Maintenance Guide

NEC Express Server
Express5800 Series

Express5800/D120h
EXP710, EXP711, EXP712

10.117.01-104.02
November 2017

Manuals

Attached as a book	
Safety Precautions and Regulatory Notices	Describes points of caution to ensure the safe use of this server. **Read these cautions before using this server.**
Getting Started	Describes how to use this server, from unpacking to operations. See this guide first and read the outline of this product.
Included into EXPRESSBUILDER as an electronic manual	
User's Guide	
Chapter 1: General Description	Overviews, names, and functions of the server's parts
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server
Chapter 3: Setup	System BIOS configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications and other information
Installation Guide (Windows)	
Chapter 1: Installing Windows	Installation of Windows and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, Universal RAID Utility, and other bundled software
Maintenance Guide	
Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2: Useful Features	The details of system BIOS settings, RAID Configuration Utility, and EXPRESSBUILDER
Chapter 3: Appendix	Error messages and Windows Event Logs
Other manuals	
The details of NEC ESMPRO, Universal RAID Utility, and the other features	

Contents

Conventions Used in This Document

Signs and symbols for safety

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

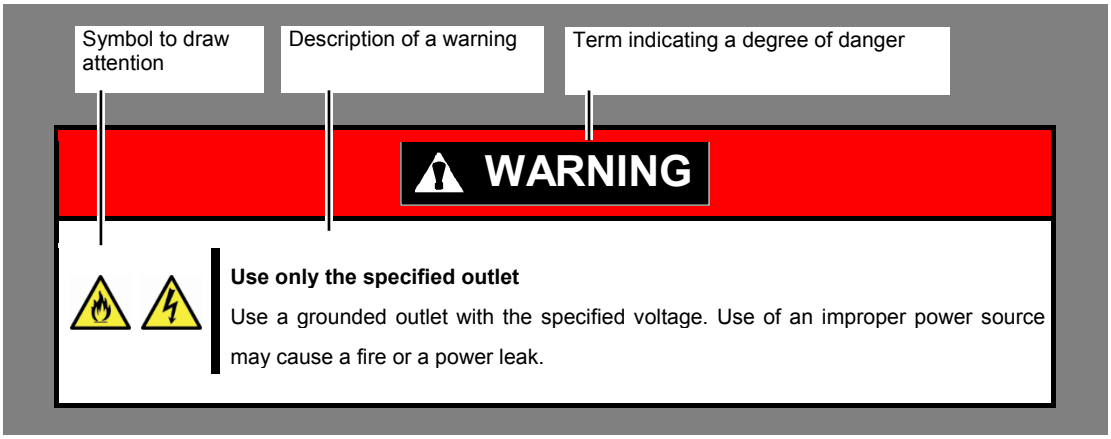
⚠ WARNING Indicates there is a risk of death or serious personal injury

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

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

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

(Example in this guide)



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 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 hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Hard disk drive

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

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

Removable media

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

- USB flash drive
- Flash FDD

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

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

Notations in this document	Official names of Windows
Windows Server 2016	Windows Server 2016 Standard
	Windows Server 2016 Datacenter
Windows Server 2012 R2	Windows Server 2012 R2 Standard
	Windows Server 2012 R2 Datacenter

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Latest editions

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

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

http://www.nec.com/

NEC Express5800 Series
Express5800/D120h

1 Maintenance

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

1. **Relocation and Storage**
   Describes how to relocate and store this server.
2. **Daily Maintenance**
   Describes how to check the status of the server, and how to clean the server.
3. **User Support**
   Describes various services on this product.
4. **Collecting Failure Information**
   Describes how to collect the failure information. See this section in case of a failure.
5. **Troubleshooting**
   Describes how to troubleshoot the server. See this section if you suspect a failure.
6. **Windows System Recovery**
   Describes Windows recovery setup. See this section if the Windows is corrupted.
7. **Resetting and Clearing the Server**
   Describes how to reset or clear the server. See this section if the server is not working or if you want to restore BIOS settings to the factory settings.
8. **System Diagnostics**
   Describes the system diagnostics of this server.
9. **Offline Tools**
   Describes tools for preventive maintenance of the server.

1. Relocation and Storage

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

WARNING

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

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

CAUTION

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

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

Note

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

Tips

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

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

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

Note Adjust the system clock after relocating or storing the server.

2. Daily Maintenance

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

2.1 Checking and Applying Updates

Express5800 Series posts update information for BIOS, firmware, driver, and others of the server and peripheral devices on our website. We recommend that the latest update always be applied for stable system operation.

NEC corporate site: **http://www.nec.com/**

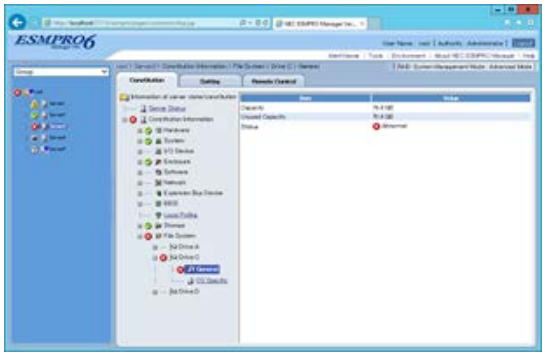
[Support & Downloads]

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

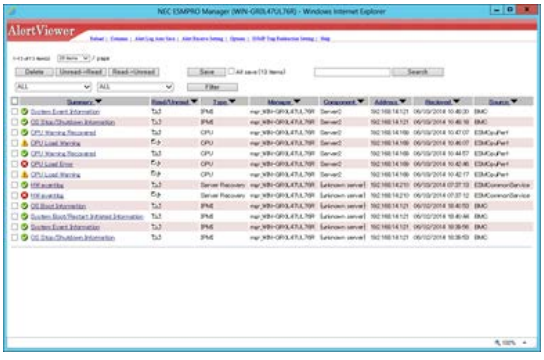
2.2 Checking Alerts

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

Example image of NEC ESMPRO Manager



NEC ESMPRO Manager



AlertViewer

2.3 Checking STATUS LED

After powering on the server or before shutting down the system and powering off the server, check STATUS LED on the front of the server. For the functions and descriptions of the LED, see *Chapter 1 (5. Names and Functions of Parts)* in *User's Guide.* If the indicator shows the server abnormality, contact your sales representative.

2.4 Backup

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

If a RAID array has been configured on your system, back up the RAID configuration data. We also recommend that you back up it after a rebuilding process required due to HDD failure. For more information, see *Chapter 2 (4.3 Utilities in 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, see *Safety Precautions and Regulatory Notices*.

- **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 thinner, benzene, and other volatile solvents. Those solvents could damage or tarnish the material.**
- **The power inlet, cables, connectors on the rear panel of the server, and the inside of the server must be kept dry.**

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

2.5.2 Cleaning the tape drive

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

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

2.5.3 Cleaning the keyboard and mouse

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

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

3. User Support

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

3.1 Maintenance Services

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

3.2 Before Asking for Repair

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

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

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

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

4. Collecting Failure Information

If the server does not work normally, you can collect failure information by using the following way.

The failure information to be described is to be collected only at the request of your sales representative.

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

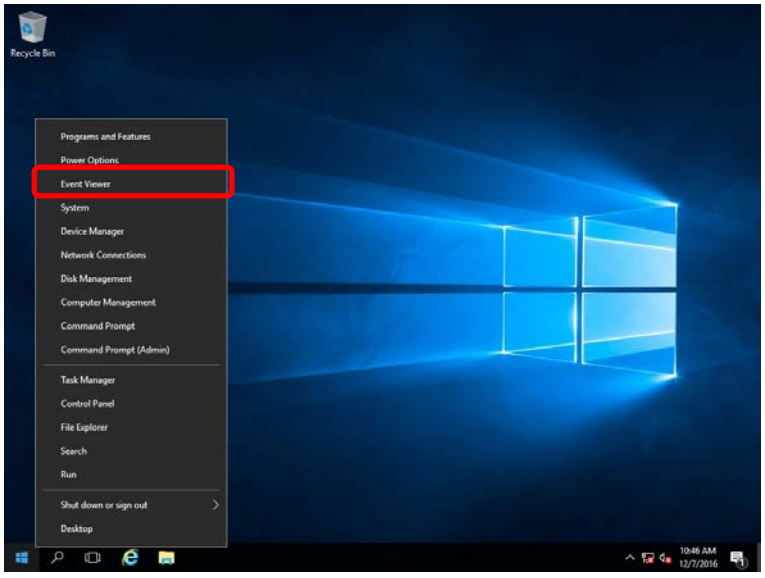
4.1 Collecting Event Logs

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

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

4.1.1 Windows Server 2016

1. Right-click the left bottom of screen, and click **Event Viewer** from the menu displayed.

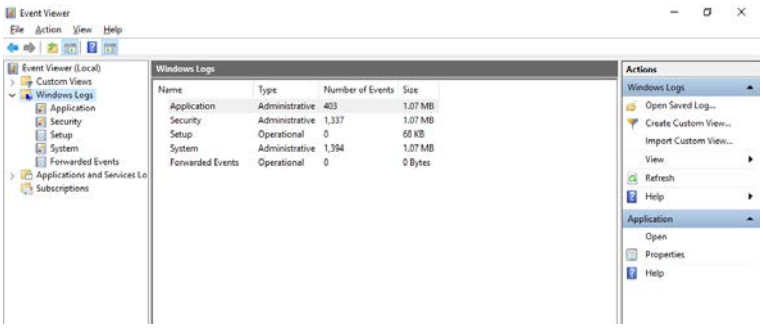


2. Select the type of log in **Windows Logs**.

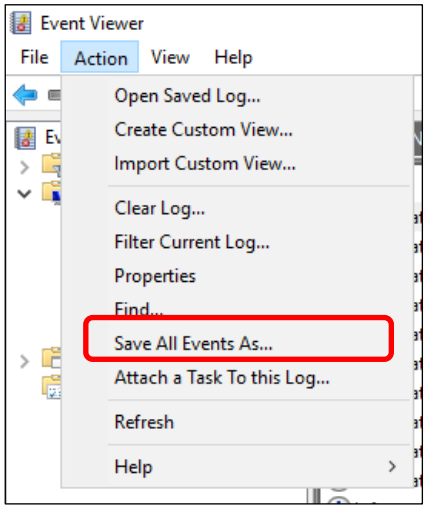
   Application records events related to running applications.

   Security records events related to security.

   System records events that occur in Windows system components.



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



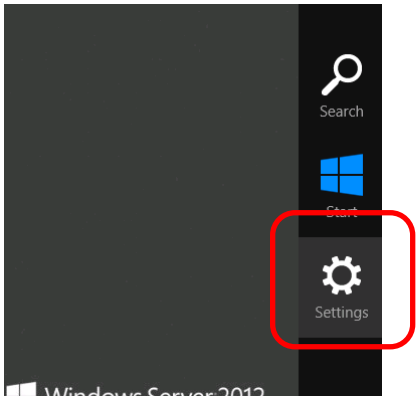
4. Type the file name of the archived log in **File name**.
5. Select the type of the log file you want to save in **Save as type**, and then click **Save**. See an online help of windows, for details.

4.1.2 Windows Server 2012 R2

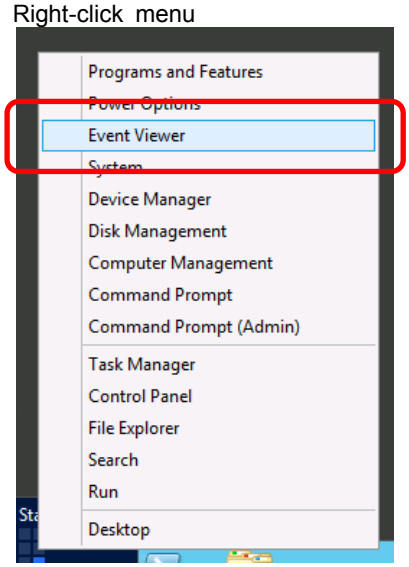
1. Click **Settings** on Charms Bar.

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

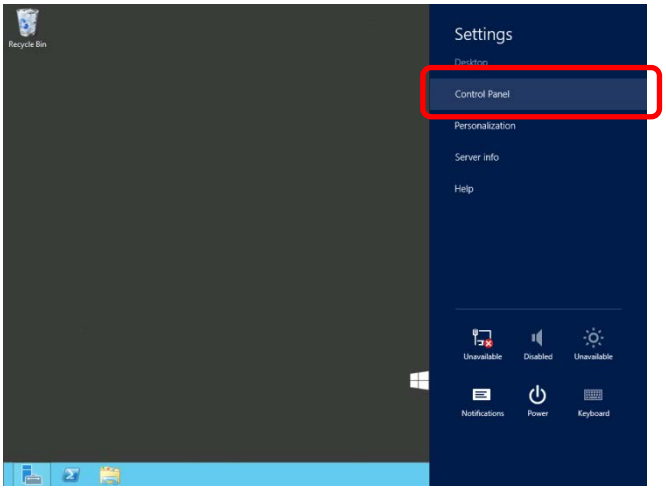
Charms



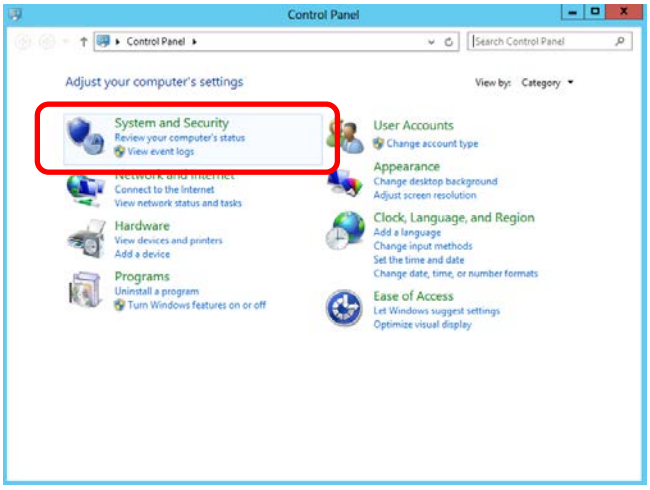
Right-click menu



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



3. Click **View event logs** of **System and Security** on **Control Panel**.

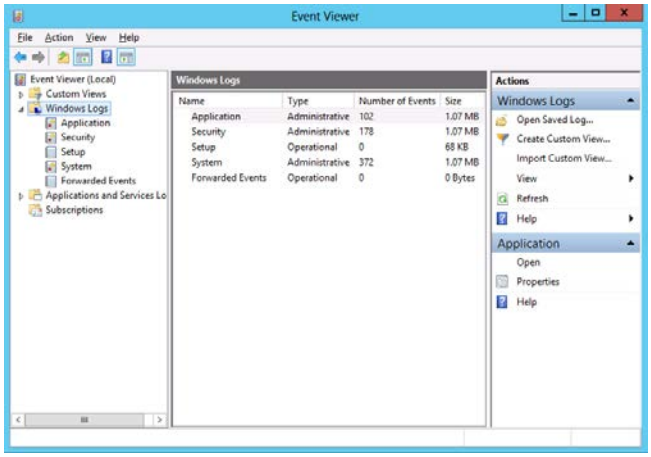


4. Select the type of log in **Windows Logs**.

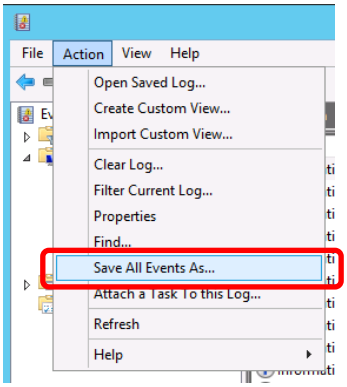
   Application records events related to running applications.

   Security records events related to security.

   System records events that occur in Windows system components.



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



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

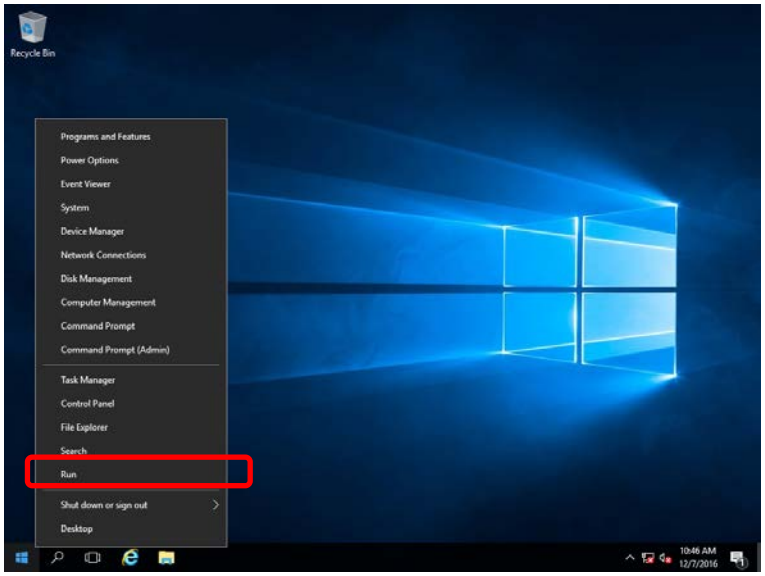
4.2 Collecting Configuration Information

This section describes how to collect hardware information or configuration.

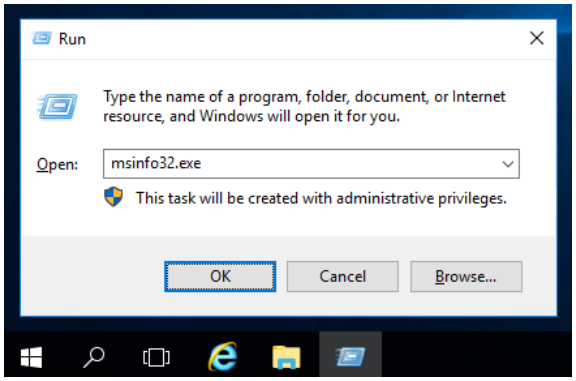
Tips If a STOP error, system error, or stall occurs, restart the system and then follow the procedure below.

4.2.1 Windows Server 2016

1. Right-click the left bottom of screen, and click **Run** from the menu displayed.



2. Type `msinfo32.exe`, and then press <Enter> key.



System Information starts.

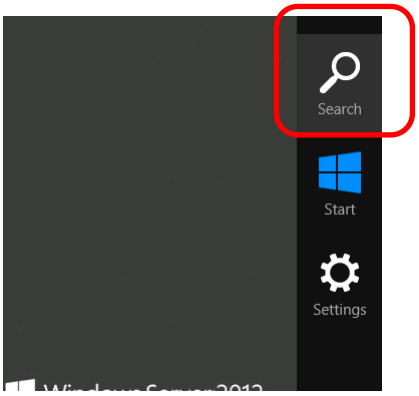
3. Click **Export** from **File** menu.
4. Type a file name to save in **File Name**, and then Click **Save**.

4.2.2 Windows Server 2012 R2

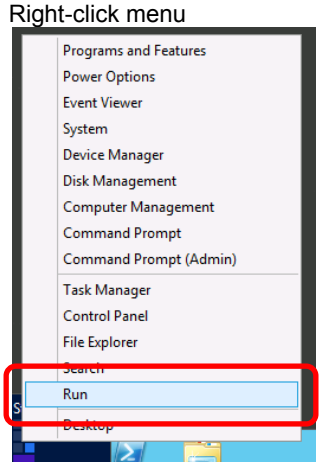
1. Click **Search** on Charms Bar.

   You can directly choose **Run** by right-clicking on the lower left corner of the screen.

   Charms

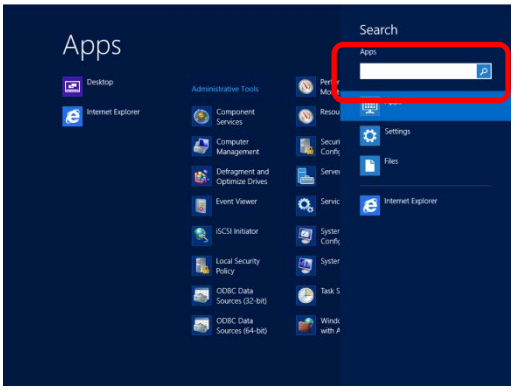
   

   Right-click menu

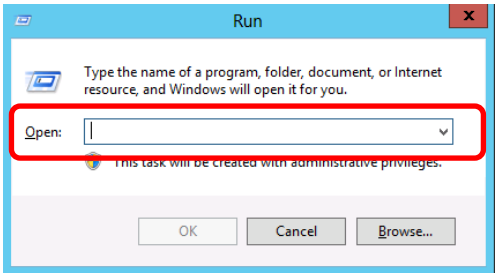
   

2. Type `msinfo32.exe`, and then press <Enter> key.

   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**.

4.3 Collecting User-Mode Process Dump

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

For details, see *Chapter 1 (5.2 How to Create a User-Mode Process Dump File)* in "*Installation Guide (Windows)*".

4.4 Collecting Memory Dump

If an error occurs, the dump file will be saved to get necessary information. You can specify any location for saving the diagnostic information. For details, see *Chapter 1 (5.1 Specifying Memory Dump Settings (Debug Information))* in "*Installation Guide (Windows)*".

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

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

5. Troubleshooting

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

5.1 Problem at Powering On

[?] **Unable 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, and check if the shield of the power is properly covered and plugs are not bent.

→ Make sure the circuit 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 can be linked with UPS using the BIOS Setup utility.

☐ Did you press the power switch?

→ Press the power switch on the front of the server to turn on the power (the POWER LED ON).

→ When power cord is connected, the initialization of EXPRESSSCOPE Engine 3 (BMC) starts. During initialization, the power switch is not available. Wait for at least 40 seconds, and press the power switch.

[?] **The screen is not displayed**

→ Wait until the NEC logo appears.

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

☐ Are **option ROM scan** for some on-board LANs specified to **Enabled**?

→ Ignore the black screen and wait until POST ends.

[?] **POST does not end**

☐ Is memory installed correctly?

→ Check if memory is installed correctly.

☐ Is the memory size large?

→ Wait for a while. The memory check takes longer than usual when the installed memory size is large.

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

→ Restart the server and do not perform any keyboard or mouse operation until the BIOS start-up message appears.

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

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

☐ Check if "Shutdown System" is enabled on ECO menu.

→ Confirm the ECO settings from a remote machine. If the remote environment is unavailable, remove the optional devices from the server to reduce power consumption of overall system, then restart the server.

→ Check if the value specified for “Power Threshold (Pa)” is appropriate for normal startup.To operate the server with “Shutdown System” being enabled, the value of “Power Threshold (Pa)” must be fully considered.

5.2 Problem at Starting EXPRESSBUILDER

[?] **Unable to start EXPRESSBUILDER**

☐ Are BIOS settings correct?

→ Configure the boot order in BIOS settings in order to set the optical disk drive to the first order.

☐ Is an error message displayed?

→ Take an appropriate action according to the message.

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

Action: Check if hardware is properly connected.

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

Action: Check if DVD is damaged or not.

☐ Is a message popped up on graphical screen?

→ Take an appropriate action according to the message.

Message	Action
EXPRESSBUILDER does not support this computer. Insert EXPRESSBUILDER disc for the computer and click **OK** to restart the computer.	Use the correct version of EXPRESSBUILDER.
Failed to get RAID configuration data. Unable to create a logical drive.	EXPRESSBUILDER cannot start if the logical drives are not sequential (for example, the server has only LD#0 and LD#2, and LD#1 is not existed). Delete all of the logical drives by using Universal RAID Utility or RAID Offline Tool, and try again.
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.	
Failed to open a file.	
Failed to get the parameters of a file.	
Failed to write a file.	
Failed to copy a file.	
An undefined error occurred.	

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

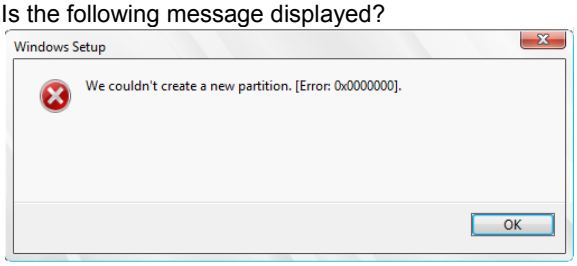
☐ Is **Boot Monitoring** enabled?

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

5.3 Problem of OS Installation

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

☐ Is the following message displayed?



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

If you have connected a data disk to a partition, be careful not to delete that partition. For details, refer to the website below:

Windows Server 2012 R2

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

[?] **Unable to install OS**

☐ Is the hard disk drive properly installed?

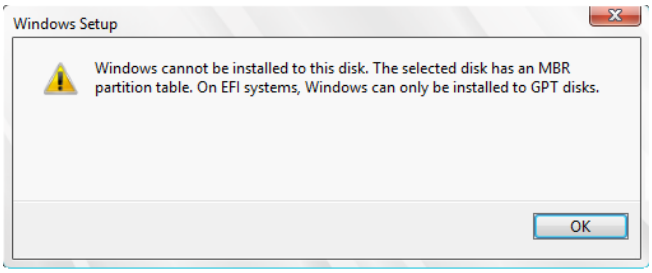
→ Make sure that the hard disk drive is installed securely and that cables are properly connected.

☐ Is the disk format correct?

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

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

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



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

☐ Have you configured the RAID controller?

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

☐ Have you created a logical drive?

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

[?] **Unable to install Windows**

☐ Have you checked precautions for installation?

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

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

- SM Bus Controller
- PCI Simple Communications Controller
- Base System Device
- System Interrupt Controller
- Performance Counters
- PCI Device

→ There is no problem with this server.

[?] **Unable to access the partition which was previously created after reinstalling with some disks**

→ For details, refer to the website below:

http://support.microsoft.com/kb/2497048/ja (Japanese text)

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

☐ Is the LAN cable properly connected?

→ If the LAN cable is not connected, Windows is installed in workgroup setting, not in domain setting. After the OS is started, join the domain by using Control Panel.

[?] **The telnet service is not installed**

☐ Is the computer name 15 characters or more?

→ Follow the steps below to install the telnet service.

(1) Adjust the computer name to 14 characters or less.

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

(3) Type `tlntsvr/service` in the **Open** box, and then click **OK**.

(4) Click **Start** menu, point to **Control Panel,** click **Administrative Tools**, and then click **Services** to confirm whether the telnet service is registered.

(5) Return the computer name to the original name (with 15 characters or more) as needed.

[?] **Unable to run "Parameter file for Windows OS"**

☐ Is the file type associated correctly?

→ "Parameter file for Windows OS" must be associated with Microsoft HTML Application Host. If it does not start, follow the steps below to associate with the program.

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

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

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

☐ Is in Server Core environment of Windows Server 2012 R2?

→ Ignore the message and event log recorded. This event does not affect system operation.

5.4 Problem at Starting OS

[?] **Unable to start OS**

☐ Have the settings of the RAID controller changed?

→ Specify the correct settings with RAID Configuration Utility (Off-line Utility).

☐ Is the RAID controller found by POST?

→ Be sure to connect the RAID controller correctly and retry.

☐ Is the RAID controller installed firmly straight into the PCI slot?

→ Install the RAID controller properly.

☐ Is the RAID controller mounted on the PCI slot for which the mounting is restricted?

→ Check the mounting restrictions of the server and then mount the RAID controller on the correct slot.

☐ Are the hard disk drives properly installed?

→ Install the hard disk drives properly.

☐ Is the SAS cable connected to the hard disk drive correctly?

→ Connect the SAS cable properly.

☐ Is the EXPRESSBUILDER DVD inserted?

→ Remove the EXPRESSBUILDER DVD and restart.

☐ Is a cartridge inserted into N8151-105/125 built-in RDX (USB)?

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

☐ Is a disk array unit connected to the PCI card?

→ Change the boot order from BBS Priorities in BIOS Setup Utility.

5.5 Problem of Windows STOP Error

[?] **Unable to turn off the power at the blue screen (STOP error screen)**

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

5.6 Problem of RAID System

[?] **Unable to rebuild the RAID array**

☐ 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.

[?] **Unable to automatically rebuild the RAID array**

☐ Did you wait for sufficient time until the hard disk drive was replaced?

→ Follow the steps below to use the auto-rebuilding feature.

(1) Remove a failure HDD.

(2) Wait for at least 90 seconds.

(3) Install a new HDD.

[?] **Unable to perform the consistency check**

☐ Is the logical drive **Critical** or **Degraded**?

→ Replace the failed hard disk drive with new one, and then perform **Rebuild**.

☐ Is the logical drive RAID0?

→ RAID0 has no data redundancy, and Consistency Check is disabled in the RAID0 array.

[?] Unable to set Write-Back for cache mode

→ In Off-line Utility, the current cache mode of RAID controller is displayed on **Virtual Disks** → **Properties** → **Policies** → **Write**.

If a 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).

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

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

```
The battery hardware is missing or malfunctioning,
or the battery is unplugged, or the battery could be
fully discharged. If you continue to boot the system,
the battery-backed cache will not function.
If battery is connected and has been allowed to charge
for 30 minutes and this message continues to appear,
then contact technical support for assistance.
Press 'D' to disable this warning (if your controller
does not have a battery.
```

☐ Are the cable between the battery pack and battery board, and the control cable between the battery board and battery connector connected correctly?

→ Connect the cables correctly.

☐ Is this message displayed after the battery is connected?

→ If the battery charging status is low, the battery is not found. If the battery is not found although 24 hours has passed, restart the server once.

[?] **Event ID510: The following event is logged. (W, X: Number of RAID controller)**

```
Event source  :  raidsrv
Event ID      :  510
Type          :  Warning
Description   :  [CTRL: W (ID=X)]
                 Battery needs to be refreshed.
```

☐ Have you refreshed the battery?

→ Refresh the battery once a year. The battery is not refreshed automatically except for the first time.

Use Universal RAID Utility to refresh the battery manually. For details, see *Universal RAID Utility User's Guide* in EXPRESSBUILDER.

5.7 Problem of Internal Devices and Other Hardware

[?] **Unable to access the internal or external devices**

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

[?] **Unable to access the hard disk drive**

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

[?] **DISK LED blinks**

→ When the patrol reading is running, the DISK LED blinks even if the hard disk drive is not being accessed. If a SATA hard disk drive is used, the LED may stay on.

[?] **Flow Control of LAN controller**

→ When the Flow Control is set as **Auto Negotiation**, **Rx & Tx Enabled**, **Tx Enabled** in case that the packet processing of the operating system stops due to some factors, such as a system hang, with a high transmission load, pause frames may be sent continuously.
In this case, the buffer in the switch runs out because a large amount of packets is stored in the switch, which may affect all the telecommunication devices connected to the server. To avoid this, set the FlowControl as Disabled.

[?] **The names of the Fibre Channel controllers appear with different names on Device Manager**

☐ When N8190-157A/158A is used in Windows, a different controller name is displayed per controller in Device Manager. It is not a problem in operating the system.

If using the EXPRESSBUILDER DVD, run the following file on the DVD.

Windows Server 2016:

```
\017\win\winnt\drivers\01_storage\1_ao_04\utl\friendlyname.exe
```

Windows Server 2012 R2:

```
\017\win\winnt\drivers\01_storage\1_ao_03\utl\friendlyname.exe
```

5.8 Problem of OS Operations

[?] **Windows operation is unstable**

☐ Have you installed Starter Pack?

→ If a network driver is installed after the OS is installed, Windows operation becomes unstable. Install Starter Pack according to *Installation Guide (Windows)*.

[?] **Windows does not work normally after it is restored from the backup tool**

☐ Have you installed Starter Pack?

→ Install Starter Pack according to *Installation Guide (Windows)*.

[?] **Unable to connect to a network**

☐ Is the cable connected properly?

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

☐ Are BIOS settings correct?

→ Check the BIOS settings with BIOS Setup Utility.

☐ Have you completed protocol and services settings?

→ Make sure that the network driver for the server has been installed and the network protocol (such as TCP/IP) or services have been properly specified.

☐ Are transfer rate settings correct?

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

[?] **RX dropped packets are created**

☐ Was the packet created at starting Linux?

→ There is no operational problem. Check the system and network environment when there are RX dropped packets during operation or when there is no communication.

5.9 Problem of EXPRESSBUILDER on Windows

[?] **Unable to read manuals**

☐ Have you installed Adobe Reader to your computer?

→ To read the manuals, install Adobe Reader in your computer.

☐ Is the message "Internet explorer has stopped working" displayed?

→ Close the dialog box and continue with the operation. If the same error occurs, double-click the “version.xml” of the root folder on EXPRESSBUILDER DVD, and then click **Yes** on the dialog box. After that, you can read the manual by clicking the link of manual again.

[?] **Autorun menu does not appear when EXPRESSBUILDER DVD is inserted to the server**

→ Run the following file directly.

\autorun\dispatcher.exe (on 32 bit edition)

\autorun\dispatcher_x64.exe (on 64 bit edition)

[?] **The menu item of Integrated Installation is gray**

☐ Is your system environment suitable?

→ To run Integrated Installation, log on to the Windows on the server with an administrative privilege.

[?] **The menu is displayed with a wrong language**

☐ Is your system environment suitable?

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

5.10 Problem of Bundled Software

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

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

[?] **NEC ESMPRO Manager**

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

[?] **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)**.

5.11 Problem of Optical Disk Drive

[?] **Unable to access or play a CD/DVD**

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

→ There is a holder in the tray to secure the disk. Make sure that the disk is securely placed in the holder.

☐ Is the CD/DVD-ROM supported by the server?

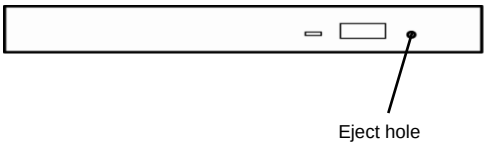
→ CD with copy guard feature is not supported.

→ CD/DVD for Macintosh is not supported.

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

→ Eject the disk 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.



Important

- **Do not use a toothpick, plastic, and other easily breaks.**
- **If you still cannot eject the disk, contact your sales representative.**

3. Pull the tray out with your hands.
4. Remove the disk.
5. Push the tray back.

6. Windows System Recovery

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

Note

- After recovering the system, install each driver and Starter Pack.
  For details, see "*Installation Guide (Windows)*".
- If hard disk drives cannot be detected, you cannot recover the Windows system.

6.1 Recovery of Windows Server 2016

If the Windows does not start normally, 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.

6.2 Recovery of Windows Server 2012 R2

If the Windows does not start normally, 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.

7. Resetting and Clearing the Server

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

7.1 Software Reset

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

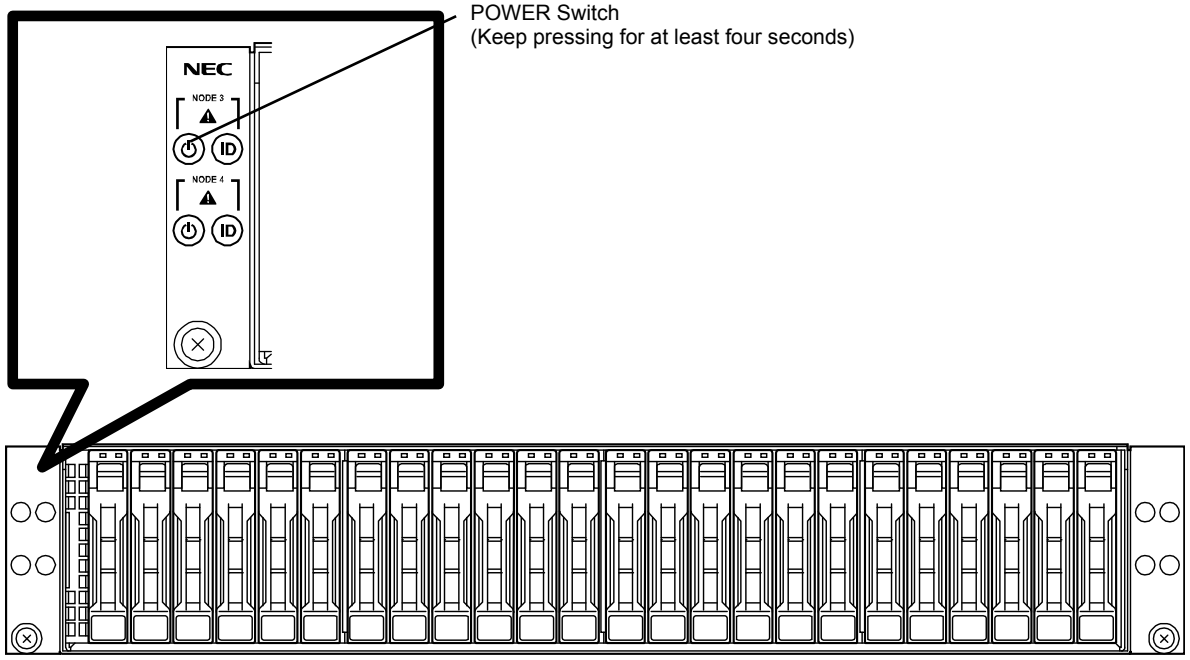
Note Make sure that no processing is in progress when resetting the server.

7.2 Forced Shutdown

Use this feature if the OS shutdown command does not work, 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.



7.3 Clearing BIOS Settings (NVRAM)

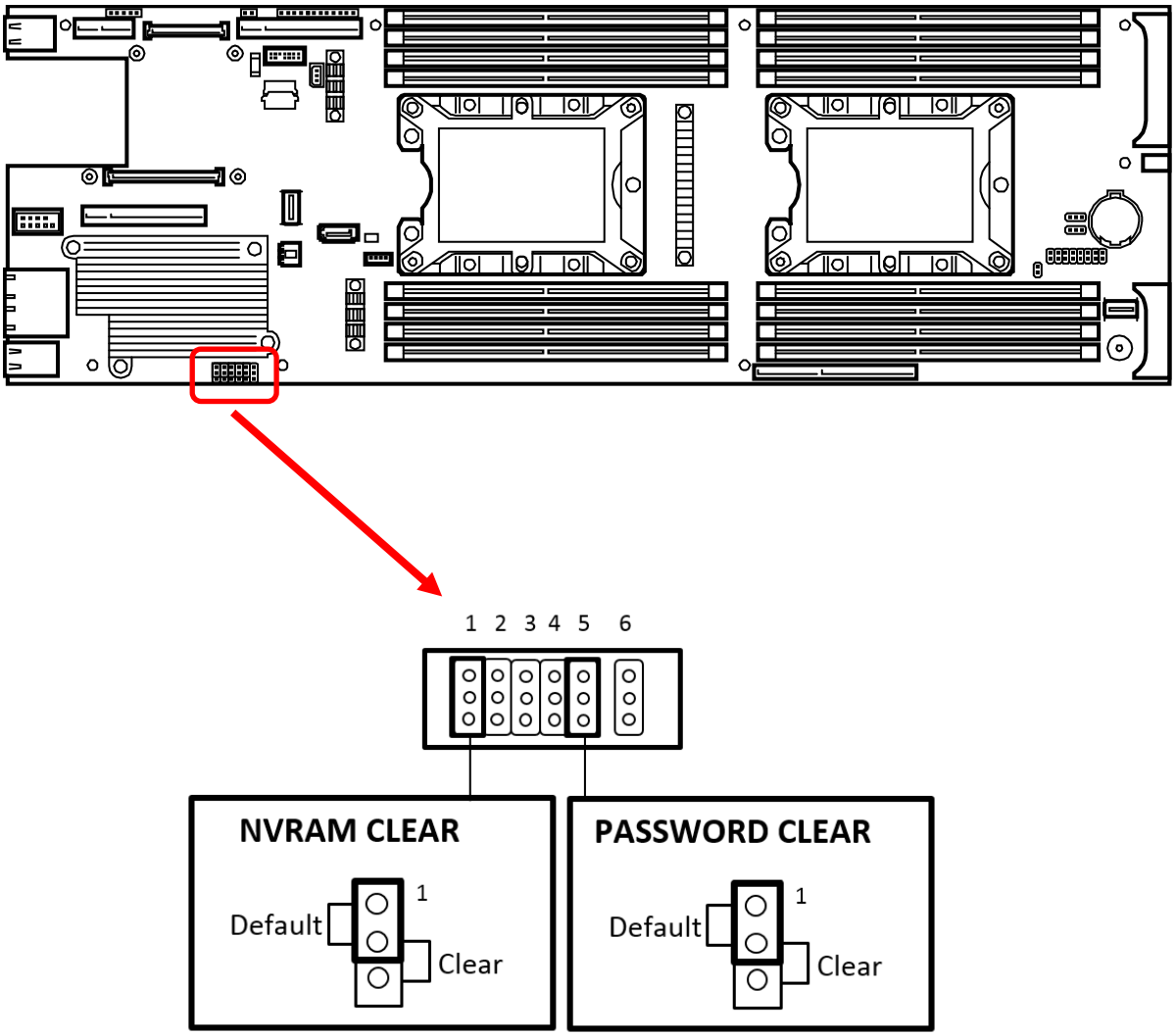
To recover the BIOS settings to the factory settings (clearing NVRAM), use the jumper switch.

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

Tips Usually, use **Load Setup Defaults** of BIOS Setup Utility (SETUP) to recover the settings to the factory settings.

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

Important **Do not change any other jumper switches. Any changes cause the server to fail or malfunction.**



The following instructions show how to clear the NVRAM 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, see *Safety Precautions and Regulatory Notices*.

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

CAUTION

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

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

Important **Take anti-static measures before operating the server. For detailed information on static electricity, see *Chapter 1 (1.8 Anti-static Measures)* in *Safety Precautions and Regulatory Notices*.**

- **Clearing NVRAM**

1. Turn off the server, and disconnect the AC power cord from power supply units.
   See "*Getting Started*" provided with this server or *Chapter 2 (1. Installing Internal Optional Devices)* in "*User's Guide*" to remove server modules.
2. Locate the NVRAM CLEAR jumper by referring the above figure.
3. Change the jumper switch from **Default** to **Clear**.
4. Wait at least five seconds and then return the jumper to **Default**.
5. Reassemble the server, connect the AC power cord, and then turn on the server.

   POST will halt with the following error message.

   ```
   Warning: BIOS Setting was Load Default value.
   ```
6. Press <Del> key to start BIOS Setup Utility, and then run **Restore Defaults** from **Save & Exit** menu.

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

- **Clearing a password**

  1. Turn off the server, and disconnect the AC power cord from power supply units.
     See *Chapter 2 (1. Installing Internal Optional Devices)* in "*User's Guide*" to remove server module.
  2. Locate the PASSWORD CLEAR jumper by referring the above figure.
  3. Change the jumper switch from **Default** to **Clear**.
  4. Reassemble the server, connect the AC power cord, and then turn on the server.

     POST will halt with the following error message.

     ```
     Clear Password by Jumper!
     ```
  5. Turn off the power and return the jumper switch to **Default** by the same manner.
  6. Reassemble the server.

8. System Diagnostics

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

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

8.2 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 (4. Details of EXPRESSBUILDER)*.

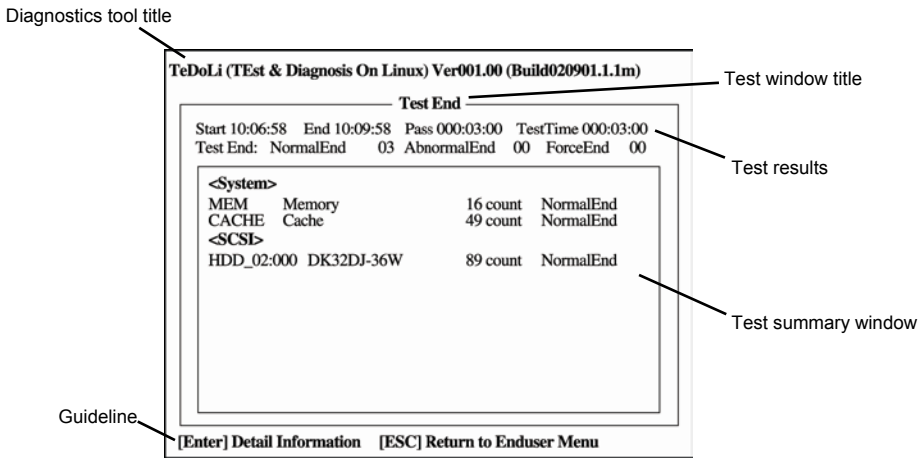
Note

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

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 display changes as shown below.

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

   Supervisor-Mode is intended for maintenance personnel.



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

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

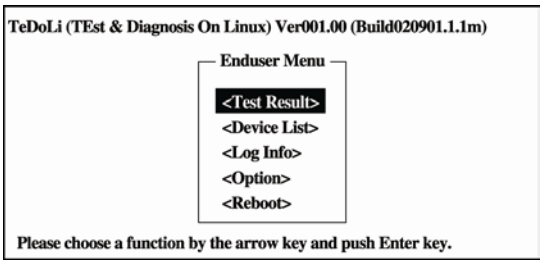
Test results
Shows the start, end, and elapsed time and completion status of the diagnostics.

Guideline
Shows the details of the keys to operate window.

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

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.



<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 server.

5. Select **Reboot** in **Enduser Menu**.

System Diagnostics is now completed.

9. Offline Tools

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

9.1 Offline Tools (Node)

<How to startup>

Start up the offline tool (Node) according to the following procedure (shut down the server once if it is operated).

Note

If the Secure Boot function is enabled, select Security and Secure Boot, and disable Attempt Secure Boot in BIOS Setup Utility (SETUP).
After finishing using the tool, enable this item again.

1. Start up EXPRESSBUILDER, and select Tool menu from the boot menu.
   For details of the EXPRESSBUILDER startup, see Chapter 2 (4. Details of EXPRESSBUILDER) in this document.
2. Select **Maintenance**.
3. When you select **BMC Maintenance Utility**, the main menu appears.

Main Menu

- Maintenance Utility
  When you select **Maintenance Utility**, the offline maintenance utility starts up. The offline maintenance utility performs the preventive maintenance of this server and analyzes a failure. In case of a problem that prevents ESMPRO from starting up, use the offline maintenance utility to check the cause.
  For details, see *Chapter 1 (9.1.1 Off-line Maintenance Utility)* in this document.

Note

The offline maintenance utility aims at maintenance workers. In case of a problem for which use of the offline maintenance utility cannot be avoided, contact the maintenance service company, and follow the instructions of the maintenance staff.

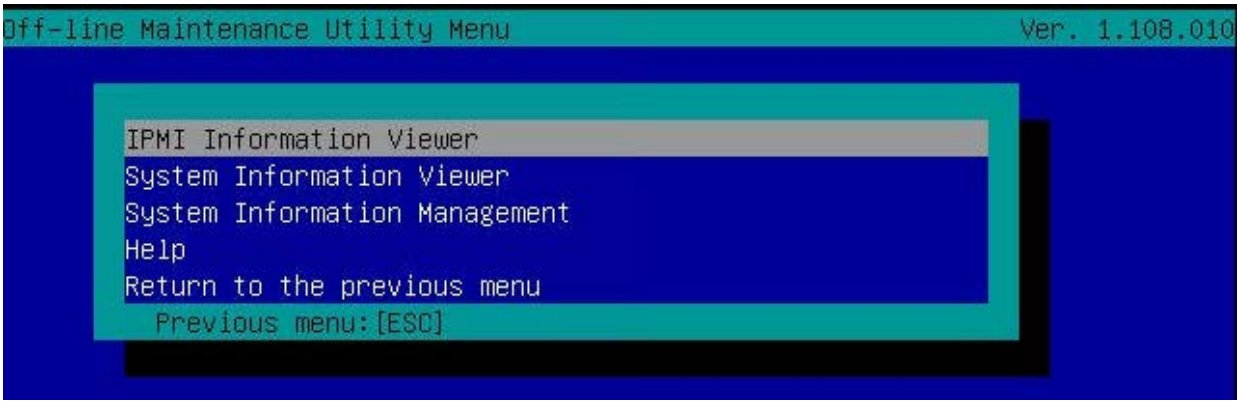
- Remote KVM And Media License
  By registering or deleting the N8115-32 Remote KVM and Media License, the virtual KVM/virtual media function can be enabled or disabled.
  For details, see *Chapter 1 (9.1.2 Remote KVM And Media License)* in this document.

- ESMPRO Configuration
  Disable/Enable Alert Acknowledge, and set Alert Retry Count and Alert Timeout.
  For details, see *Chapter 1 (9.1.3 ESMPRO Configuration)* in this document.

- Exit
  Exits the offline tool.

9.1.1 Off-line Maintenance Utility

When you select **Maintenance Utility**, the following menu appears.



Maintenance Utility Menu

- IPMI Information Viewer
  Shows the system event log (SEL), sensor device information (SDR), and maintenance replacement parts information (FRU) in Intelligent Platform Management Interface (IPMI), and backs up the displayed information.
  This function investigates the failures or events occurred in this server, and specifies the replacement parts.
  In addition, the SEL area can be cleared.
  For details, see *Chapter 1 (9.1.1 (1) IPMI Information Viewer)*.

- System Information Viewer
  Shows the information related to the processor (CPU), BIOS, and others. In addition, outputs this information in a text file.
  For details, see *Chapter 1 (9.1.1 (2) System Information Viewer)*.

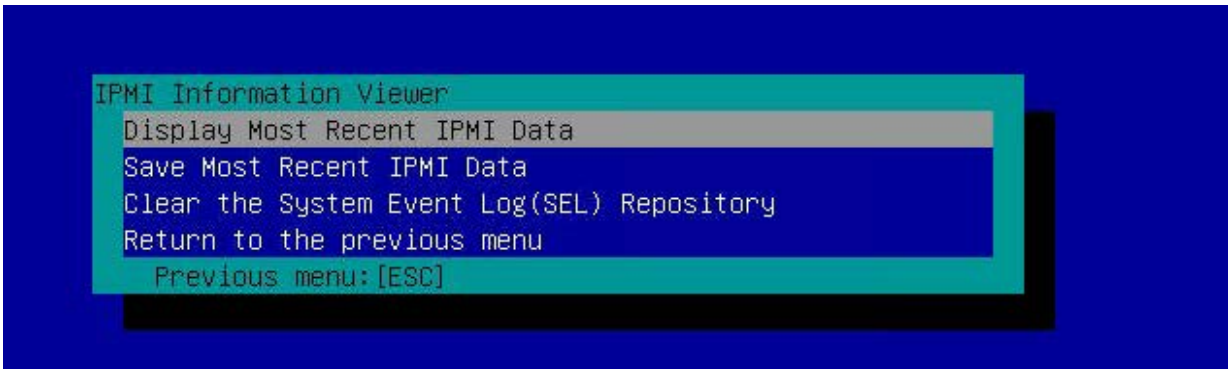
- System Information Management
  Sets the information unique to the customer's server (product information) and backs up/restores the FRU information.
  For details, see *Chapter 1 (9.1.1 (3) System Information Management)*.

- Help
  Shows Help of Maintenance Utility.

- Return to the previous menu
  Exists Maintenance Utility, and returns to Off-line TOOL MENU.

(1) IPMI Information Viewer

When you select **IPMI Information Viewer** on the Off-line Maintenance Utility menu, the following menu appears.



IPMI Information Viewer Menu

- Display Most Recent IPMI Data
  Shows the system event log (SEL), sensor device information (SDR), and maintenance replacement parts information (FRU).

- Save Most Recent IPMI Data
  Backs up the system event log (SEL), sensor device information (SDR), and maintenance replacement parts information (FRU).

- Clear the System Event Log(SEL) Repository
  Clears the system event log (SEL) area.

- Return to the previous menu
  Exists Maintenance Utility, and returns to Off-line TOOL MENU.

(2) System Information Viewer

When you select **System Information Viewer** on the Off-line Maintenance Utility menu, the following menu appears.

System Information Viewer Menu

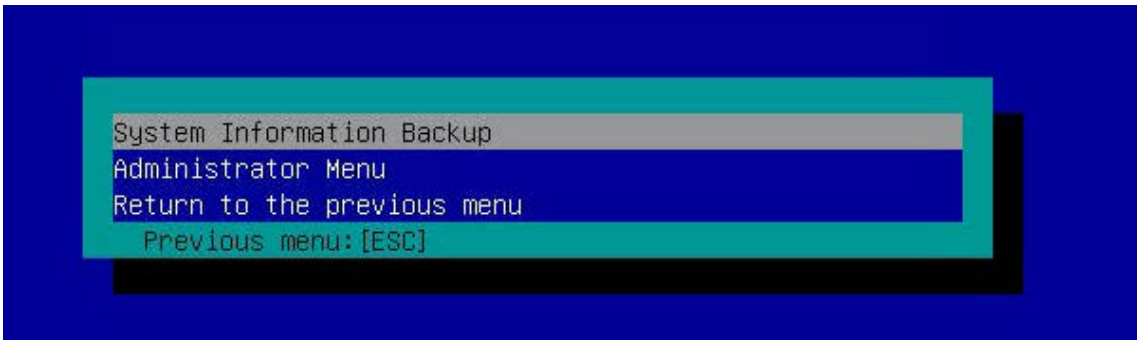
- Display System Information
  Shows the information related to the processor (CPU), BIOS, and others.

- Save System Information
  Outputs the information related to the processor (CPU), BIOS, and others in a text file.

- Return to the previous menu
  Exists Information Viewer, and returns to Off-line TOOL MENU.

(3) System Information Management

When you select **System Information Management** on the Off-line Maintenance Utility menu, the following menu appears.



System Information Management Menu

- System Information Backup
  Backs up the FRU information.

- Administrator Menu
  Sets the information unique to the customer's server (product information) and restores the FRU information.

- Return to the previous menu
  Exists Maintenance Utility, and returns to Off-line TOOL MENU.

9.1.2 Remote KVM And Media License

By registering or deleting the N8115-32 Remote KVM and Media License, the virtual KVM/virtual media function can be enabled or disabled.

The item that appears when “Remote KVM And Media License” is selected is shown below.

Item name	Description	Default value
License Key	Set the license key. *1 Set 35 characters (including “-”) for the license key.	Blank

*1: You can set this function if the license key is not registered.

9.1.3 ESMPRO Configuration

The items that appear when “ESMPRO Configuration” is selected are shown below.

Item name	Description	Default value
Alert Acknowledge	Disable/Enable the alert acknowledge function.	Enable
Alert Retry Count	Set the alert retry count. *1	3
Alert Timeout	Set the alert time out (second). *1	6

*1: You can set this function if the alert acknowledge is set to **Enable**.

9.2 Offline Tools (CMC)

<How to startup>

Start up the offline tool (CMC) according to the following procedure (shut down the server once if it is operated).

Tips The offline tool (CMC) must be operated on either Node.

Note If the Secure Boot function is enabled, select **Security** and **Secure Boot**, and disable **Attempt Secure Boot** in BIOS Setup Utility (SETUP).
After finishing using the tool, enable this item again.

1. Start up EXPRESSBUILDER, and select **Tool menu** from the boot menu.
   For details of the EXPRESSBUILDER startup, see *Chapter 2 (4. Details of EXPRESSBUILDER)* in this document.
2. Select **Maintenance**.
3. When you select **CMC Maintenance Utility**, the main menu appears.

Main Menu

- Maintenance Utility
  When you select **Maintenance Utility**, the offline maintenance utility starts up. The offline maintenance utility performs the preventive maintenance of this server and analyzes a failure. In case of a problem that prevents ESMPRO from starting up, use the offline maintenance utility to check the cause.
  For details, see *Chapter 1 (9.1.1 Off-line Maintenance Utility)* in this document.

Note The offline maintenance utility aims at maintenance workers. In case of a problem for which use of the offline maintenance utility cannot be avoided, contact the maintenance service company, and follow the instructions of the maintenance staff.

- ESMPRO Configuration
  Disable/Enable Alert Acknowledge, and set Alert Retry Count and Alert Timeout.
  For details, see *Chapter 1 (9.1.3 ESMPRO Configuration)* in this document.

- Exit
  Exits the offline tool.

9.3 Operation without Console

The offline tool can be operated remotely from the management computer (management PC) even if a console such as a keyboard is not connected to this server.

9.3.1 How to remotely control

Use the virtual KVM of BMC from the LAN-connected management PC for operation.

For details of the virtual KVM, see *BMC/CMC Management Console User's Guide* in EXPRESSBUILDER.

Note

- To use the virtual KVM, the Remote KVM and Media License (N8115-32) is required.
- For the LAN connection, use the BMC-dedicated LAN connector. When using the Shared BMC LAN function, use the corresponding LAN connector for connection.

The BIOS console redirection function is also available for the remote operation.

Tips

If the characters on the terminal screen get garbled while the console redirection connection, change the font on the terminal to the appropriate one.

9.3.2 Preparation

For the console operation, prepare the BMC remote management function so that the hardware error information can be checked in case of an error.

For details, see *BMC/CMC Management Console User's Guide*.

9.4 Cautions

Use only one media to be connected during backing up or other operations. The media that contains "\EFI\BOOT\BOOTX64.efi" is out of the output target.

NEC Express5800 Series
Express5800/D120h

2 Useful Features

This chapter describes useful functions of the product. Refer to this chapter as necessary.

1. **System BIOS**
   Describes how to configure the system BIOS and its parameters.

2. **Flash FDD**
   Describes the Flash FDD.

3. **Power Control Features**
   Describes the power control feature.

4. **Details of EXPRESSBUILDER**
   Describes the EXPRESSBUILDER.

5. **BMC/CMC**
   Describes BMC/CMC.

6. **NEC ESMPRO**
   Describes NEC ESMPRO used to manage and monitor the server.

7. **NEC Product Info Collection Utility**
   Describes the NEC Product Info Collection Utility.

8. **Ezclct Viewer**
   Describes Ezclct Viewer.

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

10. **Express Report Service / Express Report Service (HTTPS)**
    Describes Express Report Service / Express Report Service (HTTPS).

11. **Express Report Service (MG)**
    Describes Express Report Service (MG).

1. System BIOS

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

1.1 Starting SETUP

Turn on the server and proceed with POST.

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

```
Press <Del> to enter setup, <F10> Display Boot Menu, <F12> Force Network Boot
```

When <Del> key is pressed, SETUP will start after POST, and the Main menu appears.

Tips

- Messages differ depending on the environment.
- When the boot mode is legacy BIOS mode, SETUP starts even if you press the <Del> key while the option ROM message appears.

1.2 Parameter Descriptions

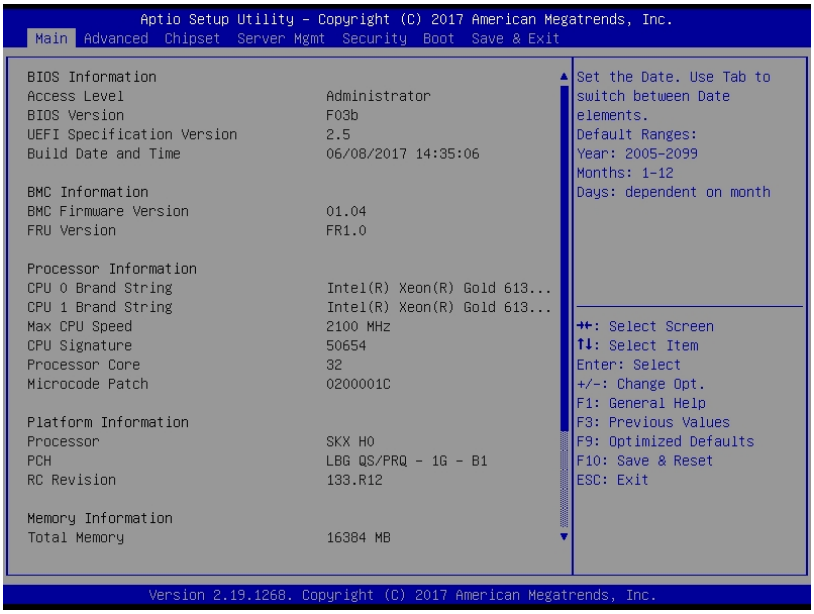
SETUP has the following menus.

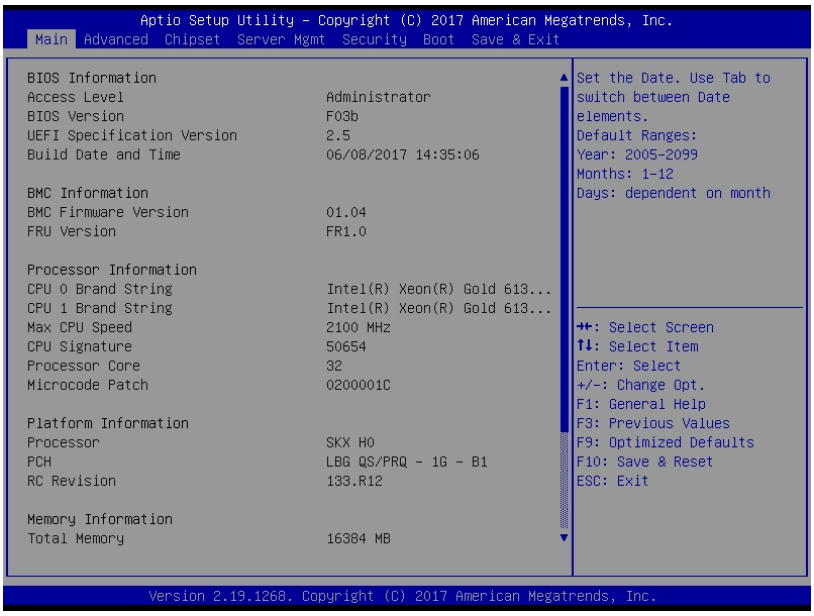
- Main menu
- Advanced menu
- Chipset menu
- Server Mgmt menu
- Security menu
- Boot menu
- Save & Exit menu

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

1.2.1 Main

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





For details about the options, see the table below.

Option	Parameter	Descriptions
BIOS Information	–	–
Access Level	(Display only)	Shows the access level.
BIOS Version	(Display only)	Displays BIOS Version.
UEFI Specification Version	(Display only)	Shows the UEFI Spec verson.
Build Date and Time	(Display only)	Displays the BIOS build date and time.
BMC Information	—	—

Option	Parameter	Descriptions
BMC Firmware Version	(Display only)	Displays BMC Firmware Version
FRU Version	(Display only)	Displays FRU Version
Processor Information	–	–
CPU 0 Brand String	(Display only)	Displays the type of the processor 0.
CPU 1 Brand String	(Display only)	Displays the type of the processor 1.
Max CPU Speed	(Display only)	Displays the clock speed of the processor.
CPU Signature	(Display only)	Displays the signature of the processor.
Processor Core	(Display only)	Displays the number of cores in the processor.
Microcode Patch	(Display only)	Displays the micro code revision applied to the processor.
Platform Information	–	–
Processor	(Display only)	Displays the type of the processor.
PCH	(Display only)	Displays PCH.
RC Revision	(Display only)	Displays RC Revision.
Memory Information	–	–
Total Memory	(Display only)	Displays the total capacity of installed memory.
Memory Frequency	(Display only)	Displays the operating frequency of the memory.
Onboard LAN Information	–	–
LOM1	(Display only)	Displays the MAC address of the onboard LAN1.
LOM2	(Display only)	Display the MAC address of the onboard LAN2.
System Date	WWW MM/DD/YYYY	Sets the system date.
System Time	HH:MM:SS	Sets the system time

[ ]: Factory settings

Tips

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

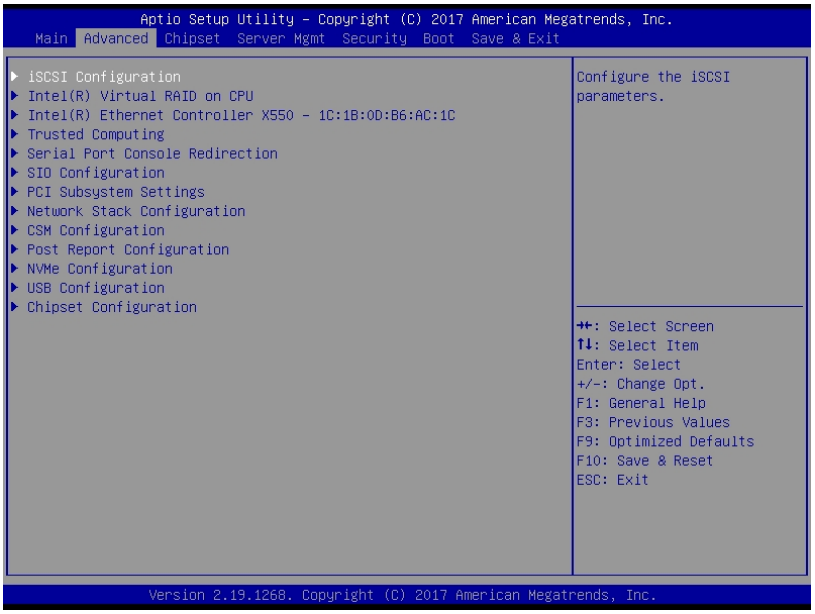
Check the system clock monthly. Additionally, if you implement the server in a system that requires highly accurate time, use of a time server (an NTP server) is recommended.

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

1.2.2 Advanced

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

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

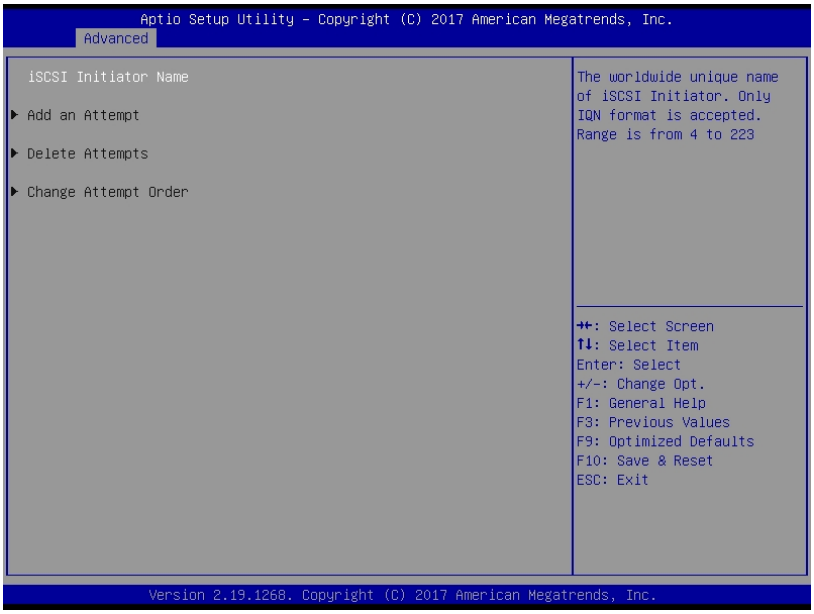


Note

You cannot select the Network Stack Configuration sub-menu and the UEFI Driver Configuration sub-menu, when "Boot Mode" is **Legacy**. Change "Boot Mode" to **UEFI** before selecting them.

(1) iSCSI Configuration submenu

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



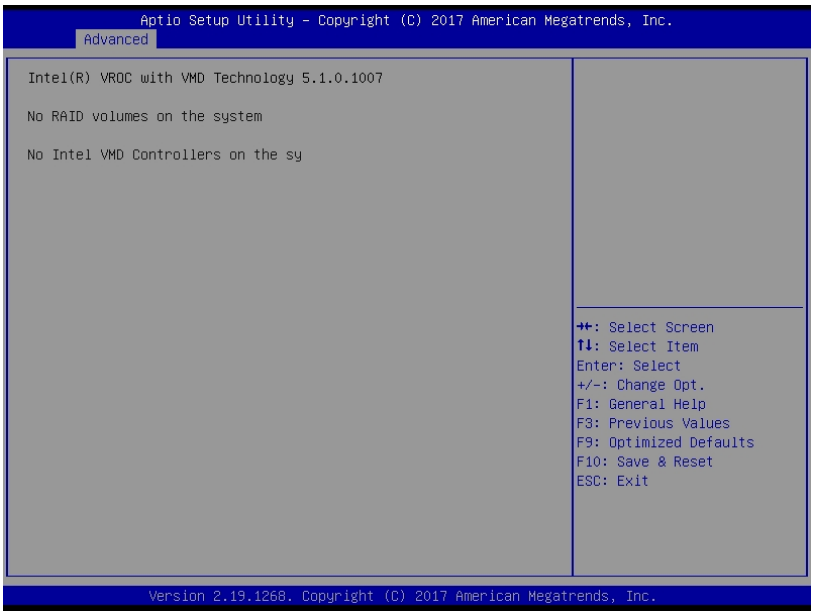
For details about the options, see the table below.

Option	Parameter	Descriptions
iSCSI Initiator Name	—	Sets the initiator name of iSCSI. Sets the initiator name in the iSCSI qualified name (IQN) format. You can select the following menu items by setting the initiator name of iSCSI.
Add an Attempt	—	—
Delete Attenmpts	—	—
Change Attempt Order	—	—

[ ]: Factory settings

(2) Intel(R) Virtual RAID on CPU submenu

From the **Advanced** menu, select **Intel(R) Virtual RAID on CPU Submenu** and then press the <Enter> key to display the menu screen shown below.



For details about the options, see the table below.

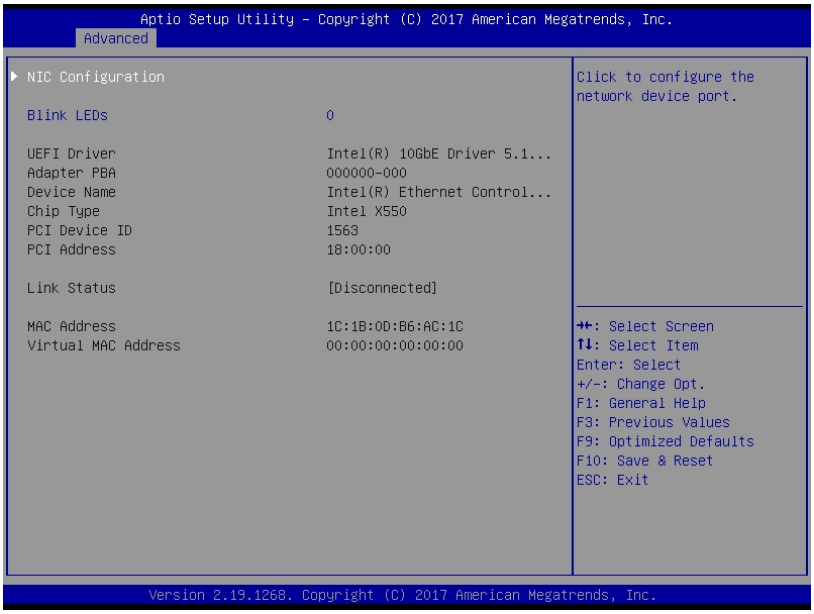
Option	Parameter	Descriptions
Intel(R)VROC with VMD Technology xxxxxxxx	—	—
No RAID volume on the system	(Display only)	Displays the RAID volume.
No Intel VMD Controller on the system	(Display only)	Displays the status of the VMD controller.

[ ]: Factory setting

(3) Intel(R) Ethernet Controller X550 submenu

From the **Advanced** menu, select **Intel(R) Ethernet Controller X550** and then press the <Enter> key to display the menu screen as shown below.

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

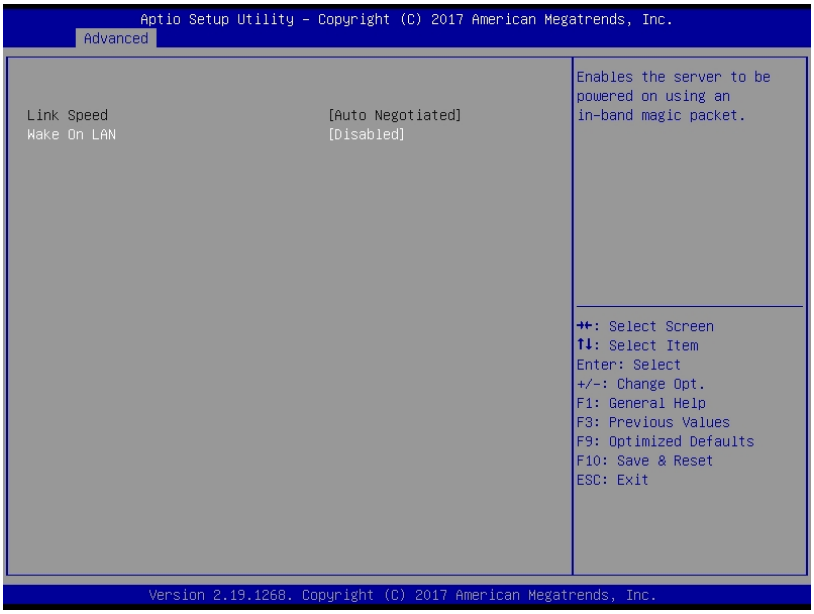


For details about the options, see the table below.

Option	Parameter	Descriptions
NIC Configuration	–	–
Blink LED	[0] Rang: 0~15	Blinks the LED of the physical network. Specifies the number of ports.
UEFI Driver	(Display only)	Displays UEFI Driver.
Adapter PBA	(Display only)	Displays Adapter PBA.
Device Name	(Display only)	Displays Device Name.
Chip Type	(Display only)	Displays Chip Type.
PCI Device ID	(Display only)	Displays PCI Device ID.
PCI Address	(Display only)	Displays PCI Address.
Link Status	(Display only)	Displays Link Status.
MAC Address	(Display only)	Displays MAC address.
Virtual MAC Address	(Display only)	Displays Virtual MAC Address.

[ ]: Factory setting

(a) NIC Configuration submenu



For details about the options, see the table below.

Option	Parameter	Descriptions
Link Speed	(Display only)	Displays Link Speed.
Wake On LAN	[Disabled] Enabled	Enables or disables the remote power on function via the network.

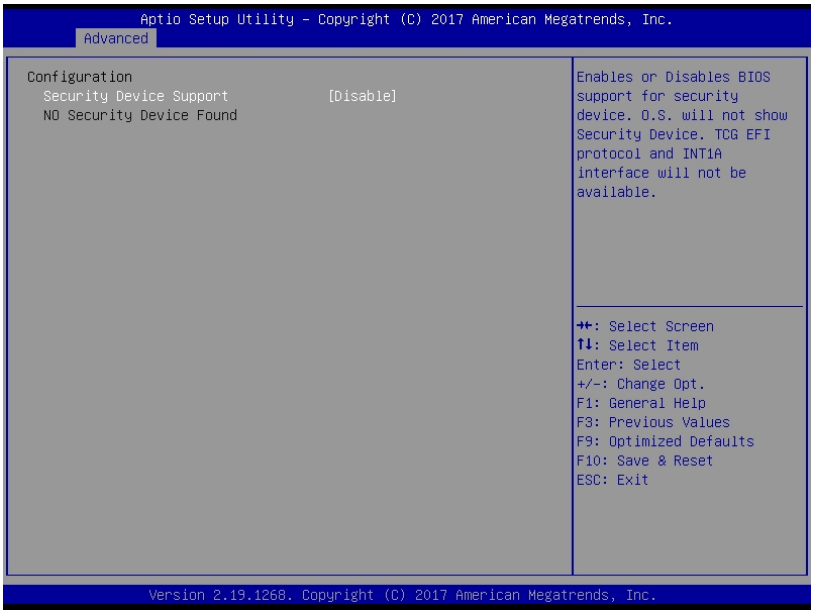
[ ]: Factory setting

Note If the AC power is turned off, the Wake on Ring feature is not available on the next system boot after AC power-on. Press the Power switch to boot the system.

(4) Trusted Computing submenu

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

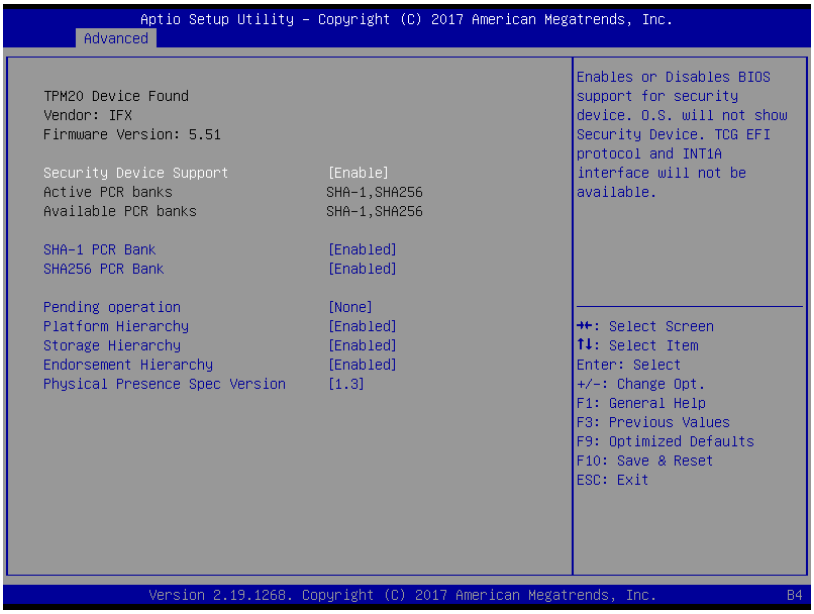
Without TPM Device:



Option	Parameter	Descriptions
Configurtaion	(Display only)	—
Security Device Support	Disabled [Enabled]	Enables or Disables BIOS support for security device.
No Security Device found	(Display only)	Show the device exists or doesn't.

[ ]: Factory setting

With TPM Device: (Security Device Support must be enabled)



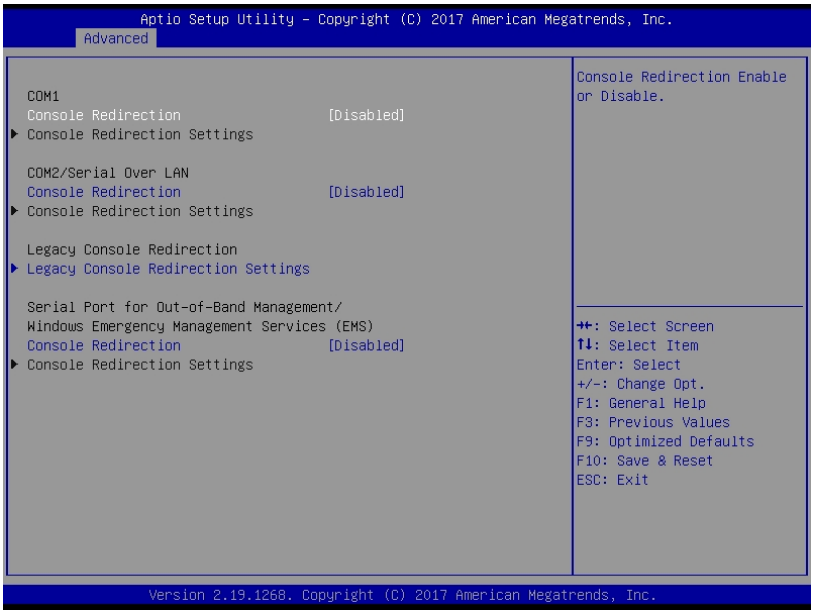
For details about the options, see the table below.

Option	Parameter	Descriptions
TPM20 Device Found	(Display only)	This is displayed when TPM is mounted.
Vendor: xxx	(Display only)	Displays the vendor name of the TPM device.
Firmware Version: xxx	(Display only)	Displays Firmware Version of TPM device.
Security Device Support	[Disabled] Enabled	Enables or disables the BIOS support of the security function.
Active PCR banks	(Display only)	Displays Active PCR banks.
Available PCR banks	(Display only)	Displays Available PCR banks.
SHA-1 PCR Bank	Disabled [Enabled]	Enable or Disable SHA-1 PCR Bank
SHA256 PCR Bank	Disabled [Enabled]	Enable or Disable SHA256 PCR Bank
Pending operation	[None] TPM Clear	Displays TPM operation
Platform Hierarchy	Disabled [Enabled]	Enables or disables Platform Hierarchy.
Storage Hierarchy	Disabled [Enabled]	Enables or disables Storage Hierarchy.
Endorsement Hierarchy	Disabled [Enabled]	Enables or disables Endorsement Hierarchy.

[ ]: Factory setting

(5) Serial Port Console Redirection submenu

From the **Advanced** menu, select **Serial Port Console Redirection** and then press the <Enter> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <Enter> key to show its submenus.

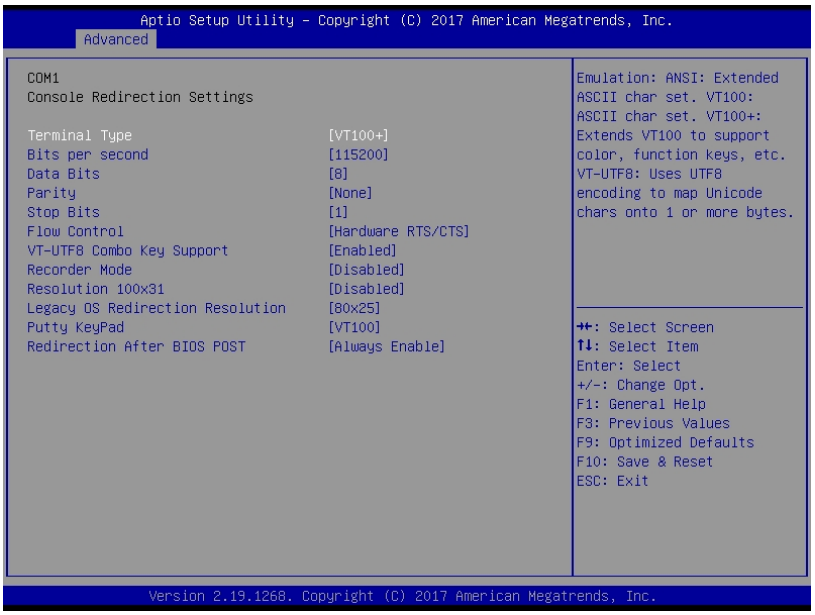


For details about the options, see the table below.

Option	Parameter	Descriptions
COM1	–	–
Console Redirection	[Disabled] Enabled	Enables or disables the console redirection function of the serial port 1.
Console Redirection Settings	–	–
COM2/Serial Over LAN	–	–
Console Redirection	[Disabled] Enabled	Enables or disables the console redirection function of the serial port 1.
Console Redirection Settings	–	–
Legacy Console Redirection	–	–
Legacy Console Redirection Settings	–	–
Serial Port for Out-of-Band Managment/ Windows Emergency Management Service (EMS)	–	–
Console Redirection	[Disabled] Enabled	Enables or disables the console redirection function of the serial port 1.
Console Redirection Settings	–	–

[ ]: Factory setting

(a) Console Redirection Settings (COM1) submenu



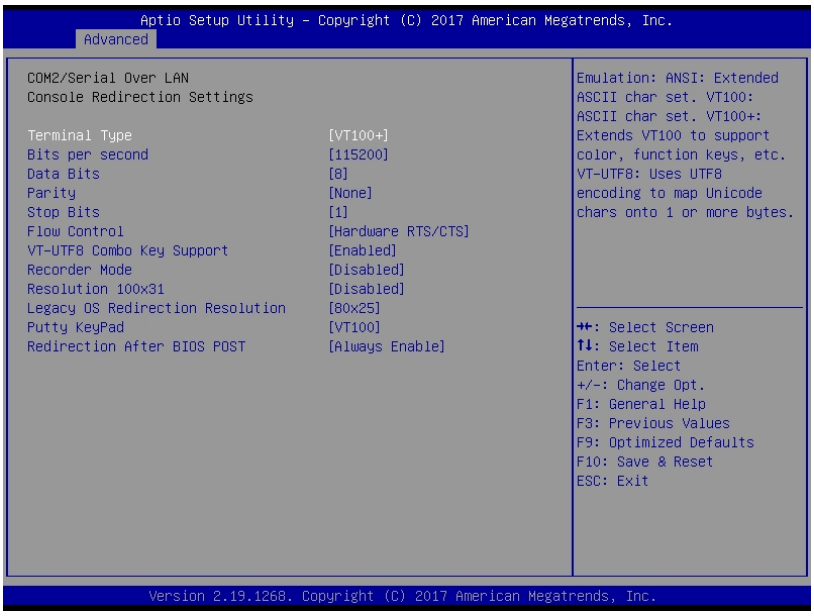
For details about the options, see the table below.

Option	Parameter	Descriptions
COM1	–	–
Console Redirection Settings	–	–
Terminal Type	VT100 [VT100+] VT-UTF8 ANSI	Specifies the terminal type.
Bits per second	9600 19200 38400 57600 [115200]	Specifies the baud rate.
Data Bits	7 [8]	Specifies the data bit width.
Parity	[None] Even Odd Mark Space	Specifies the parity type.
Stop Bits	[1] 2	Specifies the stop bits.
Flow Control	None [Hardware RTS/CTS]	Specifies the flow control method.
VT-UTF8 Combo Key Support	Disabled [Enabled]	Enables or disables VT-UTF8 Combo Key Support.
Recorder Mode	[Disabled] Enabled	Enables or disables Recorder Mode.
Resolution 100x31	[Disabled] Enabled	Enables or disables the extended resolution.

Option	Parameter	Descriptions
Legacy OS Redirection Resolution	80x24 [80x25]	Changes the setting of Legacy OS Redirection Resolution.
Putty KeyPad	[VT100] LINUX XTERMR6 SC0 ESCN VT400	Changes the setting of Putty KeyPad.
Redirection After BIOS POST	[Always Enable] BootLoader	[Always Enable]: Always enables the legacy console redirection. [Disabled]: Disables the legacy console redirection before starting the legacy OS.

[ ]: Factory setting

(b) Console Redirection Settings (COM2/Serial Over LAN) submenu



For details about the options, see the table below.

Option	Parameter	Descriptions
COM2/Serial Over LAN	–	–
Console Redirection Settings	–	–
Terminal Type	VT100 [VT100+] VT-UTF8 ANSI	Specifies the terminal type.
Bits per second	9600 19200 38400 57600 [115200]	Specifies the baud rate.
Data Bits	7 [8]	Specifies the data bit width.
Parity	[None] Even Odd Mark Space	Specifies the parity type.
Stop Bits	[1] 2	Specifies the stop bits.
Flow Control	None [Hardware RTS/CTS]	Specifies the flow control method.
VT-UTF8 Combo Key Support	Disabled [Enabled]	Enables or disables VT-UTF8 Combo Key Support.
Recorder Mode	[Disabled]	Enables or disables Recorder Mode.

Option	Parameter	Descriptions
	Enabled	
Resolution 100x31	[Disabled] Enabled	Enables or disables the extended resolution.
Legacy OS Redirection Resolution	80x24 [80x25]	Changes the setting of Legacy OS Redirection Resolution.
Putty KeyPad	[VT100] LINUX XTERMR6 SC0 ESCN VT400	Changes the setting of Putty KeyPad.
Redirection After BIOS POST	[Always Enable] BootLoader	[Always Enable]: Always enables the legacy console redirection. [Disabled]: Disables the legacy console redirection before starting the legacy OS.

[ ]: Factory setting

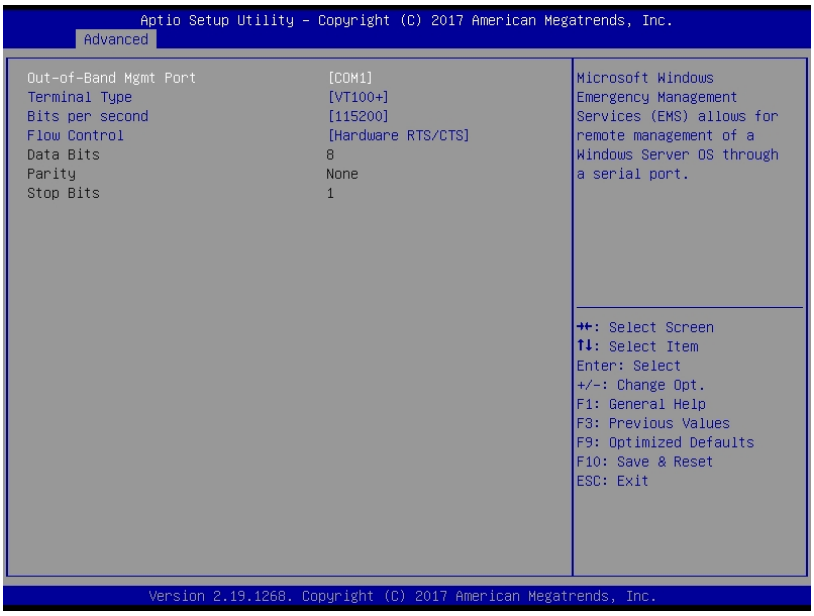
(c) Legacy Console Redirection Settings submenu

For details about the options, see the table below.

Option	Parameter	Descriptions
Legacy Serial Redirection Port	[COM1] COM2/Serial Over LAN	Selects a com port to display redirection of the Legacy OS.

[ ]: Factory setting

(d) Console Redirection Settings submenu



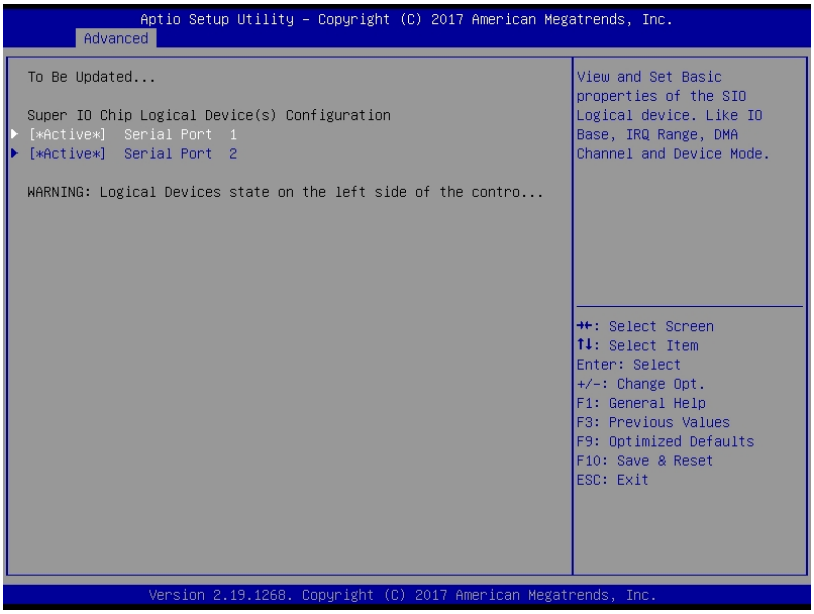
For details about the options, see the table below.

Option	Parameter	Descriptions
Out-of-Band Mgmt Port	[COM1] COM2/Serial Over LAN	Selects COM1 or COM2/Serial Over LAN.
Terminal Type	VT100 [VT100+] VT-UTF8 ANSI	Specifies the terminal type.
Bits per second	9600 19200 38400 57600 [115200]	Specifies the baud rate.
Flow Control	None [Hardware RTS/CTS] Software Xon/Xof	Specifies the flow control method.
Data Bits	(Display only)	Displays the data bit width.
Parity	(Display only)	Displays the parity type.
Stop Bits	(Display only)	Displays stop bits.

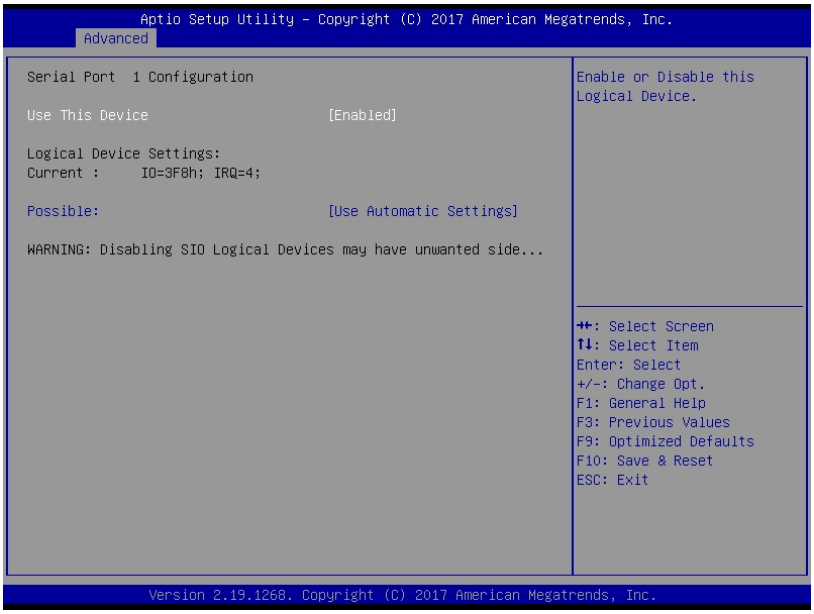
[ ]: Factory setting

(6) SIO Configuration submenu

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



(a) [*Active*] Serial Port 1 submenu

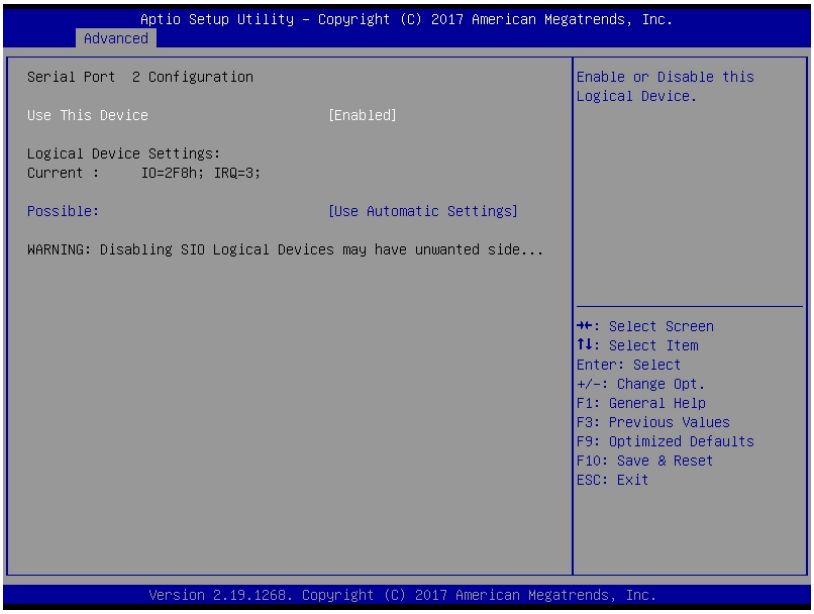


For details about the options, see the table below.

Option	Parameter	Descriptions
Serial Port 1 Configuration	–	–
Use This Device	Disabled [Enabled]	Enables or disables the device.
Logical Device Settings:	–	–
Current : IO=xxxx; IRQx;	(Display only)	Displays the current setting value.
Possible:	[Use Automatic Settings] IO=3F8h; IRQ4; DMA; IO=3F8h; IRQ=3,4,5,7,9,11,12; DMA; IO=2F8h; IRQ=3,4,5,7,9,11,12; DMA; IO=3E8h; IRQ=3,4,5,7,9,11,12; DMA; IO=2E8h; IRQ=3,4,5,7,9,11,12; DMA	Changes the setting value.
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.	(Display only)	–

[ ]: Factory setting

(b) [*Active*] Serial Port 2 submenu



For details about the options, see the table below.

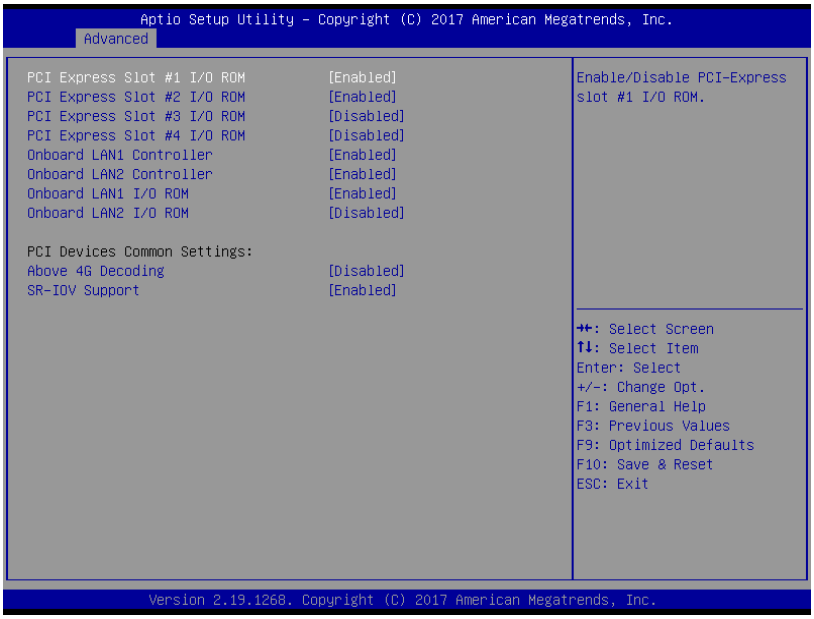
Option	Parameter	Descriptions
Serial Port 2 Configuration	–	–
Use This Device	Disabled [Enabled]	Enables or disables the device.
Logical Device Settings:	–	–
Current : IO=xxxx; IRQx;	(Display only)	Displays the current setting value.
Possible:	[Use Automatic Settings] IO=3F8h; IRQ4; DMA; IO=3F8h; IRQ=3,4,5,7,9,11,12; DMA; IO=2F8h; IRQ=3,4,5,7,9,11,12; DMA; IO=3E8h; IRQ=3,4,5,7,9,11,12; DMA; IO=2E8h; IRQ=3,4,5,7,9,11,12; DMA;	Changes the setting value.
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.	(Display only)	–

[ ]: Factory setting

(7) PCI Subsystem Settings submenu

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

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



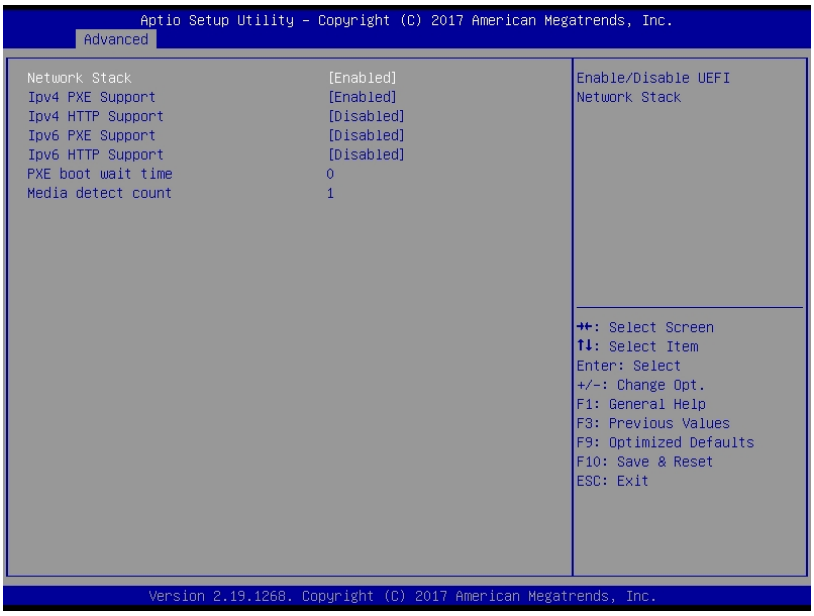
For details about the options, see the table below.

Option	Parameter	Descriptions
PCI Express Slot #1 I/O ROM	Disabled [Enable]	Enables or disables PCI-Express slot #1 I/O ROM.
PCI Express Slot #2 I/O ROM	Disabled [Enable]	Enables or disables PCI-Express slot #2 I/O ROM.
PCI Express Slot #3 I/O ROM	[Disabled] Enable	Enables or disables PCI-Express slot #3 I/O ROM.
PCI Express Slot #4 I/O ROM	[Disabled] Enable	Enables or disables PCI-Express slot #4 I/O ROM.
Onboard LAN1 Controller	Disabled [Enabled]	Enables or disables LAN 1 controller.
Onboard LAN2 Controller	Disabled [Enabled]	Enables or disables LAN 2 controller.
Onboard LAN1 I/O ROM	Disabled [Enabled]	Enables or disables Onboard LAN1 I/O ROM
Onboard LAN2 I/O ROM	[Disabled] Enabled	Enables or disables Onboard LAN2 I/O ROM
PCI Devices Common Settings:	–	–
Above 4G Decoding	[Disabled] Enabled	Enables or disables a device decoded in the 4G address (only the system support 64bit PCI decoding).
SR-IOV Support	Disabled [Enabled]	Enables or disables SR-IOV.

[ ]: Factory setting

(8) Network Stack Configuration submenu

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



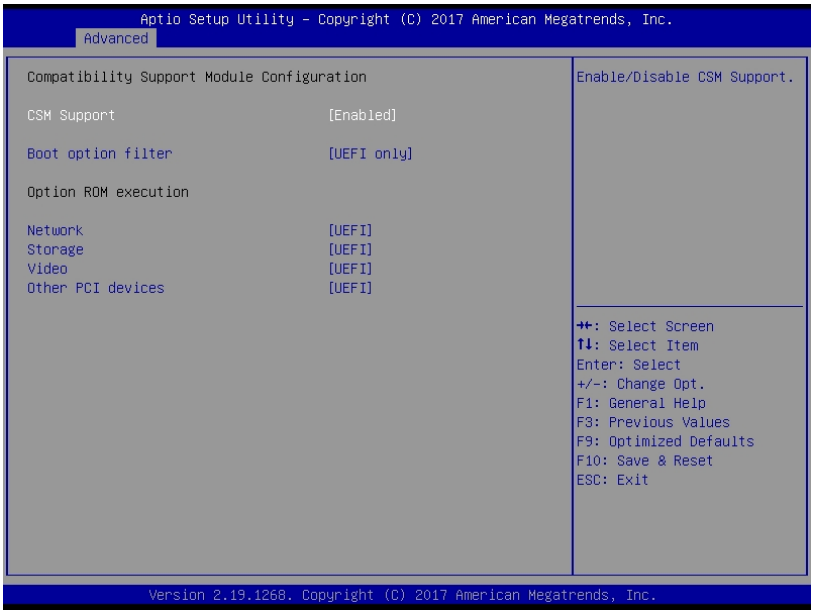
For details about the options, see the table below.

Option	Parameter	Descriptions
Network Stack	Disabled [Enabled]	Enables or disables UEFI Network Stack. If this option is **Enabled**, the menu items below appears.
Ipv4 PXE Support	Disabled [Enabled]	Enables or disables Ipv4 PXE.
Ipv4 HTTP Support	[Disabled] Enabled	Enables or disables Ipv4 HTTP.
Ipv6 PXE Support	[Disabled] Enabled	Enables or disables Ipv6 PXE.
Ipv6 HTTP Support	[Disabled] Enabled	Enables or disables Ipv6 HTTP.
PXE boot wait time	[0] Ps. Max:5 ,Min:0	Specifies PXE boot wait time.
Media detect count	[0] Ps. Max:50 ,Min:1	Specifies the number of times trying to detect media.

[ ]: Factory setting

(9) CSM UEFI Driver Configuration submenu

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



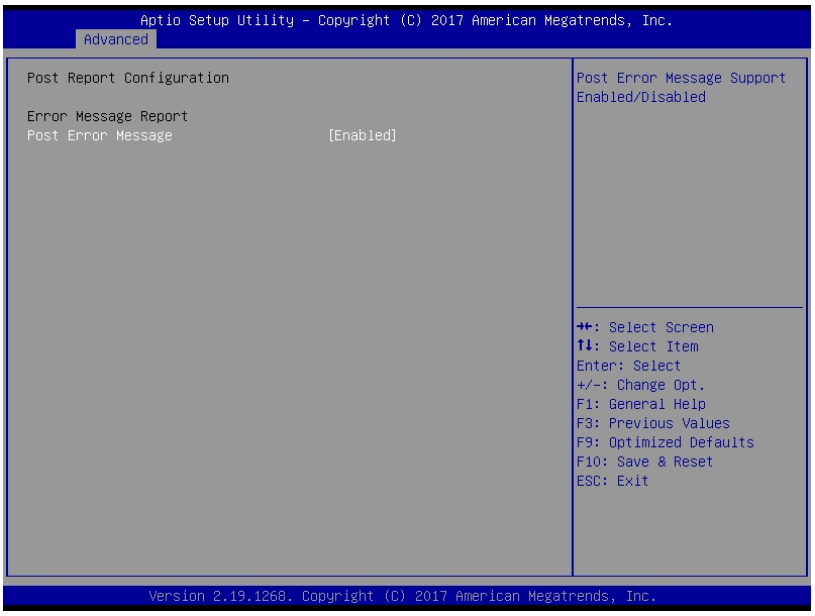
For details about the options, see the table below.

Option	Parameter	Descriptions
Compatibility Support Module Configuration	–	–
CSM Support	[Disable] Enable	Enables or disables CSM.
Boot option filter	Legacy only [UEFI only]	Specifies the boot option (UEFI or Legacy).
Option ROM execution	–	–
Networok	Do not lauch [UEFI] Legacy	Changes the setting of the network option ROM
Storage	Do not lauch [UEFI] Legacy	Changes the setting of Storage Option ROM.
Video	Do not lauch [UEFI] Legacy	Changes the setting of Video Option ROM.
Other PCI devices	Do not lauch [UEFI] Legacy	Changes the setting of PCI Device Option ROM.

[ ]: Factory setting

(10) Post Report Configuration submenu

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



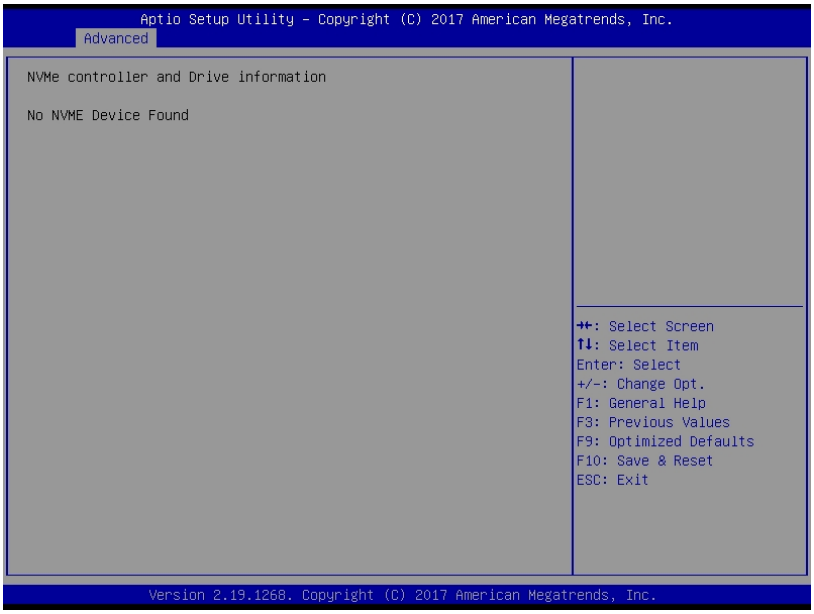
For details about the options, see the table below.

Option	Parameter	Descriptions
Post Report Configuration	—	—
Error Message Report	—	—
Post Error Message	Disabled [Enabled]	Enables or disables the function to deter starting OS when an error is detected during POST. **Disabled** setting tries to start OS without waiting for a user instruction.

[ ]: Factory setting

(11) NVMe Configuration submenu

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



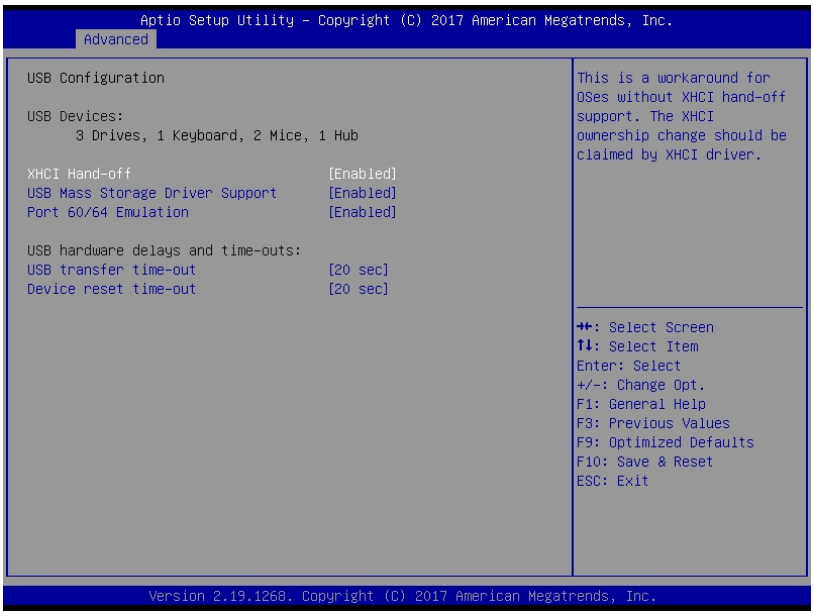
For details about the options, see the table below.

Option	Parameter	Descriptions
NVMe controller and Drive information	–	–
NO NVMe Device Found	–	Displays NVMe device information.

[ ]: Factory setting

(12) USB Configuration submenu

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



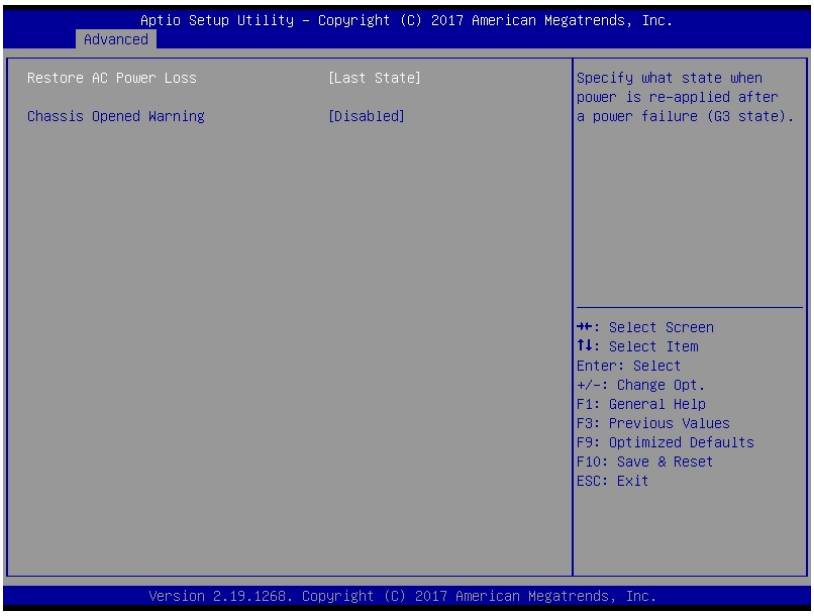
For details about the options, see the table below.

Option	Parameter	Descriptions
USB Configuration	–	–
USB Device:	–	–
1 Drive, 2 Keyboards, 3 Mice. 2 Hubs	(Display only)	Displays the USB device connected to the device.
XHCI Hand-off	Disabled [Enabled]	Enables or disables XHCI Hand-off. XHCI Hand-off.
USB Mass Storage Driver Support	Disabled [Enabled]	Enables or disables XHCI Hand-off USB Mass Storage Device.
Port 60/64 Emulation	Disabled [Enabled]	Enables or disables I/O 60/64 emulation support.
USB hardware delays and time-outs:	–	–
USB transfer time-out	1 sec 25 sec 10 sec [20 sec]	Changes the timeout setting.
Device reset time-out	10 sec [20 sec] 30 sec 40 sec	Changes the timeout setting.

[ ]: Factory setting

(13) Chipset Configuration submenu

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



For details about the options, see the table below.

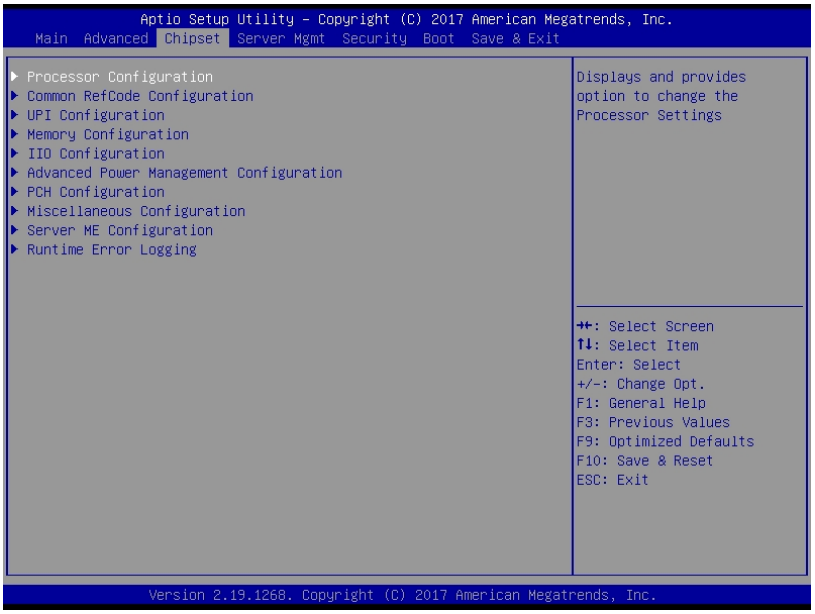
Option	Parameter	Descriptions
Restore AC Power Loss	Power Off Power On [Last State]	Sets the AC link function. Sets the status of the DC power when the AC power is supplied again after the power is turned off.
Chassis Opened Waring	[Disab;ed] Enabled Clear	Enables or disables warning when the chassis opens.

[ ]: Factory setting

1.2.3 Chipset

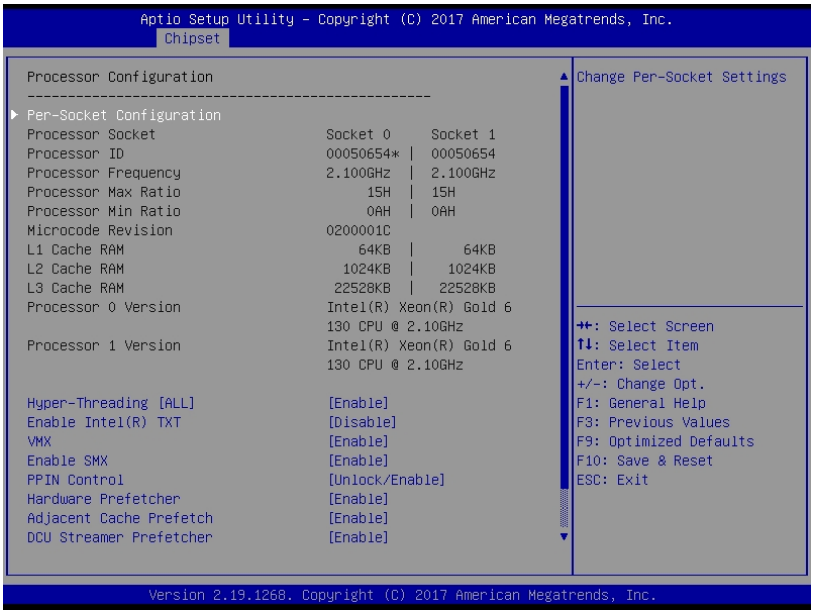
If you move the cursor to **Chipset**, the **Chipset** menu appears.

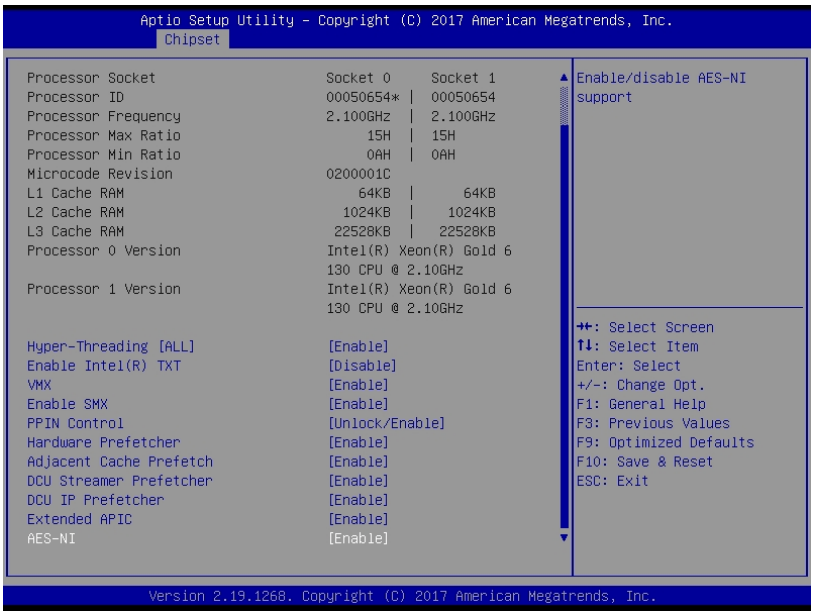
For the menus that show a "▶" to their left, select a menu and press the <Enter> key to display its submenu.



(1) Processor Configuration submenu

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





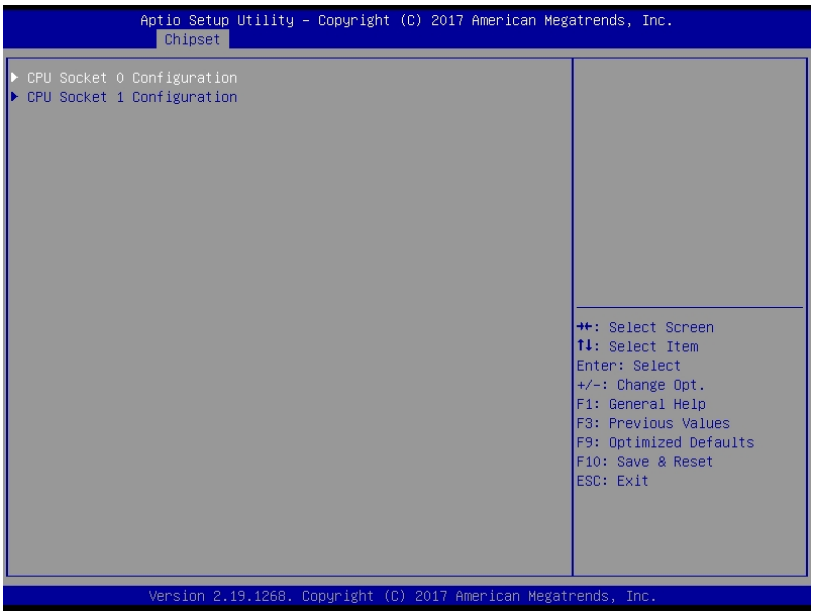
For details about the options, see the table below.

Option	Parameter	Descriptions
Processor Configuration	—	—
Per-Socket Configuration	—	—
Processor Socket	(Display only)	Displays the processor socket
Processor ID	(Display only)	Displays the ID of Processor
Processor Frequency	(Display only)	Displays the Frequency of Processor
Processor Max Ratio	(Display only)	Displays the maximum ratio of Processor.

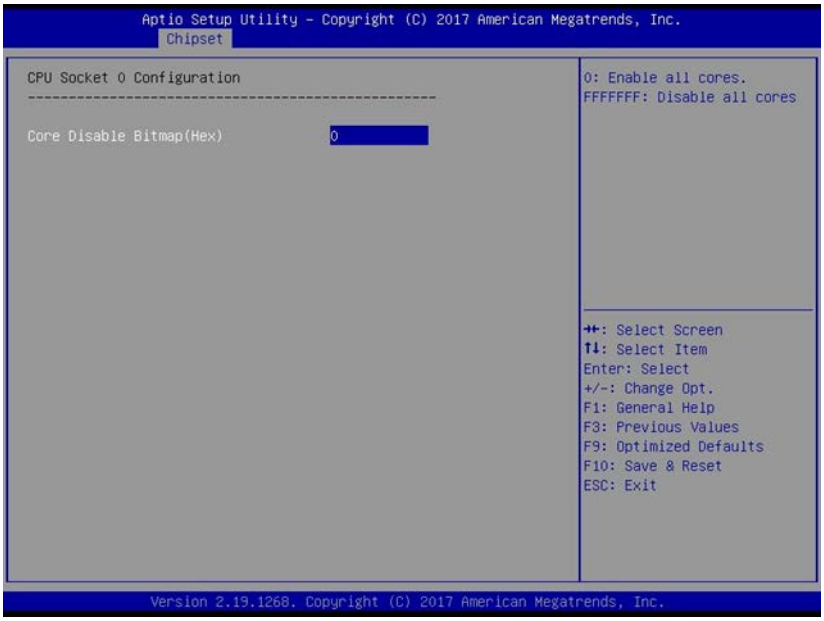
Option	Parameter	Descriptions
Processor Min Ratio	(Display only)	Displays the minimum ratio of Processor.
Microcode Revision	(Display only)	Displays the revision of the microcode applied to processor.
L1 Cache RAM	(Display only)	Displays the primary cache size of processor.
L2 Cache RAM	(Display only)	Displays the secondary cache size of processor.
L3 Cache RAM	(Display only)	Displays the tertiary cache size of processor 1.
Processor 0 Version	(Display only)	Displays the version of Processor 0.
Processor 1 Version	(Display only)	Displays the version of Processor 1.
Hyper-Threading [ALL]	Disable [Enable]	Enables or disables the setting of Hyper-Threading Technology.。
Enable Intel(R) TXT	[Disable] Enable	Enables or disables the setting of TXT.
VMX	Disable [Enable]	Enables or disables the setting of VMX.
Enable SMX	Disable [Enable]	Enables or disables SMX.
PPIN Control	Unlock/Disable [Unlock/Enable]	Enables or disables unlock of PPIN.
Hardware Prefetcher	Disable [Enable]	Enables or disables Hardware prefetcher.
Adjacent Cache Prefetch	Disable [Enable]	Enables or disables Adjacent Cache Prefetch.
DCU Streamer Prefetcher	Disable [Enable]	Enables or disables DCU Streamer Prefetcher.
DCU IP Prefeetcher	Disable [Enable]	Enables or disables DCU IP prefectcher
Extended APIC	Disable [Enable]	Enables or disables Extended APIC
AES-NI	Disable [Enable]	Enables or disables AES-NI.

[ ]: Factory setting

(a) Per-Socket Configuration submenu



①. CPU Socket 0 Configuration submenu

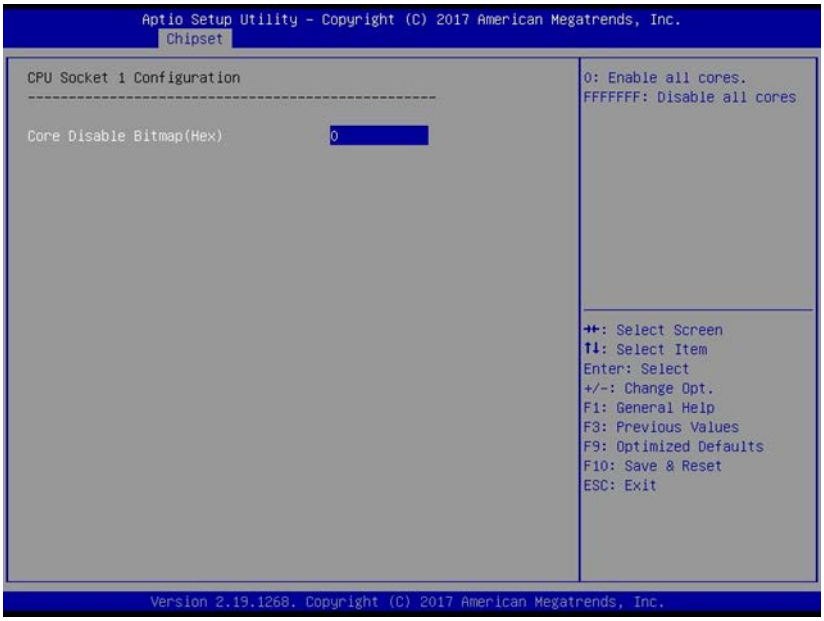


For details about the options, see the table below.

Option	Parameter	Descriptions
CPU Socket 0 Configuration	–	–
Core Disable BitMap(Hex)	0 Range: 0 to ffffffff	0 : All Core's are disabled. ffffffff : All Core's are enabled.

[ ]: Factory setting

②. CPU Socket 1 Configuration submenu



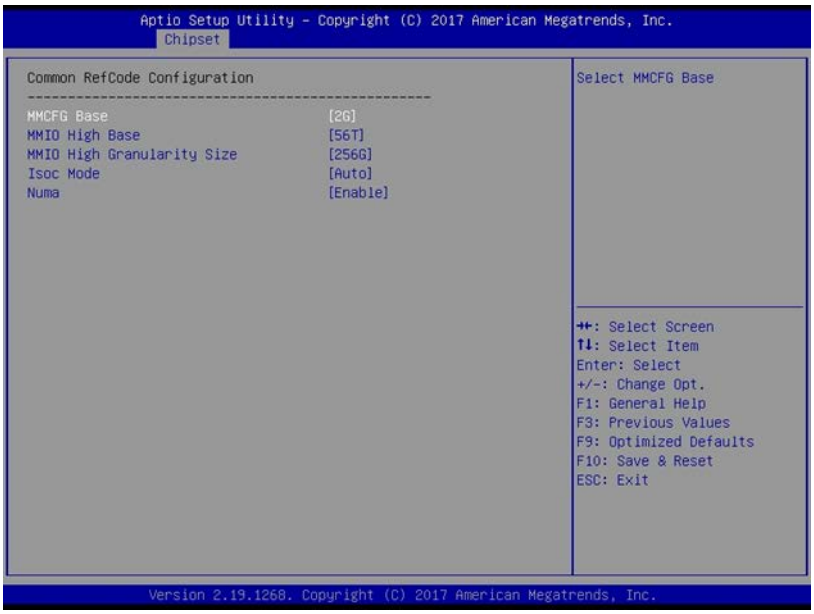
For details about the options, see the table below.

Option	Parameter	Descriptions
CPU Socket 1 Configuration	–	–
Core Disable BitMap(Hex)	0 Range: 0 to fffffff	0 : All Core' are disabled. fffffff : All Core's are enabled.

[ ]: Factory setting

(2) Common RefCode Configuration submenu

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



For details about the options, see the table below.

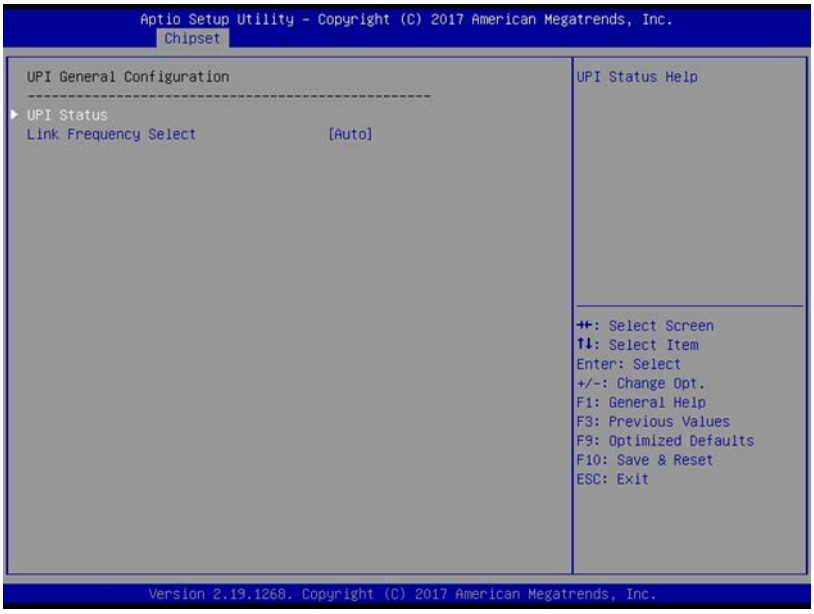
Option	Parameter	Descriptions
Common RefCode Configuration	—	—
MMCFG Base	1G 1.5G 1.75G [2G] 2.25G 3G	Specifies the value of MMCFG Base.
MMIO High Base	[56T] 40T 24T 16T 4T 1T	Specifies the value of MMIO High Base.
MMIO High Granularity Size	1G 4G 16G 64G [256G] 1024G	Specifies the size of MMIO High Granularity.
Isoc Mode	Disable [Enable]	Enables or disables Isoc Mode
Numa	Disable [Enable]	Enables or disables Numa

[ ]: Factory setting

(3) UPI Configuration submenu

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

(a) UPI General Configuration submenu

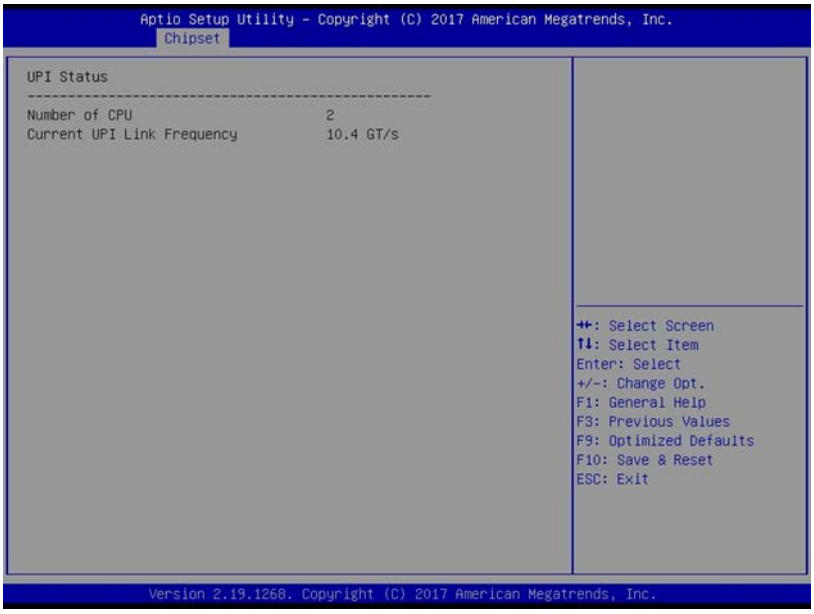


For details about the options, see the table below.

Option	Parameter	Descriptions
UPI General Configuration	—	—
UPI Status	—	—
Link Frequency Select	9.6GB/s 10.4GB/s [Auto]	Specifies UPI Link Frequency.

[ ]: Factory setting

(b) UPI Status submenu



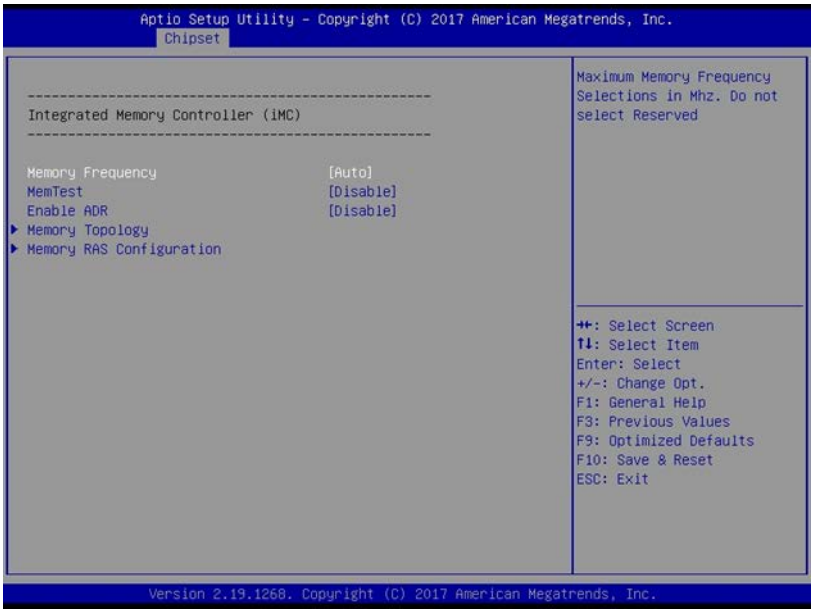
For details about the options, see the table below.

Option	Parameter	Descriptions
UPI Status	—	—
Number of CPU	(Display only)	Displays Number of CPU.
Current UPI Link Frequency	(Display only)	Displays Current UPI Link Frequency.

[ ]: Factory setting

(4) Memory Configuration submenu

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

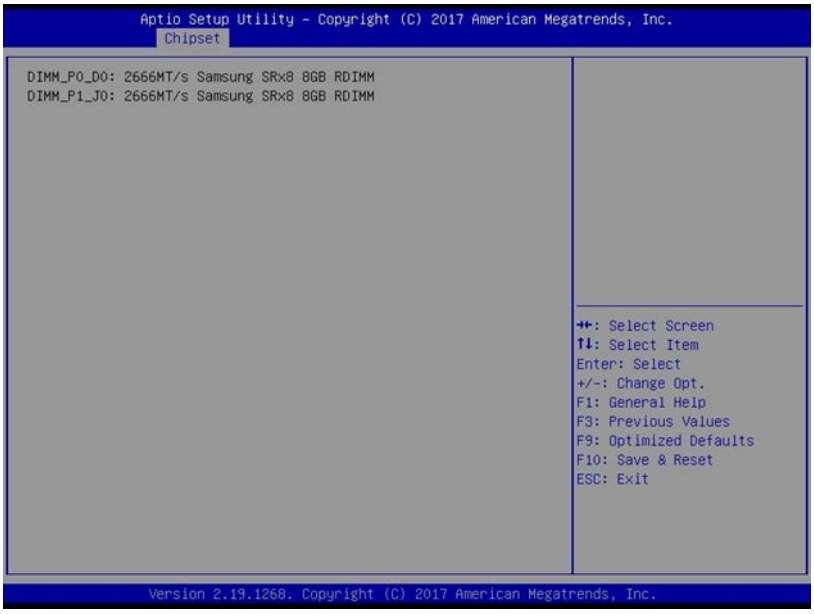


For details about the options, see the table below.

Option	Parameter	Descriptions
Integrated Memory Controller (iMC)	—	—
Memory Frequency	[Auto] 800,1000,1066,1200 1333,1400,1600,1800 2000,2133,2000,2133 2400,2600,2666,2800 2933,3000,3400,3600 3733,3800,4000,4200 4266,4400	Specifies the memory frequency. The frequency may be lower than the specified value depending on the memory configuration.
MemTest	Auto [Disable] Enable	Enables or disdables memory diagnosis during POST. This degenerates the memory source if the memory diagnosis detects an error when this is **Enabled**.
Enable ADR	[Disable] Enable	Enables or disables ADR
Memory Topology	—	—
Memory RAS Configuration	—	—

[ ]: Factory setting

(a) Memory Topology submenu

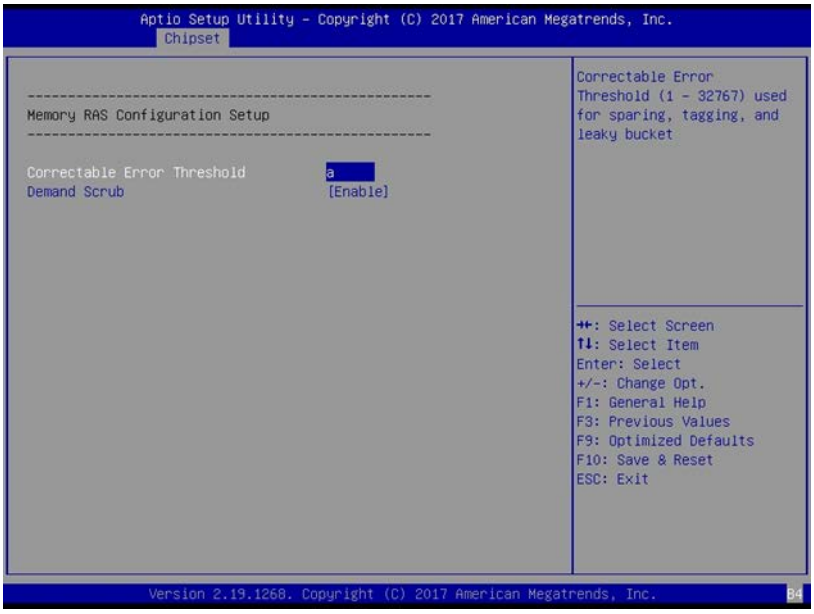


For details about the options, see the table below.

Option	Parameter	Descriptions
DIMM_xxxxxxxxxxxxxxxxxx	—	Displays the current capacity and the status of each memory DIMM.

[ ]: Factory setting

(b) Memory RAS Configuration submenu



For details about the options, see the table below.

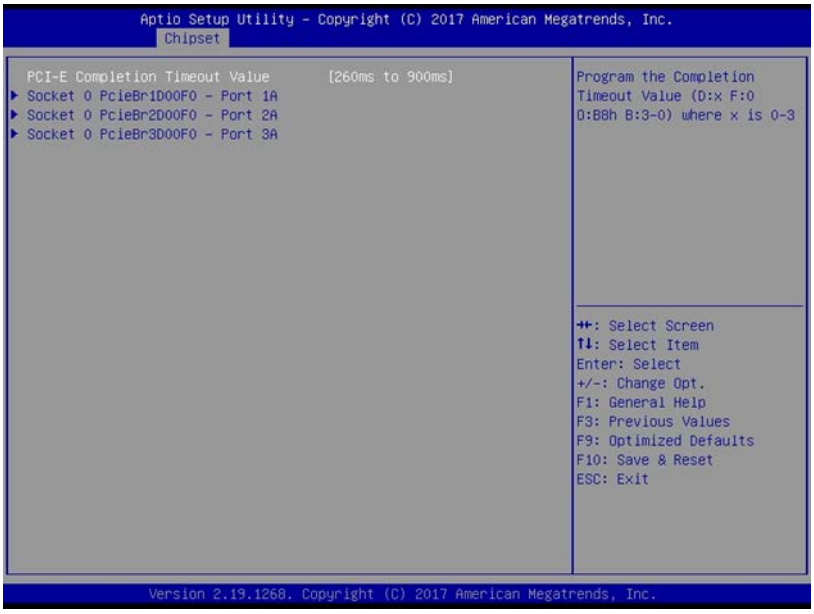
Option	Parameter	Descriptions
Memory RAS Configuration Setup	–	–
Correctable Error Threshold	[a] Range: 0 to 0x7FFF	The setting of Error Threshold is 1 to 32767.
Demand Scrub	Enable [Disable]	Enables or disables Demand Scrub

[ ]: Factory setting

(5) IIO Configuration submenu

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

(a) Socket 0 Configuration submenu

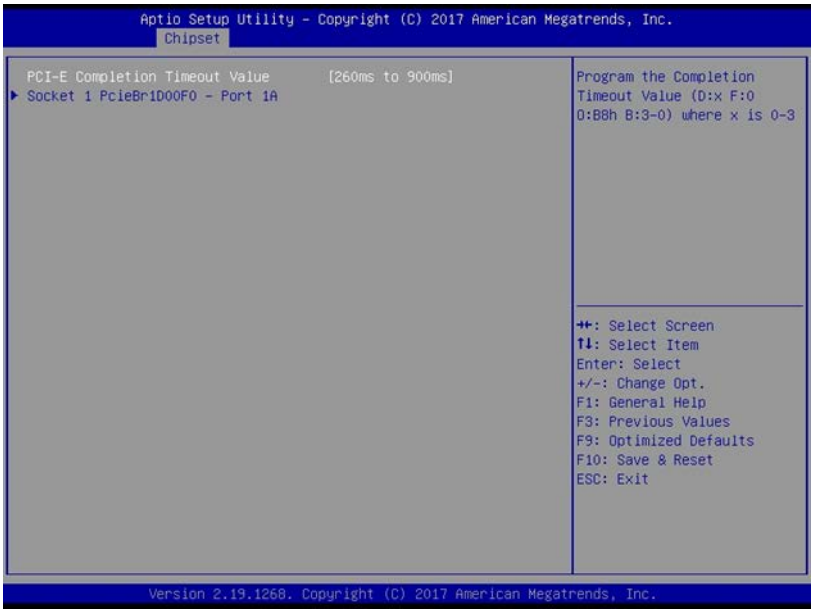


For details about the options, see the table below.

Option	Parameter	Descriptions
PCI-E Completion Timeout Value	50µs to 10ms 16ms to 55ms 65ms to 210ms [260ms to 900ms] 1s to 3.5s 4s to 13s 17s to 64s	Specifies the PCI-E completion timeout value.
Socket 0 PcieBr1D00F0 – Port 0 1A	–	–
Socket 0 PcieBr2D02F0 – Port 0 2A	–	–
Socket 0 PcieBr3D00F0 – Port 0 3A	–	–

[ ]: Factory setting

(b) Socket 1 Configuration submenu

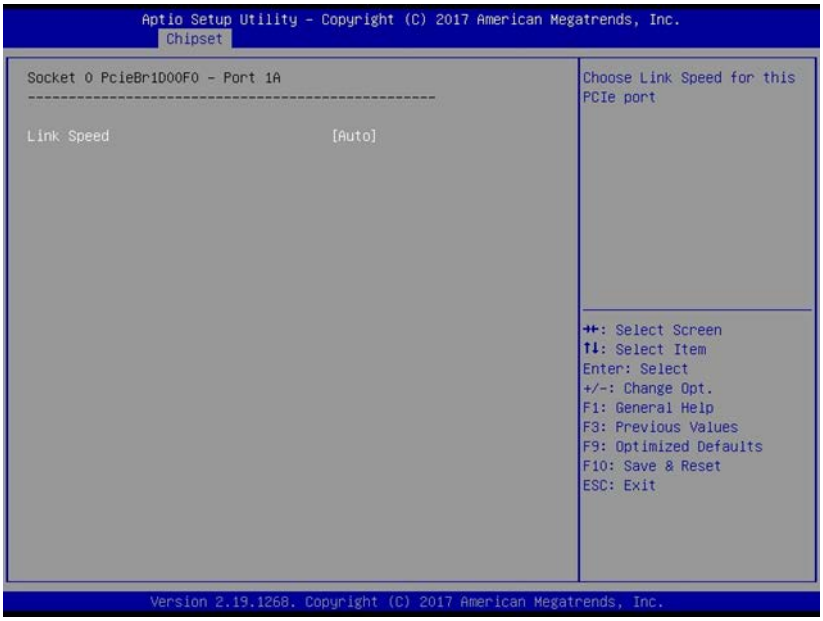


For details about the options, see the table below.

Option	Parameter	Descriptions
PCI-E Completion Timeout Disable	[No] Yes	Enables or disables the PCI-E completion timeout.
PCI-E Completion Timeout Value	50µs to 10ms 16ms to 55ms 65ms to 210ms [260ms to 900ms] 1s to 3.5s 4s to 13s 17s to 64s	Specifies the PCI-E completion timeout value.
Sck1 RP Correctable Err	[Disable] Enable	Enables or disables Sck1 RP Correctable Error.
Sck1 RP NonFatal Uncorrectable Err	[Disable] Enable	Enables or disables Sck1 RP NonFatal Uncorrectable Error.
Sck1 RP Fatal Uncorrectable Err	[Disable] Enable	Enables or disables Sck1 RP Fatal Uncorrectable Error.
Socket 1 PcieBr1D00F0 – Port 0 1A	–	–
Socket 1 PcieBr1D01F0 – Port 0 1B	–	–
Socket 1 PcieBr1D02F0 – Port 0 1C	–	–
Socket 1 PcieBr1D03F0 – Port 0 1D	–	–
Socket 1 PcieBr2D00F0 – Port 0 2A	–	–
Socket 1 PcieBr2D01F0 – Port 0 2B	–	–
Socket 1 PcieBr2D02F0 – Port 0 2C	–	–

[ ]: Factory setting

① Socket X PcieBrXD0XF0 – Port XX / MCP X submenu

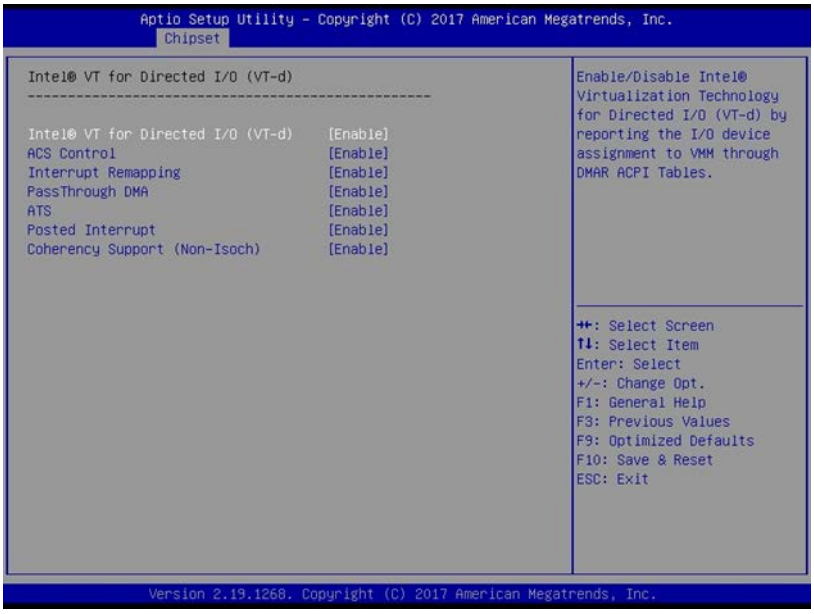


For details about the options, see the table below.

Option	Parameter	Descriptions
Socket 0 PcieBrXD0XF0	–	–
Link Speed	[Auto] Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s)	Specifies the link speed of PCIe.

[ ]: Factory setting

(c) Intel® VT for Directed I/O (VT-d) submenu

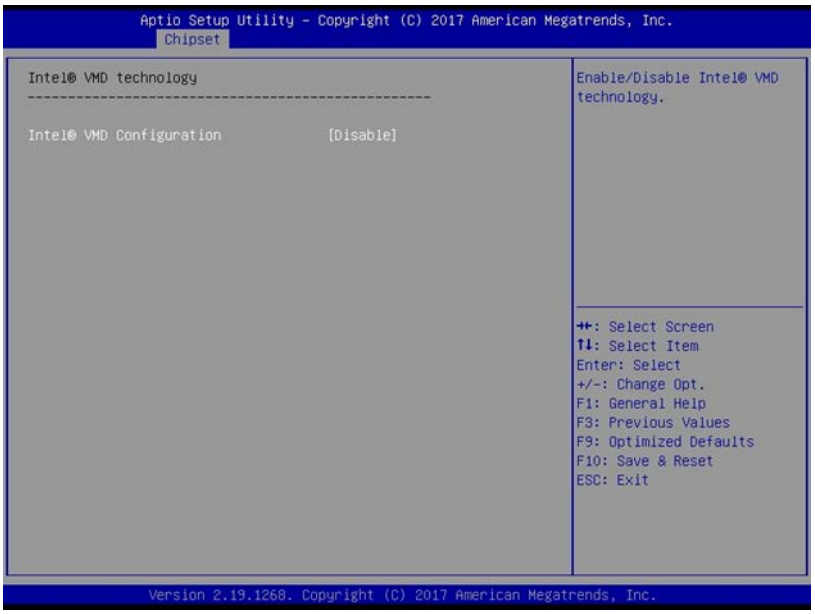


For details about the options, see the table below.

Option	Parameter	Descriptions
Intel® VT for Directed I/O (VT-d)	–	–
Intel® VT for Directed I/O (VT-d)	Disable [Enable]	Enables or disables the Intel Virtualization Technology for Directed I/O function (virtualization support function for I/O).
ACS Control	Disable [Enable]	Enables or disables Access Control Services.
Interrupt Remapping	Disable [Enable]	Enables or disables VT_D Interrupt Remapping Support.
PassThrough DMA	Disable [Enable]	Enables or disables PassThrough DMA
ATS	Disable [Enable]	Enables or disables ATS.
Posted Interrupt	Disable [Enable]	Enables or disables Posted Interrupt
Coherency Support (Non-Isoch)	Disable [Enable]	Enables or disables Coherency Support.

[ ]: Factory setting

(d) Intel® VMD technology submenu



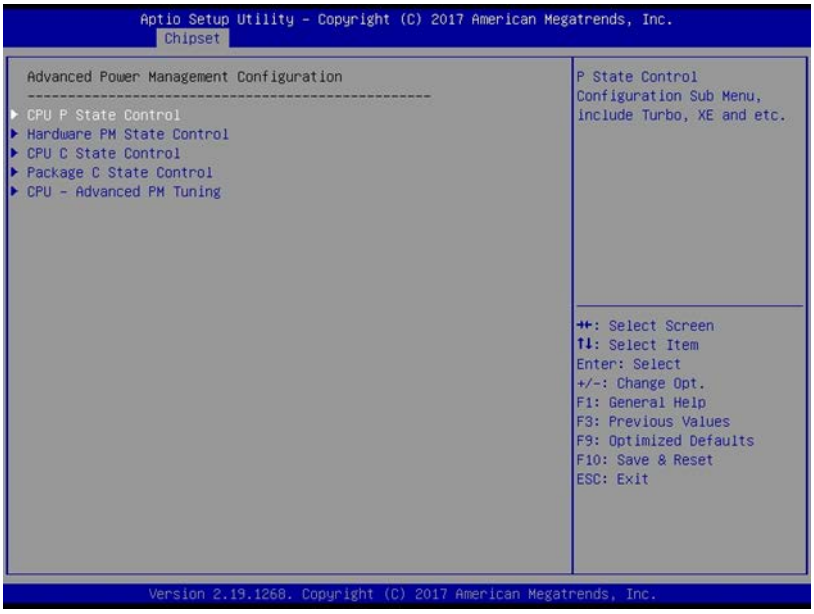
For details about the options, see the table below.

Option	Parameter	Descriptions
Posted Interrupt	Disable [Enable]	Enables or disables Posted Interrupt.
Coherency Support (Non-Isoch)	Disable [Enable]	Enables or disables Coherency Support.

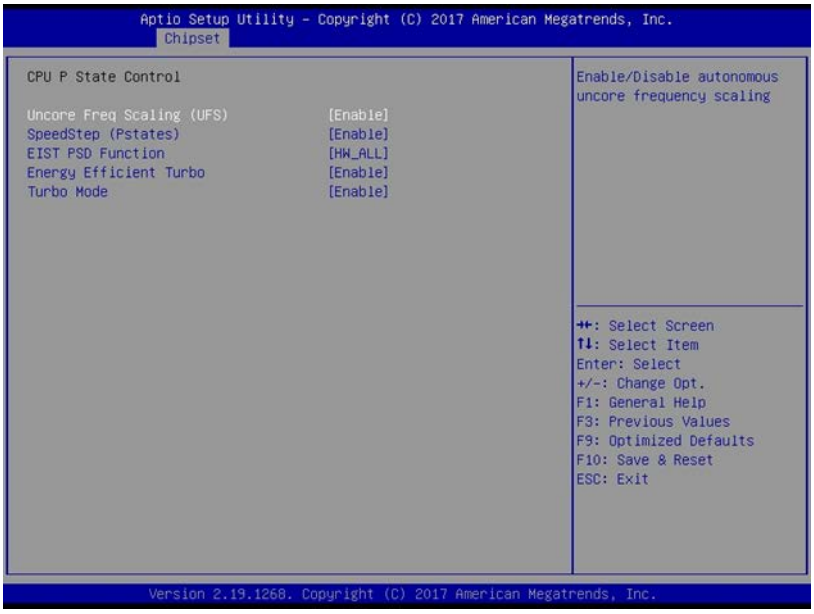
[ ]: Factory setting

(6) Advanced Power Management Configuration submenu

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



(a) CPU P State Control submenu

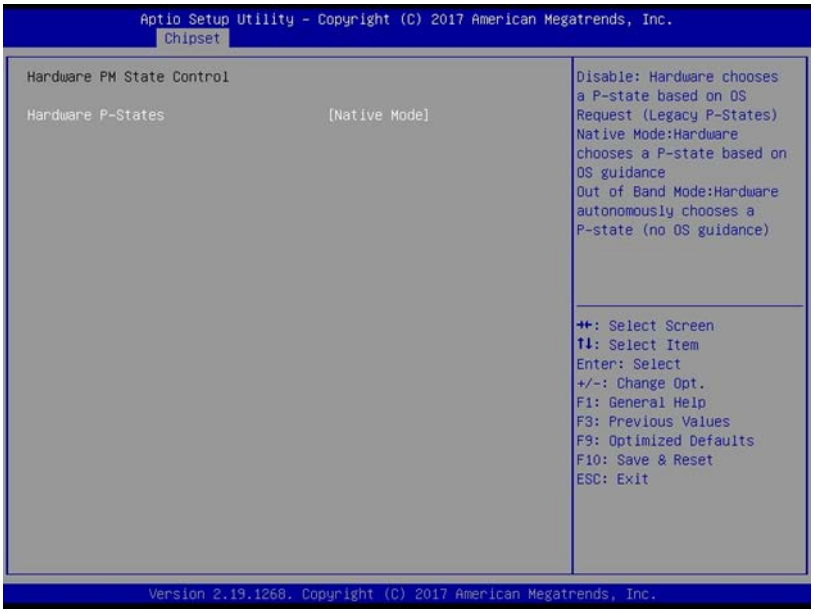


For details about the options, see the table below.

Option	Parameter	Descriptions
CPU P State Control	—	—
Uncore Freq Scallingg (UFS)	Disable [Enable]	Enables or disables Uncore frequency scaling.
SpeedStep (Pstates)	Disable [Enable]	Enables or disables EIST (P-States)
Energy Efficient Turbo	Disable [Enable]	Enables or disables Energy Efficient Turbo
Turbo Mode	Disable [Enable]	Enables or disables Turbo Mode

[ ]: Factory setting

(b) Hardware PM State Control submenu

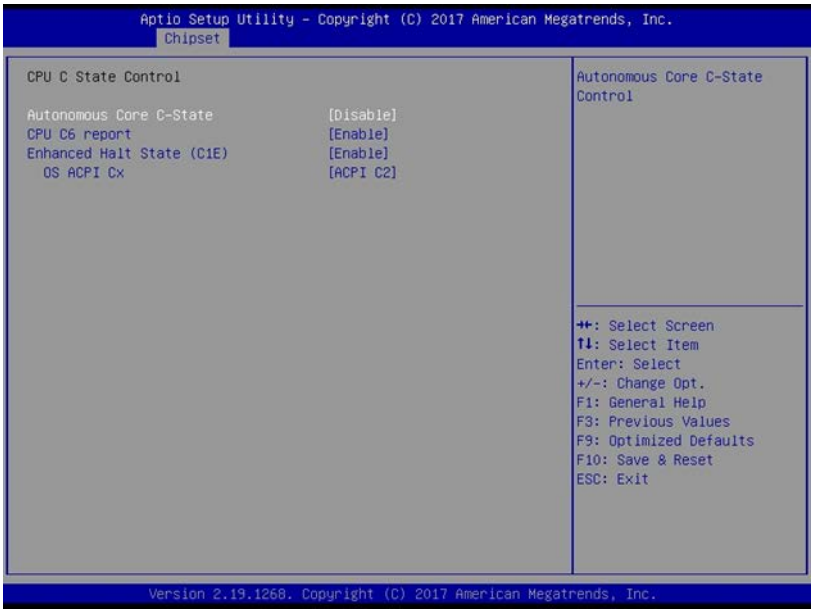


For details about the options, see the table below.

Option	Parameter	Descriptions
Hardware PM State Control	—	—
Hardware P-States	Disable [Native Mode] Out of Band Mode Native Mode With No Legacy Support	Changes the setting of Hardware P-States

[ ]: Factory setting

(c) CPU C State Control submenu

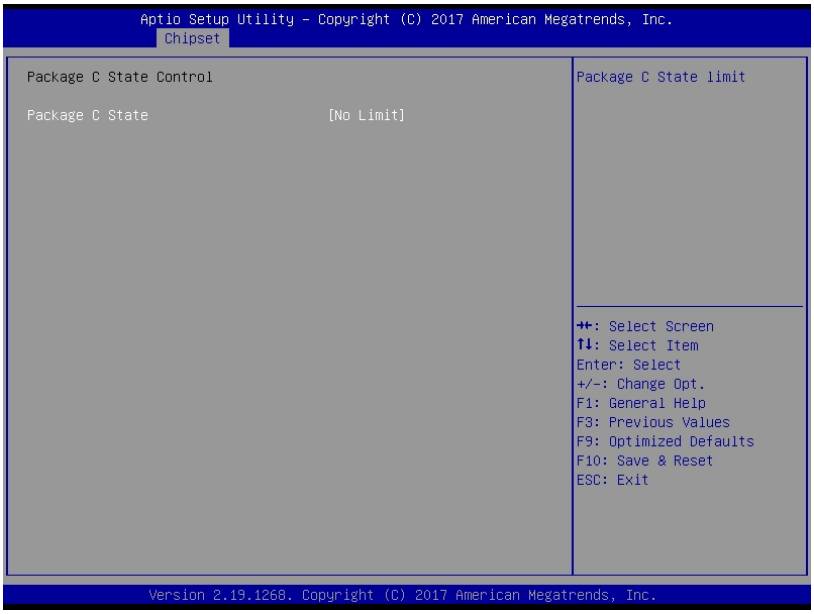


For details about the options, see the table below.

Option	Parameter	Descriptions
CPU C State Control	—	—
Autonomous Core C-State	[Disable] Enable	Enables or disables Autonomous Core C-State.
CPU C6 report	Disable [Enable] Auto	Enables or disables CPU C6(ACPI C3) report to OS.
Enhanced Halt State (C1E)	Disable [Enable]	Enables or disables Halt State. This is reflected after restart.
OS ACPI Cx	[ACPI C2] ACPI C3	Changes the setting of OS ACPI Cx.

[ ]: Factory setting

(d) Package C State Control submenu



For details about the options, see the table below.

Option	Parameter	Descriptions
Pakcage C State Control	—	—
Package C State	C0/C1 State C2 state C6(non Retention) state C6(Retention) state [No Limit] Auto	Sets the limit of C State.

[ ]: Factory setting

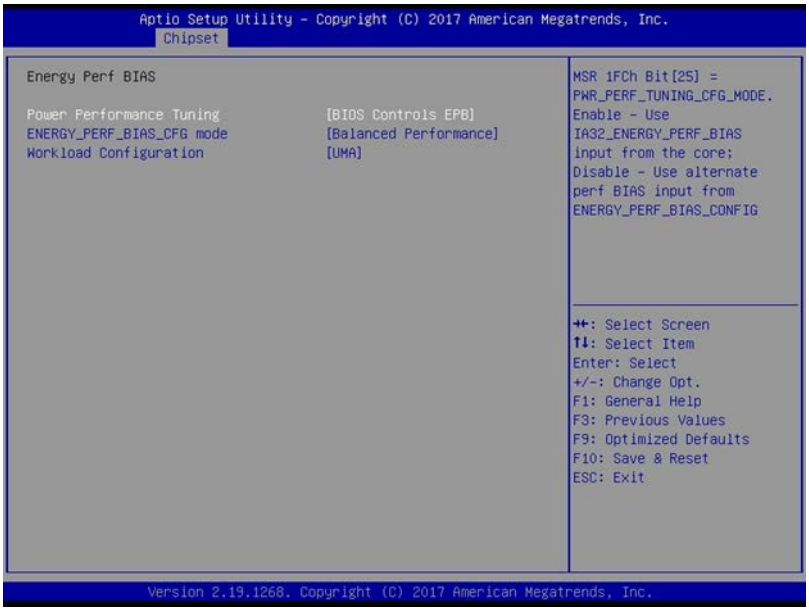
(e) CPU – Advanced PM Tuning submenu

For details about the options, see the table below.

Option	Parameter	Descriptions
CPU – Advanced PM Tuning	–	–
Energy Perf BIAS	–	–

[ ]: Factory setting

① Energy Perf BIAS submenu



For details about the options, see the table below.

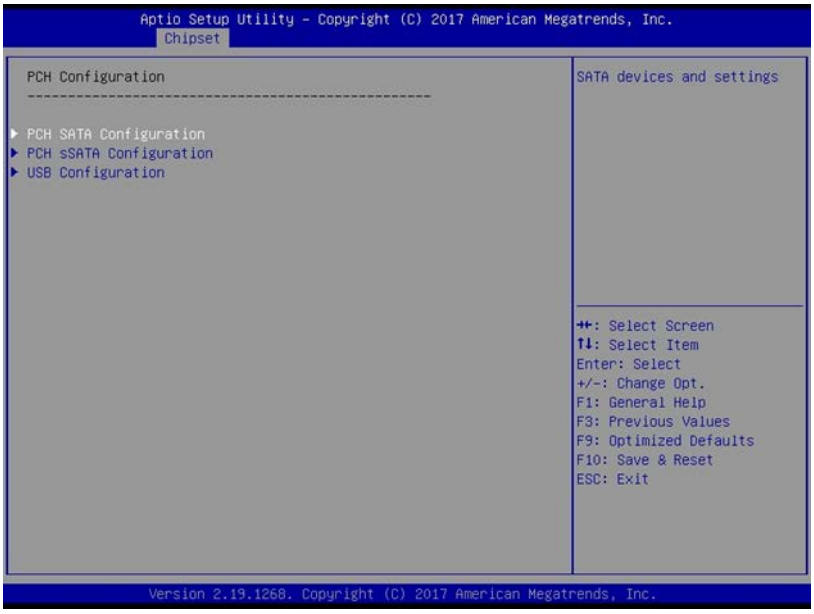
Option	Parameter	Descriptions
Power Performance Tuning	OS Controls EPB [BIOS Controls EPB]	Specifies the setting of Power Performance Tuning.

Option	Parameter	Descriptions
ENERGY_PERF _BIAS_CFG mode	Performance [Balanced Performance] Balanced Power Power	Specifies the setting of ENERGY_PERF _BIAS_CFG mode.
Workload Configuration	[UMA] NUMA	Specifies the setting of Workload Configuration.

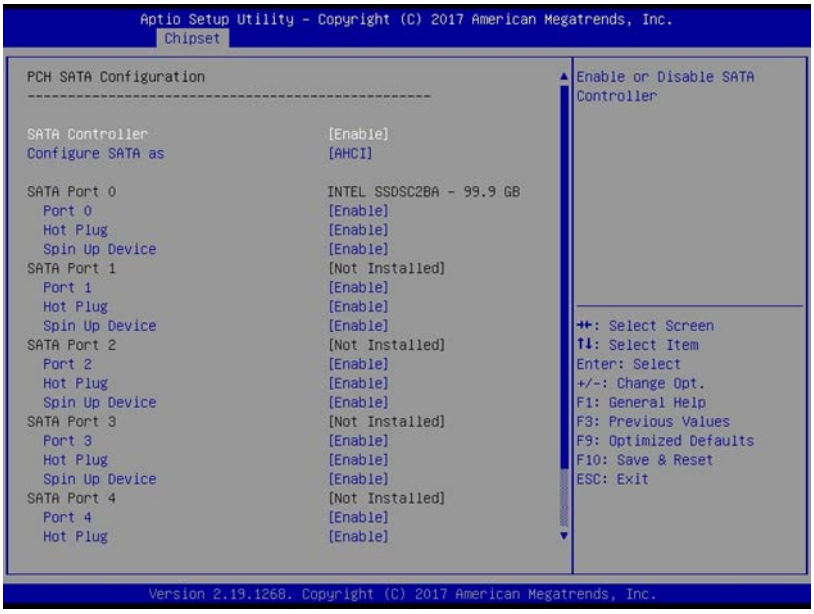
[ ]: Factory setting

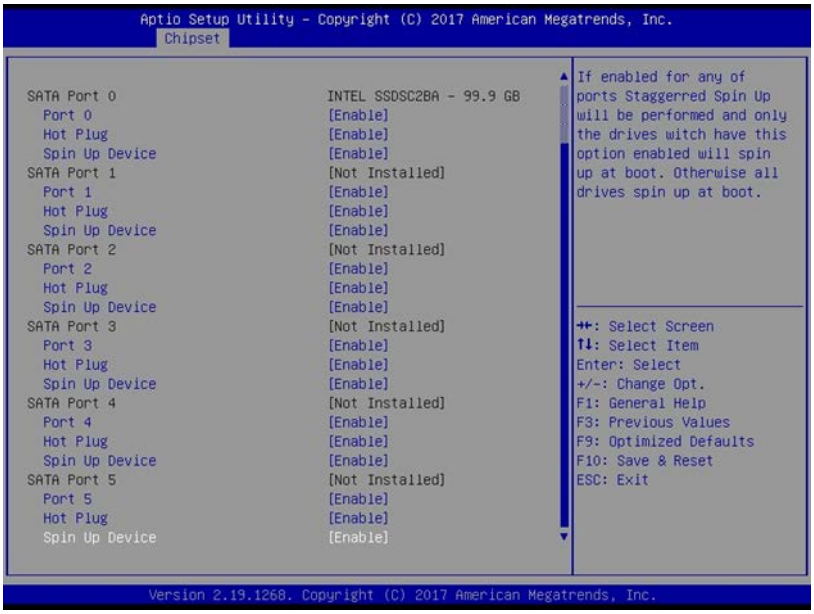
(7) PCH Configuration submenu

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



(a) PCH SATA submenu





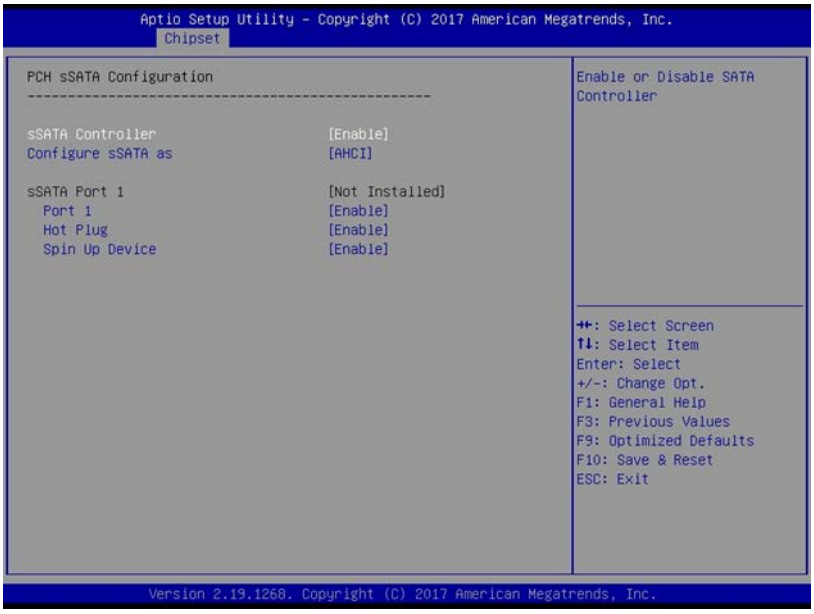
For details about the options, see the table below.

Option	Parameter	Descriptions
PCH SATA Configuration	-	-
SATA Controller	Disable [Enable]	Enables or disables SATA Controller
SATA Port 0	[Not Installed] XXXXXXXX	Shows the device connecting to SATA Port 0.
Port 0	Disable [Enable]	Enables or disables SATA Port 0
Hot Plug	Disable [Enable]	Enables or disables Hot Plug.
Spin Up Device	Disable	Enables or disables Spin Up Device

Option	Parameter	Descriptions
	[Enable]	
SATA Port 1	[Not Installed] XXXXXXXX	Shows the device connecting to SATA Port 1.
Port 1	Disable [Enable]	Enables or disables SATA Port 1
Hot Plug	Disable [Enable]	Enables or disables Hot Plug.
Spin Up Device	Disable [Enable]	Enables or disables Spin Up Device
SATA Port 2	[Not Installed] XXXXXXXX	Shows the device connecting to SATA Port 2.
Port 2	Disable [Enable]	Enables or disables SATA Port 2
Hot Plug	Disable [Enable]	Enables or disables Hot Plug.
Spin Up Device	Disable [Enable]	Enables or disables Spin Up Device.
SATA Port 3	[Not Installed] XXXXXXXX	Shows the device connecting to SATA Port 3.
Port 3	Disable [Enable]	Enables or disables SATA Port 3
Hot Plug	Disable [Enable]	Enables or disables Hot Plug.
Spin Up Device	Disable [Enable]	Enables or disables Spin Up Device.

[ ]: Factory setting

(b) PCH sSATA submenu

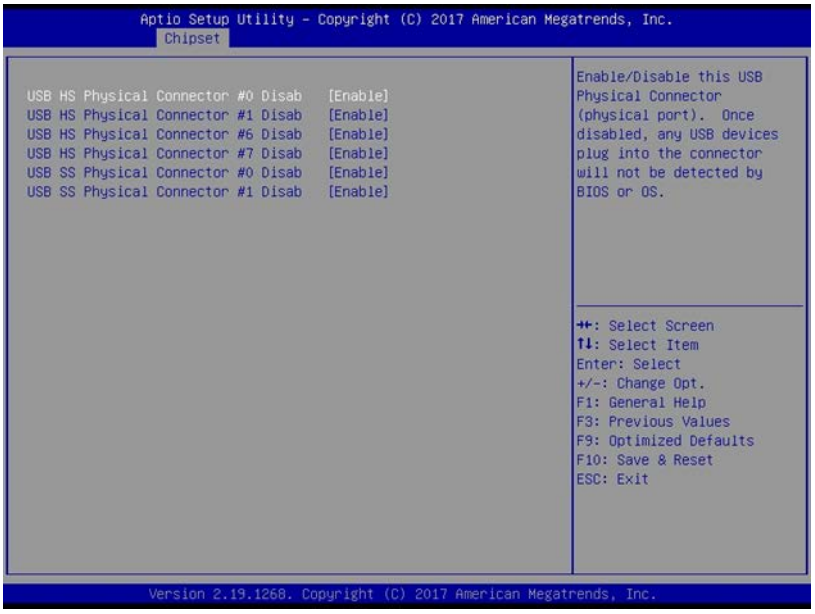


For details about the options, see the table below.

Option	Parameter	Descriptions
PCH sSATA Configuration	-	-
sSATA Controller	Disable [Enable]	Enables or disables sSATA Controller.
sSATA Port 1	[Not Installed] XXXXXXXX	Shows the device connecting to sSATA Port 1
Port 1	Disable [Enable]	Enables or disables sSATA Port 1.
Hot Plug	Disable [Enable]	Enables or disables Hot Plug.
Spin Up Device	Disable [Enable]	Enables or disables Spin Up Device.

[ ]: Factory setting

(c) USB Configuration submenu



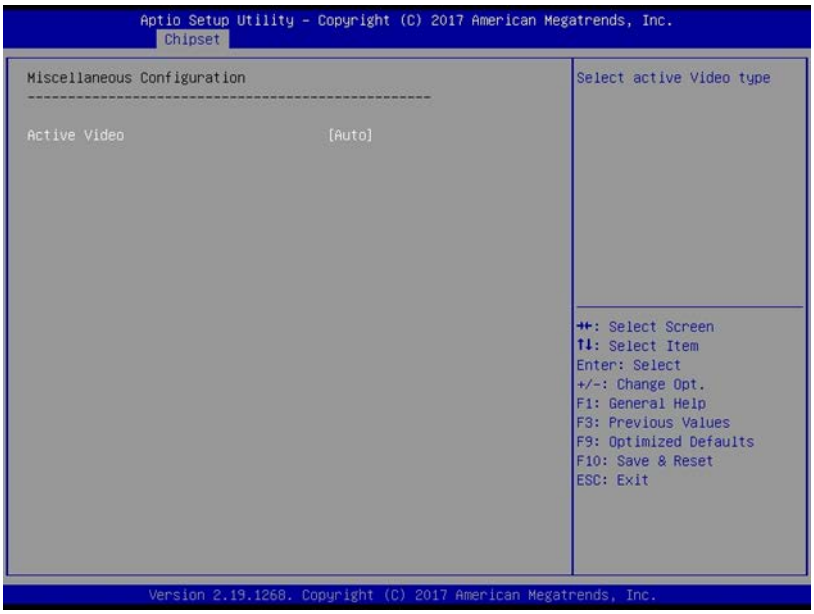
For details about the options, see the table below.

Option	Parameter	Descriptions
USB Per-Connector Disable	Disable [Enable]	Enables or disables USB Connector. Displays **Not Installed** when the USB connector is disabled.
USB HS Physical Connector #0 Disable	Disable [Enable]	Enables or disables USB HS Physical Connector 0 . **Disable** blocks being detected by BIOS/OS.
USB HS Physical Connector #1 Disable	Disable [Enable]	Enables or disables USB HS Physical Connector 1. **Disable** blocks being detected by BIOS/OS.
USB HS Physical Connector #6 Disable	Disable [Enable]	Enables or disables USB HS Physical Connector 6 . **Disable** blocks being detected by BIOS/OS.
USB HS Physical Connector #7 Disable	Disable [Enable]	Enables or disables USB HS Physical Connector 7 . **Disable** blocks being detected by BIOS/OS.
USB SS Physical Connector #0 Disable	Disable [Enable]	Enables or disables USB Connector 0 . **Disable** blocks being detected by BIOS/OS.
USB SS Physical Connector #1 Disable	Disable [Enable]	Enables or disables USB Connector 1. **Disable** blocks being detected by BIOS/OS.

[ ]: Factory setting

(8) Miscellaneous Configuration submenu

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



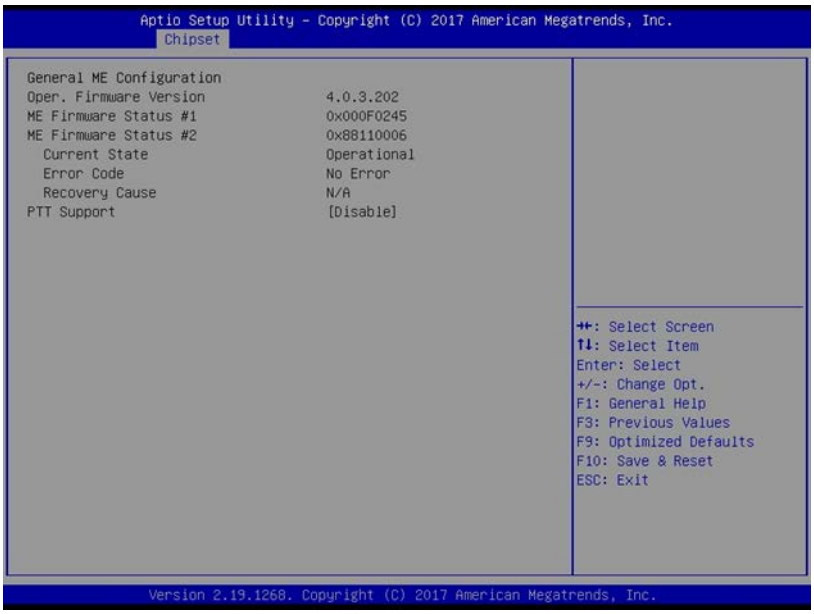
For details about the options, see the table below.

Option	Parameter	Descriptions
Miscellaneous Configuration	–	–
Active Video	[Auto]	Specifies the video type.

[ ]: Factory setting

(9) Server ME Configuration submenu

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



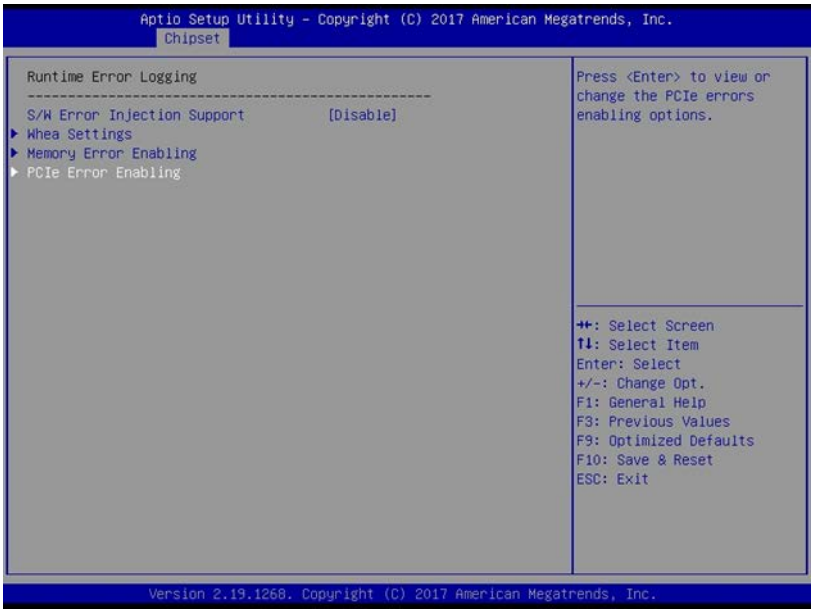
For details about the options, see the table below.

Option	Parameter	Descriptions
General ME Configuration	—	—
Oper. Firmware Version	(Display only)	Displays Oper. Firmware Version
ME firmware Status #1	(Display only)	—
ME firmware Status #2	(Display only)	—
Current State	(Display only)	Displays the current state.
Error Code	(Display only)	Displays the error code, if the error occurs. Displays **No Error**, if the error does not occur.
Recovery Cause	(Display only)	—
PTT Support	(Display only)	Displays the PTT status.

[ ]: Factory setting

(10) Runtime Error Logging submenu

From the **Chipset** menu, select **Runtime Error Logging** and then press the <Enter> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <Enter> key to show its submenus.

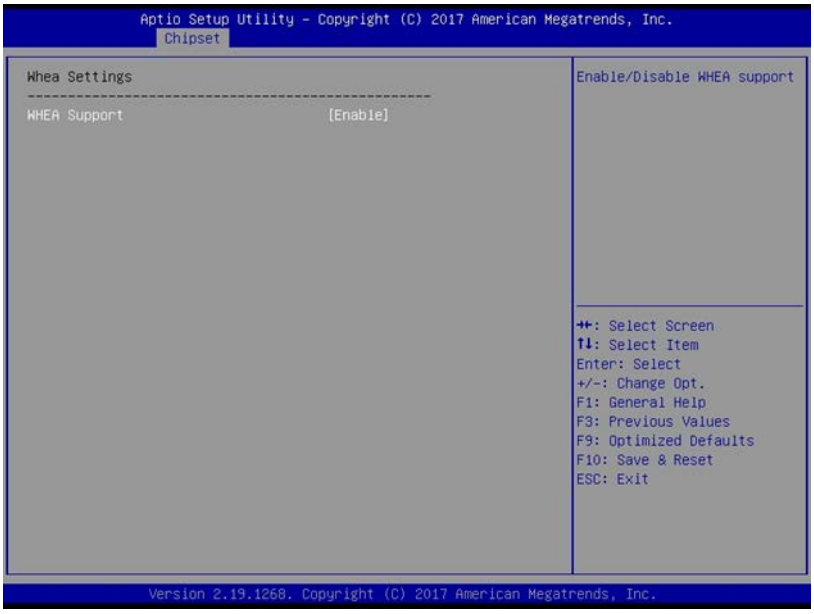


For details about the options, see the table below.

Option	Parameter	Descriptions
Runtime Error Logging	—	—
S/W Error Injection Support	[Disable] Enable	Enables or disables S/W Error Injection Support.
Whea Settings	—	—
Memory Error Enabling	—	—
PCIe Error Enabling	—	—

[ ]: Factory setting

(a) Whea Settings submenu

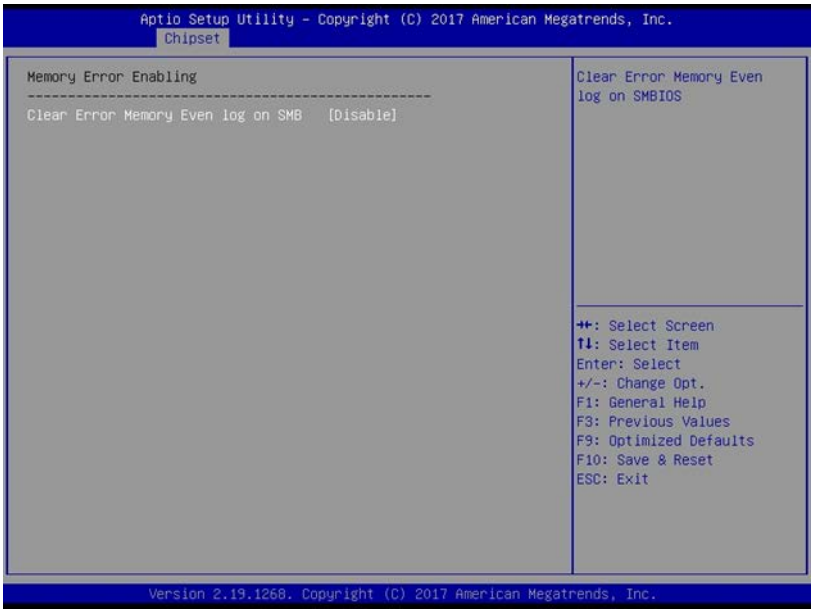


For details about the options, see the table below.

Option	Parameter	Descriptions
Whea Settings	—	—
WHEA Support	Disable [Enable]	Enables or disables WHEA support.

[ ]: Factory setting

(b) Memory Error Enabling submenu

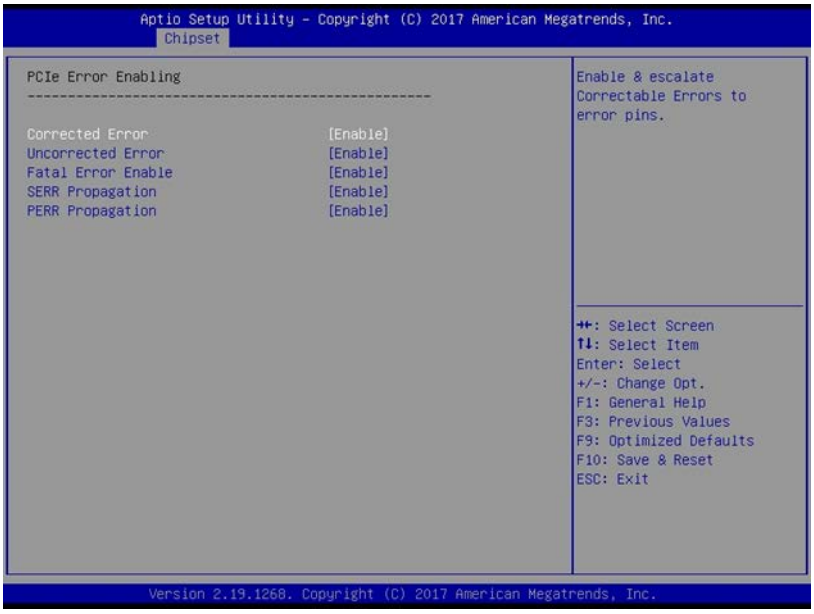


For details about the options, see the table below.

Option	Parameter	Descriptions
Memory Error Enabling	—	Displays the error information in case of an error.

[ ]: Factory setting

(c) PCIe Error Enabling submenu



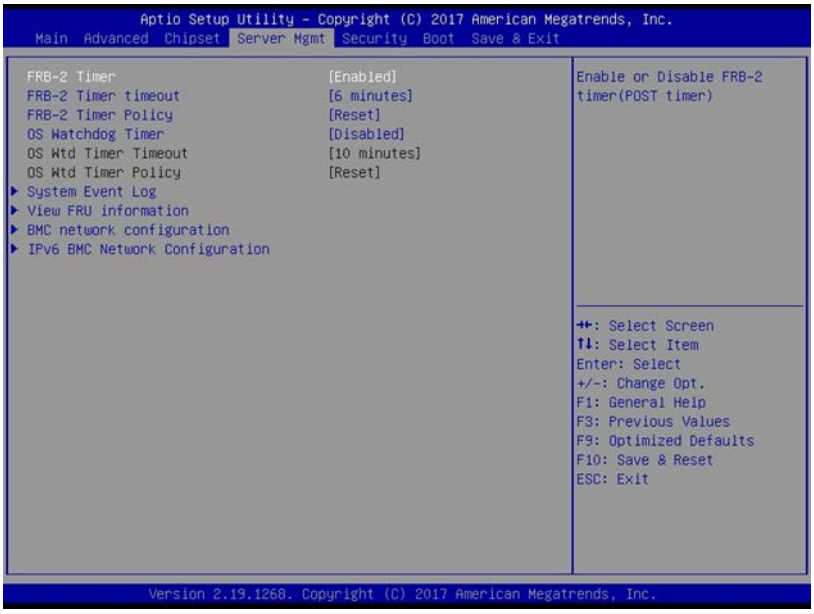
For details about the options, see the table below.

Option	Parameter	Descriptions
Memory Error Enabling	–	–
Corrected Error	Disable [Enable]	Enables it to detect Correctable Error.
Uncorrected Error	Disable [Enable]	Enables it to detect Uncorrected Error.
Fatal Error Enable	Disable [Enable]	Enables it to detect Fatal Error.
SERR Propagation	Disable [Enable]	Enables or disables SERR propagation.
PERR Propagation	Disable [Enable]	Enables or disables PERR propagation.

[ ]: Factory setting

1.2.4 Server Mgmt

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



For details about the options, see the table below.

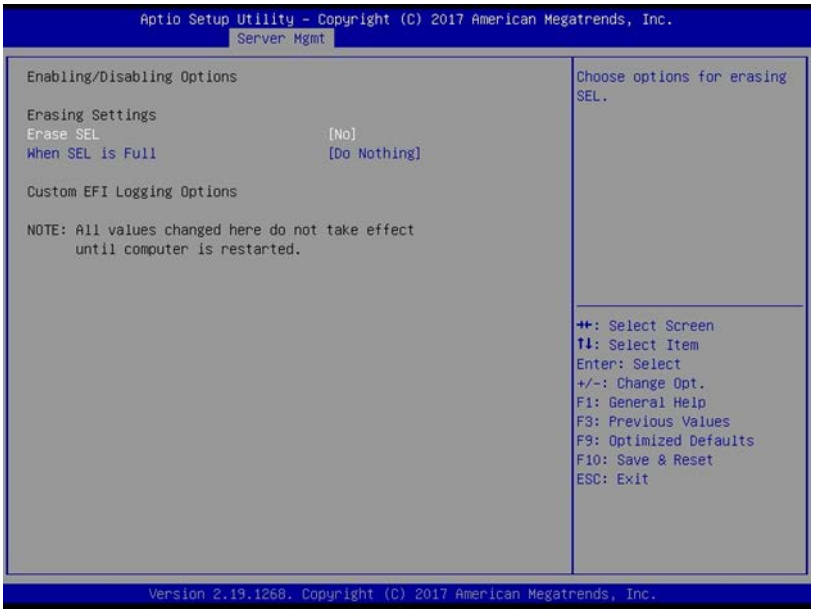
Option	Parameter	Descriptions
FRB-2 Timer	Disabled [Enabled]	Enables or disables FRB-2 Timer (POST timer).
FRB-2 Timer timeout	3 minutes 4 minutes 5 minutes [6 minutes]	Specifies the timeout of FRB-2 Timer.
FRB-2 Timer Policy	Do Nothing [Rest] Power Down Power Cycle	Sets the system operation when FRB-2 Timer has run out.
OS Watchdog Timer	[Disabled] Enabled	Enables or disables OS Watchdog Timer.
OS Wtd Timer Timeout	5 minutes 10 minutes 15 minutes 20 minutes	Specifies the timeout of FRB-2 Timer of OS Watchdog Timer. You can set this item only when **OS Watchdog Timer** is enabled.
OS Wtd Timer Policy	Do Nothing [Reset] Power Down Power Cycle	Sets the system operation when OS Watchdog Timer has run out.
System Event log	—	—
View FRU information	—	—

Option	Parameter	Descriptions
BMC network configuration	–	–
IPv6 BMC Network Configuration	–	–

[ ]: Factory setting

(1) System Event log submenu

From the **Server Mgmt** menu, select **System Event log** and then press the <Enter> key to display the menu screen shown below. For the menu that has ► on the left, move the cursor to it and then press the <Enter> key to show its submenus.



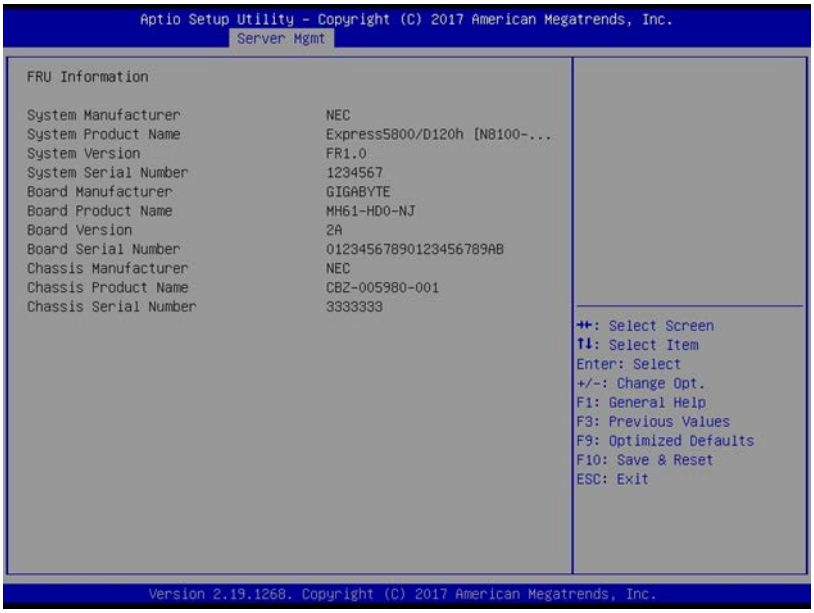
For details about the options, see the table below.

Option	Parameter	Descriptions
Enabling/Disabling Options	–	–
Erasing Settings	–	–
Erase SEL	[No] Yes, On next reset	You can erase SEL. Select **Yes, On next reset** to reflect it after restart.
When SEL is Full	[Do Nothing] Erase Immediately	Selects the operation when SEL recording area is full.
Custom EFI Logging Options	–	–

[ ]: Factory setting

(2) View FRU information submenu

From the **Server Mgmt** menu, select **View FRU information** and then press the <Enter> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <Enter> key to show its submenus.



For details about the options, see the table below.

Option	Parameter	Descriptions
FRU Information	—	—
System Manufacturer	(Display only)	Displays the manufacturer of the system.
System Product Name	(Display only)	Displays the name of the system.
System Version	(Display only)	Displays the version of the system.
System Serial Number	(Display only)	Displays the serial number of the system.
Board Manufacturer	(Display only)	Displays the manufacturer of the motherboard.
Board Product Name	(Display only)	Displays the name of the motherboard.
Board Version	(Display only)	Displays the version of the motherboard.
Board Serial Number	(Display only)	Displays the serial number of the motherboard
Chassis Manufaturer	(Display only)	Displays the manufacturer of the chassis.
Chassis Product Name	(Display only)	Displays the name of the chassis.
Chassis Serial Number	(Display only)	Displays the serial number of the chassis.

[ ]: Factory setting

(3) BMC network configuration submenu

From the **Server Mgmt** menu, select **BMC network configuration** and then press the <Enter> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <Enter> key to show its submenus.

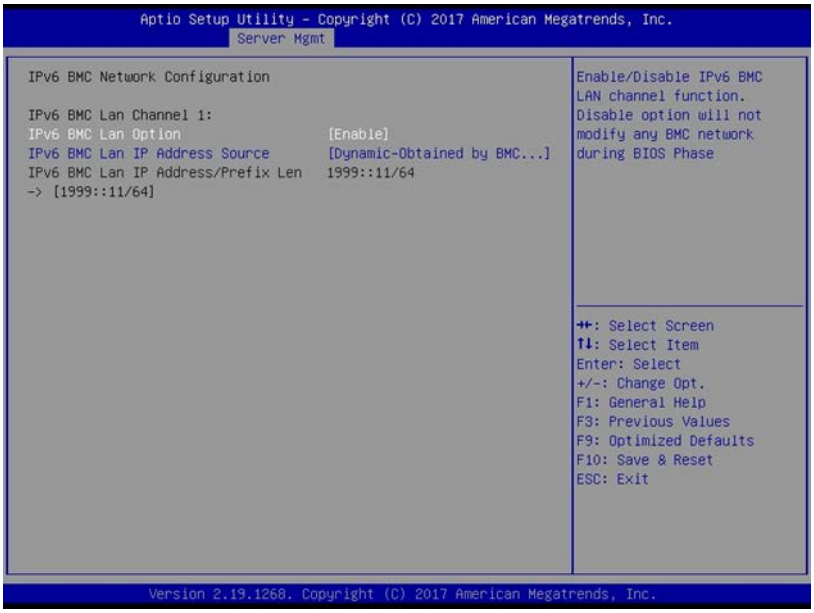
For details about the options, see the table below.

Option	Parameter	Descriptions
--BMC network configuration-	—	—
Select NCSI and Dedicated LAN	Do Nothing [Mode1 (Dedicated) Mode2 (NCSI) Mode3 (Failover)	Selects the LAN mode.
Lan channel 1	—	—
Configuration Address source	Unspecified [Static] DynamicBmcDhcp	Specifies the address source (Static or Dynamic).
Station IP address	XXX.XXX.XXX.XXX	Sets the IP address for Static.
Subet mask	XXX.XXX.XXX.XXX	Sets the subnet mask for Static.
Router IP address	XXX.XXX.XXX.XXX	Sets the router IP address for Static.
Station MAC address	XX-XX-XX-XX-XX-XX	Shows the MAC address.
Real-time synchronize BMC network parameter values		Reflects the information set above on BMC real-time.

[ ]: Factory setting

(4) IPv6 BMC network Configuration submenu

From the **Server Mgmt** menu, select **IPv6 BMC network configuration** and then press the <Enter> key to display the menu screen shown below. For the menu that has ▶ on the left, move the cursor to it and then press the <Enter> key to show its submenus.



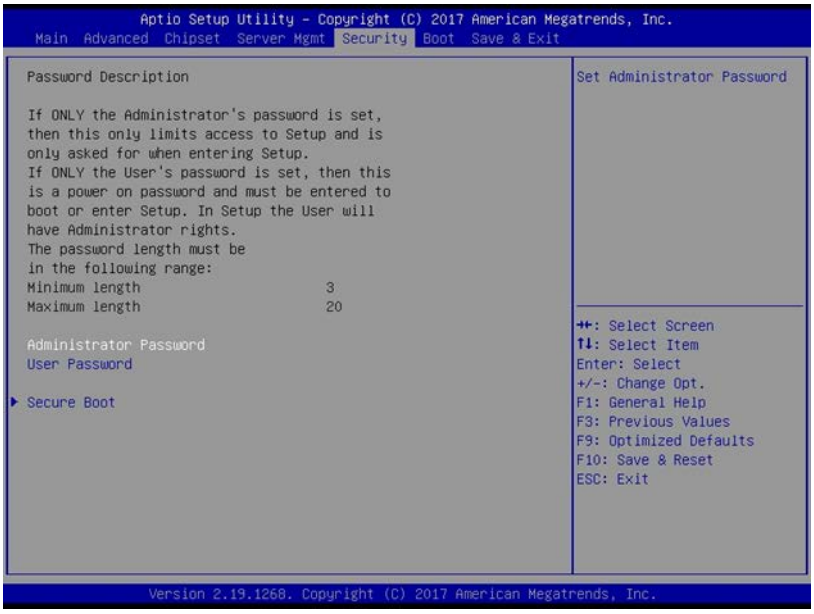
For details about the options, see the table below.

Option	Parameter	Descriptions
IPv6 BMC Network Configuration	—	—
IPv6 BMC Lan Channel 1:	—	—
IPv6 BMC Lan Option	Diable [Enable]	Enables or disables IPv6.
Ipv6 BMC Lan IP Address Source	Unspecified Static [Dynamic-Obtained by BMC running DHCP]	Specifies the address source (Static or Dynamic).
IPv6 BMC Lan IP Adress/Prefix Len XXXX:XX/XX ->[XXXX:XX/XX]	—	—

[ ]: Factory setting

1.2.5 Security

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



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

Tips

- Administrator Password must be set before seting User Password.
- Do not set any password before installing OS.
- If you have forgotten any password, contact the store where you purchased the product or your maintenance service company. If you want to clear password, refer to *Chapter 1 (7. Resetting and Clearing Server)*.

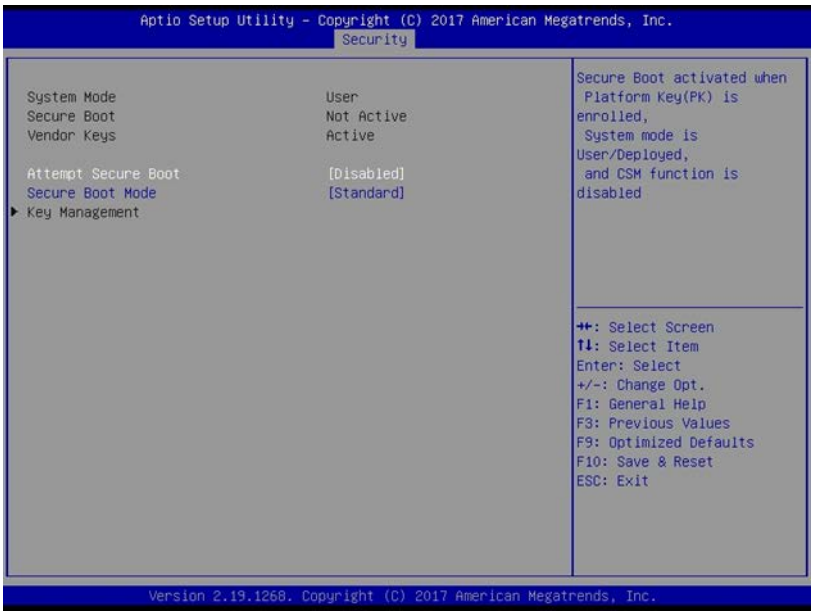
For details about the options, see the table below.

Option	Parameter	Descriptions
Password Configuration	–	–
Administrator Password	Up to 20 alphanumeric characters	When the <Enter> key is pressed, the password entry screen to set administrative right is displayed. This password can be used to access all **SETUP** menus. Password can be set only when SETUP is started by administrative right. If no password is set, SETUP starts with administrative right.
User Password	Up to 20 alphanumeric characters	When the <Enter> key is pressed, the password entry screen to set user right is displayed. With this password, access to SESTUP menus is limited. The user password can be set when SETUP is started by administrative right or user right.
Security Boot	–	–

[ ]: Factory setting

(1) Secure Boot Configuration submenu

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



For details about the options, see the table below.

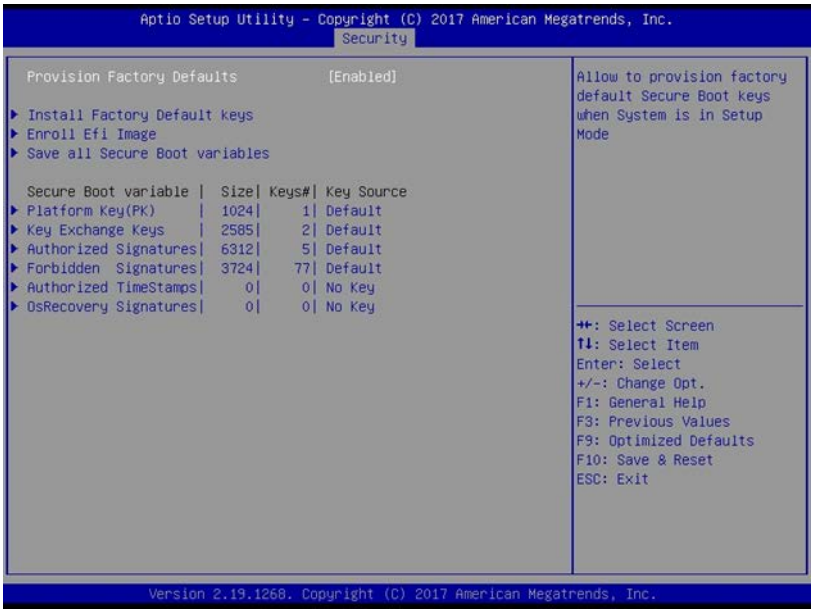
Option	Paramete	Description
System Mode	(Display only)	Displays the status of registration of Platform Key (PK). It is not registered if the status is **Setup**. It is registered if the status is **User**.
Secure Boot	(Display only)	The status is **Active** when SETUP is started with the Secure Boot function enabled.
Vendor Keys	(Display only)	The status is **Active** when the default key is registered.
Attempt Secure Boot	[Disabled] Enabled	Enables or disables the Secure Boot function. This function is enabled when the key is registered.
Secure Boot Mode	[Standard] Custom	Specifies the policy that uses the Secure Boot function in the standard settings.
Key Management	–	This item can be selected only when "Secure Boot Mode" is set to **Custom**.

[ ]: Factory setting

Tips

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

(a) Key Management submenu

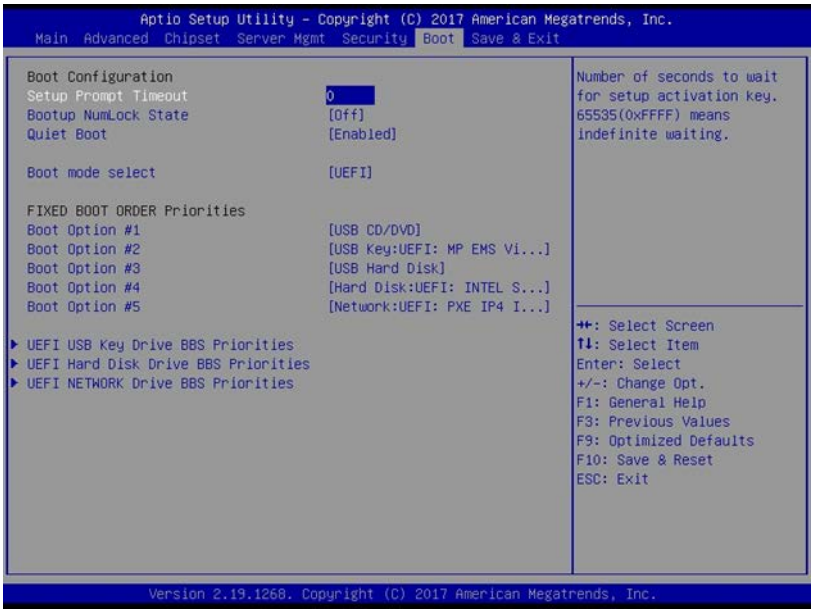


Option	Paramete	Description
Provision Factory Default keys	Disabled [Enabled]	Enables or Disables the function to automatically register the default key if you do not have Platform Key (PK).
Delete All Secure Boot Variables	—	Sets “System Mode” to **Setup**. Secure Boot will be disabled. All keys and signature databases (PK, KEK, DB, DBX and DBT) will be deleted. You can execute this section only when you set “Provision Factory Default keys” to **Disabled**.
Install Factory Default keys	—	Force System to Setup Mode - clear all Secure Boot Variables
Enroll Efi Image	—	Allows the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db)
Enroll All Factory Default Keys	—	Sets “System Mode” to **User**. Register the default key and signature databases (PK, KEK, DB, DBX and DBT). You can execute this section only when you set “Provision Factory Default keys” to **Enabled**.
Save All Secure Boot Variables	—	Saves all keys and signature databases (PK, KEK, DB, DBX and DBT) in an external media. You can execute this section only when you have registered PK, KEK, db, dbx and dbt keys.
Secure Boot variable | Size| Key#| Key source	(Display only)	Displays the status of keys and signature databases (PK, KEK, DB, DBX and DBT).
Platform Key(PK)	—	Displays the status of Platform Key (PK). Also register/delete PK.
Key Exchange Keys	—	Displays the status of Key Exchange Keys (KEK). Also register/delete KEK.
Authorized Signatures	—	Displays the status of Authorized Signatures (DB). Also register/delete DB.
Forbidden Signatures	—	Displays the status of Forbidden Signatures (DBX). Also register/delete DBX.
Authorized Timestamps	—	Displays the status of Authorized Timestamps (DBT). Also register/delete DBT.

[ ]: Factory setting

1.2.6 Boot

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



For details about the options, see the table below.

Option	Parameter	Descriptions
Boot Configuration	–	–
Setup Prompt Timeout	[0] - 65535	Specifies the time (0 to 65535 seconds) until <F2> is pressed to launch SETUP.
Bootup Numlock State	On [Off]	Enables or disables Numlock feature of keyboard.
Quiet Boot	Disabled [Enabled]	Enables or disables the feature to display logo during POST. When this option is set to **Disabled**, the results of POST execution are displayed instead of the NEC logo. If **BIOS Redirection Port** is enabled, this option is shown as **Unavailable** and inaccessible (run with **Disabled** state automatically)
Boot Mode Select	Legacy [UEFI]	Specifies the boot mode. This option can be selected when **Secure Boot** is set to **Disabled**. Select "UEFI" for the following OS: －Windows Server 2012 R2 －Windows Server 2016 - Red Hat Enterprise Linux 7.3 or later －VMware ESXi 6 －VMware ESXi 6.5 See *Chapter 1 Installing Windows* in *Installation Guide*, and determine the Boot Mode according to description in *"Before Starting Setup"* appropriate to your OS.
FIXED BOOT ORDER Priorities	－	－

Option	Parameter	Descriptions
Boot Option #1	–	These items show the priority of boot devices. If all of the Boot Options are set to **Disabled**, the SETUP starts running upon completion of POST. If **Boot Mode** is changed, devices are displayed after the system restart.
Boot Option #2	–	
Boot Option #3	–	
Boot Option #4	–	
Boot Option #5	–	
CD/DVD Priorities	–	Specifies the boot priority for each device type.
HDD Priorities	–	
Network Priorities	–	

[ ]: Factory setting

How to change the boot priority

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

Rules on boot priority

Priority of bootable devices

(1) Case when multiple bootable devices are connected

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

For example, if there are 2 Priorities for each device type, the priority of the Boot Option and the Priorities of each device type are as following:

- Priority of boot option and the Priorities of each device type ((1) to (8))

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

(2) Case when a bootable device is added

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

(3) Case when a bootable device is demounted

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

(4) Case when “Restore Defaults” is executed

If "Restore Defaults" in the Save & Exit menu is executed, the settings of the Boot Options and the Priorities of each device type are as the following:

a) Priority of Boot Options

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

b) Priority of Each Device Type’s Priorities

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

c) Bootable devices

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

(5) Case when Remote KVM and Media License (*1) is registered

If Remote KVM and Media License is registered, virtual media are registered as a bootable device.
Virtual media operate as follows:

- MP EMS Virtual Media 0399 devices are registered as the device of highest priority in "CD/DVD Priorities".
- If "Restore Defaults" in the Save & Exit menu is executed, AMI Remote CD/DVD devices are registered as the device of highest priority in "CD/DVD Priorities".

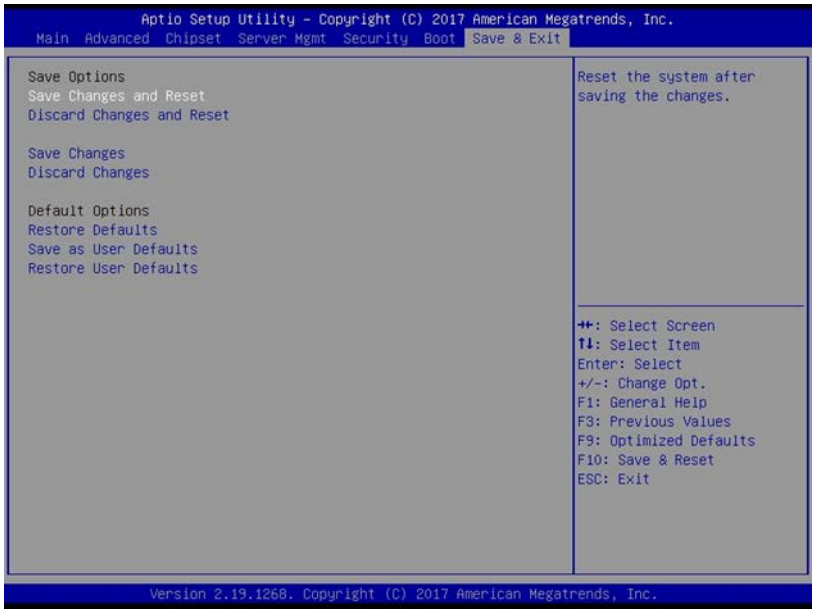
(*1) Refer to *BMC/CMC Management Console User's Guide* for details of Remote KVM and Media License.

Tips

- If the boot mode is UEFI, the device information that the installation OS has registered is displayed in "HDD Priorities". It may include the model number of the hard disk. “Removable Priorities” may have the partition information storing EFI boot image. If the boot mode is UEFI, BIOS registers the device information that is displayed in "HDD Priorities" again when the BIOS settings (NVRAM) are cleared. For that reason, the device information may be different from the one the installation OS registered. However, booting can be done with no problem.
- If **Boot Mode** is set to "Legacy", **HDD Priorities** shows the model number of the hard disk drive.
- Change bootable devices from SETUP instead of the bcdedit command of Windows and efibootmgr command of Linux.

1.2.7 Save & Exit

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



The options of this menu are described below.

(a) Save Changes and Reset

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

(b) Discard Changes and Reset

The SETUP utility closes without saving the changes in NVRAM. The setting at startup of SETUP utility is retained.
After the SETUP utility closes, the system automatically reboots.

(c) Save Changes

Saves settings in NVRAM. The operation of the SETUP utility continues after saving.

(d) Discard Changes

The SETUP utility closes without saving the changes in NVRAM. The setting at startup of SETUP utility is retained.
After the SETUP utility closes, the system automatically reboots.

(e) Restore Defaults

Restores all values to default values.

(f) Save as User Defaults

Saves settings as user default values.

(g) Restore as User Defaults

Restores all values to user default values.

Note

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

2. Flash FDD

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

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

CAUTION

Be extremely careful not to lose Flash FDD or have it stolen.
If 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, change the write protection switch, and then connect it again.

2.1 Notes on Using Flash FDD

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

2.1.1 Compensation for recorded data

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

2.1.2 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 doorknob, aluminum frame, and other metal objects.
- Do not move the server while Flash FDD is connected to USB connector.

2.1.3 Use in EXPRESSBUILDER

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

3. Power Control Feature

Power consumption of the server can be controlled through 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 *BMC/CMC Management Console User's Guide* in EXPRESSBUILDER or *NEC ESMPRO Manager online help*.

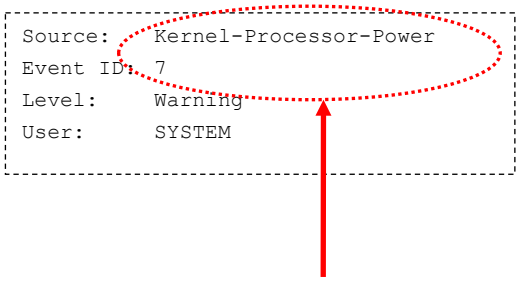
3.1 Supported OS

The power control feature is available for the following OSs.

- Windows Server 2012 R2 Standard
- Windows Server 2012 R2 Datacenter

3.2 Notes on Using Windows Server 2012 R2

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



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

4. Details of EXPRESSBUILDER

EXPRESSBUILDER helps you to install Windows and maintain the server.
EXPRESSBUILDER also provides bundled software and instruction manuals.

4.1 Starting EXPRESSBUILDER

EXPRESSBUILDER DVD is attached to a module enclosure as standard, and you can run EXPRESSBUILDER by using either following ways:

(a) Insert the DVD into the drive connected to the server module, and then restart the server.
Boot Selection Menu shown in *Chapter 2 (4.2 Menus of EXPRESSBUILDER) - (1) Boot Selection Menu* will appear.

(b) Insert the DVD into a computer running Windows.
Autorun Menu shown in *Chapter 2 (4.2 Menus of EXPRESSBUILDER) - (4) Autorun Menu* will appear.

4.2 Menus of EXPRESSBUILDER

You can operate EXPRESSBUILDER using onscreen menus.

(1) Boot Selection Menu

When the server starts from EXPRESSBUILDER, the following menu appears.
Choose an item by using arrow keys and <Enter> key.

```
OS installation   *** default ***

Tool menu (Normal mode)

Tool menu (Redirection mode)
```

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

Tool Menu shown in *(3) Tool Menu* appears when you choose **Tool menu (Normal mode)**. Usually, choose this mode if you want to run the tool menu.
You can remotely operate EXPRESSBUILDER by using BIOS Console Redirection when choosing **Tool menu (Redirection mode)**. The menu items and the tools are the same as those in normal mode.

Tips Choose the normal mode when using the Virtual KVM function.

(2) Home Menu

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

Home Menu includes the following items.

a) Setup

Configures RAID arrays or installs Windows easily. For details, see *Installation Guide (Windows)*.
If you want to configure RAID arrays without installing Windows, choose **Manual Selection** in the step 1 of Setup.

b) Utilities

Runs a utility in EXPRESSBUILDER.

For details, see *Chapter 2 (4.3 Utilities in EXPRESSBUILDER)*.

c) Versions

Shows the versions of software and drivers in EXPRESSBUILDER.

d) Exit

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

(3) Tool Menu

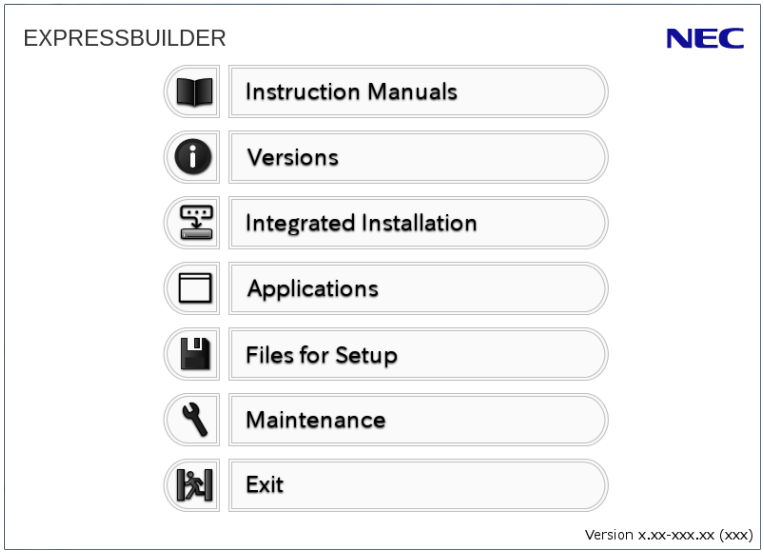
```
Maintenance

Test and diagnostics

Return to the previous menu
```

From Tool Menu, you can run System Diagnostics and Offline Tools. For details, see *Chapter 1 (8. System Diagnostics) or (9. Offline Tools)*.

(4) Autorun Menu



You can use the following features from the menu on Windows.

a) Instruction Manuals

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

b) Versions

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

c) Integrated Installation

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

d) Applications

Installs or runs an application individually.

e) Files for Setup

Creates the file for Windows installation.

f) Exit

Closes the menu.

4.3 Utilities in EXPRESSBUILDER

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

(1) RAID Configuration Data

Saves or loads the configuration data on a RAID controller.

(2) File Execution

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

Note Do not run the file provided by a third party.

5. BMC/CMC

The base board management controller (BMC) and chassis management controller (CMC) not only play role as the system management LSI but also provide various management functions.
BMC enables you to monitor the temperature, voltage and others in the server module.
CMC enables you to monitor the conditions such as the power supply unit or fan in the enclosure.
Network connection of the management LAN of BMC/CMC provides the remote control via Web browser as described below.

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

***** To enable this feature, the optional license for Remote KVM and Media License (N8115-32) is required.

To actualize these functions, virtual USB mass storage (MP EMS Virtual Media 0399) is always connected as USB mass storage.

6. NEC ESMPRO

6.1 NEC ESMPRO ServerAgentService (for Windows)

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

6.2 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 bundled software for the server such as NEC ESMPRO ServerAgentService.

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

6.3 Server Configuration Utility

Server Configuration Utility can set various configurations of the monitoring settings.

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

6.4 NEC ExpressUpdate Agent

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

You can easily install the downloaded packages 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

7. NEC Product Info Collection Utility

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

7.1 Usage (Windows)

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.

8. Ezclct Viewer

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

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

9. Universal RAID Utility

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

- N8103-176 RAID Controller (1GB, RAID 0/1)
- N8103-177 RAID Controller (1GB, RAID 0/1/5/6)
- N8103-178 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-179 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-188 RAID Controller (RAID 0/1)

For information about installing Universal RAID Utility, see Universal RAID Utility in "*Installation Guide (Windows)*".
See "*Universal RAID Utility User's Guide*" in EXPRESSBUILDER for more information about operating instructions and features.

9.1 Creating Logical Drive of RAID 6

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

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

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

11. Express Report Service (MG)

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

NEC Express5800 Series
Express5800/D120h

3

Appendix

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

2. **List of Windows Event Logs**
   Shows a list of Windows event logs

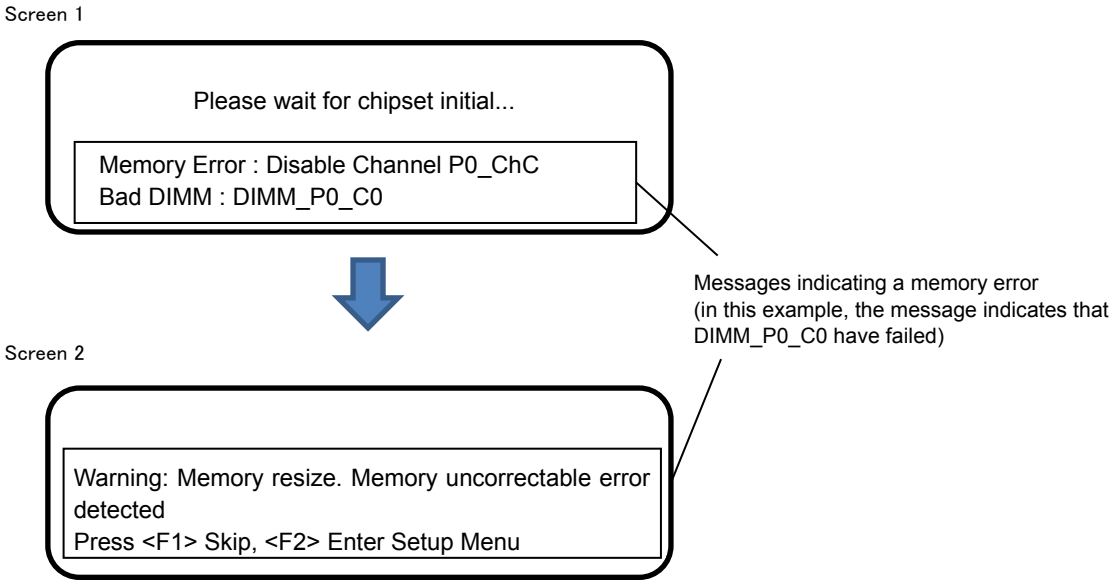
3. **Accessing Data for Electrical Power, Temperature, and Processor Utilization**
   Describes how to check power consumption in watts, intake temperature, and logical processor utilizations.

4. **Glossary**

5. **Revision Record**

1. POST Error Message

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



The next table lists the error messages and the actions to solve the problem. If the error does not change even if the action is performed, contact your sales representative.

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

(1) Error message list

Error Message	Cause	Action
Warning: Memory resize. Memory uncorrectable error detected.	A memory uncorrectable error has occurred.	Contact your sales representative.
Warning: GENERIC_BAD_DATE_TIME_ERROR.	The system date and time have been cleared.	Run SETUP, and then specify the correct date and time.
Warning: LEGACY_OPROM_NO_SPACE.	The RAM area has no free space.	Disable Option ROM setting of the PCI card. Contact your sales representative if this message persists.
Warning: BIOS Setting was Load Default value.	The BIOS configuration information has been initialized.	This is not a problem if you intentionally set the BIOS set value to the default. Contact your sales representative if this message persists.

(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.

The table below shows the beep code, cause, and action.

If the same error appears even if the action is performed, contact your sales representative.

Beep code	Description	Action
1	No memory is installed. Or, no memory is recognized.	Make sure that the DIMMs are correctly installed.
1	The password is invalid.	Enter a correct password.
2	Recovery of BIOS started.	This is not an error. Wait until the system has been recovered.
3	DXEIPL is not found. Or, DXE core firmware volume is not found.	Contact your sales representative.
5	The console output device is not found. The console input device is not found.	
6	Flash update failed.	
7	Resetting the system failed.	
8	An error was detected during allocating the PCI resources.	Remove all the PCI boards from the PCI slots, and then restart the server.

2. List of Windows Event Logs

OS

Event Log

ID	Source	Type	Message (Description)
	Timing when an event is logged		Action

All Windows OS

System Event Log

51	Cdrom	Warning	Error detected on the device \Device\CdRom0 during the paging operation.
	When installing an OS		This event may be registered in the event viewer, but this does not affect system operation.
129	megasas2	Warning	Reset command is issued to device \Device\RaidPort(x). (Any number replaces x)
	While the system is running		This event does not affect system operation If this message is logged because OS has succeeded retry process.

Windows Server 2016

System Log

4	l2nd	Warning	QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
27	e1rexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When starting system or installing Starter Pack		This event does not affect system operation.
27	e1iexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.

27	ixgbs	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When starting system or installing Starter Pack		This event does not affect system operation.
27	ixgbi	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
219	Microsoft-Windows-Kernel-PnP	Warning	The driver \Driver\WudfRd failed to load for the device xxxxxxxxxxxxxxxxx.
	When starting system or connecting a disk		This may be recorded when starting the system or connecting a disk depending on timing, but does not affect system operation.
225	Kernel-PnP	Warning	The application YYY with process id XXX stopped the removal or ejection for the device ZZZ. * ZZZ : Instance name of the device YYY : Name of the process that was using the device XXX : ID of the process that was using the device
	When applying Starter Pack		This event does not affect system operation if it is logged when applying Starter Pack.
7023	Service Control Manager	Error	"xxxxxxxx service terminated with the following error: A device attached to the system is not functioning."
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
7023	Service Control Manager	Error	The Data Sharing Service service terminated with the following error: %%3239247874 * The message may not be correctly displayed as shown below. However, this is not a problem. The description of the event ID7023 from the source “Service Control Manager” is not found. The component to generate this event is not installed on the local computer or the installation is broken. Install the component on the local computer or repair the component. If you find the event generated from another computer, you need to save the display information together with the event. The event includes the following information. Data Sharing Service %%3239247874 The local specific resource of the necessary message does not exist.
	When running an OS for the first time or rebooting it, or while the system is running		This event does not affect system operation. Refer to the following website. https://support.microsoft.com/ja-jp/help/4011803

7030	Service Control Manager	Error	The Printer Extensions and Notifications service is marked as an interactive service. However, the system is configured to not allow interactive services. This service may not function properly.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
10010	Microsoft-Windows-DistributedCOM	Error	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within the required timeout.
	When running an OS for the first time or rebooting it		Refer to the following website. http://support.microsoft.com/kb/956479/
10317	Microsoft-Windows-NDIS	Error	Miniport Microsoft Network Adapter Multiplexor Driver, {xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx}, had event Network Interface deleted while PNP Device still exists. Note that this event is provided for informational purpose and might not be an error always (Eg: In case of vSwitch which was recently un-installed or a LBFO team was removed)
	When removing a team		This event does not affect system operation.

Application Log

1014	Microsoft-Windows-Security-SPP	Warning	Acquisition of End User License failed. hr=0x80072EE7
	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1015	Microsoft-Windows-Security-SPP	Warning	Detailed HRESULT. Returned hr=0xC004F022, Original hr=0x80049E00
	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed, error code is Not implemented.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: hr=0x******** Command-line arguments: RuleId=******************************
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
8200	Microsoft-Windows-Security-SPP	Error	License acquisition failure details. hr=0x80072EE7
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.

Applications and Services Logs

69	Microsoft-Windows-AppModel-Runtime	Error	Failed with 0x490 modifying AppModel Runtime status for package ********** for user ********* (current status = 0x0, desired status = 0x20).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
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,0x1'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. The error was: No such host is known. (0x80072AF9)
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update service could not be established.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When starting system and installing Starter Pack		This event does not affect system operation if it is not recorded after connecting to the internet.
506	Microsoft-Windows-DeviceManagement-Pushrouter	Error	DmWapPushService: Failed to register WNF with EventAggregator for WAP messages received by SMS Router. Result: (0xC002000B).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.

Windows Server 2012 R2

System Log

2	Microsoft-Windows-Kernel-EventTracing	Error	The session “” could not be started due to the following error: 0xC000000D
	When running an OS for the first time		This event does not affect system operation.
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Starter Pack		This event does not affect system operation.
11	Megasas	Error	The driver detected a controller error on *\Device\RaidPort(x)*.
	When applying Starter Pack		This event does not affect system operation if it is logged when applying Starter Pack.
27	e1iexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
27	e1rexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When starting system, or applying Starter Pack		This event does not affect system operation.
27	ixgbs	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When starting system or installing Starter Pack		This event does not affect system operation.
46	volmgr	Error	Crash dump was not initialized.
	When installing an OS		Refer to the following website. http://support.microsoft.com/kb/2756313
134	Microsoft-Windows-Time-Service	Warning	The manual peer that is used as the time source in NtpClient could not be set due to DNS resolution error at “time.windows.com,0x9”. Retry after 15 minutes and, after that, retry at double intervals.
	When installing an OS, starting system, applying Starter Pack		If it is not registered after connection with the Internet, there is no problem for system operation.
153	disk	Warning	The I/O operation at the logical block address for disk was retried. • The on-screen indication may differ depending on system environment. • The character string of this event may not be displayed correctly, however, it does not affect the system operation.
	When creating logical drive by Universal RAID Utility		If this event is logged when creating a logical drive by Universal RAID Utility, there is no problem in system operation. The character string of the event will be correctly displayed by applying the Microsoft's update program on the following site: http://support.microsoft.com/kb/2925479

1500	SNMP	Error	The SNMP Service encountered an error while accessing the registry key SYSTEM\CurrentControlSet\Services\SNMP\Parameters\ TrapConfiguration.
	When installing an OS		If this event is logged only when SNMP is enabled and does not occur repeatedly, there is no problem with system operation. Go to the following Microsoft website for details. http://support.microsoft.com/kb/2002303/
7023	Service Control Manager	Error	The Network List Service terminated due to the following error. Device not ready.
	When installing an OS		This is logged only when the OS is installed and there is no problem unless the same event logs are continuously logged.
7023	Service Control Manager	Error	The IP Helper service terminated with the following error: The service cannot be started, either because it is disabled or because there are no enabled devices associated with it.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
7030	Service Control Manager	Error	Printer Extensions and Notifications service is marked as interactive service. However, the system is not allowed to use interactive service. Thus, this service might not work correctly.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
10010	Microsoft-Windows-DistributedCOM	Error	The server {xxxxxxxx-xxxx-xxxx-xxxxxxxxxxxx} did not do registration in DCOM within the necessary timeout period.
	When installing an OS		For details, refer to the following website: http://support.microsoft.com/kb/956479/ja (Japanese)
10016	Microsoft-Windows-DistributedCOM	Error	In the settings of application-specific access authorization, access authorization of local activation for COM server applications with CLSID {D63B10C5-BB46-4990-A94F-E40B9D520160} and APPID {9CA88EE3-ACB7-47C8-AFC4-AB702511C276} cannot be granted to the user NT AUTHORITY SYSTEM SID (S-1-5-18) whose address is LocalHost (LRPC is used) running with an SID unable to use application containers (utilization disabled). This security access authorization can be changed using the component service management tool.
	When running an OS for the first time		If this is logged at the first boot of OS and the same event log is not continuously logged, there is no problem.
10149	Microsoft-Windows-WinRM	Warning	The WinRM service is not listening for WS-Management requests.
	When installing an OS		If this event is logged together with ID 7036 "Service Control Manager (Windows Remote Management (WS-Management) service has stopped.), there is no problem in system operation. Also, if WinRM event 10148 (WinRM service is listening WS-Management requests.) is output immediately after this event, there is no problem in system operation.

Application Event Log

1014	Microsoft-Windows-Security-SPP	Error	Failed to obtain end-user license. hr=0x80072EE7
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1015	Microsoft-Windows-Security-SPP	Warning	Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1058	Microsoft-Windows-Security-SPP	Error	Failed to obtain certificate of purchase from ACPI table. Error code: 0xC004F057
	When installing an OS		This event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: Error code: hr=0xC004F063
	When installing an OS		Unless this event is not logged after license authentication, there is no problem in system operation.
8200	Microsoft-Windows-Security-SPP	Error	Detailed information about failure of license authentication hr=0x80072EE7
	When installing an OS		Unless this event is not logged repeatedly after license authentication, there is no problem in system operation.

Applications and Services Logs

200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update Services could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
215	Microsoft-Windows-AppReadiness	Error	'ART:ResolveStoreCategories' of Administrator failed. Error: 'Class not registered' (0.0469065 sec.)
	When installing an OS		If this event is logged only at the first sign-in after OS installation and does not occur repeatedly, there is no problem in system operation.

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 can be run on Windows Server 2012 R2, Windows Server 2016.

3.1.1 Power consumption

Run the following command to access the power consumption readings on Baseboard Management Controller (BMC) by using Intelligent Platform Management Interface (IPMI).

Network Function Code: 2Ch (Group Extension)

Command Code: 02h (Get Power Reading)

Request Data: 000001DCh

The following is the sample file (named as Power.vbs) created by using Visual Basic Script.

```
' 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 = array (&hdc, &h01, &h00, &h00)
oinparams.requestdatasize = 4


'call the driver
Dim outparams
set outparams = oipmi.execmethod_("requestresponse",oinparams)

WScript.Echo " Completion Code = 0x" & hex(outparams.Completioncode)
If outparams.Completioncode <> 0 Then
   Wscript.Echo " Not supported"
Else
   'WScript.Echo " Data LS Byte    = 0x" & hex(outparams.ResponseData(2))
   'WScript.Echo " Data MS Byte    = 0x" & hex(outparams.ResponseData(3))
   WScript.Echo " Power Consumption = " & outparams.ResponseData(3)*256 + _
                                       outparams.ResponseData(2) & " watts"
End If
' End Script
```

- Command example

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

- Result

```
Completion Code = 0x0
Power Consumption = 306 watts
```

The power consumption is 306 watts.

Tips If the power consumption readings cannot be read on the server depending on the power supply unit, the completion code is `0xC1` or `0xCB`.

3.1.2 Intake air temperature

Run the following commands to search Sensor Data Record (SDR) for the temperature sensor and read intake air temperature data.

- Get SDR Repository Info
- Reserve SDR Repository
- Get SDR
- Get Sensor Reading

The following is the sample file (named as Sensor.vbs) created by using Visual Basic Script.

```
'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
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
```

- Command example

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

- Result

```
==============================================
 ID String = Baseboard Temp4
 Sensor Type = Temperature
 Current Value = 45 degrees C
==============================================
 ID String = FntPnl Amb Temp
 Sensor Type = Temperature
 Current Value = 27 degrees C
==============================================
 ID String = CPU1_DIMM1 Temp
 Sensor Type = Temperature
 Current Value = 35 degrees C
==============================================
 ID String = CPU1_DIMM2 Temp
 Sensor Type = Temperature
 Event Status: Unavailable
==============================================
```

Intake air temperature data can read from the sensor with an ID string that contains any of the following: `Amb`, `Ambient`, or `Front Panel`.

In the case of the sample result above, the data appears at the second paragraph and you can know that the intake air temperature is 27°C.

3.1.3 Processor utilization

The utilization rate of all logical processors is given from the Win32_PerfFormattedData_PerfOS_Processor class of WMI.

The following is the sample file (named as Proc.vbs) created by using Visual Basic Script. This sample 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
```

- Comand example

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

- Result

```
Proc0 : PercentProcessorTime=0
Proc1 : PercentProcessorTime=0
Proc2 : PercentProcessorTime=0
Proc3 : PercentProcessorTime=0
Proc4 : PercentProcessorTime=76
Proc5 : PercentProcessorTime=0
Proc6 : PercentProcessorTime=0
Proc7 : PercentProcessorTime=0
Proc_Total : PercentProcessorTime=9
```

`Proc 0` to `Proc 7` show the utilization rate of each processor while `Proc_Total` shows the total processor utilization rate.

4. Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <Del> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (MG)	Software that can report the server failure to the contact center by E-mail, modem or HTTPS without NEC ESMPRO ServerAgentService. This software is installed with NEC ESMPRO Manager to "PC for Management".
ExpressUpdate	A feature for updating BIOS, firmware, driver, and software of the server. This feature is available when NEC ESMPRO Manager cooperates with BMC and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
NEC ESMPRO	Standard software for the server management. This consists of some applications for managing and monitoring.
NEC ESMPRO Manager	Software for managing a number of servers on network.
NEC ESMPRO ServerAgentService	Software for monitoring the server. This works with NEC ESMPRO Manager. You can choose Service Mode or Non-Service Mode when installing this software. Service Mode resides as the OS service and Non-Service Mode does not use the OS service to reduce memory, CPU power, and other OS resources.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU, and other IPMI data. You can start Offline tools from EXPRESSBUILDER DVD.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
RAID Configuration Utility	Software for configuring RAID arrays. You can run this software during POST.
Server Configuration Utility	Software for setting BIOS and BMC.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
TPM Kit	An optional product of Trusted Platform Module for the server.
Universal RAID Utility	Software for setting RAID arrays on Windows/Linux. This software is operated on "PC for Management" with NEC ESMPRO Manager.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when installing Windows with EXPRESSBUILDER.

5. Revision Record

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NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan