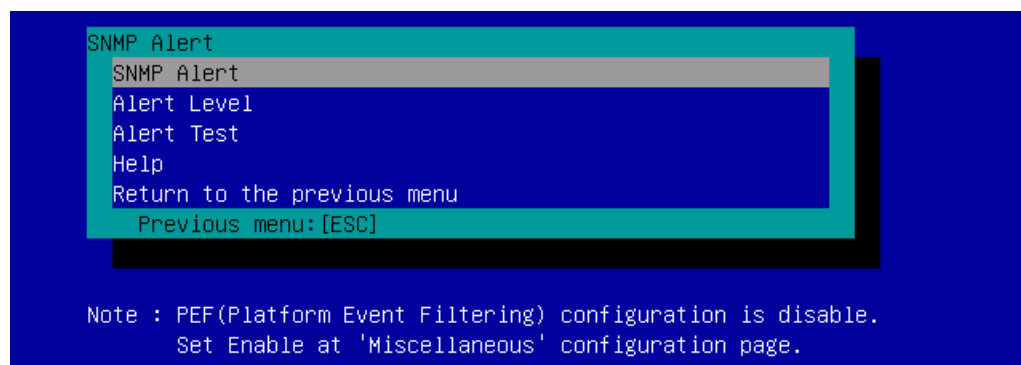
*8: Up to 64 alphanumeric characters can be used excluding " " blank, ", ?, =, <, >, #, and ¥.

*9: Up to 19 alphanumeric characters can be used excluding " " blank, ", ?, =, <, >, #, and ¥.

*10: Be sure to perform Alert Test after all the parameters are configured appropriately. Alert feature may fail depending on configuration made for network or alert receiver.

2.3.4 SNMP Alert

The following menu appears when you select **SNMP Alert** on BMC Configuration menu.



SNMP Alert menu

Item	Description	Default Value
SNMP Alert		
SNMP Alert	Enable or disable SNMP Alert. ^{*1}	Disable
Computer Name	Specify the Computer Name. ^{*2}	Blank
Community Name	Specify the Community Name. ^{*2}	public
Alert Process	Select "One Alert Receiver" or "All Alert Receiver" for Alert Process.	One Alert Receiver
Alert Acknowledge	Enable or disable Alert Acknowledge.	Enable
Alert Retry Count	Specify the count of Alert retry. ^{*3}	3
Alert Timeout	Specify the timeout period (in seconds) for alert. ^{*3}	6
Alert Receiver1	Enable or disable primary receiver. ^{*4}	Enable
IP Address1	Specify the IP Address of primary receiver. ^{*5}	0.0.0.0
Alert Receiver2	Enable or disable secondary receiver. ^{*4}	Disable
IP Address2	Specify the IP Address of secondary receiver. ^{*5}	0.0.0.0
Alert Receiver3	Enable or disable tertiary receiver. ^{*4}	Disable
IP Address3	Specify the IP Address of tertiary receiver. ^{*5}	0.0.0.0
Alert Level		
Alert Level	Specify the kind of event to alert. Error : When "Error" is detected in each sensor type, the alert is sent to the valid receiver. Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the valid receiver. Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the valid receiver. Separate Setting : You can arbitrarily select the event to alert in each sensor type.	Error, Warning
Alert Test	Execute an alert test by SNMP. ^{*6}	—

*1: When PEF (Platform Event Filter) is set to "Disable" in Miscellaneous menu, SNMP alert is disabled.

*2: Up to 16 alphanumeric characters are accepted.

*3: Can be specified only when Alert Acknowledge is set to "Enable".

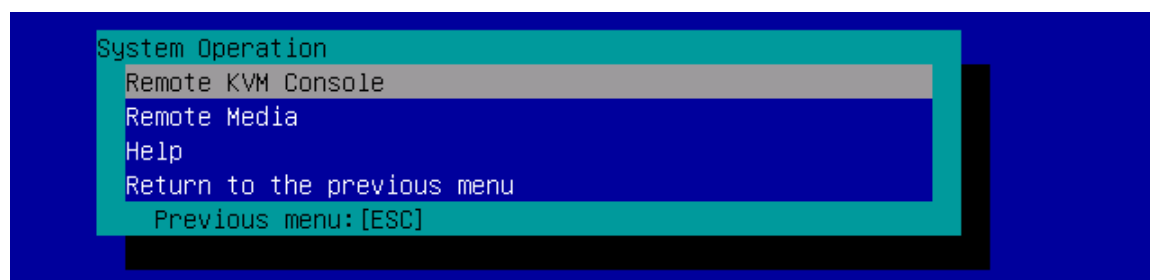
*4: When SNMP Alert is enabled, at least one alert receiver should be enabled.

*5: Can be specified only when each Alert Receiver is set to "Enable".

*6: Be sure to perform Alert Test after all the parameters are configured appropriately. Alert feature may fail depending on configuration made for network or alert receiver.

2.3.5 System Operation

The following menu appears when you select **System Operation** on BMC Configuration menu.



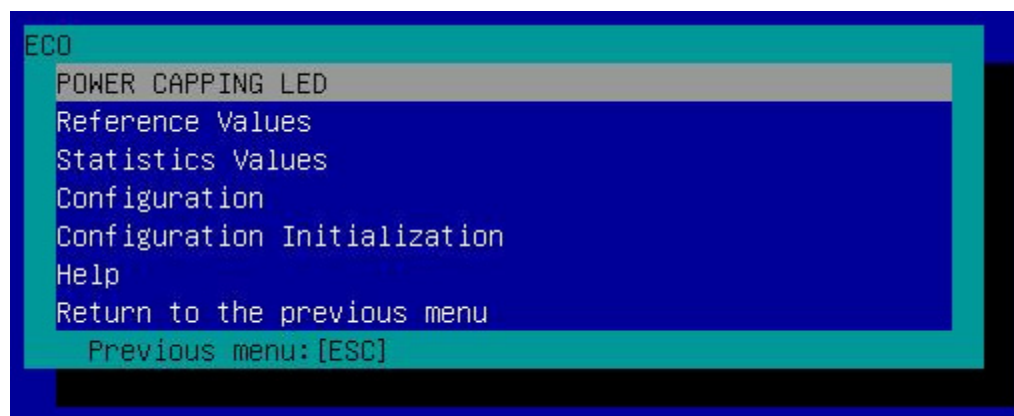
System Operation menu

Item	Description	Default Value
Remote KVM Console		
Encryption	Enable or disable encryption.	Enable
Port Number (No Encryption)	Specify the port number when encryption is disabled. *1	7578
Port Number (Encryption)	Specify the port number when encryption is enabled *1	7582
Mouse Cursor Mode	Specify display mode of mouse cursor. Single Dual	Dual
Mouse Coordinate Mode	Select a mode to indicate coordinate when moving mouse cursor. Relative Absolute	Absolute
Keyboard Language	Select a keyboard language. Japanese(JP) English(US) French(FR) German(DE)	English(US)
Remote Media		
Encryption	Enable or disable encryption.	Enable
Remote CD/DVD (No Encryption)	Specify the port number of remote CD/DVD port when encryption is disabled. *1	5120
Remote USB Memory (No Encryption)	Display the port number of remote USB memory when encryption is disabled. (Remote CD/DVD port number + 2)	—
Remote FD (No Encryption)	Display the port number of remote FD when encryption is disabled. (Remote CD/DVD port number + 3)	—
Remote CD/DVD (Encryption)	Specify the port number of remote CD/DVD port when encryption is enabled. *1	5124
Remote USB Memory (Encryption)	Display the port number of remote USB memory when encryption is enabled. (Remote CD/DVD port number + 2)	—
Remote FD (Encryption)	Display the port number of remote FD when encryption is enabled. (Remote CD/DVD port number + 3)	—

*1: Port numbers must be the unique one.

2.3.6 ECO

The following menu appears when you select **ECO** on Server Configuration Utility menu.



ECO menu

Item	Description	Default Value
POWER CAPPING LED	Shows LED status. Enable : On Working : Blinking Disable : Off Invalid : Unknown	
Reference Values	Displays reference values of power consumption. Maximum Power Consumption : Shows the maximum power consumption. *1 Minimum Power Consumption : Shows the minimum power consumption. *1	
Statistics Values	Shows statistic value for each item. Statistic values for all items can be obtained by selecting " Reload ". Statistic value of each item can be cleared by selecting " Reset xxxxx statistics ".	
Power Consumption	Shows Current / Maximum / Minimum / Average power consumption (Watt)	—
CPU Throttling	Shows Current / Maximum / Minimum / Average CPU throttling rate (%). *2	—
Memory Throttling	Shows Current / Maximum / Minimum / Average memory throttling rate (%). *2	—
Configuration		
Aggressive Mode	Enable or disable Aggressive Mode.	Disable
Power Threshold(Pa)	Specify power threshold in Aggressive Mode. Allowable range is between AAA and Maximum Power Consumption (Watt). *3 *4	Maximum power consumption
Correction time limit	When power consumption exceeds the power threshold for Aggressive Mode and unable to recover within the time period specified in this parameter, collects event log, sends an alert, and shuts down the system. Allowable value (in seconds) depends on system. *3	The larger value comparing with 2 and Minimum system value
Shutdown System	Enable or disable the feature to shut down the system when power consumption exceeds the time specified in Correction time limit. *3	Disable
Non- Aggressive Mode	Enable or disable Non-Aggressive Mode.	Disable

(2/2)

Item	Description	Default Value
Configuration		
Power Threshold(Pn)	Specify power threshold in Non-Aggressive Mode. Allowable range is between the Minimum Power Consumption and BBB (Watt). ^{*5} ^{*6}	The larger value comparing with Power Threshold(Pa) –10 and Minimum Power Consumption +10
Correction time limit	When power consumption exceeds the power threshold for Non-Aggressive Mode and unable to recover within the time period specified in this parameter, collects event log and sends an alert. Allowable value (in seconds) depends on system. ^{*5}	The larger value comparing with 10 and Minimum system value
Safe Power Capping ^{*3}	Enable or disable Safe Power Capping (Monitoring at unreadable power consumption).	Disable
Boot Time Configuration ^{*3}	Enable or disable Boot Time Configuration.	Disable
Performance Mode	Select a performance at system boot-up. ^{*7} Performance Optimized : Prefer performance and operation Power Optimized : Optimize power consumption.	Performance Optimized
Disable CPU Cores	Specify the number of cores to be disabled. Allowable value is between 0 and (Number of maximum cores –1). ^{*7}	0

*1: These values are reference purpose only. Each value might be different from the actual value which depends on your system configuration.

*2: Technology that decreases frequency or duty cycle of clock, and suppresses power consumption.

*3: Can be specified only when Aggressive Mode is set to "Enable".

*4: AAA denotes "Minimum Power Consumption" or "Power Threshold (Pn)".

*5: Can be specified only when Non-Aggressive Mode is set to "Enable".

*6: BBB denotes "Maximum Power Consumption" or "Power Threshold (Pa)".

*7: Can be specified only when Boot Time Configuration is set to "Enable".

Note

- The power value may not reach the threshold value. The power control feature saves power consumption by lowering the clock speed of CPU/memory. If the throttling value of CPU/memory reaches 100%, the power value cannot be reduced no longer.
- If the value specified for Power Threshold (Pa) for Aggressive Mode is lower than the power required for system startup and the parameter "Shutdown System" is enabled, the server might not start normally.

2.3.7 Miscellaneous

The following items are available when you select **Miscellaneous** in BMC Configuration menu.

Item	Description	Default Value
Miscellaneous		
Behavior when SEL repository is Full	Specify the behavior when SEL repository is full. ^{*1} Stop logging SEL : Any new SEL is not recorded. Clear all SEL : Erase all SEL and record a new SEL. Overwrite oldest SEL : Old SEL is overwritten with new SEL.	Overwrite oldest SEL
Platform Event Filter	Enable or disable Platform Event Filter. ^{*2}	Enable
Management Software	Setting for remote management	–
ESMPRO Management	Enable or disable BMC management by NEC ESMPRO ^{*3}	Current set value
Authentication Key	Specify the Authentication Key. ^{*4 *5}	guest
Redirection	Enable or disable Redirection feature. ^{*4 *6}	Enable

*1: When this item is changed to/from "Overwrite oldest SEL", all log records in the SEL Repository are cleared.

*2: Disabling Platform Event Filter also disables SNMP alert.

*3: When BMC can be managed directly from NEC ESMPRO Manager (Ver. 5.4 or later), this item must be set to "Enable". If it is set to "Enable", Authentication Key is required.

*4: Can be specified only when ESMPRO Management is set to "Enable".

*5: This Authentication key is used when NEC ESMPRO Manager (Ver. 5.4 or later) manages the target server. Up to 16 alphanumeric characters are accepted.

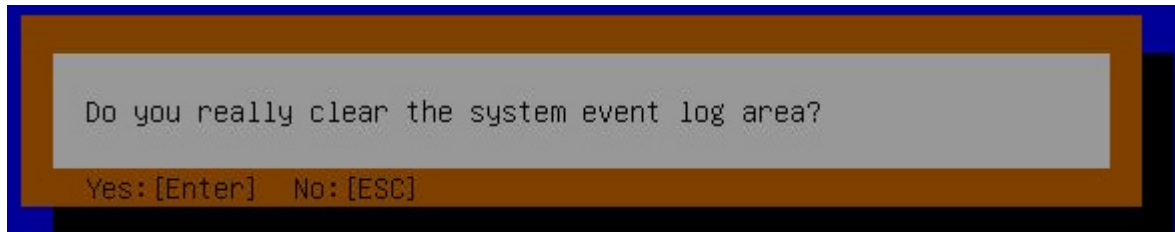
*6: If Redirection is set to "Enable", Console Redirection port in BIOS is set to "Serial Port B" at next boot.

Note

If you do not use remote management feature by NEC ESMPRO, set to "Disable" for ESMPRO Management in Management Software. In this case, setting for relevant items are hidden and unnecessary.

2.4 Clear SEL

If you select **Clear SEL** on EXPRESSSCOPE Engine 3 menu, the confirmation message as show below appears.



Confirmation message (Clear SEL)

<ESC> key: Aborts processing and returns to BMC Configuration menu.

<Enter> key: Clears SEL.

2.5 Reset

If you select **Reset** on EXPRESSSCOPE Engine 3 menu, the confirmation message as show below appears.



Confirmation message (Reset)

<ESC> key: Aborts processing and returns to BMC Configuration menu.

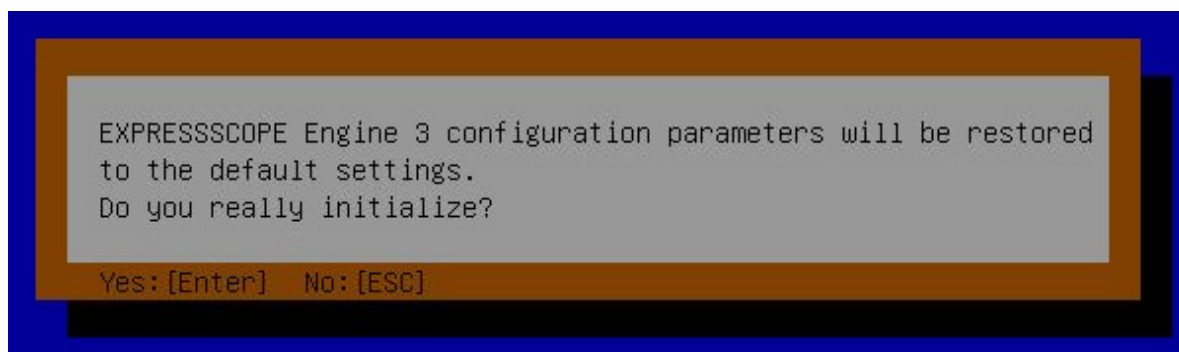
<Enter> key: Resets BMC. It takes about several minute to restart BMC.

Note

Do not shutdown the system, reboot the system, or perform any switch operation while BMC is being reset (for approximately 3 minutes).

2.6 Initializing Configuration

If you select **Configuration Initialization** on EXPRESSSCOPE Engine 3 menu, the confirmation message as show below appears.



Confirmation message (Initialization)

- <ESC> key: Aborts processing and returns to Main menu.
- <Enter> key: Initializes BMC configuration settings and restores the default value.
After initialization, it takes several minutes to restart BMC.

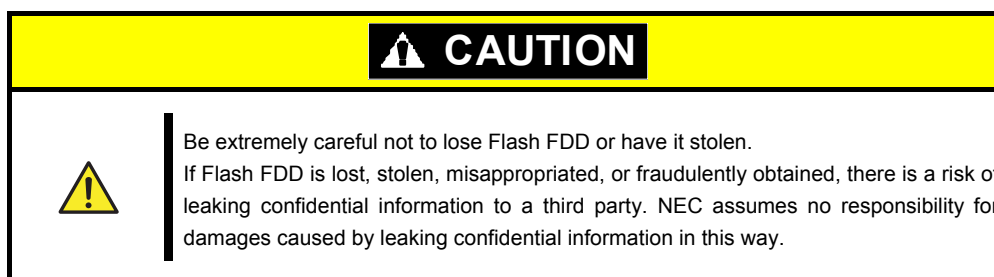
Note

Do not shutdown the system, reboot the system, or perform any switch operation while BMC is being initialized (for approximately 3 minutes).

3. Flash FDD

Flash FDD is a device that is compatible with a floppy disk drive.

One Flash FDD can be connected to a USB connector of this server. If another USB or floppy disk drive is connected to this server, be sure to remove it.



If you want to change the write protection, remove Flash FDD from the server, change the write protection switch, and then connect it again.

3.1 Notes on Using Flash FDD

Do not use Flash FDD to back up data. Flash FDD can be used for a temporary data only.

3.1.1 Compensation for recorded data

NEC does not pay compensation for data recorded on Flash FDD even if the data is lost.

3.1.2 Handling Flash FDD

- Flash FDDs are consumables. If Flash FDD causes an error, exchange to a new Flash FDD.
- Do not turn off the server while the access LED of Flash FDD is blinking.
- Flash FDD cannot be connected to a USB hub. Directly connect Flash FDD to the server.
- Discharge static electricity from your body by touching a doorknob, aluminum frame, and other nearby metal objects before touching Flash FDD.
- Do not disassemble Flash FDD.
- Do not apply a strong force to Flash FDD.
- Do not place Flash FDD in an area directly exposed to sunlight or near a heater.
- Do not handle Flash FDD while eating, drinking, or smoking. Also, avoid contact with thinner, alcohol, or other corrosive substances.
- Carefully connect Flash FDD to the server.
- Do not move the server while Flash FDD is connected to USB connector.
- Remove Flash FDD from the server after use.

3.1.3 Use in EXPRESSBUILDER

- Connect Flash FDD after Home Menu appears.
- Remove Flash FDD from the server before closing EXPRESSBUILDER.

4. Power Control Feature

For a device that has a Xeon Processor, power consumption of the server can be controlled by using the command line interface of EXPRESSSCOPE Engine 3 (BMC) or by using NEC ESMPRO Manager. This feature curves the upper limit of the power consumption, which allows more servers to be installed in the environment where the power consumption is limited.

For settings information, see *EXPRESSSCOPE Engine 3 User's Guide* or *NEC ESMPRO Manager online help*.

4.1 Supported OS

The power control feature is available for the following OSs.

- Windows Server 2008 Standard
- Windows Server 2008 Enterprise
- Windows Server 2008 Standard x64
- Windows Server 2008 Enterprise x64
- Windows Server 2008 R2 Standard x64
- Windows Server 2008 R2 Enterprise x64
- Windows Server 2012 Standard x64
- Windows Server 2012 Datacenter x64
- Windows Server 2012 R2 Standard x64
- Windows Server 2012 R2 Datacenter x64

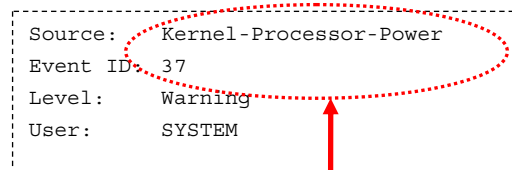
4.2 Notes on Using Windows Server 2008

Ignore the following event when Windows Server 2008 is run on the server. This event is logged at the normal operation of controlling the server power.

```
Source:      Kernel-Processor-Power
Event ID:    7
Level:       Warning
User:        SYSTEM
```

4.3 Notes on Using Windows Server 2008 R2 / 2012 / 2012 R2

Ignore the following event when Windows Server 2008 R2, 2012, or 2012 R2 is run on the server. This event is logged at the normal operation of controlling the server power.



Source: Kernel-Processor-Power
Event ID: 37
Level: Warning
User: SYSTEM

A red dotted oval highlights the 'Source' and 'Event ID' fields. A red arrow points from the text below to the 'Event ID' field.

Source: Kernel-Processor-Power
Event ID: 37

5. RAID System Configuration

This section describes the LSI Software RAID Configuration Utility and Off-line Utility. The LSI Software RAID Configuration Utility resides in LSI Software RAID and is an OS-independent program.

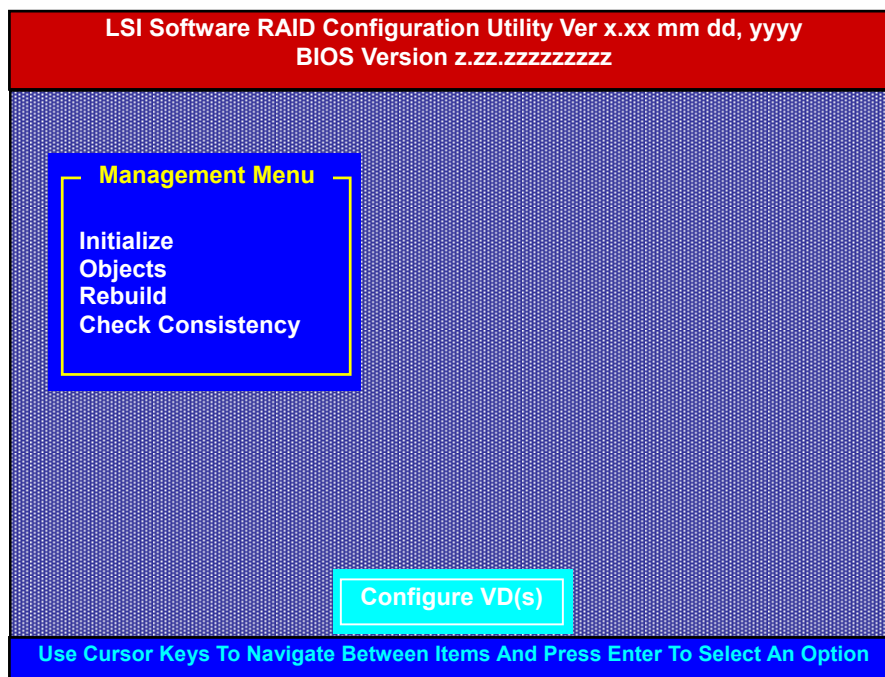
5.1 Running LSI Software RAID Configuration Utility in the Legacy Mode

On the POST screen after power-on, press the <Ctrl>+<M> key or <Enter> key when the following message appears. The LSI Software RAID Configuration Utility starts.

Press Ctrl-M or Enter to run LSI Software RAID Configuration Utility

Tips

If you fail to press <Ctrl>+<M> keys or <Enter> key, or the system proceeds without displaying the following screen, restart the system, and press <Ctrl>+<M> keys on POST screen.



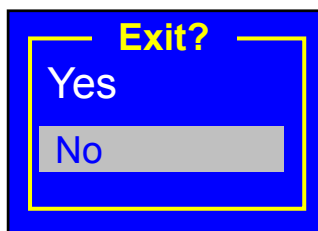
*1: "x" in LSI Software RAID Configuration Utility Verx.xx represents the version of utility.

*2: mm dd, yyy represents created date.

*3: "z" in BIOS Version z.zz.zzzzzzzz represents the version of LSI Software RAID BIOS.

5.1.1 Quitting LSI Software RAID Configuration Utility

To quit the utility, press the <Esc> key on the TOP menu of LSI Software RAID Configuration Utility.



Select **Yes**.

Press<CTRL><ALT> To Reboot The System

When the above message appears, press <Ctrl>+<Alt>+ keys. The server restarts.

5.2 Menu Tree of the Legacy Mode

◇: Selection/execution parameter ●: Setting parameter. •: Information

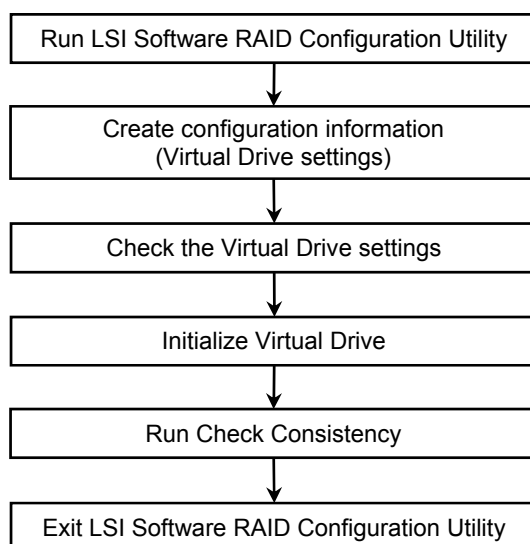
◆: Can be set (modified) after creation of Virtual Drive

Menu	Description
◇ Configure	Setting of Configuration
◇ Easy Configuration	Setting of Configuration (fixed value used)
◇ New Configuration	Create new Configuration
◇ View/Add Configuration	Display or add Configuration
◇ Clear Configuration	Clear Configuration
◇ Select Boot Drive	Select bootable Virtual Drive
◇ Initialize	Initialize Virtual Drive
◇ Objects	Various settings
◇ Adapter	Configure RAID Controller
◇ Sel. Adapter	Select an adapter
● Rebuild Rate	30 (Percentage of IO for Rebuild)
● Chk Const Rate	30 (Percentage of IO for Check Consistency)
● FGI Rate	30 (Percentage of IO for Foreground Initialize)
● BGI Rate	30 (Percentage of IO for Background Initialize)
● Disk WC	Off (Use or not use Write Cache of Adapter, unavailable on LSI Software RAID.)
● Read Ahead	On (On/Off Read Ahead)
● Bios State	Enable (Enable or disable LSI Software RAID BIOS)
● Continue on Error	Yes (If LSI Software RAID BIOS detects an error, specify whether the POST halts or not.)
● Fast Init	Enable (Enable or disable Fast Initialize)
● Auto Rebuild	On (Enable or disable Auto Rebuild)
● Auto Resume	Enable (If the system is restarted during Rebuild or Check Consistency, specify whether the task is continued automatically or not.)
● Disk Coercion	1 GB (Forcibly pack HDDs of different size)
● Factory Default	Restore the default value

◇ Virtual Drive	Operation of Virtual Drive
◇ Virtual Drives	Select Virtual Drive (if two or more Virtual Drives exist)
◇ Initialize	Initialize Virtual Drive
◇ Check Consistency	Check consistency of Virtual Drive
◇ View/Update Parameters	Display Virtual Drive information
• RAID	Display RAID level
• SIZE	Display Virtual Drive size
• Stripe SIZE	Display Stripe size
• #Stripes	Display number of physical devices included in Virtual Drive
• State	Display Virtual Drive status
• Spans	Display setting of Virtual Drive
• Disk WC	Display Write Cache Policy of Virtual Drive
• Read Ahead	Display Read Ahead Policy of Virtual Drive
◇ Physical Drive	Operation of physical drive
◇ Physical Drive Selection Menu	Select a physical drive
◇ Make HotSpare	Specify hot-spare disk used for Auto Rebuild
◇ Force Online	Forcibly make physical devices online
◇ Change Drv State	Forcibly make a physical device offline if it is included in Virtual Drive. Cancel hot-spare if the physical device is specified as a hot-spare disk.
◇ Device Properties	Display information of physical devices
• Device Type	Device type
• Media Type	Media type (HDD or SSD)
• Capacity	Capacity
• Product ID	Product ID
• Revision No.	Revision No.
• Link Speed	Transfer rate
◇ Rebuild	Execute Rebuild
◇ Check Consistency	Check Consistency of Virtual Drive

5.3 Procedures for Using Configuration Utility in the Legacy Mode

5.3.1 Create/add configuration

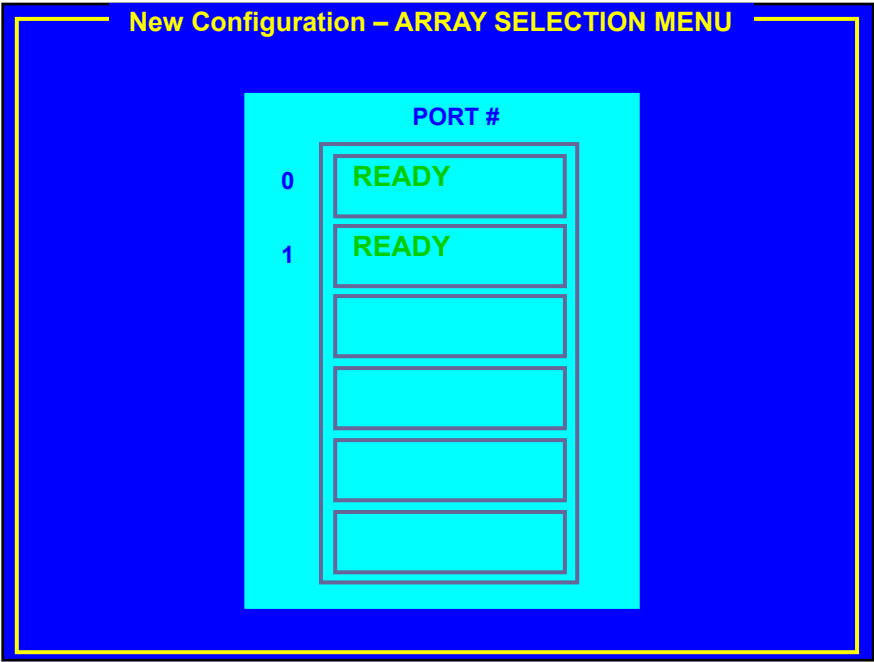


1. Run LSI Software RAID Configuration Utility.
2. From the TOP menu (Management Menu), select **Configure**, and then **New Configuration**. To add settings to an existing configuration, select **View/add Configuration**.

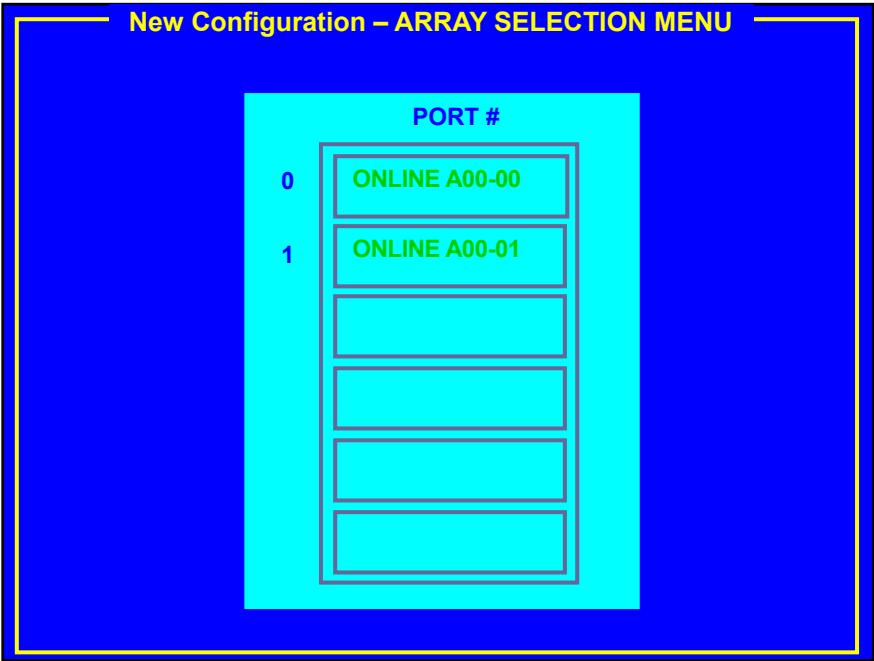
Important Creating a configuration by using "New Configuration" clears the existing configuration. To add configuration to the existing configuration, select "View/add Configuration".

- Note**
- You cannot specify the Virtual Drive capacity on the **Easy Configuration** menu. Use **New Configuration** or **View/Add Configuration** instead.
 - For RAID10, the Virtual Drive is configured with the maximum capacity. You cannot specify the capacity.
 - For RAID0, you can skip the step for checking the consistency.

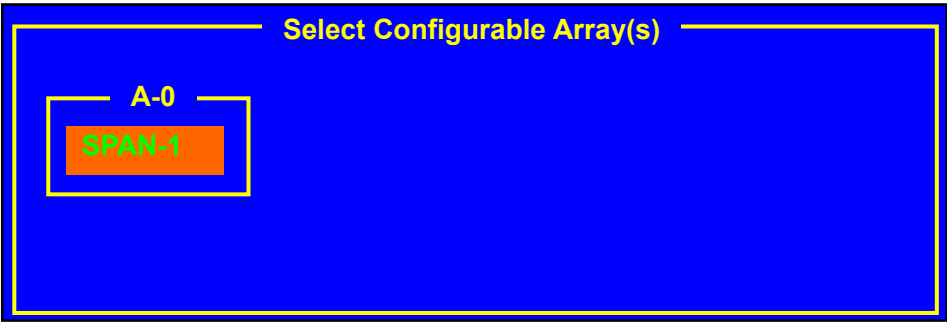
- 3. When a confirmation message “Proceed?” is displayed, select **Yes**.
The **New Configuration - ARRAY SELECTION MENU** screen appears.



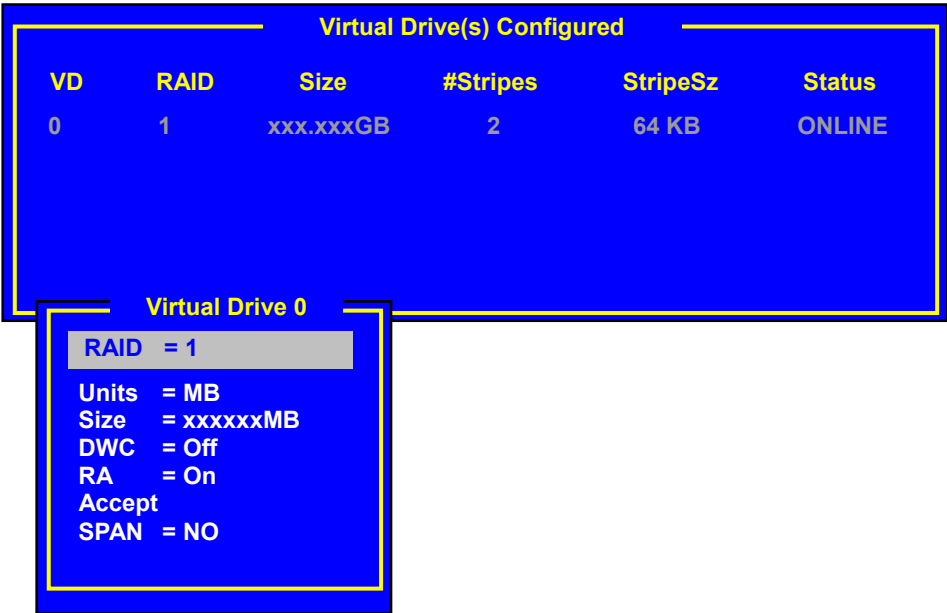
- 4. Move the cursor onto the physical device to be included in the disk array, and then press the <Space> key. The display for the selected physical device changes from READY to ONLINE.



5. Press the <F10> key to set "Select Configurable Array(s)", and then press the <Space> key.
SPAN-1 is set.



6. Press the <F10> key to create a virtual drive.
The **Virtual Drives Configure** screen appears. (The figure below shows an example of RAID1 configured with two physical devices. xxx.xxxGB shows the capacity.)



7. Select a relevant value for **RAID**, **Units**, **Size**, **DWC**, **RA**, and **Span** by using cursor keys.

Press the <Enter> key to fix the selection to determine each value.

- (1) **RAID**: Specify the RAID level.

Parameter	Remarks
0	RAID0
1	RAID1
10	RAID10

The selectable RAID level varies depending on the number of physical devices that configure the disk array.

Important Screen for RAID5 may appear, but this server does not support RAID5.

- (2) **Units**: Specify the unit (MB, GB, or TB) used in the **Size** field.
- (3) **Size**: Specify the size of the virtual drive. Up to eight virtual drives can be created per RAID Controller. You cannot specify the size for RAID10.
- (4) **DWC** (Disk Write Cache):
Specify the method for writing cached data to the disk.

Parameter	Remarks
Off	Write through
On*	Write back

* Recommended.

For this server, write back is recommended for good performance. Note, however, that cached data may be lost at an unexpected power failure. Selecting write through degrades performance by approximately 50%.

- (5) **RA** (Read Ahead): Specify whether to use read-ahead.

Parameter	Remarks
Off	Does not perform read ahead.
On*	Performs read ahead.

* Recommended

- (6) **Span**: Specify the span.

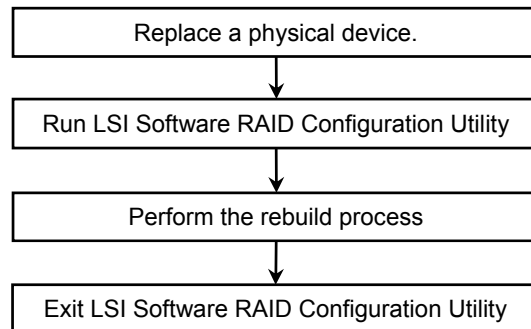
This server does not use this feature.

8. When all settings are completed, select **Accept**, and then press the <Enter> key.
9. Press the <Esc> key, and select **Yes** for the confirmation message "Save Configuration?"
The configuration is saved.
10. Press the <Esc> key to return to the TOP menu screen.
11. On the TOP menu screen, select **Objects, Virtual Drive**, and then **View/Update Parameters** to check the specified virtual drive information.
12. Press the <Esc> key to return to the TOP menu screen, and then select **Initialize**.
13. On the **Virtual Drives** screen, move the cursor to the virtual drive to be initialized, and then press the <Space> key. The virtual drive is selected.
14. Press the <F10> key.
15. Select Yes to start initialization.
When the progress bar on the **Init Of VD Is In Progress** screen indicates 100%, initialization is completed. Press the <Esc> key to return to the TOP menu screen.
16. For RAID1, check the consistency on the virtual drive that has been initialized.
See *Chapter 2 (5.3.4 Check Consistency)* for details.
17. Press the <Esc> key to return to the TOP menu and exit LSI Software RAID Configuration Utility.

5.3.2 Manual Rebuild

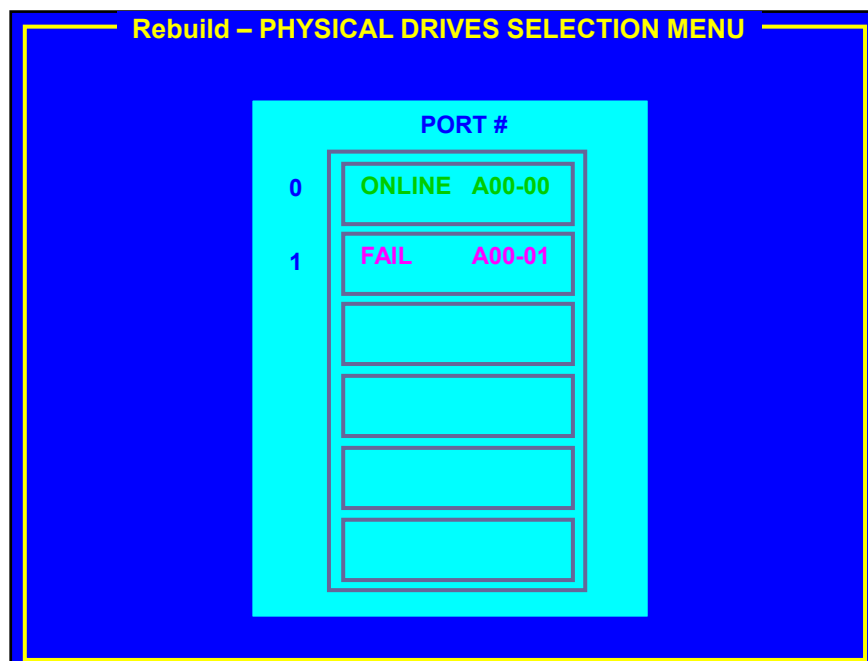
Tips

By default, rebuild starts automatically after you replace a physical device.



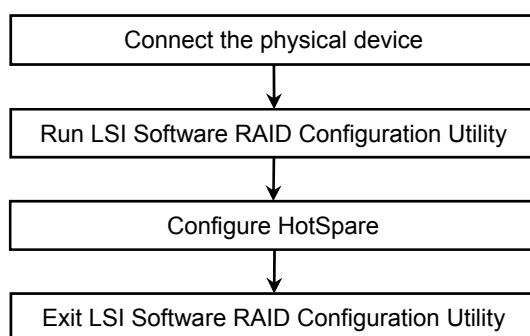
1. Replace a physical device and turn on the server.
2. Run LSI Software RAID Configuration Utility.
3. From the TOP menu, select **Rebuild**.

The **Rebuild – PHYSICAL DRIVES SELECTION MENU** screen appears.



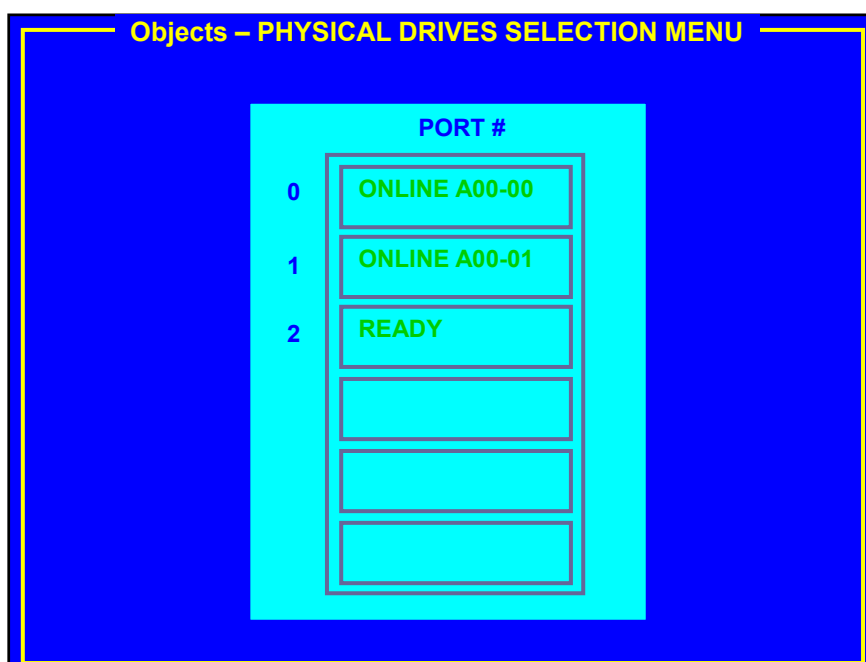
4. Move the cursor onto the physical device indicating "FAIL", and then press the <Space> key to select it. The color of "FAIL" indication for the selected physical device changes to pink.
5. Press the <F10> key.
6. Select **Yes** to start the rebuild process.
When the **Completed** indication on the **REBUILDING** screen indicates 100%, the rebuild process is completed.
7. Press the <Esc> key to return to the TOP menu and exit LSI Software RAID Configuration Utility.

5.3.3 Configure HotSpare



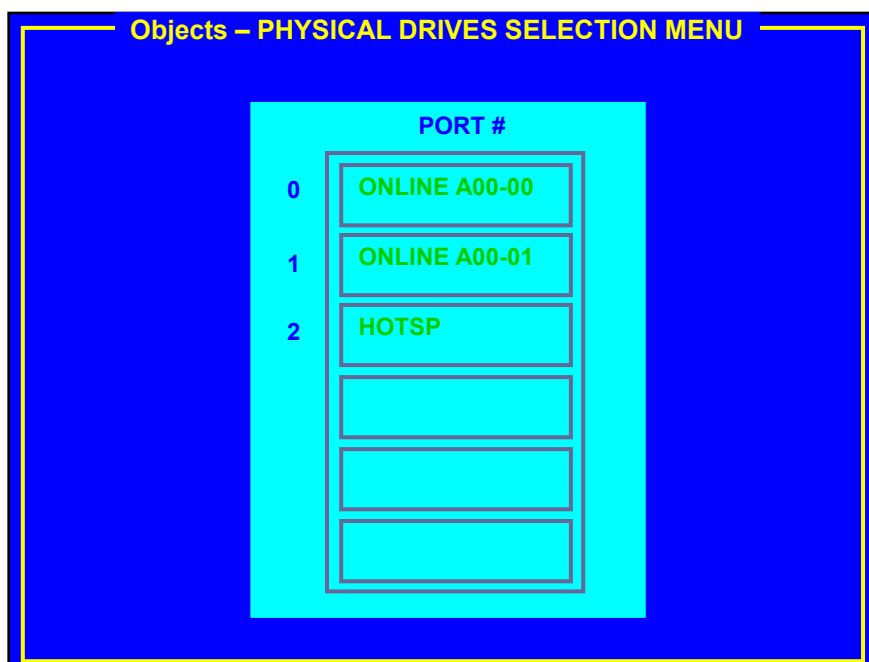
1. Connect a physical device for hot sparing, and then turn on the server.
2. Run LSI Software RAID Configuration Utility.
3. From the TOP menu, select **Objects**, and then **Physical Drive**.

The **Objects - PHYSICAL DRIVE SELECTION MENU** screen appears.



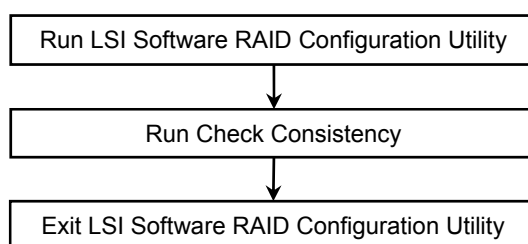
4. Move the cursor onto the physical device to be hot spared, and then press the <Enter> key.
5. Select **Make HotSpare**.
6. When you select **Yes**, the display for the physical device changes to "HOTSP".

- Press the <Esc> key to return to the TOP menu screen, and then exit LSI Software RAID Configuration Utility.

**Note**

To cancel the hot spare setting, select **Objects** and then **Physical Drive**, move the cursor onto the physical device to be canceled for hot sparing, press the <Enter> key, and then select **Change Drv State**.

5.3.4 Check Consistency



Important Do not perform Check Consistency for the hard disk drive in RAID0.

1. Run LSI Software RAID Configuration Utility.
2. From the TOP menu, select **Check Consistency**. The **Virtual Drives** screen appears.
3. Move the cursor onto the virtual drive to be checked for consistency, and press the <Space> key. The virtual drive is selected.
4. Press the <F10> key.
5. Select **Yes** to start consistency checking.
When the **Completed** indication on the **CC Under Progress** screen indicates 100%, the consistency check is completed.
6. Press the <Esc> key to return to the TOP menu and exit LSI Software RAID Configuration Utility.

5.3.5 Others

(1) Clear Configuration

Use this feature to clear configuration information. From the TOP menu, select **Configure**, and then **Clear Configuration** to clear all configuration information.

If old configuration information for the physical device remains, configuration may fail. In this case, execute "Clear Configuration".

Note

To remove a virtual drive, select **Objects** and then **Virtual Drive**, move the cursor onto the virtual drive to be removed, and then press the <Delete> key. Select **Yes** when the message "Want To Delete A VD?" is displayed.

(2) Force Online

Use this feature to forcibly put a physical device in the FAIL status online.

From the TOP menu, select **Objects**, **Physical Drive**, select the target physical device, and then select **Force Online**.

(3) Rebuild Rate

Use this feature to specify the rebuild rate.

From the TOP menu, select **Objects**, **Adapter**, and then **Rebuild Rate**.

The available value is between 0% and 100%. The default value (recommended) is 30%.

(4) Physical device information

Use this feature to display physical device information.

From the TOP menu, select **Objects**, **Physical Drive**, select the target physical device, and then **Drive Properties**.

5.4 Running LSI Software RAID Configuration Utility in the UEFI Mode

Use the BIOS Setup utility (SETUP) to start the LSI Software RAID Configuration Utility.

5.4.1 Starting SETUP

Turn on the server and wait for POST to proceed.

After a while, the following message appears at the bottom left of the screen.

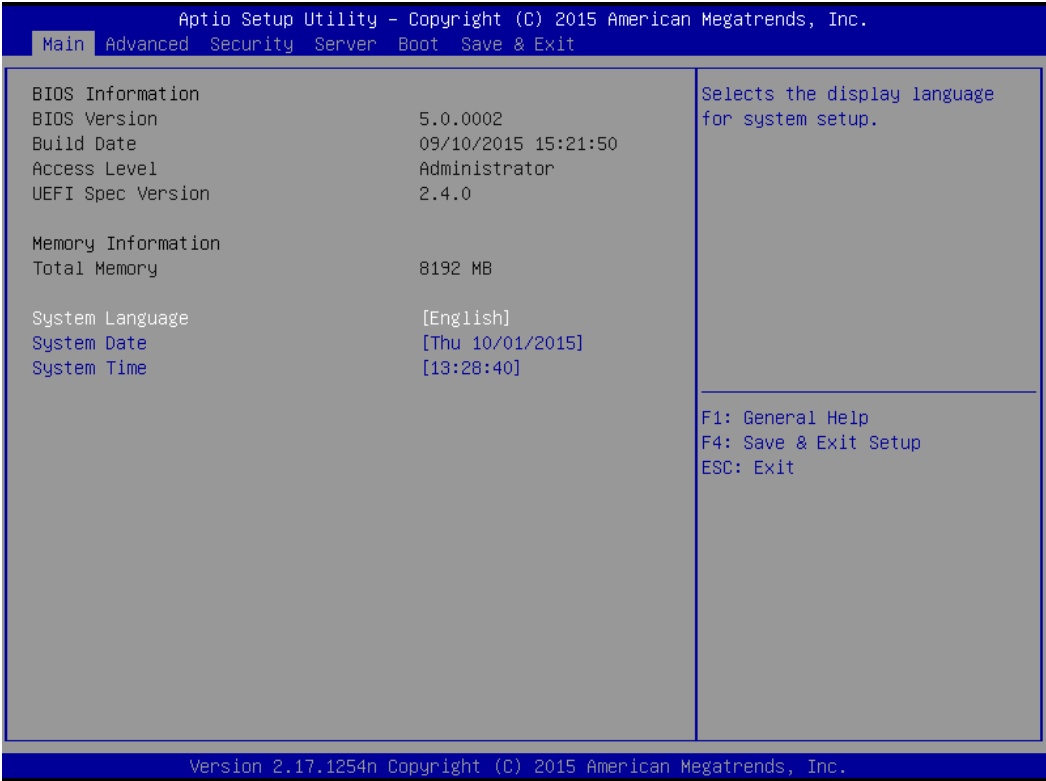
Press <F2> SETUP, <F4> ROM Utility

Press <12> Network

If you press the < F2> key, SETUP starts upon completion of POST and the Main menu is displayed. (You can also start SETUP by pressing the < F2> key while expanding option ROM.)

Tips

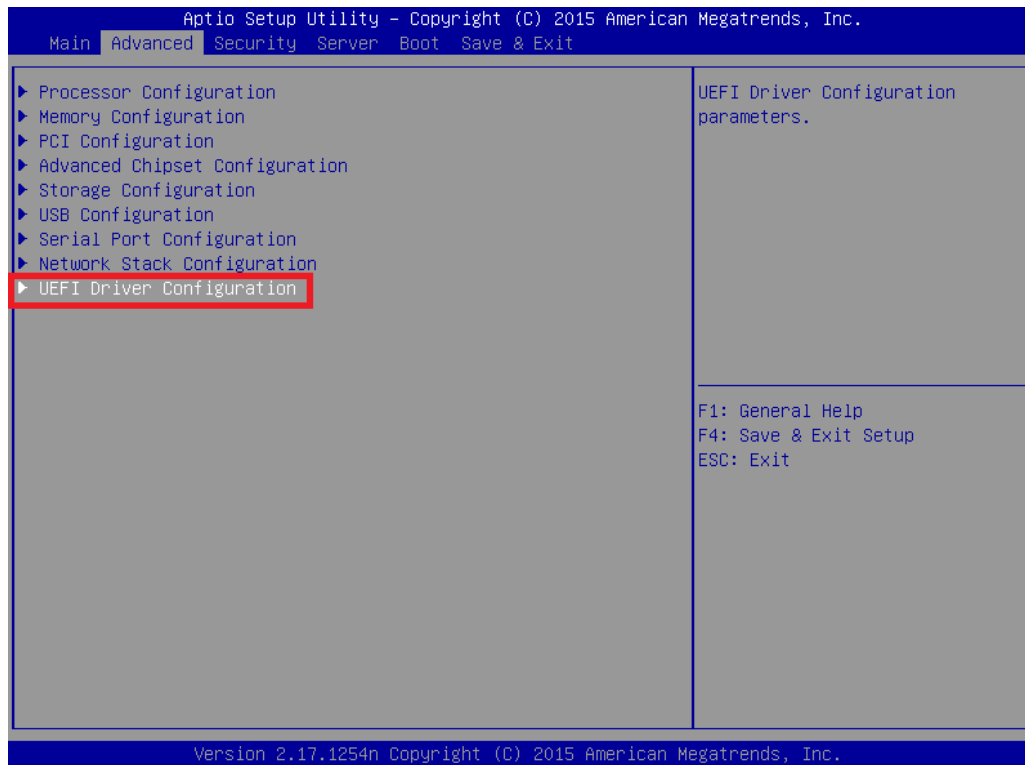
If you fail to press the <F2> key or the system proceeds without displaying the following screen, restart the system, and then press the <F2> keys on the POST screen.



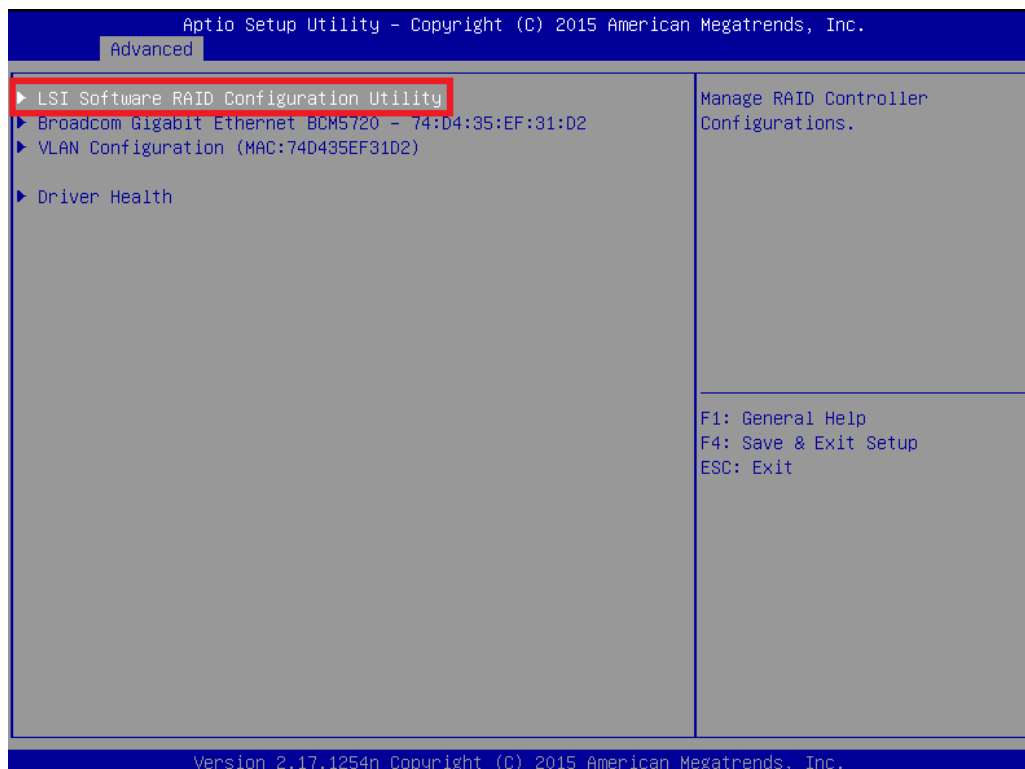
5.4.2 Advanced menu

The **Advanced** menu appears if you move the cursor to the position of **Advanced**.

If you select **UEFI Driver Configuration** and press the <Enter> key, the following submenu appears.

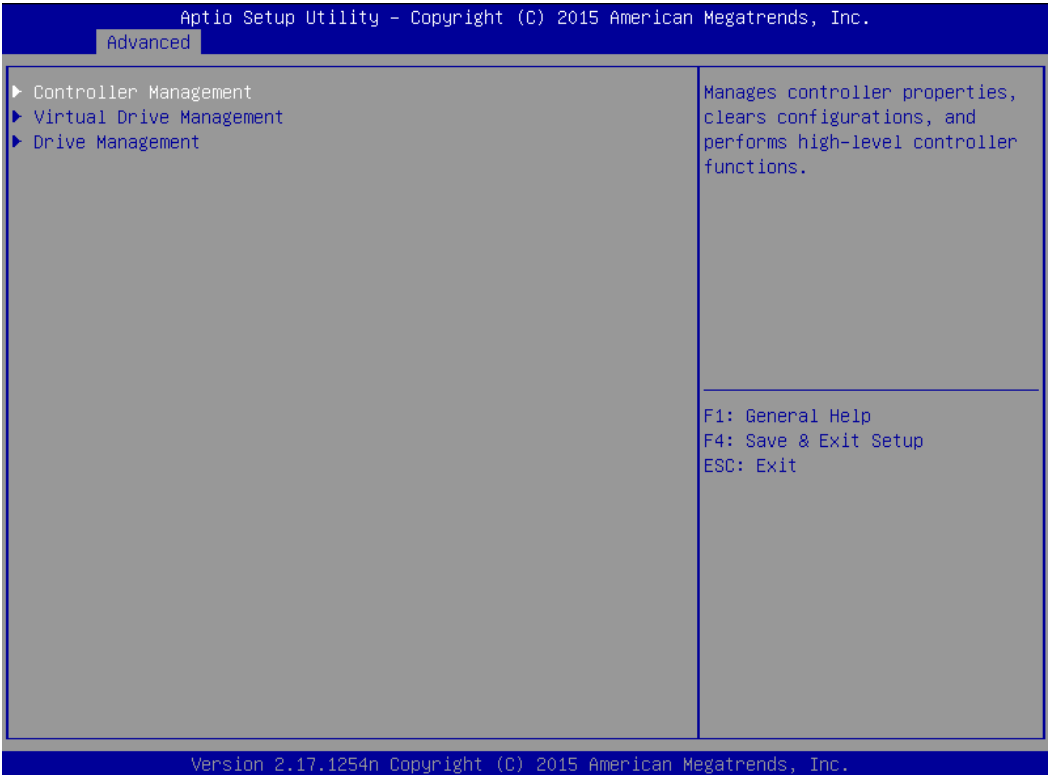


Select **LSI Software RAID Configuration Utility** and press the <Enter> key. The TOP menu of LSI Software RAID Configuration Utility appears.

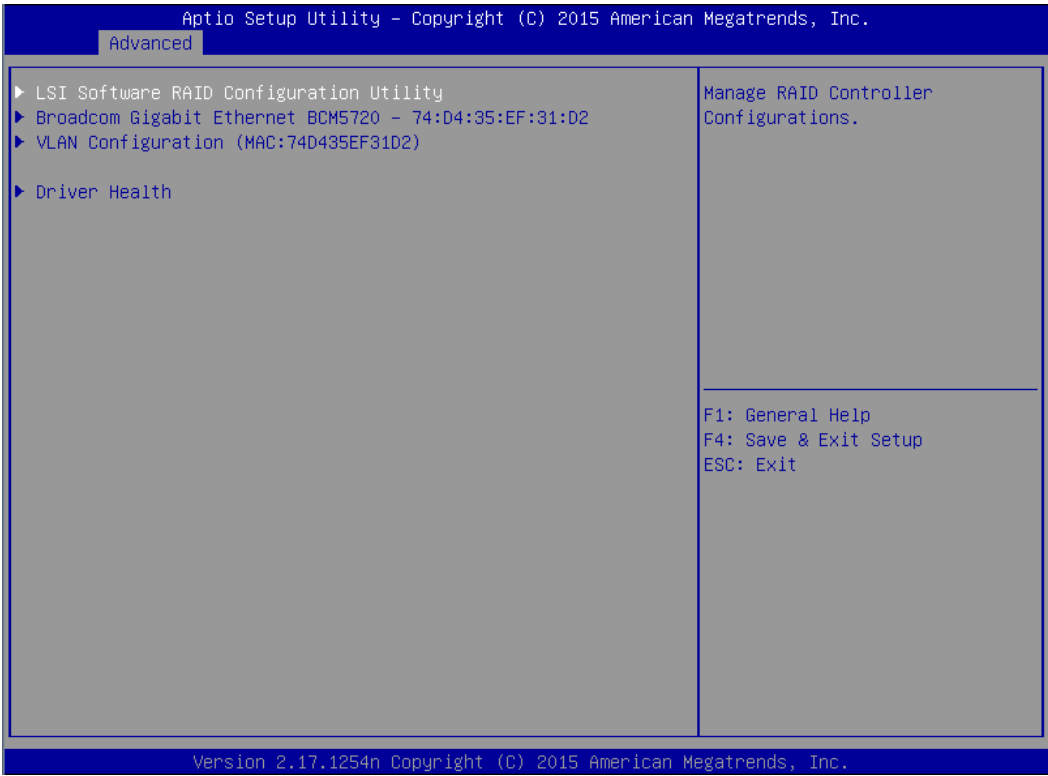


5.4.3 Quitting LSI Software RAID Configuration Utility

To quit the utility, press the <Esc> key on the TOP menu of LSI Software RAID Configuration Utility.



When the following screen appears, the LSI Software RAID Configuration Utility is exited.



5.5 Menu Tree of the UEFI Mode

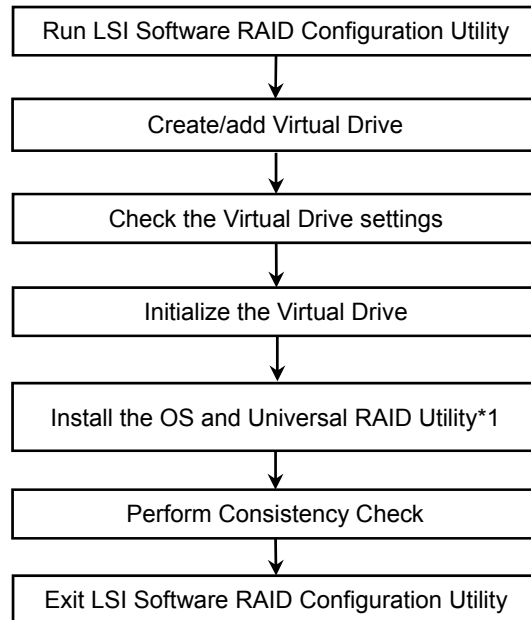
Menu	Value	Descriptions
Controller Management		
> View Controller Information		Display of the RAID controller information
Controller Marketing Name	LSI Embedded MegaRAID	Name of the RAID controller Display may differ due to the restrictions for the number of digit in the display depending on the server.
Serial Number	none	Serial number of the RAID controller
PCI ID	Device-dependent	PCI ID of the RAID controller
Host Interface	PCI-E	Host interface
Device Port Count	Device-dependent	Number of ports
PCI Slot Number	Integrated	PCI slot number of the RAID controller
Drive Count	Device-dependent	Number of Physical Drives
Virtual Drive Count		Number of Virtual Drives
Encryption Capable	No	Encryption setting
Minimum Stripe Size	64 KB	Minimum stripe size
Maximum Stripe Size	64 KB	Maximum stripe size
Driver Version		UEFI driver version
UEFI Driver TimeStamp		UEFI driver build timestamp
> Change Controller Properties		Change of the parameter for the RAID controller
Apply Changes		Reflecting the change
Set Factory Defaults		Setting to the default value
Set Boot Device		Setting of the Virtual Drive to start up the OS
Rebuild Rate	30	Ratio of the Rebuild IO (30%)
Background Initialization (BGI) Rate	30	Ratio of the Background Initialize IO (30%)
Consistency Check Rate	30	Ratio of the consistency check IO (30%)
Disk Coercion	1 GB	Forcibly pack physical drives of different size
Disk WC	Disable	Setting of the physical drive caching. The recommended setting is "Enable".
Read Ahead	Enable	Read ahead setting
Auto Rebuild	Enable	Automatic Rebuild setting
Auto Resume	Enable	Setting whether or not to reboot the system automatically when it is rebooted during Initialize, Rebuild, or consistency check.
> Clear Configuration		Clearing the RAID Configuration
Virtual Drive Management		
> Create Configuration		Creating the RAID Configuration
Save Configuration		Storing the created configuration
Select RAID Level		Selecting the RAID level
Select Drives From		Selecting the HDD creating the Virtual Drive

Select Drives		Selecting the HDD creating the RAID
Virtual Drive Name		Virtual Drive name
Virtual Drive Size		Virtual Drive size
Virtual Drive Size Unit		Unit of the Virtual Drive size
Stripe Size	64 KB	Stripe size
Disk WC	Disable	Setting of the physical drive caching. The recommended setting is "Enable".
Read Ahead	Enable	Read ahead setting
Disable Background Initialization	No	Background Initialize setting
> Manage Virtual Drive Properties		
Apply Changes		Reflecting the change
Select Virtual Drive		Virtual Drive selection
Virtual Drive Name		Virtual Drive name
Target ID		Virtual Drive ID
RAID Level		RAID level of the Virtual Drive
Virtual Drive Status	Optimal	Virtual Drive status
Virtual Drive Capacity (MB)		Virtual Drive size
Segment Size	64 KB	Stripe size
Disk WC	Disable	Cache setting of the Physical Drive The recommended setting is Enabled.
Read Ahead	Enable	Read Ahead setting
View Associated Drives		Displays the HDD configuring the Virtual Drive
> Select Virtual Drive Operations		Virtual Drive operation
Select Virtual Drive		Virtual Drive selection
Start Locate	Device-dependent	Lights on (blinks) the LED of the slot on which the selected Virtual Drive is mounted.
Stop Locate	Device-dependent	Lights off the LED of the slot on which the selected Virtual Drive is mounted.
Delete Virtual Drive		Virtual Drive deletion
Virtual Drive Operation		Operations of the Virtual Drive
Stop Operation		Stopping the operations being executed in the Virtual Drive.
> View Drive Group Properties		Displays the area used by the members configured in the Virtual Drive.
Drive Management		
> View Drive Properties		Display of the property of the Physical Drive
Select Drive		Physical Drive selection
Drive ID		Physical Drive ID
State	Online	Physical Drive status
Coerced Size (MB)		Other Physical Drive size
Device Type		Physical Drive type
Connected Port		Port number
Media Errors		Media error count
Predicted Fail Count	0	Failure prediction count
Available Size (MB)		Available remained size

Used Space (MB)		Size in use
Disk Protocol	SATA	Protocol
Negotiated Drive Transfer Speed		Transfer rate
Number of Connections	1	Number of connected Physical Drives
Associated Virtual Drive		The selected Physical Drive is a Virtual Drive of the member
Model Number		Physical Drive model
Revision		Physical Drive revision
> Select Drive Operations		Operations of the Physical Drives
Select Drive		Physical Drive selection
Start Locate	Device-dependent	Lights on (blinks) the LED of the slot on which the selected Physical Drive is mounted.
Stop Locate	Device-dependent	Lights off the LED of the slot on which the selected Physical Drive is mounted.
Drive Operation		Operations executed in the Physical Drive
Operation Progress		Progress of the operations being executed in the Physical Drive.
Start Operation		Starting the operations to the Physical Drive
Stop Operation		Cancel of the operations being executed in the Physical Drive.
> View Global Hot Spare Drives	Device-dependent	Display of the Global Hot Spare Drive

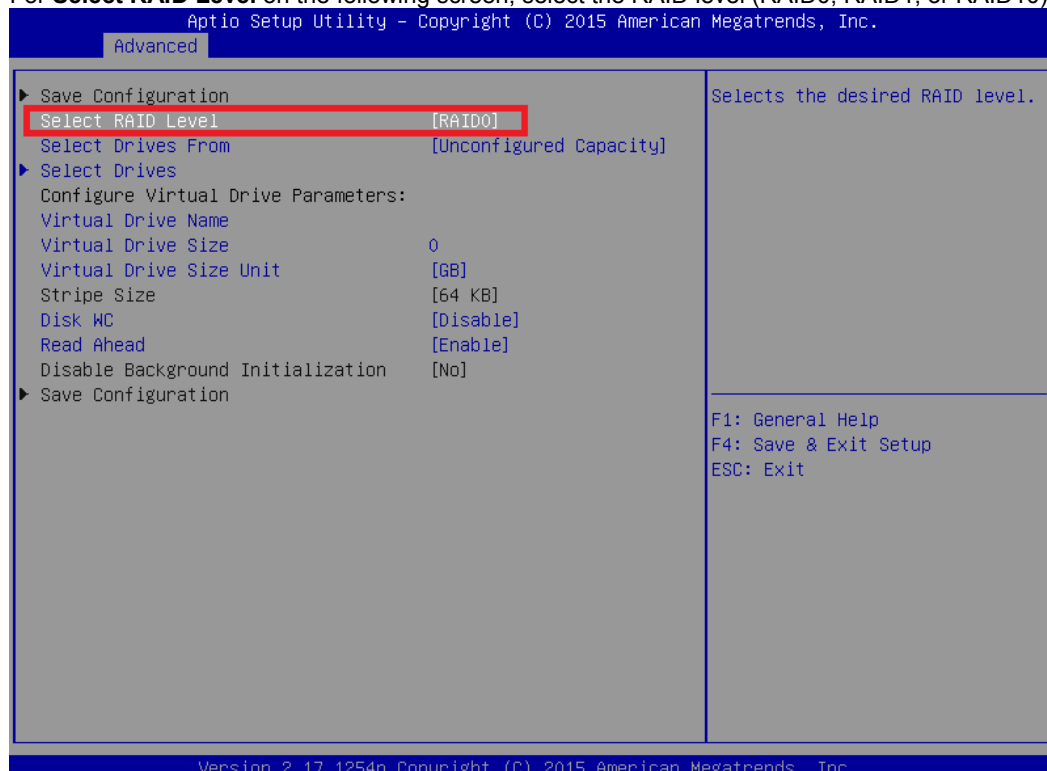
5.6 Procedures for Using Configuration Utility in the UEFI Mode

5.6.1 Create/add configuration



*1 This step is not required if an virtual drive has already been installed.

1. Run LSI Software RAID Configuration Utility.
2. From the TOP menu screen, select **Virtual Drive Management**, and then **Create Configuration**.
3. For **Select RAID Level** on the following screen, select the RAID level (RAID0, RAID1, or RAID10).



4. Create a virtual drive. The procedure for creating a new virtual drive is different from that for adding a virtual drive. Creating a new virtual drive is to create a virtual drive by using a new physical device. Adding a virtual drive is to create an additional virtual drive by using an unused area of the existing Drive Group.

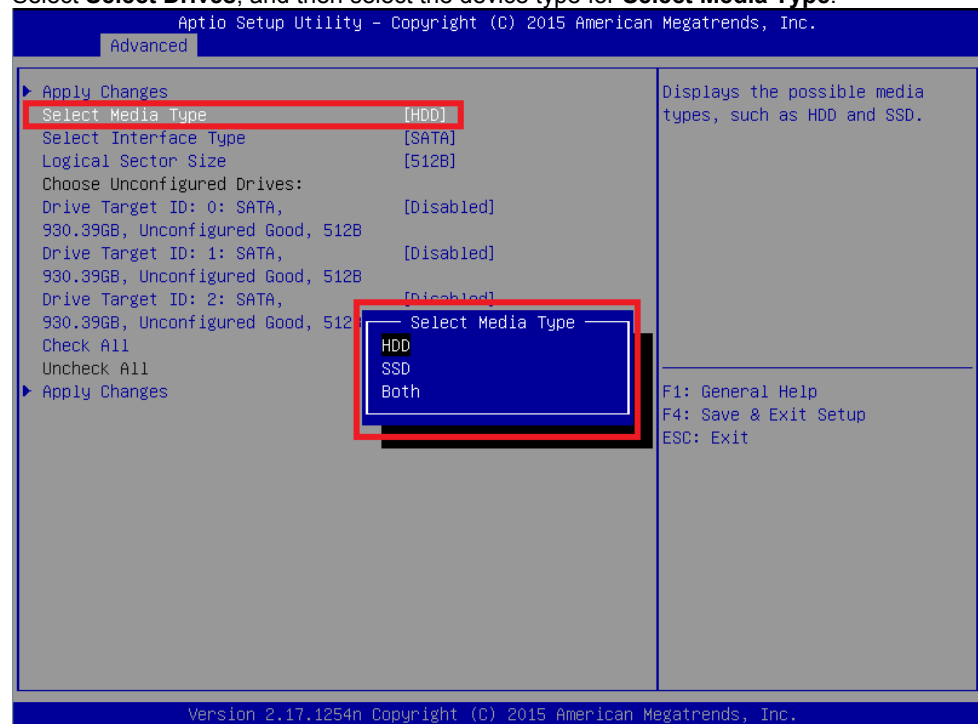
The procedures to create the virtual drive in each case are following below.

Note

- Up to eight virtual drives can be created.
- For RAID10, only creating a new virtual drive is available.
- For RAID10, the virtual drive is configured with the maximum capacity. You cannot specify the capacity.

4-1. New creation (RAID0/RAID1)

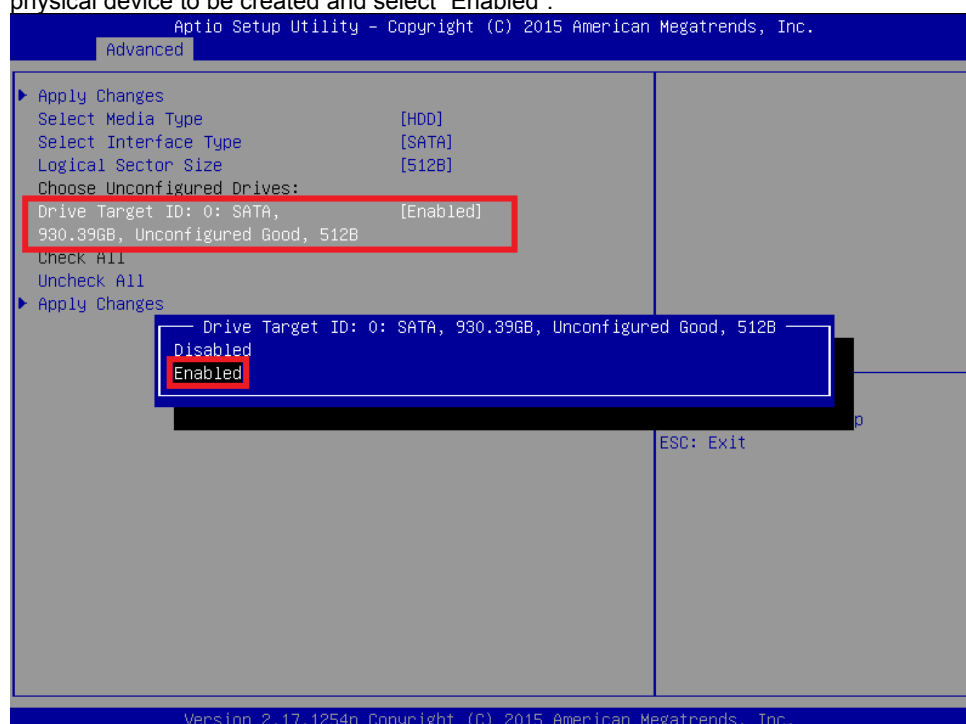
- 1) On the screen shown in step 3, select "Unconfigured Capacity" for **Select Drives From**.
- 2) Select **Select Drives**, and then select the device type for **Select Media Type**.



Note

- Do not select **Both**. This platform does not support **Both** of Media Type.
- The options for **Select Media Type** vary depending on the connected device.

- 3) When the selected physical device type is displayed on the following screen, select the physical device to be created and select “Enabled”.

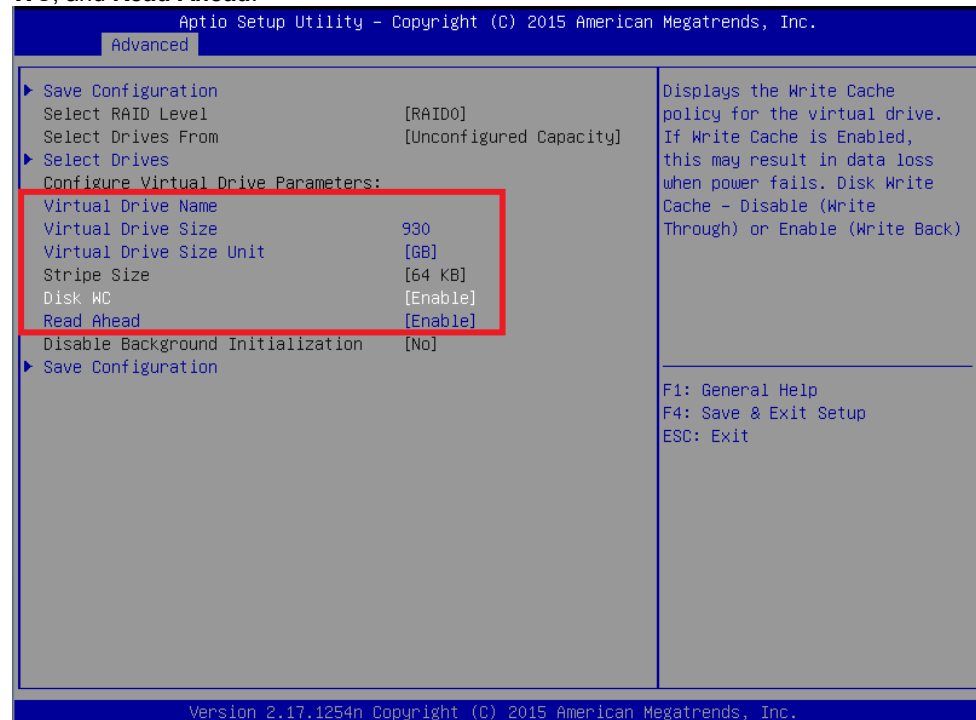


- 4) Select all of the physical devices to be created, select **Apply Changes**, and then select **OK** on the next screen.

Note

You may select either of the upper or lower **Apply Changes** which is provided at two locations.

- 5) Specify values for **Virtual Drive Name**, **Virtual Drive Size**, **Virtual Drive Size Unit**, **Disk WC**, and **Read Ahead**.



5-1. **Virtual Drive Name**: Specify the name of the virtual drive. (Optional)

5-2. **Virtual Drive Size**: Specify the capacity of the virtual drive.

5-3. **Virtual Drive Size Unit**: Specify the unit (MB/GB/TB) used for **Virtual Drive Size**.

5-4. **Disk WC**: Specify the Disk Write Cache policy.

Parameter	Remarks
Enable*	Write back
Disable	Write through

* Recommended

* For this server, Setting "Enable" is recommended for good performance. Note, however, that cached data may be lost at an unexpected power failure. Selecting "Disable" degrades performance by approximately 50%, comparing with the "Enable" setting.

5-5. **Read Ahead**: Specify the Read Ahead setting.

Parameter	Remarks
Disable	Does not perform read ahead.
Enable*	Performs read ahead.

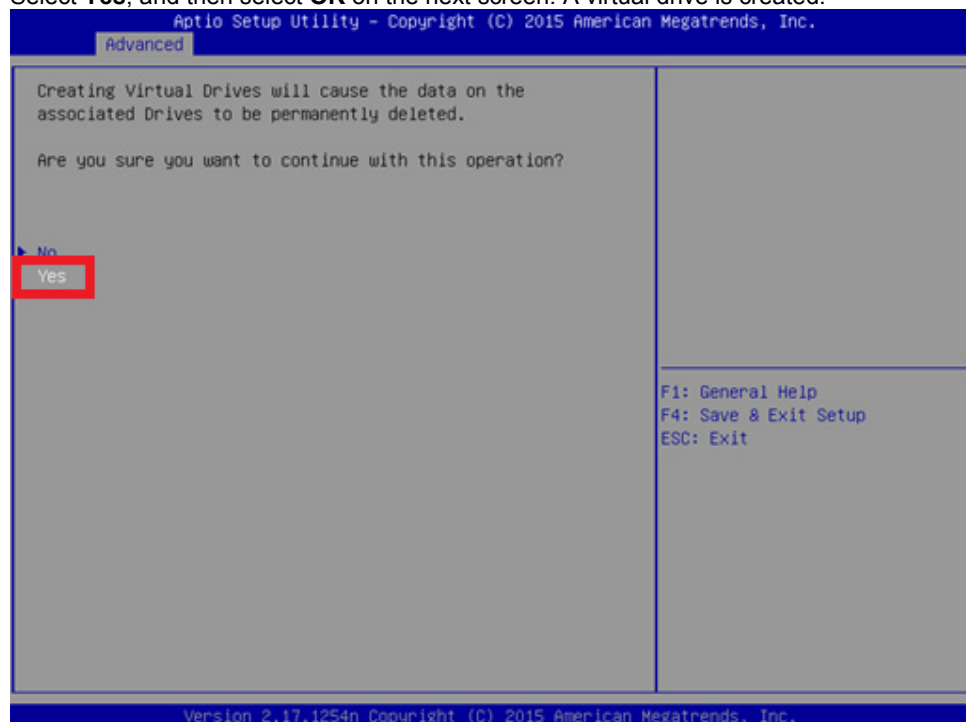
* Recommended

- 6) When all the settings are completed, select **Save Configuration**.

Note

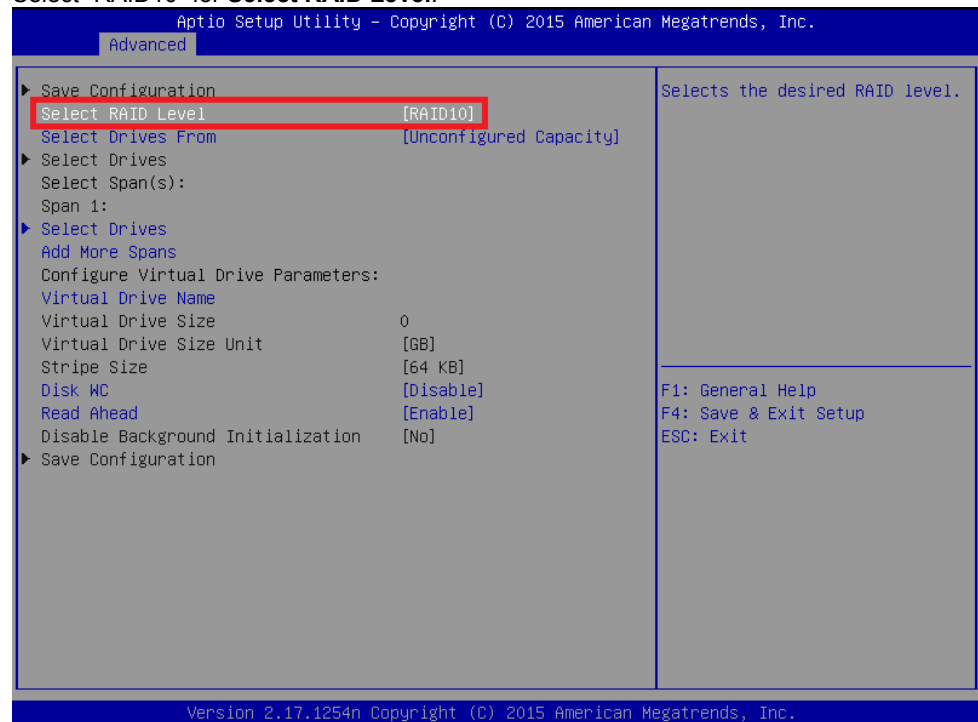
You may select either of the upper or lower **Save Configuration** which is provided at two locations.

- 7) Select **Yes**, and then select **OK** on the next screen. A virtual drive is created.

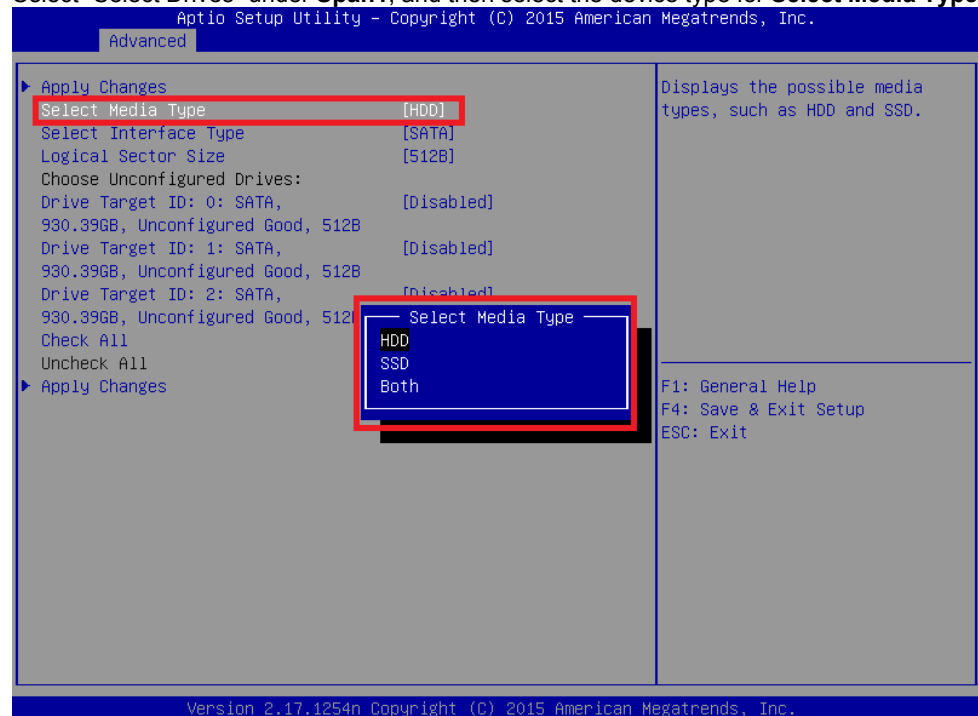


4-2. New creation (RAID10)

- 1) Select "RAID10" for
- Select RAID Level**
- .

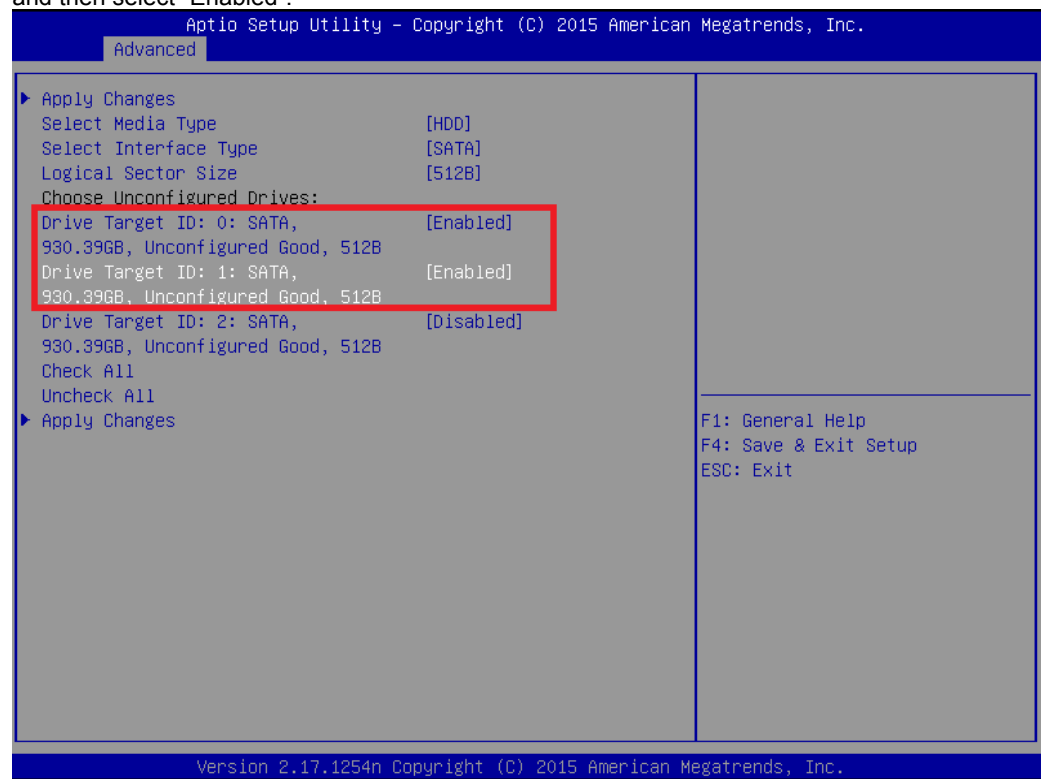


- 2) Select "Select Drives" under
- Span1**
- , and then select the device type for
- Select Media Type**
- .

**Note**

- Do not select **Both**. This platform does not support **Both** of Media Type.
- The options for **Select Media Type** vary depending on the connected device.

- 3) When the selected physical device is displayed, select two physical devices to be created, and then select "Enabled".

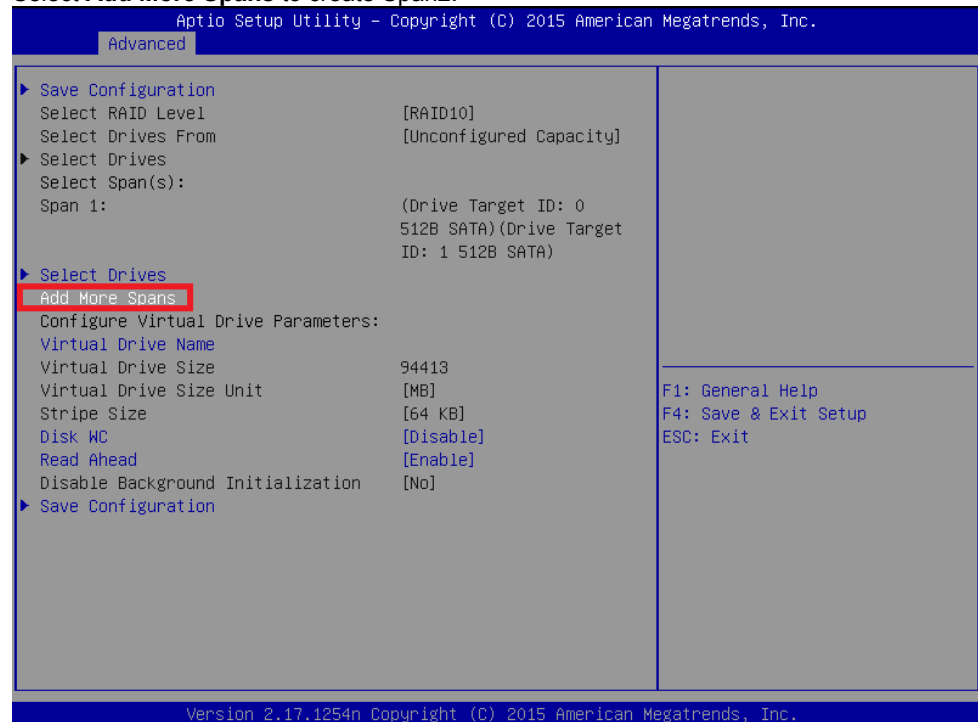


- 4) Select all of the physical devices to be created, select **Apply Changes**, and then select **OK** on the next screen.

Note

You may select either of the upper or lower **Apply Changes** which is provided at two locations.

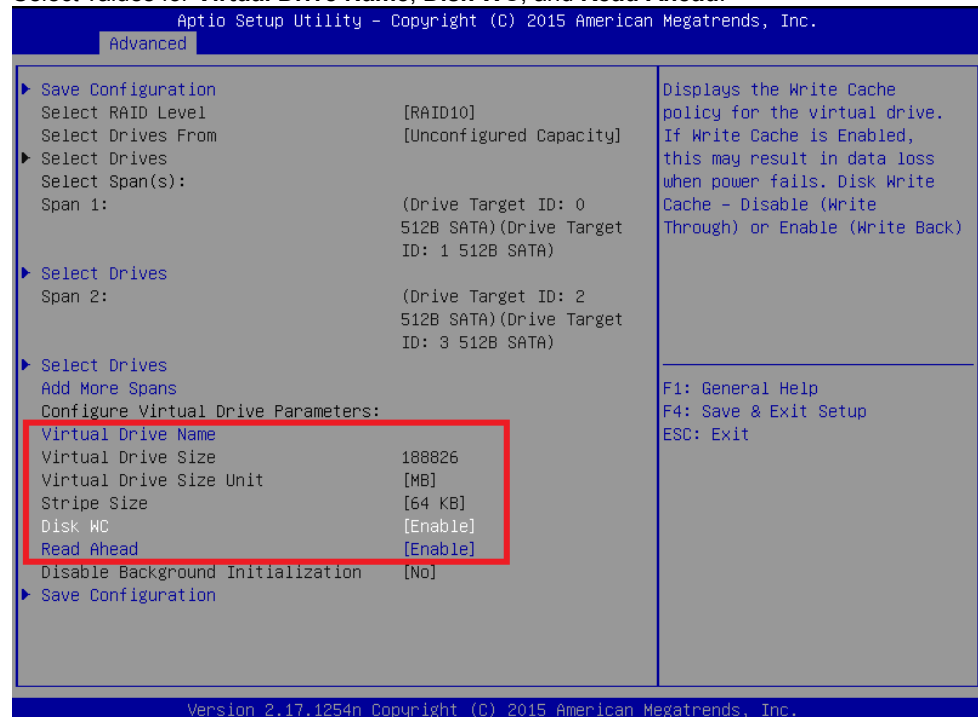
- 5) Select **Add More Spans** to create Span2.



- 6) Select **Select Drives** under **Span2**, and then select the device type for **Select Media Type**.
- 7) When the selected physical device is displayed, select two physical devices to be created, and then select "Enabled".
- 8) Select all of the physical devices to be created, select **Apply Changes**, and then select **OK** on the next screen.

Note

- You may select either of the upper or lower **Apply Changes** which is provided at two locations.
- Do not create Span3 and more in **Add More Spans** menu.

9) Select values for **Virtual Drive Name**, **Disk WC**, and **Read Ahead**.9-1. **Virtual Drive Name:** Specify the name of the virtual drive. (Optional)9-2. **Disk WC:** Specify the Disk Write Cache policy.

Parameter	Remarks
Enable*	Write back
Disable	Write through

* Recommended

* For this server, Setting "Enable" is recommended for good performance. Note, however, that cached data may be lost at an unexpected power failure. Selecting "Disable" degrades performance by approximately 50%, comparing with the "Enable" setting.

9-3. **Read Ahead:** Specify the Read Ahead setting.

Parameter	Remarks
Disable	Does not perform read ahead.
Enable*	Performs read ahead.

* Recommended

Note

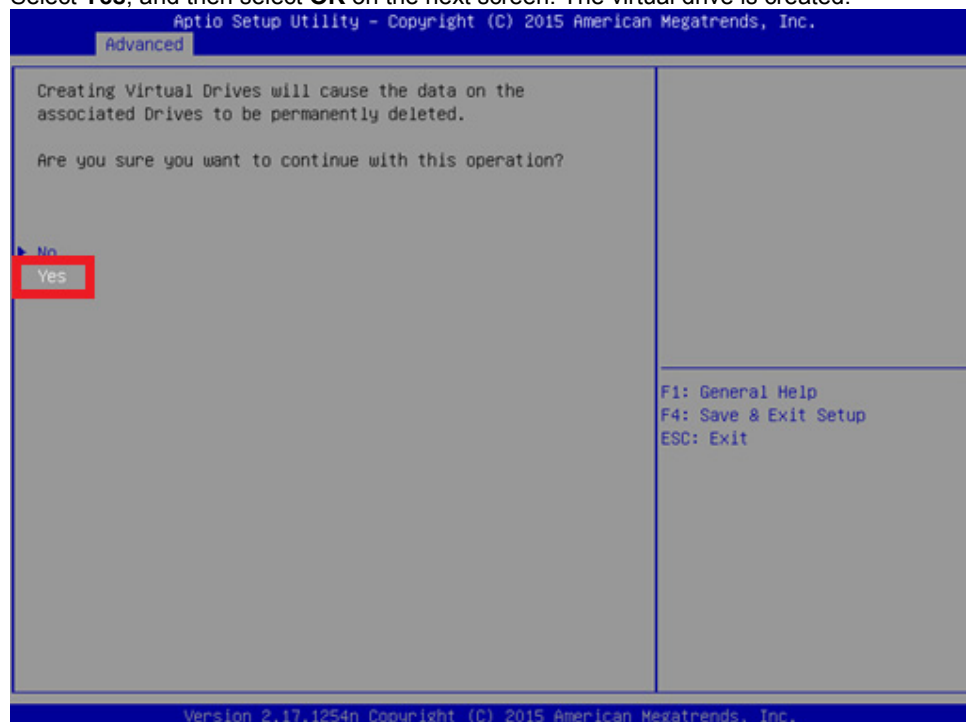
For RAID 10, the virtual drive can be created only with the maximum size.

- 10) When all of the settings are complete, select **Save Configuration**.

Note

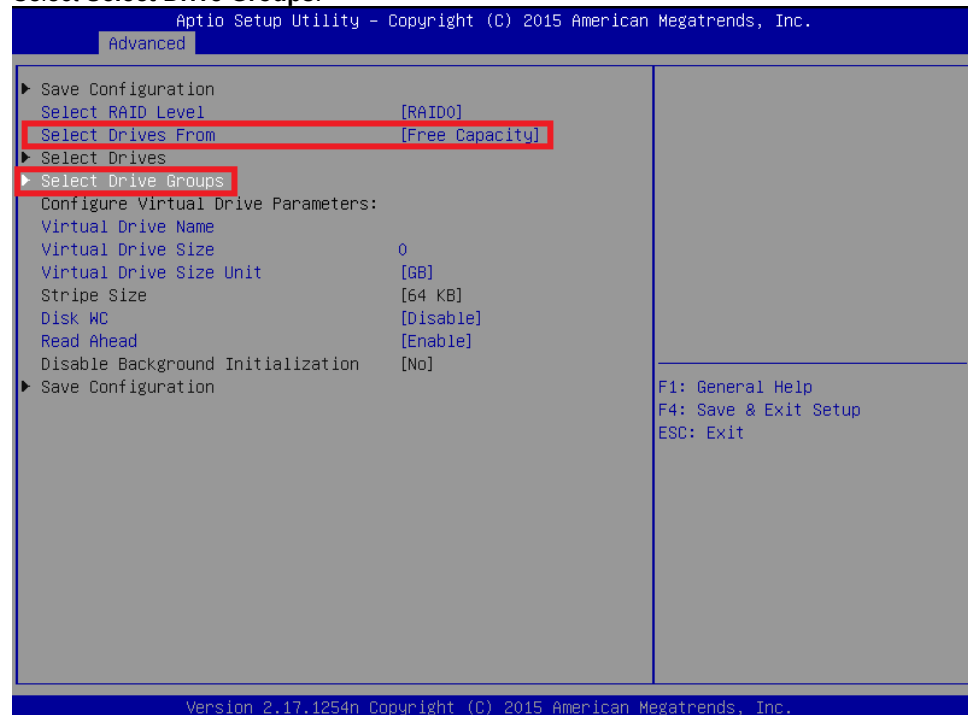
You may select either of the upper or lower **Save Configuration** which is provided at two locations.

- 11) Select **Yes**, and then select **OK** on the next screen. The virtual drive is created.

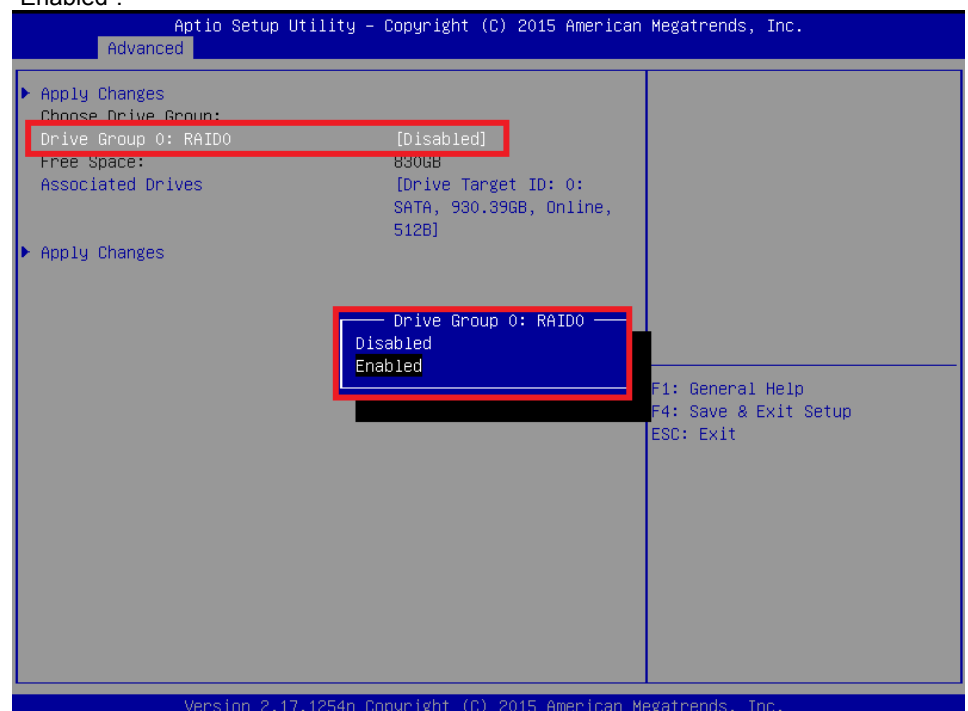


4-3. Additional creation

- 1) Select "Free Capacity" for **Select Drives From**.
- 2) Select **Select Drive Groups**.



- 3) Select the Drive Group to be additionally created for **Choose Drive Group**, and then select "Enabled".



- 4) Select **Apply Changes**, and then **OK** on the next screen.

Note

You may select either of the upper or lower **Apply Changes** which is provided at two locations.

- 5) Select values for **Virtual Drive Name**, **Virtual Drive Size**, and **Virtual Drive Size Unit**.

The screenshot shows the 'Advanced' tab of the Aptio Setup Utility. The 'Configure Virtual Drive Parameters' section is highlighted with a red box. The parameters are as follows:

Parameter	Value
Virtual Drive Name	
Virtual Drive Size	830
Virtual Drive Size Unit	[GB]
Stripe Size	[64 KB]
Disk WC	[Disable]
Read Ahead	[Enable]
Disable Background Initialization	[No]

On the right side of the screen, there is a description: 'Displays and/or assigns the amount of virtual drive storage space. By default, it assigns the maximum capacity available for the virtual drive.'

At the bottom right, the following keys are listed: F1: General Help, F4: Save & Exit Setup, ESC: Exit.

Version 2.17.1254n Copyright (C) 2015 American Megatrends, Inc.

5-1. **Virtual Drive Name**: Specify the name of the virtual drive. (Optional)

5-2. **Virtual Drive Size**: Specify the capacity of the virtual drive.

5-3. **Virtual Drive Size Unit**: Specify the unit (MB/GB/TB) used for **Virtual Drive Size**.

Important

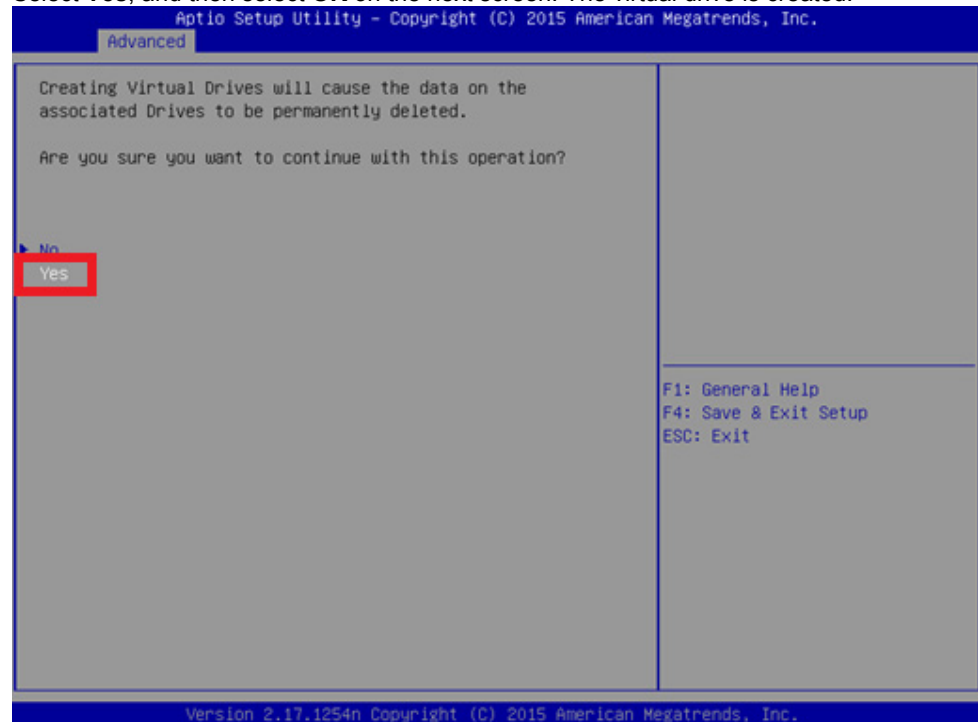
The Disk WC and Read Ahead settings reflect the original Drive Group setting. If you change these settings, the original Drive Group setting is also changed.

- 6) When all the settings are completed, select **Save Configuration**.

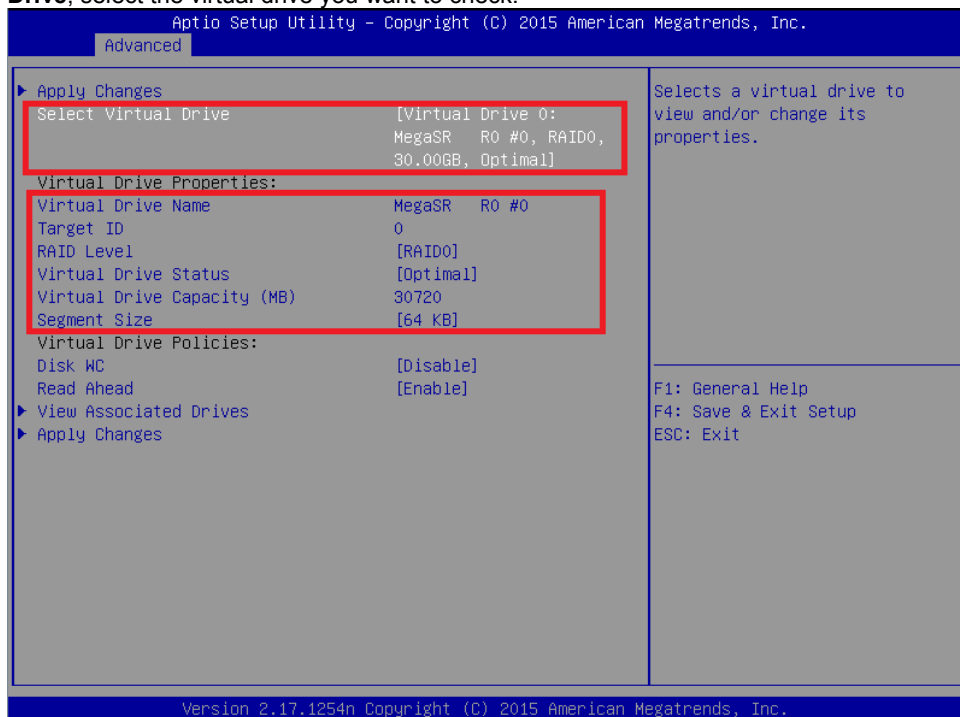
Note

You may select either of the upper or lower **Save Configuration** which is provided at two locations.

- 7) Select **Yes**, and then select **OK** on the next screen. The virtual drive is created.

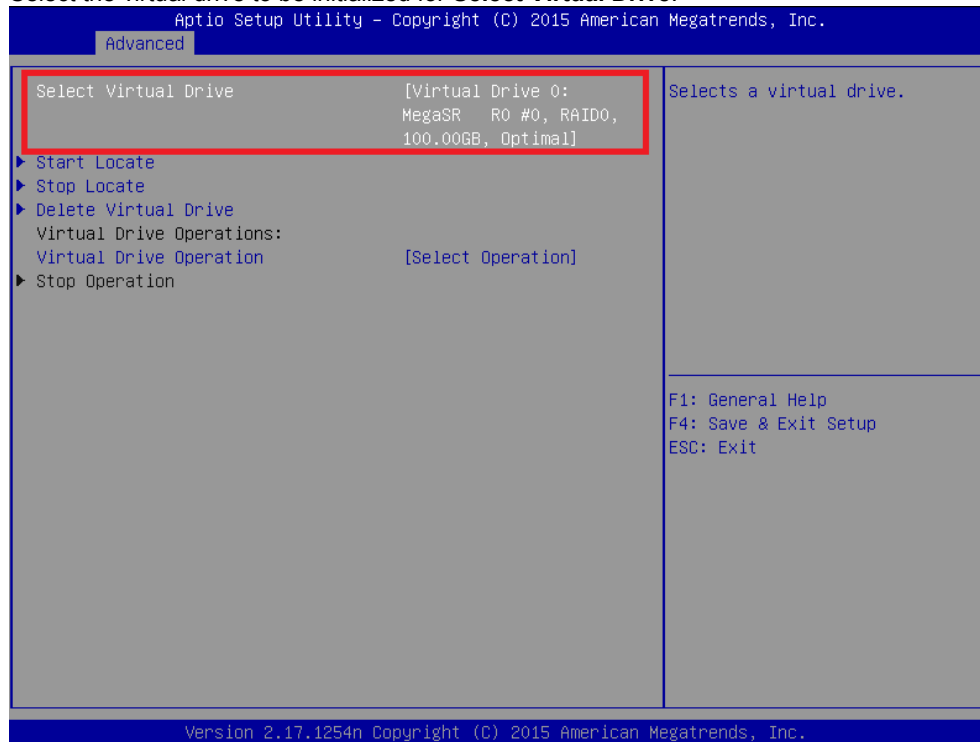


5. Select **Virtual Drive Management** and then **Manage Virtual Drive Properties** and check the Virtual Drive information on the following screen. When multiple virtual drives are created, for **Select Virtual Drive**, select the virtual drive you want to check.



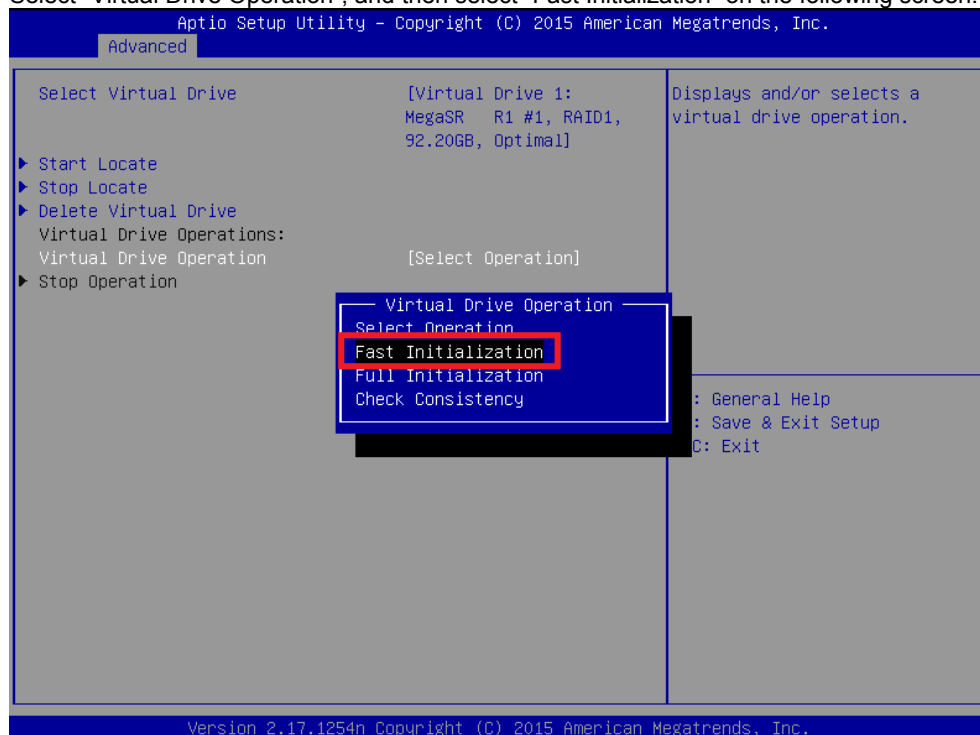
6. Press the <Esc> key to return to the previous screen, and then select **Select Virtual Drive Operations**.

7. Select the virtual drive to be initialized for **Select Virtual Drive**.



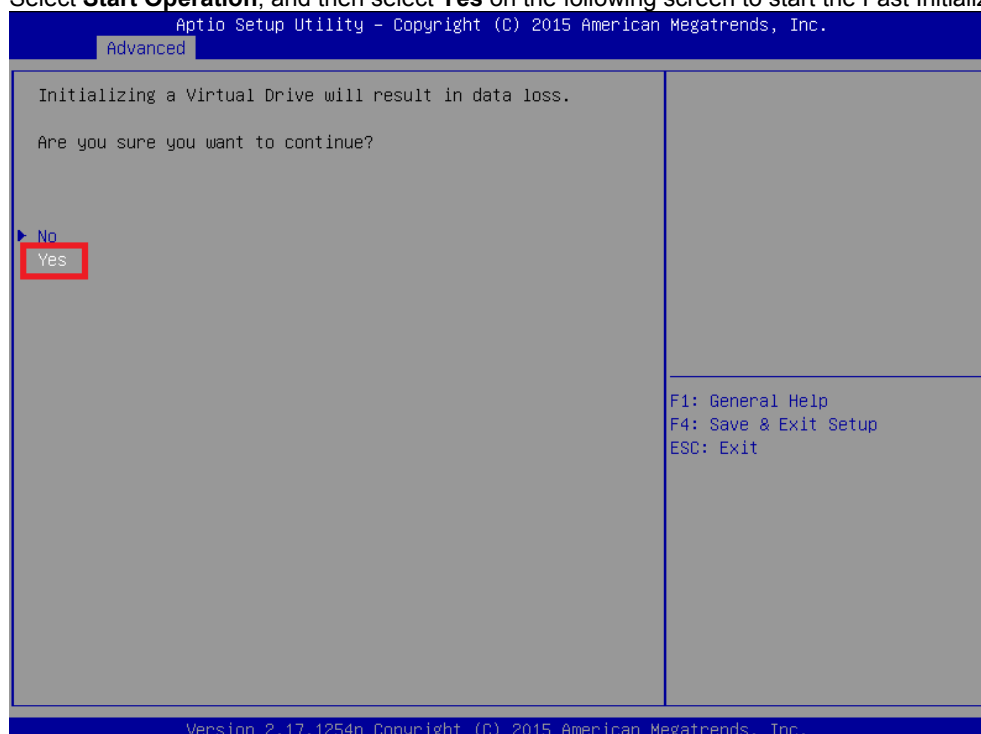
Important Data is lost after initialization. Take extreme care to select the correct Virtual Drive.

8. Select “Virtual Drive Operation”, and then select “Fast Initialization” on the following screen.



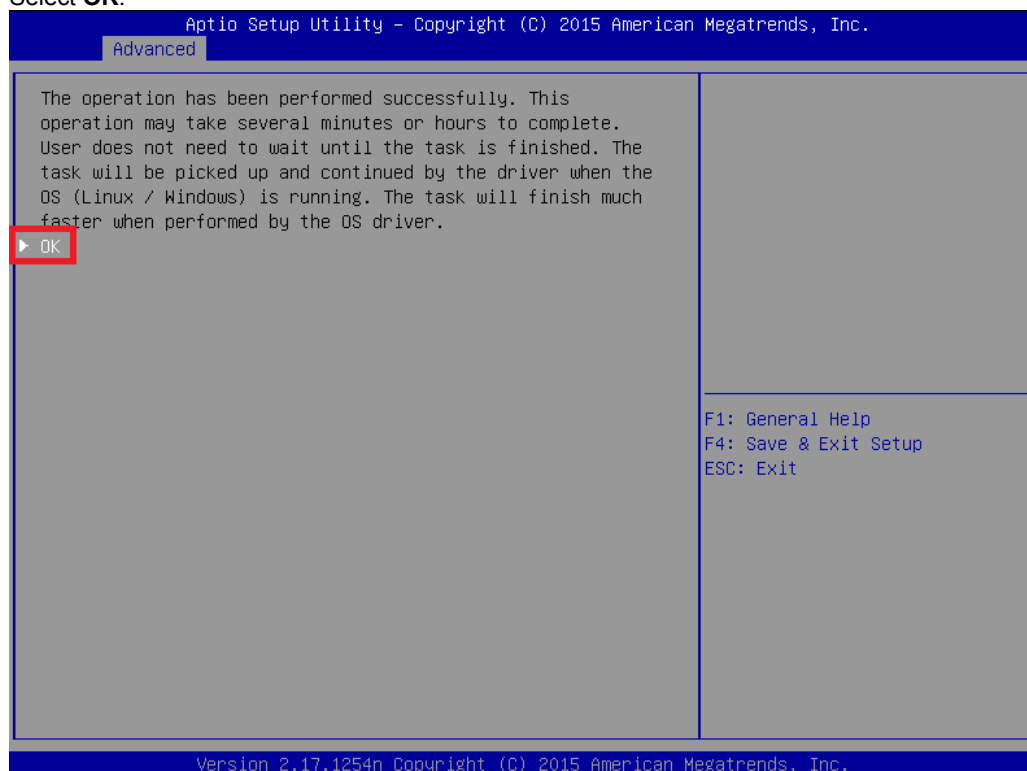
Important Full Initialization on the LSI Software RAID Configuration Utility takes long time, so do not select it.

9. Select **Start Operation**, and then select **Yes** on the following screen to start the Fast Initialization.

**Note**

Fast Initialization completes in a few seconds or several tens of seconds.

10. Select **OK**.



11. Install the OS. You don't need to install the OS if the created virtual drive is not for booting the OS. After the OS is installed, install Universal RAID Utility. For more information about how to install, refer to the User's Guide that comes with this server.
12. For RAID1/RAID10, boot up the OS and run Check Consistency. For more information about how to run Check Consistency, see *Universal RAID Utility User's Guide*.

Important

- Check Consistency on the LSI Software RAID Configuration Utility takes long time. Run Check Consistency from the Universal RAID Utility on the OS.
- Inconsistency may be detected at the first time of the consistency check, but there is no problem.

Note

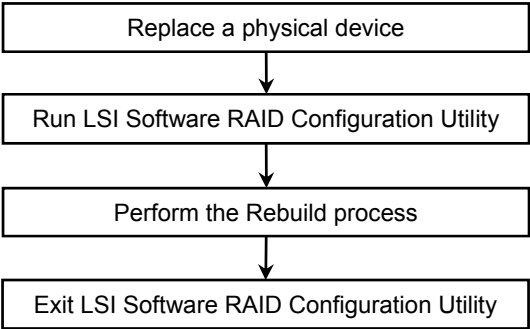
For RAID0, running Check Consistency is not required.

13. Press the <Esc> key to return to the TOP menu and exit the utilities.

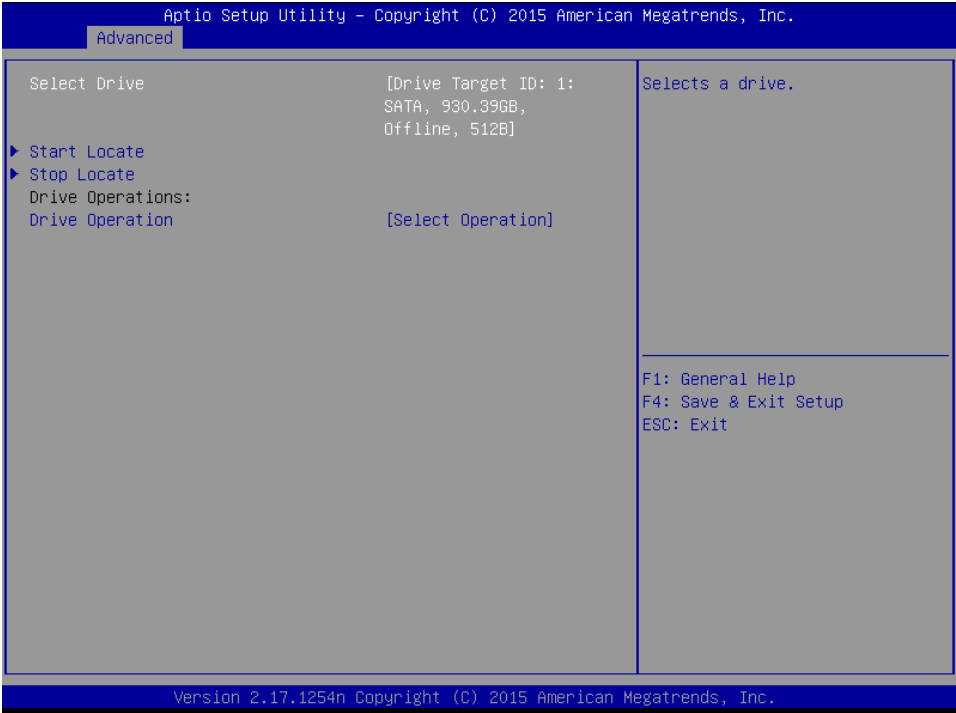
5.6.2 Manual Rebuild

Tips By default, Rebuild starts automatically after you replace a physical device.

Important Rebuild on the LSI Software RAID Configuration Utility takes long time. Run Rebuild from the Universal RAID Utility on the OS.
If you need to run Rebuild on the LSI Software RAID Configuration Utility, follow the procedure below.

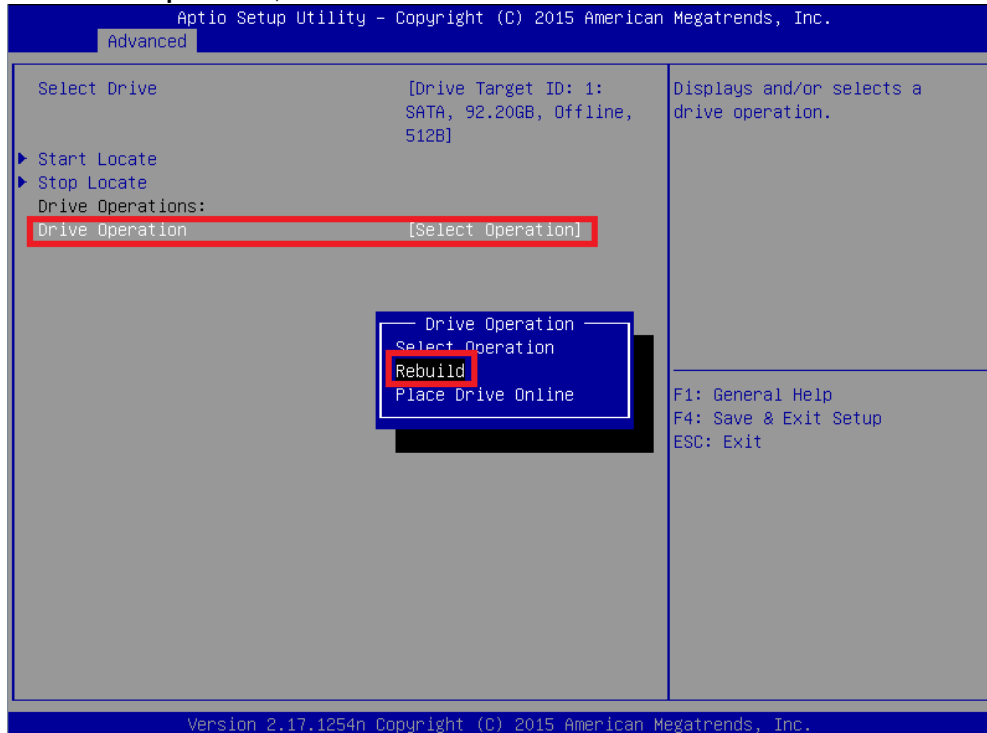


- 1. Replace a physical device, and then restart the server.
- 2. Run LSI Software RAID Configuration Utility.
- 3. From the TOP menu, select **Drive Management**, and then **Select Drive Operations**. The following screen appears.



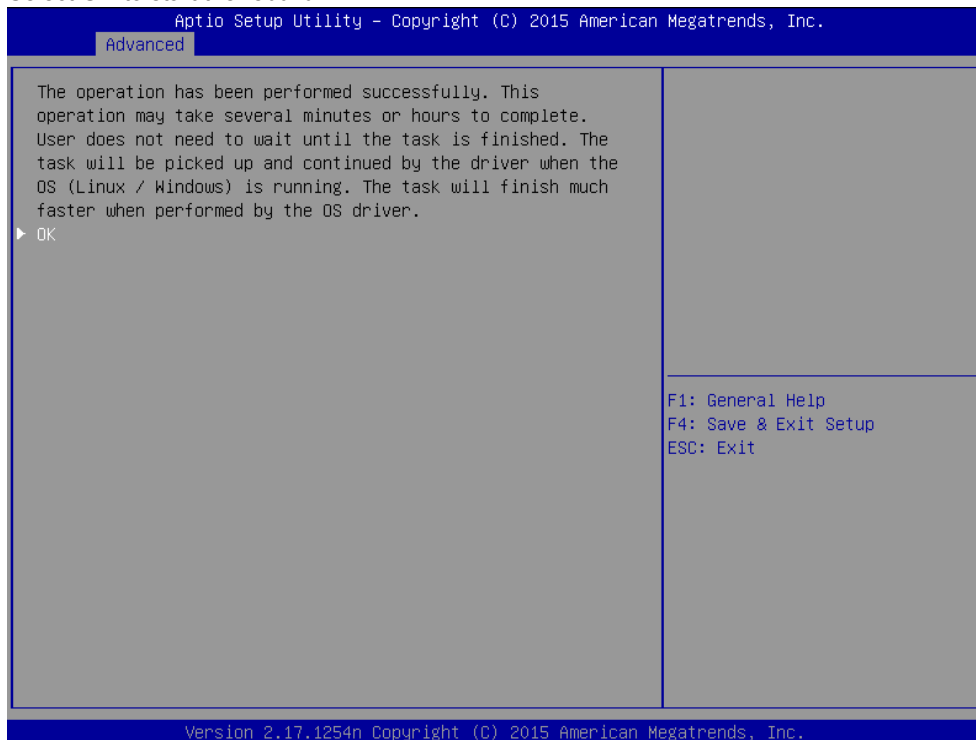
- 4. Confirm that the target physical device is displayed for **Select Drive**.

5. Select **Drive Operations**, and then select "Rebuild".



6. Select **Start Operation**.

7. Select **OK** to start the rebuild.

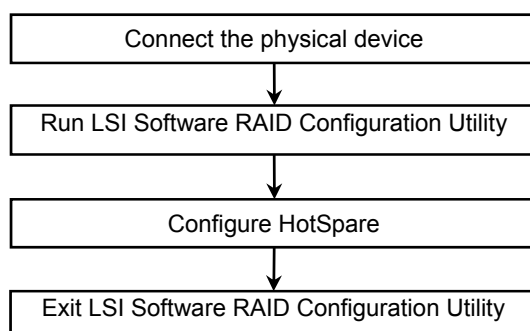


Note

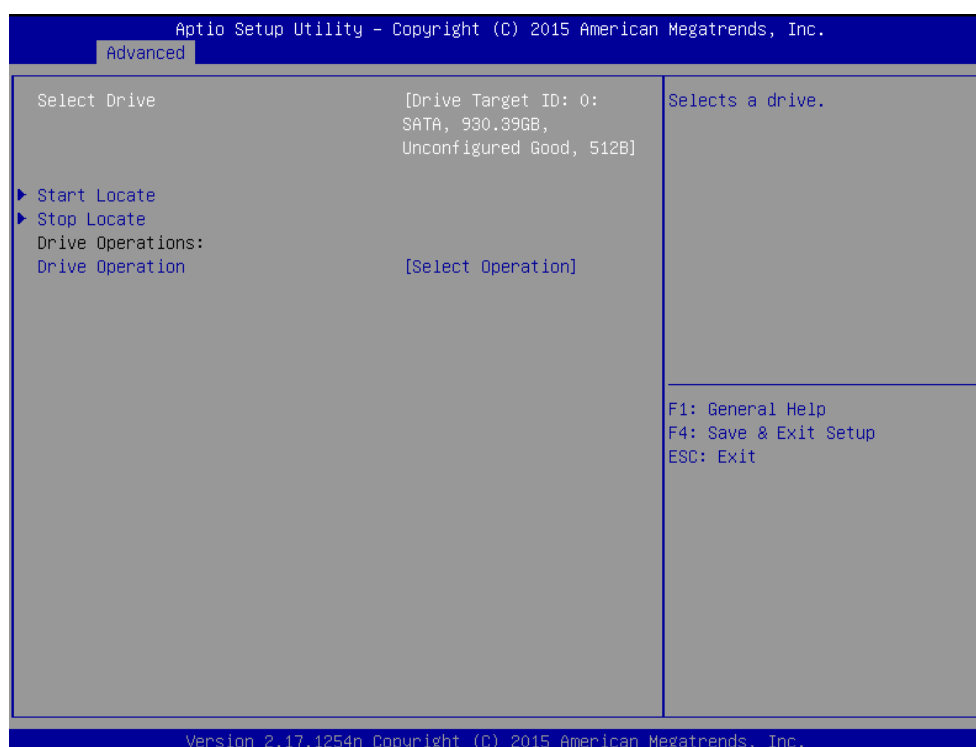
The status of Operation Progress is not automatically updated. If you want to update the progress status, press the <Esc> key to return to the previous screen, and then select **Select Virtual Drive Operations** again.

8. Exit LSI Software RAID Configuration Utility.

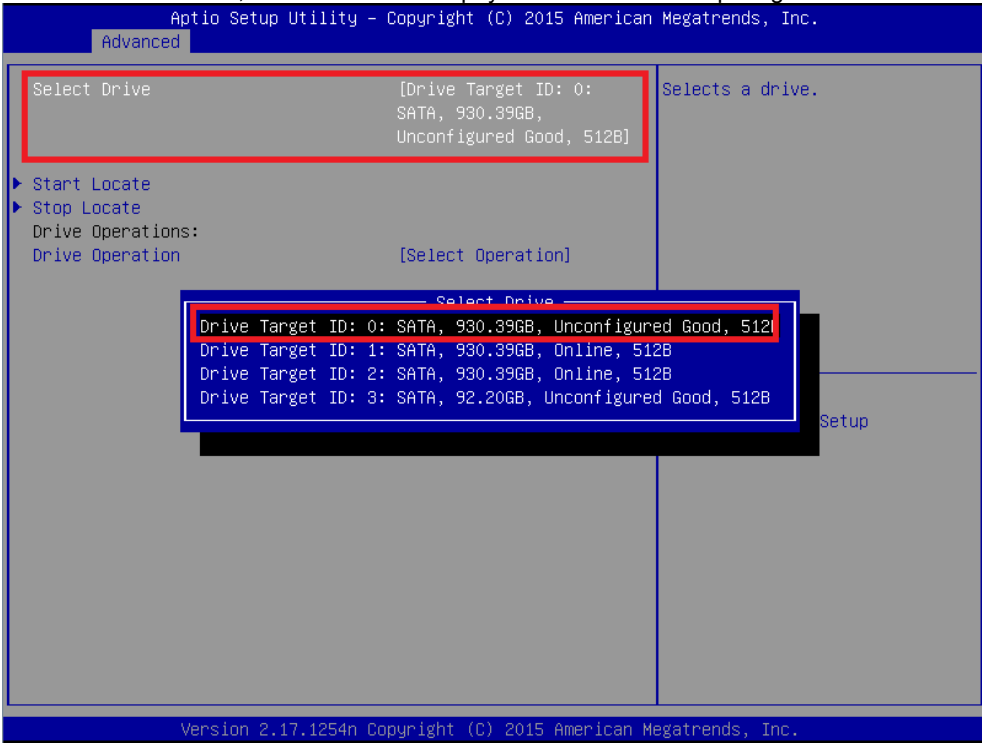
5.6.3 Configure HotSpare



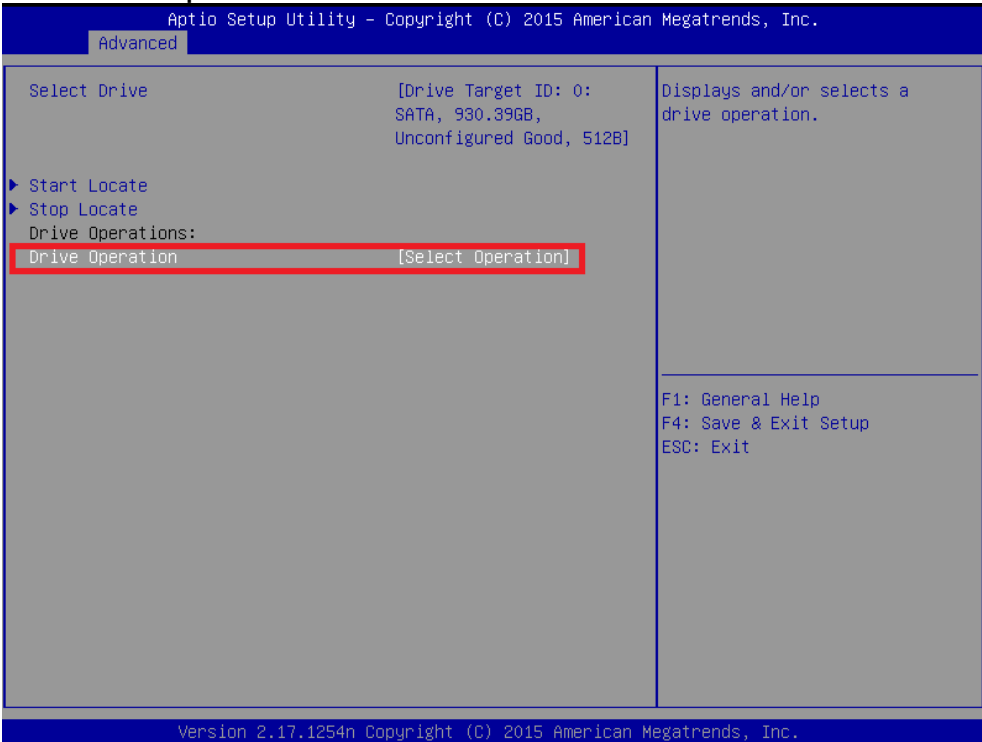
1. Connect a physical device for hot sparing, and then turn on the server.
2. Run LSI Software RAID Configuration Utility.
3. On the TOP menu screen, select **Drive Management**. The following screen appears.



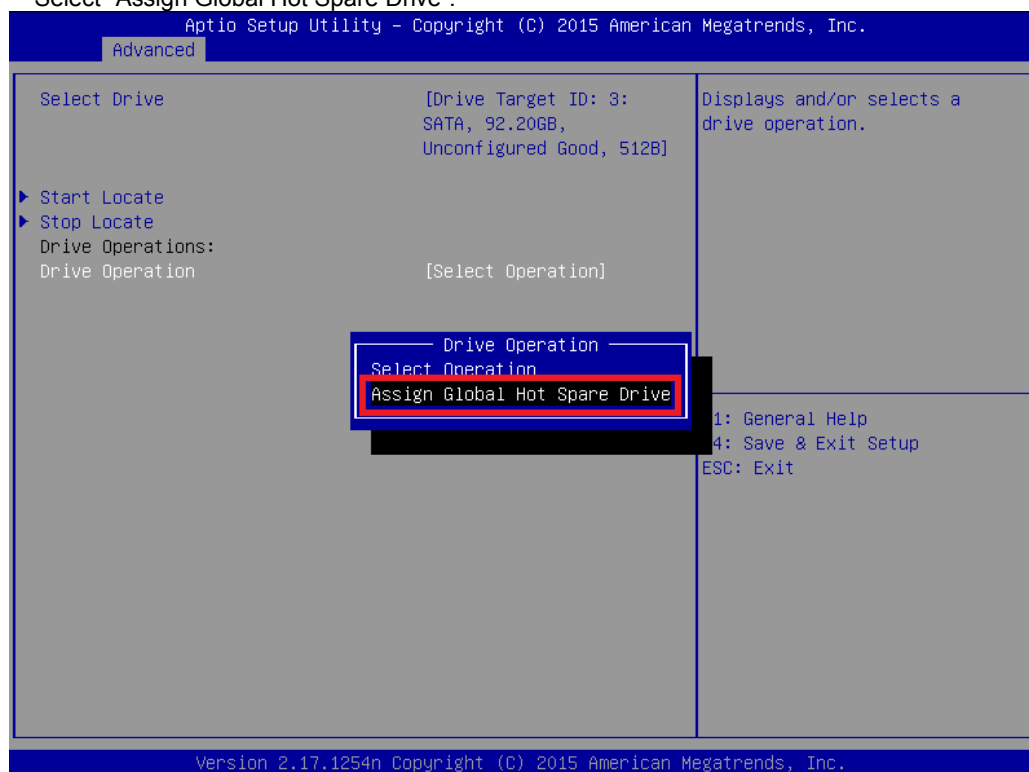
4. Select **Select Drive**, and then select the physical device for hot sparing.



5. Select **Drive Operation**.

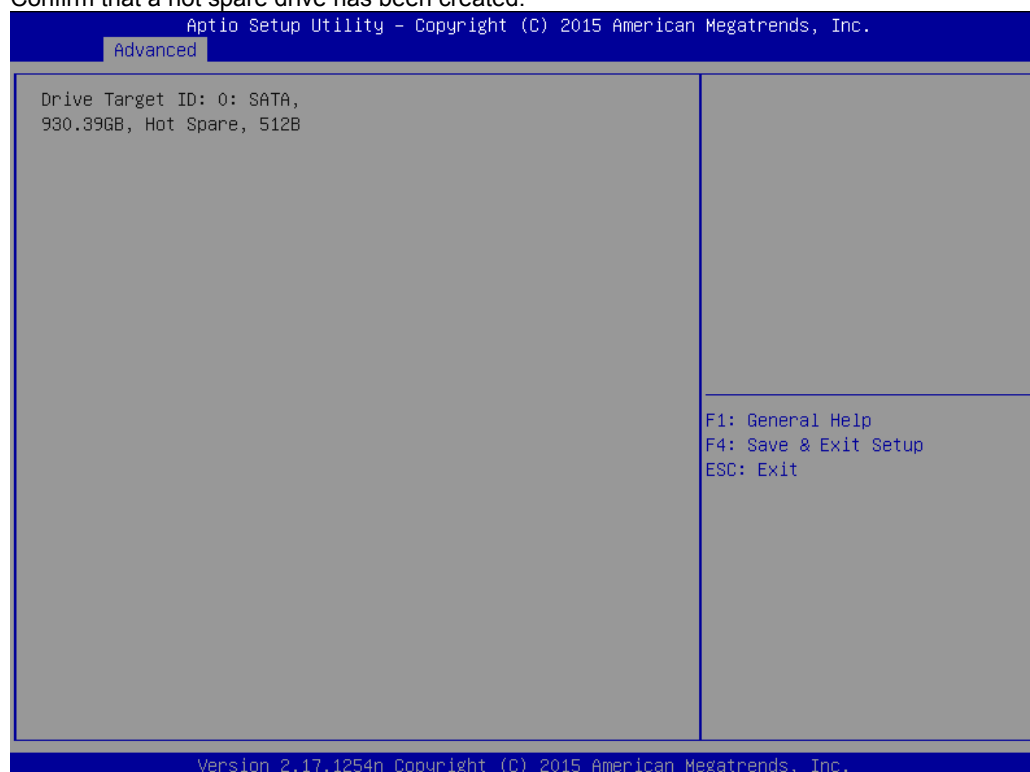


6. Select "Assign Global Hot Spare Drive".



7. Select **Start Operation**, and then select **OK**.
8. Return to the TOP menu screen.
9. Select **Drive Management**.
10. Select **View Global Hot Spare**.

11. Confirm that a hot spare drive has been created.



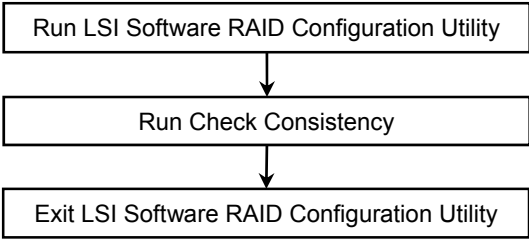
12. Exit LSI Software RAID Configuration Utility.

Note

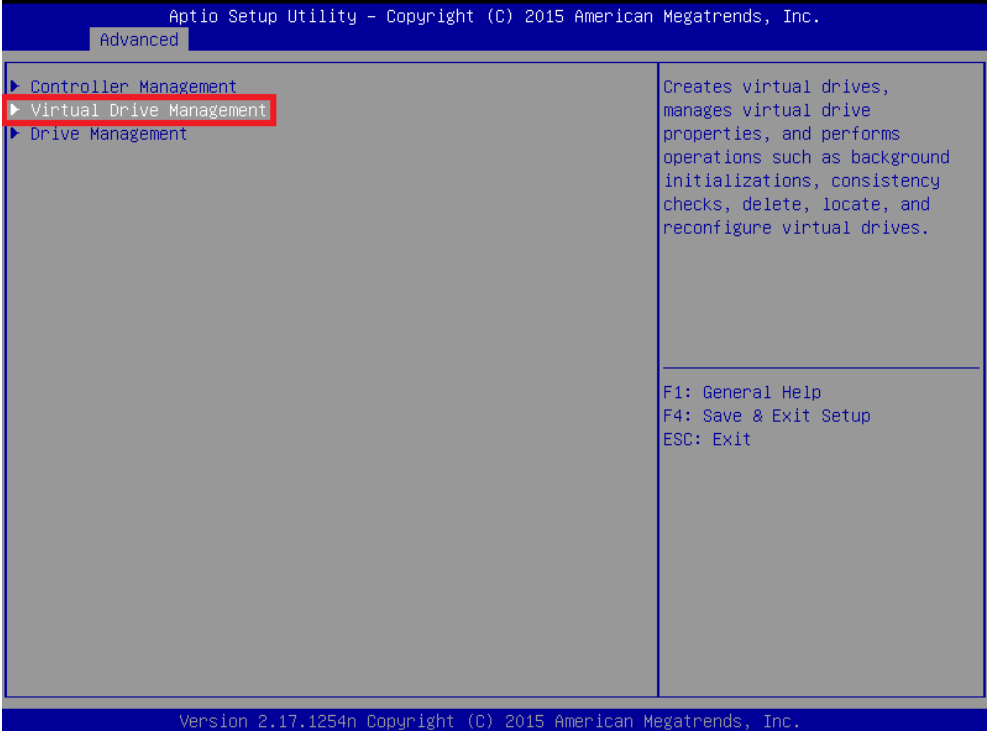
To cancel the HotSpare setting, select **Drive Management**, Select **Drive Operations**, and then select "Unassign Hot Spare Drive".

5.6.4 Check Consistency

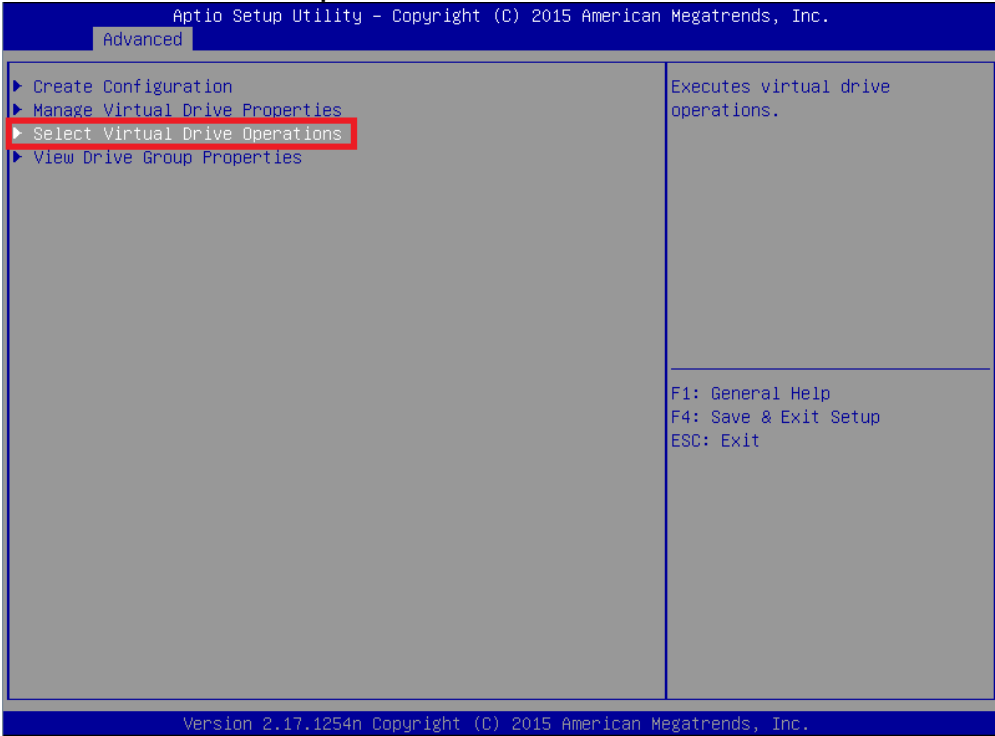
- Important
- Check Consistency on the LSI Software RAID Configuration Utility takes long time. Run Check Consistency from the Universal RAID Utility on the OS.
 - For RAID0, running Check Consistency is not required.



1. From the TOP menu of LSI Software RAID Configuration Utility, select **Virtual Drive Management**.

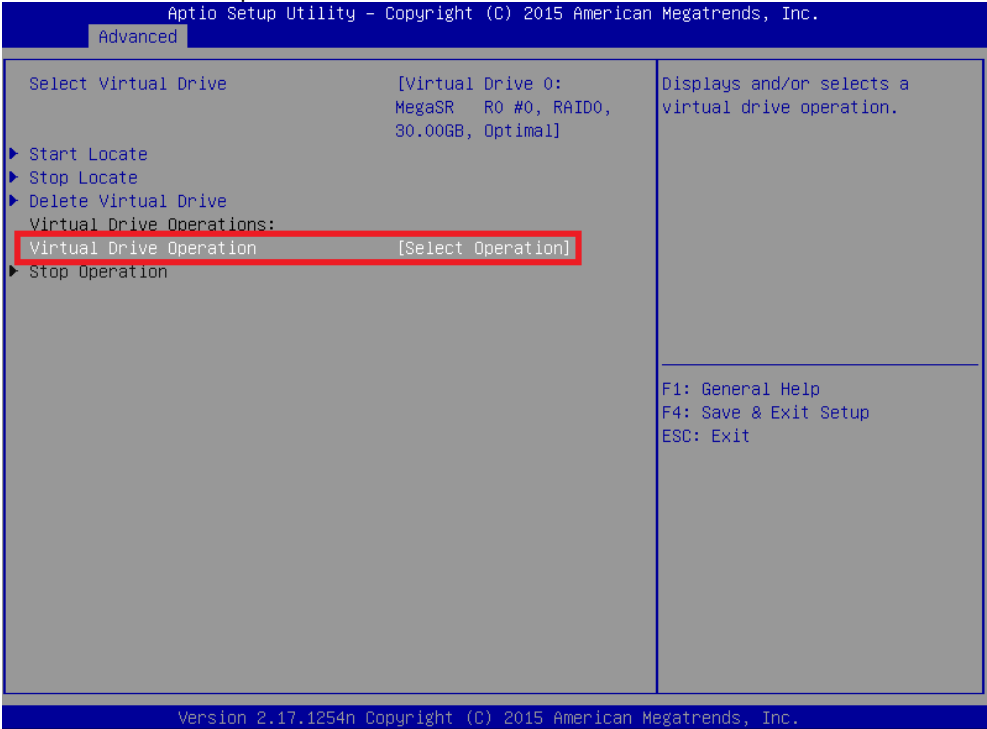


2. Select **Select Virtual Drive Operations**.

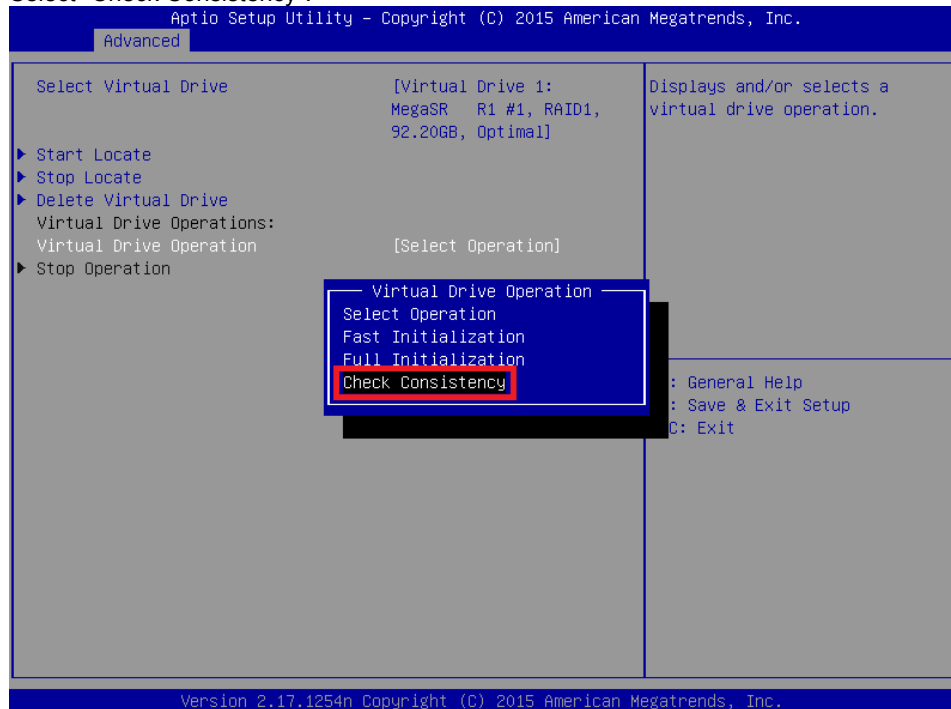
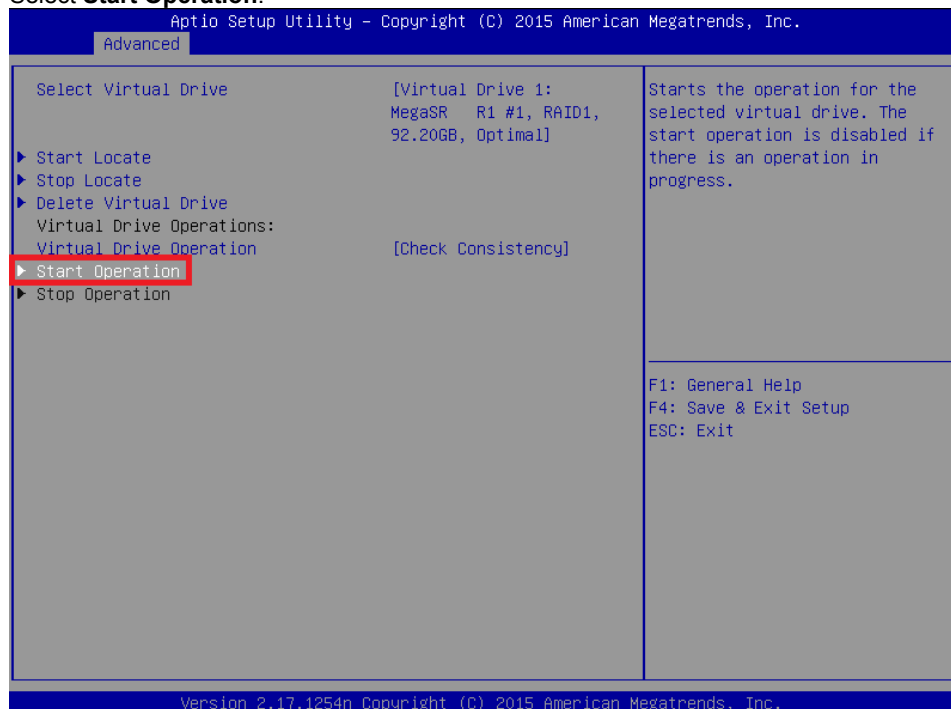


3. Select the target virtual drive for **Select Virtual Drive**.

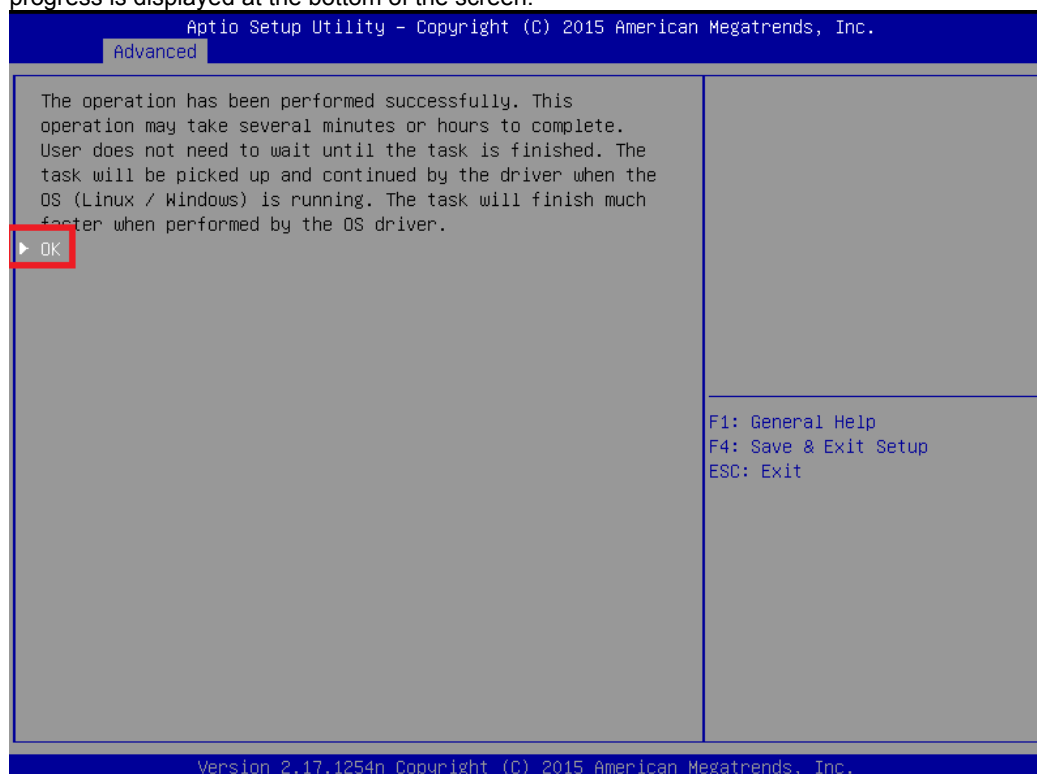
4. Select "Virtual Drive Operation".



5. Select "Check Consistency".

6. Select **Start Operation**.7. Select **Yes** on the next screen.

8. Select **OK** to run Check Consistency. Once Check Consistency starts, the indication for **Virtual Drive Operation** changes to **Check Consistency** on the **Select Virtual Drive Operations** screen, and the progress is displayed at the bottom of the screen.

**Note**

The status of Operation Progress is not automatically updated. Press the <Esc> key to return to the screen to the upper position once; the progress status is updated when the mode enters "Select Virtual Drive Operations".

5.6.5 Others

(1) Clear Configuration

Use this feature to clear configuration information. From the TOP menu, select **Controller Management**, and then **Clear Configuration** to clear all configuration information.

If old configuration information for the physical device remains, configuration may fail. In this case, execute "Clear Configuration".

Note

To remove a virtual drive, select **Virtual Drive Management** and then **Select Virtual Drive Management** and confirm that the virtual drive you want to deleted is displayed for **Select Virtual Drive**. Select **Delete Virtual Drive**. When a confirmation message is displayed, select **Yes**, and then select **OK**.

(2) Place Drive Online

Use this feature to forcibly put a physical device in the FAIL status online.

From the TOP menu, select **Drive Management** and then **Select Drive Operations**, confirm that the target physical device is displayed for **Select Drive**, select **Drive Operation**, **Place Drive Online**, and then **Start Operation**. When a confirmation message is displayed, select **Yes**, and then select **OK**.

(3) Rebuild Rate

Use this feature to specify the rebuild rate.

From the TOP menu, select **Controller Management**, **Change Controller Properties**, and **Rebuild Rate**. The available value is between 0% and 100%. The default value (recommended) is 30%.

Select **Apply Changes** and, when a confirmation message is displayed, select **OK**.

(4) Physical device information

Use this feature to display physical device information.

From the TOP menu, select **Drive Management** and then **View Drive Properties**, and then select **Select Drive** to select the physical device you want to check.

5.7 LSI Software RAID Configuration Utility and Universal RAID Utility

Note the following when you use Universal RAID Utility together with LSI Software RAID Configuration Utility.

(1) Terms

LSI Software RAID Configuration Utility and Universal RAID Utility differ in terms. If you use Universal RAID Utility together with LSI Software RAID Configuration Utility, read the terms according to the following list.

Terms of LSI Software RAID Configuration Utility	Terms of Universal RAID Utility	
	RAID Viewer	raidcmd
Adapter	RAID Controller	RAID Controller
Virtual Drive	Logical Drive	Logical Drive
Array	Disk Array	Disk Array
Physical Drive	Physical Device	Physical Device
Drive Group	Disk Array	Disk Array

Tips

`raidcmd` is a command that Universal RAID Utility provides. See *Universal RAID Utility User's Guide* for more information.

(2) Number and ID

The number to manage each component of RAID Controller of Universal RAID Utility is different to LSI Software RAID Configuration Utility. See the table below.

See *Universal RAID Utility User's Guide* for more information.

Item	Management number	
	LSI Software RAID Configuration Utility	Universal RAID Utility
Adapter (RAID Controller)	Number starting from 0	Number starting from 1
Virtual Drive (Logical Drive)	Number starting from 0	Number starting from 1
Array (Disk Array)	Number starting from 0	Number starting from 1
Physical Drive (Physical Device)	Number starting from 0	Assigned based on Enclosure number and slot number
Drive Group (Disk Array)	Number starting from 0	Number starting from 1

(3) Setting of Priority

LSI Software RAID Configuration Utility displays and sets Rebuild Priority and Consistency Check Priority of RAID Controller by percentage. However, Universal RAID Utility uses three levels as High/Middle/Low for them. See the table below for the correspondence.

Setting value of LSI Software RAID Configuration Utility and the display level of Universal RAID Utility

Item	Setting value of LSI Software RAID Configuration Utility	Display level of Universal RAID Utility
Rebuild Priority Rebuild Rate (LSI Software RAID Configuration Utility)	15 to 100	High
	8 to 14	Middle
	0 to 7	Low
Consistency Check Priority Chk Const Rate (LSI Software RAID Configuration Utility)	15 to 100	High
	8 to 14	Middle
	0 to 7	Low

Setting level of Universal RAID Utility and the setting value

Item	Setting level of Universal RAID Utility	Setting value
Rebuild Priority Rebuild Rate (LSI Software RAID Configuration Utility)	High	20
	Middle	10
	Low	5
Consistency Check Priority Chk Const Rate (LSI Software RAID Configuration Utility)	High	20
	Middle	10
	Low	5

Tips

- LSI Software RAID Configuration Utility can set FGI Rate (Foreground Initialization priority) and BGI Rate (Background Initialization Priority). But Universal RAID Utility cannot set Background Initialization Priority.
- Initialization priority cannot be set by Universal RAID Utility in LSI Embedded MegaRAID. To set the initialization priority, use LSI Software RAID Configuration Utility.

5.8 Off-line Utility and Universal RAID Utility

The points to be noted when using Universal RAID Utility together with Off-line Utility are described below.

The name of Off-line Utility depends on Boot Mode. In Legacy Mode, Ctrl-R is used. In UEFI Mode, HII is used.

(1) Terms

Some terms are different between Off-line Utility and Universal RAID Utility. When using Universal RAID Utility together with Off-line Utility, replace the terms as shown in the table below:

Terms of Off-line Utility	Terms of Universal RAID Utility	
	RAID Viewer	raidcmd
Controller	RAID Controller	RAID Controller
Virtual Drive	Logical Drive	Logical Drive
Drive Group	Disk Array	Disk Array
Drive	Physical Device	Physical Device

Tips

`raidcmd` is a command provided by Universal RAID Utility. See *Universal RAID Utility User's Guide* for details.

(2) Numbering

The numbers indicating RAID controller information differ between Off-line Utility and Universal RAID Utility as shown in the table below.

See *Universal RAID Utility Users Guide* for details.

Item	Number	
	Off-line Utility	Universal RAID Utility
Controller (RAID Controller)	Starts from 0	Starts from 1
Virtual Drive (Logical Drive)	Starts from 0	Starts from 1
Drive group (Disk Array)	Starts from 0	Starts from 1
Drive (Physical Device)	Starts from 0	To be assigned based on an enclosure that contains the physical device and its slot number.

(3) Priority settings

Three levels of High, Middle, and Low are used as priority settings in Universal RAID Utility, instead of numerical values in Off-line Utility. The table below shows the correspondence between the numerical value ranges and levels for each item.

Comparison of Off-line Utility and Universal RAID Utility

Item	Off-line Utility	Universal RAID Utility
Rebuild priority	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Patrol Read priority	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Consistency Check priority	80 to 100	High
	31 to 79	Middle
	0 to 30	Low

Setting values of Universal RAID Utility

Item	Levels of Universal RAID Utility	Setting values
Rebuild priority	High	90
	Middle	50
	Low	10
Patrol Read priority	High	90
	Middle	50
	Low	10
Consistency Check priority	High	90
	Middle	50
	Low	10

Tips

- Off-line Utility can specify the background initialization priority, but Universal RAID Utility cannot.
- The parameter of initialization priority (Slow Initialize) in Universal RAID Utility is not available for this server.

6. Details of EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows and maintain the server.

EXPRESSBUILDER also provides bundled software and instruction manuals.

6.1 Starting EXPRESSBUILDER

You can start EXPRESSBUILDER by using the following ways:

Internal Flash Memory:

Remove a CD/DVD and removable media from the server, restart the server and press <F3> key at the following POST message.

Press <F2> SETUP, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network

When EXPRESSBUILDER starts from Internal Flash Memory, Boot Selection Menu shown in *Chapter 2 (6.2 Menus of EXPRESSBUILDER) - (1) Boot Selection Menu* will appear.

Windows Application:

After installing Starter Pack in the server, you can run EXPRESSBUILDER as a Windows application.

Run **NEC EXPRESSBUILDER** from Windows Start Menu or run the shortcut on the desktop.

When EXPRESSBUILDER starts as a Windows application, Autorun Menu shown in *Chapter 2 (6.2 Menus of EXPRESSBUILDER) - (4) Autorun Menu* will appear.

EXPRESSBUILDER DVD:

EXPRESSBUILDER DVD can be downloaded from the following website.

<http://www.nec.com/>

Use the DVD by the following two ways:

- (1) Insert the DVD into the server, and then restart.

Boot Selection Menu shown in *Chapter 2 (6.2 Menus of EXPRESSBUILDER) - (1) Boot Selection Menu* will appear.

- (2) Insert the DVD into a computer running Windows.

Autorun Menu shown in *Chapter 2 (6.2 Menus of EXPRESSBUILDER) - (4) Autorun Menu* will appear.

6.2 Menus of EXPRESSBUILDER

You can operate EXPRESSBUILDER using onscreen menus.

(1) Boot Selection Menu

When the server starts from EXPRESSBUILDER, the following menu appears.

Choose an item by using arrow keys and <Enter> key.

```
OS installation   *** default ***  
  
Tool menu (Normal mode)  
  
Tool menu (Redirection mode)
```

Home Menu shown in (2) *Home Menu* appears when you choose **OS installation** or no key is pressed.

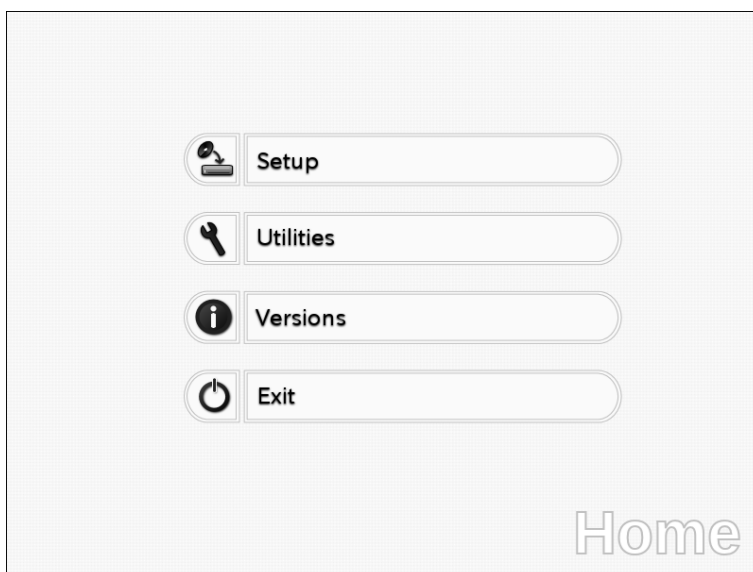
Tool Menu shown in (3) *Tool Menu* appears when you choose **Tool menu (Normal mode)**. Usually, choose this mode when running the tool menu.

You can remotely operate EXPRESSBUILDER by using BIOS Console Redirection when choosing **Tool menu (Redirection mode)**. The menu items and the tools are the same as the normal mode.

Tips

Choose the normal mode when using the remote KVM feature.

(2) Home Menu



Operate Home Menu using the mouse or keyboard (Tab and Enter keys).

Home Menu includes the following items.

a) Setup

Configures RAID arrays or install Windows easily. For details, see "*Installation Guide (Windows)*".

If you want to configure RAID arrays without installing Windows, choose **Manual Selection** in the step 1 of Setup.

b) Utilities

Starts a utility in EXPRESSBUILDER.

For details, see *Chapter 2 (6.3 Utilities in EXPRESSBUILDER)*.

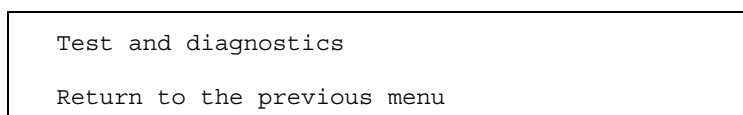
c) Versions

Shows the versions of software and drivers in EXPRESSBUILDER.

d) Exit

Closes EXPRESSBUILDER, and then shut down or restart the server.

(3) Tool Menu



Choose **Test and diagnostics** to run System Diagnostics, which is used to analyze and diagnose the server and check the cable connection. For details, see *Chapter 1 (8. System Diagnostics)*.

(4) Autorun Menu



You can use the following features from the menu that starts by using the Windows autorun feature or by using EXPRESSBUILDER as a Windows application.

a) Instruction Manuals

Shows User's Guide, Installation Guide, and other instruction manuals.

Install Adobe Reader to your computer to read the manuals.

b) Versions

Shows the versions of the included software, drivers, and EXPRESSBUILDER.

c) Integrated Installation

Installs several applications or Starter Pack easily. If the menu is not run on the server or the logon user does not have the administrator privilege, this item is not available.

d) Applications

Installs or runs an application individually.

e) Files for Setup

Creates the file for Windows installation.

f) Maintenance

Updates Internal Flash Memory or copies the application files to removable media.

g) Exit

Closes the menu.

6.3 Utilities in EXPRESSBUILDER

You can run the following utilities when choosing **Utilities** from Home Menu.

(1) RAID Configuration Data

Saves or loads the configuration data on a RAID controller.

(2) File Execution

Runs directly an external utility on removal media. Use this feature for utilities provided by NEC.

Note

Do not run the file provided by a third party.

(3) Internal Flash Memory (only available on DVD)

Manages Internal Flash Memory with the following commands.

a) Initialize

Clears the data on Internal Flash Memory and initializes (formats) it.

All data on Internal Flash Memory is deleted.

b) Update

Copies the data of EXPRESSBUILDER DVD or other media to Internal Flash Memory.

The data is overwritten and **all previous data is cleared.**

Tips

The parameter file and RAID configuration data are retained.

(4) Starter Pack installation (only available on Internal Flash Memory)

Installs Starter Pack to the installed Windows. Starter Pack is usually installed from **Setup** of Home Menu or Autorun Menu. Use this feature to manually install Windows without EXPRESSBUILDER DVD.

Tips

Starter Pack is automatically installed when Windows is installed by EXPRESSBUILDER.

6.4 CLI for EXPRESSBUILDER

You can operate EXPRESSBUILDER by using Command Line Interface (CLI) on Windows command prompt.

For details, see *EXPRESSBUILDER Command Line Interface User's Guide*.

7. EXPRESSSCOPE Engine 3

EXPRESSSCOPE Engine 3 enables various features by using Baseboard Management Controller (BMC).

EXPRESSSCOPE Engine 3 monitors power supplies, fans, temperature, voltage, and other statuses inside the server. Connecting the management LAN port to your network enables you to do the following from a remote site by using a web browser and SSH client;

- Managing the server
- Operating* KVM (keyboard, video, and mouse) from a remote console
- Accessing* a CD-ROM, DVD ROM, floppy disk, ISO image, or USB flash drive in a remote console

* N8115-04 Remote KVM and Media License are required to activate these features.

To actualize these features, virtual USB mass storage (Remote FD, Remote CD/DVD, Remote USB Memory, or Virtual Flash) is always connected as USB mass storage.

8. NEC ESMPRO

8.1 NEC ESMPRO ServerAgentService (for Windows)

For details of NEC ESMPRO ServerAgentService (for Windows), see “*NEC ESMPRO ServerAgentService Installation Guide (Windows)*” in EXPRESSBUILDER.

8.2 NEC ESMPRO Manager

NEC ESMPRO Manager can remotely control and monitor the hardware and the RAID system of the server. To use these features, install the bundle software for the server such as NEC ESMPRO ServerAgentService.

For details, see "*NEC ESMPRO Manager Installation Guide*" or online help.

8.3 NEC ESMPRO Agent Extension

You can manage the server remotely by using NEC ESMPRO Agent Extension with NEC ESMPRO Manager monitoring the server's BMC.

For details, see "*NEC ESMPRO Agent Extension Installation Guide*" in EXPRESSBUILDER.

8.4 Server Configuration Utility

You can specify configuration data to the BMC of the server by using this utility.

For details, see "*Server Configuration Utility User's Guide*" in EXPRESSBUILDER.

8.5 NEC ExpressUpdate Agent

You can easily download, manage and update the firmware or the software installed in this server by using NEC ExpressUpdate Agent.

For details, see "*NEC ExpressUpdate Agent Installation Guide*" in EXPRESSBUILDER.

Tips

Refer to the following website to install the packages that do not support the feature of NEC ExpressUpdate.

<http://www.nec.com/global/prod/express/index.html>

9. NEC Product Info Collection Utility

NEC Product Info Collection Utility can collect various data and logs related to the server all at once. You can collect the server information (Product Info) for maintenance by using this utility.

9.1 Usage

Run the `\stdclct\collect.exe` contained in the installation folder of this utility.

This utility is usually installed to the `C:\ezclct` folder.

The `log` folder is created in the `stdclct` folder and “Product Info” is stored in a compressed (zip) file.

Tips

- Log on to Windows with an account that has an administrator privilege.
- The installation drive requires a free space of at least 2.5 GB.

***10.* Ezclct Viewer**

Ezclct Viewer can display the log files collected by NEC Product Info Collection Utility.

For details, see " Ezclct Viewer *User's Guide*" in EXPRESSBUILDER.

***11.* Universal RAID Utility**

Universal RAID Utility is an application to manage or monitor the following RAID controllers.

- Onboard RAID Controller (LSI Embedded MegaRAID)
- N8103-176 RAID Controller (1GB, RAID 0/1)
- N8103-177 RAID Controller (1GB, RAID 0/1/5/6)
- N8103-178 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-179 RAID Controller (2GB, RAID 0/1/5/6)

For information about installing Universal RAID Utility, see *Universal RAID Utility* in *Installation Guide (Windows)*.

See *Universal RAID Utility User's Guide* in EXPRESSBUILDER for more information about operating instructions and features.

***11.1* Creating Logical Drive of RAID 6**

Four or more physical devices are required to create a RAID 6 logical drive by using Universal RAID Utility. If you want to create a RAID 6 logical drive with three physical devices, use Off-line Utility.

***12.* Express Report Service / Express Report Service (HTTPS)**

For details about Express Report Service / Express Report Service (HTTPS), see “*Express Report Service / Express Report Service (HTTPS) Installation Guide (Windows)*” in EXPRESSBUILDER.

***13.* Express Report Service (MG)**

For details about Express Report Service (MG), see “*Express Report Service (MG) Installation Guide (Windows)*” in EXPRESSBUILDER.

NEC Express5800 Series Express5800/R120g-2E, T120g

3

Appendix

1. POST Error Message

Shows a list of error messages for errors detected by the power on self-test (POST).

2. List of Windows Event Logs

Shows a list of Windows event logs

3 Accessing Data for Electrical Power, Temperature, and Processor Utilization

Describes how to check power consumption in watts, intake temperature, and logical processor utilizations.

4. Glossary

5. Revision Record

1. POST Error Message

If POST detects a problem, an error message appears or a beep code sounds.

Messages indicating a memory error
(in this example, the message indicates
that CPU1_DIMM1 and CPU1_DIMM2
have failed, and that DIMM1 has been
forcibly started up)

System Monitoring Check
... Passed
ERROR
AE81: CPU1_DIMM1 with error is enabled.
AE01: CPU1_DIMM1 has been disabled.
AE02: CPU1_DIMM2 has been disabled.

Press <F1> to resume, <F2> to setup

The next table lists the error messages and the actions to solve the problem.

Tips

Write down the displayed messages and beep patterns before contacting your sales representative. The messages are useful information for maintenance.

(1) Error messages

Error Message		Cause	Solution
8000	System variable is corrupted.	Illegal setup information of BIOS was detected.	Start BIOS Setup Utility (SETUP), and then execute Load Setup Defaults and specify the necessary settings. If the same error is detected repeatedly in spite of re-setting, contact your sales representative.
8001	Real time clock error	Real time clock error was detected.	Start SETUP, and then specify the correct date and time.
8002	Check date and time settings	Incorrect date and time set on real time clock was detected.	If the same error is detected repeatedly in spite of re-setting, contact your sales representative.
8003	System battery is dead - Replace and run SETUP	The battery for storing system settings is dead.	Contact your sales representative. After the replacement, start SETUP, and then specify the correct settings.
8005	Previous boot incomplete - Default configuration used	The previous POST processing did not finish.	Use SETUP to specify the correct settings.
8006	System configuration data cleared by Jumper.	The setup utility settings were cleared using the jumper.	Follow the steps described in <i>Chapter 1 (7. Resetting and Clearing the Server)</i> . Start SETUP, and then setup each item again.
8007	SETUP Menu Password cleared by Jumper.	The setup utility password was cleared using the jumper.	If the same error is detected repeatedly in spite of re-setting, contact your sales representative. This error message also appears when lithium battery is removed.
8020	BIOS update error.	BIOS update failed.	Try BIOS update again. If the same error is detected repeatedly, contact your sales representative.
8021	Recovery jumper is set, but recovery images is not found.	Recovery jumper is set, but recovery of BIOS failed.	Contact your sales representative.
8800	DXE_NB_ERROR	An error was detected during initialization of chipset.	
8801	DXE_NO_CON_IN	An error was detected during initialization of console.	
8802	DXE_NO_CON_OUT		
8803	PEI_DXE_CORE_NOT_FOUND	A flash ROM is corrupt.	
8804	PEI_DXEIPL_NOT_FOUND		
8805	DXE_ARCH_PROTOCOL_NOT_AVAILABLE		
8806	PEI_RESET_NOT_AVAILABLE	The system was not reset correctly.	
8807	DXE_RESET_NOT_AVAILABLE		
8808	DXE_FLASH_UPDATE_FAILED	The Flash ROM was not written to correctly.	
8830	PEI_RECOVERY_NO_CAPSULE	The Flash ROM was not recovered correctly.	
8831	PEI_RECOVERY_PPI_NOT_FOUND		
8832	PEI_RECOVERY_FAILED		
9000	Unsupported CPU detected	An unsupported CPU was detected.	
9001	Unsupported CPU detected on CPU #1		
9002	Unsupported CPU detected on CPU #2		
9021	Unsupported CPU Speed detected on CPU #1	A CPU of which clock speed is unsupported was detected.	
9022	Unsupported CPU Speed detected on CPU #2		

Error Message		Cause	Solution
9040	PEI_CPU_SELF_TEST_FAILED	An error was detected in CPU initialization.	Contact your sales representative.
9041	Detected CPU Error on CPU #1	An error was detected on CPU #1.	
9042	Detected CPU Error on CPU #2	An error was detected on CPU #2.	
9060	PEI_CPU_MISMATCH	CPU #1 and #2 are not the same type.	
9080	Link in Slow Speed Mode between CPU1 and CPU2.	Low-speed mode was detected on bus between CPU1 and CPU2.	
9081	Link Failure between CPU1 and CPU2	Connection failure was detected on bus between CPU1 and CPU2.	
9082	Link width Error between CPU1 and CPU2	Connection decline was detected on bus width between CPU1 and CPU2.	
9E80	Forced to use CPU with error.	An error was detected in CPU, but the CPU was forcedly enabled.	
A001	Memory Error detected in CPU1_DIMM1	An error was detected in CPU1_DIMM1.	
A002	Memory Error detected in CPU1_DIMM2	An error was detected in CPU1_DIMM2.	
A003	Memory Error detected in CPU1_DIMM3	An error was detected in CPU1_DIMM3.	
A004	Memory Error detected in CPU1_DIMM4	An error was detected in CPU1_DIMM4.	
A005	Memory Error detected in CPU1_DIMM5	An error was detected in CPU1_DIMM5.	
A006	Memory Error detected in CPU1_DIMM6	An error was detected in CPU1_DIMM6.	
A007	Memory Error detected in CPU1_DIMM7	An error was detected in CPU1_DIMM7.	
A008	Memory Error detected in CPU1_DIMM8	An error was detected in CPU1_DIMM8.	
A00D	Memory Error detected in CPU2_DIMM1	An error was detected in CPU2_DIMM1.	
A00E	Memory Error detected in CPU2_DIMM2	An error was detected in CPU2_DIMM2.	
A00F	Memory Error detected in CPU2_DIMM3	An error was detected in CPU2_DIMM3.	
A010	Memory Error detected in CPU2_DIMM4	An error was detected in CPU2_DIMM4.	
A011	Memory Error detected in CPU2_DIMM5	An error was detected in CPU2_DIMM5.	
A012	Memory Error detected in CPU2_DIMM6	An error was detected in CPU2_DIMM6.	
A013	Memory Error detected in CPU2_DIMM7	An error was detected in CPU2_DIMM7.	
A014	Memory Error detected in CPU2_DIMM8	An error was detected in CPU2_DIMM8.	
A420	Online Spare Memory was not ready.	Memory Sparing feature is disabled in this memory configuration.	<p>Confirm the setting for Memory RAS Mode in SETUP. If Memory Sparing, Memory Mirroring, or Memory LockStep feature is enabled and DIMM is degraded, this POST error is displayed.</p> <p>Run SETUP, change parameter for Memory Retest to Yes, and then execute Save Changes and Exit.</p> <p>If the same error persists, contact your sales representative.</p>
A421	Mirroring Memory was not ready.	Memory Mirroring feature is disabled in this memory configuration.	
A423	Lockstep was not ready.	Memory LockStep feature is disabled in this memory configuration.	

Error Message		Cause	Solution
A428	Cluster On Die was not ready.	Cluster On Die feature is disabled in this hardware configuration.	Replace the processor with the one that supports this feature. Or, run SETUP and select Disabled for the Cluster On Die . If the same error persists, contact your sales representative.
A429	DIMM population is insufficient for Cluster On Die.	Cluster On Die feature is disabled in this memory configuration.	Check if memory configuration is correct. If the same error persists, contact your sales representative.
A800	Memory not detected	No valid memory is installed.	Check if DIMMs are properly installed. If the same message appears repeatedly, contact your sales representative.
A801	PEI_MEMORY_NONE_USEFUL	No available memory is installed.	Check if the memory configuration is correct. If the same message appears repeatedly, contact your sales representative.
A804	Latest memory module is corrupted.	Failure on BIOS Flash ROM was detected.	Contact your sales representative.
AE01	CPU1_DIMM1 has been disabled.	A memory error was detected. CPU1_DIMM1 has been disabled.	
AE02	CPU1_DIMM2 has been disabled.	A memory error was detected. CPU1_DIMM2 has been disabled.	
AE03	CPU1_DIMM3 has been disabled.	A memory error was detected. CPU1_DIMM3 has been disabled.	
AE04	CPU1_DIMM4 has been disabled.	A memory error was detected. CPU1_DIMM4 has been disabled.	
AE05	CPU1_DIMM5 has been disabled.	A memory error was detected. CPU1_DIMM5 has been disabled.	
AE06	CPU1_DIMM6 has been disabled.	A memory error was detected. CPU1_DIMM6 has been disabled.	
AE07	CPU1_DIMM7 has been disabled.	A memory error was detected. CPU1_DIMM7 has been disabled.	
AE08	CPU1_DIMM8 has been disabled.	A memory error was detected. CPU1_DIMM8 has been disabled.	
AE0D	CPU2_DIMM1 has been disabled.	A memory error was detected. CPU2_DIMM1 has been disabled.	
AE0E	CPU2_DIMM2 has been disabled.	A memory error was detected. CPU2_DIMM2 has been disabled.	
AE0F	CPU2_DIMM3 has been disabled.	A memory error was detected. CPU2_DIMM3 has been disabled.	
AE10	CPU2_DIMM4 has been disabled.	A memory error was detected. CPU2_DIMM4 has been disabled.	
AE11	CPU2_DIMM5 has been disabled.	A memory error was detected. CPU2_DIMM5 has been disabled.	
AE12	CPU2_DIMM6 has been disabled.	A memory error was detected. CPU2_DIMM6 has been disabled.	
AE13	CPU2_DIMM7 has been disabled.	A memory error was detected. CPU2_DIMM7 has been disabled.	
AE14	CPU2_DIMM8 has been disabled.	A memory error was detected. CPU2_DIMM8 has been disabled.	
AE81	CPU1_DIMM1 with error is enabled.	An error in CPU1_DIMM1 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE82	CPU1_DIMM2 with error is enabled.	An error in CPU1_DIMM2 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	

Error Message		Cause	Solution
AE83	CPU1_DIMM3 with error is enabled.	An error in CPU1_DIMM3 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	Contact your sales representative.
AE84	CPU1_DIMM4 with error is enabled.	An error in CPU1_DIMM4 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE85	CPU1_DIMM5 with error is enabled.	An error in CPU1_DIMM5 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE86	CPU1_DIMM6 with error is enabled.	An error in CPU1_DIMM6 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE87	CPU1_DIMM7 with error is enabled.	An error in CPU1_DIMM7 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE88	CPU1_DIMM8 with error is enabled.	An error in CPU1_DIMM8 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE8D	CPU2_DIMM1 with error is enabled.	An error in CPU2_DIMM1 occurred, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE8E	CPU2_DIMM2 with error is enabled.	An error in CPU2_DIMM2 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE8F	CPU2_DIMM3 with error is enabled.	An error in CPU2_DIMM3 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE90	CPU2_DIMM4 with error is enabled.	An error in CPU2_DIMM4 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE91	CPU2_DIMM5 with error is enabled.	An error in CPU2_DIMM5 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE92	CPU2_DIMM6 with error is enabled.	An error in CPU2_DIMM6 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE93	CPU2_DIMM7 with error is enabled.	An error in CPU2_DIMM7 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
AE94	CPU2_DIMM8 with error is enabled.	An error in CPU2_DIMM8 was detected, but because all memory is currently disabled, this DIMM was forcibly enabled.	
B000	Expansion ROM not initialized	Failed to expand option ROM.	Disable expansion of option ROM of the board that is not used for OS boot.
B001	Expansion ROM not initialized - PCI Slot 01	Option ROM expansion in PCI slot 01 failed.	Disable expansion of option ROM of the option board that is not used for OS boot. Run SETUP, and select Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → PCIxx Slot Option ROM → Disabled . (xx: PCI slot number)
B002	Expansion ROM not initialized - PCI Slot 02	Option ROM expansion in PCI slot 02 failed.	
B003	Expansion ROM not initialized - PCI Slot 03	Option ROM expansion in PCI slot 03 failed.	
B004	Expansion ROM not initialized - PCI Slot 04	Option ROM expansion in PCI slot 04 failed.	

Error Message		Cause	Solution
B005	Expansion ROM not initialized - PCI Slot 05	Option ROM expansion in PCI slot 05 failed.	Disable expansion of option ROM of the option board that is not used for OS boot. Run SETUP, and select Advanced → PCI Configuration → PCI Device Controller and Option ROM Settings → PCIxx Slot Option ROM → Disabled . (xx: PCI slot number)
B022	Serial Port Configuration Overlapped.	Overlapping serial port configuration was detected.	Start SETUP, select Advanced → Serial Port Configuration , and specify the setting again in a way that the values of Base I/O or Interrupt in Serial Port A and Serial Port B will not be the same.
B030	PCI System Error on Bus/Device/Function	PCI SERR was detected.	Contact your sales representative.
B040	PCI Parity Error on Bus/Device/Function	PCI PERR was detected.	
B201	Onboard LAN 1 - PCIe Link Failure	Connection failure of PCIe bus was detected on onboard LAN1.	
B202	Onboard LAN 2 - PCIe Link Failure	Connection failure of PCIe bus was detected on onboard LAN2.	
B211	PCI Slot 01 - PCIe Link Failure	Connection failure of PCIe bus was detected on PCI slot 01.	
B212	PCI Slot 02 - PCIe Link Failure	Connection failure of PCIe bus was detected on PCI slot 02.	
B213	PCI Slot 03 - PCIe Link Failure	Connection failure of PCIe bus was detected on PCI slot 03.	
B214	PCI Slot 04 - PCIe Link Failure	Connection failure of PCIe bus was detected on PCI slot 04.	
B215	PCI Slot 05 - PCIe Link Failure	Connection failure of PCIe bus was detected on PCI slot 05.	
B221	Onboard LAN 1 PCIe Link Width Error	A Link Width error was detected on Onboard LAN 1.	
B222	Onboard LAN 2 PCIe Link Width Error	A Link Width error was detected on Onboard LAN 2.	
B231	PCI Slot 01 - PCIe Link Width Error	A Link Width error was detected in PCI Slot 01.	
B232	PCI Slot 02 - PCIe Link Width Error	A Link Width error was detected in PCI Slot 02.	
B233	PCI Slot 03 - PCIe Link Width Error	A Link Width error was detected in PCI Slot 03.	
B234	PCI Slot 04 - PCIe Link Width Error	A Link Width error was detected in PCI Slot 04.	
B235	PCI Slot 05 - PCIe Link Width Error	A Link Width error was detected in PCI Slot 05.	
B261	Onboard LAN 1 - PCIe Link Speed Error	Link Speed error was detected on onboard LAN1.	
B262	Onboard LAN 2 - PCIe Link Speed Error	Link Speed error was detected on onboard LAN2.	
B271	PCI Slot 01 - PCIe Link Speed Error	Link Speed error was detected on PCI Slot 01.	
B272	PCI Slot 02 - PCIe Link Speed Error	Link Speed error was detected on PCI Slot 02.	
B273	PCI Slot 03 - PCIe Link Speed Error	Link Speed error was detected on PCI Slot 03.	
B274	PCI Slot 04 - PCIe Link Speed Error	Link Speed error was detected on PCI Slot 04.	
B275	PCI Slot 05 - PCIe Link Speed Error	Link Speed error was detected on PCI Slot 05.	

Error Message		Cause	Solution
B800	DXE_PCI_BUS_OUT_OF_RESOURCES	Resources to be allocated to PCI expansion card was insufficient.	Contact your sales representative.
C000	The error occurred during fan sensor reading.	An error was detected while reading fan sensor.	
C010	The error occurred during temperature sensor reading	An error was detected while reading temperature sensor.	
C011	System Temperature out of the range.	A temperature abnormality was detected.	The cooling fan has failed or is clogged. Contact your sales representative.
C020	The error occurred during voltage sensor reading.	An error was detected while reading voltage sensor.	Contact your sales representative.
C021	System Voltage out of the range.	A system voltage abnormality was detected.	
C040	SR0M data read error	An error was detected while reading data in FRU.	
C061	1st SMBus device Error detected.	An error was detected on 1st SM Bus.	
C062	2nd SMBus device Error detected.	An error was detected on 2nd SM Bus.	
C063	3rd SMBus device Error detected.	An error was detected on 3rd SM Bus.	
C064	4th SMBus device Error detected.	An error was detected on 4th SM Bus.	
C065	5th SMBus device Error detected.	An error was detected on 5th SM Bus.	
C066	6th SMBus device Error detected.	An error was detected on 6th SM Bus.	
C067	7th SMBus device Error detected.	An error was detected on 7th SM Bus.	
C068	8th SMBus device Error detected.	An error was detected on 8th SM Bus.	
C101	BMC Memory Test Failed.	An error was detected on BMC.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C102	BMC Firmware Code Area CRC check Failed.		
C103	BMC core hardware failure.		
C104	BMC IBF or OBF check failed.	An error was detected while accessing BMC.	
C105	BMC SEL area full.	There is not enough space to store the system event log.	Run Offline Tools (<i>Chapter 1, 9. Offline Tools</i>) and delete the event logs.
C10B	BMC operational code corrupted.	Flash Memory for BMC is faulty.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C10C	BMC update firmware corrupted.	An illegality was detected while updating BMC firmware.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C10D	Internal Use Area of BMC FRU corrupted.	An illegality was detected in FRU containing the device information.	
C10E	BMC SDR Repository empty.	An error was detected on BMC SDR.	
C10F	IPMB signal lines do not respond.	Failure of Satellite Management Controller was detected.	
C110	BMC FRU device failure.	An error was detected in FRU that contains device information.	
C111	BMC SDR Repository failure.	Failure was detected in SR0M that stores the SDR.	
C112	BMC SEL device failure.	Device failure was detected in BMC SEL.	
C113	BMC RAM test error.	An error was detected in BMC RAM.	

Error Message		Cause	Solution
C114	BMC Fatal hardware error.	A hardware error was detected in BMC.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C115	Management controller not responding	Management controller does not respond.	Update the BMC firmware. If the same error is detected repeatedly, contact your sales representative.
C116	Private I2C bus not responding.	Private I2C bus does not respond.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C117	BMC internal exception	BMC internal error was detected.	
C118	BMC A/D timeout error.	BMC A/D timeout error was detected.	
C119	SDR repository corrupt.	BMC error or illegal SDR data was detected.	
C11A	SEL corrupt.	BMC error or illegal system event log data was detected.	
C11B	BMC Mezzanine card is not found.	BMC Mezzanine card is not installed.	Contact your sales representative.
C11C	BMC Mezzanine partition is invalid.	A format error was detected in BMC Mezzanine card.	
C11D	BMC is in Forced Boot Mode.	Detected that BMC is in Forced Boot Mode.	Unplug the power cord, wait for at least 30 seconds, then restart the server. At that time, check the jumper switch setting on motherboard. If the same error is detected repeatedly, contact your sales representative.
C11E	Communication with BMC was failed in previous boot	Communication with BMC was failed in previous boot	Unplug the power cord, wait for at least 30 seconds, and restart the server. If the same error is detected repeatedly, contact your sales representative.
C11F	Backup Data of BMC Mezzanine card has corrupted.	Inconsistency was found on BMC mezzanine card.	Contact your sales representative.
C120	BMC Runtime FW corrupted.	An error occurred on BMC Runtime FW.	Disconnect the power cord, wait for at least 30 seconds, and then restart the server. If the same error is detected again, contact your sales representative.
C121	BMC Force Update FW corrupted.	An error occurred on BMC Force Update FW.	
C122	BMC Configuration area corrupted.	An error occurred on BMC Configuration area.	
C123	BMC eMMC inaccessible.	Failed to access to BMC eMMC.	
C125	BMC eMMC mode error.	BMC eMMC mode error	
C126	BMC eMMC partition corrupted.	An error occurred on BMC eMMC partition.	
C127	BMC eMMC format corrupted.	A format error occurred on BMC eMMC.	
C128	BMC is in Update Mode.	BMC is in update mode.	
C300	Out-of-band setup configuration failure	An error was detected while accessing BMC Mezzanine card.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.

Error Message		Cause	Solution
C301	SDR mismatch error	Inconsistency in the hardware information of the sensor data record was detected	Contact your sales representative.
C302	Hardware configuration error.	Illegal hardware configuration was detected.	
C303	FAN Structure ID command error.	Illegal fan control was detected when RAID controller is installed.	
C304	Necessary to update SDR Version for new RAID Card.	SDR for RAID controller is inappropriate.	
C310	Hardware configuration of cooling is insufficient.	Detected that cooling power is insufficient in this hardware configuration.	
C320	Unmatched PSUs.	Unmatched power supply units are configured.	
C321	System power consumption is out-of-range in PSUs.	System power consumption exceeds the power output capacity limit.	
C322	No information for system power consumption check.	No information is acquired in checking system power consumption.	
C323	Internal Use Area of BMC FRU is incompatible.	FRU containing the device information is unmatched.	Unplug the power cord, wait for at least 30 seconds, then restart the server. If the same error is detected repeatedly, contact your sales representative.
C501	ME is in Recovery Mode.	Intel Node Manager is in Recovery Mode.	Unplug the power cord, wait for at least 30 seconds, then restart the server. At that time, check the jumper switch setting on motherboard. If the same error is detected repeatedly, contact your sales representative.
C600	Internal Flash is not valid.	Internal Flash Memory was specified by a one-time boot device but could not be enabled.	Unplug the power cord, wait for at least 30 seconds, and then restart the server. If the same error is detected repeatedly, contact your sales representative.
C624	Invalid internal BIOS Configuration Data.	Internal error of BIOS Configuration Data was detected.	
C625	BIOS Configuration Data Send Error.	This is an error when BIOS Configuration Data is sent.	
C626	BIOS Configuration Data Read Error.	This is a read error on BIOS Configuration Data.	
C627	BIOS Configuration Data Write Error.	This is a write error on BIOS Configuration Data.	
C628	System configuration data cleared by System Boot Options command.	The SETUP settings were cleared by the standard IPMI-compliant command of "Set System Boot Options."	Run SETUP and re-specify each item. If the problem cannot be solved, contact your sales representative.

(2) Beep code

If POST detects a problem and is unable to display the error message, the beep code sounds instead of displaying the message.

A beep code is a series of short beeps separated by pauses. For example, "1-3-3-1" indicates one beep, a pause, three beeps, a pause, three beeps, a pause, and one beep.

The table below shows the beep code, cause, and solution.

Beep code	Description	Solution
1-3-3-1	No DIMMs are installed.	Check if DIMMs are properly installed. If the same error persists, contact your sales representative.
1-5-2-1	No processors are installed.	Check if processor is properly installed. If the same error persists, contact your sales representative.
1-5-4-4	Power-on is inhibited.	Contact your sales representative.
1	POST detected an error.	
4	Initializing the BIOS executable module failed.	
5	No graphics controllers are installed.	
7	Resetting the system failed.	
8	An error was detected when allocating PCI resources.	Remove all the installed PCI boards from the PCI slots, and then restart the server. If the same error is detected repeatedly, contact your sales representative.

(3) Error messages on a virtual LCD

You can confirm the error messages by the EXPRESSSCOPE Engine 3 web browser window. See *EXPRESSSCOPE Engine 3 User's Guide* for details.

The table below shows the error messages displayed on upper and lower lines, cause, and solution.



Message displayed on
upper LCD line
Message sent from BIOS

Message displayed on lower
LCD line
Message sent from BMC

• Messages displayed on an upper LCD line

BIOS Message on Upper LCD Line	Cause	Solution
XX POST Started...	This message appears while POST is running. "XX" means a POST code in progress.	This is not an error.
XX BIOS Rev YYYY	This message appears while POST is running. "XX" means a POST code in progress, and "YYYY" means the system BIOS version.	
POST Completed Successfully	POST completes normally.	
POST ERROR XXXX	Error XXXX occurred during POST.	Check the displayed message and take an appropriate action.
No Available Memory in System	No available memory is implemented.	Make sure that the memory is correctly implemented.
Error Pause in POST	POST detected an error and paused.	Check the displayed message and take an appropriate action.
Entering BIOS SETUP MENU	Starting up BIOS SETUP MENU.	This is not an error. This message will disappear when SETUP operation is completed.
Waiting for normal temperature	A temperature abnormality was detected inside the server.	Lower the room temperature or turn off the power to cool the server to room temperature before starting up the server. If this abnormality continues to occur, check if a fan has failed. If the same error still continues to occur, contact your representative.
BIOS Recovery Running	BIOS recovery is in progress.	This is not an error. Wait until BIOS update is completed.
BIOS Updater Running	BIOS update is in progress.	
System Configuration change is detected	The CPU or memory configuration has changed since the previous startup.	If this message appears even when no configuration change has been made, contact your sales representative.
PCI Bus System Error 1	A system error was detected in PCI bus.	Contact your sales representative.
PCI Bus Parity Error 1	A parity error was detected in PCI bus.	
CPUx_DIMMx Correctable Error (x: DIMM number)	A frequent occurrence of correctable memory error was detected.	
Memory DIMM Sparing Fail-over on CPUx (x: CPU socket number)	Memory Sparing feature failed over to standby memory.	
Memory Mirroring Fail-over on CPUx (x: socket number)	Memory Mirroring feature failed over to standby memory.	

- **Messages displayed on a lower LCD line**

BMC Message on Lower LCD Line	Cause	Solution
Processor1 Voltage Lower Non-Critical	A voltage abnormality was detected.	Contact your sales representative.
Processor1 Voltage Upper Non-Critical		
Processor1 Voltage Lower Critical		
Processor1 Voltage Upper Critical		
Processor2 Voltage Lower Non-Critical		
Processor2 Voltage Upper Non-Critical		
Processor2 Voltage Lower Critical		
Processor2 Voltage Upper Critical		
Processor Voltage Lower Non-Critical		
Processor Voltage Upper Non-Critical		
Processor Voltage Lower Critical		
Processor Voltage Upper Critical		
BaseBoard Voltage Lower Non-Critical		
BaseBoard Voltage Upper Non-Critical		
BaseBoard Voltage Lower Critical		
BaseBoard Voltage Upper Critical		
Baseboard Temperature1 Lower Non-Critical	A temperature abnormality was detected.	The cooling fan has failed or is clogged. Contact your sales representative.
Baseboard Temperature1 Upper Non-Critical		
Baseboard Temperature1 Lower Critical		
Baseboard Temperature1 Upper Critical		
Ambient Temperature Lower Non-Critical		
Ambient Temperature Upper Non-Critical		
Ambient Temperature Lower Critical		

BMC Message on Lower LCD Line	Cause	Solution
Ambient Temperature Upper Critical	A temperature abnormality was detected.	The cooling fan has failed or is clogged. Contact your sales representative.
CPU1-DIMM Area Temperature Lower Non-Critical		
CPU1-DIMM Area Temperature Upper Non-Critical		
CPU1-DIMM Area Temperature Lower Critical		
CPU1-DIMM Area Temperature Upper Critical		
CPU2-DIMM Area Temperature Lower Non-Critical		
CPU2-DIMM Area Temperature Upper Non-Critical		
CPU2-DIMM Area Temperature Lower Critical		
CPU2-DIMM Area Temperature Upper Critical		
Processor1 Thermal Control Upper Non-Critical		
Processor1 Thermal Control Upper Critical		
Processor2 Thermal Control Upper Non-Critical		
Processor2 Thermal Control Upper Critical		
DUMP Request !	The dump button was pressed.	Wait until collecting the memory dump data has finished.
Power Supply1 Failure detected	A power supply unit abnormality occurred.	Make sure that the power cord is plugged in. If this does not resolve the problem, contact your sales representative.
Power Supply2 Failure detected		
Power Supply1 AC lost		
Power Supply2 AC lost		
Processor Missing	No CPU is installed.	Contact your sales representative.

BMC Message on Lower LCD Line	Cause	Solution
Processor1 Thermal Trip	The power was forcibly turned off due to a CPU temperature abnormality.	Contact your sales representative.
Processor2 Thermal Trip		
Chip Set Thermal Trip	The power was forcibly turned off due to an abnormal temperature of chipset.	
CPU1-DIMM1 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM1.	
CPU1-DIMM2 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM2.	
CPU1-DIMM3 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM3.	
CPU1-DIMM4 Uncorrectable Error	An uncorrectable error occurred for CPU1-DIMM4.	
CPU1-DIMM5 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM5.	
CPU1-DIMM6 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM6.	
CPU1-DIMM7 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM7.	
CPU1-DIMM8 Uncorrectable Error	An unrecoverable error occurred for CPU1-DIMM8.	
CPU2-DIMM1 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM1.	
CPU2-DIMM2 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM2.	
CPU2-DIMM3 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM3.	
CPU2-DIMM4 Uncorrectable Error	An uncorrectable error occurred for CPU2-DIMM4.	
CPU2-DIMM5 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM5.	
CPU2-DIMM6 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM6.	
CPU2-DIMM7 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM7.	
CPU2-DIMM8 Uncorrectable Error	An unrecoverable error occurred for CPU2-DIMM8.	
Processor1 Internal Error	An internal CPU1 error (IERR) occurred.	
Processor2 Internal Error	An internal CPU2 error (IERR) occurred.	
Sensor Failure Detected.	Abnormality in a sensor was detected.	
SMI timeout	A timeout occurred while servicing system management interrupts.	
Soft Power Control Failure	Power-on is inhibited.	
IPMI Watchdog timer timeout (Power off)	A watchdog timer timeout occurred.	
IPMI Watchdog timer pre-timeout		

BMC Message on Lower LCD Line	Cause	Solution
Node Manager Firmware Image execution Failed	Abnormality in Node Manager occurred.	Turn off the power, wait for at least 30 seconds, and restart the server. If this does not resolve the problem, contact your sales representative.
Node Manager Firmware Flash Erase Error		
Node Manager Firmware Flash Corrupted		
Node Manager Internal Error		
Node Manager can't communicate BMC		
Node Manager Manufacturing Error		
Node Manager Persistent Storage Integrity Error		
Drive 0 Fault	Operation was performed during hard disk drive failure	
Drive 1 Fault		
Drive 2 Fault		
Drive 3 Fault		
Drive 4 Fault		
Drive 5 Fault		
Drive 6 Fault		

BMC Message on Lower LCD Line	Cause	Solution
Drive 7 Fault	Operation was performed during hard disk drive failure	Turn off the power, wait for at least 30 seconds, and restart the server. If this does not resolve the problem, contact your sales representative.
Drive 8 Fault		
Drive 9 Fault *1		
Drive 10 Fault *1		
Drive 11 Fault *1		
Drive 12 Fault *1		
Drive 13 Fault *1		
Drive 14 Fault *1		
Drive 15 Fault *1		
System Rear FAN1 Lower Non-Critical	A fan alarm was detected.	The cooling fan has failed or is clogged. Contact your sales representative.
System Rear FAN2 Lower Non-Critical		
System Rear FAN3 Lower Non-Critical		
System Rear FAN4 Lower Non-Critical		
System Rear FAN5 Lower Non-Critical		
System Rear FAN6 Lower Non-Critical		
System Rear FAN7 Lower Non-Critical		
System Rear FAN8 Lower Non-Critical		
System Front FAN1 Lower Non-Critical		
System Front FAN2 Lower Non-Critical		
System Front FAN3 Lower Non-Critical		
System Front FAN4 Lower Non-Critical		
System Front FAN5 Lower Non-Critical		
System Front FAN6 Lower Non-Critical		
System Front FAN7 Lower Non-Critical		
System Front FAN8 Lower Non-Critical		

*1 An optional HDD cage is installed.

2. List of Windows Event Logs

OS

Event Log

ID	Source	Type	Message (Description)
	Timing when an event is logged		Action

All Windows OS

System Event Log

11	megasas2	Error	The driver detected a controller error on \Device\RaidPort(x).
	When starting system		<p>If the below value is 50 in Details of the event log, this event does not affect system operation.</p> <p><Word style></p> <p>0000: 0018000F 00000001 00000000 C004000B</p> <p>0008: 00000050 00000000 00000000 00000000</p> <p>0010: 00000000 00000000 00000000 00000000</p> <p>0018: 00FFFFFF C004000B 00000000 00000000</p>
51	Cdrom	Warning	Error detected on the device \Device\CdRom0 during the paging operation.
	When installing an OS		This event may be registered in the event viewer, but this does not affect system operation.
129	megasas2	Warning	Reset command is issued to device \Device\RaidPort(x). (Any number replaces x)
	While the system is running		This event does not affect system operation If this message is logged because OS has succeeded retry process.
129	Megasr1	Warning	A Reset command is issued to device \Device\RaidPort0.
	During Consistency Check		This event does not affect system operation If this message is logged because OS has succeeded retry process.

Windows Server 2012 R2

System Log

2	ipoib6x	Error	Failed to initialize Mellanox ConnectX IPoIB Adapter.
	At the time of applying Starter Pack		<p>This event is logged in the system when InfiniBand Adapter is connected.</p> <p>This event does not affect the system operation if the following event is recorded after this event.</p> <p>Source : ipoib6x</p> <p>ID : 1</p> <p>Message : Mellanox ConnectX-3 IPoIB Adapter device has been successfully initialized and enabled.</p>

4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
4	l2nd	Warning	Broadcom BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
11	Megasas	Error	The driver detected a controller error on \Device\RaidPort(x).
	When applying Starter Pack		This event does not affect system operation if it is logged when applying Starter Pack.
24	mlx4_bus	Warning	<p>MLX4_SF_32_0_0:</p> <p>Problem - The port was configured to use auto sensing for deciding the port type. Port * failed to detect the port type automatically.</p> <p>Impact - As a result the port is being started as an IB port (unless the port is ETH only). This may cause a connection problem if the other side is an ETH port.</p> <p>Reason and suggestion to fix - This problem may happen since the computer is connected back to back or the cable is unplugged.</p> <p>To solve this issue connect the port to a switch or define the port type explicitly (IB or ETH) instead of auto.</p> <p>* There may be cases that the above message is somewhat different.</p>
	At the time of system start-up		<p>This event is logged in the system when InfiniBand Adapter is connected.</p> <p>This event will be recorded when the type of port could not be recognized automatically such as InfiniBand cable is not connected.</p>
27	ixgbi	Warning	Intel(R) Ethernet Controller X540-AT2 #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
27	ixgbt	Warning	Intel(R) Ethernet Controller X540-AT2 #xx Network link is disconnected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
46	volmgr	Error	Crash dump initialization failed!
	When installing an OS		Go to the following Microsoft website for details. http://support.microsoft.com/kb/2756313
134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of a DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter.
	When installing an OS, starting system, or applying Starter Pack		If it is not registered after connecting to the Internet, there is no problem with system operation.

153	disk	Warning	<p>The I/O operation at the logical block address for disk was retried.</p> <ul style="list-style-type: none"> The on-screen indication may differ depending on system environment. The character string of this event may not be displayed correctly, however, it does not affect the system operation.
	When creating logical drive by Universal RAID Utility		<p>If this event is logged when creating a logical drive by Universal RAID Utility, there is no problem in system operation.</p> <p>The character string of the event will be correctly displayed by applying the Microsoft's update program on the following site: http://support.microsoft.com/kb/2925479</p>
1500	SNMP	Error	<p>The SNMP Service encountered an error while accessing the registry key SYSTEM\CurrentControlSet\Services\SNMP\Parameters\TrapConfiguration.</p>
	When installing an OS		<p>If this event is logged only when SNMP is enabled and does not occur repeatedly, there is no problem with system operation.</p> <p>Go to the following Microsoft website for details. http://support.microsoft.com/kb/2002303/</p>
7023	Service Control Manager	Error	<p>The Network List Service terminated with the following error: The device is not ready.</p>
	When installing an OS		<p>If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.</p>
7023	Service Control Manager	Error	<p>The IP Helper service terminated with the following error: The service cannot be started, either because it is disabled or because there are no enabled devices associated with it.</p>
	When installing an OS		<p>If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.</p>
7023	Service Control Manager	Error	<p>The WMI Performance Adapter service terminated with the following error: The error cannot be identified.</p>
	When starting an OS or shutting down an OS		<p>Ignore this error because there is no impact on the system.</p>
7030	Service Control Manager	Error	<p>Printer Extensions and Notifications service is marked as interactive service. However, the system is not allowed to use interactive service. Thus, this service might not work correctly.</p>
	When installing an OS		<p>If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.</p>
10149	Microsoft-Windows-WinRM	Warning	<p>The WinRM service is not listening for WS-Management requests.</p>
	When installing an OS		<p>If this event is logged together with ID 7036 "Service Control Manager (Windows Remote Management (WS-Management) service has stopped.), there is no problem in system operation.</p> <p>Also, if WinRM event 10148 (WinRM service is listening WS-Management requests.) is output immediately after this event, there is no problem in system operation.</p>

Application Event Log

24	Microsoft-Windows-WMI	Error	Event provider MLNXProvider attempted to register query "select * from MLNX_NetAdapterStatusEvent" whose target class "MLNX_NetAdapterStatusEvent" in //./root/standardcimv2/mlnx namespace does not exist. The query will be ignored. * There may be cases that the above message is somewhat different.
	At the time of applying Starter Pack		This event is logged in the system when InfiniBand Adapter is connected. This event does not affect the system operation.
1014	Microsoft-Windows-Security-SPP	Error	Failed to obtain end-user license. hr=0x80072EE7
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1015	Microsoft-Windows-Security-SPP	Warning	Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1058	Microsoft-Windows-Security-SPP	Error	Failed to obtain certificate of purchase from ACPI table. Error code: 0xC004F057
	When installing an OS		This event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: Error code: hr=0xC004F063
	When installing an OS		Unless this event is not logged after license authentication, there is no problem in system operation.
8200	Microsoft-Windows-Security-SPP	Error	Detailed information about failure of license authentication hr=0x80072EE7
	When installing an OS		Unless this event is not logged repeatedly after license authentication, there is no problem in system operation.

Applications and Services Logs

200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update Services could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.

215	Microsoft-Windows-AppReadiness	Error	'ART:ResolveStoreCategories' of Administrator failed. Error: 'Class not registered' (0.0469065 sec.)
	When installing an OS		If this event is logged only at the first sign-in after OS installation and does not occur repeatedly, there is no problem in system operation.

Windows Server 2012

System Log

4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
4	l2nd	Warning	Broadcom BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
24	mlx4_bus	Warning	<p>MLX4_SF_32_0_0:</p> <p>Problem - The port was configured to use auto sensing for deciding the port type. The port * failed to detect the port type automatically.</p> <p>Impact - As a result the port is started as IB port (unless the port is ETH only). This may cause a connection problem if the other side is ETH port.</p> <p>Reason and suggestion to fix - This problem may happen since the computer is connected back to back or the cable is unplugged.</p> <p>For solving this issue connect the port to a switch or define the port type explicitly (IB or ETH) instead of auto.</p> <p>* There may be cases that the above message is somewhat different.</p>
	At the time of system start-up		<p>This event is logged in the system when InfiniBand Adapter is connected.</p> <p>This event will be recorded when the type of port could not be recognized automatically such as InfiniBand cable is not connected.</p>
27	ixgbi	Warning	Intel(R) Ethernet Controller 10 Gigabit X540-AT2 #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
27	ixgbt	Warning	Intel(R) Ethernet Controller X540-AT2 #xx Network link is disconnected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
46	volmgr	Error	Crash dump initialization failed!
	When installing an OS		Go to the following Microsoft website for details. http://support.microsoft.com/kb/2756313
134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of a DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. The error was: No such host is known. (0x80072AF9)
	When installing an OS, booting the system, or applying Starter Pack		If it is not registered after connecting to the Internet, there is no problem with system operation.

153	disk	Warning	The IO operation at the logical block address for disk was retried. * The on-screen message depends on your environment.
	When creating logical drive by Universal RAID Utility		If this event is logged when creating a logical drive by Universal RAID Utility, there is no problem in system operation.
7023	Service Control Manager	Error	The Network List Service terminated with the following error: The device is not ready.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
7023	Service Control Manager	Error	The IP Helper service terminated with the following error: The service cannot be started, either because it is disabled or because there are no enabled devices associated with it.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
7023	Service Control Manager	Error	The WMI Performance Adapter service terminated with the following error: The error cannot be identified.
	When starting an OS or shutting down an OS		Ignore this error because there is no impact on the system.
10010	Microsoft-Windows-DistributedCOM	Error	The server {xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx} did not register with DCOM within the required timeout.
	When installing an OS		Go to the following Microsoft website for details. http://support.microsoft.com/kb/956479/
10149	Microsoft-Windows-WinRM	Warning	The WinRM service is not listening for WS-Management requests.
	When installing an OS		If this event is logged together with ID 7036 "Service Control Manager (Windows Remote Management (WS-Management) service has stopped.), there is no problem in system operation. Also, if WinRM event 10148 (WinRM service is listening WS-Management requests.) is output immediately after this event, there is no problem in system operation.

Application Event Log

1015	Microsoft-Windows-Security-SPP	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		Unless the application event is registered after license authentication, this event does not affect system operation.
1530	Microsoft-Windows-User Profiles Service	Warning	Windows detected your registry file is still in use by other applications or services. The file will be unloaded now. The applications or services that hold your registry file may not function properly afterwards.
	Applying Starter Pack		If there is no such influence cannot sign in Windows, does not affect the system operation.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: hr=0x80070057
	When installing an OS, running an OS for the first time		Unless the application event is registered after license authentication, this event does not affect system operation. Go to the following Microsoft website for details. http://support.microsoft.com/kb/921471/en-us

Applications and Services Logs

104	Microsoft-Windows-DeviceSetupManager	Error	The DSM service failed to start. Result=0x800706B5
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update service could not be established.
	When running the system		If it is not registered after the Internet connection is established, there is no problem with system operation.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running the system		If it is not registered after the Internet connection is established, there is no problem with system operation.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running the system		If it is not registered after the Internet connection is established, there is no problem with system operation.
1001	Microsoft-Windows-Dhcp-Client	Error	Your computer could not assign an address from the network (by the DHCP Server) for the Network Card with network address <MAC address>. The following error occurred: 0x79. Your computer will continue to try and obtain an address on its own from the network address (DHCP) server.
	When installing an OS, applying Starter Pack		If this event does not occur repeatedly, there is no problem with system operation.
12520	Microsoft-Windows-Hyper-V-VMMS	Warning	Auto-generating a self-signed certificate for server authentication.
	When running the system		This event is logged when activating Windows Server 2012 Hyper-V, but this event does not affect system operation.
14100	Microsoft-Windows-Hyper-V-VMMS	Warning	Shut down physical computer. Stopping/saving all virtual machines...
	When running the system		This event is logged when activating Windows Server 2012 Hyper-V, but this event does not affect system operation.
15350	Microsoft-Windows-Hyper-V-VMMS	Error	VID (Virtual Infrastructure Driver) is not running.
	When running the system		This event is logged at shutdown of Windows Server 2012 with Hyper-V enabled. However, this event does not affect system operation.

Windows Server 2008 R2

System Event Log

1	iScsiPrt	Error	Initiator failed to connect to the target. Target IP address and TCP Port number are given in dump data.
	When Windows Server 2008 R2 is operating while iSCSI is recognized		Go to the following Microsoft website for details. http://support.microsoft.com/kb/976072/en-us
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
11	Disk	Error	The driver detected a controller error on Device\HarddiskX\DRX. Note: A different number replaces <i>x</i> depending on the connection status of the disk.
	Upon connecting with a USB device, remote media, and/or Virtual Flash USB Device		When the below values are 00 in Details in the event logs → Display , this event does not affect system operation. <Word style> 0000: 0068030E 00000001 00000000 C004000B 0008: 00000103 00000000 00000000 002D0800 0010: 00000000 00000000 000427B7 00000000 0018: FFFFFFFF 00000006 00000040 00000000 0020: 12060000 10000008 00000000 0000003C 0028: 00000000 86BAA280 00000000 86BDB008 0030: 00000000 00000000 00000000 00000000 0038: 00000000 00000000 00000000 00000000 0040: 00000000 00000000 00000000 00000000 0048: 00000000 00000000 00000000 00000000 0050: 00000000 00000000 <Byte style> 0000: 0E 03 68 00 01 00 00 00 . .h. 0008: 00 00 00 00 0B 00 04 C0A 0010: 03 01 00 00 00 00 00 00 0018: 00 00 00 00 00 08 2D 00-. 0020: 00 00 00 00 00 00 00 00 0028: B7 27 04 00 00 00 00 00 • ' 0030: FF FF FF FF 06 00 00 00 yyyy 0038: 40 00 00 00 00 00 00 00 @ 0040: 00 00 06 12 08 00 00 10 0048: 00 00 00 00 3C 00 00 00< 0050: 00 00 00 00 80 A2 BA 86?Ço? 0058: 00 00 00 00 08 B0 BD 86°?? 0060: 00 00 00 00 00 00 00 00 0068: 00 00 00 00 00 00 00 00 0070: 00 00 00 00 00 00 00 00 0078: 00 00 00 00 00 00 00 00 0080: 00 00 00 00 00 00 00 00 0088: 00 00 00 00 00 00 00 00
11	iANSMiniport	Warning	Adapter link down: Intel(R) ~
	When starting system		This event is logged at system startup if a team is configured with Intel(R) PROSet, however, there is no problem in system operation.

13	iANSMiniport	Warning	Intel(R) ~ has been deactivated from the team.
	When starting system		This event is logged at system startup if a team is configured with Intel(R) PROSet, however, there is no problem in system operation.
16	iANSMiniport	Warning	Team #0: The last adapter has lost link. Network connection has been lost.
	When starting system		This event is logged at system startup if a team is configured with Intel(R) PROSet, however, there is no problem in system operation.
22	iANSMiniport	Warning	Primary Adapter does not sense the following Probes: Intel(R) ~ Possible reason: partitioned Team.
	When starting system		This event is logged at system startup if a team is configured with Intel(R) PROSet, however, there is no problem in system operation.
27	elrepress	Warning	Intel(R) Ethernet Server Adapter I340-T2 #xx Network link is disconnected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on '. NtpClient will try again in 3473457 minutes and double the reattempt interval thereafter.
	When installing an OS		This event does not affect system operation.
1004	IPMIDRV	Warning	The IPMI device driver attempted to communicate with the IPMI BMC device during normal operation. However the communication failed due to a timeout. You can increase the timeouts associated with the IPMI device driver.
	When running the system		The above event log may be recorded. Usually, however, IPMI command retry processing is performed, so there is no operation problem.
7023	Service Control Manager	Error	The WMI Performance Adapter service terminated with the following error: The error cannot be identified.
	When starting an OS or shutting down an OS		Ignore this error because there is no impact on the system.

Application Event Log

63	Microsoft-Windows-WMI	Warning	A provider, BnxWmiProvider, has been registered in the Windows Management Instrumentation namespace root\brcmbnxns to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.
	Upon applying Starter Pack		This event does not affect system operation.
63	Microsoft-Windows-WMI	Warning	A provider, BnxWmiProvider, has been registered in the Windows Management Instrumentation namespace root\interop to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.
	Upon applying Starter Pack		This event does not affect system operation.

63	Microsoft-Windows-WMI	Warning	A provider, QLGWmiProvider, has been registered in the Windows Management Instrumentation namespace root\qlgcnxns to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.
	Upon applying Starter Pack		This event does not affect system operation.
63	Microsoft-Windows-WMI	Warning	A provider, QLGWmiProvider, has been registered in the Windows Management Instrumentation namespace root\interop to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.
	Upon applying Starter Pack		This event does not affect system operation.
1015	Microsoft-Windows-Security-SPP	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		Unless the application event is registered after license authentication, this event does not affect system operation.
1020	ASP.NET 4.0.30319.0	Warning	Updating the IIS metabase has been stopped due to a factor such as the IIS has not been installed or the IIS is disabled on this computer. To configure ASP.NET by running IIS, install or enable IIS, and then register the ASP.NET again by using aspnet_regiis.exe /i.
	When installing .NET Framework 4.0		This event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed.
	When installing an OS		This event does not affect system operation.
8193	VSS	Error	Volume Shadow Copy Service error: Unexpected error calling routine IOCTL_DISK_GET_DRIVE_LAYOUT_EX(\\?\mpio#disk&ven_nec&prod_istorage_2000&rev_2800#1&7f6ac24&0&3030303030303933313030303735373030323934#{ GUID }) - BuildLunInfoForDrive. hr = 0x80070013, This media is write-protected.
	When you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003016/en-us
12289	VSS	Error	Unexpected error DeviceIoControl(\\?\storage#volume#_??_mpio#disk&ven_nec&prod_istorage_1000&rev_1000#1&7f6ac24&0&3030303030303031303030303032383030304636#{ GUID })#0000000000007 e00#{ GUID }-000000000000002B8, x00560000,0000000000000000,0,00000000004866D0,4096,[0]). hr = 0x80070013, This media is read-only volume.
	When you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003016/en-us

12289	VSS	Error	Volume shadow copy service error: unexpected error DeviceIoControl (\\?\fdcc#generic_floppy_drive#6&6a032c4&0 &0 #{ GUID }-000000000000002B0,0x00560000, 0000000000000000,0,00000000001EC0E0,4096,[0]). hr = 0x80070001, function is incorrect.
	When you import a transportable shadow-copy to another server that has a floppy disk drive while operating Windows Server 2008 R2:		Go to the following Microsoft website for details: http://support.microsoft.com/kb/2003968/en-us

Applications and Services Logs

Microsoft-Windows-Kernel-EventTracing/Admin			
2	Microsoft-Windows-Kernel-EventTracing	Error	Session "" failed to start with the following error: 0xC000000D
	When running an OS for the first time		This event does not affect system operation.
3	Microsoft-Windows-Kernel-EventTracing	Error	Session "Microsoft-Windows-Setup" stopped due to the following error: 0xC000000D
	When running an OS for the first time		This event does not affect system operation.
Microsoft-Windows-Dhcp-Client/Admin			
1001	Microsoft-Windows-Dhcp-Client	Error	Your computer could not assign an address from the network (by the DHCP Server) for the Network Card with network address <MAC address>. The following error occurred: 0x79. Your computer will continue to try and obtain an address on its own from the network address (DHCP) server.
	When installing an OS, running an OS for the first time, or applying Starter Pack		If this event is logged when installing an OS, running an OS for the first time, or while applying Starter Pack, it does not affect system operation.
Microsoft-Windows-Hyper-V-VMMS-Admin			
12520	Microsoft-Windows-Hyper-V-VMMS	Warning	Auto-generating a self-signed certificate for server authentication.
	When running the system		This event is logged when activating Windows Server 2008 R2 Hyper-V, but this event does not affect system operation.
14098	Microsoft-Windows-Hyper-V-VMMS	Error	'Hypervisor' driver required by the Virtual Machine Management service is not installed or is disabled. Check your settings or try reinstalling the Hyper-V role.
	When running the system		This event is logged when activating Windows Server 2008 R2 Hyper-V, but this event does not affect system operation.
14100	Microsoft-Windows-Hyper-V-VMMS	Warning	Shut down physical computer. Stopping/saving all virtual machines...
	When running the system		This event is logged when activating Windows Server 2008 R2 Hyper-V, but this event does not affect system operation.

3. Accessing Data for Electric Power, Temperature, and Processor Utilization

This section describes how to access data related to input power consumption in watts, intake temperature, and all logical processor utilizations in the Express Server during usual operation in accordance with ENERGY STAR® Program Requirements.

3.1 Windows

The sample program below is verified to be run normally on Windows Server 2008.

3.1.1 Power consumption

Execute the following commands to access power consumption readings on Baseboard Management Controller (BMC) by using Intelligent Platform Management Interface (IPMI).

Network Function Code: 2Ch (Group Extension)

Command Code: 02h (Get Power Reading)

Request Data : 000001DCh

Below is the sample file created by using Visual Basic Script (named as Power.vbs).

```
' Start Script
Option Explicit

' Prepare for IPMI Driver
Dim osv, oclass
Dim oinstance, oipmi
set osv = getobject("winmgmts:root\wmi")
set oclass = osv.get("microsoft_ipmi")
for each oinstance in osv.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

'Format the IPMI command request
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
oinparams.networkfunction = &h2c
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h02
oinparams.requestdata = array (&hdc, &h01, &h00, &h00)
oinparams.requestdatasize = 4

'call the driver
Dim outparams
set outparams = oipmi.execmethod_("requestresponse",oinparams)

WScript.Echo " Completion Code = 0x" & hex(outparams.Completioncode)
If outparams.Completioncode <> 0 Then
    WScript.Echo " Not supported"
Else
    'WScript.Echo " Data LS Byte   = 0x" & hex(outparams.ResponseData(2))
    'WScript.Echo " Data MS Byte   = 0x" & hex(outparams.ResponseData(3))
    WScript.Echo " Power Consumption = " & outparams.ResponseData(3)*256 + _
        outparams.ResponseData(2) & " watts"
End If
' End Script
' Start Script
```

- Execution example

```
C:\VBS> cscript //nologo Power.vbs
```


- Execution result
Completion Code = 0x0
Power Consumption = 306 watts

The power consumption is 306 watts.

Tips

Power consumption readings may not be acquired depending on the power supply configuration of the server.
The completion code in such cases is 0xC1 or 0xCB.

3.1.2 Intake air temperature

Execute the following standard commands that conform to IPMI to search Sensor Data Record (SDR) for the temperature sensor and obtain intake air temperature data.

- Get SDR Repository Info
- Reserve SDR Repository
- Get SDR
- Get Sensor Reading

Below is the sample file created by using Visual Basic Script (named as Sensor.vbs),

```
'Start Script
Option Explicit

' Prepare for MS IPMI Driver
Dim osv, oclass
Dim oinstance, oipmi
set osv = getobject("winmgmts:root\Wmi")
set oclass = osv.get("microsoft_ipmi")
for each oinstance in osv.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

' (Get SDR Repository Info)
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
' (Get SDR Repository Info)
oinparams.networkfunction = &h1
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h20
oinparams.requestdatasize = 0
' Fire IPMI Command
Dim outparams
Dim i, RecordCount
set outparams = oipmi.execmethod_("requestresponse",oinparams)
RecordCount = outparams.ResponseData(3)*256 + outparams.ResponseData(2)

' (Reserve SDR Repository)
oinparams.networkfunction = &h1
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h22
oinparams.requestdatasize = 0
Dim Reserve_LS, Reserve_MS
set outparams = oipmi.execmethod_("requestresponse",oinparams)
Reserve_LS = outparams.ResponseData(1)
Reserve_MS = outparams.ResponseData(2)

' (Get SDR) for each record
Dim Record_LS,Record_MS, Offset, Length
Dim cnt, sensorNum, sensorType
' First Record
Record_LS = 0
Record_MS = 0
For cnt = 0 to RecordCount-1
    Offset = 0
    Length = 9
    oinparams.networkfunction = &h1
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(Reserve_LS, Reserve_MS, Record_LS, Record_MS, Offset, Length)
    oinparams.requestdatasize = 6
    set outparams = oipmi.execmethod_("requestresponse",oinparams)
```

```

If outparams.Completioncode = 0 Then
    If outparams.ResponseData(6) = 1 Then ' Full Sensor Record
        call GetSensorType(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorType)
        If sensorType = 1 Then ' Temperature
            WScript.Echo "===== "
            call GetIDString(Reserve_LS, Reserve_MS, Record_LS, Record_MS)
            WScript.Echo " Sensor Type = Temperature"
            sensorNum = outparams.ResponseData(10)
            call GetSensor(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorNum)
        End If
    End If
    Record_LS = outparams.ResponseData(1)
    Record_MS = outparams.ResponseData(2)
    If Record_LS = &hff And Record_MS = &hff Then
        exit For
    End If
End If
Next

Sub GetSensorType(rv_ls, rv_ms, rc_ls, rc_ms, sensorType)
    Dim outtmp
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 12, 2)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse", oinparams)
    sensorType = outtmp.ResponseData(3)
End Sub

Sub GetSensor(rv_ls, rv_ms, rc_ls, rc_ms, sensorNum)
    Dim outtmp, units1, units2, sorttype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 20, 14)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse", oinparams)

    units1 = outtmp.ResponseData(3)
    Select Case outtmp.ResponseData(4)
        case 0: units2 = "unspecified"
        case 1: units2 = "degrees C"
        case 6: units2 = "Watts"
        case else: units2 = "Refer to IPMI Specification: Type=0x" & _
            & hex(outtmp.ResponseData(4))
    End Select

    ' (Get Sensor Reading)
    Dim sensorData, rawData, currentValue
    oinparams.networkfunction = &h4
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h2d
    oinparams.requestdata = array(sensorNum)
    oinparams.requestdatasize = 1
    set sensorData = oipmi.execmethod_("requestresponse", oinparams)
    If sensorData.Completioncode <> 0 Then
        WScript.Echo " Sensor Not Available"
        exit Sub
    End If
    rawData = sensorData.ResponseData(1)
    If units1 and &h40 Then
        If rawData And &h80 Then
            rawData = rawData Xor &hff
        End If
    ElseIf units1 and &h80 Then
        call get2complement(rawData, rawData, 8)
    End If
    If (sensorData.ResponseData(2) And &h80) = 0 Or _
        (sensorData.ResponseData(2) And &h40) = 0 Or _
        (sensorData.ResponseData(2) And &h20) Then
        WScript.Echo " Event Status: Unavailable"
    Else
        WScript.Echo " Event Status: ok"
        Dim M, B, k1, k2
        Dim ret
        M = (outtmp.ResponseData(8) And &hc0) * 4 + outtmp.ResponseData(7)
        B = (outtmp.ResponseData(10) And &hc0) * 4 + outtmp.ResponseData(9)
        call get2complement(M, M, 10)
        call get2complement(B, B, 10)
        call get2complement(outtmp.ResponseData(12) And &h0f, k1, 4)
        call get2complement((outtmp.ResponseData(12) And &hf0)/16, k2, 4)
        currentValue = CDbl (((M * rawData) + (B * (10 ^ k1))) * (10 ^ k2))
        WScript.Echo " Current Value = " & currentValue & " " & units2
    End If
End Sub

```

```

Sub get2complement(raw, rv, bit)
    Select Case bit
        case 4:
            If raw And &h8 Then
                rv = 0 - ((&h10 - raw) and &h0f)
            Else
                rv = raw
            End If
        case 8:
            If raw And &h80 Then
                rv = 0 - ((&h100 - raw) and &h0ff)
            Else
                rv = raw
            End If
        case 10:
            If raw And &h200 Then
                rv = 0 - ((&h400 - raw) and &h3ff)
            Else
                rv = raw
            End If
    End Select
End Sub

Sub GetIDString(rv_ls, rv_ms, rc_ls, rc_ms)
    Dim tmpMessage
    Dim outsdridstringtype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 47, 1)
    oinparams.requestdatasize = 6
    set outsdridstringtype = oipmi.execmethod_("requestresponse",oinparams)

    Dim outsdridstring
    Dim idlength, j
    idlength = outsdridstringtype.ResponseData(3) and 31
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 48, idlength)
    oinparams.requestdatasize = 6
    set outsdridstring = oipmi.execmethod_("requestresponse",oinparams)
    tmpMessage = " ID String = "
    For j = 3 to idlength + 2
        tmpMessage = tmpMessage & Chr(outsdridstring.ResponseData(j))
    Next
    WScript.Echo tmpMessage
End Sub
'End Script

```

- Execution example

```
C:\VBS> cscript //nologo Sensor.vbs
```

- Execution result

```

=====
ID String = Baseboard Temp4
Sensor Type = Temperature
Current Value = 45 degrees C
=====
ID String = FntPnl Amb Temp
Sensor Type = Temperature
Current Value = 27 degrees C
=====
ID String = CPU1_DIMM1 Temp
Sensor Type = Temperature
Current Value = 35 degrees C
=====
ID String = CPU1_DIMM2 Temp
Sensor Type = Temperature
Event Status: Unavailable
=====

```

Intake air temperature data is obtained from the sensor with an ID string that contains any of the following: Amb, Ambient, Or Front Panel.

In the case of the sample above, the data is obtained from a sensor that contains FntPnl Amb Temp in its ID, with a resulting intake air temperature of 27°C.

3.1.3 Processor utilization

The utilization rate of all logical processors is given by executing the Win32_PerfFormattedData_PerfOS_Processor class that Windows OS provides. Below is the sample file created by using Visual Basic Script (named as Proc.vbs). This script outputs the processor utilization rate every 30 seconds.

```
' Start Script
strComputer = "."
Set objWMIService = GetObject("winmgmts:" _
    & "{impersonationLevel=impersonate}!\\\\" & strComputer & "\root\cimv2")
set objRefresher = CreateObject("WbemScripting.Swbemrefresher")
Set objProcessor = objRefresher.AddEnum _
    (objWMIService, "Win32_PerfFormattedData_PerfOS_Processor").objectSet
objRefresher.Refresh
Dim first
first = true
Do
    For each intProcessorUse in objProcessor
        If first Then
            If intProcessorUse.Name = "_Total" Then
                first = false
            End If
        else
            Wscript.Echo "Proc" & intProcessorUse.Name & " : " & _
                "PercentProcessorTime=" & _
                intProcessorUse.PercentProcessorTime
        End If
    Next
    Wscript.Sleep 30*1000 'sleep 30 * 1000ms
    objRefresher.Refresh
Loop
' End Script
```

- Execution example

```
C:\VBS> cscript //nologo Proc.vbs
```

- Execution result

```
Proc0 : PercentProcessorTime=0
Proc1 : PercentProcessorTime=0
Proc2 : PercentProcessorTime=0
Proc3 : PercentProcessorTime=0
Proc4 : PercentProcessorTime=76
Proc5 : PercentProcessorTime=0
Proc6 : PercentProcessorTime=0
Proc7 : PercentProcessorTime=0
Proc_Total : PercentProcessorTime=9
```

Proc 0 to Proc 7 show the utilization rate of each processor while Proc_Total shows the total processor utilization rate.

4. Glossary

Terms	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <F2> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
BMC RESET Switch	A switch for resetting the BMC of the server. This resets the BMC without clearing the BMC settings. Use the switch if the problem on the BMC occurs.
DUMP Switch	A switch that is used for collecting the memory dump if an error occurs. You can specify the destination of the dump by using the OS function.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
EXPRESSSCOPE ENGINE 3	A name of BMC for NEC Express5800 series.
EXPRESSSCOPE Profile Key	A removable flash memory that stored the settings of BIOS and BMC. If the motherboard of the server is replaced, you can use former settings when moving this flash memory from the former motherboard.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (MG)	Software that can report the server failure to the contact center by E-mail, modem or HTTPS without NEC ESMPRO ServerAgentService. This software is installed with NEC ESMPRO Manager to "PC for Management".
ExpressUpdate	A feature for updating BIOS, firmware, driver, or software of the server. This feature is available when NEC ESMPRO Manager cooperates with EXPRESSSCOPE ENGINE 3 and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
Internal Flash Memory	A built-in flash memory that stored EXPRESSBUILDER as standard. You can start EXPRESSBUILDER from it without DVD when pressing <F3> key during POST.
NEC ESMPRO	Standard software for the server management. This consists of several applications for managing or monitoring.
NEC ESMPRO Agent Extension	Software for performing the scheduled operations. This works with NEC ESMPRO Manager.
NEC ESMPRO Manager	Software for managing plural servers on network.
NEC ESMPRO ServerAgentService	Software for monitoring the server. This works with NEC ESMPRO Manager. You can choose Service Mode or Non-Service Mode when installing this software. Service Mode resides as the OS service and Non-Service Mode does not use the OS service to reduce memory, CPU power and other OS resources.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can confirm or change SEL, SDR, FRU, and other IPMI data. You can start Offline tools when pressing <F4> key during POST.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses or event logs. You can easily collect the data for the server maintenance by using this software.
RAID Configuration Utility	Software for configuring RAID arrays. You can run this software during POST.
Server Configuration Utility	Software for setting BIOS or BMC. You can use as Windows application or run this software when pressing <F4> key during POST. This software is the same as BMC Configuration of former models.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
TPM Kit	An optional product of Trusted Platform Module for the server.
Universal RAID Utility	Software for setting RAID arrays on Windows/Linux. This software is operated on "PC for Management" with NEC ESMPRO Manager.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when setting Windows with EXPRESSBUILDER.

5. Revision Record

Document Number	Date Issued	Description
10.115.01-104.01	April 2016	Newly created

[MEMO]

NEC Express Server
Express5800/R120g-2E, T120g
Maintenance Guide

April 2016

NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan

©NEC Corporation 2016

The contents of this manual may not be copied or altered without the prior written permission of NEC Corporation.