Express5800

NEC

NEC Express Server
Express5800 Series

Express5800/T110f-S, R110f-1E, T110f-E
EXP283A/284A/285A/287A/288A

Maintenance Guide

Chapter 1   Maintenance

Chapter 2   Useful Features

Chapter 3   Appendix

Documents for This Product

Documents for this product are provided as booklets (📖) or as electronic manuals (📄)
in the EXPRESSBUILDER disc (💿).

📖 Precautions for Use	Describes points of caution to ensure the safe use of this server. **<u>Read these cautions before using this server.</u>**
📖 Getting Started	Describes how to use this server, from unpacking to operations. See this guide at first and confirm an 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 proper 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 important information for installation
Chapter 2: Installing the Bundled Software	Installation of bundled software, such as NEC ESMPRO and Universal RAID Utility

📄 Maintenance Guide

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

📄 Other documents

Provides the details of NEC ESMPRO, Universal RAID Utility, and the other features.

Contents

Notations Used in This Document

Notations used in the text

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

Important	Indicates critical items that must be followed when handling the hardware or operating software. If the procedures described are not followed, **hardware failure, data loss, and other serious malfunctions could occur**.
Note	Indicates items that must be confirmed when handling the 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 document.

- **DVD-ROM drive**
- **DVD Super MULTI drive**

Hard disk drive

Unless otherwise stated, *hard disk drive* (HDD) described in this document refers to the following.

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

Removable media

Unless otherwise stated, *removable media* described in this document refers to 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	Widnows Server 2012 Standard
	Widnows Server 2012 Datacenter
	Windows Server 2012 Foundation
Windows Server 2008 R2	Windows Server 2008 R2 Standard
	Windows Server 2008 R2 Enterprise
Windows Server 2008 *	Windows Server 2008 Standard
	Windows Server 2008 Enterprise

*   Includes 64-bit and 32-bit Editions unless otherwise stated.

The following appears on EXPRESSBUILDER.

- Windows Server 2008 64-bit Edition: Windows Server 2008 x64
- Windows Server 2008 32-bit Edition: Windows Server 2008 x86

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Class A Emission Compliance Statement/ Avis de conformité à la réglementation d'Industrie Canada:

CAN ICES-3(A)/NMB-3(A)

CE / Australia and New Zealand Statement

This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (EN55022).

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警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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In the European Union
EU-wide legislation as implemented in each Member State requires that used electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes Information and Communication Technology (ICT) equipment or electrical accessories, such as cables or DVDs.
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If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority and ask for the correct method of disposal.

Turkish RoHS information relevant for Turkish market

EEE Yönetmeliğine Uygundur

CCC声明

声　明
此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	×	○	○	○	○	○
HDD、DVD等	×	○	○	○	○	○
机箱、支架	○	○	○	○	○	○
电源	×	○	○	○	○	○
键盘	×	○	○	○	○	○
其他（电缆、鼠标等）	×	○	○	○	○	○
○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。						
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。						

Vietnam RoHS information relevant for Vietnam market

Complying with "CIRCULAR, No.30/2011/TT-BCT (Hanoi, August 10 2011), Temporary regulations on content limit for certain hazardous substances in electrical products"

廢電池請回收

警告：
如果更換錯誤池會產生爆炸請以相同或同型電池更換使用

Declaration of Conformity
with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in Electrical and Electronic Equipment
(adopted by Order №1057 of Cabinet of Ministers of Ukraine)

The Product is in conformity with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment (TR on RoHS).

The content of hazardous substance with the exemption of the applications listed in the Annex №2 of TR on RoHS:

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2. Cadmium (Cd) – not over 0,01wt % or 100wt ppm;
3. Mercury (Hg) – not over 0,1wt % or 1000wt ppm;
4. Hexavalent chromium (Cr6+) – not over 0,1wt % or 1000wt ppm;
5. Polybrominated biphenyls (PBBs) – not over 0,1wt % or 1000wt ppm;
6. Polybrominated diphenyl ethers (PBDEs) – not over 0,1wt % or 1000wt ppm.

Декларація про Відповідність
Вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в електричному та електронному обладнанні
(затвердженого Постановою №1057 Кабінету Міністрів України)

Виріб відповідає   вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в електричному та електронному обладнанні *(ТР ОВНР)*.

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2. кадмій (Cd) – не перевищує 0,01 % ваги речовини або в концентрації до 100 частин на мільйон;
3. ртуть(Hg) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
4. шестивалентний хром (Cr6+) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
5. полібромбіфеноли (PBB) – не перевищує 0,1% ваги речовини або в концентрації до 1000 частин на мільйон;
6. полібромдефенілові ефіри (PBDE) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон.

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Требованиям Технического Регламента об Ограничении Использования некоторых Вредных Веществ в электрическом и электронном оборудовании
(утверждённого Постановлением №1057 Кабинета Министров Украины)

Изделие   соответствует   требованиям   Технического   Регламента   об   Ограничении Использования
*некоторых Вредных Веществ в электрическом и электронном оборудовании (*ТР ОИВВ).

Содержание вредных веществ в случаях, не предусмотренных Дополнением №2 ТР ОИВВ:

1. свинец (Pb) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
2. кадмий (Cd) – не превышает 0,01 % веса вещества или в концентрации до 100 миллионных частей;
3. ртуть (Hg) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
4. шестивалентный хром (Cr6+)– не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
5. полибромбифенолы (PBB) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
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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 the actual values.**

Keep this document for future reference.

Latest editions

This document was created based on the information available at the time of its creation. The screen images, messages and procedures **may differ from the actual screens, messages and procedures.** Substitute as appropriate when content has been modified.

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

http://www.nec.com/

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NEC Express5800 Series
Express5800/T110f-S, R110f-1E, T110f-E

Maintenance

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

1. Transfer, Movement, and Disposal
Describes how to transfer and move this server to a third party. Also describes how to dispose and store this server.

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

3. User Support
Describes various services on this product. Services are offered from NEC and the maintenance service companies authorized by NEC.

4. Collecting Failure Information
Describes how to collect information about the location where a failure occurred and its cause when 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 when you suspect a failure.

6. Windows System Recovery
Describes Windows recovery setup. See this section when the Windows is corrupt.

7. Resetting and Clearing the Server
Describes how to reset or clear the server. See this section when the server is not working or when you wish to restore the settings made in BIOS to the factory settings.

8. System Diagnostics
Describes system diagnostics of this server and checking connection status check.

9. Offline Tools
Describes tools for preventive maintenance of this product.

1. Transfer, Movement, and Disposal

1.1 Transfer to a Third Party

Note the following precautions when you transfer (or sell) the server to a third party.

- **Server**

  When transferring (or selling) the server to a third party, be sure to provide this manual (including electronic data) to the third party.

- **Data on the hard disk drive**

  Be sure to erase hard disk drive data to prevent the leakage of sensitive data (such as customer information or company management information) to any third parties.

Important	**NEC assumes no liability for data leakage.**

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

- **Bundled software**

  Note the following precautions when transferring (selling) the provided software to a third party.

  - Transfer them with the server.
  - All provided media and documents must be transferred and no backup copies must be retained.
  - Transfer requirements listed in "Software License Agreement" that comes with each software must be satisfied.
  - Software on client PC must be uninstalled before transferring.

1.2   Disposal of the Server and Consumables

- Dispose of the server, hard disk drives, DVD/CD-ROMs, option board, and battery according to laws and regulations of the central and/or local government. Also dispose of the power cord attached to this product together with the server to prevent diversion to other products.

Note	• For disposal (or replacement) of the battery on the mother board of the server, consult with your sales representative. • It is your responsibility to completely erase all data stored on storage devices such as hard disk drives, backup data cartridges, or any other media (such as CD-R/CD-RW) so that the data cannot be restored by a third party.

- Some components including fans, built-in batteries, and the optical disk drive work for a limited period of time and require replacement. For stable operation of the server, NEC recommends you regularly replace these components. Contact your sales representative for information on replacement or the lifetime of components.

1.3   Regarding the Transportation of This Server

This server and/or some of the associated optional devices uses lithium metal batteries or lithium ion batteries. **Regulations for air/ocean transportation apply when transporting lithium batteries.** Conform to the regulations if you want to transport this server or optional devices by air or ship.

1.4   Moving and Storage

Follow the steps below when you move or store this server.

⚠ **WARNING**
Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*". • **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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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 a built-in hard disk drive, 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 media 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 the server is suddenly moved from a cold place to a warm place, condensation will occur and cause failures. 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.
- If the system clock time is significantly delayed or advanced over time in spite of adjustment, contact your sales representative.

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

ExpressUpdate is contained in EXPRESSBUILDER provided with 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   **Status Indicator LEDs**

After powering on the server or before shutting down the system and powering off the server, check the status indicator LEDs on the front of the server. For the functions and descriptions of LEDs, see *Chapter 1 (5. Names and Functions of Parts)* in "*User's Guide*". If the indicator shows the server abnormality, contact your salses 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 rebuilt required due to HDD failure. For information about RAID configuration data backup, see *Chapter 2 (6. Details of EXPRESSBUILDER).*

2.5   **Cleaning**

Regularly clean the server to keep it in good condition.

⚠ **WARNING**
Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*". • **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 procedure below if stains remain on the surfaces.

Important	• **Do not use volatile solvents such as thinner and benzene to clean the server. Those solvents could damage or tarnish the material.** • **The power outlet, cables, connectors on 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 manual 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 the 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 correctly, 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   **When the system restarts after a failure has occurred, a message may appear indicating virtual memory shortage. Ignore this message and proceed with starting the system. Restarting the system may result in an inability to properly dump the data.**

4.1 **Collecting Event Logs**

To collect various event logs, follow the steps below.

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

4.1.1 **Windows Server 2012**

1. Click **Settings** on the charm bar.

   To go to step 5, you can directly choose **Event Viewer** on the menu that appears when you right click on the lower left corner of the screen.
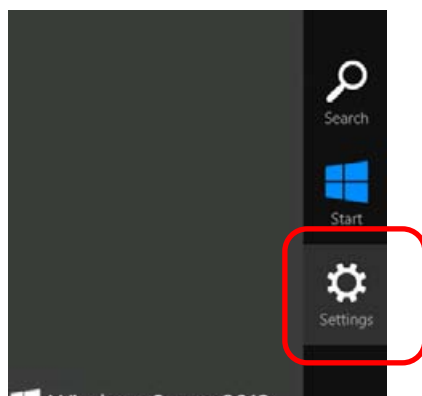
[Settings]   [Event Viewer]
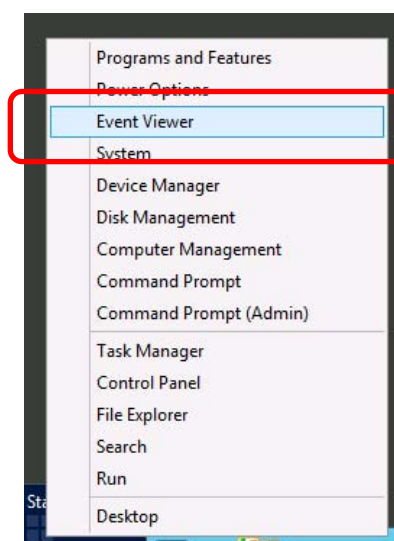
2.   Click **Control Panel** from **Settings**.
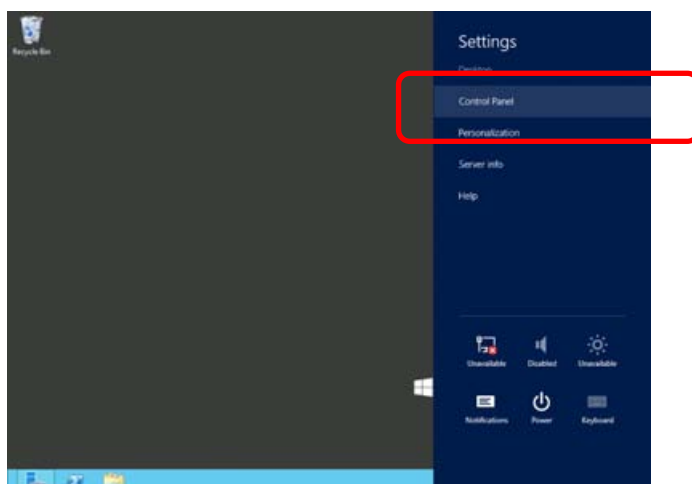
3.   Click **System and Security** of **Control Panel**.
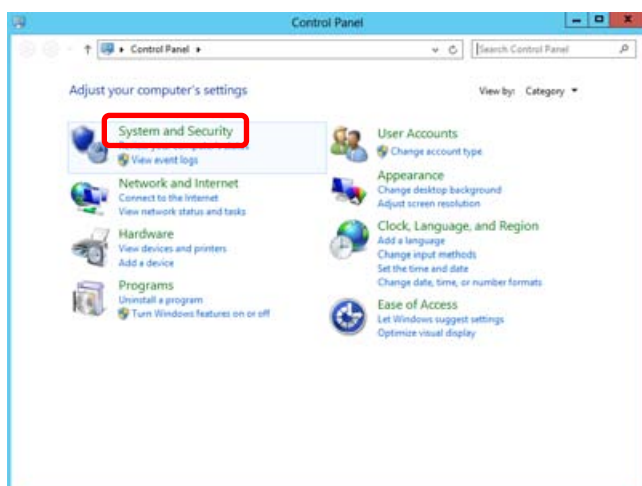
4.   Click **Administrative Tools** and then click **View event logs** of **System and Security**.
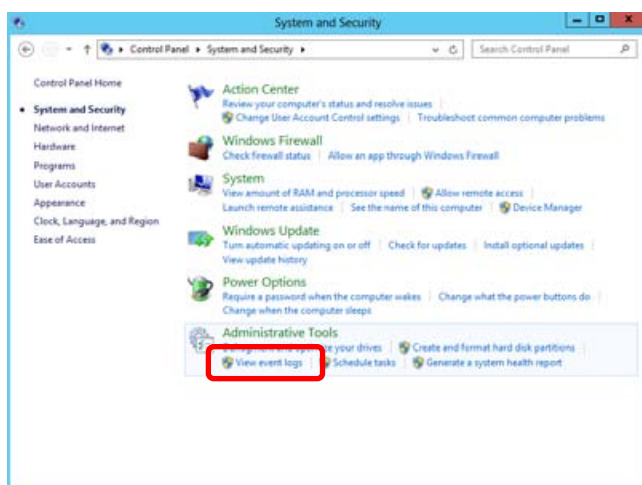
5.   Select the type of log in **Windows Logs**.
      Application records events related to running applications.
      Security records events related to security.
      System records events that occur in Windows system components.
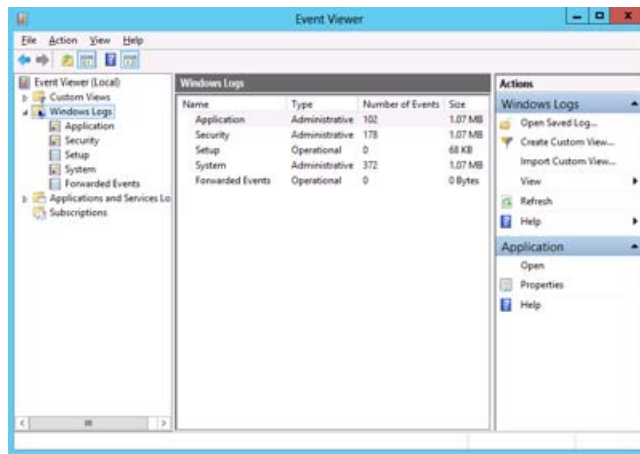
6.   Click **Save All Events As...** from **Action** menu.
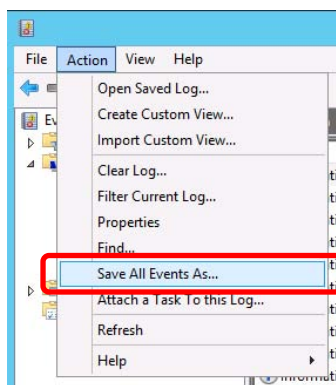
7.   Type the file name of the archived log in **File name**.

8.   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 / Windows Server 2008

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 archived log 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

1. Click **Search** on the charm bar.

    You can use **Run** feature by right-clicking on the lower left corner of the screen.
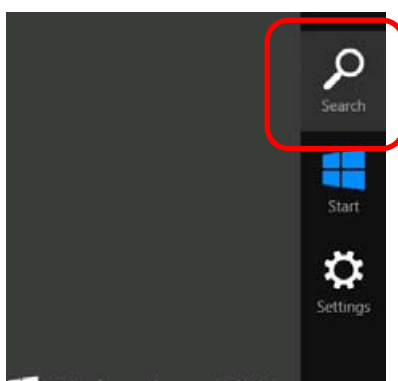
    [Search]   [Run]
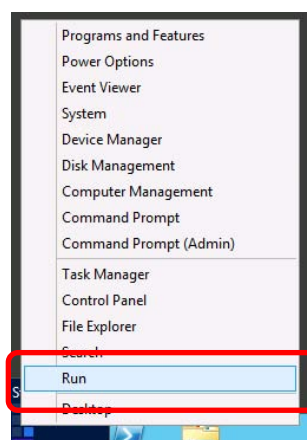
2. Type `msinfo32.exe` in the text box, and then press <Enter> key.
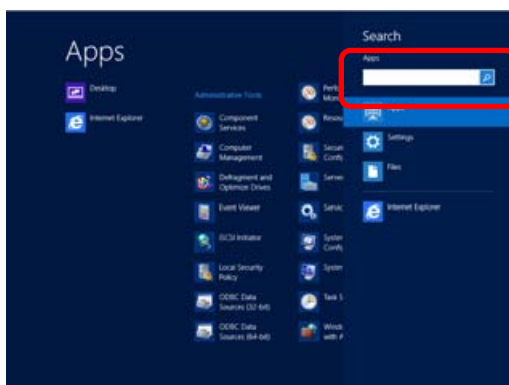
    [Search]   [Run]
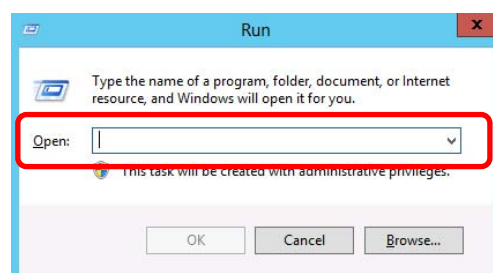
3. **System Information** starts.

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 is created to acquire necessary information. You can specify any location for saving it. 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. **Do not dump the memory while the server is in normal state.**

Important	**A message indicating insufficient virtual memory may appear when restarting the system due to an error. Ignore this message and proceed. Restarting the system may result in an inability to properly dump the data.**

5.   Troubleshooting

If the server does not work correctly, check it according to the contents of the following checklist before sending it for repair.

If the server still does not work correctly, write down the error messages displayed on the screen and then contact your sales representative.

5.1   Problem of Powering on

[?]   **When the power cable is connected, the POWER LED turns on.**

→   POWER LED lights amber during initialization of the server after connecting the power cord.

POWER LED turns off when initialization finishes.

[?]   **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 POWER Switch?

→   Wait until POWER LED is unlit if POWER LED lights amber, and then press the switch on the front of the server to turn on the power.

☐   Is Standby Power Save set to **Enabled** in the BIOS setup?

→   When Standby Power Save is enabled, remote power on is not allowed, and you can power on the server only by using POWER Switch on the server. If you change the AC Link setting while Standby Power Save is enabled, you need to press the switch twice to start up the server.

[?]   **POST does not complete**

  □   Is memory installed correctly?

   →   Check if memory is installed correctly.

  □   Is the memory size large?

   →   The memory check may take longer than usual if the installed memory size is large. Wait for a while.

  □   Did you perform any keyboard or mouse operation immediately after you started the server?

   →   If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops processing. In such a case, reboot the server. Do not perform any keyboard or mouse operation until the BIOS start-up message appears after you reboot the server.

  □   Are memory and PCI devices supported for use with this server?

   →   Operation of the server with unauthorized devices is not guaranteed.

[?]   **The POST error message "B000: Expansion ROM not initialized" is output when an optional card is installed.**

  □   Check if expanding the option ROM of a device other than the boot device is enabled.

  Start the BIOS setup utility and set expansion of the option ROM of a device other than the boot device to **Disabled**.

  Advanced → PCI Configuration → PCI Slot n Option ROM → Enabled

  Advanced → PCI Configuration → LAN1 Option ROM Scan → Disabled

5.2   Problem of Starting EXPRESSBUILDER

[?]   **Unable to start EXPRESSBUILDER**

☐   Did you insert EXPRESSBUILDER disc before starting the server?
→   The server tries to read CD/DVD upon completion of POST. If EXPRESSBUILDER is not inserted at this timing, an error message may appar or the OS starts up. Restart the server and retry.

☐   Are BIOS settings correct?
→   BIOS Setup Utility allows you to configure the boot order of the devices. Configure the boot order so that the optical disk drive will be the first to start up.
(Check menu: **Boot**)

☐   Is a message such as the following displayed?
→   Take an appropriate action according to the table below.

Message	Solution
EXPRESSBUILDER does not support this computer. Insert EXPRESSBUILDER disc for the computer and click OK to restart the computer.	Run the correct version of EXPRESSBUILDER.
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.	EXPRESSBUILDER disc has stains or cracks or the optical disk drive is faulty. Contact your sales representative.
Failed to open a file.	
Failed to get the parameters of a file.	
Failed to save a file.	
Failed to copy a file.	
An undefined error occurred.	Contact your sales representative.

[?]   **Unable to start EXPRESSBUILDER from Internal Flash Memory**

☐   Did you press <F3> key to start EXPRESSBUILDER from Internal Flash Memory during POST?
→   When the following message appears on screen after starting, press <F3> to start EXPRESSBUILDER from Internal Flash Memory.
```
Press <F2> Setup, <F3> Internal Flash Memory, <F4> ROM Utility, <F12> Network
```

☐   Is there the message, "<F3> Internal Flash Memory", displayed on the POST screen?
→   If not, make sure that Internal Flash Memory is connected correctly. See *Chapter 2 (6. Details of EXPRESSBUILDER)*.

☐   Did you purchase Internal Flash Memory as BTO?
→   If not, copy EXPRESSBUILDER to Internal Flash Memory first. See *Chapter 2 (6. Details of EXPRESSBUILDER)*.

5.3　　**Problem of Installing OS**

[?]　**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.

　　☐　Did you configure the RAID Controller?

　　　→　For the RAID System, use EXPRESSBUILDER or a RAID Configuration Utility (LSI Software RAID Configuration Utility, WebBIOS) to properly configure the RAID Controller before installing OS.

　　☐　Did you create a Logical Drive?

　　　→　For the RAID System, create a Logical Drive using EXPRESSBUILDER, LSI Software RAID Configuration Utility, WebBIOS to install OS.

[?]　**Unable to install Windows**

　　☐　Have you checked precautions for installation?

　　　→　For installing OS, see "*Installation Guide (Windows)*".

[?]　**A product key was not requested**

　　　→　If you install using the backup DVD-ROM, entering the product key is not required. If installing using a DVD-ROM other than the backup DVD-ROM, a screen for entering the product key is displayed, during OS installation, and, before the MICROSOFT SOFTWARE LICENSE TERMS dialog box, which displays after OS installation. Follow the on-screen instructions to enter the product key.

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

　　•　SM Bus Controller

　　→　There is no operational problem.

[?]　**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 2012 is installed while several disks are connected, the system partition and the boot partition (350 MB) are sometimes created in another disk**

　　　→　For details, refer to the Microsoft website below:

　　　　http://support.microsoft.com/kb/2530901/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 sometimes 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 executed on Windows Server 2008 R2, the below message is sometimes displayed 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

[?]   **The system was installed as Workgroup although it is set to join the domain**

☐   Is the LAN cable properly connected?

→   If the LAN cable is not connected, the system is installed in workgroup setting, not in domain join setting.

After the OS is started, join the domain.

[?]   **The following features are installed when Windows Server 2008 R2/Windows Server 2008 IIS is installed 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:

How to install the Telnet Service

(1) Click **Run** on **Start** menu.

(2) Enter `tlntsvr/service` in the **Open** box, 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.
*   When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

[?]   **Fails to execute "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 via the following process.

(1) Select **Run** in **Windows Start** menu.

(2) Enter `%windir%\system32\mshta.exe/register`.

[?]   **The keyboard or mouse does not work**

→   When the keyboard or mouse is connected to the port that supports USB3.0 this error occurs. It is not a failure.

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 the OS, and you cannot proceed.**

> Load Driver
>
> A required CD/DVD drive device driver is missing. If you
> have a driver for floppy disk, CD, DVD, or USB flash
> drive, please insert it now.
>
> Note; If the Windows installation media is in the
> CD/DVD drive, you can safely remove it for this step.
>
> [Browse]   [OK]   [Cancel]
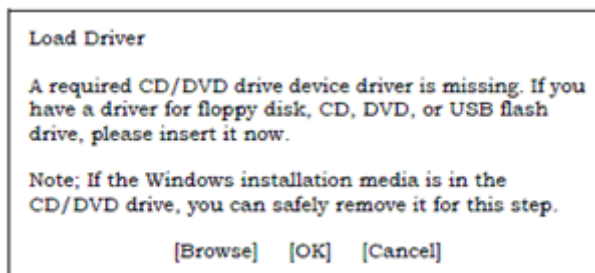
→   The USB optical disk drive in which EXPRESSBUILDER is inserted may be connected to a USB 3.0 port.
Connect the optical disk drive to a USB 2.0 port.
See *Chapter 1* (*4. Names and Functions of Parts*) in User's Guide.

→   To install the OEM drivers, copy the files of each Windows family to removable media.

5.4   Problem of Starting OS

[?]   **Unable to start OS**

☐   Has the BIOS configuration of the RAID Controller changed?

→   Set the correct BIOS configuration with a RAID Configuration Utility (LSI Software RAID Configuration Utility, WebBIOS).

☐   Is the RAID Controller recognized by POST?

→   Turn on the power after the RAID Controller is recognized as being connected successfully.

→   If the RAID Controller is not recognized as being connected successfully, the RAID Controller may be faulty. Contact the maintenance service company with which you signed up or the dealer where you purchased the product.

☐   Is RAID Controller inserted 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.
If the RAID Controller is not recognized as connected although the above action has been taken, the RAID Controller may be faulty. Contact the maintenance service company with which you signed up or the dealer where you purchased the product.

☐   Are Hard Disk Drives properly installed?

→   Install the RAID Controller properly.

☐   Is SAS cable connected to Hard Disk Drive correctly?

→   Connect the SAS cable properly.
If the SAS cable is not recognized as connected although the above action has been taken, the Hard Disk Drive may be faulty. Contact the maintenance company with which you signed up or the dealer where you purchased the product.

☐   Is the EXPRESSBUILDER DVD inserted?

→   Eject the EXPRESSBUILDER DVD and reboot.

☐   Is a cartridge inserted into built-in RDX (USB)?

→   Either remove the cartridge or change the boot order in BIOS Setup.

☐   Is Disk Array unit connected to the PCI card?

→   Change the boot device configuration from HDD Drive BBS Priorities of the BIOS Setup Boot menu.

[?]   **The following message appears when logging in the system on Windows Server 2008 R2 or Windows Server 2008:**
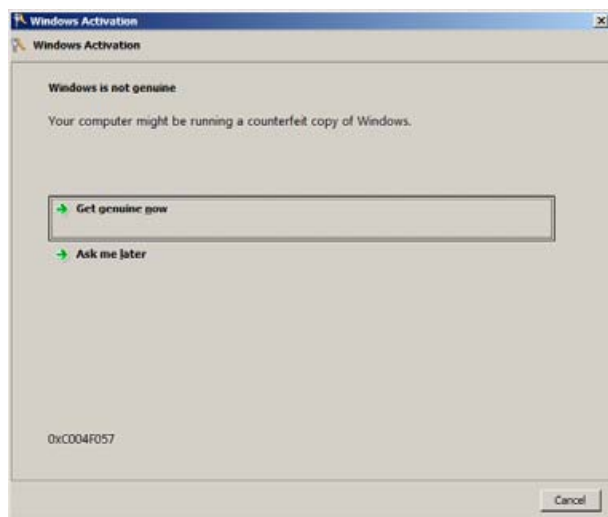
☐   Have you finished license authentication for Windows product?

→   The above message will appear if you use Windows Server 2008 R2 or Windows Server 2008 with the unauthenticated license.

Select [Get Genuine now] and proceed license authentication.

The above message is an example of request for license authentication. The message displayed on screen may differ from this depending on the license.

5.5   **Problem of Windows STOP Error**

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

→   If you want to turn off the power at the blue screen, execute forced shutdown (continue to press the power switch for 4 seconds). If you press the switch briefly instead of holding it, the server will not power off.

5.6　　Problem of Operating a RAID System

[?]　**Unable to rebuild Hard Disk Drive**

□　Is the capacity of the Hard Disk Drive to be rebuilt enough?
　→　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, recreate the configuration information, initialize it, and recover the drive using backup data.

[?]　**Fails to automatically rebuild the Hard Disk Drive**

□　Did you secure sufficient time for replacing the Hard Disk Drive (hot swap)?
　→　To make auto-rebuild work, secure at least 90 seconds from when a Hard Disk Drive is removed to when the drive is installed.

□　Are settings correct?
　→　Use the LSI Software RAID Configuration Utility to check the Auto Rebuild settings.
　　　TOPMENU → Objects → Adapter → Auto Rebuild
　　　* The Auto Rebuild settings are not available in WebBIOS.

[?]　**The Hard Disk Drive failed**

　→　Contact the maintenance service company with which you signed up or the dealer where you purchased the product.

[?]　**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 RAID0 configured for the Logical Drive?
　　　RAID0 has no data redundancy, and therefore, Consistency Check is disabled in the RAID0 configuration.

[?]　**A part of Physical Device information of Universal RAID Utility is not be displayed correctly**

　→　If LSI Embedded MegaRAID is used, a part of Physical Device information of Universal RAID Utility may not be displayed correctly.

[?]　**Cannot set Write-Back for Cache Mode**

　→　The current cache of RAID Controller is displayed on **Virtual Disks** – **Properties** – **Policies** – **Write.** If an extra battery is faulty, is not connected, or insufficiently charged, the Cache Mode is changed to **WThru (Write Through)** even if you specify **WBack (Write Back).**
　　　For the description of the Cache Mode, see *Chapter 2 (5. RAID System Configuration).*

[?]   **Event ID505: If the N8103-154/ 155/162 extra battery is mounted, the following message may be registered in the RAID log of Universal RAID Utility and OS logs (Windows event log, Linux syslog)**

```
Event source :  raidsrv

Event ID     :  505

Type         :  Warning

Description  :  <RU0505> [CTRL: Number of RAID Controller] Temperature of battery
                is high.
```

☐   If the above event is registered, check the Cache Mode (current value) of the RAID Controller with Universal RAID Utility.

→   If the Cache Mode (current value) is **Write Back**, use the battery as is because there is no problem.

→   If the Cache Mode (current value) is **Write Through**, the battery refresh operation causes the battery temperature to rise temporarily. This event temporarily stops the refresh operation, so the battery temperature drops and the refresh operation resumes. However, it may take time till the temperature drops. After the refresh operation is completed, the Cache Mode (current value) changes to **Write Back**. If the Cache Mode does not change to **Write Back** although 24 hours have elapsed, the battery may be faulty. Replace the battery.

[?]   **Event ID508: If the N8103-154/155/162 extra battery is mounted, the following message is registered in the RAID log of Universal RAID Utility and OS logs (Windows event log, Linux syslog)**

```
Event source :  raidsrv

Event ID     :  508 (800001FC)

Type         :  Warning

Description  :  <RU0508> [CTRL: Number of RAID Controller] The battery status is
                unstable.
```

☐   Did the battery become unstable immediately after the extra battery had been mounted?

→   Immediately after the extra battery is mounted, this event may be registered till the battery refresh operation is completed.

☐   If this message is registered, wait for about 15 minutes and check the Cache Mode (current value) of the RAID Controller. If the Cache Mode (current value) is **Write Back**, use the battery as is because there is no problem.

→   If the current cache mode is set to "Write Through", the battery needs to be refreshed. Contact your service representative.

If "Write Through" is retained for 9 hours or more after starting refresh operation, the battery may be faulty. Replace the battery.

[?]   **Event ID510: The following event is logged in RAID log of Universal RAID Utility and OS log (Windows event log or Linux syslog) when additionally battery is installed.**

```
Event source :  raidsrv

Event ID     :  510

Type         :  Info

Description  :  <RU0510> [CTRL: Number of RAID Controller]
                Battery Refresh required.
```

→   Use Universal RAID Utility to perform battery refresh manually. See *Universal RAID Utility User's Guide* stored in EXPRESSBUILDER for more information.

[?]   **DISK LED flashes**

☐   DISK LED flashes frequently even while the Hard Disk Drive is not accessed.

→   When Patrol Read is running, the DISK LED flashes even if the Hard Disk Drive is not being accessed. If SATA Hard Disk Drive is used, the DISK LED may stay on.

[?]   **When N8190-153/154 is used, the names of the Fibre Channel controllers may appear with different names on Device Manager**

☐   When N8190-153/154 is used in Windows Server 2012 or Windows Server 2008 R2 or Windows Server 2008, a different controller name may be displayed per controller in Device Manager. It is not a problem in operating the system.

To display correct controller name, run the following command stored in the EXPRESSBUILDER DVD and reboot the system.

Windows Server 2012:
Drive letter of optical disk:\001\win\winnt\ws2012\elxfc\friendlyname.exe

Windows Server 2008 R2:
Drive letter of optical disk:\001\win\winnt\ws2008x64\elxstor\friendlyname.exe

Windows Server 2008 32-bit Edition:
Drive letter of optical disk:\001\win\winnt\ws2008\elxstor\friendlyname.exe

[?]   **When N8103-152 is used, the name of the RAID controller is different between on the Device Manager of Windows and on WebBIOS/Universal RAID Utility.**

☐   When N8103-152 is used in Windows Server 2012, Windows Server 2008 R2, or Windows Server 2008, the name of the RAID controller is different between on the Device Manager of Windows and on WebBIOS/Universal RAID Utility. However, it is not a problem.

Device Manager
LSI MegaRAID SAS 9265CV-8i

WebBIOS/Universal RAID Utility
LSI MegaRAID SAS 9270CV-8i

5.7   Problem of Using Internal Devices and Other Hardware

[?]   **Fail to access the internal or external devices (or such devices fail to operate)**

☐   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?

→　Usually, no PCI device settings need to be changed. However, depending on the board to be set, special setting may be required. Refer to the manual that comes with the board for details to make correct settings.

→　Some devices connected to the serial or parallel port, or USB port may require I/O port address or operation mode settings. Refer to the manual that comes with the device to make correct settings.

[?]　**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?

→　You can use the BIOS setup utility to change the keyboard feature. Check the BIOS configuration with this 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. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to the manual to check that the keyboard and mouse settings are correct.

[?]　**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 guaranteed.

□　Is the Hard Disk Drive properly installed?

→　Check the Hard Disk Drive installation status and the cable connections.

[?]　**The numbers assigned to the Hard Disk Drive bays do not match the numbers indicated in the OS.**

□　Is the SATA drive connected in IDE mode?

→　In SATA IDE mode, the drive bays might be recognized in a different order from the physical connection, depending on the OS used.

　　Primary > Secondary

　　Master > Slave

Group1
　Port0 : Primary Master
　Port1 : Secondary Master
　Port2 : Primary Slave
　Port3 : Secondary Slave

Group2
　Port4 : Primary Master
　Port5 : Secondary Master
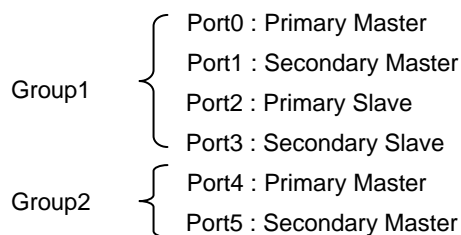
5.8   Problem of OS

[?]   **Windows operation is unstable**

☐   Have you installed the Starter Pack?

→   If the network driver is installed after OS is installed, Windows operation may become unstable. Install Starter Pack by following "*Installation Guide (Windows)*".

[?]   **After the system is restored from the backup tool, Windows is misbehaving**

→   Apply Starter Pack by using EXPRESSBUILDER (see *Chapter 2 Installing the Bundled Software* in "*Installation Guide (Windows)*".

[?]   **The system time lags**

→   In Windows Server 2008, if you do not use the server that adjusts time such as NTP (Network Time Protocol) Server, the system time may differ from actual time.
In this case, use NTP server or disable Windows Time Service.

[?]   **Fails to be recognized on 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?

→   You can disable the internal network controller using the BIOS setup utility. Check the settings with BIOS setup utility.

☐   Have you completed protocol and services settings?

→   Verity that the network driver for the server network controller has been installed. Also verify that protocol such as TCP/IP or various services have been properly specified.

☐   Are transfer rate settings correct?

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

[?]   **Communication performance of a network adapter is degraded**

→   NEC recommends that the value of Jumbo Packet be 4,000 bytes or less for N8104-128 if the settings of Flow Control are specified as other than **Disabled**.
For Standard network adapters or N8104-132/133/138, Jumbo Mtu (Jumbo Packet) value is only supported 4608 bytes or less.
If a value larger than the recommended value is specified for Jumbo Packet, the communication performance may be degraded.

[?]   **There are RX dropped packets (ifInDiscards) when the system is in operation on Linux and Windows**

→   Although there may be RX dropped packets when the LAN is received multicast frames, there is no operational problem.

5.9   Problem of Stating EXPRESSBUILDER on Windows

[?]   **Cannot read documents**

☐   Do you have Adobe Reader installed correctly in your system?

→   Some documents are supplied in PDF format. To read PDF files, Adobe Reader needs to be installed in your computer.

☐   Is your browser Internet Explorer?

→ Internet Explorer sometimes displays the Information bar to enforce security. Click the Information bar to display the documents.

→ When IE is halted displaying "Connecting...", click "Instruction Manual" on Autorun Menu again.

[?]   **The menu does not appear**

☐   Is the shift key pressed?

→   Setting the DVD/CD with the shift key pressed down cancels the Autorun feature.

☐   Is the OS in the proper state?

→   The menu may not appear depending on the system registry setting or the timing to set the DVD/CD. In such a case, select **My Computer** from Explorer and double-click the icon of the set DVD drive.

[?]   **The menu items started by Autorun are unavailable**

☐   Is your system environment correct?

→   Some software requires administrator privilege (built-in administrator) or needs to be operated on the server. Run on the appropriate environment.

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

5.10 Problem of Bundled Software

[?]   **The installer was 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).

[?]   **NEC ESMPRO Agent (for Windows)**

→   For details of NEC ESMPRO Agent (for Windows), see "NEC ESMPRO Agent Installation Guide (Windows)" in EXPRESSBUILDER or its help.

[?]   **NEC ESMPRO Manager**

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

5.11 Problem of Optical Disk Drive

[?]   **Unable to access or play a disc**

☐   Is the disc properly set in the optical disk drive tray?

→   There is a holder in the tray to secure the disc. Make sure that the disc 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 disc such as 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 disc using the eject button**

→   Eject the disc in the following procedure.

1.   Press POWER Switch to turn off the server (POWER 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 the eject hole at the front of the tray. Keep pressing slowly until the tray comes out.

Eject hole
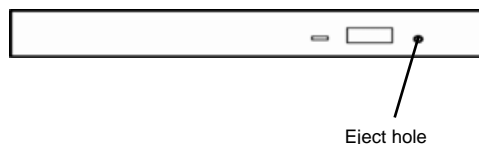
Important	• **Do not use anything that easily breaks such as toothpicks or plastic.**
	• **If you still cannot eject the disk, contact your sales representative.**

3.   Pull the tray out with your hands.

4.   Remove the disc.

5.   Push the tray back.

5.12 Problem of Powering Off

[?]   **The power is not turned off**

☐   Is the suppression feature of the power switch enabled?

→   Restart the system once and start the BIOS setup utility.

The menu to be confirmed: **Server → Power Switch Inhibit**

6.   Windows System Recovery

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

Note	• After recovering the system, be sure to install each driver and Starter Pack. See "*Installation Guide (Windows)*" to install Starter Pack and device drivers. • If hard disk drives cannot be detected, you cannot recover the Windows system. • Create the OEM drivers to removable media depending on the server configuration.

6.1   Recovery of Windows Server 2012

If the Windows does not start correctly, you can recover it 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.

To install the OEM drivers, copy the files under the following folder in EXPRESSBUILDER to removable media.

Windows Server 2012: `\001\win\winnt\oemfd\ws2012`

6.2   Recovery of Windows Server 2008 R2 and Windows Server 2008

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

To install the OEM drivers, copy the files under the following folder in EXPRESSBUILDER to removable media.

- **Windows Server 2008 R2:** `\001\win\winnt\oemfd\ws2008r2`
- **Windows Server 2008 32-bit Edition:** `\001\win\winnt\oemfd\ws2008`

7.   Resetting and Clearing the Server

Read this section when the server does not work or when you set BIOS settings back to the factory settings.

7.1   Software Reset

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

Note	Make sure that no processing is in progress when you reset the server.

7.2   BMC Reset

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

Do not press BMC RESET Switch in usual operation.

To reset the BMC, press BMC RESET Switch at least five seconds. Remote management feature is disabled for about 2 minutes after resetting.

Note	Do not shutdown the system, reboot the system, or perform any switch operation after pressing the BMC Reset switch for approximately 2 minutes.

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

<Express5800/T110f-S>

BMC RESET Switch

<Express5800/R110f-1E>

3.5-inch Hard Disk Drive model

BMC RESET Switch

2.5-inch Hard Disk Drive model

BMC RESET Switch

<Express5800/ T110f-E>

BMC RESET Switch
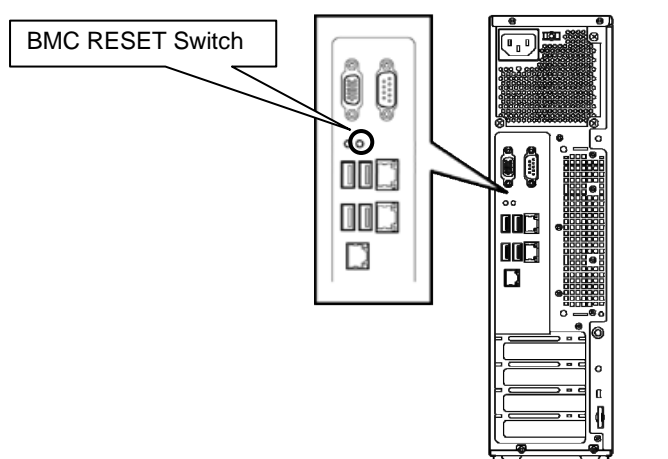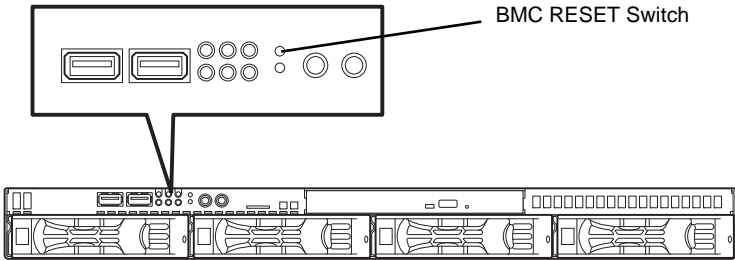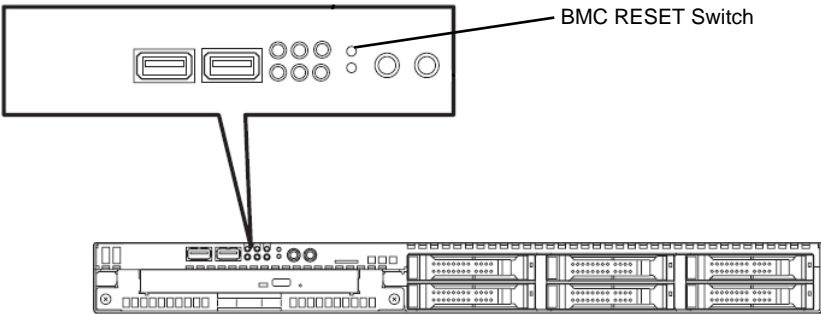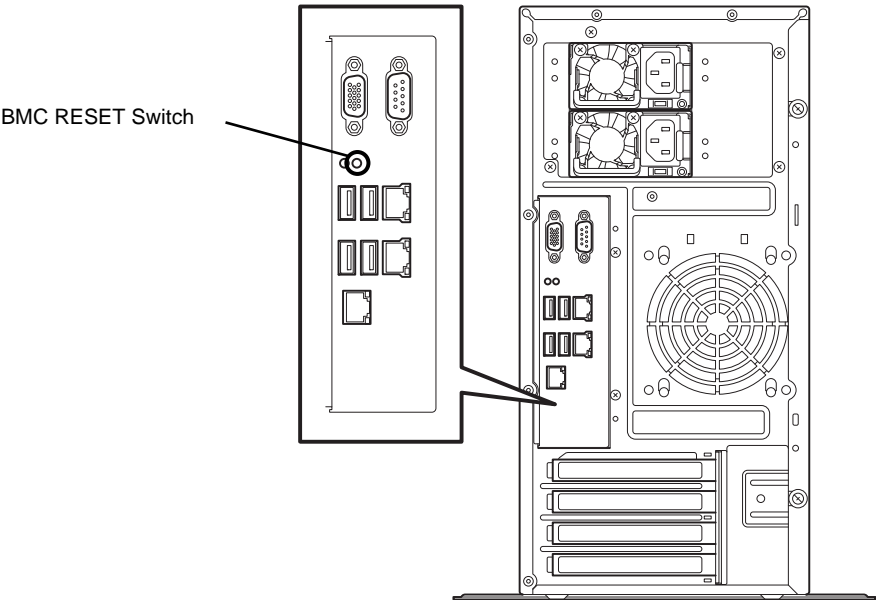
7.3   Forced Shutdown

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.
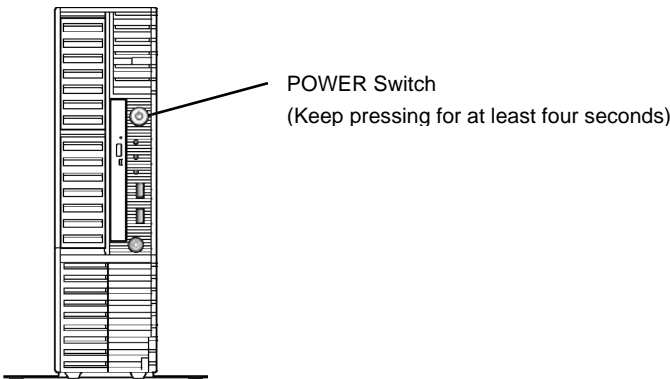
<Express5800/T110f-S>

POWER Switch
(Keep pressing for at least four seconds)

<Express5800/R110f-1E>

3.5-inch Hard Disk Drive model

POWER Switch
(Keep pressing for at least four seconds)

2.5-inch Hard Disk Drive model

POWER Switch
(Keep pressing for at least four seconds)

<Express5800/T110f-E>

POWER Switch

(Keep pressing for at least four seconds)
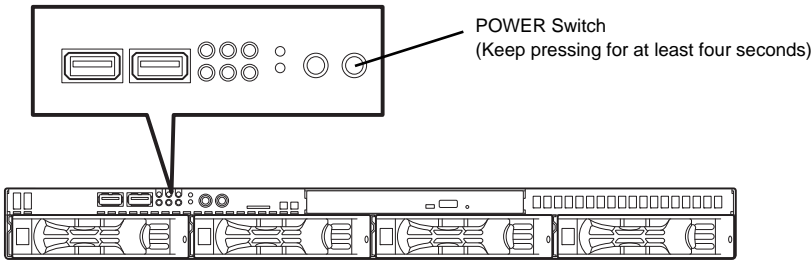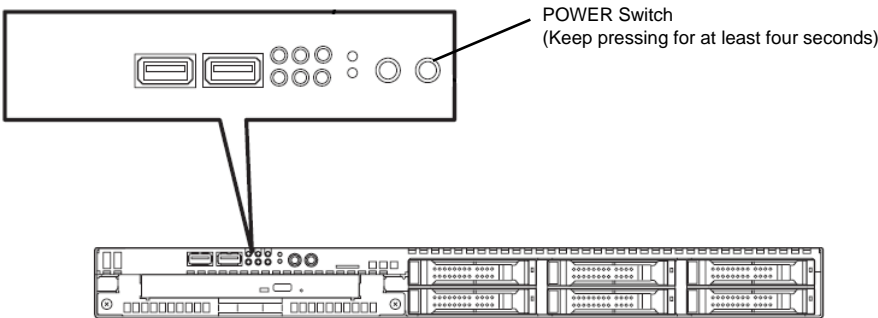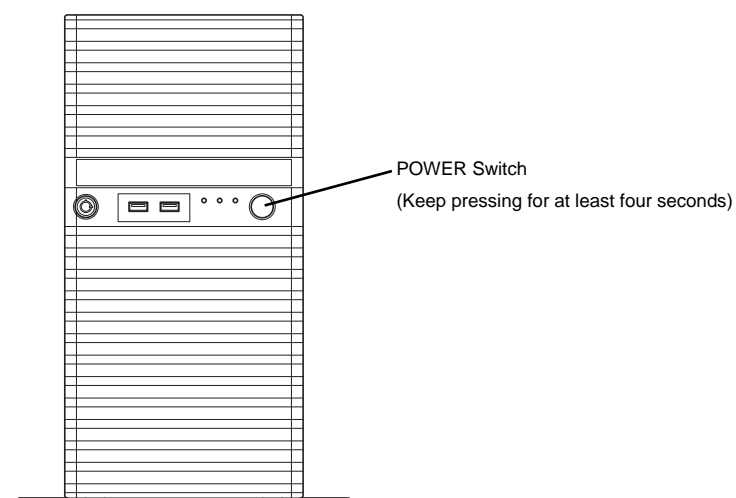
7.4   **Clearing BIOS Settings (CMOS Memory)**

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

You can also clear the password in BIOS Setup Utility (SETUP) by using the same procedure.

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

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

Important	**Do not change any other jumper switch settings. Any change may cause the server to fail or malfunction.**

Clear CMOS Jumper
(J_CLRCMOS)

3 2 1

Clear

Keep (factory setting)

Clear Password Jumper
(J_PASSWORD)

3 2 1

Clear

Keep (factory setting)
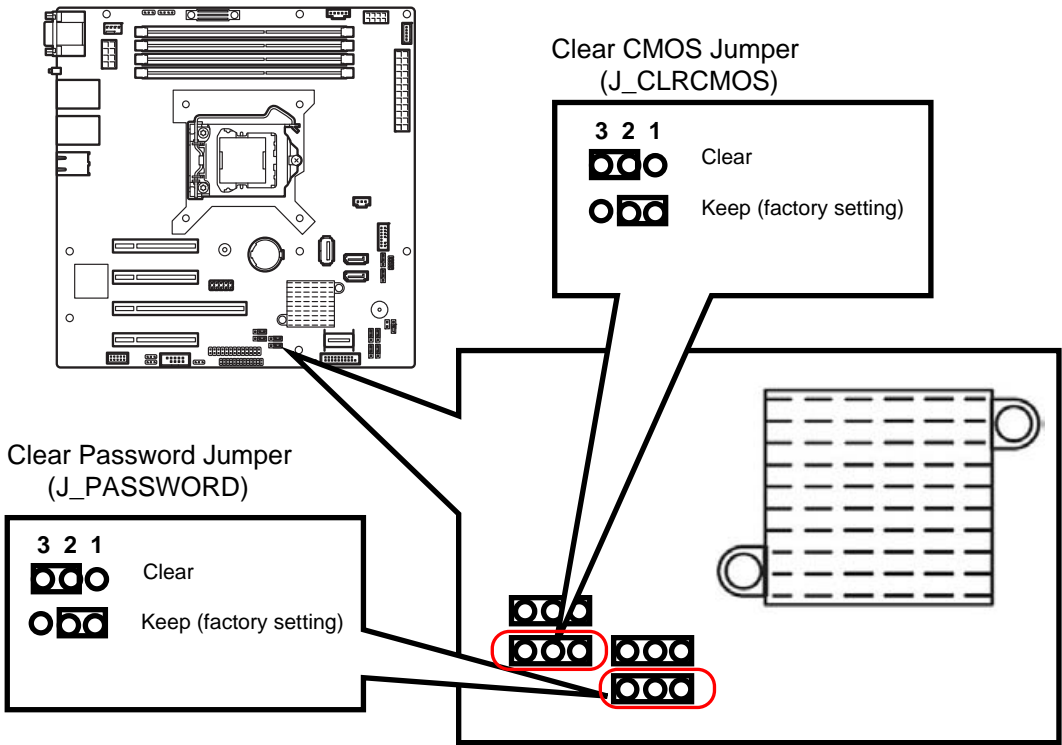
The following instructions show how to clear the CMOS memory and the password.

⚠ **WARNING**

Be sure to observe the following precautions to use the server safety. Failure to observe the precautions may cause death or serious injury. For details, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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, refer to *Safety precautions* in *Precautions for Use* in "*User's Guide*".

- **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 detailed information on static electricity, see *Chapter 2 (1.2 Anti-static Measures)* in "*User's Guide*".

- **Clearing CMOS memory**

  1. See "*Getting Started*" attached to this server or *Chapter 2 (1. Installing Internal Optional Devices)* in "*User's Guide*" to remove Top Cover.

  2. Confirm the position of Clear CMOS Jumper.

  3. Change the jumper from **Keep** to **Clear**.

  4. Wait at least five seconds and then return the jumper to **Keep.**

  5. Assemble the removed components.

  6. Plug in the power cord and turn on the server.

  7. POST halts with the following error massage.

     ```
     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. The server will restart once before the OS starts.

Tips	After this operation, system may restart once before the OS is started.

- **Clearing a password**

  1. See "*Getting Started*" attached to this server or *Chapter 2 (1. Installing Internal Optional Devices)* in "*User's Guide*" to remove Top Cover.

  2. Confirm the position of Clear Password Jumper.

  3. Change the jumper from **Keep** to **Clear**.

  4. Assemble the removed components and turn on the server.

  5. POST halts with the following error message
     ```
     ERROR
     8007: SETUP Menu Password cleared by Jumper.
     Press <F1> to resume, <F2> to Setup
     ```

  6. Turn off the power and return the jumper to **Keep** by following steps 1 and 2.

  7. Assemble the server again.

8.   System Diagnostics

System Diagnostics run several tests on the server.

8.1   Test Items

The following items are tested in System Diagnostics.

- Memory
- CPU cache memory
- Hard disk drive

Important	**Before executing the System Diagnostics, be sure to disconnect the LAN cable. Executing the System Diagnostics with the LAN cable connected may affect the network.**

Tips	On checking the hard disk drives, no data is written to the disk.

8.2   Startup and Exit of System Diagnostics

Start up System Diagnostics in the following procedure. (If the server is running, shutdown the system.)

1. Start up EXPRESSBUILDER and select **Tool menu** from Boot Menu.
    For information on starting up EXPRESSBUILDER, see *Chapter 2 (6. Details of EXPRESSBUILDER)*.

Note	In case **Language selection menu** appears, choose **English**. If "Hit key to continue. [y|Y]" is displayed in **Redirection mode**, press <y> key (or <Y> key).

2. Select **Test and diagnostics**.

3. Select **End-User Mode (Basic)** to start System Diagnostics. This process takes about three minutes.
    When the diagnostics is completed, the screen changes as shown below.
    See *eupro_ug_en.pdf* in the ¥isolinux¥diag folder of EXPRESSBUILDER for the **End-User Mode (Professional)** feature.

Diagnostics tool title

Test window title

Test results

Test summary window

Guideline

```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
                            Test End
 Start 10:06:58   End 10:09:58   Pass 000:03:00   TestTime 000:03:00
 Test End:  NormalEnd     03   AbnormalEnd   00   ForceEnd   00

  <System>
  MEM       Memory              16 count    NormalEnd
  CACHE     Cache               49 count    NormalEnd
  <SCSI>
  HDD_02:000  DK32DJ-36W         89 count    NormalEnd




[Enter] Detail Information    [ESC] Return to Enduser Menu
```

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

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

Test result
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.

When an error is detected by the 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 output to the Detail Information screen and contact the store where you purchased the product or your maintenance service company.

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

```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
                    — Enduser Menu —
                      <Test Result>
                      <Device List>
                      <Log Info>
                      <Option>
                      <Reboot>
Please choose a function by the arrow key and push Enter key.
```
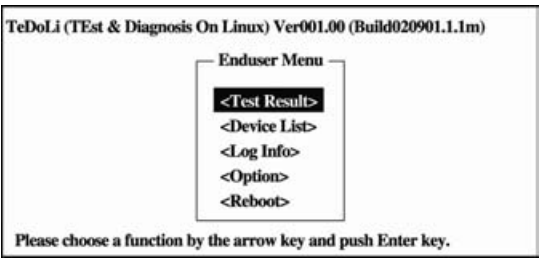
<Test Result>
Shows the diagnostics completion screen of the above diagnostics.

<Device List>
Shows a list of connected devices.

<Log Info>
Shows the log information of the diagnostics. Log information can be saved.
To save it, connect a FAT formatted removable media, and then select [Save(F)].

<Option>
Optional features can be used from this menu.

<Reboot>
Reboots the hardware.

5. Select **Reboot** in the **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 in the following steps.

1. Turn on the peripheral devices, such as display unit, and then 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 is displayed after choosing a keyboard type.

Off-line TOOL MENU
Maintenance Utility BMC Configuration BMC Configuration Initialization 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

The offline tools offer the following features.

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

- **Off-line Maintenance Utility**

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

| **Note** | The Off-line Maintenance Utility is intended for mainenance personnel. Consult with your service representative if a trouble that requires Off-line Maintenance Utility occurs. |

    After starting up the 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 output the information to a text file.

    − System Information Management

        Set the information specific to your server (Product information, Chassis information).

- **BMC Configuration**

    − It is used for setups of alert functions by Baseboard Management Controller (BMC) and remote control

        functions by PC for Management.

- **BMC Configuration Initialization**

    − All of BMC configuration parameters are restored to the default values.

9.3   Console-less Feature

The 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. Or, if Shared BMC LAN feature is used, connect the LAN cable to the corresponding LAN connector.

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

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/T110f-S, R110f-1E, T110f-E

2

Useful Features

This chapter describes useful features for using the server.

1. **System BIOS**

   Describes how to set the BIOS settings.

2. **BMC Configuration**

   The server has the following off-line tools.

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 attached to the server.

7. **EXPRESSSCOPE Engine 3**

   Describes EXPRESSSCOPE Engine 3.

8. **NEC ESMPRO**

   Describes NEC ESMPRO Agent and NEC ESMPRO Manager, applications to manage and monitor the server.

9. **NEC Product Info Collection Utility**

   Describes the NEC Product Info Collection Utility.

10. **Universal RAID Utility**

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

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

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

12. **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.

Press <F2> key while the following message is displayed.

```
Press <F2> SETUP, ...
```

1.2 **Parameters**

SETUP has the following menus.

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

These menus have several submenus for configuring.

1.2.1 **Main**

When you start SETUP, the **Main** menu appears first.
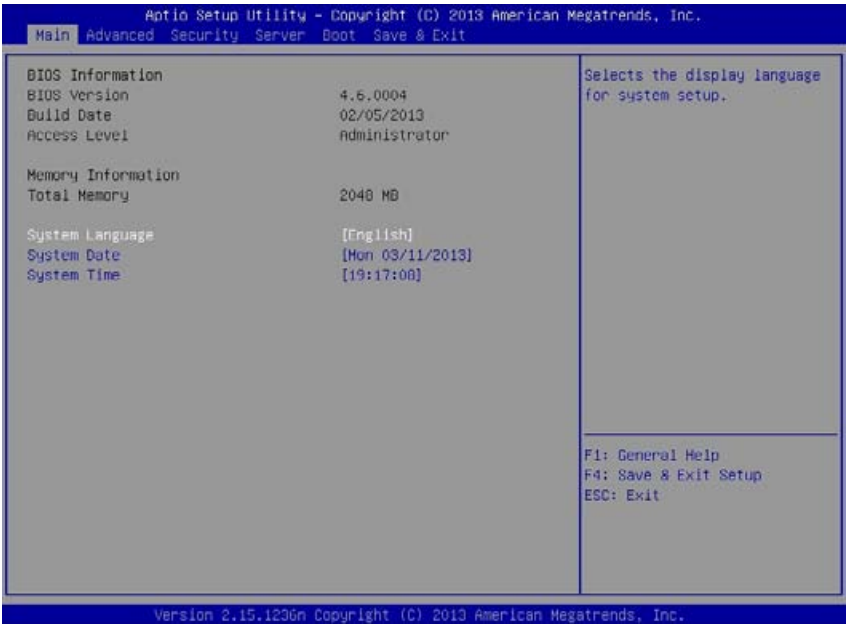
The table on the next page shows the items you can configure on the **Main** menu.

Option	Parameter	Description
BIOS Information	–	–
BIOS Version	(display only)	Displays the BIOS version.
Build Date	(display only)	Displays the BIOS build date.
Access Level	(display only)	Displays the access level of the login user, Administrator or User. If no password is specified, **Administrator** is displayed.
Memory Information	–	–
Total Memory	(display only)	Displays the basic memory capacity.
System Language	[English] Français Español Deutsch Italiano	Specifies the display language for the BIOS. If you run SETUP with **BIOS Redirection Port** enabled, **English** is automatically selected and you cannot change **System Language**. If **BIOS Redirection Port** is disabled, you can change **System Language**.
System Date	WWW MM/DD/YYYY	Sets the system date.
System Time	HH:MM:SS	Sets the system time

[   ]: Factory settings

Tips	Make sure that the date and time are correct. Using a time server (NTP server) is recommended.

1.2.2 Advanced

Advanced menu appears when the cursor is moved to **Advanced**.

For the menus that show a "▶" to their left, press <Enter> key to display its submenu, and then change the settings.

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
      Main  Advanced  Security  Server  Boot  Save & Exit

    ▶ Processor Configuration                              Processor Configuration
    ▶ Memory Configuration                                 parameters.
    ▶ PCI Configuration
    ▶ Advanced Chipset Configuration
    ▶ Storage Configuration
    ▶ USB Configuration
    ▶ Serial Port Configuration






                                                           F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit



            Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

(1) Processor Configuration submenu

On **Advanced**, choose **Processor Configuration** and then press <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 <Enter> key to show its submenus.

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
          Advanced

    ▶ Processor Information
    ▶ Processor Power Management

      DCU IP Prefetcher                  [Enabled]
      DCU Streamer Prefetcher            [Enabled]
      Hardware Prefetcher                [Enabled]
      Adjacent Cache Line Prefetch       [Enabled]

      Execute Disable Bit                [Enabled]
      VT-x                               [Enabled]
      Active Processor Cores             [All]
      Hyper-Threading                    [Enabled]






                                                           F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit


            Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
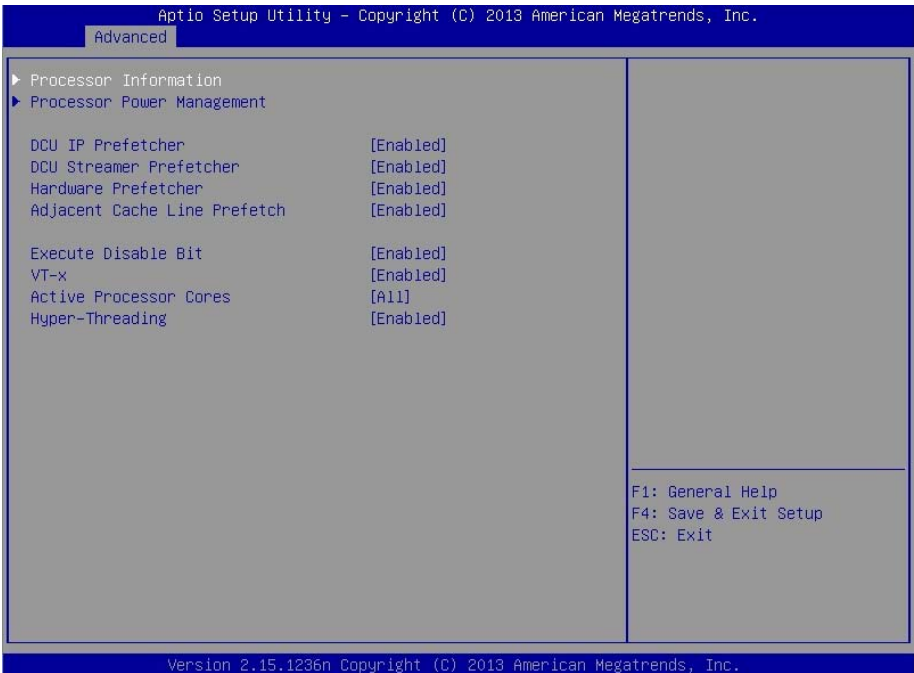
For details about the options, see the table on the next page.

Option	Parameter	Description
Processor Information	–	–
Processor Power Management	–	–
DCU IP Prefetcher	Disabled [Enabled]	Enables or disables the prefetcher of L1 cache.
DCU Streamer Prefetcher	Disabled [Enabled]	Enables or disables the prefetcher of L1 data cache.
Hardware Prefetcher	Disabled [Enabled]	Enables or disables Hardware Prefetcher.
Adjacent Cache Line Prefetch	Disabled [Enabled]	Enables or disables the optimal access from memory to cache.
Execute Disable Bit	Disabled [Enabled]	Enables or disables Execute Disable Bit feature. This option is displayed only when the installed processor supports this featue.
VT-x	Disabled [Enabled]	Enables or disables Intel Virtualization Technology feature.
Active Processor Cores	[All] 1 2 3	Specifies the number of active cores in processor. The selectable number of cores depends on processor installed.
Hyper-Threading	Disabled [Enabled]	Enables or disables the feature to simultaneously execute two threads in a single core. This option is displayed only when the installed processor supports this featue.

[   ]:   Factory settings

(a)   Processor Information submenu

For details about the options, see the table on the next page.

Option	Parameter	Description
Processor 1 CPUID	(display only)	Displays the ID of Processor 1. **Error** indicates an error was detected during POST.
Processor Type	(display only)	Displays the type of Processor 1.
Processor Speed	(display only)	Displays the clock speed of Processor 1.
Active Cores	(display only)	Displays the number of active cores in Processor 1.
Max Cores	(display only)	Displays the maximum number of cores in Processor 1.
L2 Cache RAM	(display only)	Displays the secondary cache size of processor 1.
L3 Cache RAM	(display only)	Displays the tertiary cache size of processor 1.
Microcode Revision	(display only)	Displays the revision of the microcode applied to processor 1.
EMT64	(display only)	Displays **Supported** when processor 1 supports Intel 64 architecture.
Hyper-Threading	(display only)	Displays **Supported** when processor 1 supports Hyper-Threading Technology feature.

[   ]:   Factory setting

(b)   Processor Power Management submenu
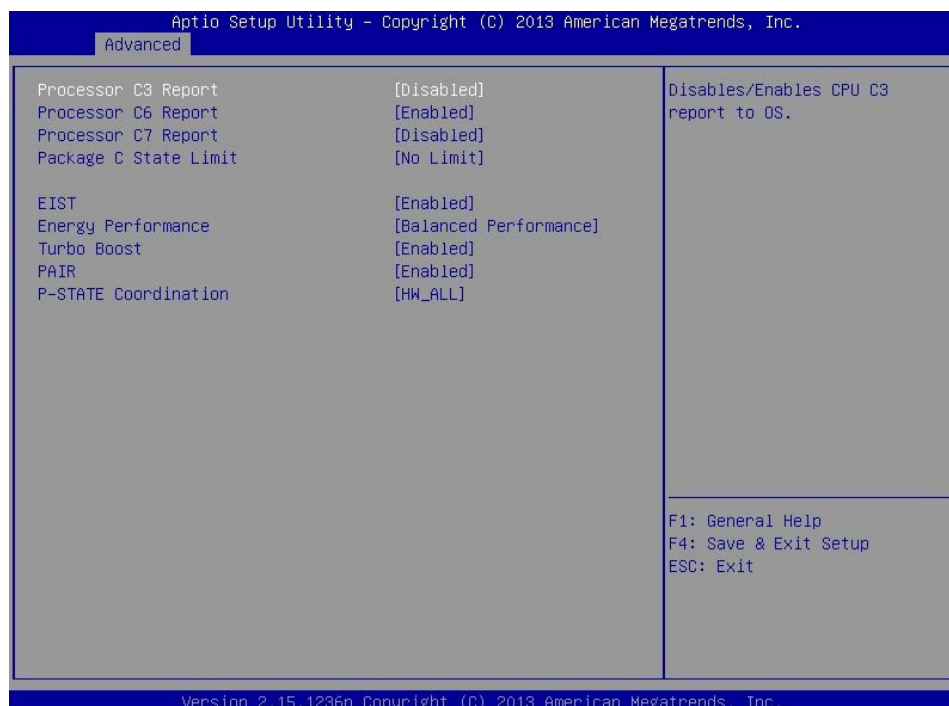
For details about the options, see the table on the next page.

Option	Parameter	Description
Processor C3 Report	[Disabled] Enabled	Enables or disables the feature to report C3 state of processor to OS.
Processor C6 Report	Disabled [Enabled]	Enables or disables the feature to report C6 state of processor to OS.
Processor C7 Report	[Disabled] Enabled	Enablesor disables the feature to report C7 state of processor to OS.
Package C state Limit	C0 C2 C6 [No Limit]	Specifies the upper limit for Package C State of processor.
EIST	Disabled [Enabled]	Enables or disables Enhanced Intel SpeedStep(R) Technology feature. This option is displayed only when the installed processor supports this featue.
Energy Performance	Performance [Balanced Performance] Balanced Energy Energy Efficient	Specifies whether the performance is preferred or energy-saving is preferred while processor is running.
Turbo Boost	Disabled [Enabled]	Enables or disables Intel Turbo Boost Technology. This option is displayed only when the installed processor supports this feature.
PAIR	Disabled [Enabled]	Enables or disables the Power Aware Interrupt Routing feature.
P-STATE Coordination	[HW_ALL] SW_ALL SW_ANY	Specifies the type of P-STATE Coordination.

[   ]:   Factory settings

(2) Memory Configuration submenu

On **Advanced**, choose **Memory Configuration** and then press <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 <Enter> key to show its submenus.

```
              Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
        Advanced

  ▶ Memory Information

    Hardware Memory Test                  [Disabled]
    Memory Retest                         [NO]
    Memory Frequency Limit                [Auto]
    Memory Voltage                        [1.35 V]




                                                      F1: General Help
                                                      F4: Save & Exit Setup
                                                      ESC: Exit



              Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
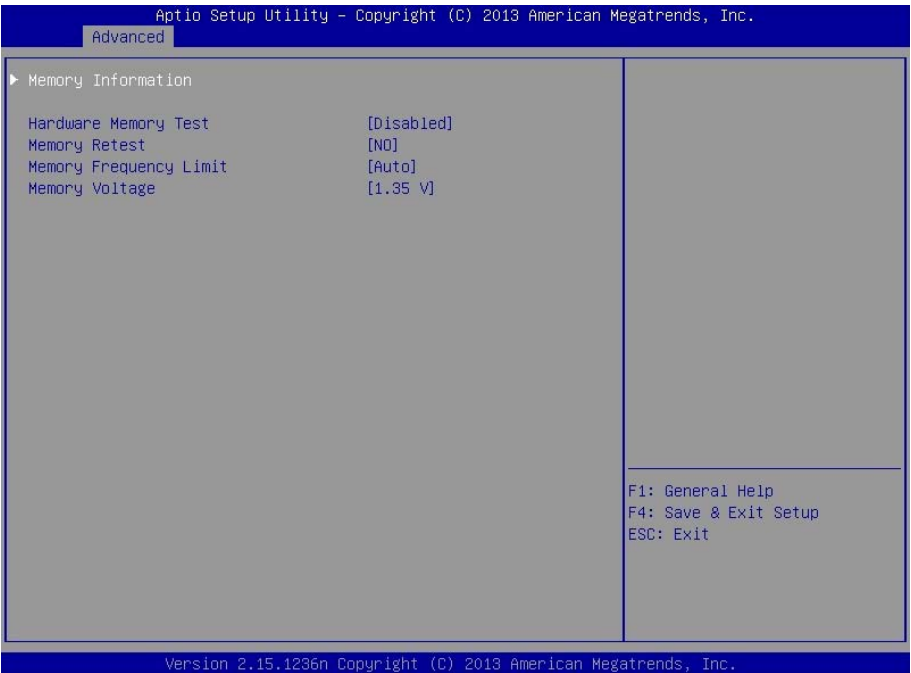
Option	Parameter	Description
Memory Information	–	–
Hardware Memory Test	[Disabled] Enabled	Specifies whether to perform a memory test. **Enabled :** if an error is detected during the test, the applicable memory resource will be disabled.
Memory Retest	[No] Yes	**Yes :** the memory error is cleared and all DIMMs are tested on the next POST process. This option is automatically changed to **No** after starting the server.
Memory Frequency Limit	[Auto] 1066 MHz 1333 MHz 1600 MHz	Specifies the upper limit of the memory frequency. The frequency may be lower than the specified value depending on the memory configuration.
Memory Voltage	1.5 V [1.35 V]	Specifies the memory voltage. This option is changed automatically for safe operation, if necessary.

[   ]: Factory setting

(a)   Memory Information submenu

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
       Advanced

 Total Memory                        14336 MB
 Available under 4GB                 3293 MB

 Current Memory Speed                1600 Mhz

 DIMM1 Status                        2048 MB
 DIMM2 Status                        4096 MB
 DIMM3 Status                        4096 MB
 DIMM4 Status                        4096 MB











                                                  F1: General Help
                                                  F4: Save & Exit Setup
                                                  ESC: Exit




            Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
Total Memory	(display only)	Displays the basic memory capacity.
Available under 4 GB	(display only)	Displays the amount of available memory in an area at 4 GB or less.
Current Memory Speed	(display only)	Displays the current memory operating frequency.
DIMM1 Status **DIMM2 Status** **DIMM3 Status** **DIMM4 Status**	(display only)	Displays the current memory status. The number displayed here corresponds to a DIMM slot number. The number indicates the amount of memory as well as means that memory is normal. The list below shows the meanings of the other states. Disabled: The memory has failed Not Present: No memory is installed Error: Forced memory startup

[   ]:   Factory setting

(3)   PCI Configuration submenu

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

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
         Advanced

 ▶ PCI Device Controller and Option ROM Settings
 ▶ PCI Link Speed Settings

   ASPM Support                         [Disabled]

   4GB PCI Hole Granularity             [Auto]
   PCI Bus Static Allocation            [Enabled]




                                                    F1: General Help
                                                    F4: Save & Exit Setup
                                                    ESC: Exit


         Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
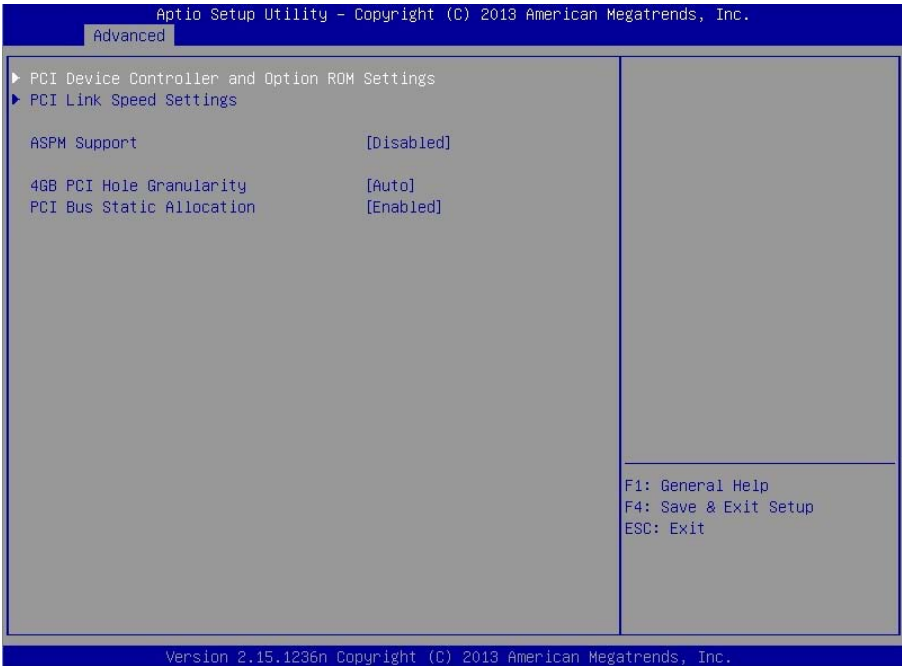
Option	Parameter	Description
PCI Device Controller and Option ROM Settings	–	–
PCI Link Speed Settings	–	–
ASPM Support	[Disabled] Auto Force L0s	Specifies the level of Active State Power Management. **Auto :** the level supported by the system is automatically set. **Force L0s :** all links are forcibly set to L0s.
4GB PCI Hole Granularity	[Auto] 3 GB 2 GB 1.5 GB 1 GB	Specifies the size of the address space for the PCI device. **Auto :** an appropriate size is automatically specified.
PCI Bus Static Allocation	Disabled [Enabled]	Enables or disables static allocation of PCI bus numbers.

[   ]:   Factory setting

(a)   PCI Device Controller and Option ROM Settings

```
                    Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
          Advanced

    VGA Controller                    [Enabled]              Disables/Enables the onboard
    VGA Priority                      [Offboard]             VGA controller.

    LAN Controller                    [Enabled]
    LAN1 Option ROM Scan              [Enabled]
    LAN2 Option ROM Scan              [Disabled]

    PCI1 Slot Option ROM              [Enabled]
    PCI2 Slot Option ROM              [Enabled]
    PCI3 Slot Option ROM              [Enabled]
    PCI4 Slot Option ROM              [Enabled]




                                                            F1: General Help
                                                            F4: Save & Exit Setup
                                                            ESC: Exit


                    Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
VGA Controller	Disabled [Enabled]	Enables or disables the onboard VGA controller.
VGA Priority	[Offboard] Onboard	Specifies the priority to expand ROM of the VGA controller.
LAN Controller	Disabled [Enabled]	Enables or disables the on-board LAN controller.
LAN1 Option ROM Scan	Disabled [Enabled]	Enables or disables the option ROM SCAN for on-board LAN 1.
LAN2 Option ROM Scan	[Disabled] Enabled	Enables or disables the option ROM SCAN for on-board LAN 2.
PCI1 Slot Option ROM **PCI2 Slot Option ROM** **PCI3 Slot Option ROM** **PCI4 Slot Option ROM** (Express5800/T110f-S, T110f-E)	Disabled [Enabled]	Enables or disables the option ROM on each PCI board.
PCI1A Slot Option ROM **PCI1B Slot Option ROM** (Express5800/R110f-1E)	Disabled [Enabled]	Enables or disables the option ROM on each PCI board.

[   ]:   Factory setting

Note   For a RAID controller, LAN adapter (network boot), or Fibre Channel controller, if no hard disk drive on which an OS is installed is connected, set the option ROM for that slot to **Disabled**.

(b)   PCI Link Speed Settings submenu

```
                    Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Advanced

      Target Link Speed Limit              [Auto]                  Selects the target link
                                                                   speed limit.Depending on
      PCI1 Slot Link Speed Limit           [5.0 GT/s]              hardware, link speed may be
      PCI2 Slot Link Speed Limit           [5.0 GT/s]              set lower than this limit.
      PCI3 Slot Link Speed Limit           [8.0 GT/s]
      PCI4 Slot Link Speed Limit           [5.0 GT/s]




                                                                   F1: General Help
                                                                   F4: Save & Exit Setup
                                                                   ESC: Exit



                    Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
Target Link Speed Limit	[Auto] 2.5 GT/s 5.0 GT/s	Specifies the upper limit of the link speed for the onboard PCI devices and PCI devices connected to the PCI slots
PCI1 Slot Link Speed Limit (Express5800/T110f-S, T110f-E)	2.5 GT/s [5.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit
PCI2 Slot Link Speed Limit (Express5800/T110f-S, T110f-E)	2.5 GT/s [5.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit
PCI3 Slot Link Speed Limit (Express5800/T110f-S, T110f-E)	2.5 GT/s 5.0 GT/s [8.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit
PCI4 Slot Link Speed Limit (Express5800/T110f-S, T110f-E)	2.5 GT/s [5.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit
PCI1A Slot Link Speed Limit (Express5800/R110f-1E)	2.5 GT/s 5.0 GT/s [8.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit
PCI1B Slot Link Speed Limit (Express5800/R110f-1E)	2.5 GT/s [5.0 GT/s]	Specifies the upper limit of the link speed for the PCI slots in the range specified in Target Link Speed Limit

[   ]:   Factory settings

(4)   Advanced Chipset Configuration submenu

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

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Advanced

     VT-d                              [Enabled]                    Disables/Enables Intel(R)
                                                                    Virtualization Technology
     Wake On LAN/PME                   [Enabled]                    for Directed I/O.
     Wake On Ring                      [Disabled]
     Wake On RTC Alarm                 [Disabled]




                                                                    F1: General Help
                                                                    F4: Save & Exit Setup
                                                                    ESC: Exit

           Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
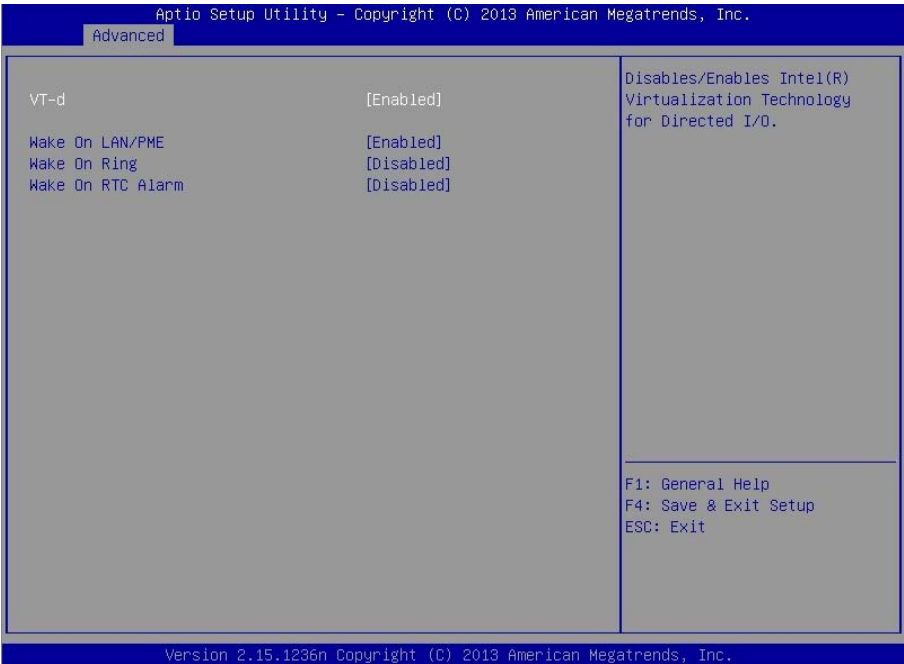
Option	Parameter	Description
HPET	Disabled [Enabled]	Enables or disables the High-Precision Event Timer. This feature may not be supported depending on OS.
VT-d	Disabled [Enabled]	Enables or disables Intel Virtualization Technology for Directed I/O, which is provided by the Intel chipset. This option is displayed only when the installed processor supports this feature.
Wake On LAN/PME	Disabled [Enabled]	Enables or disables the feature that remotely powers on through a network.
Wake On Ring	[Disabled] Enabled	Enables or disables the feature that remotely powers on using serial ports (modems).
Wake On RTC Alarm	[Disabled] Enabled	Enables or disables the feature that remotely powers on using the real time clock.

[   ]:   Factory setting

Note   If the AC power is turned off, the Wake on Ring feature is not available on the next booting after AC power-on. Press POWER Switch to start the system.

(5)   Storage Configuration submenu

On **Advanced**, choose **Storage Configuration** and then press <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 <Enter> key to show its submenus.

```
                    Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
          Advanced

       ▶ SATA Information

         SATA Mode                          [IDE Mode]
         Hard Disk Pre-Delay                [Disabled]




                                                            F1: General Help
                                                            F4: Save & Exit Setup
                                                            ESC: Exit


                    Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
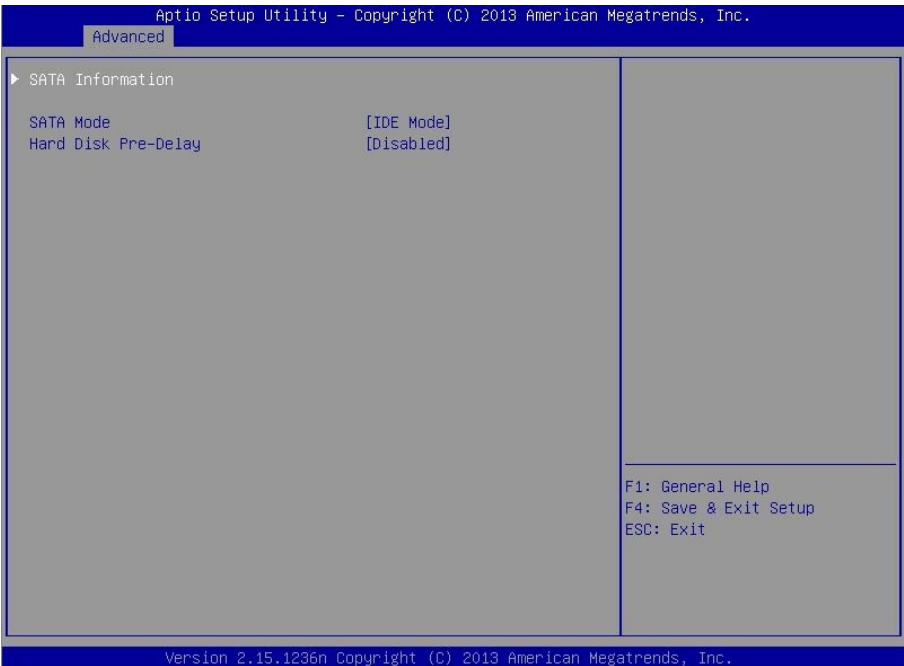
Option	Parameter	Description
SATA Information	–	This option is not displayed when SATA Mode is **RAID Mode**.
SATA Mode	Disabled [IDE Mode] AHCI Mode RAID Mode	Specifies SATA Mode. For the models that show **RAID Mode**, this option is only for display.
Hard Disk Drive Pre-Delay	[Disable] 3 Seconds 6 Seconds 9 Seconds 12 Seconds 15 Seconds 21 Seconds 30 Seconds	Specifies delay time before HDD is accessed during POST.

[   ]:   Factory setting

Note	NEC has not verified AHCI driver support.

(a)   SATA Information submenu

```
                 Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
      Advanced

  SATA Port0                        Not Present
  SATA Port1                        Not Present
  SATA Port2                        Not Present
  SATA Port3                        Not Present
  SATA Port4                        DV-28S-W       ATAPI
  SATA Port5                        Not Present




                                                           F1: General Help
                                                           F4: Save & Exit Setup
                                                           ESC: Exit



                 Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```
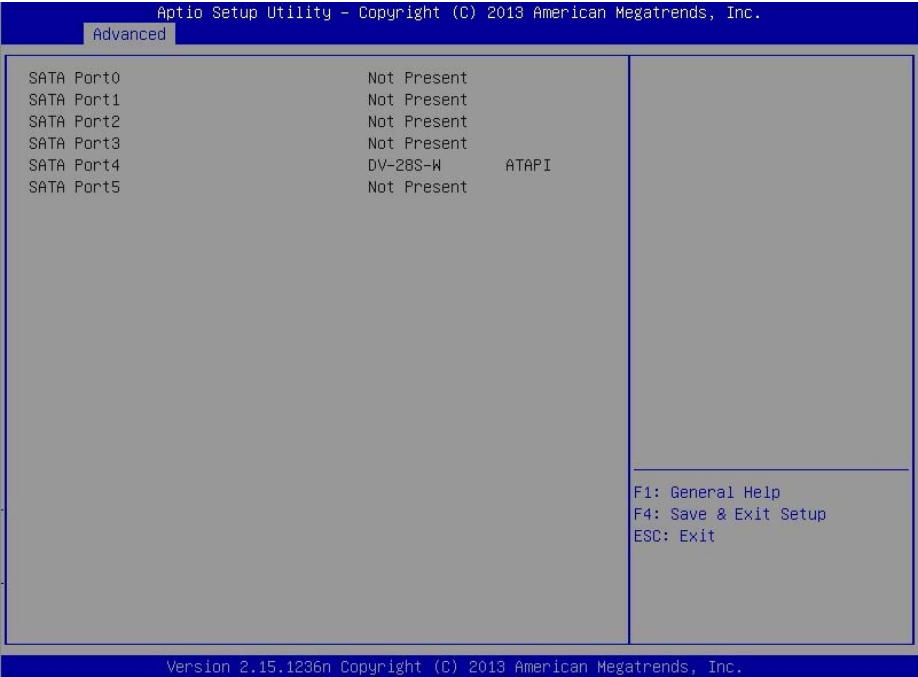
Option	Parameter	Description
SATA Port0	(display only)	Displays the devices connected to each port.
SATA Port1		**Not Present** means that no device is connected to the port.
SATA Port2		
SATA Port3		
SATA Port4		
SATA Port5		

[   ]:   Factory setting

(6)   USB Configuration submenu

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

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                 Advanced

       Device Reset Timeout                    [20 sec]                Selects USB mass storage
       Controller Timeout                      [20 sec]                device Start Unit command
                                                                       timeout.
       XHCI Mode                               [Auto]
       XHCI Hand-off                           [Enabled]




                                                                       F1: General Help
                                                                       F4: Save & Exit Setup
                                                                       ESC: Exit



              Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
Device Reset Timeout	10 sec [20 sec] 30 sec 40 sec	Specifies the time to wait when Start Unit Command is issued to a USB mass storage device.
Controller Timeout	1 sec 5 sec 10 sec [20 sec]	Specifies the time to wait when Control, Bulk, or Interrupt Transfer Command is issued to a USB controller.
XHCI Mode	Smart Auto [Auto] Enabled Disabled	Specifies the operation mode of the USB 3.0 controller. **Smart Auto:** Takes over the settings of USB 3.0 according to OS support at execution of POST. **Auto:** Enables USB 3.0 after the OS that supports USB 3.0 is started. **Enabled:** Enables USB 3.0. **Disabled:** Disables USB 3.0.
XHCI Hand-off	Disabled [Enabled]	Enables or disables the XHCI Hand-off feature.

[   ]:   Factory setting

(7)   Serial Port Configuration submenu

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

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                 Advanced

        Serial Port A Settings                                    Configures serial port A
        Serial Port A                    [Enabled]                using options.
        Serial A Base I/O                [3F8h]                   [Disabled]
        Serial A Interrupt               [IRQ 4]                   No configuration
                                                                  [Enabled]
        Serial Port B Settings                                     User configuration
        Serial Port B                    [Enabled]
        Serial B Base I/O                [2F8h]
        Serial B Interrupt               [IRQ 3]

        Console Redirection Settings
        BIOS Redirection Port            [Disabled]




                                                                  F1: General Help
                                                                  F4: Save & Exit Setup
                                                                  ESC: Exit


              Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

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

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                 Advanced

        Serial Port A Settings                                    Selects the Serial port to
        Serial Port A                    [Enabled]                use for Console Redirection.
        Serial A Base I/O                [3F8h]                   [Disabled] completely
        Serial A Interrupt               [IRQ 4]                  disables Console Redirection.

        Serial Port B Settings
        Serial Port B                    [Enabled]
        Serial B Base I/O                [2F8h]
        Serial B Interrupt               [IRQ 3]

        Console Redirection Settings
        BIOS Redirection Port            [Serial Port A]
        Terminal Type                    [VT100+]
        Baud Rate                        [115200]
        Data Bits                        [8]
        Parity                           [None]
        Stop Bits                        [1]
        Flow Control                     [Hardware RTS/CTS]

        Continue C.R. after POST         [Enabled]                F1: General Help
                                                                  F4: Save & Exit Setup
                                                                  ESC: Exit


              Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

For details about the options, see the table on the next page.

Option	Parameter	Description
Serial Port A Settings	–	–
Serial Port A	Disabled [Enabled]	Enables or disables serial Port A
Serial A Base I/O	[3F8h] 2F8h 3E8h 2E8h	Specifies the base I/O address for serial port A.
Serial A Interrupt	[IRQ 4] IRQ 3	Specifies the interrupt for serial port A
Serial Port B Settings	–	–
Serial Port B	Disabled [Enabled]	Enables or disables serial Port B
Serial B Base I/O	3F8h [2F8h] 3E8h 2E8h	Specifies the base I/O address for serial port B
Serial B Interrupt	IRQ 4 [IRQ 3]	Specifies the interrupt for serial port B
Console Redirection Settings	–	–
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Enables or disables the console redirection feature for the specified serial port. Specifying **Serial Port A** or **Serial Port B** enables direct connection through terminal unit, and options for connection shown below are displayed.
Terminal Type	[VT100+] VT-UTF8 ANSI	Specifies the terminal type.
Baud Rate	9600 19200 57600 [115200]	Specifies the baud rate.
Data Bits	7 [8]	Specifies the data bit width.
Parity	[None] Even Odd	Specifies the parity type.
Stop Bits	[1] 2	Specifies stop bits.
Flow Control	None [Hardware RTS/CTS]	Specifies the flow control method.
Continue C.R. after POST	Disabled [Enabled]	Enables or disables the feature to continue console redirection after completion of POST.

[   ]:   Factory setting

1.2.3   **Security**

Security menu appears when the cursor is moved to **Security**. For the menu that has ▶ on the left, move the cursor to it and then press <Enter> key to show its submenus.

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Security  Server  Boot  Save & Exit

    Password Configuration                                    Set the Administrator
    Administrator Password                                    Password for system setup.
    User Password

    Security Configuration
    Password On Boot                   [Disabled]
    Disable USB Ports                  [Disabled]
    Remote Keyboard and Mouse          [Enabled]

  ▶ Trusted Computing




                                                             F1: General Help
                                                             F4: Save & Exit Setup
                                                             ESC: Exit



          Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

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

Tips	• Set **Administrator Password** before setting **User Password**.
	• Do not set any password before installing the OS.
	• If you have forgotten the password, see *Chapter 1* (*7. Resetting and Clearing the Server*) to clear password.

For details about the options, see the table on the next page.

Option	Parameter	Description
Password Configuration	–	–
Administrator Password	Up to 20 alphanumeric characters	Specifies the administrator password. This password can be used to access all SETUP menus. This option can only be specified by logging in with an administrator privilege.
User Password	Up to 20 alphanumeric characters	Specifies the user password. This password can be used to access the limited **SETUP** menus. This option can only be specified by logging in with an administrator privilege.
Security Configuration	–	–
Password On Boot	[Disabled] Enabled	Enables or disables the feature that requires a password entry on boot. This option can be selected when **Administrator Password** is set.
Disable USB Ports	[Disabled] Front Rear Internal Front + Rear Front + Internal Rear + Internal Front + Rear + Internal	Selects the ports to be disabled. Note that the USB keyboard can be used while POST is running. If the internal USB ports are disabled, Internal Flash Memoy cannot be used.
Remote Keyboard and Mouse	Disabled [Enabled]	Enables or disables the remote keyboard and mouse supported by BMC.
Trusted Computing		This option is displayed only when the optional TPM kit is installed. This option becomes available after Administrator Password is set

[   ]:   Factory setting

(1)   Trusted Computing submenu

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

```
               Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                       Security

    TPM Configuration                                          Disables/Enables Trusted
    TPM Support                          [Disabled]            Platform Module support.
    TPM State                            [Disabled]
    Pending TPM operation                [None]


    Current TPM Status Information


    Intel(R) TXT Configuration
    TXT Support                          [Disabled]
  ▶ ***************************************************
  ▶ Setup Notice :
  ▶  When the above "TPM Support","TPM State"
  ▶ and the following menus are set to [Enabled],
  ▶ "TXT Support" can be set to [Enabled].
  ▶
  ▶ ***************************************************
    VT-x                                 [Enabled]
    VT-d                                 [Enabled]
                                                               _____
                                                               F1: General Help
                                                               F4: Save & Exit Setup
                                                               ESC: Exit




               Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

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

```
               Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                       Security

    TPM Configuration                                          Disables/Enables TPM State.
    TPM Support                          [Enabled]
    TPM State                            [Enabled]
    Pending TPM operation                [None]


    Current TPM Status Information
    TPM Enabled Status                   [Disabled]
    TPM Active Status                    [Deactivated]
    TPM Owner Status                     [UnOwned]


    Intel(R) TXT Configuration
    TXT Support                          [Disabled]
  ▶ ***************************************************
  ▶ Setup Notice :
  ▶  When the above "TPM Support","TPM State"
  ▶ and the following menus are set to [Enabled],
  ▶ "TXT Support" can be set to [Enabled].
  ▶
  ▶ ***************************************************
    VT-x                                 [Enabled]              _____
    VT-d                                 [Enabled]              F1: General Help
                                                               F4: Save & Exit Setup
                                                               ESC: Exit




               Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

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

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                  Security

   TPM Configuration                               ▲  Disables/Enables Intel(R)
   TPM Support                        [Enabled]       Trusted Execution Technology.
   TPM State                          [Enabled]
 ▶ ***************************************************
 ▶ Setup Notice :
 ▶  When "TXT Support" is set to [Enabled],
 ▶ "TPM Support" and "TPM State" cannot be
 ▶ set to [Disabled].
 ▶ ***************************************************
   Pending TPM operation              [None]

   Current TPM Status Information
   TPM Enabled Status                 [Disabled]
   TPM Active Status                  [Deactivated]
   TPM Owner Status                   [UnOwned]

   Intel(R) TXT Configuration
   TXT Support                        [Enabled]
   VT-x                               [Enabled]
   VT-d                               [Enabled]           _____
 ▶ ***************************************************
 ▶ Setup Notice :                                      F1: General Help
 ▶  When "TXT Support" is set to [Enabled],            F4: Save & Exit Setup
 ▶ "VT-x" and "VT-d" cannot be set to                  ESC: Exit
 ▶ [Disabled].                                      ▼

           Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

(1/2)

Option	Parameter	Description
TPM Configuration	−	−
TPM Support	[Disabled] Enabled	Enables or disables Trusted Platform Module feature. When set to **Enabled**, **Current TPM Status Information** is displayed.
TPM State	[Disabled] Enabled	Enables or disables TPM features. This option can be changed when **TPM Support** is enabled.
Pending TPM operation	[None] Enable Take Ownership Disable Take Ownership TPM Clear	Specifies TPM operation. This option can be selected when **TPM State** is set to **Enabled**.
Current TPM Status Information	−	−
TPM Enabled Status	(display only)	Displays TPM Support Status
TPM Active Status	(display only)	
TPM Owner Status	(display only)	
Intel(R) TXT Configuration	−	−

(2/2)

Option	Parameter	Description
TXT Support	[Disabled] Enabled	Enables or disables the Intel Trusted Execution Technology feature. This option can be selected when **VT-x**, **VT-d**, and **TPM State** are set to **Enabled**.
VT-x	Disabled [Enabled]	Enables or disables Intel Virtualization Technology for Directed processor feature.
VT-d	Disabled [Enabled]	Enables or disables Intel Virtualization Technology for Directed I/O feature. This option is displayed only when the installed processor supports this feature.

[   ]:   Factory setting

1.2.4   Server

Server menu appears when the cursor is moved to **Server**. For the menu that has ▶ on the left, move the cursor to it and then press <Enter> key to show its submenus.

```
                Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
        Main  Advanced  Security  Server  Boot  Save & Exit

   ▶ System Management
   ▶ Power Control Configuration

     Assert NMI on PERR              [Enabled]
     Assert NMI on SERR              [Enabled]
     FRB-2 Policy                    [Retry 3 Times]
     Boot Monitoring                 [Disabled]
     Boot Monitoring Policy          [Retry 3 Times]
     Thermal Sensor                  [Enabled]
     Check previous System Config    [Disabled]
     BMC IRQ                         [Disabled]
     POST Error Pause                [Enabled]
     Memory Error                    [Boot]
     Power Switch Inhibit            [Disabled]
     CLI SETUP                       [Disabled]



                                                   F1: General Help
                                                   F4: Save & Exit Setup
                                                   ESC: Exit


                Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

On **System Management**, press <Enter> key to show its submenus.

(1/2)

Option	Parameter	Description
System Management	–	–
Power Control Configuraiton	–	–
Assert NMI on PERR	Disabled [Enabled]	Enables or disables the feature to detect PCI PERR.

(2/2)

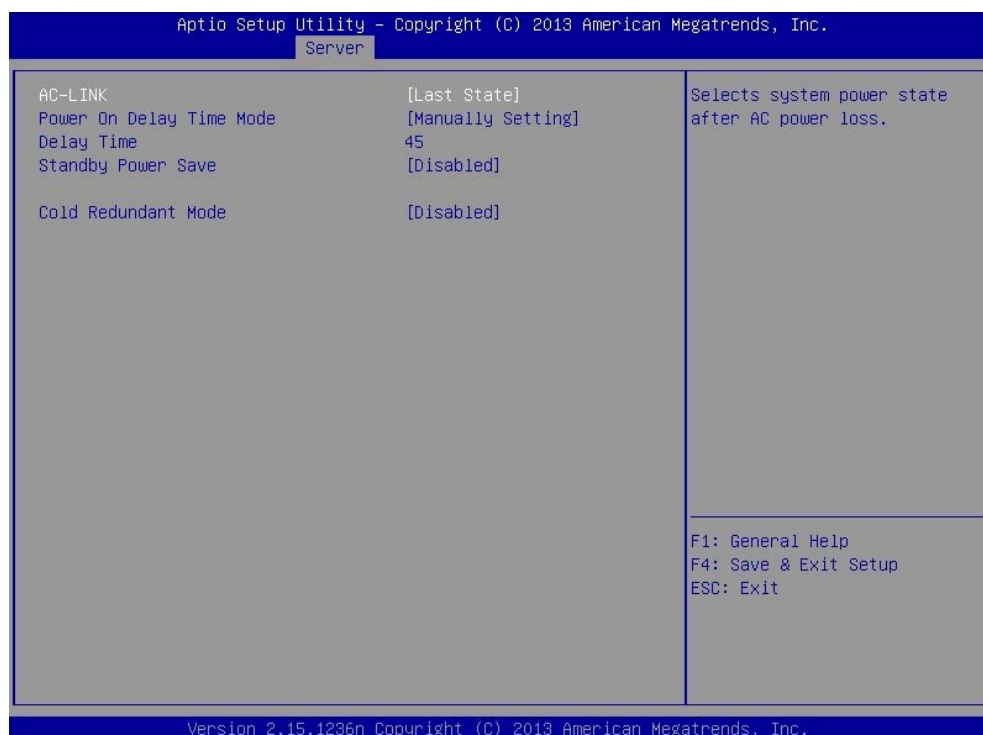| Option	Parameter	Description
Assert NMI on SERR	Disabled [Enabled]	Enables or disables the feature to detect PCI SERR.
FRB-2 Policy	[Retry 3 Times] Disable FRB2 Timer Always Reset	Specifies how to operate when FRB level 2 errors occur.
Boot Monitoring	[Disabled] 5-60 minutes	Enables or disables the boot monitoring feature and specifies the timeout setting. To use this feature, install NEC ESMPRO Agent on Windows. If starting up an OS on which it is not installed, disable this feature.
Boot Monitoring Policy	[Retry 3 times] Always Reset	Specifies the processing to be done when time-out was enforced during boot monitoring. This is configurable only if **Boot Monitoring** has been enabled. **Retry 3 times** resets the server upon the timeout and attempts to boot OS up to three times. **Always Reset** retries booting the OS repeatedly.
Thermal Sensor	Disabled [Enabled]	Enables or disables the thermal sensor monitoring. If this option is set to **Enabled** and when abnormal temperature is detected, the system stops at the end of POST.
Check previous System Config	[Disabled] Enabled	If this option is set to **Enabled** and the system configuration differs from the previous boot, the system waits for user's intervention before booting.
BMC IRQ (Express5800/T110f-E)	[Disabled] IRQ 11	Specifies whether to assign an interrupt line to the BMC.
Post Error Pause	Disabled [Enabled]	Specifies whether to stop the POST once at the end of POST if an error occurs during the POST.
Memory Error	Halt [Boot]	Specifies whether to stop operation at the end of POST processing if a memory resource error occurred while executing POST. This option is enabled if **POST Error Pause** in the **Server** menu is enabled. Even if this option is set to **Boot**, operation stops at the end of POST if errors occurred for all resources.
Power Switch Inhibit	[Disabled] Enabled	Enables or disables the power switch inhibit feature.
CLI SETUP	[Disabled] Enabled	Specifies whether to use Command Line Interface (CLI). **Enabled :** SETUP is run by CLI instead of the menu operation. To switch back to the meu operation, set this option to **Disabled** on CLI.

(1)   System Management submenu

On **Server**, choose **System Management** and then press <Enter> key to show its submenus.

```
             Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                                   Server

   BIOS Version                       4.6.0004

   Board Part Number                  GA-6LASV1
   Board Serial Number                12345
   System Part Number                 [N8100-1977Y]
   System Serial Number               0123456
   Chassis Part Number                856-061659-001
   Chassis Serial Number              04
   Onboard LAN1 MAC                   90-2B-34-5B-1F-B4
   Onboard LAN2 MAC                   90-2B-34-5B-1F-B5
   Management LAN MAC                 90-2B-34-5B-1F-9E
   BMC Device ID                      80
   BMC Device Revision                01
   BMC Firmware Revision              00.05
   SDR Revision                       01.11
   NM Firmware Version                3.0.4.164
   Descriptor Revision                08010100
   Chipset Revision                   0x04


                                                         F1: General Help
                                                         F4: Save & Exit Setup
                                                         ESC: Exit



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```

Option	Parameter	Description
BIOS Version	(display only)	Displays the current BIOS version.
Board Part Number	(display only)	Displays the part number of the motherboard.
Board Serial Number	(display only)	Displays the serial number of the motherboard.
System Part Number	(display only)	Displays the part number of the system.
System Serial Number	(display only)	Displays the serial number of the system.
Chassis Part Number	(display only)	Displays the part number of the chassis.
Chassis Serial Number	(display only)	Displays the serial number of the chassis.
Onboard LAN1 MAC	(display only)	Displays the MAC address of the onboard LAN port 1.
Onboard LAN2 MAC	(display only)	Displays the MAC address of the onboard LAN port 2.
Management LAN MAC	(display only)	Displays the MAC address of the management LAN port.
BMC Device ID	(display only)	Displays the BMC device ID.
BMC Device Revision	(display only)	Displays the BMC device revision.
BMC Firmware Revision	(display only)	Displays the BMC firmware revision.
SDR Revision	(display only)	Displays the revision of the sensor data record.
NM Firmware Version	(display only)	Displays the firmware version of Intel Node Manager
Descriptor Revision	(display only)	Displays the Descriptor revision.
Chipset Revision	(display only)	Displays the chipset revision.

(2)   Power Control Configuration submenu

On **Server**, choose **Power Control Configuration** and then press <Enter> key to show its submenus.

```
                Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                                    Server

    AC-LINK                              [Last State]              Selects system power state
    Power On Delay Time Mode             [Manually Setting]        after AC power loss.
    Delay Time                           45
    Standby Power Save                   [Disabled]

    Cold Redundant Mode                  [Disabled]











                                                                  F1: General Help
                                                                  F4: Save & Exit Setup
                                                                  ESC: Exit



                Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
AC-LINK	Stay Off [Last State] Power On	Specifies how the power state should be when the AC power is supplied again after the power is lost.See the table below.
Power On Delay Time Mode	[Manually Setting] Random	Selects a method to specify the delay time before powering on DC power. This option is selectable when **Power On** or **Last State** is specified in **AC-LINK**.
Delay Time	[xx]-600	Specifies the waiting time before powering on DC within the range between **"xx"** and 600 seconds. This feature is enabled when **Power On** or **Last State** is specified in the AC LINK setting. **"xx"** indicates the minimum configurable time and is displayed when executing **Load Setup Defaults**. If **Save Changes and Exit** is selected with a value smaller than the minimum value specified, the minimum configurable time is automatically applied.
Standby Power Save	[Disabled] Enabled	Enables or disables the feature that saves the standby power on standby. If this option is enabled, the **AC-LINK** setting is fixed to **Power On** and cannot be changed.
Cold Redundant Mode (Express5800/T110f-E)	[Disabled] Enabled	Enables or disables cold redundancy. This option is displayed only when using redundant power supply.

The table below shows the operation 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	Off	On	On
Abort (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**.

1.2.5   Boot

Boot menu appears when the cursor is moved to **Boot**.

```
                    Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
        Main  Advanced  Security  Server  Boot  Save & Exit

        Boot Configuration                                    Disables/Enables the Quiet
        Quiet Boot                         [Enabled]          Boot option.
        Bootup NumLock State               [Off]
        Setup Prompt Timeout               0

        Boot Option Priorities
        Boot Option #1                     [AMI Remote CD/DVD 1.00]
        Boot Option #2                     [AMI Remote FD 1.00]
        Boot Option #3                     [Hard Drive]
        Boot Option #4                     [BRCM MBA Slot 3A00
                                            v15.4.2]


        CD/DVD ROM Drive BBS Priorities
        Floppy Drive BBS Priorities
        Hard Drive BBS Priorities
        Network Device BBS Priorities




                                                              F1: General Help
                                                              F4: Save & Exit Setup
                                                              ESC: Exit




                    Version 2.15.1236n Copyright (C) 2013 American Megatrends, Inc.
```

Option	Parameter	Description
Boot Configuration	–	–
Quiet Boot	Disabled [Enabled]	Specifies whether to display the logo during POST. **Disabled :** the results of POST execution are displayed instead of the NEC logo after the power is turned on. If **BIOS Redirection Port** is enabled, this option is always disabled.
Bootup Numlock State	On [Off]	Enables or disables Numlock.
Setup Prompt Timeout	[0] - 65535	Specifies the time (in seconds) until <F2> is pressed to launch SETUP. The specified value is reflected to waiting time immediately before completion of POST.
Boot Option Priorities	–	–
Boot Option #1	–	These items display the priority of boot devices. If all of the Boot Options are set to **Disabled**, the SETUP starts running upon completion of POST.
Boot Option #2	–	
Boot Option #3	–	
Boot Option #4	–	
CD/DVD ROM Drive BBS Priorities	–	Specifies the boot priority for each BIOS Boot Specification (BBS).
Floppy Drive BBS Priorities	–	
Hard Drive BBS Priorities	–	
Network Drive BBS Priorities	–	

[   ]:   Factory setting

About boot order
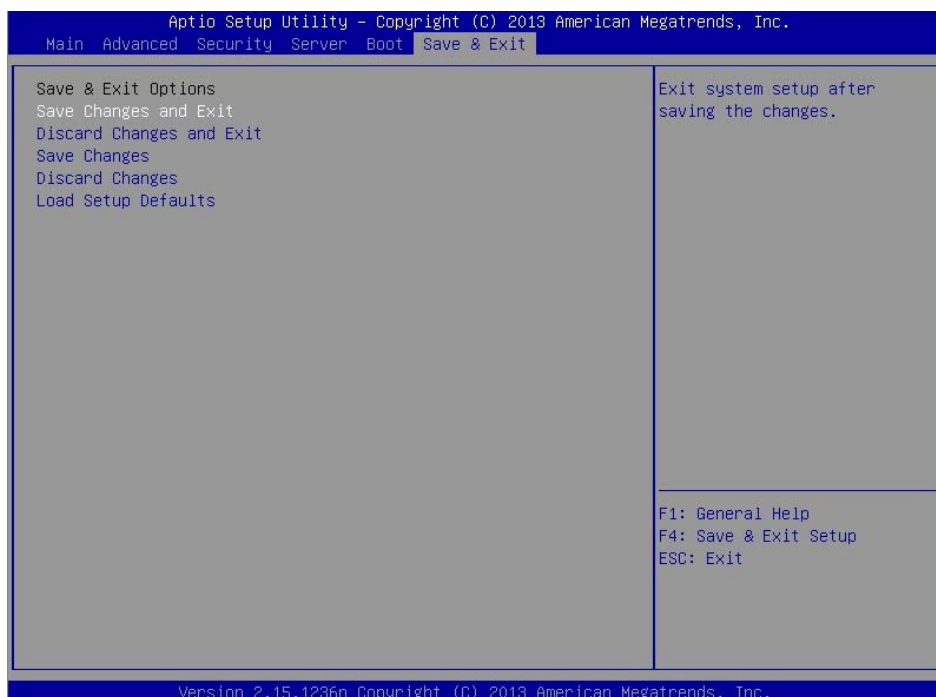
(1)   If a new bootable device is connected, the device is assigned into each BBS Priorities as the lowest priority device.

(2)   If a bootable device is disconnected from the server, the relevant device is removed from BBS Priorities.

(3)   When **Load Setup Defaults** is executed on **Save & Exit** menu, the **Boot Option** and **BBS Priorities** are changed as follows.

      a)   Boot Option Priorities

            1.   Boot Option #1: CD/DVD ROM Drive

            2.   Boot Option #2: Floppy Drive

            3.   Boot Option #3: Hard Drive

            4.   Boot Option #4: Network Device

      b)   BBS Priorites

          -- Devices other than USB device   :   High

          -- USB device   :   Next to non-USB devices

      c)   Bootable devices

          If a bootable device has been set to Disabled, the Disabled status is canceled and it is registered into BBS Priorities.

(4)   If Remote Management Extended License (*) is registered, the remote media is added to bootable devices. The remote media is assigned as follows:

      -- The highest priority within "CD/DVD ROM Drive BBS Priorities" is assigned to AMI Remote CD/DVD device.

      -- When executing **Load Setup Defaults** in **Save & Exit** menu, the highest priority within "CD/DVD ROM Drive BBS Priorities" is assigned to AMI Remote CD/DVD device.

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

1.2.6   Save & Exit

Save & Exit menu appears when the cursor is moved to **Save & Exit**.

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Security  Server  Boot  Save & Exit

  Save & Exit Options                               Exit system setup after
  Save Changes and Exit                             saving the changes.
  Discard Changes and Exit
  Save Changes
  Discard Changes
  Load Setup Defaults




                                                    ─────────────────────
                                                    F1: General Help
                                                    F4: Save & Exit Setup
                                                    ESC: Exit




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```

The options of this menu are described below.

(a)   Save Changes and Exit

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

(b)   Discard Changes and Exit

SETUP closes without saving the changes and returns to the previous BIOS settings.
After the SETUP utility closes, the system automatically restarts.

(c)   Save Changes

Changes are saved in NVRAM.

(d)   Discard Changes

Changes are discarded and the parameters are reset to the previous settings.

(e)   Load Setup Defaults

This option resets all parameters in SETUP to the default settings.

Note	The factory settings and default settings may differ depending on the model. The settings must be corrected according to your system by referring to the list of settings in this section.

2.   **BMC Configuration**

The server has the following off-line tools:

- Off-line Maintenance Utility
  Use this tool when maintaining the server.
- BMC Configuration
  Use this tool when setting system configuration information to BMC.

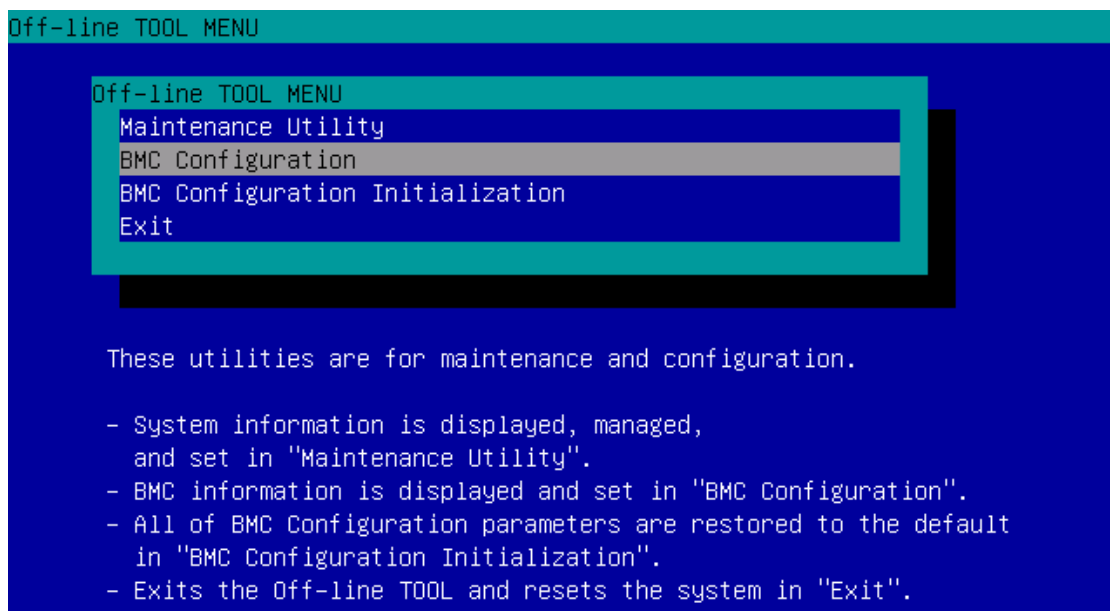This section describes the features of BMC Configuration.

2.1   **Starting BMC Configuration**

1. Press the [F4] key when the device starts. "Keyboard type selection" is then displayed.

```
Keyboard type selection
  JAPANESE-Keyboard
  ENGLISH-Keyboard



  Select your keyboard type connected to your system by arrow keys,
  then press the Enter key.
```
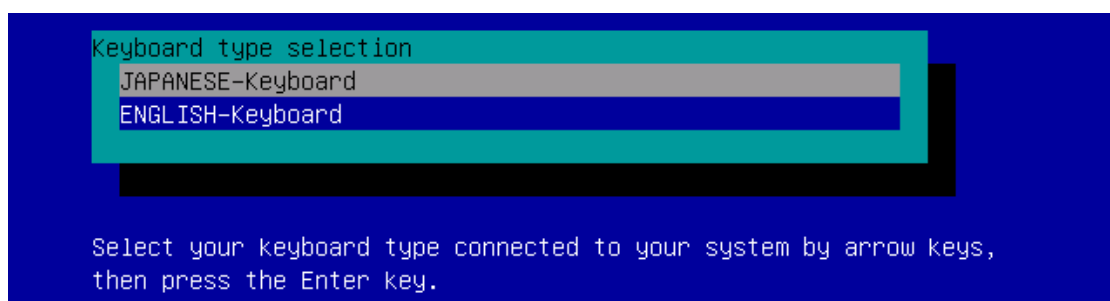
Keboard type selection menu

2. Select the type of the keyboard used. "Off-line TOOL MENU" is then displayed.

```
Off-line TOOL MENU

  Off-line TOOL MENU
    Maintenance Utility
    BMC Configuration
    BMC Configuration Initialization
    Exit



  These utilities are for maintenance and configuration.

  - System information is displayed, managed,
    and set in "Maintenance Utility".
  - BMC information is displayed and set in "BMC Configuration".
  - All of BMC Configuration parameters are restored to the default
    in "BMC Configuration Initialization".
  - Exits the Off-line TOOL and resets the system in "Exit".
```

Off-line TOOL menu

3. In **Off-line TOOL MENU**, select **BMC Configuration** to launch the BMC configuration main menu.

2.2   **Main menu of BMC Configuration**

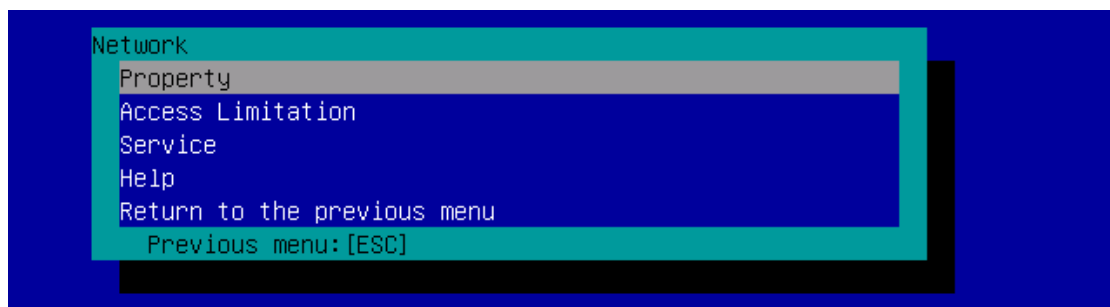The **BMC Configuration** menu appears when you select **BMC Configuration** on **Off-line TOOL MENU**.
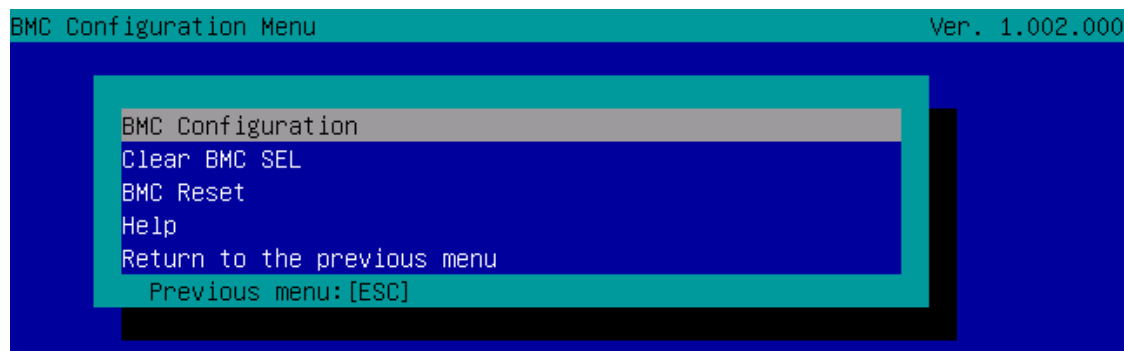
Main menu

(1)   BMC Configuration

Select this item to set configuration information to BMC.

If you select **OK** after you change the values, the set values are applied to BMC.

See *Chapter 2* (*2.3 Setting BMC Configuration*) for details.

(2)   Clear BMC SEL

Select this item to clear BMC SEL (System Event Log).

See *Chapter 2* (*2.4 Clear BMC Configuration*) for details.

(3)   BMC Reset

Select this item to reset BMC without changing any settings.

See *Chapter 2* (*2.5 Resetting BMC*) for details.

(4)   Help

Select this item to open BMC Configuration help.

(5)   Return to the previous menu

Select this item to exit BMC Configuration and return to Off-line Tool menu.

2.3   Setting BMC Configuration

The **BMC Configuration** menu appears when you select **BMC Configuration** on **Off-line TOOL MENU**.
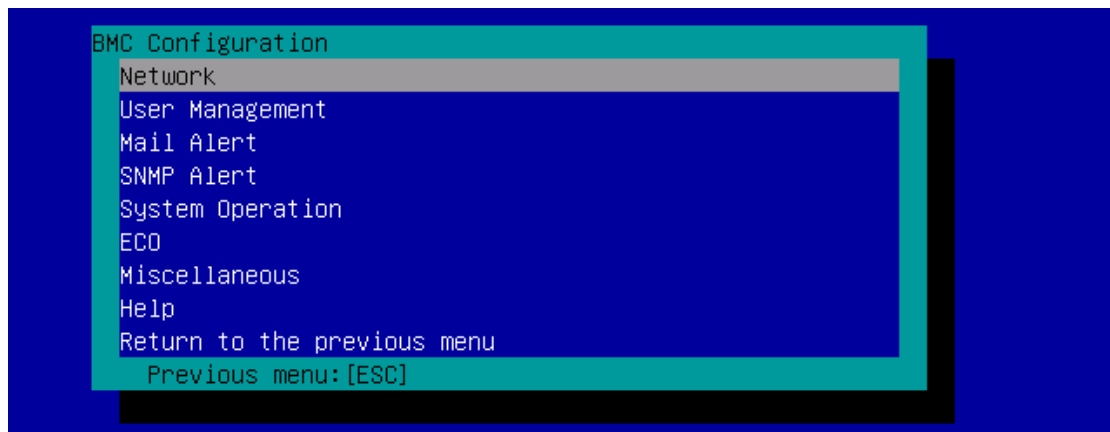
BMC Configuration menu

(1)   Network

Select this item to view the network environment and services of BMC LAN and change parameter setting.

See *Chapter 2* (*2.3.1 Network)* for details.

(2)   User Management

Select this item to manage BMC users.

See *Chapter 2* (*2.3.2 User Management*) for details.

(3)   Mail Alert

Select this item to view E-mail alerts issued from BMC and change parameter setting.

See *Chapter 2* (*2.3.3 Mail Alert*) for details.

(4)   SNMP Alert

Select this item to view SNMP alerts issued from BMC and change parameter setting.

See *Chapter 2* (*2.3.4 SNMP Alert*) for details.

(5)   System Operation

Select this item to set parameters for remote KVM console and remote media.

See *Chapter 2* (*2.3.5 System Operation*) for details.

(6)   ECO

Select this item to view power consumption and system load and change parameter setting.

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

(7)   Miscellaneous

Select this item to configure various BMC features.

See *Chapter 2* (*2.3.7 Miscellaneous*) for details.

2.3.1   Network

The **Network** menu appears when you select **Network** on the **BMC Configuration** menu.

```
Network
  Property
  Access Limitation
  Service
  Help
  Return to the previous menu
     Previous menu:[ESC]
```

Network menu

The table below shows details of parameters and their default value.

(1/2)

Item	Description	Default Value
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.	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	MAC Address of BMC is displayed.	–
DHCP	Determine whether to dynamically obtain an IP address from a DHCP server. If the item is set to Enable and applied, 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
Dynamic DNS	Determine whether to enable/disable of Dynamic DNS. *5	Disable
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
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 denied to access BMC.	Allow All
IP Address	Specify the IP Address to allow or deny to access with BMC. *8 *9	Blank
Service		
HTTP	Enable or disable HTTP service. *10	Enable
HTTP Port Number	Specify the HTTP port number. *11	80
HTTPS	Enable or disable HTTPS service. *10	Enable
HTTPS Port Number	Specify the HTTPS port number. *11	443
SSH	Enable or disable SSH service.	Enable
SSH Port Number	Specify the SSH port number. *11	22

*1:   You can change this parameter only if you allow it.
*2:   After you change parameter value, resetting of BMC may be required depending on the server. When set to "Shared BMC LAN", the management 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)
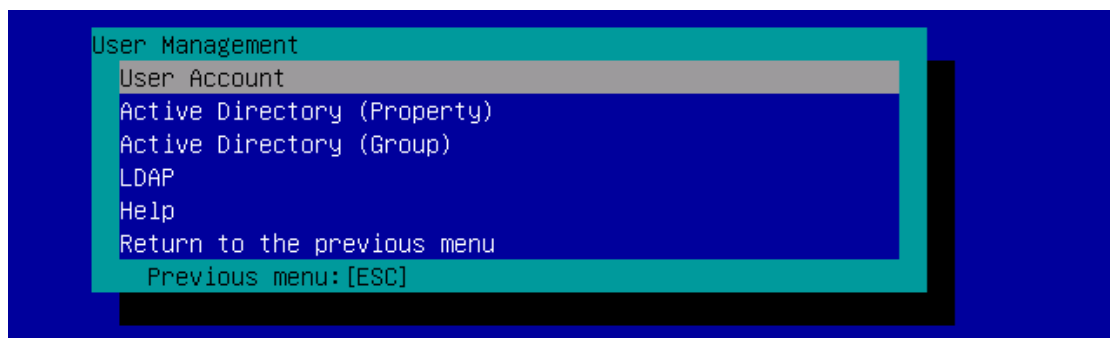*9:   Can be specified when Access Limitation Type is "Allowed Address" or "Deny Address".
      The length must not exceed 255 characters.
*10: If HTTP is set to "Enable", HTTPS is changed to "Enable" automatically. You are not allowed to set "Enable" to HTTP only.
*11: Port number can be specified only when the relevant port is set to "Enable". The port number must be unique.

2.3.2   **User Management**

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

```
User Management
  User Account
  Active Directory (Property)
  Active Directory (Group)
  LDAP
  Help
  Return to the previous menu
    Previous menu:[ESC]
```

User Management menu

The table below shows details of parameters and their default value on the User Management menu items.

(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 1. *5 *7	Enable
Server Address1	Specify IP address of Domain Controller 1. *5 *8	Blank
Domain Controller Server2	Enable or disable Domain Controller 2. *5 *7	Disable
Server Address2	Specify IP address of Domain Controller 2. *5 *8	Blank
Domain Controller Server3	Enable or disable Domain Controller 3. *5 *7	Disable
Server Address3	Specify IP address of Domain Controller 3. *5 *8	Blank
Active Directory (Group)		
Group Name	Specify group name. *8	Blank
Group Domain	Specify group domain. *6	Blank
Privilege	Specify privilege of group. *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	636
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 start start with hyphen (-). In addition, "root", "null", "MWA", "AccessByEM-Poem", and names which are already assigned for other number are not allowed.
*3:   Up to 19 ASCII characters excluding " " (blank), " (quotation), & (ampersand), ? (question mark), = (equal sign), #, and ¥, can be used.
*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.
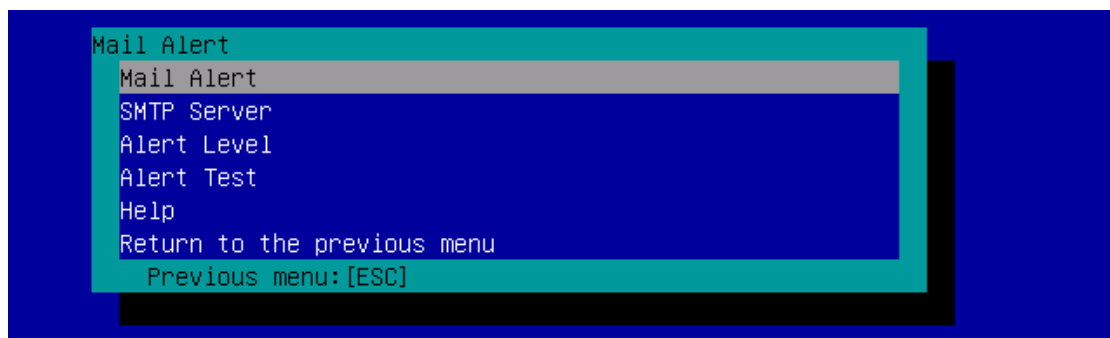*8:   Can be specified only when domain controller server is set to "Enable".
*9:   Can be specified only when LDAP authentication is set to "Enable".
*10: Characters in the range between 4 and 62 including alphanumeric, hyphen, underscore, period, comma, and equal sign can be used.
*11: Alphanumeric characters in the range between 4 and 31 excluding ", #, and ¥ can be used.

2.3.3   Mail Alert

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

```
Mail Alert
  Mail Alert
  SMTP Server
  Alert Level
  Alert Test
  Help
  Return to the previous menu
    Previous menu:[ESC]
```

Mail Alert menu

The table below shows details of parameters and their default values.

(1/2)

Item	Description	Default Value
Mail Alert		
SMTP 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 User 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 checked address. Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the checked address. Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the checked address. 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 method should be enabled.
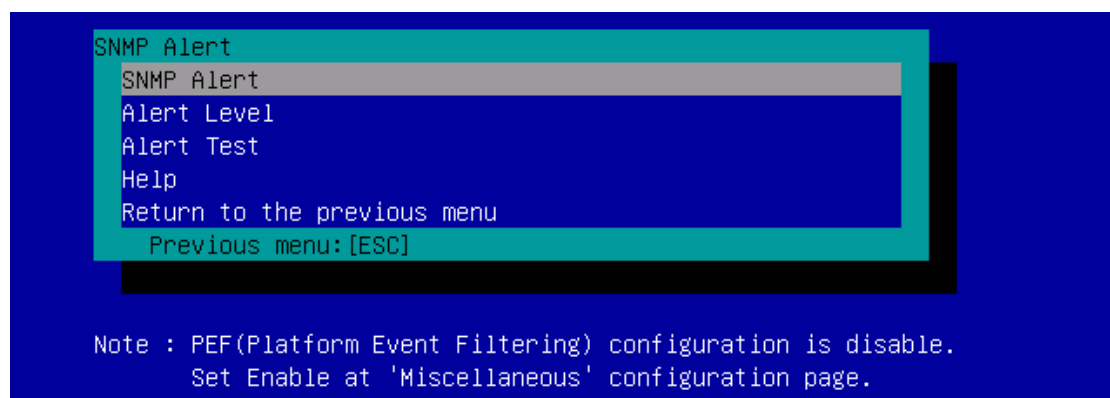*8:   Up to 64 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and ¥, can be used.
*9:   Up to 19 alphanumeric characters excluding " " blank, ",?, =, <, >, #, and ¥, can be used.
*10: Be sure to perform Alert Test after all the parameters are configured appropriately.
       Alert feature may fail depending on configuration made for network or alert receiver.

2.3.4   SNMP Alert

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

```
SNMP Alert
  SNMP Alert
  Alert Level
  Alert Test
  Help
  Return to the previous menu
    Previous menu:[ESC]


Note : PEF(Platform Event Filtering) configuration is disable.
       Set Enable at 'Miscellaneous' configuration page.
```

SNMP Alert menu

The table below shows details of parameters and their default values.

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 Reciever1	Enable or disable primary receiver. *4	Enable
IP Address1	Specify the IP Address of primary receiver. *5	0.0.0.0
Alert Reciever2	Enable or disable secondary receiver. *4	Disable
IP Address2	Specify the IP Address of secondary receiver. *5	0.0.0.0
Alert Reciever3	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 checked address. Error, Warning : When "Error" or "Warning" is detected in each sensor type, the alert is sent to the checked address. Error, Warning, Information : When "Error", "Warning" or "Information" is detected in each sensor type, the alert is sent to the checked address. Separate Setting : You can arbitrarily select the event to alert in each sensor type.	Error, Warning
Alert Test	Execute a test by SNMP alert. *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 **System Operation** menu appears when you select **System Operation** on the **BMC Configuration** menu.
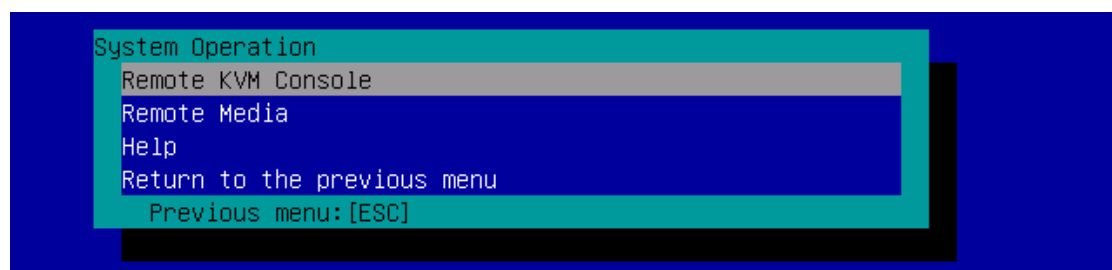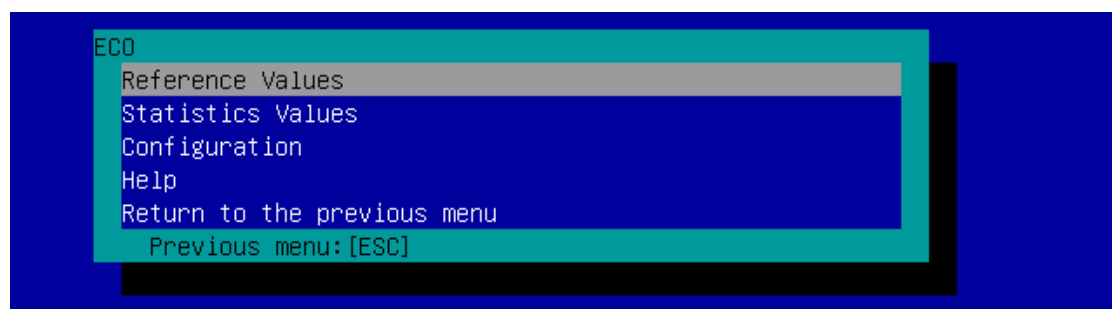

System Operation menu

The table below shows details of parameters and their default values.

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 Absoluite	Relative
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 **ECO** menu appears when you select **ECO** on the **BMC Configuration** menu.

ECO menu

The table below shows details of parameters and their default values.

(1/2)

Item	Description	Default Value
Reference Values	Displays reference values of power consumption.	
Maximum Power Consumption	Shows the minimum 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 Supply	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 *3	−
Configuration		
Aggressive Mode	Enable or disable Aggressive Mode.	Disable
Power Threshold(Pa)	Specify power threshold in Aggressive Mode. Allowable range is between AAA and Operating power at maximum configuration (Watt). *4 *5	Operating power at maximum configuration
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. *4	The larger value comparing with 2 and Minimum system value
Shutdown System	Enable or disable the feature to shutdown the system when power consumption exceeds the time specified in Correction time limit. *4	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 BBB and Standby power at minimum configuration (Watt). *6 *7	The larger value comparing with Power Threshold(Pa) –10 and Standby Power at Minimum Configuration +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. *6	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. *8 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 values are between 0 and (Number of maximum cores –1). *8	0

*1:   These values are reference purpose only. Each value might be different from the actual value which depends on your precise server configuration.
*2:   Technology that decreases frequency or duty cycle of clock, and suppresses power consumption.
*3:   This item is not displayed when the system does not support this function.
*4:   Can be specified only when Aggressive Mode is set to "Enable".
*5:   AAA denotes "Standby power at minimum configuration" or "Power Threshold(Pn)".
*6:   Can be specified only when Non-Aggressive Mode is set to "Enable".
*7:   BBB denotes "Operating power at maximum configuration" or "Power Threshold(Pa)".
*8:   Can be specified only when Boot Time Configuration is set to "Enable".

Notes	• 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 can no longer be reduced. • 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 after shutdown. When validating this setup, it is recommended to fully consider the value of "Power Threshold (Pa)" to be specified.

2.3.7   Miscellaneous

The **Miscellaneous** menu appears when you select **Miscellaneous** on the **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 : SEL is not recorded any more. Clear all SEL : Delete all SEL and record SEL newly. Overwrite oldest SEL : Old SEL is overwritten with new SEL.	Stop logging SEL
Platform Event Filter	Enable or disable Platform Event Filter. *2	Enable
Management Software	Setting for remote management.	−
ESMPRO Management	Enable or disable NEC ESMPRO Management. *3	Enable
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 Configuration port in BIOS is set to "Serial Port B" at next boot.

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

2.4   Clear BMC Configuration

If you select **Clear BMC SEL** on the main menu, the confirmation message below appears.
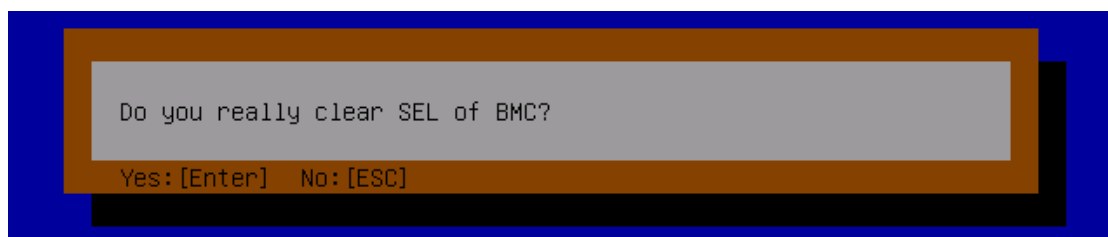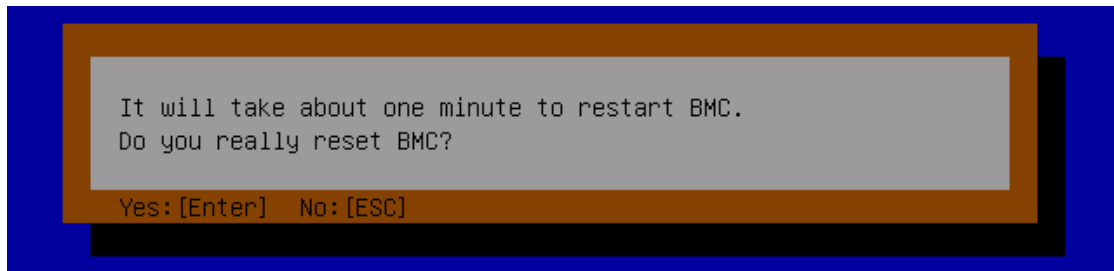

Confirmation message (Clear BMC SEL)

<ESC> key

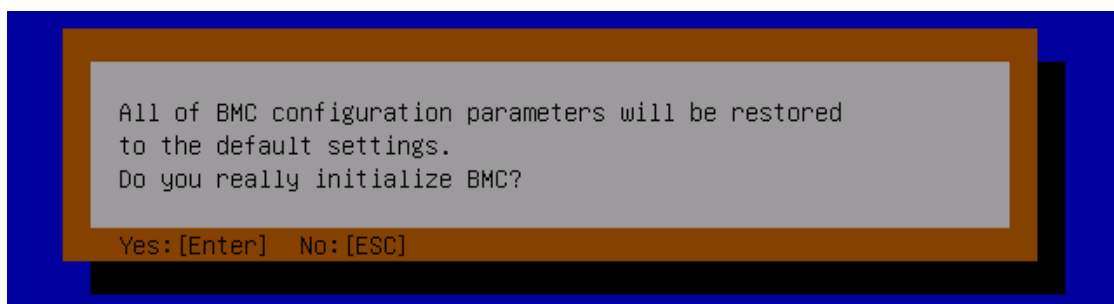: Aborts processing and returns to the main menu.

<Enter> key

: Clears SEL of BMC.

2.5   **Resetting BMC**

If you select **BMC Reset** on the main menu, the confirmation message below appears.

```
It will take about one minute to restart BMC.
Do you really reset BMC?

Yes:[Enter]   No:[ESC]
```

Confirmation message (BMC Reset)

<ESC> key

  : Aborts processing and returns to the main menu.

<Enter> key

  : Resets BMC.

   It takes about two minute to restart BMC.

Note	If you select **BMC Reset** on the main menu, wait for at least two minutes before shutting down the system, rebooting the system, or performing any switch operation.

2.6   **Initializing BMC**

If you select **BMC Initialization** on the main menu, the confirmation message below appears.

```
All of BMC configuration parameters will be restored
to the default settings.
Do you really initialize BMC?

Yes:[Enter]   No:[ESC]
```

Confirmation message (Initialization)

<ESC> key

  : Aborts processing and returns to the main menu.

<Enter> key

  : Initializes BMC configuration settings and restores the default value except.

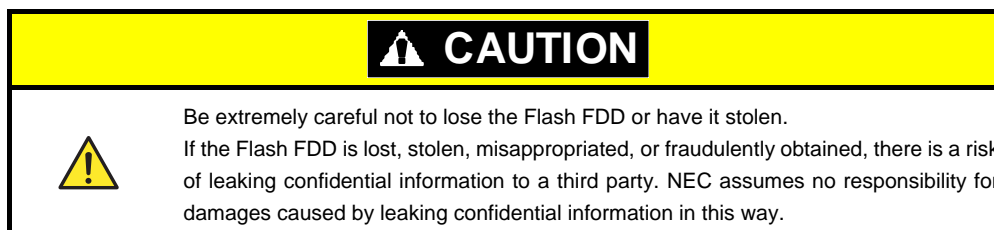   After initialization, it takes about two minutes to restart BMC.

Note	Do not shut down the system, reboot the system, or perform any switch operation while BMC is being reset (for approximately two 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 the server, remove it before using Flash FDD.

⚠ CAUTION

⚠ Be extremely careful not to lose the Flash FDD or have it stolen.
If the Flash FDD is lost, stolen, misappropriated, or fraudulently obtained, there is a risk of leaking confidential information to a third party. NEC assumes no responsibility for damages caused by leaking confidential information in this way.

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

3.1   Precautions

Do not use Flash FDD to back up data. Flash FDD can be used to save temporary data.

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.
- Before touching Flash FDD, discharge static electricity from your body by touching a nearby metal object such as a doorknob or aluminum frame.
- Do not disassemble 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.

3.1.3   Precautions when using EXPRESSBUILDER

- Connect Flash FDD after Home Menu is displayed.
- When you close EXPRESSBUILDER, remove Flash FDD from the server.

4.   **Power Control Feature**

Power consumption of the server can be controlled through 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 Engine3 User's Guide*" or *NEC ESMPRO Manager online help*.
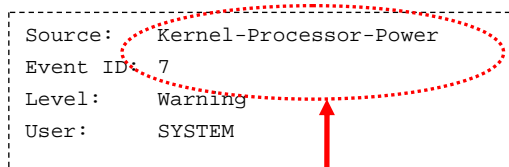
4.1   **Supported OS**

The power control feature is available for the following OSs.

OSs that support the power control feature

- Windows Server 2008 Standard (RTM, SP2 or later)
- Windows Server 2008 Enterprise (RTM, SP2 or later)
- Windows Server 2008 R2 Standard
- Windows Server 2008 R2 Enterprise
- Windows Server 2012 Standard
- Windows Server 2012 Datacenter
- Red Hat Enterprise Linux 5.9 or later (x86)
- Red Hat Enterprise Linux 5.9 or later (EM64T)
- Red Hat Enterprise Linux 6.4 or later (x86)
- Red Hat Enterprise Linux 6.4 or later (x86_64)

4.2   **Notes on Using Windows Server 2008**

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

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

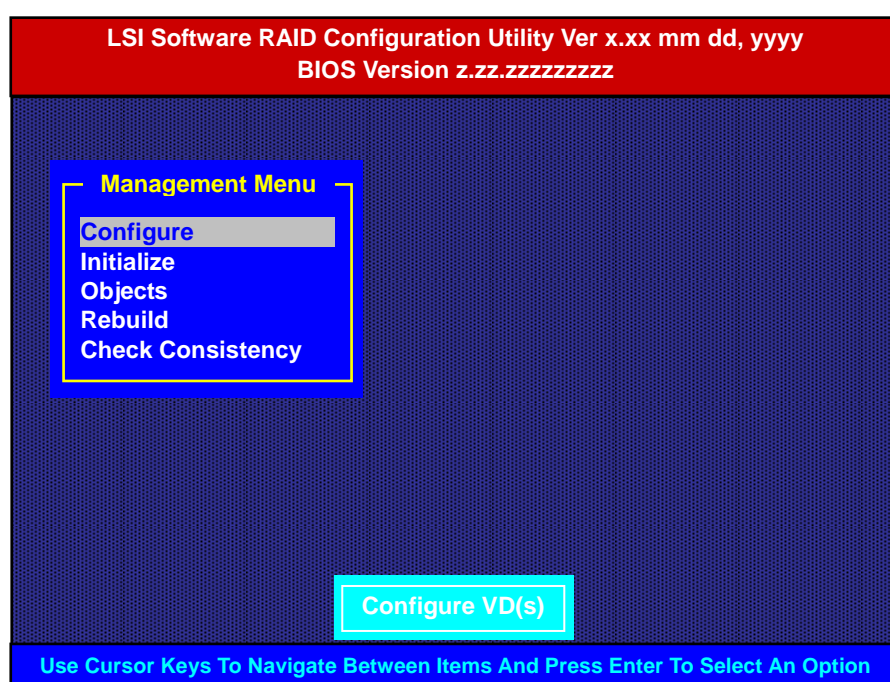Source: Kernel-Processor-Power
Event ID: 7 or 37

5.   RAID System Configuration

This section describes the RAID configuration utility, the LSI Software RAID Configuration Utility.

5.1   Running the LSI Software RAID Configuration Utility

To run LSI Software RAID Configuration Utility, press <Ctrl> + <M> keys or <Enter> key while the following message appears on the POST screen.

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

LSI Software RAID Configuration Utility Ver x.xx mm dd, yyyy
BIOS Version z.zz.zzzzzzzzz

Management Menu

Configure
Initialize
Objects
Rebuild
Check Consistency

Configure VD(s)

Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option

*1:   In the above figure, x of LSI Software RAID Configuration Utility Verx.xx indicates the utility version.

*2:   mm dd, yyyy indicates the date when the utility was created.

*3:   z of BIOS Version z.zz.zzzzzzzzz indicates the version of the LSI Software RAID BIOS.

5.1.1   Exiting the LSI Software RAID Configuration Utility

On the TOP menu of the LSI Software RAID Configuration Utility, press <Esc> key.
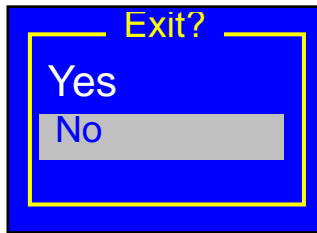
Choose **Yes** to exit the utility.

When the following message appears, press <Ctrl> + <Alt> + <Delete> keys to restart the server.

```
Press<CTRL><ALT><DEL> To Reboot The System
```

5.2   Menu Tree

◇: Selection and execution parameter   ●: Setting parameter   •: Data display

◆: Can be set or modified after a Virtual Drive is created

(1/2)

Menu	Description
◇Configure	Specify configuration settings
◇Easy Configuration	Set a configuration using fixed values
◇New Configuration	Set a new configuration
◇View/Add Configuration	Add or view a configuration
◇Clear Configuration	Clear the configuration data
◇Select Boot Drive	Select a Virtual Drive to be booted
◇Initialize	Initialize the Virtual Drive
◇Objects	Set up various objects
◇Adapter	Set up the RAID Controller
◇Sel. Adapter	Select an adapter
●Rebuild Rate	30
●Chk Const Rate	30
●FGI Rate	30
●BGI Rate	30
●Disk WC	Off
●Read Ahead	On
●Bios State	Enable
●Cont on Error	Yes
●Fast Init	Enable
●Auto Rebuild	On
●Auto Resume	Enable
●Disk Coercion	1 GB
●Factory Default	Reset to the default values
◇Virtual Drive	Operate a Virtual Drive
◇Virtual Drives	Select a Virtual Drive (when multiple Virtual Drives exist)
◇Initialize	Initialize the Virtual Drive
◇Check Consistency	Check Virtual Drive consistency
◇View/Update Parameters	View the Virtual Drive information
• RAID	View the RAID level
• SIZE	View the Virtual Drive capacity
• Stripe SIZE	View the stripe size
• #Stripes	View the number of Hard Disk Drives in the Virtual Drive
• State	View the Virtual Drive status
• Spans	View the span setting
• Disk WC	View the write cache setting
• Read Ahead	View the read ahead setting

(2/2)

Menu	Description
◇Physical Drive	Operate a physical drive
◇Physical Drive Selection Menu	Select a physical drive
◇Make HotSpare	Set a hot spare disk for auto rebuilding
◇Force Online	Forcibly place a Hard Disk Drive online
◇Change Drv State	Forcibly place a Hard Disk Drive in the Virtual Drive offline Cancel the setting of a hot spare Hard Disk Drive
◇Device Properties	View the Hard Disk Drive information
• Device Type	Device type
• Capacity	Capacity
• Product ID	Model
• Revision No.	Revision number
• Link Speed	Link speed
◇Rebuild	Perform rebuilding
◇Check Consistency	Check Virtual Drive consistency

5.3   Using LSI Software RAID Configuration Utility

5.3.1   Creating and adding a configuration

```
┌──────────────────────────────────────────────────────────────┐
│         Run the LSI Software RAID Configuration Utility         │
└──────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌──────────────────────────────────────────────────────────────┐
│      Set new configuration data (disk array/virtual drive settings)      │
└──────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌──────────────────────────────────────────────────────────────┐
│                  Check the virtual drive settings                  │
└──────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌──────────────────────────────────────────────────────────────┐
│                    Initialize the virtual drive                    │
└──────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌──────────────────────────────────────────────────────────────┐
│                   Execute the Consistency Check                   │
└──────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌──────────────────────────────────────────────────────────────┐
│         Exit the LSI Software RAID Configuration Utility         │
└──────────────────────────────────────────────────────────────┘
```
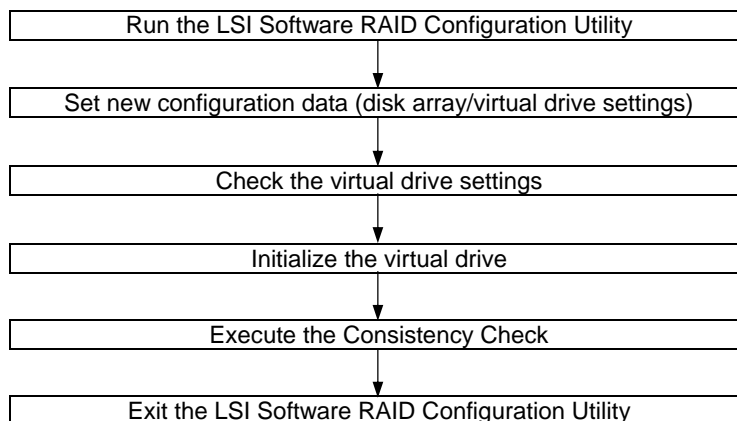
1. Run the LSI Software RAID Configuration Utility.

2. To create a new configuration, choose **Configure** and then **New Configuration** from the TOP menu (Management Menu).
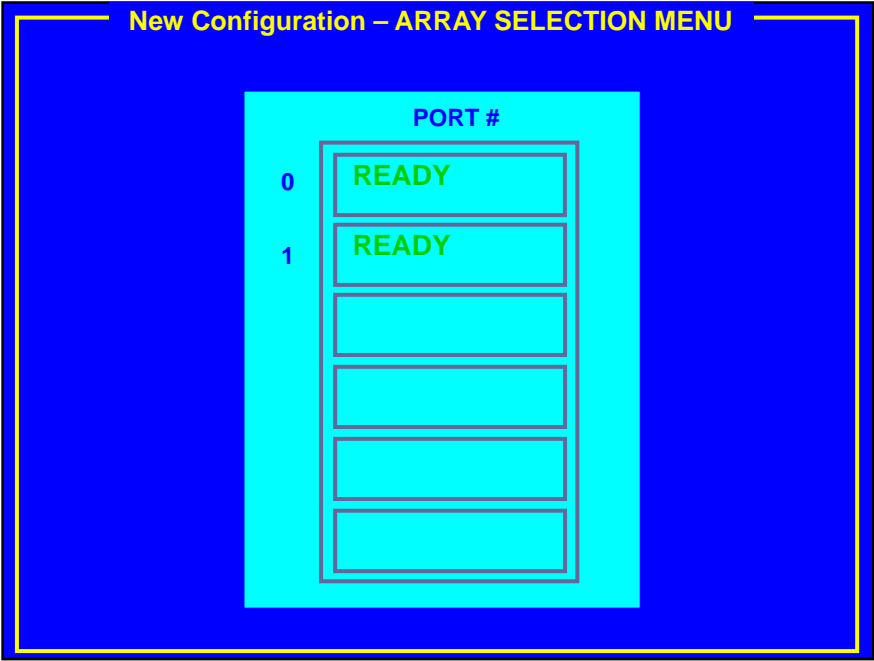   To add a configuration, choose **Configure** and then **View/Add Configuration**.

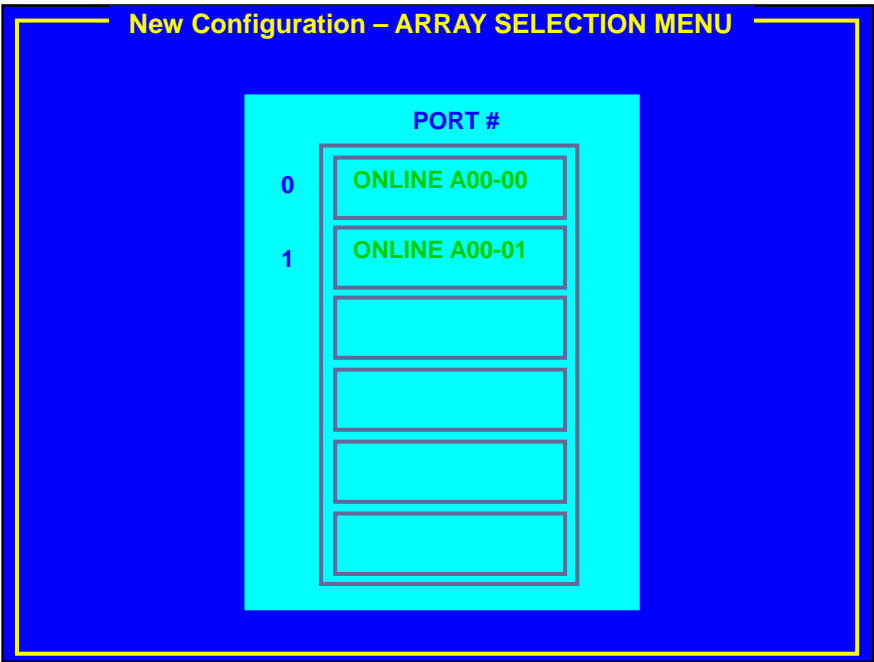| Important	**When a configuration is created by choosing *New Configuration*, the existing configuration data is cleared. To add configuration data to the existing configuration, choose *View/Add Configuration*.**

| Note	• When **Easy Configuration** is chosen to create a configuration, the Virtual Drive capacity cannot be specified. If you want to specify the capacity, choose **New Configuration** or **View/Add Configuration**. • The capacity of the virtual drive for RAID10 is set as the maximum capacity. You cannot specify the capacity. • Skip **Consistency Check** for RAID0.

3. When the confirmation message "Proceed?" appears, choose **Yes**.
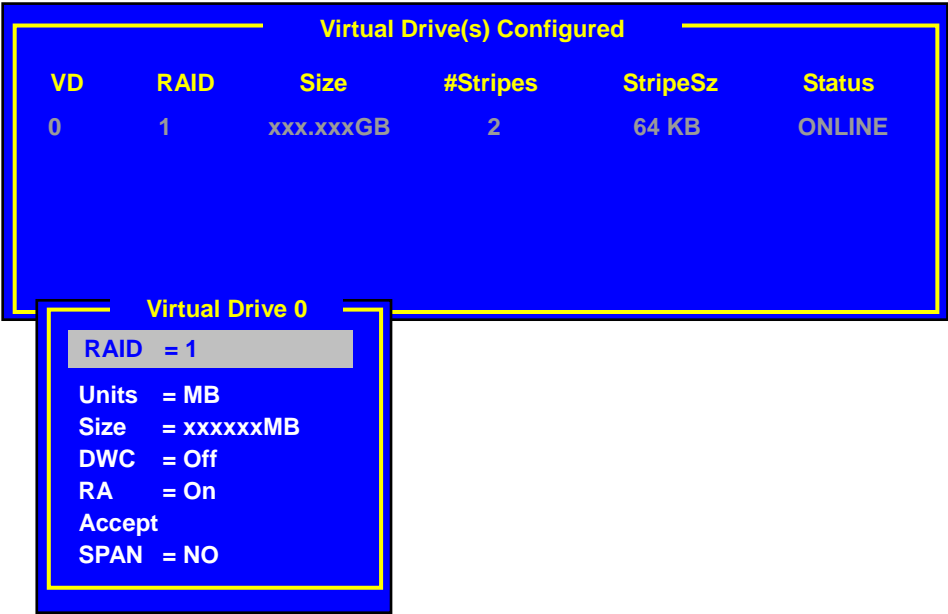   The New Configuration - ARRAY SELECTION MENU screen appears.

```
┌──────── New Configuration – ARRAY SELECTION MENU ────────┐
│                                                          │
│                      PORT #                              │
│                 ┌──────────────────┐                     │
│              0  │  READY           │                     │
│                 ├──────────────────┤                     │
│              1  │  READY           │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 └──────────────────┘                     │
└──────────────────────────────────────────────────────────┘
```

4. Use the arrow keys to move the cursor to the hard disk drive to be configured as an array disk, and then
    press <Space> key.
    The selected hard disk drive status changes from "READY" to "ONLINE".

```
┌──────── New Configuration – ARRAY SELECTION MENU ────────┐
│                                                          │
│                      PORT #                              │
│                 ┌──────────────────┐                     │
│              0  │  ONLINE A00-00   │                     │
│                 ├──────────────────┤                     │
│              1  │  ONLINE A00-01   │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 ├──────────────────┤                     │
│                 │                  │                     │
│                 └──────────────────┘                     │
└──────────────────────────────────────────────────────────┘
```

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

```
                    Select Configurable Array(s)

          A-0

      SPAN-1
```
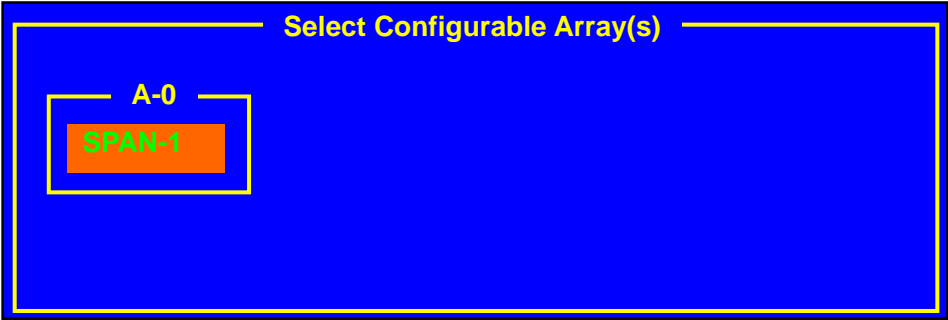
6. Press <F10> key to create a virtual drive.
    The Virtual Drive(s) Configured screen is displayed. The following screen shows an example of RAID1
    consisting of two hard disk drives. xxx.xxxGB indicates the capacity of the virtual drive.

```
                    Virtual Drive(s) Configured

   VD        RAID        Size        #Stripes        StripeSz        Status
   0         1           xxx.xxxGB      2             64 KB           ONLINE




           Virtual Drive 0

      RAID   = 1

      Units   = MB
      Size    = xxxxxxMB
      DWC     = Off
      RA      = On
      Accept
      SPAN    = NO
```

7. Use the arrow keys to move the cursor to **RAID**, **Size**, **DWC**, **RA**, or **Span**.
    To specify each setting, press <Enter> key.

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

Parameter	Description
0	RAID0
1	RAID1
10	RAID10

    The available RAID level is depending on the number of hard disk drives configuring the array.

Important	Although *RAID5* is displayed if three or more hard disk drives are configured, this server does not support RAID5.

    (2) **Units**: Specify the units of the virtual drive capacity specified by **Size** (MB, GB, or TB).

    (3) **Size**: Specify the virtual drive capacity. Up to eight virtual drives can be created. The capacity of the virtual drive for RAID10 cannot be specified.

    (4) **DWC**: Specify the disk write cache.

Parameter	Description
Off	Write through
On*	Write back

*Recommended

    * **On** (write back) is recommended for this server, but note that cache
       data is lost when power failure occurs.
       When **Off** is selected, the performance is lowered to 50% or less
       compared with **On** state.

    (5) **RA**: Specify whether to perform read ahead.

Parameter	Description
Off	Do not perform read ahead
On*	Perform read ahead

*Recommended

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

    This parameter is not used for this server.

8. When all settings are specified, choose **Accept** and then press <Enter> key.

9. Press <ESC> key to close the screen. When the message "Save Configuration?" appears, choose **Yes**.

10. Press <Esc> key to return to the TOP menu screen.

11. On the TOP menu screen, choose **Objects**, **Virtual Drive**, and then **View/Update Parameters** to check the virtual drive information.

12. Press <Esc> key to return to the TOP menu screen, and then choose **Initialize**.

13. On the Virtual Drives screen, use the arrow keys to move the cursor to the virtual drive to be initialized, and then press the space key.
    The virtual drive is selected.

14. Press <F10> key.

15. To start the initialization of the selected virtual drive, choose **Yes** at the initialization confirmation message.
    The initialization completes when the "Completed" progress bar on the "Init Of VD Is In Progress" screen reaches 100%. Press <Esc> key to return to the TOP menu screen.

16. Execute the consistency check process at the virtual drive for RAID1/RAID10 after initialization is complete.
    For details about the consistency check, see *Chapter 2 (5.3.4 Executing the Consistency Check)*.

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

5.3.2   Executing rebuilding manually

Replace the hard disk drive

Run the LSI Software RAID Configuration Utility

Execute rebuilding

Exit the LSI Software RAID Configuration Utility
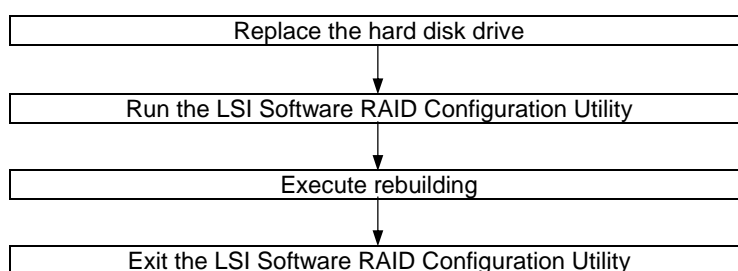
1. Replace the hard disk drive and turn on the server.

2. Run the LSI Software RAID Configuration Utility.

3. Select **Rebuild** from the TOP menu.
    The Rebuild - PHYSICAL DRIVES SELECTION MENU screen appears.

Rebuild – PHYSICAL DRIVES SELECTION MENU

PORT #

0   ONLINE   A00-00

1   FAIL   A00-01
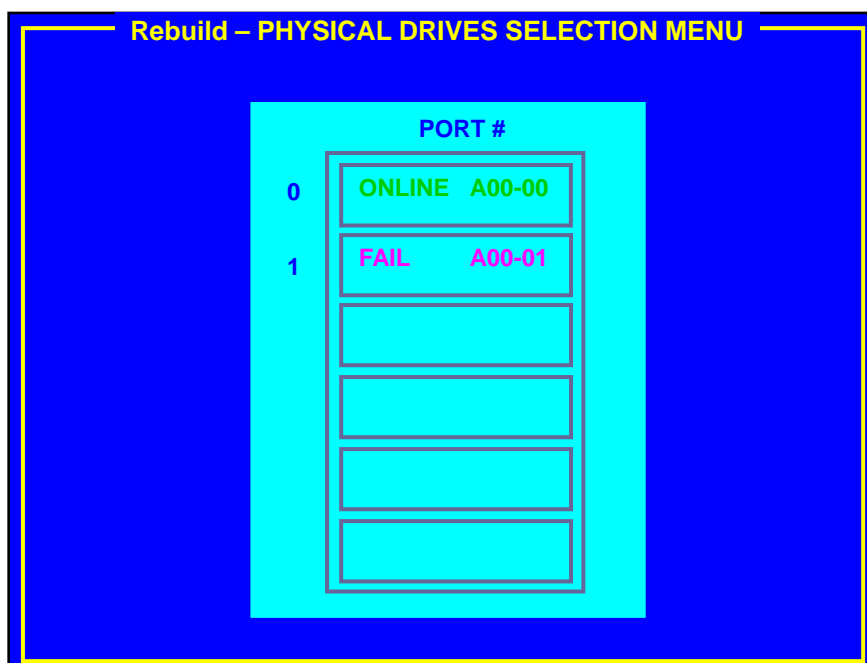
4. Move the cursor to a hard disk drive indicated by "FAIL", and then press the space key to select it.
    The "FAIL" of the selected drive turns pink.

5. Press <F10> key after selecting the hard disk drive.

6. To start the rebuilding the selected drive, choose **Yes** at the confirmation message.
    Rebuilding completes when the "Completed" progress bar on the REBUILDING screen reaches 100%.

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

5.3.3   Setting a hot spare

Install a hard disk drive

↓

Run the LSI Software RAID Configuration Utility

↓

Set the hard disk drive as a hot spare

↓

Exit the LSI Software RAID Configuration Utility
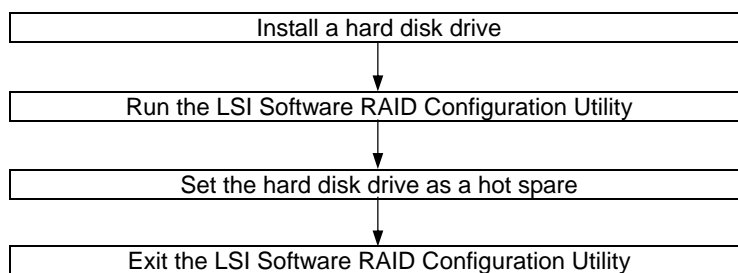
1. Install a hard disk drive to be used as a hot spare, and then turn on the server.

2. Run the LSI Software RAID Configuration Utility.

3. From the TOP menu, choose **Objects** and then **Physical Drive**.
    The Objects - PHYSICAL DRIVE SELECTION MENU screen appears.

```
    Objects – PHYSICAL DRIVES SELECTION MENU

                        PORT #

            0      ONLINE A00-00

            1      ONLINE A00-01

            2      READY
```
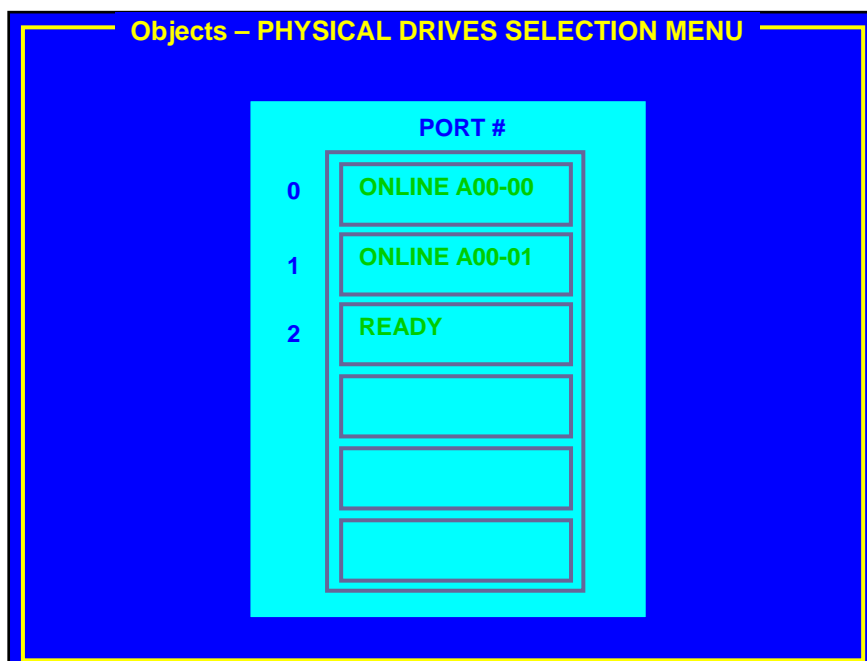
4. Move the cursor to the hard disk drive to be used as a hot spare drive, and then press <Enter> key.

5. Choose **Make HotSpare**.

6. When you choose **Yes** at the confirmation message, the indication of the hard disk drive specified as a hot spare drive changes to "HOTSP".

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

Objects – PHYSICAL DRIVES SELECTION MENU

PORT #

0	ONLINE A00-00
1	ONLINE A00-01
2	HOTSP
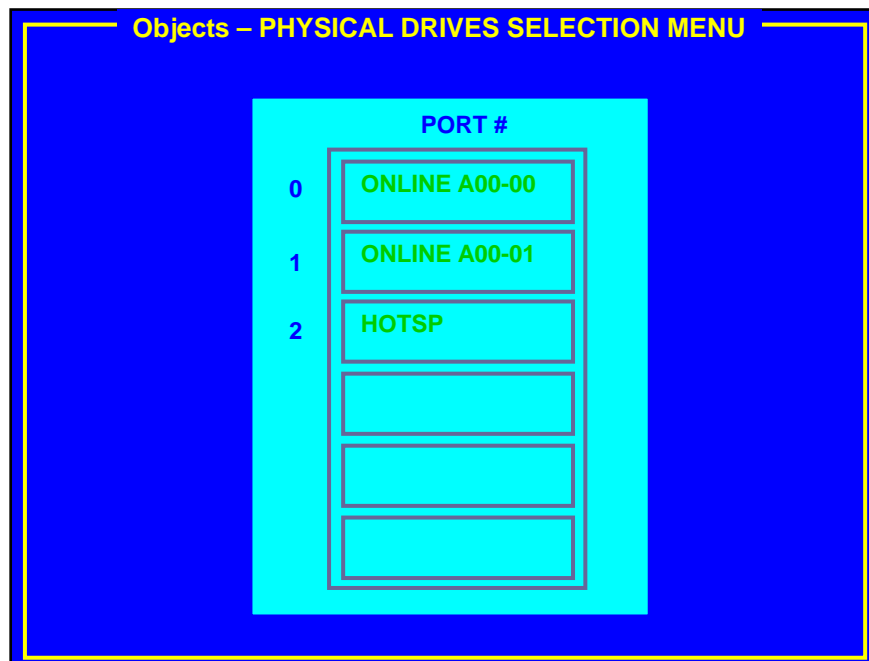
Note	• To cancel the hot spare setting, choose **Objects** and then **Physical Drive** from the TOP menu. Move the cursor to the hard disk drive to cancel the hot spare setting, press <Enter> key, and then select **Change Drv State**.
	• If two or more hard disk drives with the same capacity are assigned as a hot spare drive, rebuilding is executed from the drive that has a smaller port number.

5.3.4   Executing the Consistency Check

Run the LSI Software RAID Configuration Utility

Execute the Consistency Check

Exit the LSI Software RAID Configuration Utility
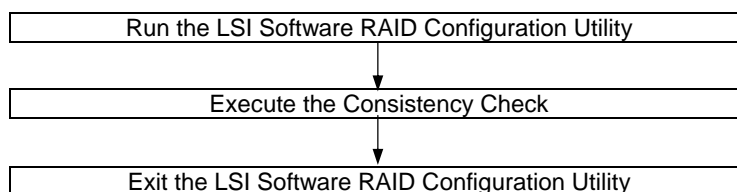
Important **Do not execute the Consistency Check for RAID0.**

1. Run the LSI Software RAID Configuration Utility.

2. Choose **Check Consistency** from the TOP menu.
    The Virtual Drives screen appears.

3. Move the cursor to the hard disk drive to be checked for consistency, and then press the space key to select it. The virtual drive is selected.

4. Press <F10> key.

5. To start the Consistency Check, choose **Yes** at the confirmation message.
    The Consistency Check completes when the "Completed" progress bar on the CC Under Progress screen reaches 100%.

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

5.3.5   Other features

(1) Clear Configuration

Clears the configuration data. From the TOP menu, choose **Configure** and then **Clear Configuration**. When **Clear Configuration** is executed, all the configuration data on the RAID controller and hard disk drives is cleared.

If the old configuration data is remained in hard disk drive, configuration may fail. In this case, execute **Clear Configuration**.

Note	To delete the configuration data of a virtual drive, choose **Objects** and then **Virtual Drive** from the TOP menu. Move the cursor to the virtual drive to be deleted, and then press <Delete> key. When the confirmation message "Want To Delete A VD?" appears, choose **Yes**.

(2) Force Online

Forcibly places a failed hard disk drive online.
From the TOP menu, choose **Objects** and then **Physical Drive**. Select the drive to be placed online, and then choose **Force Online**.

(3) Rebuild Rate

Specifies the rebuilding rate.
From the TOP menu, choose **Objects**, **Adapter**, and then **Rebuild Rate**.
The setting range is 0 to 100%. The default value is 30% (recommended).

(4) Viewing Hard Disk Drive Information

Displays information about a hard disk drive.
From the TOP menu, choose **Objects** and then **Physical Drive**. Select the drive whose information you want to view, and then choose **Drive Properties**.

5.4   LSI Software RAID Configuration Utility and Universal RAID Utility

The points to be noted when using the Universal RAID Utility together with the LSI Software RAID Configuration Utility are described below.

(1) Terms

Some terms are different between the LSI Software RAID Configuration Utility and Universal RAID Utility. When using the Universal RAID Utility together with the LSI Software RAID Configuration Utility, replace the terms as shown in the table below:

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

Tips   `raidcmd` is a command provided by the Universal RAID Utility. For details, see "*Universal RAID Utility User's Guide*".

(2) Numbering

The numbers indicating RAID controller information differ between the LSI Software RAID Configuration Utility and Universal RAID Utility as shown in the table below.

For details about the differences, see "*Universal RAID Utility User's Guide*".

Item	Management Number	
	LSI Software RAID Configuration Utility	Universal RAID Utility
Adapter (RAID Controller)	Starts from 0	Starts from 1
Virtual Drive (Logical Drive)	Starts from 0	Starts from 1
Array (Disk Array)	Starts from 0	Starts from 1
Physical drive (Physical Device)	Starts from 0	To be assigned based on an enclosure that contains the physical device and its slot number.

(3)   Priority specification

For setting and displaying the priority of the Rebuild and Consistency Check for the RAID controller, the LSI Software RAID Configuration Utility uses numerical values while the Universal RAID Utility uses three levels of high, middle, and low. The table below shows the correspondence between the numerical value ranges and levels for each item.

- Correspondence between the setting values for the LSI Software RAID Configuration Utility and the display levels for the Universal RAID Utility

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

- Values to be set when changing the level with the Universal RAID Utility

Item	Selection levels of the Universal RAID Utility	Setting values
Rebuild priority	High	20
Rebuild Rate (LSI Software RAID Configuration Utility)	Middle	10
	Low	5
Consistency Check priority	High	20
Chk Const Rate (LSI Software RAID Configuration Utility)	Middle	10
	Low	5

Tips	• The LSI Software RAID Configuration Utility can specify **FGI** (foreground initialization) and **BGI Rate** (background initialization priority), but the Universal RAID Utility cannot specify the background initialization priority. • The Universal RAID Utility can specify the initialization priority, except for the LSI MegaRAID. Therefore, no parameter for specifying the initialization priority is provided on the Option tab in the RAID Viewer properties.

5.5   WebBIOS and Universal RAID Utility

The points to be noted when using the Universal RAID Utility together with the WebBIOS are described below.

(1) Terms

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

Terms of WebBIOS	Terms of Universal RAID Utility	
	RAID Viewer	raidcmd
Adapter	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 the Universal RAID Utility. For details, refer to "*Universal RAID Utility User's Guide*".

(2) Numbering

The numbers indicating RAID Controller information differ between the WebBIOS and Universal RAID Utility as shown in the table below.

For details about the differences, see "*Universal RAID Utility User's Guide*".

Item	Management Number	
	WebBIOS	Universal RAID Utility
Adapter (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 specification

For setting and displaying the priority of the background tasks (Rebuild, Patrol Read, and Consistency Check) for the RAID controller, the WebBIOS uses numerical values while the Universal RAID Utility uses three levels of high, middle, and low. The table below shows the correspondence between the numerical value ranges and levels for each item. In this case, the priority is the percentage of the background task processing to all processes being processed by the RAID controller.

- Correspondence between the setting values for the WebBIOS and the display levels for the Universal RAID Utility

Item	Setting values of the LSI Software RAID Configuration Utility	Display levels of the 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

- Values to be set when changing the level with the Universal RAID Utility

Item	Selection levels of the 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	• The WebBIOS can specify the background initialization priority, but the Universal RAID Utility cannot. • Although the Universal RAID Utility can specify the priority of initialization (Slow Initialize), this server does not support this function.

6.   Details of EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows and maintain the server. Bundled software and instruction manuals are provided by EXPRESSBUILDER.

6.1   Starting EXPRESSBUILDER

You can start EXPRESSBUILDER using the following ways.

Tips	Remove other removable media before starting EXPRESSBUILDER.

DVD:

The EXPRESSBUILDER disc is attached as standard. You can start the disc using the following two ways:

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

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

(2)   Insert the disc into a computer on which Windows is running.

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

Internal Flash Memory (optional):

EXPRESSBUILDER can be started from Internal Flash Memory when Internal Flash Memory is installed on the server.

Note	Copy the data of EXPRESSBUILDER to Internal Flash Memory first. For details, see *(4) Internal Flash Memory* in *Chapter 2 (6.3 Utilities Provided by EXPRESSBUILDER)*.

Confirm that the EXPRESSBUILDER disc or other bootable disc is not inserted. Press <F3> key when the following message appears on POST screen.

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

If "<F3> Internal Flash Memory" is not displayed on POST screen, make sure that Internal Flash Memory is connected correctly. See *a) Check the status* in *Chapter 2 (6.3 Utilities Provided by EXPRESSBUILDER - (4) Internal Flash Memory*.

When EXPRESSBUILDER is started from Internal Flash Memory, Boot Selection Menu shown in *Chapter 2 (6.2 Menus of EXPRESSBUILDER) - (1) Boot Selection Menu* appears.

6.2   **Menus of EXPRESSBUILDER**

You can operate EXPRESSBUILDER using onscreen menus.

(1) Boot Selection Menu

When EXPRESSBUILDER starts from disc or Internal Flash Memory, the menu below appears.

Boot selection
OS installation *** default ***
Tool menu (Normal mode)
Tool menu (Redirection mode)

Use the upper and lower arrow keys to move the cursor, and then press <Enter> key to choose it.

OS installation is selected if no key is pressed.

Home Menu shown in *(2) Home Menu* appears when choosing **OS installation**.

Tool Menu shown in *(3) Tool Menu* appears when choosing **Tool menu (Normal mode)**. The screen appears on the display. Choose this mode usually.

You can operate EXPRESSBUILDER remotely 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.

The following menus are included.

a) Setup

Configures RAID array or install Windows easily. For details about how to install Windows, see "*Installation Guide (Windows)*".

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

b) Utilities

Starts a utility provided by EXPRESSBUILDER.

See *Chapter 2 (6.3 Utilities Provided by EXPRESSBUILDER)* for details.

c) Versions

Displays software and driver versions in EXPRESSBUILDER.

d) Exit

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

(3) Tool Menu

Test and diagnostics

Return to the previous menu
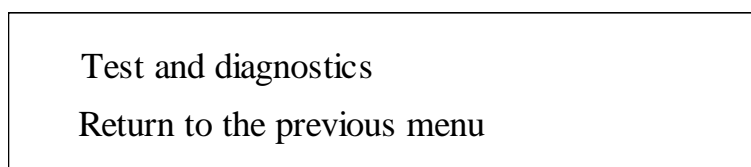
The system diagnostics, which is used to analyze and diagnose the server and check the cable connection, can be started from Tool Menu. For details about system diagnostics, see *Chapter 1 (8. System Diagnostics)*.

(4)   Autorun Menu

You can read instruction manuals or install bundled software using Autorun Menu. Adobe Reader is required to view or print manuals.

Integrated Installation

You can easily install Starter Pack or applications using this feature. Log on the system with the built-in Administrator to use this feature.

If you want to uninstall the applications or install individually, choose **Applications**.

6.3   Utilities Provided by EXPRESSBUILDER

The following utilities can be started when choosing **Utilities** from Home Menu.

(1) Starter Pack installation (only on Internal Flash Memory)

Installs Starter Pack to the installed Windows. This feature is only supported when using Internal Flash Memory.

Starter Pack is usually installed from Autorun menu.

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

(2) RAID configuration data

Saves or loads the configuration data on a RAID controller.

You can save the data to Internal Flash Memory when Internal Flash Memory is installed.

(3) File execution

Directly runs an external utility on removable media. **Use this feature only for utilities provided by NEC**.

Note	Do not run the file provided the third party.

(4) Internal Flash Memory (only on disc)

Manages Internal Flash Memory with the following commands:

a) Check the status

Checks whether Internal Flash Memory is installed and accessible. **POST message will be changed** depending on the result of this command. The commands (4)-b) and (4)-c) below can be run when Internal Flash Memory is detected.

Connected: EXPERSSBUILDER can be started by pressing <F3> key. "`<F3> Internal Flash Memory`" is displayed on the screen.

Not connected: EXPERSSBUILDER cannot be started by pressing <F3> key. "`<F3> Internal Flash Memory`" is not displayed on the screen.

b)   Initialize

Clears the data in Internal Flash Memory and initializes (formats) it. Note that **all data in Internal Flash Memory is deleted**.

c) Update

Copies the data of the EXPRESSBUILDER disc or other media to Internal Flash Memory. The data is overwritten and **all the previous data is cleared**.

Tips	The parameter file and RAID configuration data are retained.

7.   EXPRESSSCOPE Engine 3

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

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

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

*   The optional license for remote management (N8115-04) is required to use this feature. A USB mass storage device (Remote FD, Remote CD/DVD, Remote USB Memory, or Virtual Flash) is virtually connected to enable this feature.

Notice of N8115-04 Remove KVM and Media License

When N8115-04 is applied to the server, more than one removable drives other than the actual drive are displayed on the operating system of the server. These added removable drives are the virtual removable drives reserved for the remote media feature of EXPRESSSCOPE Engine 3 (*1).
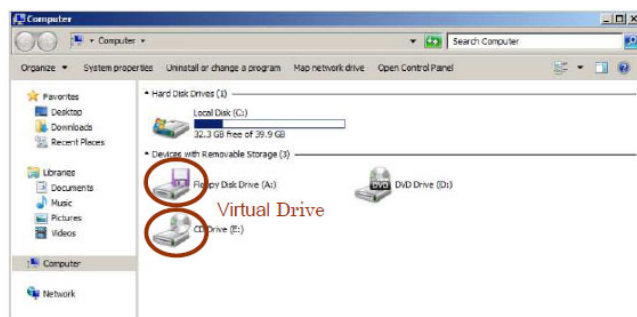
Fig. 1   For example, Windows Server 2008 R2 Computer Folder
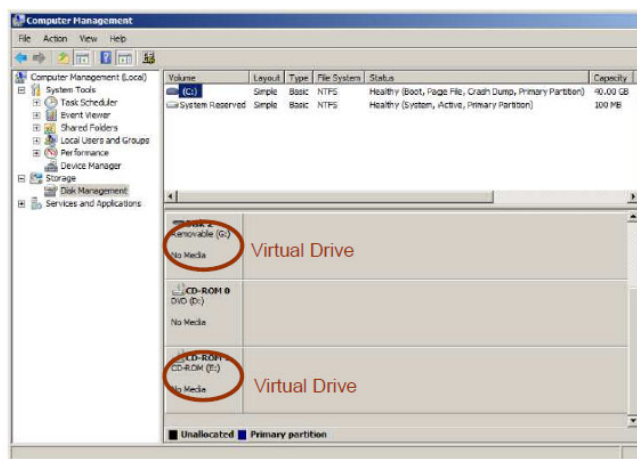
Fig. 2   For example, Windows Server 2008 R2 Server Manager

*1 This feature is to use FD/CD/DVD drives, ISO images and USB flash drives connected to "PC for Management" as drives virtually connected to the server.

8. NEC ESMPRO

8.1 NEC ESMPRO Agent (for Windows)

For details of NEC ESMPRO Agent (for Windows), see "*NEC ESMPRO Agent Installation Guide (Windows)*" in EXPRESSBUILDER or its help.

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 Agent.

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

8.3   **NEC ESMPRO Agent Extension**

NEC ESMPRO Agent Extension enables you to manage the server remotely by this server's BMC communicating with NEC ESMPRO Manager.

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

8.4   **BMC Configuration**

BMC Configuration enables you to specify configurations to this server's BMC.

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

8.5   **NEC ExpressUpdate Agent**

NEC ExpressUpdate Agent enables you to manage and update the versions of the firmware and software installed in this server.

You can install the downloaded packages easily by using NEC ExpressUpdate.

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

Tips	Updates are available for some firmware and software that do not support NEC ExpressUpdate. Refer to the following website to install these packages: http://www.nec.com/global/prod/express/index.html

9.   NEC Product Info Collection Utility

NEC Product Info Collection Utility can collect various information 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. Universal RAID Utility

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

- On-board RAID Controller (LSI Embedded MegaRAID)
- N8103-149 RAID Controller (512 MB, RAID 0/1)
- N8103-150 RAID Controller (512 MB, RAID 0/1/5/6)
- N8103-151 RAID Controller (1GB, RAID 0/1/5/6)
- N8103-152 RAID Controller (1GB, RAID 0/1/5/6)
- N8103-160 RAID Controller (1GB, RAID 0/1/5/6)
- N8103-171 RAID Controller (0MB, RAID 0/1)

See "*Installation Guide (Windows)*" for installation.

See "*Universal RAID Utility User's Guide*" in the attached EXPRESSBUILDER for more information.

10.1 Easy Configuration Feature

You cannot use Easy Configuration with LSI Embedded MegaRAID.

10.2 Creating Logical Drive of RAID 6

Four or more physical devices are mandatory to create a RAID 6 logical drive by using Universal RAID Utility. If you want to create a RAID 6 logical drive from three physical devices, use WebBIOS.

11. 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* in EXPRESSBUILDER.

12. Express Report Service(MG)

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

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.

1. POST Error Message

If POST detects a problem, an error message is displayed or a beep code sounds.

```
System Monitoring Check
... Passed
ERROR
AE81: DIMM1 with error is enabled.
AE02: DIMM2 has been disabled.

Press <F1> to resume, <F2> to setup
```

The message indicates that DIMM1 and
DIMM2 have failed, and that DIMM1 has
been forcibly started up.

The next table lists the error messages and the actions to solve the problem.

Tips   Write down the displayed messages and the beep code before contacting your
sales representative. The messages are useful information for maintenance.

(1)   Error messages

<div align="right">(1/4)</div>

	Error Message	Description	Action
8000	System variable is corrupted.	BIOS settings are invalid.	Run the setup utility, and then execute **Load Setup Defaults** and specify the necessary settings. If the same error continues to occur, contact your sales representative.
8002	Check date and time settings	The real-time clock is incorrect.	Run the setup utility, and then specify the correct date and time. If the same error continues to occur, contact your sales representative.
8006	System configuration data cleared by Jumper.	The setup utility settings were cleared by the jumper.	See *Chapter 1 (7. Resetting and Clearing the Server).*
8007	SETUP Menu Password cleared by Jumper.	The setup utility password was cleared by the jumper.	
8020	BIOS update error.	BIOS update failed.	Try BIOS update again. If it fails again, contact your sales representative.
8021	Recovery jumper is set, but recovery images is not found.	The recovery jumper is set but the BIOS recovery failed.	Contact your sales representative.
8800	DXE_NB_ERROR	An error was detected during initialization of the chipset	
8801	DXE_NO_CON_IN	An error was detected during initialization of the console.	
8802	DXE_NO_CON_OUT		
9000	Unsupported CPU detected	An unsupported CPU was detected.	
9E80	Forced to use CPU with error.	A CPU error occurred.	
AB00	Memory not detected	No valid memory is installed.	Check if the memory modules are properly installed. If the same error is displayed consecutively, contact your sales representative.
AE01	DIMM1 has been disabled.	A memory error occurred. DIMM1 has been disabled.	Contact your sales representative.
AE02	DIMM2 has been disabled.	A memory error occurred. DIMM2 has been disabled.	
AE03	DIMM3 has been disabled.	A memory error occurred. DIMM3 has been disabled.	
AE04	DIMM4 has been disabled.	A memory error occurred. DIMM4 has been disabled.	
AE81	DIMM1 with error is enabled.	An error in DIMM1 occurred. The DIMM1 was forcibly enables because all memory is currently disabled.	
AE82	DIMM2 with error is enabled.	An error in DIMM2 occurred. The DIMM2 was forcibly enables because all memory is currently disabled.	
B000	Expansion ROM not initialized	There is no memory for expanding option ROM.	If the PCI board does not connect to a bootable device, disable the Option ROM Scan for that board.
B001	Expansion ROM not initialized - PCI Slot 1 (Express5800/T110f-S, T110f-E)	Option ROM expansion in PCI slot 1 failed.	
B002	Expansion ROM not initialized - PCI Slot 2 (Express5800/T110f-S, T110f-E)	Option ROM expansion in PCI slot 2 failed.	
B003	Expansion ROM not initialized - PCI Slot 3 (Express5800/T110f-S, T110f-E)	Option ROM expansion in PCI slot 3 failed.	

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Error Message		Description	Action
B004	Expansion ROM not initialized - PCI Slot 4 (Express5800/T110f-S, T110f-E)	Option ROM expansion in PCI slot 4 failed.	If the PCI board does not connect to a bootable device, disable the Option ROM Scan for that board.
B01A	Expansion ROM not initialized - PCI Slot 1A (Express5800/R110f-1E)	Option ROM expansion in PCI slot 1A failed.	
B01B	Expansion ROM not initialized - PCI Slot 1B (Express5800/R110f-1E)	Option ROM expansion in PCI slot 1B failed.	
B022	Serial Port Configuration Overlapped.	Overlapping serial port configuration was detected.	Run the setup utility, select **Advanced** → **Serial Port Configuration**, and specify the different settings for **Serial Port A** and **Serial Port B**.
B200	Onboard VGA - PCIe Link Failure	A PCIe bus connection failure was detected by the onboard VGA controller.	Contact your sales representative.
B201	Onboard LAN 1 - PCIe Link Failure	A PCIe bus connection failure was detected on the onboard LAN1 port.	
B202	Onboard LAN 2 - PCIe Link Failure	A PCIe bus connection failure was detected on the onboard LAN2 port.	
B211	PCI Slot 1 - PCIe Link Failure (Express5800/T110f-S, T110f-E)	A PCIe bus connection failure was detected in PCI slot 1.	
B212	PCI Slot 2 - PCIe Link Failure (Express5800/T110f-S, T110f-E)	A PCIe bus connection failure was detected in PCI slot 2.	
B213	PCI Slot 3 - PCIe Link Failure (Express5800/T110f-S, T110f-E)	A PCIe bus connection failure was detected in PCI slot 3.	
B214	PCI Slot 4 - PCIe Link Failure (Express5800/T110f-S, T110f-E)	A PCIe bus connection failure was detected in PCI slot 4.	
B21A	PCI Slot 1A - PCIe Link Failure (Express5800/R110f-1E)	A PCIe bus connection failure was detected in PCI slot 1A.	
B21B	PCI Slot 1B - PCIe Link Failure (Express5800/R110f-1E)	A PCIe bus connection failure was detected in PCI slot 1B.	
B221	Onboard LAN 1 - PCIe Link Width Error	A PCIe bus link width error was detected on the onboard LAN1 port.	
B222	Onboard LAN 2 - PCIe Link Width Error	A PCIe bus link width error was detected on the onboard LAN2 port.	
B231	PCI Slot 1 - PCIe Link Width Error (Express5800/T110f-S, T110f-E)	A PCIe bus link width error was detected in PCI slot 1.	
B232	PCI Slot 2 - PCIe Link Width Error (Express5800/T110f-S, T110f-E)	A PCIe bus link width error was detected in PCI slot 2.	
B233	PCI Slot 3 - PCIe Link Width Error (Express5800/T110f-S, T110f-E)	A PCIe bus link width error was detected in PCI slot 3.	
B234	PCI Slot 4 - PCIe Link Width Error (Express5800/T110f-S, T110f-E)	A PCIe bus link width error was detected in PCI slot 4.	

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Error Message		Description	Action
B23A	PCI Slot 1A - PCIe Link Width Error (Express5800/R110f-1E)	A PCIe bus link width error was detected in PCI slot 1A.	Contact your sales representative.
B23B	PCI Slot 1B - PCIe Link Width Error (Express5800/R110f-1E)	A PCIe bus link width error was detected in PCI slot 1B.	
B261	Onboard LAN 1 - PCIe Link Speed Error	A PCIe bus link speed error was detected on the onboard LAN1 port.	
B262	Onboard LAN 2 - PCIe Link Speed Error	A PCIe bus link speed error was detected on the onboard LAN2 port.	
B271	PCI Slot 1 - PCIe Link Speed Error (Express5800/T110f-S, T110f-E)	A PCIe bus link speed error was detected in PCI slot 1.	
B272	PCI Slot 2 - PCIe Link Speed Error (Express5800/T110f-S, T110f-E)	A PCIe bus link speed error was detected in PCI slot 2.	
B273	PCI Slot 3 - PCIe Link Speed Error (Express5800/T110f-S, T110f-E)	A PCIe bus link speed error was detected in PCI slot 3.	
B274	PCI Slot 4 - PCIe Link Speed Error (Express5800/T110f-S, T110f-E)	A PCIe bus link speed error was detected in PCI slot 4.	
B27A	PCI Slot 1A - PCIe Link Speed Error (Express5800/R110f-1E)	A PCIe bus link speed error was detected in PCI slot 1A.	
B27B	PCI Slot 1B - PCIe Link Speed Error (Express5800/R110f-1E)	A PCIe bus link speed error was detected in PCI slot 1B.	
C010	The error occurred during temperature sensor reading	An error occurred while reading the temperature sensor.	Contact your sales representative.
C011	System Temperature out of the range.	A temperature abnormality was detected.	A cooling fan has a failure or is clogged by dusts. Contact your sales representative.
C020	The error occurred during voltage sensor reading.	An error occurred while reading the voltage sensor.	Contact your sales representative.
C021	System Voltage out of the range.	A system voltage abnormality was detected.	
C040	SROM data read error	SROM data reading error	
C061	1st SMBus device Error detected.	An error occurred in the 1st SM Bus.	
C062	2nd SMBus device Error detected.	An error occurred in the 2nd SM Bus.	
C063	3rd SMBus device Error detected.	An error occurred in the 3rd SM Bus.	
C064	4th SMBus device Error detected.	An error occurred in the 4th SM Bus.	
C065	5th SMBus device Error detected.	An error occurred in the 5th SM Bus.	
C066	6th SMBus device Error detected.	An error occurred in for the 6th SM Bus.	
C067	7th SMBus device Error detected.	An error occurred in the 7th SM Bus.	
C068	8th SMBus device Error detected.	An error occurred in the 8th SM Bus.	
C103	BMC core hardware failure.	BMC device (chip) error	Turn off the power, disconnect the server from the outlet, wait for at least 30 seconds, and restart the server. If the error occurs again, contact your sales representative.
C104	BMC IBF or OBF check failed.	Accessing the BMC address failed.	
C105	BMC SEL area full.	No memory to write the system event log.	Run the offline tools by pressing <F4> key and delete the event logs.

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Error Message		Description	Action
C10B	BMC operational code corrupted.	BMC device (chip) error	Turn off the power, disconnect the server from the outlet, wait for at least 30 seconds, and restart the server. If the error occurs again, contact your sales representative.
C10C	BMC update firmware corrupted.		
C10D	Internal Use Area of BMC FRU corrupted.	Chassis information is incorrect.	
C10E	BMC SDR Repository empty.	BMC device (chip) error	
C10F	IPMB signal lines do not respond.	SMC (Satellite Management Controller) failure	
C110	BMC FRU device failure.	Failure of the SROM for storing chassis information	
C111	BMC SDR Repository failure.	Failure of the SROM for storing sensor data record information	
C112	BMC SEL device failure.	BMC device (chip) failure	
C113	BMC RAM test error.	BMC RAM error	
C114	BMC Fatal hardware error.	BMC error	
C11B	BMC Mezzanine card is not found.	BMC Mezzanine card is not mounted.	
C11C	BMC Mezzanine partition is invalid.	BMC Mezzanine partition is invalid.	
C11D	BMC is in Forced Boot Mode.	The Forced Boot Mode of BMC was detected.	Check the jumper switch on the motherboard. Unplug the power cable, wait for at least 30 seconds, and then restart the server. If the error is detected again, contact your sales representative.
C11E	Communication with BMC was failed in previous boot.	Communication with BMC was failed in previous boot.	Contact your sales representative.
C200	The error occurred during memory configuration check.	The memory information could not be obtained.	Turn off the power and restart the server. If the error is detected again, contact your sales representative.
C201	Memory Configuration change is detected.	The memory configuration has changed since the previous startup.	When **Check previous system Config** is enabled in **server** of the BIOS settings, this message appears if the configuration was changed since the previous startup. If this message appears even when no configuration change has been made, contact your sales representative.
C202	The error occurred during CPU configuration check.	The CPU information could not be obtained.	Turn off the power and restart the server. If the error is detected again, contact your sales representative.
C203	CPU Configuration change is detected.	The CPU configuration has changed since the previous startup.	When **Check previous system Config** is enabled in **server** of the BIOS settings, this message appears if the configuration was changed since the previous startup. If this message appears even when no configuration change has been made, contact your sales representative
C300	Out-of-band setup configuration failure	Invalid access to BMC Mezzanine card	Contact your sales representative.
C301	SDR mismatch error	Inconsistency in the hardware information of the sensor data record was detected	Contact your sales representative.
C322	No information for system power consumption check	The information for system power consumption was not detected.	
C501	Intel(R) Node Manager is in Recovery Mode	The Recovery Mode of Intel(R) Node Manager was detected.	Check the jumper switch on the motherboard. Unplug the power cable, wait for at least 30 seconds, and then restart the server. If the same error is detected again, 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, descriptions, and recommended actions.

Beep Code	Description	Action
1-3-3-1	No memory in the server.	Make sure that the DIMMs are correctly installed. If the DIMM is installed correctly, contact your sales representative.
1-5-2-1	No processor in the server.	Make sure that the processor is correctly installed. If the processor is installed correctly, contact your sales representative.
1	An error occurred during the POST processing.	Contact your sales representative.
2	Updated BIOS data was detected.	Wait until BIOS update completes.
3	Reading or running the BIOS executable module failed.	Contact your sales representative.
4	Initializing the BIOS executable module failed.	Contact your sales representative.
5	No graphics controller in the server.	Contact your sales representative.
7	Resetting the system failed.	Contact your sales representative.
8	An error was detected during allocating the PCI resources.	Remove all the PCI boards from the PCI slots, and then reboot the server. If the error is detected again, contact your sales representative.

(3) Error messages on a virtual LCD

You can confirm the error messages by the EXPRESSSCOPE Engine 3 (BMC) web browser window. For details, see "*EXPRESSSCOPE Engine 3 User's Guide*".

The table below shows the error messages displayed on upper and lower lines, descriptions, and recommended actions.

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**

(1/2)

BIOS Message on Upper LCD Line	Description	Action
XX POST Started...	POST is running. "*XX*" is the POST running code.	This is not an error.
XX BIOS Rev YYYY	POST is running. "*XX*" is the POST running code. "*YYYY*" is the system BIOS version.	This is not an error.
POST Completed Successfully	POST completes normally.	This is not an error.
POST ERROR XXXX	Error XXXX was detected during POST.	Check the error message which appears on-screen, and take the appropriate action for each error.
No Available Memory in System	No available memory in the server.	Make sure that the memory is correctly installed.
Error Pause in POST	An error occurred during POST.	Check the error message which appears on-screen, and take the appropriate action for each error.
Entering BIOS SETUP MENU	Running BIOS SETUP MENU.	This message disappears 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 cooling fan has failed. If the same error still continues to occur, contact your sales representative.
BIOS Recovery Running	BIOS recovery is in progress.	Wait until the BIOS recovery process completes.
BIOS Updater Running	BIOS update is in progress.	Wait until the BIOS update process completes.

(2/2)

BIOS Message on Upper LCD Line	Description	Action
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 Slot #x Uncorrectable Error (x: 1-2) (Express5800/T110 f-S, T110f-E)	An uncorrectable error occurred in PCI slot #x.	Install the PCI boards correctly. If the error is detected again, contact your sales representative.
PCIxx Slot UnCorrectable Error (xx: 1A, 1B) (Express5800/R110 f-1E)	An uncorrectable error occurred in PCI slot #xx.	
PCI-Express Uncorrectable Error 1	An uncorrectable device error occurred in PCI Express.	Contact your sales representative.
DIMM #x Correctable Error (x: 1-4)	A correctable memory error occurred in DIMM #x.	The error was corrected. If the same error occurs after restarting, install the DIMM correctly. If the error is detected again, contact your sales representative.
DIMM #x Uncorrectable Error (x: 1-4)	An uncorrectable memory error occurred in DIMM #x.	Contact your sales representative.
Memory Reconfigured	A failed DIMM was detected and degraded.	Contact your sales representative.

- **Messages displayed on a lower LCD line**

(1/4)

BMC Message on Lower LCD Line	Description	Action
Processor Voltage Lower Non-Critical	A voltage abnormality was detected.	Contact your sales representative.
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		
VBAT Lower Non-Critical		
VBAT Upper Non-Critical		
VBAT Lower Critical		
VBAT Upper Critical		
Baseboard Temperature1 Lower Non-Critical	A temperature abnormality was detected.	A cooling fan has a failure or is clogged by dusts. Contact your sales representative.
Baseboard Temperature1 Upper Non-Critical		
Baseboard Temperature1 Lower Critical		
Baseboard Temperature1 Upper Critical		
Baseboard Temperature2 Lower Non-Critical		
Baseboard Temperature2 Upper Non-Critical		
Baseboard Temperature2 Lower Critical		
Baseboard Temperature2 Upper Critical		
Ambient Temperature Lower Non-Critical		
Ambient Temperature Upper Non-Critical		
Ambient Temperature Lower Critical		
Ambient Temperature Upper Critical		
DIMM Area Temperature Lower Non-Critical		

(2/4)

BMC Message on Lower LCD Line	Description	Action
DIMM Area Temperature Upper Non-Critical	A temperature abnormality was detected.	A cooling fan has a failure or is clogged by dusts. Contact your sales representative.
DIMM Area Temperature Lower Critical		
DIMM Area Temperature Upper Critical		
Processor Thermal Control Upper Non-Critical		
Processor Thermal Control Upper Critical		
DUMP Request !	The dump button was pressed.	Wait until collecting the memory dump is complete.
OS shutdown Alm	An OS stop error occurred.	Write down the displayed message, wait until collecting the memory dump is complete, and then contact your sales representative.
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	AC input of a power supply unit was abnormality.	
Power Supply2 AC Lost		
Processor Missing	No CPU is installed.	Contact your sales representative.
Processor Thermal Trip	The power was forcibly turned off due to a CPU temperature abnormality.	Contact your sales representative.
DIMM1 Uncorrectable Error	An unrecoverable error occurred for DIMM1.	
DIMM2 Uncorrectable Error	An unrecoverable error occurred for DIMM2.	
DIMM3 Uncorrectable Error	An unrecoverable error occurred for DIMM3.	
DIMM4 Uncorrectable Error	An uncorrectable error occurred for DIMM4.	
Processor Internal Error	An internal CPU error (IERR) occurred.	
Sensor Failure Detected.	Abnormality in a sensor was detected.	
SMI timeout	A timeout occurred while servicing system management interrupts.	
IPMI Watchdog timer timeout (Power off)	A watchdog timer timeout occurred.	

(3/4)

BMC Message on Lower LCD Line	Description	Action
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 Firmware Flash Corrupted		
Node Manager Internal Error		
Node Manager can't communicate BMC		
Node Manager Firmware Image execution Failed		
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		
Drive 7 Fault		

(4/4)

BMC Message on Lower LCD Line	Description	Action
System FAN1 Lower Non-Critical	A fan alarm was detected.	A cooling fan has a failure or is clogged by dusts. Contact your sales representative.
System FAN2 Lower Non-Critical		
System FAN3 Lower Non-Critical		
System FAN4 Lower Non-Critical		
System FAN5 Lower Non-Critical		
System FAN6 Lower Non-Critical		
System FAN7 Lower Non-Critical		
System FAN8 Lower Non-Critical		
System FAN9 Lower Non-Critical		
System FAN10 Lower Non-Critical		
System FAN11 Lower Non-Critical		
System FAN12 Lower Non-Critical		

2.   List of Windows Event Logs

OS

Event Log

ID	Source	Type	Message (Description)
	Timing		Action

All Windows OS

System Event Log

	Source	Type	Message (Description)
51	Cdrom	Warning	Error detected on the device \Device\CdRom0 during the paging operation.
	Upon OS installation		This event may be registered in the event viewer, but this does not affect system operation.

Windows Server 2012

System Log

ID	Source	Type	Message (Description)
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, running an OS for the first time, or applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
4	l2nd	Warning	Broadcom BCM57711 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, running an OS for the first time, or applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
27	e1rexpress	Warning	Intel(R) Ethernet Server Adapter I340-T2 #xx Network is disconnected.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
46	volmgr	Error	Crash dump initialization failed!
	Upon OS Installation		Go to the following Microsoft website for details. http://support.microsoft.com/kb/2756313/en-us
129	megasas2	Warning	Reset to device, \Device\RaidPortX, was issued. (The rest is skipped.)
	When the system is used.		Retry by OS has succeeded. It is not the problem in operating the system. (A different number replaces X depending on the system.)
129	Megasr1	Warning	A Reset command is issued to device \Device\RaidPort0.
	During Consistency Check		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 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, running an OS for the first time, 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.
	When creating logical drive by Universal RAID Utility		When you create logical drive by using the Universal RAID Utility, the following message appears on the Windows Event Log. This warning message indicates that OS retried the I/O operation and it has succeeded. There is no problem with this message in terms of the system operation.
7023	`Service Control Manager`	Error	The Network List Service terminated with the following error: The device is not ready.
	Upon OS Installation		The event may be registered at logon. This event does not affect 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.
	Upon OS Installation		The event may be registered at logon. This event does not affect system operation.
10010	`Microsoft-Windows-DistributedCOM`	Error	The server {xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx} did not register with DCOM within the required timeout.
	Upon OS Installation		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.
	Upon OS Installation		If ID:10149 is logged, there may be a problem. However, if ID:10149 is logged with ID:7036 or ID:10148, you can ignore those warnings.

Application Event Log

1015	`Microsoft-Windows-Security-SPP`	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	Upon OS Installation		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
	Upon OS Installation		The event may be registered at logon. This event does not affect system operation.
200	`Microsoft-Windows-DeviceSetupManager`	Warning	A connection to the Windows Update service could not be established.
	When the system is used.		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 the system is used.		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 the system is used.		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 was not assigned an address from the network (by the DHCP Server) for the Network Card with network address 0x50E549A98325. 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 it is not an event occurs will continue, there is no problem with system operation.
12520	`Microsoft-Windows-Hyper-V-VMMS`	Warning	Auto-generating a self-signed certificate for server authentication.
	When the system is used.		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 the system is used.		This event is logged when activating Windows Server 2012 Hyper-V, but 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.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.

4	l2nd	Warning	Broadcom BCM57711 #xx: The network link is down. Check to make sure the network cable is properly connected.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
11	Disk	Error	The driver detected a controller error on Device\Harddisk*X*\DR*X*. **Note**: A different number replaces *X* 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 C0 ....A 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 ÿÿÿÿ.... 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 ....?¢o? 0058: 00 00 00 00 08 B0 BD 86 .....º?? 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
27	e1rexpress	Warning	Intel Ethernet Server Adapter I340-T2 #xx Network is disconnected.
	Upon system startup or upon applying Starter Pack		If the error was logged at system startup or when applying Starter Pack, there is no problem in system operation.
129	megasas2	Warning	Reset to device, \Device\RaidPortX, was issued. (The rest is skipped.)
	When the system is used.		Retry by OS has succeeded. It is not the problem in operating the system. (A different number replaces X depending on the system.)
129	Megasr1	Warning	A Reset command is issued to device \Device\RaidPort0.
	During Consistency Check		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. The error was: No such host is known. (0x80072AF9)
	Upon OS Installation		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 you operate Windows Server 2008 R2		The above event log may be recorded. Usually, however, IPMI command retry processing is performed, so there is no operation problem.

Application Event Log

11	`iANSMiniport`	Warning	Adapter link down:Intel(R) ...
	At system startup,		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
13	`iANSMiniport`	Warning	Intel(R) ... has been deactivated from the team.
	At system startup,		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
16	`iANSMiniport`	Warning	Team : The last adapter has lost link. Team network connection has been lost.
	At system startup,		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
22	`iANSMiniport`	Warning	Primary Adapter does not sense any Probes: Intel(R) ... Possible reason: partitioned Team.
	At system startup,		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
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.
1015	`Microsoft-Windows-Security-SPP`	Warning	Description: Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	Upon OS Installation		Unless the application event is registered after license authentication, 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, error code is The revision level is unknown.
	Upon OS Installation		Unless the application event is registered after license authentication, 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&30303030303030303039333130 3 0303735373030323934#{ 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_n ec&prod_istorage_1000&rev_1000#1&7f6ac24&0&303030303 0303030313030303030323830303034636#{ GUID}#00000000 00007 e00#{ GUID }-00000000000002B8, 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 (\\?\fdc#generic_floppy_drive#6&6a032c4&0 &0 #{ GUID }-00000000000002B0,0x00560000, 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 was not assigned an address from the network (by the DHCP Server) for the Network Card with network address 0x50E549A98325. 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 the system is used.		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 the system is used.		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 the system is used.		This event is logged when activating Windows Server 2008 R2 Hyper-V, but this event does not affect system operation.

Windows Server 2008

System Event Log

4	`b57nd60x`	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
4	`l2nd`	Warning	Broadcom BCM57711 #xx: The network link is down. Check to make sure the network cable is properly connected.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
5	`Storflt`	Warning	The Virtual Storage Filter Driver is disabled through the registry. It is inactive for all disk drives.
	Upon OS Installation		This event does not affect system operation.
10	`VDS Dynamic Provider`	Error	The provider failed while storing notifications from the driver. The Virtual Disk Service should be restarted. hr=80042505
	Upon OS Installation		Go to the following Microsoft website for details: http://support.microsoft.com/kb/948275/en-us
27	`e1rexpress`	Warning	Intel(R) Ethernet Server Adapter I340-T2 #xx Network is disconnected.
	Upon system startup or upon applying Starter Pack		If the message appears upon system startup or upon applying Starter Pack, there is no problem in system operation.
129	`megasas2`	Warning	Reset to device, \Device\RaidPortX, was issued. (The rest is skipped.)
	When the system is used.		Retry by OS has succeeded. It is not the problem in operating the system. (A different number replaces X depending on the system.)
129	`Megasr1`	Warning	A Reset command is issued to device \Device\RaidPort0.
	During Consistency Check		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 '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)
	Upon OS Installation		This event does not affect system operation.
263	`PlugPlayManager`	Warning	The service `ShellHWDetection` may not have unregistered for device event notifications before it was stopped.
	Upon OS Installation		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 the system is used.		The above event log may be recorded. Usually, however, IPMI command retry processing is performed, so there is no operation problem.
1021	Microsoft-Windows-Security-Licensing-SLC	Warning	SLUINotify service has failed to start. hr=0x80070424
	Upon OS Installation		Execute the license authentication from the license authentication screen.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is -2147023591
	Upon OS Installation		The event may be registered at logon. This event does not affect system operation.
2505	Server	Error	The server could not bind to the transport \Device\NetBT_Tcpip_{7A71FB4F-0E8F-4E19-9B14-A68452 59AAD6} because another computer on the network has the same name. The server could not start.
	Upon OS Installation		This does not affect system operation.
4307	NetBT	Error	Initialization failed because the transport refused to open initial addresses.
	Upon OS Installation		This event log does not affect system operation unless it occurs often.
7000	Service Control Manager	Error	The Parallel port driver service failed to start due to the following error: The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.
	Upon OS Installation		This event does not affect system operation.
15016	Microsoft-Windows-HttpEvent	Error	Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.
	Upon OS Installation		This event does not affect system operation.

Application Event Log

11	iANSMiniport	Warning	Adapter link down:Intel(R) ...
	Applying Starter Pack		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
13	iANSMiniport	Warning	Intel(R) ... has been deactivated from the team.
	Applying Starter Pack		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
16	iANSMiniport	Warning	Team : The last adapter has lost link. Team network connection has been lost.
	Applying Starter Pack		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.
22	iANSMiniport	Warning	Primary Adapter does not sense any Probes: Intel(R) ... Possible reason: partitioned Team.
	Applying Starter Pack		The event shown above is logged at system startup if a team is configured, however, there is no problem in operation of LAN driver.

63	`Microsoft-Windows-WMI`	Warning	A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\cimv2 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. A provider, IntelEthernetDiag, has been registered in the Windows Management Instrumentation namespace Root\CIMv2 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. A provider, WmiPerfClass, has been registered in the Windows Management Instrumentation namespace root\cimv2 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 OS Installation		This event does not affect system operation.
63	`Microsoft-Windows-WM`	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.
	Applying Starter Pack		This event does not affect system operation.
63	`Microsoft-Windows-WM`	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.
	Applying Starter Pack		This event does not affect system operation.
1020	`EvntAgnt`	Error	processing registry parameters. Extension agent terminating.
	Upon OS Installation		This event does not affect system operation.
1054	`Security-Licensing-SLC`	Warning	Component error. hr=0x80049E00, [4, 3]
	Upon OS Installation		This event does not affect system operation.
1500	`SNMP`	Error	The SNMP Service encountered an error while accessing the registry key SYSTEM\CurrentControlSet\Services\SNMP\Parameters\PermittedManagers.
	Upon OS Installation		This event does not affect system operation.
2019	`EvntAgnt`	Error	SNMP Event Log Extension Agent did not initialize correctly.
	Upon OS Installation		This event does not affect system operation.
3001	`EvntAgnt`	Warning	Log file not positioned at end.
	Upon OS Installation		This event does not affect system operation.
3003	`EvntAgnt`	Warning	Error positioning to end of log file -- can't get oldest log record. Handle specified is 17891340. Return code from GetOldestEventLogRecord is 223.
	Upon OS Installation		This event does not affect system operation.
6000	`Microsoft-Windows-Winlogon`	Warning	The winlogon notification subscriber <GPClient> was unavailable to handle a notification event.
	Upon OS Installation		This event does not affect system operation.
6001	`Microsoft-Windows-Winlogon`	Warning	The winlogon notification subscriber <GPClient> failed a notification event.
	Upon OS Installation		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 and Windows Server® 2012.

3.1.1   Power consumption

Execute the following commands to access power consumption readings on BMC (Baseboard Management Controller) via IPMI (Intelligent Platform Management Interface).

```
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 (e.g. Power.vbs).

```
' Start Script
Option Explicit

' Prepare for IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root¥wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.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 = arry(&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
```

- Execution example

```
C:¥VBS> cscript //nologo Power.vbs
```

- Execution result

```
Completion Code = 0x0
Power Consumption = 76 watts
```

The power consumption is 76 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 the SDR (Sensor Data Record) 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 (e.g. Sensor.vbs),

```
'Start Script
Option Explicit

' Prepare for MS IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root¥wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.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 = &ha
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 = &ha
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 = &ha
    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
    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, sensortype
    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 Sendor 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 = Fnt Pnl 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 `Fnt Pnl 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 (such 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.

3.2   Linux

The sample program below is verified to be run on Red Hat Enterprise Linux 5 and Linux 6.

3.2.1   Power consumption

Power consumption is given by executing the following commands via IPMI to BMC.

```
Network Function Code: 2Ch (Group Extension)
Command Code: 02h (Get Power Reading)
Request Data: 000001DCh
```

The example below uses the open-source software OpenIPMI driver and IPMITool. For Red Hat Enterprise Linux 5, OpenIPMI is provided as an inbox driver. IPMITool is provided in: OpenIPMI-tools-[version].rpm

- Execution example
  ```
  # ipmitool raw 0x2c 0x02 0xdc 0x01 0x00 0x00
  ```

- Execution result
  ```
  dc 32 01 00 00 4d 01 7f 00 80 0e 33 4e 70 b2 72 01 40
  ```

Power consumption is given by calculating the 2-byte (16 bits) output value.

  The second value 0x01 [15:8]

  The first value   0x32 [7:0]

In the example above, power consumption = 0x0132 (hexadecimal) = 306 (decimal) watts.

Tips	Power consumption readings may not be acquired depending on the power supply configuration of the server. In such cases, either of the following messages is displayed.

```
Unable to send RAW command (channel=0x0 netfn=0x3e lun=0x0 cmd=0xb rsp=0xc1): Invalid Command
```

3.2.2   Intake air temperature

Intake air temperature is given by executing IPMI commands to BMC.

The example below uses Open IPMI driver and IPMITool that are open source software. For Red Hat Enterprise Linux 5, OpenIPMI driver is contained in Inbox driver. IPMITool is contained in: OpenIPMI-tools-[version].rpm

- Execution example
  ```
  # ipmitool sdr type Temperature
  ```

- Execution result
  ```
  Baseboard Temp4  | 31h | ok  | 45 degrees C
  Fnt Pnl Temp     | 35h | ok  | 27 degrees C
  CPU1_DIMM1 Temp  | 40h | ok  | 48 degrees C
  CPU1_DIMM2 Temp  | 41h | ok  | 46 degrees C
  CPU1_DIMM3 Temp  | 42h | ok  | 49 degrees C
  CPU1_DIMM4 Temp  | 43h | ns  | No Reading
  CPU1_DIMM5 Temp  | 44h | ns  | No Reading
  CPU1_DIMM6 Temp  | 45h | ns  | No Reading
  P1 Therm Ctrl %  | A0h | ok  | 0 unspecified
  ```

The output above shows the following in a line in order.

1st: Sensor name

2nd: Sensor number

3rd: Sensor status

   ok indicates that the status has not reached a point of warning or danger.

4th: Sensor monitoring point

5th: The current reading of the sensor

The sensor indicating intake air temperature contains Amb, Ambient, or Fnt Pnl Temp in its name.

The data in the above example is obtained from the sensor that contains Fnt Pnl Temp in its ID and the intake air temperature is 27°C.

3.2.3   **Processor utilization**

The utilization rate of all logical processors is given by executing the mpstat command provided in a Linux distribution.

For Red Hat Enterprise Linux 5, sysstat-[version].rpm contains the command.

- Execution example
  ```
  # mpstat -P ALL
  ```

- Execution result
  ```
  Linux 2.6.18-164.el5 (localhost.localdomain) 11/17/09

  17:59:30    CPU   %user   %nice   %sys %iowait   %irq   %soft  %steal   %idle    intr/s
  17:59:30    all    1.23    0.04    0.42    2.69   0.03    0.10    0.00   95.49   1086.42
  17:59:30      0    0.42    0.00    0.58    0.76   0.00    0.00    0.00   98.24    666.34
  17:59:30      1    0.41    0.00    0.29    1.09   0.00    0.00    0.00   98.21      0.00
  17:59:30      2    2.17    0.00    0.33    2.30   0.00    0.00    0.00   95.21      0.00
  17:59:30      3    1.85    0.08    0.68    8.55   0.00    0.60    0.00   88.24    379.87
  17:59:30      4    0.87    0.00    0.19    0.42   0.00    0.00    0.00   98.53      0.00
  17:59:30      5    2.42    0.01    0.35    1.31   0.08    0.00    0.00   95.83      6.63
  17:59:30      6    0.30    0.01    0.17    1.39   0.00    0.00    0.00   98.13      0.02
  17:59:30      7    1.36    0.20    0.74    5.72   0.12    0.20    0.00   91.66     33.54
  ```

You can acquire the processor utilization rate by subtracting %idle from 100%.