Maintenance Guide (Common)

NEC Express Server
Express5800 Series

Express5800/R120h-1M, R120h-2M
Express5800/R120h-1E, R120h-2E
Express5800/T120h
(2nd-Gen)
EXP804, EXP805, EXP336, EXP337, EXP806

Chapter 1 Useful Features

Chapter 2 Appendix

10.201.01-104.01
May 2019
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Manuals

Booklets	
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.
The electronic edition has been published on a website (http://www.nec.com/express/).	
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 Utility 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 the Bundled Software	Installation of NEC ESMPRO, and other bundled software
Maintenance Guide	
Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2: Useful Features	The details of RAID Configuration Utility
Chapter 3: Appendix	Windows Event Logs
Maintenance Guide (Common)	
Chapter 1: Useful Features	The details of System Utility, Starter Pack, and EXPRESSBUILDER
Chapter 2: Appendix	Error messages
Other manuals	
The details of NEC ESMPRO, and other features	

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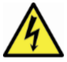
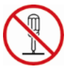
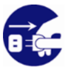
Conventions Used in This Document

Signs and symbols for safety

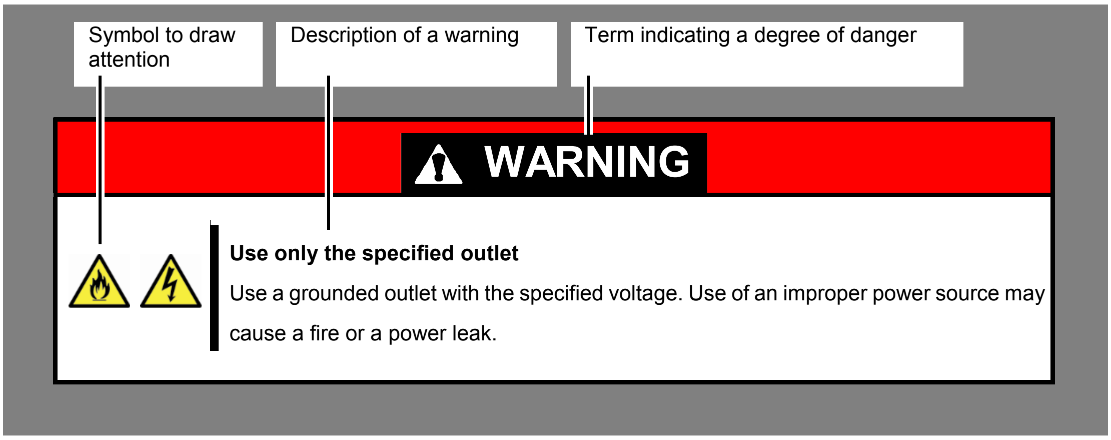
WARNING and CAUTION are used in this guide as the following meaning.

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

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

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

(Example)



Use only the specified outlet

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

Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this 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.

Optical disk drive

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

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

Hard disk drive

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

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

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 2019	Windows Server 2019 Standard
	Windows Server 2019 Datacenter
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

Abbreviations of Operating Systems (Linux)

Linux Operating Systems are referred to as follows.

Notations in this document	Official names of Linux
Red Hat Enterprise Linux 7 Server	Red Hat Enterprise Linux 7 Server (x86_64)

Abbreviations of Operating Systems (VMware)

VMware Operating Systems are referred to as follows.

Notations in this document	Official names of VMware
ESXi 6.7	VMware ESXi 6.7 Update1 or later
ESXi 6.5	VMware ESXi 6.5 Update2 or later

POST

POST described in this manual refers to the following.

- **Power On Self-Test**

BMC

BMC described in this manual refers to the following.

- **Baseboard Management Controller**

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zlib End User License Agreement

zlib License

zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.2, October 3rd, 2004

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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 this guide, as well as other related documents, is also available for download from the following website.

http://www.nec.com/express/

NEC Express5800 Series
Express5800/R120h-1M, -2M, -1E, -2E, T120h

1

Useful Features

This chapter explains useful features of this product. Refer to it when necessary.

1. **System Utilities**
   This section explains how to configure the system and details the parameters.

2. **Details of EXPRESSBUILDER**
   This section explains EXPRESSBUILDER, which comes with this machine.

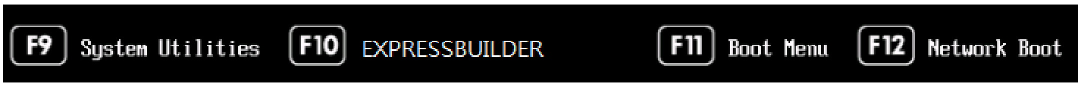
3. **Details of Starter Pack**
   This section details Starter Pack.

1. System Utilities

The System Utilities, built in the system ROM, provide the configuration instructions for the launching order, the diagnostic function for detecting system abnormality, and the log collection function for enabling quick analysis after occurrence of a system failure, as well as system information checking and the function of configuring the devices.

1.1 Launch the System Utilities

To launch the System Utilities, power on this machine or restart it to advance POST.
After a while, the following message appears at the bottom of the screen.
Press the <F9> key. POST ends at this time. The System Utilities is launched.



F9 System Utilities F10 EXPRESSBUILDER F11 Boot Menu F12 Network Boot

Tips The messages displayed vary, depending on the environment.

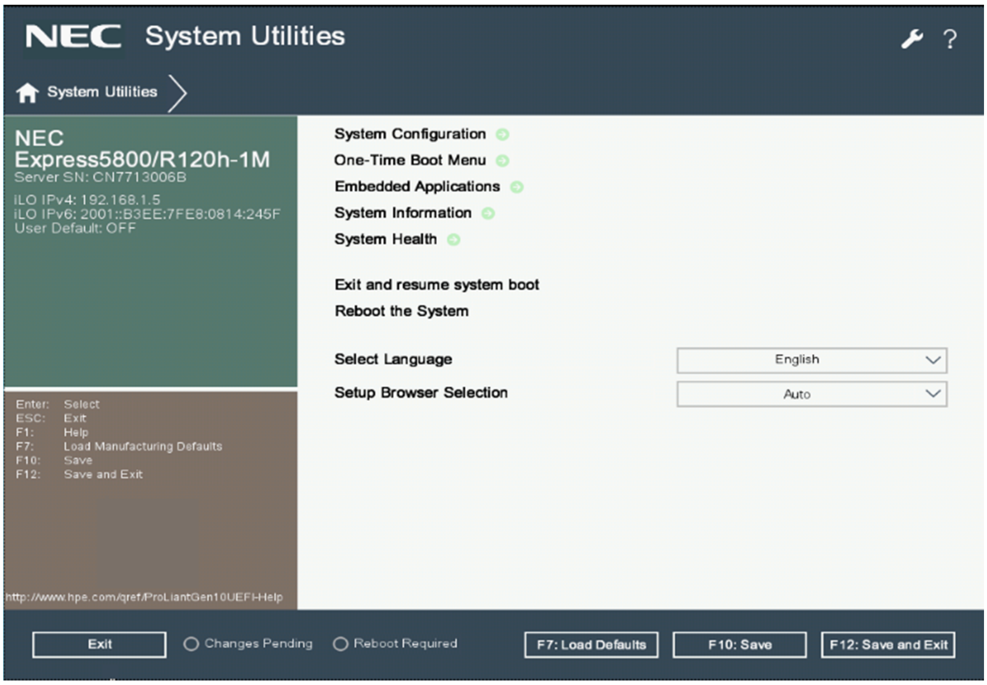
1.2 Parameter Descriptions

When the System Utilities are launched, the following menu appears.

- **System Configuration**
- **One-Time Boot Menu**
- **Embedded Applications**
- **System Information**
- **System Health**
- **Exit and resume system boot**
- **Reboot the System**
- **Select Language**
- **Setup Browser Selection**

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

Important **Please keep a backup of setting information on SystemROM beforehand to prepare for failure and update implementation of SystemROM.**


NEC System Utilities
System Utilities
System Configuration
One-Time Boot Menu
Embedded Applications
System Information
System Health
Exit and resume system boot
Reboot the System
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-1M
Server SN: CN7713006B

iLO IPv4: 192.168.1.5
iLO IPv6: 2001::B3EE:7FE8:0814:245F
User Default: OFF

Enter: Select
ESC: Exit
F1: Help
F7: Load Manufacturing Defaults
F10: Save
F12: Save and Exit

http://www.hpe.com/qref/ProLiantGen10UEFI-Help

Select Language: English
Setup Browser Selection: Auto

For details about the options, see the table below.

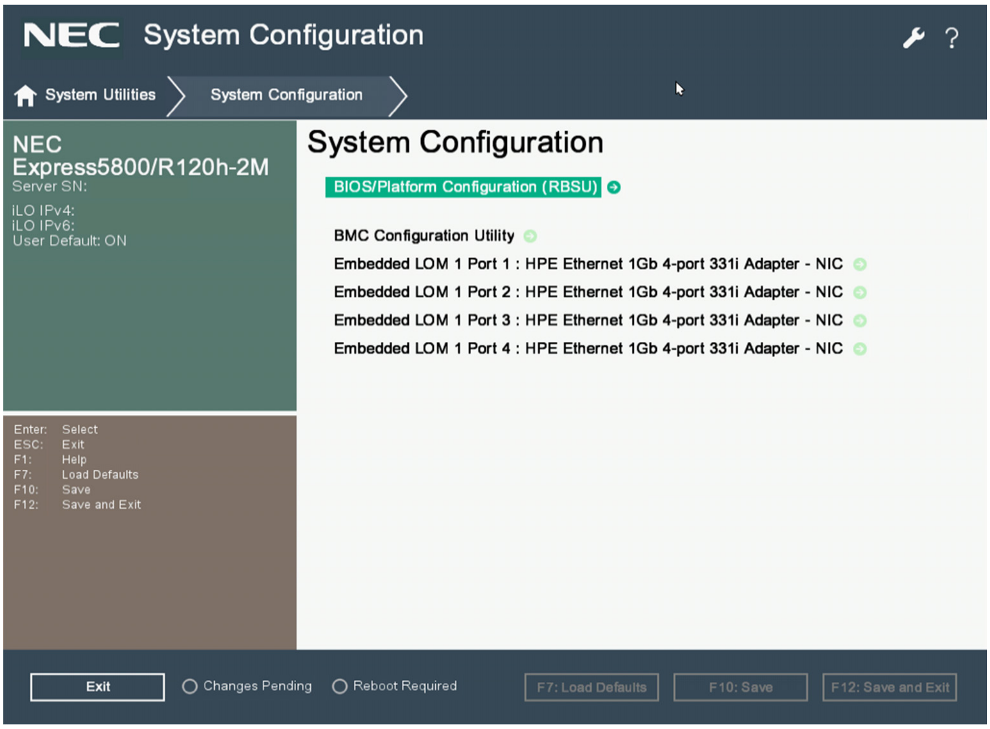
Option	Parameter	Description
System Configuration	–	Displays the **System Configuration** menu. You can use this option to set up the System Utilities, the other system devices, and the option card devices.
One-Time Boot Menu	–	Displays the **One-Time Boot** menu. Use this option to boot the system only one time from a device not dependent on the predefined boot order. Selecting a device through **One-Time Boot** menu does not change the predefined boot order.
Embedded Applications	–	Displays the [Embedded Application] menu. By using this option, you can update **Embedded UEFI Shell**, [EXPRESSBUILDER], and firmware or display [Embedded Diagnostics], [Integrated Management Log], and [Active Health System Log].
System Information	–	Displays the **System Information** menu. Use this menu to view system information including the system name, system ROM version, date, processor information, and memory information.
System Health	–	Displays the **System Health** menu. Use this option to display the health status of all the devices within this machine. When an error is detected during POST, <F2> View Information/Errors appears. This starts up by pressing the <F2> key.
Exit and resume system boot	–	Exits the System Utilities and continues with the usual boot process.
Reboot the System	–	Exits the System Utilities and restart the BIOS.
Select Language	[English] Simplified Chinese Japanese	Changes the current language of the system.
Setup Browser Selection	GUI Text [Auto]	Selects the setup browser to use. In the [Auto] mode, use [Text] when the user enters the System Utilities via the serial console or [GUI] when the user enters it via the IRC or physical terminal.

[ ]: Default setting

1.2.1 System Configuration

When you select **System Configuration** from the System Utilities, the following menu appears.

- **BIOS/Platform Configuration (RBSU)**
- **BMC Configuration Utility**
- **Embedded device information**

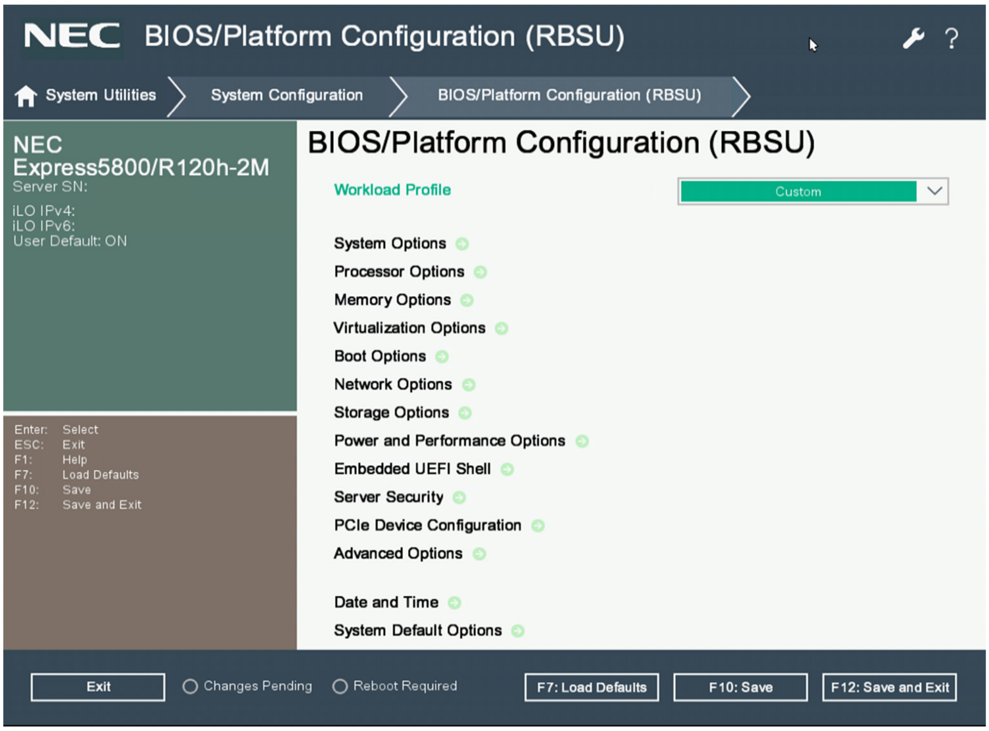

NEC System Configuration
System Utilities
System Configuration
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
System Configuration
BIOS/Platform Configuration (RBSU)
BMC Configuration Utility
Embedded LOM 1 Port 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC
Embedded LOM 1 Port 2 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC
Embedded LOM 1 Port 3 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC
Embedded LOM 1 Port 4 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
BIOS/Platform Configuration (RBSU)	–	Accesses **BIOS/Platform Configuration (RBSU)** to set up the System Utilities and other platforms.
BMC Configuration Utility	–	Launches **BMC Configuration Utility** in order to set up BMC.
(Embedded device name)	–	Sets the embedded device parameter. The number of options displayed increases or decreases, depending on whether or not a PCIe device is installed. Example: Embedded LOM

1.2.2 BIOS/Platform Configuration (RBSU)

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** from the System Utilities, the **BIOS/Platform Configuration (RBSU)** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
BIOS/Platform Configuration (RBSU)
System Options
Processor Options
Memory Options
Virtualization Options
Boot Options
Network Options
Storage Options
Power and Performance Options
Embedded UEFI Shell
Server Security
PCIe Device Configuration
Advanced Options
Date and Time
System Default Options
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit

Workload Profile: Custom

For details about the options, see the table below.

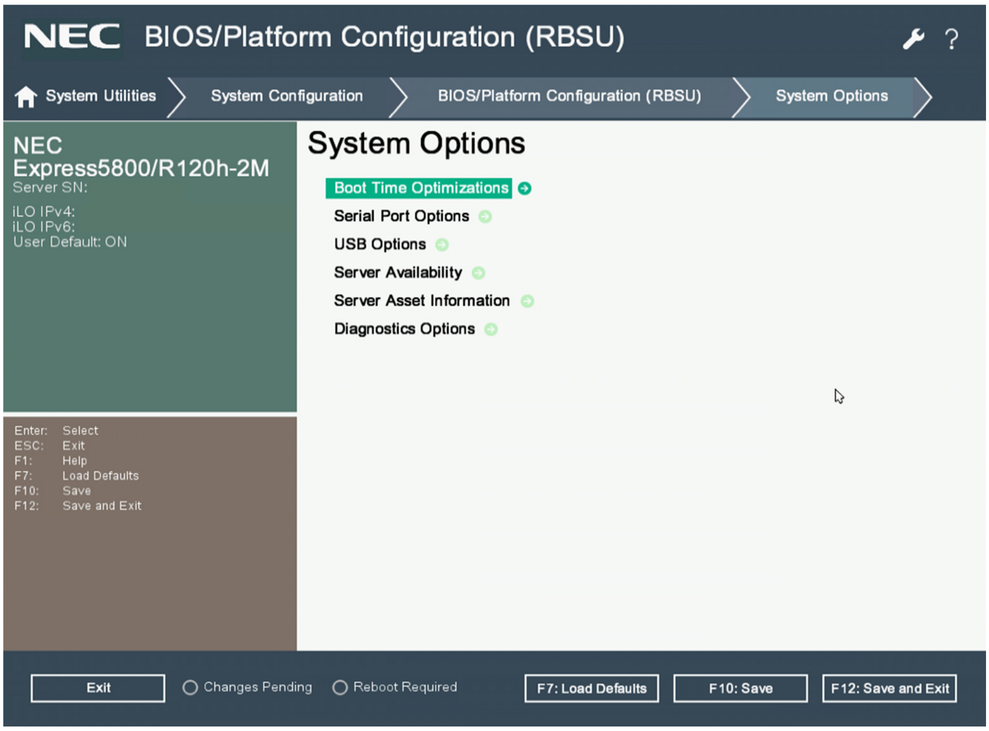
Option	Parameter	Description
Workload Profile	General Power Efficient Compute General Peak Frequency Compute General Throughput Compute Virtualization - Power Efficient Virtualization - Max Performance Low Latency Mission Critical Transactional Application Processing High Performance Compute(HPC) Decision Support Graphic Processing I/O Throughput [Custom]	Select this option to choose a workload profile for power and performance.
System Options	–	Select this option to display the available System Options. System Options include various configuration options.
Processor Options	–	Select this option to display Processor options, such as configuring Intel Hyper-Threading, Processor Core Enablement, and x2APIC Support.
Memory Options	–	Use this option to configure additional memory options, such as Advanced Memory Protection.
Virtualization Options	–	Select this option to display virtualization options, such as Virtualization Technology, Intel VT-d, and SR-IOV.

Option	Parameter	Description
Boot Options	–	Select this option to display the Boot Options menu. Use this menu to configure Boot Options, such as Boot Mode, UEFI Optimized Boot, Boot Order Policy, UEFI Boot Order, and Legacy BIOS Boot Order.
Network Options	–	Select to enter the Network Options.
Storage Options	–	Use this option to configure storage options, such as PCIe Slot Storage Boot Policy options.
Power and Performance Options	–	Select this option to display Power Management and Performance options. Use this menu to set the Power Regulator, Advanced Power Options, Intel Turbo Boost, ACPI SLIT, and other Power and Performance options.
Embedded UEFI Shell	–	Select this option to display the Embedded UEFI Shell options menu. Use this menu to enable the Embedded UEFI Shell, add the Embedded UEFI Shell in the boot order, and enable automatic execution of the default UEFI Shell startup script.
Server Security	–	Select this option to display the Server Security menu. Use this menu to set the power-on and administrator password, and to set access to EXPRESSBUILDER and the Trusted Platform Module (TPM).
PCIe Devices Configuration	–	Select this option to display the PCI Express (PCIe) Device options menu. Use this menu to configure options, such as PCIe Device Disable, and other PCIe related power and performance options.
Advanced Options	–	Select this option to display all the available Advanced Options. Advanced Options do not generally require modification from their default values, but might need to be modified in some situations.
Date and Time	–	Use this option to enter the Date and Time options.
System Default Options	–	Select this option to display the System Default Options.

[ ]: Default setting

(1) System Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** from the System Utilities, the **System Options** menu appears.


NEC
BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
System Options
NEC Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
System Options
Boot Time Optimizations
Serial Port Options
USB Options
Server Availability
Server Asset Information
Diagnostics Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Boot Time Optimizations	–	Select this option to display Boot Time Optimizations options, such as Dynamic Power Capping, and Extended Memory Test.
Serial Port Options	–	Select this option to display the Serial Port Options menu. Use this menu to configure the Embedded and Virtual Serial Port settings.
USB Options	–	Select this option to display USB options, such as setting USB control, USB boot support, and removable flash media boot sequence.
Server Availability	–	Select this option to display the Server Availability menu. Use this menu to enable the Automatic Server Recovery Status and Timeout, configure Power-on-Self-Test, set the Power Button Mode, and set the Power-On Delay.
Server Asset Information	–	Select this option to display the Server Asset Information options. Use this menu to modify server information, administrator contact information, service contact information, and the system startup message.
Diagnostics Options	–	This server does not support this option.

(a) Boot Time Optimizations Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options**> **Boot Time Optimizations** from the System Utilities, the **Boot Time Optimizations** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Dynamic Power Capping Functionality	Auto Enabled [Disabled]	This setting is to correct the power value during POST. If this is set to [Auto], the power value is corrected at the first startup of this device. After this, correction of this value is performed when this device is configured or the settings are changed. If this is set to [Disabled], the power value is not corrected, and Dynamic Power Capping is not supported. If this is set to [Enabled], the power value is corrected every time the device starts up.
Extended Memory Test	Enabled [Disabled]	When enabled, the system validates memory during the memory initialization process. If uncorrectable memory errors are detected, the memory is mapped out, and the failed DIMMs are logged to the Integrated Management Log (IML). Enabling this option can result in a significant increase in the server boot time.
Memory Fast Training	[Enabled] Disabled	This option enables a boot time reduction by controlling when the BIOS bypasses the full memory training. When enabled, the server bypasses the full memory training during boot, and uses memory parameters determined on a previous boot to decrease boot time. Note that even when enabled, the BIOS performs a full memory training if the DIMM configuration or processor configuration changes, or if there is a change in any BIOS setting related to memory or processor configuration. When disabled, the server performs a full memory training on every server boot.
UEFI POST Discovery Mode	[Auto] Force Full Discovery Force Fast Discovery	Use this option to configure the UEFI POST Discovery Mode. When Auto is selected, the system selectively starts devices which are required for booting the devices in the UEFI Boot Order list. Note: For some situations with auto mode like system configuration change, the system will change to start all devices for discovering all boot devices. When Force Full Discovery is selected, the system starts all devices in the system providing full boot device availability. Note: When Force Full Discovery is selected, boot time might significantly increase. When Force Fast Discovery is selected, the system starts devices as less as possible for getting the shortest boot time. Note: When Force Fast Discovery is selected, some unsupported device might not work properly. You might need to replace the unsupported device with the supported one.
Memory Clear on Warm Reset	Enabled [Disabled]	Use this option to configure when memory is cleared on warm resets. When disabled, the contents of memory are only cleared on a warm reset if requested by the operating system. When enabled, memory is cleared on all reboots. Disabling this option can save boot time by skipping the clearing of memory on warm resets.

[ ]: Default setting

(b) Serial Port Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Serial Port Options** from the System Utilities, the **Serial Port Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
BIOS Serial Console and EMS	–	Select this option to display the BIOS Serial Console and EMS menu. Use the menu to view POST error messages and run the System Utilities remotely through a serial connection to the server COM port or Virtual Serial port. The remote server does not require a keyboard or mouse.
Embedded Serial Port	COM 1; IRQ4; I/O: 3F8h-3FFh [COM 2; IRQ3; I/O: 2F8h-2FFh] Disabled	Select this option to assign the logical COM port address and associated default resources to the selected physical serial port. The operating system can overwrite this setting.
Virtual Serial Port	[COM 1; IRQ4; I/O: 3F8h-3FFh] COM 2; IRQ3; I/O: 2F8h-2FFh Disabled	Use this option to assign the logical COM port address and associated default resources used by the Virtual Serial Port (VSP). In order to support BIOS Serial Console and serial console of operating system, VSP enables emulated serial port that provides management processor.

[ ]: Default setting

①. BIOS Serial Console and EMS Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Serial Port Options** > **BIOS Serial Console and EMS** from the System Utilities, the **BIOS Serial Console and EMS** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
BIOS Serial Console Port	[Auto] Disabled Physical Serial Port Virtual Serial Port	Use this option to re-direct video and keystrokes through the serial port to OS boot. This option can interfere with non-terminal devices attached to the serial port. In such cases, set this option to disabled. This option is only supported in English language mode when running in the UEFI pre-boot System Utilities.
BIOS Serial Console Emulation Mode	VT100 ANSI [VT100+] VT-UTF8	Use this option to select the emulation mode type. The option you select depends on the emulation you want to use in your serial terminal program (such as HyperTerminal or PuTTy). The BIOS Serial Console Emulation Mode must match the mode you select in your terminal program.
BIOS Serial Console Baud Rate	9600 19200 38400 57600 [115200]	This is the transfer rate at which data is transmitted through the serial port.
EMS Console	[Disabled] Physical Serial Port Virtual Serial port	Use this option to configure the ACPI serial port settings, which include the ability to redirect the Windows Server Emergency Management console (EMS) through either the physical or virtual serial port.

[ ]: Default setting

(c) USB Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **USB Options** from the System Utilities, the **USB Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
USB Control	[All USB Ports Enabled] All USB Ports Disabled External USB Ports Disabled Internal USB Ports Disabled	All USB Ports Enabled: Enables all USB ports and embedded devices. All USB Ports Disabled: Disables all USB ports and embedded devices. External USB Ports Disabled: Disables only external USB ports. Internal USB Ports Disabled: Disables only internal USB ports.
USB Boot Support	[Enabled] Disabled	Set this option to disabled to prevent the system from booting to any USB devices connected to the server. This includes preventing boot to virtual media devices, and the embedded SD or uSD card slot (if supported).
Removable Flash Media Boot Sequence	Internal SD Card First Internal DriverKeys First [External DriveKeys First]	Use this option to select which USB or SD Card devices you want to search for first when enumerating boot devices. You can select whether the system boots to external USB drive keys, internal USB drive keys, or the internal SD card slot. This option does not override the device boot order in the Standard Boot Order (IPL) option. You can only configure this option when Boot Mode is set to Legacy BIOS.
Internal SD Card Slot	Enabled [Disabled]	Use this option to enable or disable the Internal SD Card Slot. When set to disabled, the SD card slot is disabled, regardless of whether an SD Card is installed or not. The SD Card will not be visible in the pre-boot environment or under the operating system.

[ ]: Default setting

Tips

There is no influence on usual server operation since internal micro SD card slot is not to be used.

(d) Server Availability Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Server Availability** from the System Utilities, the **Server Availability** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
ASR Status	[Enabled] Disabled	Use this option to configure the Automatic Server Recovery option, which enables the system to automatically reboot if the server locks up.
ASR Timeout	[10 Minutes] 15 Minutes 20 Minutes 30 Minutes 5 Minutes	When Automatic Server Recovery is enabled, you can use this option to set the time to wait before rebooting the server in the event of an operating system crash or server lockup.
Wake-On LAN	[Enabled] Disabled	You can configure the server to be powered on remotely when it receives a special packet. This option requires a NIC, NIC driver, and operating system that are WOL-capable. This option is applied only to network devices installed in PCIe slots. To disable WOL for the built-in network controller, use the options on the Setup page of the network controller. For details on how to configure WOL, refer to *"2.4 Cases that Require Configuration"* in *"2. Description on System Utility"* in *Chapter 3* of the *User's Guide*.
POST F1 Prompt	[Delayed 20 Seconds] Delayed 2 Seconds Disabled	Use this option to configure the system to display the F1 key on the server POST screen. If an error is encountered, you can press the F1 key to continue with the server power-up sequence. Select one of the following options: Delayed 20 Seconds - If an error occurs, the system pauses for 20 seconds at the F1 prompt and continues to boot the OS. Delayed 2 Seconds - If an error occurs, the system pauses for 2 seconds at the F1 prompt and continues to boot the OS. Disabled - If an error occurs, the system bypasses the F1 prompt and continues to boot the OS. Note: For critical errors, the system pauses for 20 seconds at the F1 prompt, regardless of how this option is configured.
Power Button Mode	[Enabled] Disabled	Disabling this option disables the momentary power button functionality. This option does not affect the four-second power button override or the remote power control functionality.
Automatic Power-On	Always Power On Always Power Off [Restore Last Power State]	Use this option to configure the server power state when AC power is applied to the system. By default, the system returns to its previous power state when AC power is restored after an AC power loss. Always Power On and Always Power Off cause the system to always return to the "on" and "off" state, respectively, whenever power is applied, even if the system is in the "off" state when power is lost.

Option	Parameter	Description
Power-On Delay	[No Delay] Random Delay 15 Second Delay 30 Second Delay 45 Second Delay 60 Second Delay	Use this option to delay the server from turning on for a specified time. Pressing the power button (using the Virtual Power Button), or Wake-ON LAN events, and RTC Wake-up events override the delay and power on the server without any additional delay. This enables staggering when servers power-up after a power loss to prevent power usage spikes. Note that the actual delay before the server is powered on will be longer than the specified time because the server must always wait for iLO FW to initialize before the server attempts to power on.

[ ]: Default setting

(e) Server Asset Information Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Server Asset Information** from the System Utilities, the **Server Asset Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Server Information	–	Select this option to modify the server information.
Administrator Information	–	Enter the administrator's contact information.
Service Contact Information	–	Enter the service contact information.
Custom POST Message	String of up to 62 alphanumeric and/or special characters	Enter a message to be displayed on POST screen during system startup. This feature limits POST screen messaging to 62 characters, special characters are also accepted.

[ ]: Default setting

①. Server Information Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Server Asset Information** > **Server Information** from the System Utilities, the **Server Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Server Name	String of up to 28 alphanumeric and/or special characters	Select this option to modify the server name text line.
Server Assert Tag	String of up to 32 alphanumeric and/or special characters	Select this option to modify the Server Asset Tag text line.
Assert Tag Protection	Locked [Unlocked]	Use this option to lock Asset Tag information. When set to lock, the Asset Tag is not erased if the default system settings are restored.
Server Primary OS	String of up to 42 alphanumeric and/or special characters	Use this option to modify the Server Primary OS text line.
Server Other Information	String of up to 28 alphanumeric and/or special characters	Use this option to modify the Other Server text line.

[ ]: Default setting

②. Administrator Information Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Server Asset Information** > **Administrator Information** from the System Utilities, the **Administrator Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Administrator Name	String of up to 28 alphanumeric and/or special characters	Enter the server administrator's name text.
Administrator Phone Number	Phone number String of up to 28 alphanumeric and/or special characters	Enter the server administrator's phone number text.
Administrator E-mail Address	E-Mail Address String of up to 28 alphanumeric and/or special characters	Enter the server administrator's e-mail address.
Administrator Other Information	String of up to 28 alphanumeric and/or special characters	Enter the server administrator's information text.

[ ]: Default setting

③. Service Contact Information Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Server Assert Information** > **Service Contact Information** from the System Utilities, **Service Contact Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Service Contact Name	String of up to 28 alphanumeric and/or special characters	Enter the server service contact name text.
Service Contact Phone Number	Phone number String of up to 28 alphanumeric and/or special characters	Enter the server service contact phone number text.
Service Contact E-mail Address	E-Mail Address String of up to 28 alphanumeric and/or special characters	Enter the server service contact e-mail address.
Service Contact Other Information	String of up to 28 alphanumeric and/or special characters	Enter the other server service contact information text.

(f) Diagnostics Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Options** > **Diagnostics Options** from the System Utilities, the **Diagnostics Options** menu appears.

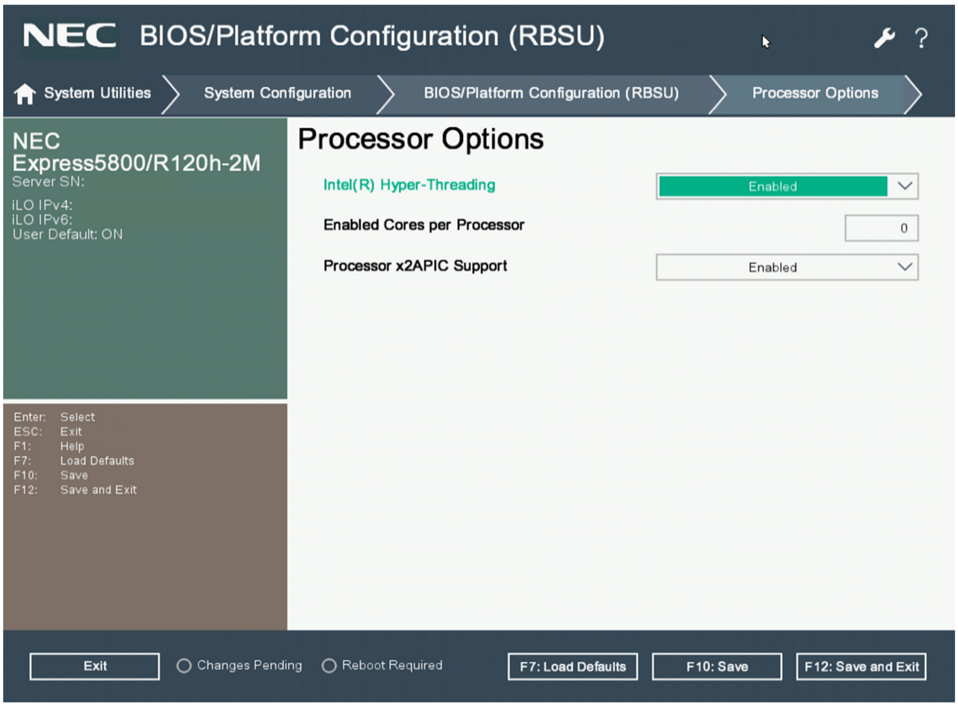
For details about the options, see the table below.

Option	Parameter	Description
Embedded Diagnostics	[Enabled] Disabled	This server does not support this option.

[ ]: Default setting

(2) Processor Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Processor Options** from the System Utilities, the **Processor Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Processor Options
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Processor Options
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Intel(R) Hyper-Threading: Enabled
Enabled Cores per Processor: 0
Processor x2APIC Support: Enabled

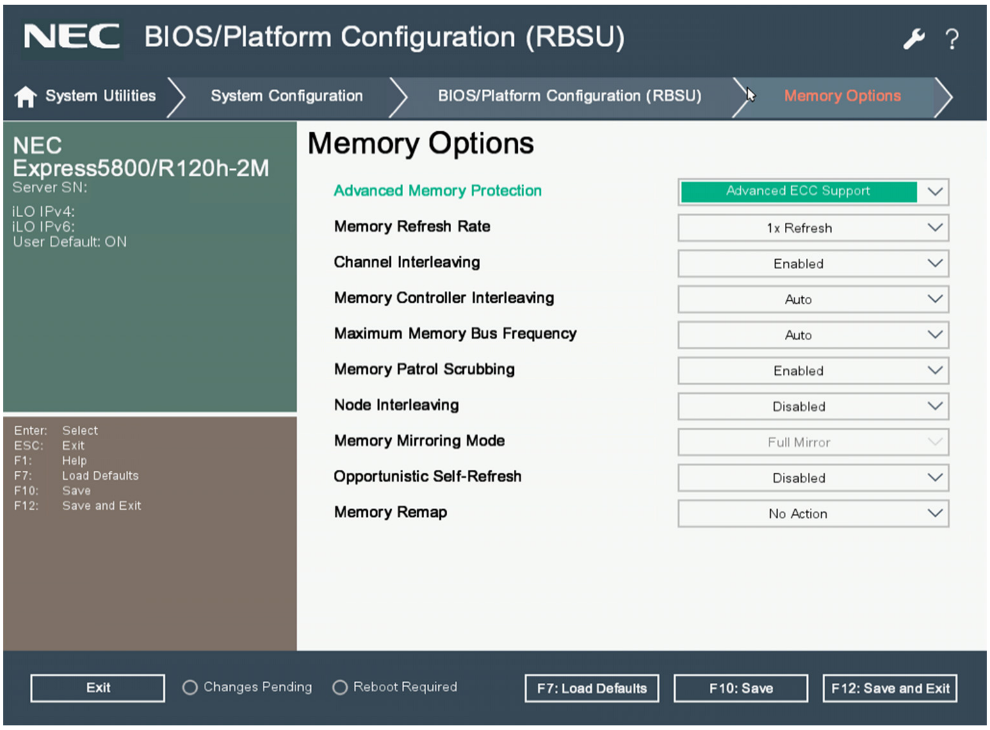
For details about the options, see the table below.

Option	Parameter	Description
Intel(R) Hyper-Threading	Disabled [Enabled]	Use this option to enable or disable Intel Hyper-Threading. When enabled, each physical processor core operates as two logical processor cores. When disabled, each physical processor core operates as one logical processor core. Enabling this option can improve overall performance for applications that benefit from a higher processor core count. This appears only when the processor that supports this function is mounted. This option is displayed only when the installed processor supports this feature.
Enabled Cores per Processor	[0]-X	This option enables limiting the number of enabled processor cores per physical processor. You can set the number of enabled cores to a value supported by the physical processor. Setting the value to 0 or a value larger than the number of supported cores of the installed processor will result in all processor cores in the socket being enabled.
Processor x2APIC Support	[Enabled] Force Enabled Disabled	x2APIC support enables operating systems to run more efficiently on high core count configurations. It also optimizes interrupt distribution in virtualized environments. In most cases, set this option to enabled. This configures the operating system to optionally enable x2APIC support when it loads. Some older hypervisors and operating systems might have issues with optional x2APIC support, in which case disabling x2APIC might be necessary to address those issues. Additionally, some hypervisors and operating systems will not use X2APIC unless this option is set to Force Enabled prior to booting. The Force Enabled option also causes the Intel(R) VT-d setting to be set to enabled.

[ ]: Default setting

(3) Memory Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Memory Options** from the System Utilities, the **Memory Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Memory Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Memory Options

Advanced Memory Protection	Advanced ECC Support
Memory Refresh Rate	1x Refresh
Channel Interleaving	Enabled
Memory Controller Interleaving	Auto
Maximum Memory Bus Frequency	Auto
Memory Patrol Scrubbing	Enabled
Node Interleaving	Disabled
Memory Mirroring Mode	Full Mirror
Opportunistic Self-Refresh	Disabled
Memory Remap	No Action

For details about the options, see the table below.

Option	Parameter	Description
Advanced Memory Protection	Fast Fault Tolerant (ADDDC) [Advanced ECC Support] Online Spare with Advanced ECC Support Mirrored Memory with Advanced ECC Support	Use this option to configure additional memory protection with ECC (Error Checking and Correcting). Options and support vary per system. Advanced ECC keeps all installed memory available for use while still protecting the system against all single-bit failures and certain multi-bit failures. Online Spare Memory enables a system to automatically map out a group of memory that is detected to be at an increased risk of receiving uncorrected memory errors based on an advanced analysis of corrected memory errors. The mapped out memory is automatically replaced by a spare group of memory without interrupting the system. Mirrored Memory provides the maximum protection against uncorrected memory errors that might otherwise result in a system failure. Fault Tolerant Advanced Double Device Data Correction (ADDDC) enables the system to correct memory errors and continue to operate in cases of multiple DRAM device failures on a DIMM. This provides protection against uncorrectable memory errors beyond what is available with Advanced ECC.
Memory Refresh Rate	[1x Refresh] 2x Refresh	This option controls the refresh rate of the memory controller and might affect the performance and resiliency of the server memory. It is recommended that you leave this setting in the default state unless indicated in other documentation for this server.

Option	Parameter	Description
Channel Interleaving	[Enabled] Disabled	You can only configure this option if the Workload Profile is set to Custom. Use this option to modify the level of interleaving for which the memory system is configured. Typically, higher levels of memory interleaving result in maximum performance. However, reducing the level of interleaving can result in power savings.
Memory Controller Interleaving	[Auto] Disabled	Use this option to control the Memory Controller Interleaving option. When set to Auto, the system will automatically enable or disable memory controller interleaving based on the configuration of the system. When set to disabled, the user may force disable memory controller interleaving. In certain memory configurations, setting this option to disabled has showed a performance benefit across all memory in the system. It is recommended to leave this option to set to Auto.
Maximum Memory Bus Frequency	[Auto] 2933MHz 2667 MHz 2400MHz 2133 MHz 1867 MHz	You can only configure this option if the Workload Profile is set to Custom. Use this option to configure the memory system to run memory at a lower maximum speed than that supported by the installed processor and DIMM configuration. Setting this option to Auto configures the system to run memory at the maximum speed supported.
Memory Patrol Scrubbing	[Enabled] Disabled	This option corrects memory soft errors so that, over the length of the system runtime, the risk of producing multi-bit and uncorrectable errors is reduced.
Node Interleaving	Enabled [Disabled]	Use this option to disable the NUMA architecture properties for the system. All operating system platforms support NUMA architectures. In most cases, optimum performance is obtained by disabling the Node Interleaving option. When this option is enabled, memory addresses are interleaved across the memory installed for each processor. Some workloads might experience improved performance when this option is enabled. Node Interleaving cannot be enabled when NVDIMMs are present in the system.
Memory Mirroring Mode	[Full Mirroring] Partial Mirror(Os Configured) Partial Mirror(Memory below 4GB) Partial Mirror(10% above 4GB) Partial Mirror(20% above 4GB)	Use this option to select from the available Memory Mirroring modes. Full Mirror - reserves 50% of the total available memory for mirroring. Partial Mirror (20% above 4GB) - reserves 20% of the total available Memory above 4GB for Mirroring. Partial Mirror (10% above 4GB) - reserves 10% of the total available Memory above 4GB for Mirroring. Partial Mirror (Memory below 4GB) - depending on the memory configuration, sets up 2GB or 3GB of lower memory below 4GB for Mirroring. Partial Mirror (OS Configured) - sets up the system to configure Partial Mirroring at OS level.
Opportunistic Self-Refresh	[Disabled] Enabled	When "Enabled" is selected, self-refresh of memory is performed when the main memory is in the idle state. When "Disabled" is selected, regular-refresh of memory is performed.
Memory Remap	[No Action] All Memory	Use this option to remap memory that may have been previously disabled from the system due to a failure event, such as an uncorrectable memory error. The Remap All Memory Option causes the system to make all memory in the system available again on the next boot. The No Action option leaves any affected memory unavailable to the system.

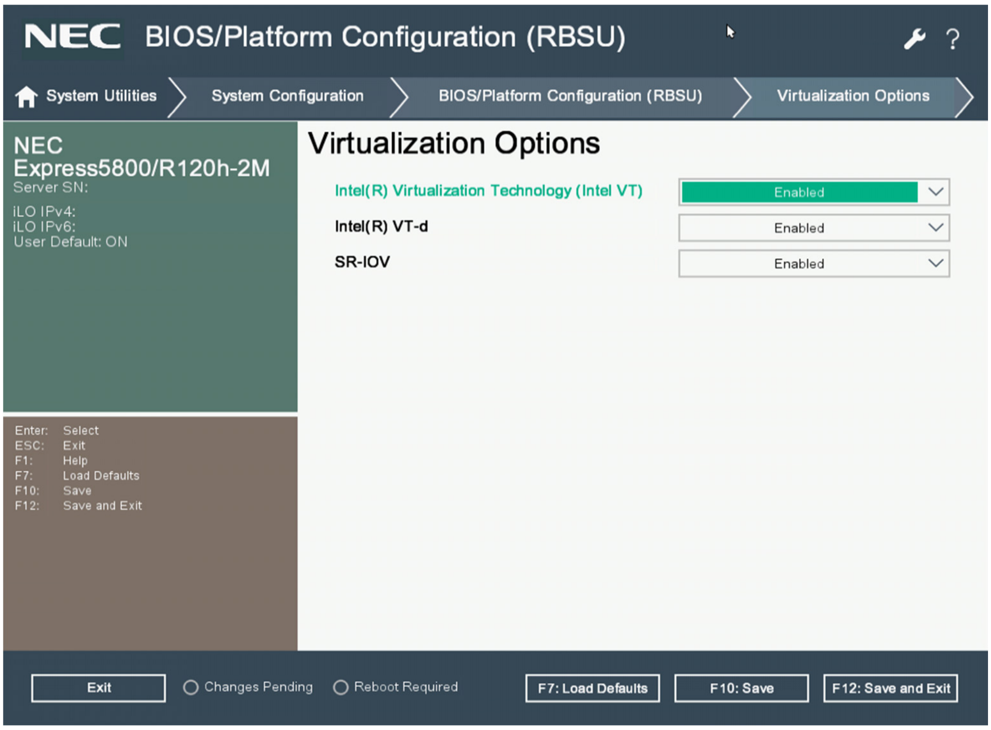
[ ]: Default setting

Tips

- When the memory configuration supports the Fault Tolerant Memory (ADDDC) mode and the **Workload Profile** setting is other than **Low Latency** and **Custom**, **Advanced Memory Protection** is automatically changed to **Fault Tolerant Memory (ADDDC)** mode. For details on memory configuration, refer to *"Memory Function"* in *"DIMM"* in *"Chapter 2 Preparations"* of the *User's Guide*.
- If **Advanced Memory Protection** is set to **Mirrored Memory with Advanced ECC Support** mode or **Online Spare with Advanced ECC Support** mode, the **Advanced Memory Protection** setting is not automatically changed.

(4) Virtualization Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Virtualization Options** from the System Utilities, the **Virtualization Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Virtualization Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Virtualization Options

Intel(R) Virtualization Technology (Intel VT): Enabled
Intel(R) VT-d: Enabled
SR-IOV: Enabled

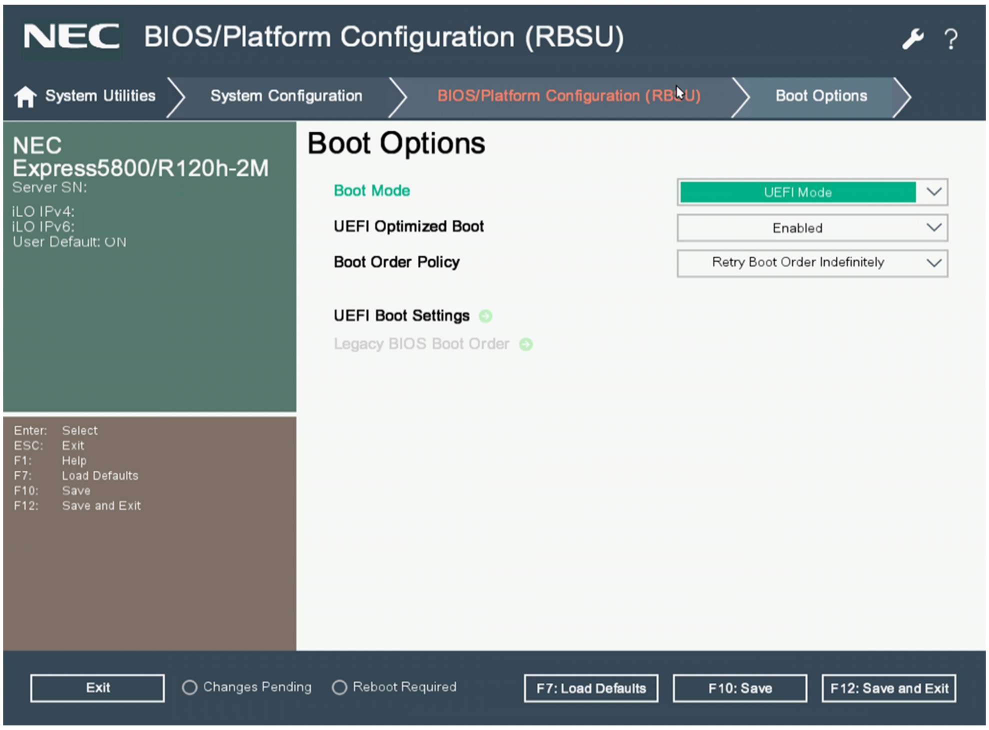
For details about the options, see the table below.

Option	Parameter	Description
Intel(R) Virtualization Technology (Intel VT)	[Enabled] Disabled	When enabled, a hypervisor or operating system supporting this option can use hardware capabilities provided by Intel VT. Some hypervisors require that you enable Intel VT. You can leave this set to enabled even if you are not using a hypervisor or an operating system that uses this option.
Intel(R) VT-d	[Enabled] Disabled	If enabled, a hypervisor or operating system supporting this option can use hardware capabilities provided by Intel VT for Directed I/O. You can leave this set to enabled even if you are not using a hypervisor or an operating system that uses this option.
SR-IOV	[Enabled] Disabled	If enabled, SR-IOV support enables a hypervisor to create virtual instances of a PCI-express device, potentially increasing performance. If enabled, the BIOS allocates additional resources to PCI-express devices. You can leave this option set to enabled even if you are not using a hypervisor.

[ ]: Default setting

(5) Boot Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Boot Options** from the System Utilities, the **Boot Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Boot Options
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Boot Options
UEFI Boot Settings
Legacy BIOS Boot Order
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Boot Mode: UEFI Mode
UEFI Optimized Boot: Enabled
Boot Order Policy: Retry Boot Order Indefinitely

For details about the options, see the table below.

Option	Parameter	Description
Boot Mode	[UEFI Mode] Legacy BIOS Mode	Use this option to select the boot mode of the system. Selecting UEFI Mode configures the system to boot Unified Extensible Firmware Interface (UEFI) compatible operating systems. Selecting Legacy BIOS Mode configures the system to boot traditional operating systems in Legacy BIOS compatibility mode. The operating system can only boot in the mode in which it is installed. The following options require booting in UEFI Mode: Secure Boot, IPv6 PXE Boot, boot > 2.2 TB Disks in AHCI SATA Mode, and Smart Array SW RAID.
UEFI Optimized Boot	[Enabled] Disabled	When enabled, the system BIOS boots using native UEFI graphics drivers. When disabled, the system BIOS boots using INT10 legacy video support. You cannot disable this option if Secure Boot is enabled. You can only configure this option if Boot Mode is configured to UEFI Mode. Set this option to enabled for compatibility with VMWare ESXi operating systems on a system configured for UEFI Mode.

Option	Parameter	Description
Boot Order Policy	[Retry Boot Order Indefinitely] Attempt Boot Order Once Reset After Failed Boot Attempt	Use this option to configure how the system attempts to boot devices per the Boot Order list when no bootable device is found. If configured to 'Retry Boot Order Indefinitely,' the system continuously attempts to process the Boot Order list until a bootable device is found. If configured to 'Attempt Boot Order Once,' the system attempts to process all items in the Boot Order list once, and if unsuccessful, waits for user input to proceed. If configured for 'Reset After Failed Boot Attempt,' the system attempts to process all items in the Boot Order list once, and then reboots the system.
UEFI Boot Settings	–	Changes the UEFI boot option order. Enables or disables an individual UEFI boot option. Adds or deletes UEFI boot options.
Legacy BIOS Boot Order	–	Use this option to configure the Legacy BIOS Boot Order list. You can only configure this option if the Boot Mode is configured to Legacy BIOS Mode.

[ ]: Default setting

(a) UEFI Boot Settings Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Boot Options** > **UEFI Boot Settings** from the System Utilities, the **UEFI Boot Settings** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
UEFI Boot Order	–	Use this option to change the order of the UEFI Boot list. You can only configure this option if the Boot Mode is configured to UEFI Mode.
UEFI Boot Order Control	–	Enables or disables individual UEFI boot options. Enabled items are selected (checked). Disabled items remain in their location in the UEFI Boot Order, but are not attempted during the boot process.
Add Boot Option	–	Use this option to browse FAT16/FAT32 file systems that are available in the system, and to select X64 UEFI (.EFI) applications to add as a new UEFI Boot Option, such as an OS boot loader or other UEFI applications. The new boot option is added to the end of the UEFI Boot Order list.
Delete Boot Option	–	Use this setting to delete a UEFI Boot Option from the UEFI Boot Order list. If the option points to a standard boot location, such as a network PXE boot or a removable media device, the system BIOS adds the option on the next reboot.

How to change the boot order of bootable devices

1. Select the **UEFI Boot Order** menu. Then, move the cursor to the position of each device by using the < ↑ > and < ↓ > keys, and change the boot order using the <＋> and <－> keys.

About the boot order of bootable devices

1. If two or more bootable devices are connected to this machine

   Boot the devices, beginning with the earliest boot order preset in **UEFI Boot Order**. If booting a device fails to boot, the device of the next order and the subsequent are booted in order.

   ・ Adding a bootable device

   When a new bootable device is connected to this machine, the added one is registered as the one with the largest boot order.

2. Removing a bootable device

   When a bootable device is removed from this machine, it is deleted from **UEFI Boot Order**.

Tips

- In the UEFI boot mode, the hard disk model number may be assigned to **UEFI Boot Order**.
- When the OS is installed with EXPRESSBUILDER, an **Assisted Install** boot device may be created in **UEFI Boot Order**. Delete it from the **Delete Boot Option** menu because it is no longer used after the OS installation is completed.
- When a restore is performed with backup software, **UEFI Boot Order** is also updated. After the restore is completed, check the order in **UEFI Boot Order**, and delete unnecessary boot devices.

(b) Legacy BIOS Boot Order Menu

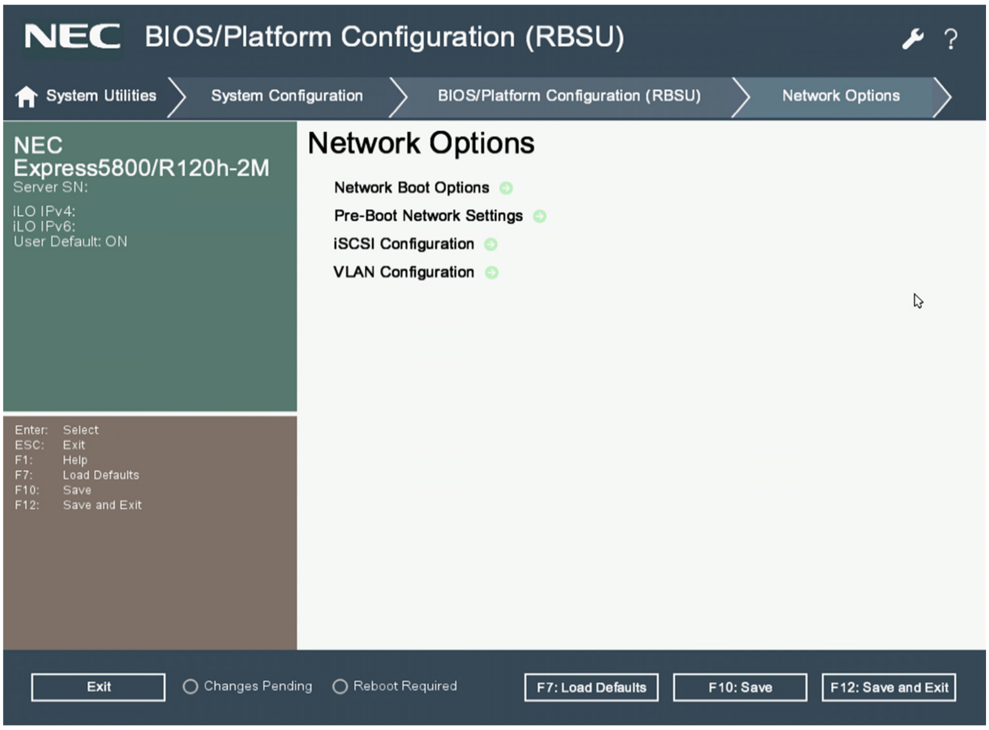
When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Boot Options** > **Legacy BIOS Boot Order** from the System Utilities, the **Legacy BIOS Boot Order** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Standard Boot Order(IPL)	–	Use this option to configure the Legacy BIOS Boot Order list. You can only configure this option if the Boot Mode is configured to Legacy BIOS Mode.
Boot Controller Order	–	Use this option to configure the Legacy BIOS Boot Order list. You can only configure this option if the Boot Mode is configured to Legacy BIOS Mode.

(6) Network Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** from the System Utilities, the **Network Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Network Options
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Network Options
Network Boot Options
Pre-Boot Network Settings
iSCSI Configuration
VLAN Configuration
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Network Boot Options	–	Use this option to configure network boot settings, such as enabling or disabling network boot for embedded NICs, setting the network boot retry support, or setting the PXE boot policy.
Pre-Boot Network Settings	–	Use this option to configure the pre-boot network settings such as the IPv4 address, the subnet mask, the gateway, and the primary and secondary DNS servers.
iSCSI Configuration	–	Select this option to display the iSCSI Configuration menu. Use this menu to configure the iSCSI Software Initiator settings to access remote targets. In UEFI boot mode, these targets will appear as bootable devices in the UEFI Boot Order. This option is available only if Network Boot Options > iSCSI Policy is set to Software Initiator.
VLAN Configuration	–	Use this option to set the Global VLAN UEFI configuration for all enabled network interfaces as defined in the IEEE 802.1Q standard. This setting applies to UEFI PXE boot, iSCSI Software Initiator Boot, and UEFI HTTP Boot. It also applies to all pre-boot network access from the UEFI Shell.

(a) Network Boot Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **Network Boot Options** from the System Utilities, the **Network Boot Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Pre-Boot Network Environment	[Auto] IPv4 IPv6	Use this option to set the preference for Pre-Boot Network. If configured for Auto, all the network operations initiated in the pre boot environment occur over IPv4 or IPv6. The order of the existing network boot devices is not modified in the UEFI Boot Order list. New network boot devices are added to the end of the list using the default policy of the System BIOS. If configured for IPv4, all the network operations initiated in the pre boot environment only occur over IPv4. All existing IPv6 network boot devices are removed in the UEFI Boot Order. No new IPv6 network boot devices are added to the list. If configured for IPv6, all the network operations initiated in the pre boot environment only occur over IPv6. All existing IPv4 network boot devices in the UEFI Boot Order are removed. No new IPv4 network boot devices are added to the list.
IPv6 DHCP Unique Identifier	[Auto] DUID-LLT	Use this option to control the IPv6 DHCP Unique Identifier (DUID). If configured for Auto, the DUID is set using the Universal Unique Identifier (UUID) of the server, or using the DUID-LLT method if the server UUID is not available. If configured for DUID-LLT, the DUID is set based on the Link-layer Address Plus Time [DUID-LLT] method.
Network Boot Retry Support	[Enable] Disabled	Use this option to configure the Network Boot Retry Support. When enabled, the system BIOS attempts to boot the network device up to the number of times configured in the Network Boot Retry Count option before attempting to boot the next network device. This setting only takes effect when attempting to boot a network device from the F12 function key and one-time boot options.
Network Boot Retry Count	0-X [20]	Use this option to control the number of times the system BIOS attempts to boot a network device.

Option	Parameter	Description
HTTP Support	[Auto] HTTPS only HTTP only Disabled	Use this option to control the UEFI HTTP(s) boot support when in UEFI Mode, and the 'Discover Shell Auto-Start Script using DHCP' option under 'Embedded UEFI Shell' settings. When 'Auto' is selected, the system automatically adds HTTP(S) boot options to the UEFI Boot Order list for every network port that is enabled for Network Boot. Selecting this option enables the system to boot to the HTTP or HTTPS URLs provided by the DHCP server. Any other URLs provided by the DHCP server are ignored. When 'HTTP only' is selected, the system automatically adds HTTP boot options to the UEFI Boot Order list for every network port that is enabled for Network Boot. Selecting this option enables the system to boot to the HTTP URLs provided by the DHCP server, and to ignore any HTTPS or other URLs that are provided. When 'HTTPS only' is selected, the system automatically adds HTTPS boot options to the UEFI Boot Order list for every network port that is enabled for Network Boot. Selecting this option enables the system to boot to the HTTPS URLs provided by the DHCP server, and to ignore any HTTP or other URLs that are provided. To enable HTTPS boot either by selecting 'Auto' or 'HTTPS only', you must enroll the respective TLS certificate of the HTTPS server under Server Security > TLS (HTTPS) Options. Note: This setting only affects the HTTP boot options added for the network ports, and the Discover Shell Auto-Start Script provided by the DHCP server. Other settings, such as Boot from URL, are not affected by this setting.
iSCSI Policy	[Software Initiator] Adapter Initiator	Use this option to set the iSCSI Policy. If configured to Software Initiator, the iSCSI software initiator will be used to access iSCSI targets on any configured NIC ports. If configured to Adapter Initiator, the adapter specific iSCSI initiator will be used instead. The adapter firmware must be configured to access iSCSI targets from the adapter initiator.
Network Interface Cards (NICs) Example: Embedded LOM 1 Port 1	[Network Boot] Disabled	Use this option to enable or disable network boot (PXE, iSCSI, FCoE or UEFI HTTP) for the selected NIC. You might need to configure the NIC firmware for the boot option to be active.
Embedded LOM X Port X	Network Boot [Disabled]	Use this option to enable or disable network boot (PXE, iSCSI, FCoE or UEFI HTTP) for the selected NIC. You might need to configure the NIC firmware for the boot option to be active.
PCIe Slot Network Boot	–	Use this option to enable or disable network boot for NIC cards in PCIe Slots.

[ ]: Default setting

Tips

If **PCIe Option ROM** is set to **Disabled** in the **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCIe Device Configuration** > **Embedded LOM Driver** menu, the name of the **Embedded LOM** becomes **Network Controller**.

①. PCIe Slot Network Boot

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **Network Boot Options** > **PCIe Slot Network Boot** from the System Utilities, the **PCIe Slot Network Boot** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Slot 1 NIC Port 1 Boot	[Network Boot] Disabled	Use this option to enable or disable UEFI PXE Boot, UEFI HTTP Boot and iSCSI Software Initiator for the selected NIC. You might need to configure the NIC firmware for the boot option to be active.
Slot X NIC Port Y Boot	Network Boot [Disabled]	Use this option to enable or disable UEFI PXE Boot, UEFI HTTP Boot and iSCSI Software Initiator for the selected NIC. You might need to configure the NIC firmware for the boot option to be active.

[ ]: Default setting

(b) Pre-Boot Network Settings Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **Pre-Boot Network Settings** from the System Utilities, the **Pre-Boot Network Settings** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Pre-Boot Network Interface	[Auto] SlotX PortY : Intel(R) Ethernet Controller	Use this option to select the network interface used for pre-boot network connections. When the selection is Auto, the system uses the first available port with a network connection.
Pre-boot Network Proxy	HTTP URL	Use this option to configure a pre-boot network proxy. When set, network operations for 'Pre-Boot Network Interface' are attempted through the configured proxy. The proxy must be in a HTTP URL format, and can be specified as http://IPv4_address:port, http://IPv6_address:port or http://FQDN:port.
DHCPv4	[Enabled] Disabled	When enabled, this option enables obtaining the pre-boot network IPv4 configuration from a DHCP server. Individual settings are not available. When disabled, you must configure static IP address settings individually.
IPv4 Address	IPv4 Address	Use this option to specify the pre-boot network IPv4 address. Enter a static IP address using dotted-decimal notation (for example, 127.0.0.1). If DHCP is used (the DHCPv4 option is enabled), this setting is unavailable because the value is supplied automatically.
IPv4 Subnet Mask	IPv4 Subnet Mask	Use this option to specify the pre-boot network subnet mask. Enter a static IP Subnet Mask using dotted-decimal notation (for example, 255.255.255.0). If DHCP is used (the DHCPv4 option is enabled), this setting is unavailable because the value is supplied automatically.
IPv4 Gateway	IPv4 Address	Use this option to specify the pre-boot network gateway IPv4 address. Enter a static IP address using dotted-decimal notation (for example, 127.0.0.1). If DHCP is used (the DHCPv4 option is enabled), this setting is unavailable because the value is supplied automatically.
IPv4 Primary DNS	IPv4 Address	Use this option to specify the pre-boot network Primary DNS Server IPv4 address. Enter a static IP address using dotted-decimal notation (for example, 127.0.0.1). If DHCP is used (the DHCPv4 option is enabled), this setting is unavailable because the value is supplied automatically.

Option	Parameter	Description
IPv4 Secondary DNS	IPv4 Address	Use this option to specify the pre-boot network Secondary DNS Server IPv4 address. Enter a static IP address using dotted-decimal notation (for example, 127.0.0.1). If DHCP is used (the DHCPv4 option is enabled), this setting is unavailable because the value is supplied automatically.
IPv6 Config Policy	[Automatic] Manual	When set to Automatic, this option enables obtaining the pre-boot network IPv6 configuration automatically. Individual settings are not available. When set to Manual, you must configure static IP address settings individually.
IPv6 Address	IPv6 Address	Use this option to specify the pre-boot network IPv6 address. Enter a static IP address in the standard colon separated format (for example, 1234::1000). If IPv6 Config Policy is set to Automatic, this setting is unavailable because the value is supplied automatically.
IPv6 Gateway	IPv6 Address	Use this option to specify the pre-boot network gateway IPv6 address. Enter a static IP address in the standard colon separated format (for example, 1234::1000). If IPv6 Config Policy is set to Automatic, this setting is unavailable because the value is supplied automatically.
IPv6 Primary DNS	IPv6 Address	Use this option to specify the pre-boot network Primary DNS Server IPv6 address. Enter a static IP address in the standard colon separated format (for example, 1234::1000). If IPv6 Config Policy is set to Automatic, this setting is unavailable because the value is supplied automatically.
IPv6 Secondary DNS	IPv6 Address	Use this option to specify the pre-boot network Secondary DNS Server IPv6 address. Enter a static IP address in the standard colon separated format (for example, 1234::1000). If IPv6 Config Policy is set to Automatic, this setting is unavailable because the value is supplied automatically.
Boot from URL X	HTTP/HTTPS URL	Use this option to configure a network URL to a bootable ISO or EFI file. URLs in HTTP/HTTPS are accepted using either an IPv4 or IPv6 server address, or using a host name. For example, the URLs can be in any of the following formats: http://192.168.0.1/file/image.iso, http://example.com/file/image.efi, https://example.com/file/image.efi, http://[1234::1000]/image.iso. When configured, this URL is listed as a boot option in the UEFI boot menu. Selecting this boot option downloads the file to the system memory, and configures the system to attempt to boot from it. There is no specific ordering on this option. It can be independently ordered in the boot menu. This setting requires configuring the 'Pre-Boot Network Interface' option if you want to access the URL location through a specific network interface. When a HTTPS URL is configured, this setting requires enrolling the respective TLS certificate of the HTTPS server under Server Security > TLS (HTTPS) Options. This is only applicable in UEFI Mode. Note: Booting from an ISO file can involve only booting a preliminary OS environment image, such as WinPE or a mini Linux, or a complete OS install image if the OS supports the HTTP Boot feature (Old OS versions may not support this). Please check your OS documentation for the HTTP Boot feature support.

[ ]: Default setting

(c) iSCSI Configuration Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **iSCSI Configuration** from the System Utilities, the **iSCSI Configuration** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
iSCSI Initiator Name	String of 4 to 223 alphanumeric and/or special characters	The worldwide unique iSCSI Qualified Name (IQN) of the iSCSI initiator. Only IQN format is accepted. EUI format is not supported. For example: iqn.2001-04.com.example:uefi-13021088
Add an iSCSI Attempt	–	Add an iSCSI Attempt
Delete iSCSI Attempts	–	Deletes one or more iSCSI attempts.
iSCSI Attempts	–	-
AttemptX	–	-

[ ]: Default setting

①. Add an iSCSI Attempt Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **iSCSI Configuration** > **Add an iSCSI Attempt** from the System Utilities, the **Add an iSCSI Attempt** menu appears.

This menu increases or decreases, depending on the installed status of the network interface card.

For details about the options, see the table below.

Option	Parameter	Description
(UEFI LAN Driver name) Example: SlotX PortY : Intel(R) Ethernet Controller	–	–

i. (UEFI LAN Driver) Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **iSCSI Configuration** > **Add an iSCSI Attempt** > **(UEFI LAN Driver)** from the System Utilities, the **(UEFI LAN Driver)** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
iSCSI Attempt Name	[1]	A descriptive name for this iSCSI attempt configuration.
iSCSI Control	[Disabled] Enabled Enabled for MPIO	Use this option to set the iSCSI mode for this attempt, or to enable the Multi-Path I/O (MPIO) capability.
IP Address Type	[IPv4] IPv6 Auto	Use this option to configure the iSCSI initiator IP address type (IPv4 or IPv6). In Auto mode, the iSCSI connection uses the IPv4 stack, and if the connection fails, is re-attempted using the IPv6 stack.
Connection Retry Count	0-16 [3]	The number of times to retry the iSCSI connection. Valid values are between 0 and 16. A value of 0 means no retries.
Connection Timeout	100-[20000]	The iSCSI connection timeout value in milliseconds. Valid values are between 100 milliseconds and 20 seconds (20000 milliseconds).
Initiator DHCP Config	(Check Box)	Enables or disables configuring the iSCSI initiator IP address from DHCP.
Initiator IP Address	IP Address	The IP address of the iSCSI initiator if not configured via DHCP. The Initiator IP Address is always auto-assigned if IP address type is IPv6. The address can be IPv4 or IPv6, depending on the IP address type.

Option	Parameter	Description
Initiator Subnet Mask	IP Address	The subnet mask of the iSCSI initiator if not configured via DHCP. The address needs to be an IPv4 or IPv6 address, depending on the IP address type.
Initiator Gateway	IP Address	The gateway address of the iSCSI initiator if not configured via DHCP. The address needs to be an IPv4 or IPv6 address, depending on the IP address type.
Target DHCP Config	(Check Box)	Enables or disables configuring the iSCSI target settings from DHCP.
Target Name	String of 4 to 223 alphanumeric and/or special characters	The unique iSCSI Qualified Name (IQN) of the iSCSI target, if not configured via DHCP. Only IQN format is accepted. EUI format is not supported. For example: iqn.2015-02.com.nec:iscsitarget-iscsidisk-target.
Target IP Address	IP Address	The IP Address of the iSCSI target, if not configured via DHCP. The address must be an IPv4 or IPv6 address, depending on the IP address type.
Target Port	1-65535 [3260]	The iSCSI target TCP port number, if not configured via DHCP. Valid port numbers range from 1-65535. Typical iSCSI port numbers include 860 or 3260. If no port number or any other number deemed invalid is specified, the value 3260 will be used.
Target LUN	[0]	The iSCSI target Logical Unit Number (LUN), if not obtained from DHCP. This value must follow the SAM-2 spec. E.g. 0001-1234-5678-9ABC. If the number is less than 5 characters, a dash character is not required. E.g. 0001. If the LUN number is 12345, input 1234-5.
Authentication Type	CHAP [None]	The iSCSI connection authentication method. This can be None for no security or CHAP for Challenge Handshake Authentication Protocol (CHAP).
CHAP Type	[One way] Mutual	The CHAP authentication type. When configured to One way, the target authenticates the initiator. When configured to Mutual, both the initiator and target authenticate each other. This is applicable only when the Authentication Method is set to CHAP.
CHAP User Name	String of up to 126 alphanumeric and/or special characters	The user name for CHAP authentication from the initiator to the target. This is applicable only when the Authentication Method is set to CHAP.
CHAP Secret	String of 12 to 16 alphanumeric and/or special characters	The password needed for CHAP authentication. Must be between 12 and 16 characters long. This is applicable only when the Authentication Method is set to CHAP.
Mutual CHAP User Name	String of up to 126 alphanumeric and/or special characters	The user name for Mutual (reverse) CHAP authentication (from the target to the initiator). This is applicable only when the Authentication Method is set to CHAP and the CHAP Type is set to Mutual.
Mutual CHAP Secret	String of 12 to 16 alphanumeric and/or special characters	The password needed for Mutual (reverse) CHAP authentication (from the target to the initiator).The password must be between 12 and 16 characters long. This is applicable only when the authentication type is set to CHAP and the CHAP Type is set to Mutual.

[ ]: Default setting

(d) VLAN Configuration Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Network Options** > **VLAN Configuration** from the System Utilities, the **VLAN Configuration** menu appears.

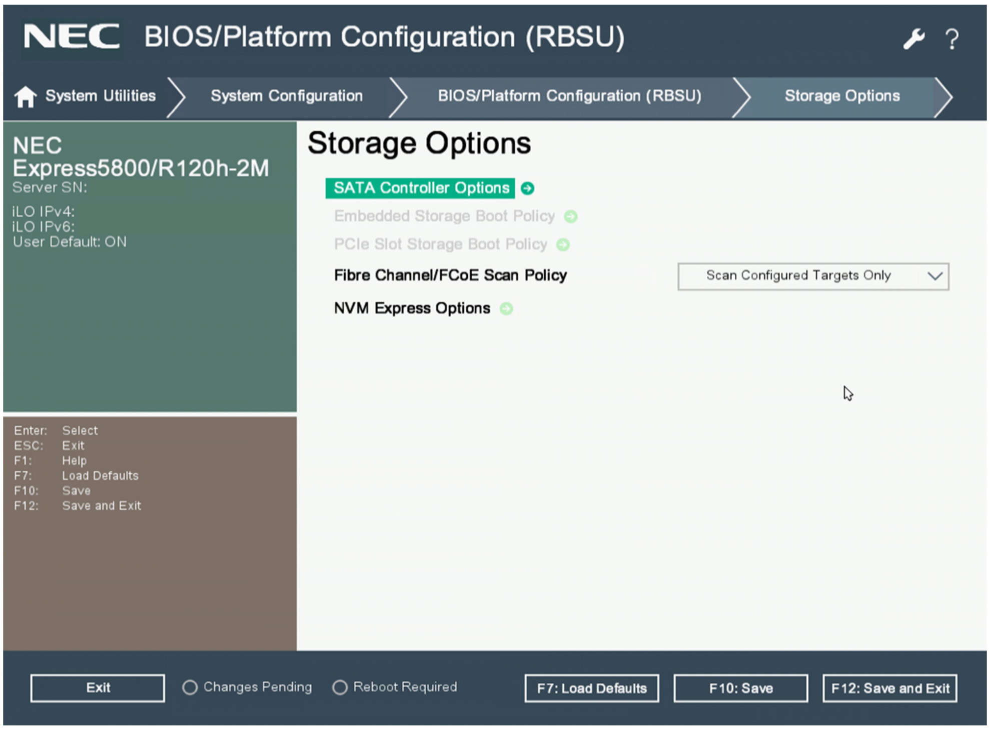
For details about the options, see the table below.

Option	Parameter	Description
VLAN Control	Enabled [Disabled]	Use this option to enable or disable VLAN tagging on all enabled network interfaces.
VLAN ID	[0]-4094	Use this option to set the global VLAN ID for all enabled network interfaces. Valid values are 0 to 4094.A value of 0 sets the device to send untagged frames.
VLAN Priority	[0]-7	Use this option to set the priority for the VLAN tagged frames. Valid values are 0 to 7.

[ ]: Default setting

(7) Storage Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Storage Options** from the System Utilities, the **Storage Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Storage Options
NEC Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Storage Options
SATA Controller Options
Embedded Storage Boot Policy
PCIe Slot Storage Boot Policy
NVM Express Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Fibre Channel/FCoE Scan Policy: Scan Configured Targets Only

For details about the options, see the table below.

Option	Parameter	Description
SATA Controller Options	–	Select this option to display SATA Controller options, such as selecting the Embedded SATA configuration.
Embedded Storage Boot Policy	–	Use this option to select the UEFI BIOS boot devices for embedded storage controllers. This option is only supported in UEFI Mode.
PCIe Slot Storage Boot Policy	–	Use this option to select the UEFI BIOS boot devices for storage controllers in PCIe slots. This option overrides the Fibre Channel/FCoE Scan Policy for Fibre channel controllers in PCIe slots. This option is only supported in UEFI Mode.
Fibre Channel/FCoE Scan Policy	Scan All Targets [Scan Configured Targets Only]	Use this option to change the default Fibre Channel or FCoE policy for scanning for boot devices. When configured for Scan All Targets, each installed FC/FCoE adapter scans all available targets. When configured for Scan Configured Targets Only, the FC/FCoE adapters only scan targets that are preconfigured in the devices settings. This option overrides any individual device settings configured in the device-specific setup.
NVM Express Options	–	Select this option to display Logical NVDIMM-N NVM Express Configuration Options.

[ ]: Default setting

(a) SATA Controller Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Storage Options** > **SATA Controller Options** from the System Utilities, the **SATA Controller Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Embedded SATA Configuration	[SATA AHCI Support] Smart Array SW RAID Support	Important: Smart Array SW RAID is not supported when Boot Mode is set to Legacy BIOS Mode. Use this option to configure the embedded chipset SATA controller. When selecting the Advanced Host Controller Interface (AHCI) or RAID (if supported), make sure the proper operating system drivers are used for proper operation.
SATA Secure Erase	Enabled [Disabled]	Use this option to control whether Secure Erase functionality is supported. When enabled, the Security Freeze Lock command is not sent to supported SATA hard drives, enabling Secure erase to function (the Secure Erase command is supported). This option is only supported when the SATA controller is in AHCI mode. Secure Erase only operates with hard drives that support the Secure Erase command.

[ ]: Default setting

Note

Set **Smart Array SW RAID Support** only when the Smart Array SW RAID controller is used on Windows; otherwise, set **SATA AHCI Support**.

(b) Embedded Storage Boot Policy Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Storage Options** > **Embedded Storage Boot Policy** from the System Utilities, the **Embedded Storage Boot Policy** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
(UEFI Driver Name)	Boot All Targets [Boot Limit to 24 Targets] Boot No Targets	If you select [Boot All Targets], all the enabled boot targets connected to the storage controller are available in the UEFI boot order list. If you select [Boot No Targets], the boot targets from the storage controller are not available in the UEFI boot order list. If you select [Boot Limit to 24 Targets], the 24 boot targets connected to the storage controller are available in the UEFI boot order list.

[ ]: Default setting

(c) PCIe Slot Storage Boot Policy Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Storage Options** > **PCIe Slot Storage Boot Policy** from the System Utilities, the **PCIe Slot Storage Boot Policy** menu appears.

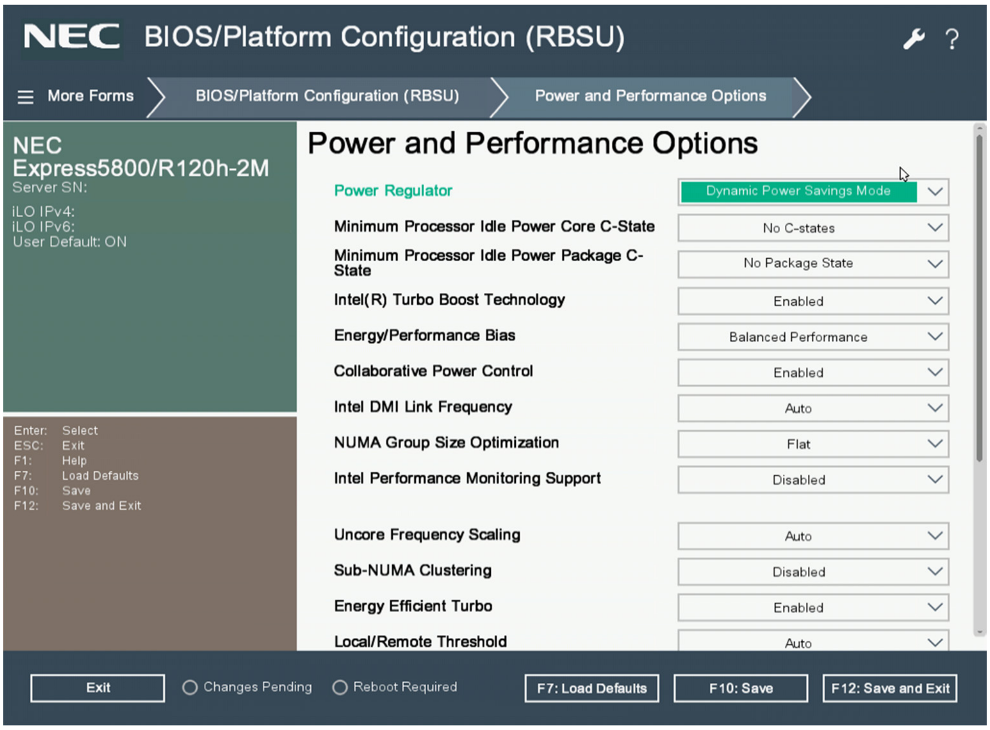
For details about the options, see the table below.

Option	Parameter	Description
PCI Slot X	Boot All Targets [Boot Limit to 24 Targets] Boot No Targets	If you select [Boot All Targets], all the enabled boot targets connected to the storage controller are available in the UEFI boot order list. If you select [Boot No Targets], the boot targets from the storage controller are not available in the UEFI boot order list. If you select [Boot Limit to 24 Targets], the 24 boot targets connected to the storage controller are available in the UEFI boot order list.

[ ]: Default setting

(8) Power and Performance Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** from the System Utilities, the **Power and Performance Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
More Forms
BIOS/Platform Configuration (RBSU)
Power and Performance Options
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit

Power and Performance Options

Power Regulator: Dynamic Power Savings Mode
Minimum Processor Idle Power Core C-State: No C-states
Minimum Processor Idle Power Package C-State: No Package State
Intel(R) Turbo Boost Technology: Enabled
Energy/Performance Bias: Balanced Performance
Collaborative Power Control: Enabled
Intel DMI Link Frequency: Auto
NUMA Group Size Optimization: Flat
Intel Performance Monitoring Support: Disabled
Uncore Frequency Scaling: Auto
Sub-NUMA Clustering: Disabled
Energy Efficient Turbo: Enabled
Local/Remote Threshold: Auto

For details about the options, see the table below.

Option	Parameter	Description
Power Regulator	[Dynamic Power Savings Mode] Static Low Power Mode Static High Performance Mode OS Control Mode	You can only configure this option if the Workload Profile is set to Custom. Use this option to configure the following Power Regulator support: - Dynamic Power Savings Mode: Automatically varies processor speed and power usage based on processor utilization. Enables the reduction of overall power consumption with little or no impact on performance. Does not require OS support. - Static Low Power Mode: Reduces processor speed and power usage. Guarantees a lower maximum power usage for the system. Performance impacts are greater for environments with higher processor utilization. - Static High Performance Mode: Processors run in their maximum power/performance state at all times, regardless of the OS power management policy. - OS Control Mode: Processors run in their maximum power/performance state at all times unless the OS enables a power management policy.
Minimum Processor Idle Power Core C-State	C6 State C1E State [No C-states]	You can only configure this option if Workload Profile is set to Custom. Use this option to select the lowest idle power state (C-state) of the processor that the operating system uses. The higher the C-state, the lower the power usage of that idle state. (C6 is the lowest power idle state supported by the processor).

Option	Parameter	Description
Minimum Processor Idle Power Package C-State	Package C6(retention) State Package C6(non-retention) State [No Package State]	You can configure this option only if the Workload Profile is set to Custom. Use this option to select the lowest idle package power state (C-state) of the processor. The processor automatically transitions into package C-states based on the Core C-states in which cores on the processor have transitioned. The higher the package C-state, the lower the power usage of that idle package state. (Package C6 (retention) is the lowest power idle package state supported by the processor).
Intel(R) Turbo Boost Technology	Disabled [Enabled]	Turbo Boost Technology enables the processor to transition to a higher frequency than the processor's rated speed if the processor has available power and is within temperature specifications. Disabling this option reduces power usage, and also reduces the system's maximum achievable performance under some workloads. This appears only when the processor that supports this function is mounted. This option is displayed only when the installed processor supports this feature.
Energy/Performance Bias	Maximum Performance [Balanced Performance] Balanced Power Power SavingMode	You can only configure this option if the Workload Profile is set to Custom. Use this option to configure several processor subsystems to optimize the performance and power usage of the processor. Balanced Performance provides optimum power efficiency, and is recommended for most environments. Maximum Performance Mode is recommended for environments that require the highest performance and lowest latency but are not sensitive to power consumption. Only use Power Savings Mode in environments that are power sensitive and can accept reduced performance.
Collaborative Power Control	[Enabled] Disabled	For operating systems that support the Processor Clocking Control (PCC) Interface, enabling this option enables the Operating System to request processor frequency changes even if the Power Regulator option on the server are configured for Dynamic Power Savings Mode. For Operating Systems that do not support the PCC Interface, or when the Power Regulator Mode is not configured for Dynamic Power Savings Mode, this option has no effect on system operation.
Intel DMI Link Frequency	[Auto] Gen 1 Speed Gen 2 Speed	Use this option to force the link speed between the processor and the southbridge to run at slower speeds to save power.
NUMA Group Size Optimization	[Flat] Clustered	Use this option to configure how the System BIOS reports the size of a NUMA node (number of logical processors), which assists the Operating System in grouping processors for application use (referred to as Kgroups). The default setting of Clustered provides better performance due to optimizing the resulting groups along NUMA boundaries. However, some applications might not be optimized to take advantage of processors spanning multiple groups. In such cases, selecting the Flat option might be necessary in order for those applications to utilize more logical processors.
Intel Performance Monitoring Support	[Disabled] Enabled	This option does not impact performance. When enabled, this option exposes certain chipset devices that can be used with the Intel Performance Monitoring Toolkit.
Uncore Frequency Scaling	[Auto] Maximum Minimum	This option controls the frequency scaling of the processor's internal busses (uncore). Setting this option to Auto enables the processor to dynamically change frequencies based on workload. Forcing to the maximum or minimum frequency enables tuning for latency or power consumption.

Option	Parameter	Description
Sub- NUMA Clustering	Enabled [Disabled]	When enabled, Sub-NUMA Clustering divides the processor's cores, cache, and memory into multiple NUMA domains. Enabling this feature can increase performance for workloads that are NUMA aware and optimized. Note: When this option is enabled, up to 1GB of system memory may become unavailable.
Energy Efficient Turbo	[Enabled] Disabled	This option controls whether the processor uses an energy efficiency based policy when engaging turbo range frequencies. This option is only applicable when Turbo Mode is enabled.
Local/Remote Threshold	[Auto] Low Medium High Disabled	Local/Remote Threshold setting.
LLC Dead Line Allocation	[Enabled] Disabled	When it is made effective, it may meet the dead line of LLC depending on the situation. When it is made disable, it will not meet the dead line of LLC.
Stale A to S	Enabled [Disabled]	It optimizes the directories from A to S which have become old.
Processor Prefetcher Options	–	Use this menu to set options such as HW Prefetcher, Adjacent Sector Prefetcher, DCU Stream Prefetcher, and DCU IP Prefetcher.
I/O Options	–	Use this menu to adjust ACPI SLIT Preferences, INTEL NIC DMA Channels, ACPI PXM Enablement, and I/O Non-Posted Prefetching.
Intel UPI Options	–	Select this option to display the Intel UPI Options menu. Use this menu to change settings for ACPI SLIT, Intel NIC DMA, Memory Proximity Reporting for I/O, and I/O Non-posted Prefetching.
Advanced Performance Tuning Options	–	Select this option to display the Advanced Performance Tuning Options menu.
Advanced Power Options	–	Select this option to display the Advanced Power Options menu. Use this menu to enable advanced power features, such as Channel Interleaving and Collaborative Power Control. You can also set the UPI Link Frequency to a lower speed and set the Processor Idle Power State.

[ ]: Default setting

(a) Processor Prefetcher Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **Processor Prefetcher Options** from the System Utilities, the **Processor Prefetcher Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
HW Prefetcher	[Enabled] Disabled	Use this option to disable the processor HW prefetch feature. In some cases, setting this option to disabled can improve performance. Typically, setting this option to enabled provides better performance. Only disable this option after performing application benchmarking to verify improved performance in the environment.
Adjacent Sector Prefetch	[Enabled] Disabled	Use this option to disable the processor Adjacent Sector Prefetch feature. In some cases, setting this option to disabled can improve performance. Typically, setting this option to enabled provides better performance. Only disable this option after performing application benchmarking to verify improved performance in the environment.
DCU Stream Prefetcher	[Enabled] Disabled	Use this option to disable the processor DCU Stream Prefetcher feature. In some cases, setting this option to disabled can improve performance. Typically, setting this option to enabled provides better performance. Only disable this option after performing application benchmarking to verify improved performance in your environment.
DCU IP Prefetcher	[Enabled] Disabled	Use this option to disable the processor DCU IP Prefetcher feature. In some cases, setting this option to disabled can improve performance. In most cases, the default value of enabled provides optimal performance. Only disable this option after performing application benchmarking to verify improved performance in the environment.
LLC Prefetch	Enabled [Disabled]	Use this option to configure the processor Last Level Cache (LLC) prefetch feature. In some cases, setting this option to disabled can improve performance. Typically, setting this option to enabled provides better performance. Only disable this option after performing application benchmarking to verify improved performance in the environment.
XPT Prefetcher	[Auto] Enabled Disabled	"Enabled" setting of this option is not supported. Use this option with "Auto" or "Disabled" setting.

[ ]: Default setting

(b) I/O Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **I/O Options** from the System Utilities, the **I/O Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
ACPI SLIT	[Enabled] Disabled	The ACPI SLIT (System Locality Information Table) defines the relative access times between processors, memory subsystems, and I/O subsystems. Operating systems that support the SLIT can use this information to improve performance by allocating resources and workloads more efficiently.
Intel NIC DMA Channels (IOAT)	[Enabled] Disabled	Use this option to select the Intel NIC DMA Channels support. This is a NIC acceleration option that only runs on Intel-based NICs.
Memory Proximity Reporting for I/O	[Enabled] Disabled	When enabled, the System BIOS reports the proximity relationship between I/O devices and system memory to the operating system. Most operating systems can use this information to efficiently assign memory resources for devices, such as network controllers and storage devices. Additionally, certain I/O devices might not be able to take advantage of I/O handling benefits if their OS drivers are not properly optimized to support this feature. See your operating system and I/O device documentation for more details.

[ ]: Default setting

(c) Intel UPI Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **Intel UPI Options** from the System Utilities, the **Intel UPI Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Intel UPI Link Enablement	[Auto] Single Link Operation	Use this option to configure the UPI topology to use fewer links between processors, when available. Changing from the default can reduce UPI bandwidth performance in exchange for less power consumption.
Intel UPI Link Power Management	[Enable] Disable	Use this option to place the Quick Path Interconnect (UPI) links into a low power state when the links are not being used. This lowers power usage with minimal effect on performance. You can only configure this option if two or more CPUs are present and the Workload Profile is set to custom.
Intel UPI Link Frequency	[Auto] Min UPI Speed	Use this option to set the UPI Link frequency to a lower speed. Running at a lower frequency can reduce power consumption, but can also affect system performance. You can only configure this option if two or more CPUs are present and the Workload Profile is set to custom.
UPI Prefetcher	[Enable] Disable	Use this option to disable the processor UPI Prefetch feature. In some cases, setting this option to disabled can improve performance. Typically, setting this option to enabled provides better performance. Only disable this option after performing application benchmarking to verify improved performance in the environment. This option must be enabled when Sub-NUMA Clustering (SNC) is enabled.
Direct To UPI (D2K)	[Auto] Enabled Disabled	When "Enabled" is selected, Latency of the last level cache is reduced. Please don't change this setting unless it's designated. This options appears on only dual processor configuration.

[ ]: Default setting

(d) Advanced Performance Tuning Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **Advanced Performance Tuning Options** from the System Utilities, the **Advanced Performance Tuning Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Processor Jitter Control	[Disabled] Auto-tuned Manual-tuned	Processor Jitter Control allows the customer to manage processor frequency variance to do technologies such as Turbo which vary the frequency based on power, thermals, and active cores. When configured for Auto-tuned, the platform will monitor frequency variance and automatically make adjustments to minimize variance over time. When configured for Manual-tuned, the customer can choose to attempt to operate the processor at a fixed frequency and can select lower or higher frequencies statically.
Processor Jitter Control Frequency	[0]-X	Processor Jitter Control Frequency allows the customer to stipulate the starting frequency in the Auto-tuned mode, or the desired frequency in the Manual-tuned mode. The input frequency is in units of Megahertz. System firmware will adjust the frequency to the nearest higher intermediate frequency supported by the processor if the input frequency is not supported.
Processor Jitter Control Optimization	Optimized for Throughput Optimized for Latency [Zero Latency]	This option optimizes the thresholds used when the Autotuned function detects fluctuations in processor frequency. Optimized for Throughput allows only the amount of fluctuations that doesn't impact overall compute throughput. Optimized for Latency allows for a very small amount of occasional fluctuations to occur before reducing processor frequency. Zero Latency attempts to eliminate any frequency fluctuations.
Core Boosting	Enabled [Disabled]	This enables or disables the core boost technology that enhances the processor performance. This appears only when the processor that supports this function is mounted.
Enhanced Processor Performance	[Disabled] Enabled	Use this option to enable the "Enhanced Processor Performance" setting. When this option is enabled, the processor settings are adjusted to be more aggressive As a result, the performance may increase, but power consumption may increase.
Processor Config TDP Level	[Normal] Level 1 Level 2	This option is used to overwrite the default CPU policy related to the deterministic frequency of SSE, AVX, and AVX-512. As a result, the deterministic operating frequency (P1) decreases based on the setting. When the Turbo mode is disabled, deterministic operations increase, but the operating frequency decreases as a result.
PCI Peer to Peer Serialization	Enabled [Disabled]	Select this option to configure the PCIe Peer to Peer Serialization option. When this option is enabled, peer-to-peer communication performance may improve because PCIe transactions are interleaved in the entire PCIe root port of the processor. When this function is enabled, performance may improve in specific configurations, such as systems with multiple GPUs installed on the processor sockets.

[ ]: Default setting

(e) Advanced Power Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **Advanced Power Options** from the System Utilities, the **Advanced Power Options** menu appears.

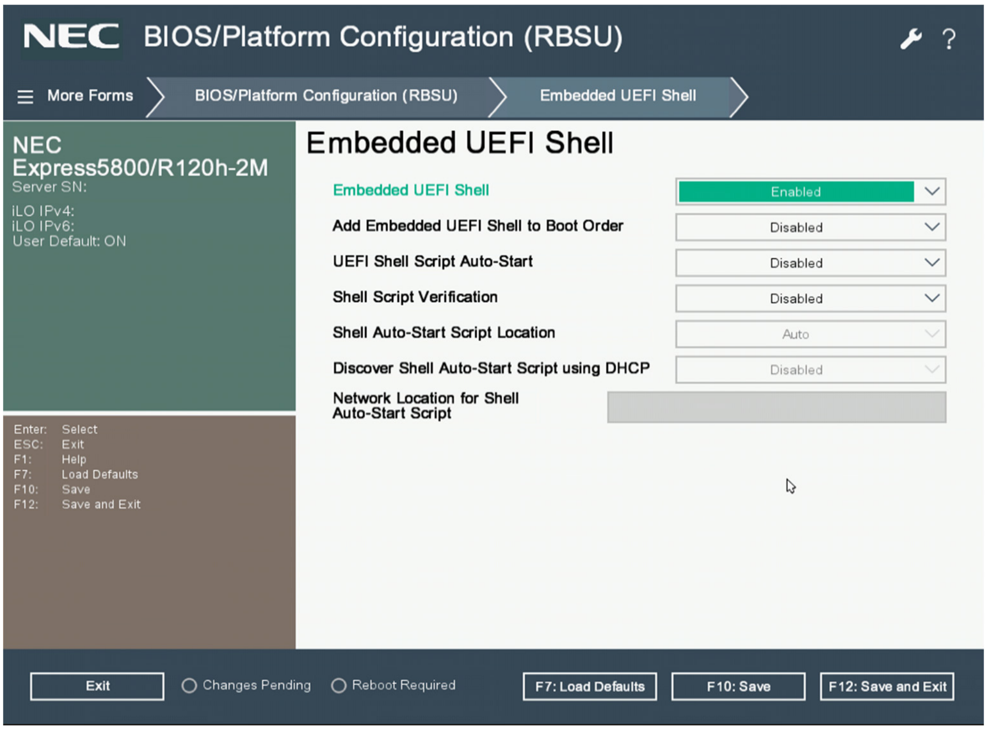
For details about the options, see the table below.

Option	Parameter	Description
Redundant Power Supply Mode	[Balanced Mode] High Efficiency Mode (Auto) High Efficiency Mode (Odd Supply Standard) High Efficiency Mode (Even Supply Standard)	Use this option to configure how the system handles redundant power supply configurations. Balanced Mode shares the power delivery equally between all installed power supplies. All High Efficiency Mode options provide the most power efficient operation with redundant power supplies by keeping half of the power supplies in standby mode at lower power usage levels. The High Efficiency Mode options enable the system to select which power supply to place in standby. Auto enables the system to select between the odd or even power supply based on a semi-random distribution within a group of systems.

[ ]: Default setting

(9) Embedded UEFI Shell Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Embedded UEFI Shell** from the System Utilities, the **Embedded UEFI Shell** menu appears.



Embedded UEFI Shell

Embedded UEFI Shell: Enabled
Add Embedded UEFI Shell to Boot Order: Disabled
UEFI Shell Script Auto-Start: Disabled
Shell Script Verification: Disabled
Shell Auto-Start Script Location: Auto
Discover Shell Auto-Start Script using DHCP: Disabled
Network Location for Shell Auto-Start Script:

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

NEC BIOS/Platform Configuration (RBSU)
More Forms
BIOS/Platform Configuration (RBSU)
Embedded UEFI Shell
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Embedded UEFI Shell	[Enabled] Disabled	Use this option to enable or disable the Embedded UEFI Shell. When enabled, you can launch the Embedded UEFI Shell from the pre-boot environment. When enabled and the Boot Mode is configured for UEFI Mode, you can add the Embedded UEFI Shell to the UEFI Boot Order list by selecting the option entitled 'Add Embedded UEFI Shell to Boot Order'. When disabled, the Embedded UEFI Shell is not available in the pre-boot environment, and you cannot add it to the UEFI Boot Order list. The Embedded UEFI Shell is a pre-boot command line environment that you can use for scripting and running UEFI applications. It provides CLI-based commands to configure the server, update the System BIOS and other firmware, and obtain system information and error logs.
Add Embedded UEFI Shell to Boot Order	Enabled [Disabled]	When enabled, this option adds the Embedded UEFI Shell as an entry in the UEFI Boot Order list. This option is only available when the Boot Mode is configured to UEFI Mode and the Embedded UEFI Shell is enabled.

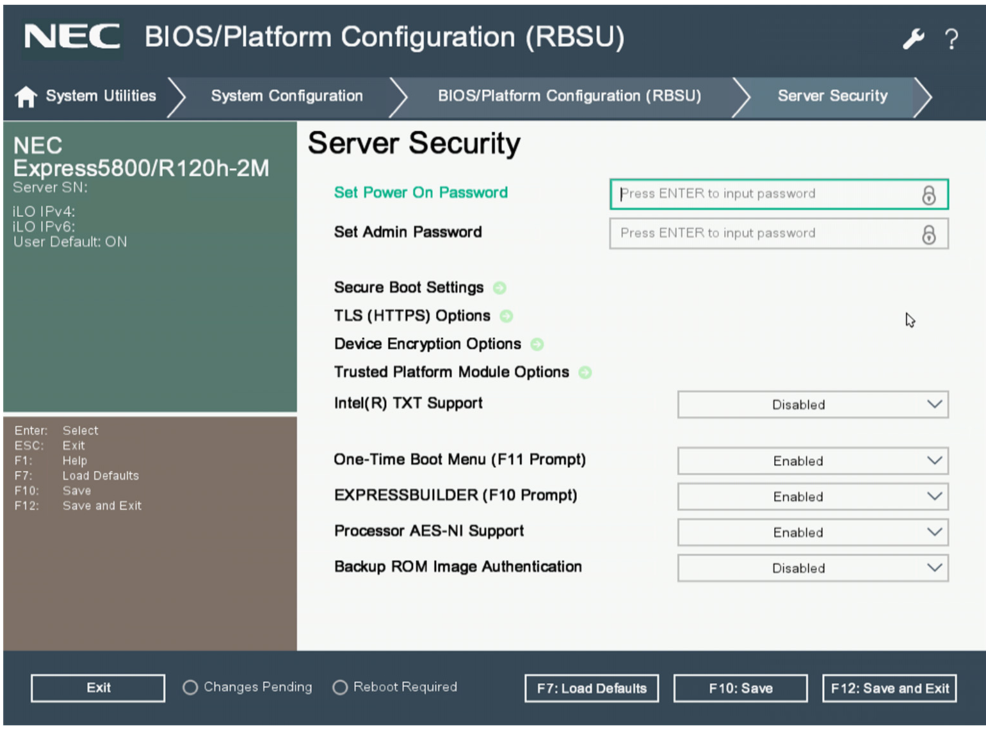
Option	Parameter	Description
UEFI Shell Script Auto-Start	Enabled [Disabled]	Use this option to enable or disable automatic execution of the Embedded UEFI Shell startup script. You can store the script file on local media or access it from a network location. You must name the script file "startup.nsh" and place it on local media or a network location accessible to the server.
Shell Script Verification	Enabled [Disabled]	Enable this option to allow verification of UEFI shell script files when Secure Boot is enabled. For successful execution of script, make sure that UEFI shell scripts are enrolled in the Secure Boot database (db).
Shell Auto-Start Script Location	[Auto] File System on Attached Media Network Location	Use this option to select the location of the Embedded UEFI Shell startup script. For the 'File Systems on Attached Media' option, you must name the script file "startup.nsh" and place it on a UEFI accessible local file system, such as a FAT32 partition on a USB disk or HDD. For the 'Network Location' option, the file must end with a .nsh extension, and must be placed at an HTTP/HTTPS or FTP location accessible to the system. When you select the 'Auto' option, the system attempts to retrieve the startup script from the network location first, followed by locally attached media.
Discover Shell Auto-Start Script using DHCP	Enabled [Disabled]	Use this option to let the Shell discover its startup script URL using DHCP. This option is available only if the 'HTTP Support' policy is not set to 'Disabled' and Auto-Start Script Location is set to 'Network Location', or 'Auto'. When set to 'Enabled', the Shell sends DHCP requests with the DHCP User Class option set to the string 'UEFIShell'. The DHCP server must be configured to provide HTTP/HTTPS or FTP URLs when this DHCP User Class string is present in the DHCP request. The User Class option is Option 77 when using DHCP over IPv4, and Option 15 when using DHCP over IPv6. URLs in HTTP/HTTPS must use either an IPv4 or IPv6 server address, or a host name. FTP formats are accepted using either an IPv4 server address or a host name. The URL provided by the DHCP server should match the 'HTTP Support' policy. When 'HTTP Support' policy is set to 'Auto', any HTTP/HTTPS or FTP URL provided by the DHCP server is used. When policy is set to 'HTTPS only', only HTTPS URLs are used, and other URLs are ignored. When policy is set to 'HTTP only', only HTTP or FTP URLs are used, and other URLs are ignored. When policy is set to 'Disabled', the Shell does not send any DHCP request.

Option	Parameter	Description
Network Location for Shell Auto-Start Script	URL of HTTP or FTP server	Use this option to configure a network URL to a UEFI Shell startup script. This option is available and used only when the Auto-Start Script Location is set to 'Network Location', or 'Auto', and the Shell Auto-Start Script discovery using DHCP is set to 'Disabled'. URLs in HTTP/HTTPS are accepted using either an IPv4 or IPv6 server address, or using a host name. FTP formats are accepted using either an IPv4 server address or a host name. For example, the URLs can be in any of the following formats: http://192.168.0.1/file/file.nsh, http://example.com/file/file.nsh, https://example.com/file/file.nsh, http://[1234::1000]/file.nsh. The file must end with an .nsh extension. When configured, the Embedded UEFI Shell attempts to load and execute the startup script from the network location pointed to by this URL. When a HTTPS URL is configured, you must enroll the respective HTTPS server's TLS certificate under Server Security > TLS(HTTPS) Options.

[ ]: Default setting

(10) Server Security Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** from the System Utilities, the **Server Security** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Server Security
NEC Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Server Security

Set Power On Password: Press ENTER to input password

Set Admin Password: Press ENTER to input password

Secure Boot Settings

TLS (HTTPS) Options

Device Encryption Options

Trusted Platform Module Options

Intel(R) TXT Support: Disabled

One-Time Boot Menu (F11 Prompt): Enabled

EXPRESSBUILDER (F10 Prompt): Enabled

Processor AES-NI Support: Enabled

Backup ROM Image Authentication: Disabled

For details about the options, see the table below.

Option	Parameter	Description
Set Power On Password	String of up to 31 alphanumeric and/or special characters	When the server powers on, a prompt is displayed to enter a password before continuing the boot process. In the event of an ASR reboot, the Power-On Password is bypassed, and the server boots normally.
Set Admin Password	String of up to 31 alphanumeric and/or special characters	Use this option to enter the administrator password to protect BIOS/Platform Setup Utility (RBSU) configuration. When this option is enabled, you are prompted for this password before being allowed to modify the configuration.
Secure Boot Settings	–	Select this option to display the Secure Boot Configuration menu. Use this menu to enable or disable Secure Boot Mode, and to add or remove certificates in the Secure Boot databases. Before configuring Secure Boot, ensure that you selected the UEFI Mode, and that the UEFI Optimized Boot option is enabled (under the Boot Mode menu).
TLS (HTTPS) Options	–	Select this option to display the TLS Certificate management and other options menu.
Device Encryption Options	–	This server does not support this option.
Trusted Platform Module Options	–	Select this option to enter the Trusted Platform Module Setup options.
Intel(R) TXT Support	Enabled [Disabled]	Use this option to modify Intel TXT support.

Option	Parameter	Description
One-Time Boot Menu (F11 Prompt)	[Enabled] Disabled	Use this option to disable the POST One-Time Boot F11 Prompt.
EXPRESSBUILDER (F10 Prompt)	[Enabled] Disabled	Use this option to enable or disable the EXPRESSBUILDER functionality. When disabled, you are prevented from entering the EXPRESSBUILDER environment by pressing F10 during server boot. You must set this option to enabled to use EXPRESSBUILDER functionality.
Processor AES-NI Support	[Enabled] Disabled	Use this option to enable or disable the Advanced Encryption Standard Instruction Set (AES-NI) in the processor.
Backup ROM Image Authentication	Enabled [Disabled]	Use this option to enable cryptographic authentication of the backup ROM image on startup. When this option is disabled, only the primary image is authenticated on each startup. Enable this option to also perform cryptographic authentication of the backup ROM image.

[ ]: Default setting

Tips

- Do not set the password before OS installation.
- If you forget your password, perform the password initialization and set the password again according to the procedure in *Chapter 1 (7. Resetting and Clearing the Server) of the Maintenance Guide*.
- To protect the configuration of the BMC Configuration Utility, set the option **BMC Configuration Utility** > **Setting Option** > **Require user login and configuration privilege for BMC Configuration** to **Enabled**.

(a) Secure Boot Settings Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** from the System Utilities, the **Secure Boot Settings** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Current Secure Boot State	(Display only)	This option shows whether Secure Boot is currently enabled or disabled.
Attempt Secure Boot	Enabled [Disabled]	Enable/Disable the Secure Boot feature after platform reset.
Advance Secure Boot Options	–	Use this option to configure Advanced Secure Boot options, such as Platform Key (PK) Options, Key Exchange (KEK) Options, Allowed Signatures Database (DB), and Forbidden Signatures Database (DBX) Options.

[ ]: Default setting

Tips

- To enable **Secure Boot**, it is recommended that you set **Admin Password**.
- To make the option card recognizable as a bootable device when **Secure Boot** has been enabled, you need to have an option card UEFI driver that has been signed with the Microsoft key.

①. Advance Secure Boot Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** from the System Utilities, the **Advance Secure Boot Settings** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
PK - Platform Key	–	Select this option to display the Platform Key (PK) Options menu. Use this menu to enroll or delete the PK certificate. The file must be in DER-encoded certificate format.
KEK - Key Exchange Key	–	Select this option to display the Key Exchange Key (KEK) Options menu. Use this menu to enroll, delete, view or export the KEK certificates. The file must be in DER-encoded certificate format.
DB - Allowed Signatures Database	–	Select this option to display the Allowed Signatures (DB) Options menu. Use this menu to enroll, delete, view or export the DB signatures.
DBX - Forbidden Signatures Database	–	Select this option to display the Forbidden Signatures (DBX) Options menu. Use this menu to enroll, delete, view or export the DBX signatures.
DBT - Timestamp Signatures Database	–	Select this option to display the Secure Boot Timestamps Signatures Database (DBT) Options menu. Use this menu to enroll, delete, view or export the DBT signatures.
Delete all keys	–	Deletes all the keys, i.e. PK, KEK, DB, and DBX.
Export all keys	–	Use this option to export all keys to files.
Reset all keys to platform defaults	–	Reinitializes all the keys to the platform defaults.

i. **PK - Platform Key** Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **PK - Platform Key** from the System Utilities, the **SPK - Platform Key** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View PK Entry	–	Use this option to list and view Platform Key (PK) entry. The expiration date of the certificate is shown in Coordinated Universal Time (UTC).
Enroll PK	–	Use this option to enroll a new Platform Key (PK). Only one PK can exist in the system. If a PK already exists, you must delete it before you can enroll a new PK. A valid PK must be present for Secure Boot to be enabled.
Delete PK	–	Use this option to delete the Platform Key (PK). Doing so requires an immediate system reboot and disables Secure Boot until you enroll a new PK. Changing the default security certificate may cause this machine to fail to boot from some devices or cause it to fail to launch some software such as EXPRESSBUILDER. Use this option to download Active Health Log.

Option	Parameter	Description
Export PK Entry	–	Use this option to export the PK certificate to a file on an attached media device. Supported formats include .der, .cer, and .crt.
Reset to platform defaults	–	Resets the PK key to the platform default.

ii. KEK - Key Exchange Key Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **KEK - Key Exchange Key** from the System Utilities, the **KEK - Key Exchange Key** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View KEK Entry	–	Use this option to list and view Key Exchange Key (KEK) entries. The expiration date of the certificate is shown in Coordinated Universal Time (UTC).
Enroll KEK Entry	–	Use this option to enroll a new entry in the Key Exchange Key (KEK) security database.
Delete KEK Entry	–	Use this option to delete a new entry in the Key Exchange Key (KEK) security database.
Export KEK Entry	–	Use this option to export the KEK certificate to a file on an attached media device. Supported formats include .der, .cer, and .crt.
Reset to platform defaults	–	Restores the KEK settings to the default parameters.

Important **Changing the default security certificate from the Delete Key Entry option may cause the system to fail to boot from some devices or cause it to fail to launch some software such as EXPRESSBUILDER.**

ii-1. Enroll KEK Entry Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **KEK - Key Exchange Key** > **Enroll KEK Entry** from the System Utilities, the **Enroll KEK Entry** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Enroll KEK using File	–	Use this option to read the KEK certificate from a file on an attached media device. Supported formats include .der, .cer, and .crt.
Signature Owner GUID (optional)	[Other] Hewlett Packard Enterprise Company Hewlett-Packard Company Microsoft Corporation SUSE Linux Products HmbH	Select the Signature Owner to use their Signature GUID in the Certificate.

Option	Parameter	Description
Signature GUID (optional)	String of 32 digits (“0” to “9”) and alphabetic characters “A” to “F”	Enter the optional security certificate Signature GUID. You must enter the data in the following GUID format: 11111111-2222-3333-4444-1234567890ab. For Hewlett Packard Enterprise certificates, enter 1E910BE1-4BEB-6337-19F1-8A8AC107D512. For Hewlett-Packard certificates, enter F5A96B31-DBA0-4faa-A42A-7A0C9832768E. For Microsoft certificates, enter 77fa9abd-0359-4d32-bd60-28f4e78f784b. For SUSE certificates, enter 2879c886-57ee-45cc-b126-f92f24f906b9.
View KEK Certificate Preview	–	Displays the KEK certificate to be registered.
Commit changes and exit	–	Commit changes and exit.
Discard changes and exit	–	Discard changes and exit.

[ ]: Default setting

iii. DB - Allowed Signatures Database

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **DB - Allowed Signatures Database** from the System Utilities, the **DB - Allowed Signatures Database** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View Signatures	–	Shows the signature. The expiration date of the certificate is shown in Coordinated Universal Time (UTC).
Enroll Signatures	–	Enrolls the signature.
Delete Signature	–	Deletes the enrolled signature.
Export Signature	–	Use this option to export the signature to a file on an attached media device. Supported formats include .der, .cer, and .crt.
Reset to platform defaults	–	Restores the DB setting to the default.

iii-1. Enroll Signatures

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > DB - Allowed Signatures Database > **Enroll Signature** from the System Utilities, the **Enroll Signature** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Enroll Signature Using File	–	Enrolls the signature using a file.
Signature Owner GUID (optional)	[Other] Hewlett Packard Enterprise Company Hewlett-Packard Company Microsoft Corporation SUSE Linux Products GmbH	Select the Signature Owner to use their Signature GUID in the Certificate.

Option	Parameter	Description
Signature GUID (optional)	String of 32 digits (“0” to “9”) and alphabetic characters “A” to “F”	Enter the optional security certificate Signature GUID. You must enter the data in the following GUID format: 11111111-2222-3333-4444-1234567890ab. For Hewlett Packard Enterprise certificates, enter 1E910BE1-4BEB-6337-19F1-8A8AC107D512. For Hewlett-Packard certificates, enter F5A96B31-DBA0-4faa-A42A-7A0C9832768E. For Microsoft certificates, enter 77fa9abd-0359-4d32-bd60-28f4e78f784b. For SUSE certificates, enter 2879c886-57ee-45cc-b126-f92f24f906b9.
View DB Certificate Preview	–	Displays the DB certificate to be registered.
Commit changes and exit	–	Commit changes and exit.
Discard changes and exit	–	Discard changes and exit.

[ ]: Default setting

iv. DBX - Forbidden Signatures Database

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **DBX - Forbidden Signatures Database** from the System Utilities, the **DBX - Forbidden Signatures Database** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View Signatures	–	Shows the hash value of the currently registered DBX.
Enroll Signatures	–	Adds a DBX.
Delete Signature	–	Deletes the enrolled signatures.
Export Signature	–	Use this option to export the signature to a file on an attached media device. Supported formats include .der, .cer, and .crt.
Reset to platform defaults	–	Resets the DBX key to the platform default.

iv-1.Enroll Signatures

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Secure Boot Settings** > **Advance Secure Boot Options** > **DBX - Forbidden Signature Database** > **Enroll Signature** from the System Utilities, the **Enroll Signature** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Enroll Signature Using File	–	Enrolls the signature using a file.
Signature Owner GUID (optional)	[Other] Hewlett Packard Enterprise Company Hewlett-Packard Company Microsoft Corporation SUSE Linux Products GmbH	Select the Signature Owner to use their Signature GUID in the Certificate.

Option	Parameter	Description
Signature GUID (optional)	String of 32 digits (“0” to “9”) and alphabetic characters “A” to “F”	Enter the optional security certificate Signature GUID. You must enter the data in the following GUID format: 11111111-2222-3333-4444-1234567890ab. For Hewlett Packard Enterprise certificates, enter 1E910BE1-4BEB-6337-19F1-8A8AC107D512. For Hewlett-Packard certificates, enter F5A96B31-DBA0-4faa-A42A-7A0C9832768E. For Microsoft certificates, enter 77fa9abd-0359-4d32-bd60-28f4e78f784b. For SUSE certificates, enter 2879c886-57ee-45cc-b126-f92f24f906b9.
Signature Format	SHA256 SHA384 SHA512 [RAW]	Select the certificate format used to enroll certificate into database. Ensure correct signature format SHA256/SHA384/SHA512 is selected for the certificate with EFI_CERT_X509_SHA*_GUID signature type. For all other certificate types please select RAW signature format.
View DBX Certificate Preview	–	Displays the signature to be registered.
Commit changes and exit	–	Commit changes and exit.
Discard changes and exit	–	Discard changes and exit

[ ]: Default setting

v. DBT - Timestamp Signatures Database

When you select **System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Secure Boot Settings > Advance Secure Boot Options > DBT - Timestamp Signatures Database** from the System Utilities, the **DBT - Timestamp Signatures Database** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View Signatures	–	Displays the hash value of the registered DBT.
Enroll Signatures	–	Enrolls the signature.
Delete Signature	–	Deletes the enrolled signature.
Export Signature	–	Exports signatures prohibited on the connected media device to a file. The supported formats are .der, .cer, and .crt.

Enroll Signatures

When you select **System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Secure Boot Settings > Advance Secure Boot Options > DBT - Timestamp Signatures Database > Enroll Signature** from the System Utilities, the **Enroll Signature** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Enroll Signature Using File	–	Enrolls the signature using a file.
Signature Owner GUID (optional)	[Other] Hewlett Packard Enterprise Company Hewlett-Packard Company Microsoft Corporation SUSE Linux Products GmbH	Select the Signature Owner to use their Signature GUID in the Certificate.
Signature GUID (optional)	String of 32 digits ("0" to "9") and alphabetic characters "A" to "F"	Enter the optional security certificate Signature GUID. You must enter the data in the following GUID format: 11111111-2222-3333-4444-1234567890ab. For Hewlett Packard Enterprise certificates, enter 1E910BE1-4BEB-6337-19F1-8A8AC107D512. For Hewlett-Packard certificates, enter F5A96B31-DBA0-4faa-A42A-7A0C9832768E. For Microsoft certificates, enter 77fa9abd-0359-4d32-bd60-28f4e78f784b. For SUSE certificates, enter 2879c886-57ee-45cc-b126-f92f24f906b9.
View DBT Certificate Preview	–	Displays the signature to be registered.
Commit changes and exit	–	Commit changes and exit.
Discard changes and exit	–	Discard changes and exit

[ ]: Default setting

(b) TLS (HTTPS) Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **TLS (HTTPS) Options** from the System Utilities, the **TLS (HTTPS) Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
View Certificates	–	Use this option to list and view enrolled TLS certificates.
Enroll Certificate	–	Use this option to enroll a new TLS certificate.
Delete Certificate	–	Use this option to delete one or more TLS certificates.
Export Certificate	–	Use this option to export TLS certificate to a file on an attached media device. Supported formats are .der, .pem.
Advanced Secure Settings	–	Use this option to configure Advanced TLS Security Settings, such as Cipher suites allowed for TLS connections, Certificate validation settings.
Delete all Certificates	–	Deletes all the TLS certificates from the platform.
Export all Certificates	–	Saves the certificates enrolled in DER or PEM format to the external media.
Reset all settings to platform defaults	–	Removes all the certificates from the platform and restores all the Advanced TLS Security settings to the platform defaults.

①. Advanced Security Settings Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **TLS (HTTPS) Options** > **Advanced Security Settings** from the System Utilities, the **Advanced Security Settings** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Cipher suites allowed for TLS connections	–	Use this option to select the Cipher suites that are allowed for TLS connections.
Certificate validation for every TLS connection	[PEER] NONE	Use this option to select the validation process of the certificate. It is recommended to validate the certificate presented by the Peer for secure communication. Select option 'PEER' for verification or 'NONE' to skip this process.
Strict Hostname checking	[Disabled] Enabled	Use this option to enable or disable verification of the connected server's hostname with the hostname in the certificate supplied by the server.
TLS Protocol Version Support	[AUTO] 1.0 1.1 1.2	Use this option to specify which TLS protocol version to use for TLS connections. AUTO will negotiate the highest version supported by both TLS server and the client.

[ ]: Default setting

(c) Trusted Platform Module Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Server Security** > **Trusted Platform Module Options** from the System Utilities, the **Trusted Platform Module Options** menu appears.

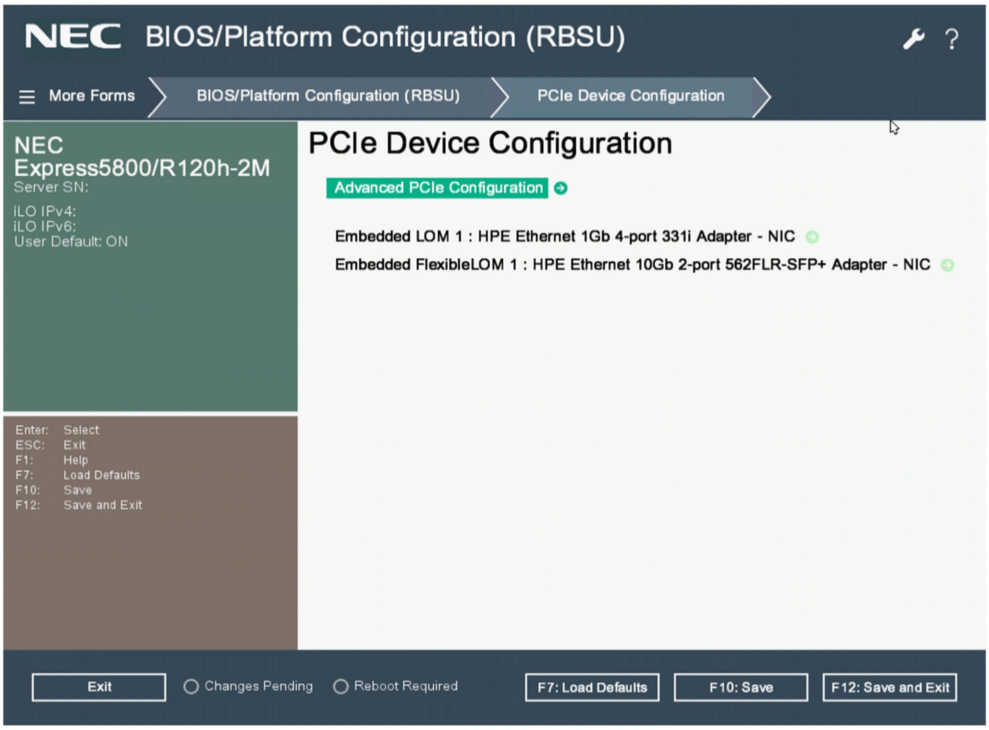
For details about the options, see the table below.

Option	Parameter	Description
Current TPM Type	(Display only)	Current TPM device type.
Current TPM State	(Display only)	Current TPM device state: Not Present; Present and Disabled; Present and Enabled.
Current TPM 2.0 Active PCRs	(Display only)	Current TPM 2.0 Active PCRs: SHA1, SHA256 or SHA1_SHA256 Appears only when TPM is installed.
Current TPM 2.0 Software Interface Status	(Display only)	Current TPM 2.0 Software Interface Status: FIFO or CRB. Appears only when TPM is installed.
TPM 2.0 Operation	[No Action] Clear	Use this option to perform a clear operation on the TPM. Clearing the TPM can prevent the server from booting to a TPM-aware operating system if the operating system uses TPM's measurements. TPM 2.0 is only supported in UEFI Mode. Selectable only when TPM is installed.
TPM Mode Switch Operation	[No Action] TPM 1.2 TPM 2.0	Use this option to switch the TPM chip to TPM 1.2/2.0, FIPS mode or non-FIPS mode. Selectable only when TPM is installed.
TPM 2.0 Software Interface Operation	[No Action] FIFO interface CRB interface	TPM 2.0 Software Interface Operation: FIFO or CRB. Selectable only when TPM is installed.
TPM Visibility	Hidden [Visible]	Use this option to hide the TPM from the operating system. When the TPM is hidden, BIOS secure startup is disabled, and the TPM does not respond to any commands. Intended use is for removing the TPM option from the system without removing the actual hardware. Selectable only when TPM is installed.
TPM UEFI Option ROM Measurement	[Enabled] Disabled	Use this option to enable measuring the UEFI PCI option ROMs. Disabling this option skips measuring the UEFI PCI option ROMs. Selectable only when TPM is installed.

[ ]: Default setting

(11) PCIe Device Configuration Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCI Device Configuration** from the System Utilities, the **PCI Device Configuration** menu appears.


NEC BIOS/Platform Configuration (RBSU)
More Forms
BIOS/Platform Configuration (RBSU)
PCIe Device Configuration
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit

PCIe Device Configuration

Advanced PCIe Configuration

Embedded LOM 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC

Embedded FlexibleLOM 1 : HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter - NIC

For details about the options, see the table below.

Option	Parameter	Description
Advanced PCIe Configuration	-	-
(Driver name)	–	Select this option to enable or disable PCI devices.

[ ]: Default setting

(a) Advanced PCIe Configuration Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCIe Device Configuration** > **Advanced PCIe Configuration** from the System Utilities, the **Advanced PCIe Configuration** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
PCIe Bifurcation Options	-	-
NVMe PCIe Resource Padding	[Normal] Medium High	Use this option to configure PCIe resources to support PCIe hot-add for NVMe drives. When Normal is selected, PCIe resources are only allocated to devices installed at boot time, and PCIe hot-add is not supported. When Medium is selected, additional PCIe resources are allocated for each PCIe Root Port, which might enable a PCIe hot-add event to work without requiring a system reboot to enumerate the device. When High is selected, a maximum amount of PCIe resources are set aside to allow for the best chance of supporting a PCIe hot-add event.

Option	Parameter	Description
Maximum PCI Express Speed	[Per Port Control] PCIe Generation 1.0	You can only configure this option if the Workload Profile is set to Custom. If a PCI Express device does not run properly at its optimal speed, lowering the speed at which the device is running can address this issue. This option enables you to lower the maximum PCI Express speed at which the server allows PCI Express devices to operate. You can also use it to address issues with problematic PCI Express devices. Setting this value to Maximum Supported configures the platform to run at the maximum speed supported by the platform or the PCIe device, whichever is lower.

[ ]: Default setting

①. PCIe Bifurcation Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCIe Devices Configuration** > **Advanced PCIe Configuration** > **PCIe Bifurcation Options** from the System Utilities, the **PCIe Bifurcation Options** menu appears.

For details about the additional options, see the table below.

Option	Parameter	Description
PCIe Slot XX Bifurcation	[Auto] Bifurcate Dual Bifurcate	If the device installed in the slot supports this capability, the “Bifurcate” or "Dual Bifurcate" can be selected. When "Auto" is selected, the PCIe slot will train at the maximum width supported by the slot and end point. When "Bifurcate" is selected, the PCIe slot will be bifurcated into two equal width slots. When "Dual Bifurcate" is selected, the PCIe slot will be bifurcated into four equal width slots. XX: 1/2/3... (XX appears as specific slot number by the processor or the riser card configuration.)

[ ]: Default setting

(b) (Driver name) Menu

The number of options displayed in this menu increases or decreases, depending on whether or not a PCIe device is installed.

①. Embedded LOM Driver

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCIe Device Configuration** > **Embedded LOM Driver** from the System Utilities, the **Embedded LOM Driver** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
PCIe Device Disable	[Auto] Disabled	Select this option to enable or disable PCI devices.
PCIe Link Speed	[Auto] PCIe Generation 1.0	Use this option to configure the PCIe Link Speed for the selected device. When configured for Auto, the selected device trains at the maximum supported speed of the PCIe link. When configured for PCIe Generation, the selected device trains at a maximum of PCIe Generation 1 linkspeed.
PCIe Option ROM	[Enabled] Disabled	Use this option to enable or disable Device Option ROM.

[ ]: Default setting

Tips

The name changes depending on the **PCIe Option ROM** setting in the **Embedded LOM Driver** menu. If **PCIe Option ROM** is set to **Disabled**, the name of the **Embedded LOM** becomes **Network Controller**.

②. Embedded SATA Controller

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **PCIe Device Configuration** > **Embedded SATA Controller** from the System Utilities, the **Embedded SATA Controller** menu appears.

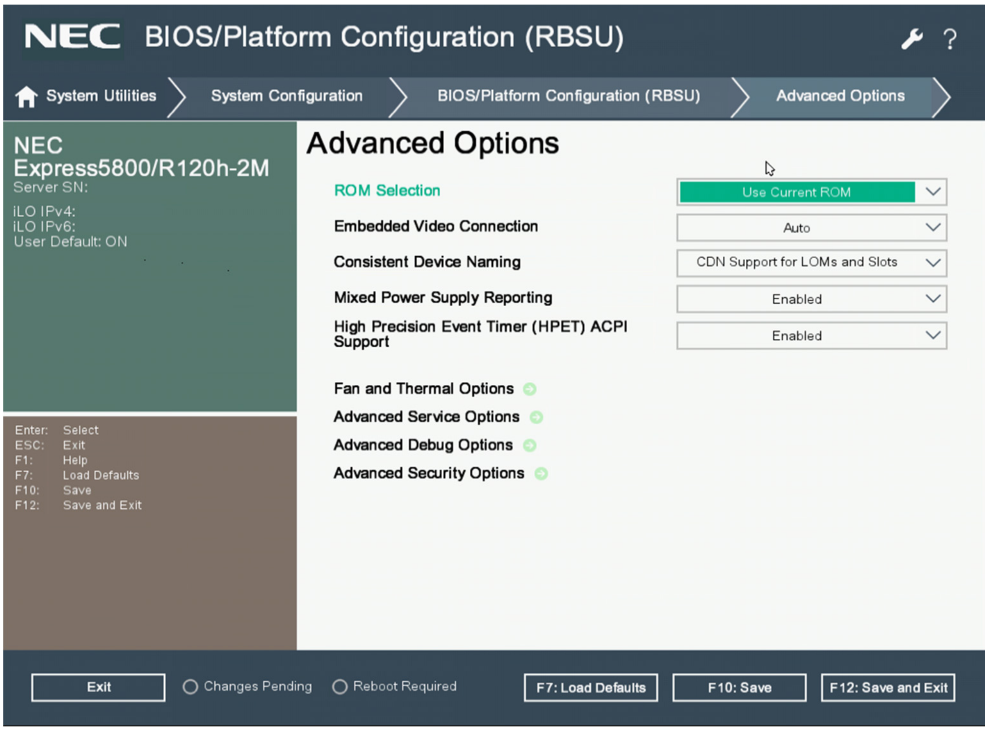
For details about the options, see the table below.

Option	Parameter	Description
SATA Device Disable	[Auto] Disabled	Select this option to enable or disable SATA devices.
PCIe Option ROM	[Enabled] Disabled	Use this option to enable or disable Device Option ROM.

[ ]: Default setting

(12) Advanced Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** from the System Utilities, the **Advanced Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Advanced Options
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Advanced Options

ROM Selection: Use Current ROM

Embedded Video Connection: Auto

Consistent Device Naming: CDN Support for LOMs and Slots

Mixed Power Supply Reporting: Enabled

High Precision Event Timer (HPET) ACPI Support: Enabled

Fan and Thermal Options

Advanced Service Options

Advanced Debug Options

Advanced Security Options

For details about the options, see the table below.

Option	Parameter	Description
ROM Selection	[Use Current ROM] Switch to Backup ROM	Use this option to revert the server to a previous BIOS ROM image. The backup image is the BIOS ROM image that was used prior to the last flash event.
Embedded Video Connection	[Auto] Always Disabled Always Enabled	When configured for Auto mode, the external video connection to the embedded video controller is automatically disabled to save power when a monitor is not attached. It is automatically enabled when a monitor is attached, including when the server is operating. When configured for Always Disabled, the external video connection to the embedded video controller is disabled, and a monitor connected to this port does not display except during system boot. This can be used for security reasons. When configured for Always Enabled, the external video connection to the embedded video controller is always enabled. This option is only required if a monitor is attached with a monitor detection that does not function properly (making AUTO mode not work properly). Note: This option does not affect Integrated Remote Console video. Also, if you press F9 or F11 during system boot, the configured video connector behavior is overridden, and the video console remains enabled. This lets you reconfigure the Embedded Video Connection option even if the video is disabled.
Consistent Device Naming	[CDN Support for LOMs and Slots] CDN Support LOMs Only Disabled	Use this option to select the level of Consistent Device Naming. On supported operating systems, NIC ports are named based on their location in the system. CDN Support for LOMs Only names Embedded NICs and FlexibleLOMs. Existing NIC connections retain their names until reinstalled under the OS environment.
Mixed Power Supply Reporting	[Enabled] Disabled	When enabled, the server logs a message that a mixed power supply configuration is present. When disabled, the server no longer logs messages that a mixed power supply configuration is present.
High Precision Event Timer (HPET) ACPI Support	[Enabled] Disabled	Use this option to disable the High Precision Event Timer (HPET) table and device object in ACPI. When disabled, the HPET is not available to an operating system that supports the HPET through the industry standard ACPI name space.
Fan and Thermal Options	–	Use this option to display the Fan and Thermal Options menu. Use this menu to configure advanced fan and thermal options, such as Thermal Configuration, Thermal Shutdown, and Thermal and Fan Policies.

Option	Parameter	Description
Advanced Service Options	–	Select this option to display the Advanced Service Options menu. Use this menu to enter a chassis serial number and Part Number Leave all the options under this one unchanged unless otherwise specified. If you want to change them, contact the dealer or maintenance service company.
Advanced Debug Options	–	Select this option to display the Debug Options menu. Use this menu to enable or disable the advanced debug options UEFI serial debug level and POST Verbose Boot Progress. Leave all the options under this one unchanged unless otherwise specified. If you want to change them, contact the dealer or maintenance service company.
Advanced Security Options	–	Select this option to display the Advanced Security Options menu.

[ ]: Default setting

(a) Fan and Thermal Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Fan and Thermal Options** from the System Utilities, the **Fan and Thermal Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Thermal Configuration	[Optimal Cooling] Increased Cooling Maximum Cooling Enhanced CPU Cooling	Use this option to select the fan cooling solution for the system. "Optimal Cooling" provides the most efficient solution by configuring fan speeds to the minimum required speed to provide adequate cooling. "Increased Cooling" runs fans at higher speeds to provide additional cooling. Select "Increased Cooling" when third-party storage controllers are cabled to the embedded hard drive cage, or if the system is experiencing thermal issues that cannot be resolved. "Maximum Cooling" provides the maximum cooling available on this platform. "Enhanced CPU Cooling" provides additional cooling to the processors. When running certain processor intensive workloads, this option can provide additional cooling to the processors which can result in improved performance.
Thermal Shutdown	[Enabled] Disabled	Use this option to control the reaction of the system to caution level thermal events. When disabled, the System Management Firmware ignores thermal events, and the system immediately powers off in data-destructive situations. If ESMPRO/ServerAgentService is installed, set this option to "Disabled". A shutdown is performed by ESMPRO/ServerAgentService at high temperature of warning levels.

Option	Parameter	Description
Fan Installation Requirements	[Enable Messaging] Disable Messaging	With this function, you can set the correspondence method of the system when the fan required for the system configuration is removed. When configured for Enable Messaging, the server displays messages and log events to the Integrated Management Log (IML) when required fans are not installed. The server can still boot and operate. When configured for Disable Messaging, the server does not display messages and log events when required fans are not installed. Not all information will be notified. It is recommended that you leave Fan Installation Requirements in the default state of Enable Messaging. Operating without the required fans can result in damage to hardware components. * For this option, the user default has been overridden with [Allow Operation with Critical Fan Failures] at the time of factory shipment. When resetting the user default, check the setting of this option.
Fan Failure Policy	Shutdown/Halt on Critical Fan Failures [Allow Operation with Critical Fan Failures]	With this function, the correspondence method of the system can be set when a fan failure occurs. If "Shutdown/Halt on Critical Fan Failures" is set, the system will be shut down when the fan configuration required for the system is no longer available. If "Allow Operation with Critical Fan Failures" is set, the system can continue operation without the fan configuration required for the system.
Extended Ambient Temperature Support	[Disabled] Enabled for 40c Ambient(ASHRAE 3) Enabled for 45c Ambient(ASHRAE 4)	Use this option to enable the server to operate at higher ambient temperatures than normally supported. These options are only supported with specific hardware configurations. See your server documentation before configuring the server to enable extended ambient temperature support. Improper system operation or damage to hardware components can result from enabling these options in unsupported configurations. Selecting Enabled for 40c Ambient (ASHRAE 3) enables the server to operate in environments with ambient temperatures up to 40 degrees Celsius. Selecting Enabled for 45c Ambient (ASHRAE 4) enables the server to operate in environments with ambient temperatures up to 45 degrees Celsius. Not all servers support both 40c Ambient (ASHRAE 3) and 45c Ambient (ASHRAE 4).

[ ]: Default setting

Tips

If NEC ESMPRO ServerAgentService is installed, set "Thermal Shutdown" to "Disabled" because shutdown at high temperature is executed by NEC ESMPRO ServerAgentService.

(b) Advanced Service Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced Service Options** from the System Utilities, the **Advanced Service Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Serial Number	String of up to 16 alphanumeric and/or special characters	Use this option to set the system serial number. This value must always match the serial number sticker located on the chassis. Leave all the options unchanged unless otherwise specified.
Product ID	String of up to 16 alphanumeric and/or special characters	Use this option to set the system Part Number. This value must always match the Part Number sticker located on the chassis. Leave all the options unchanged unless otherwise specified.

[ ]: Default setting

(c) Advanced Debug Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced Debug Options** from the System Utilities, the **Advanced Debug Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
UEFI Serial Debug Message Level	[Disabled] Errors Only Medium Network Verbose Custom	Use this option to enable the UEFI Serial Debug output and verbosity level. Selecting Verbose can impact server boot time significantly. This option is only applicable in UEFI Mode.
POST Verbose Boot Progress	[Disabled] Serial Only All	Use this option to enable verbose boot progress messaging. Because this option displays additional debug information to the screen and serial console, it might be helpful for determining why a server became unresponsive during the boot process.
Advanced Crash Dump Mode	[Disabled] Enabled	Use this option to enable the Advanced Crash Dump Mode. When enabled, the system will be configured to log additional debug information to the Active Health System logs when an unexpected system crash is experienced. This option should only be enabled when directed by qualified service personnel.

[ ]: Default setting

(d) Advanced Security Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced Security Options** from the System Utilities, the **Advanced Security Options** menu appears.

For details about the options, see the table below.

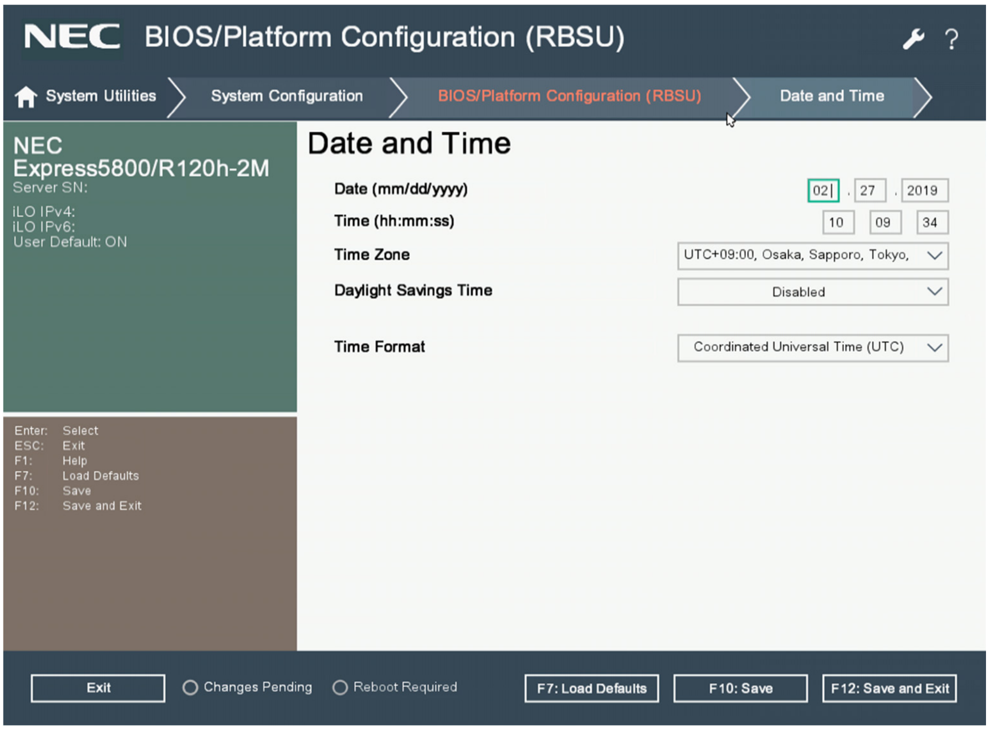
Option	Parameter	Description
TPM FIPS Mode Switch	[No Action] Regular mode FIPS mode	Use this option to switch the TPM chip to FIPS mode, regular mode.

[ ]: Default setting

(13) Date and Time Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Date and Time** from the System Utilities, the **Date and Time** menu appears.

When a change is made to this menu, make sure to press the <F10> key to save the setting, and select **Reboot the System** from System Utilities to reboot the system. If the <F12> key is used to save the setting, it may not be reflected properly because the OS starts up without rebooting the system.


NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
Date and Time
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Date and Time

Date (mm/dd/yyyy) 02 . 27 . 2019

Time (hh:mm:ss) 10 09 34

Time Zone UTC+09:00, Osaka, Sapporo, Tokyo,

Daylight Savings Time Disabled

Time Format Coordinated Universal Time (UTC)

For details about the options, see the table below.

Option	Parameter	Description
Date (mm/dd/yyyy)	[mm/dd/yyyy]	Enter the date in the month/day/year (mm/dd/yyyy) format. Use 1-12 for entering months, 1-31 for entering days, and 1900-9999 for entering years.
Time (hh:mm:ss)	[hh:mm:ss]	Enter the time in hh:mm:ss format. Use the 24-hour format for entering hours: 15:00 for 3 PM. Use 0-59 for entering minutes and seconds.
Time Zone	UTC-12:00, International Date Line West … UTC+09:00, Osaka Sapporo, Tokyo, Seoul, Yakutsk … UTC+14:00, Line Islands Unspecified Time Zone	Enter the time zone of the local time used for RBSU.
Daylight Savings Time	Enabled [Disabled]	This option controls the Daylight Savings Time (DST) adjustment to the displayed local time. If this option is disabled, the displayed local time will not be adjusted for DST. If this option is enabled, the displayed local time will be advanced by one hour.

Option	Parameter	Description
Time Format	[Coordinated Universal Time (UTC)] Local Time	This option controls how the system time is stored in the hardware Real Time Clock (RTC). When configured to 'Coordinated Universal Time (UTC)' (default) the local time is calculated from the associated time zone value. When configured to 'Local Time' the time is stored directly as local time and the time zone option does not have meaning. Setting this option to 'Local Time' works around an issue when using Microsoft Windows operating systems in Legacy Boot Mode where the time is set incorrectly. * For this option, the user default has been overridden with the value in synchronization with the factory-shipped OS at the time of factory shipment. When resetting the user default, check the setting of this option.

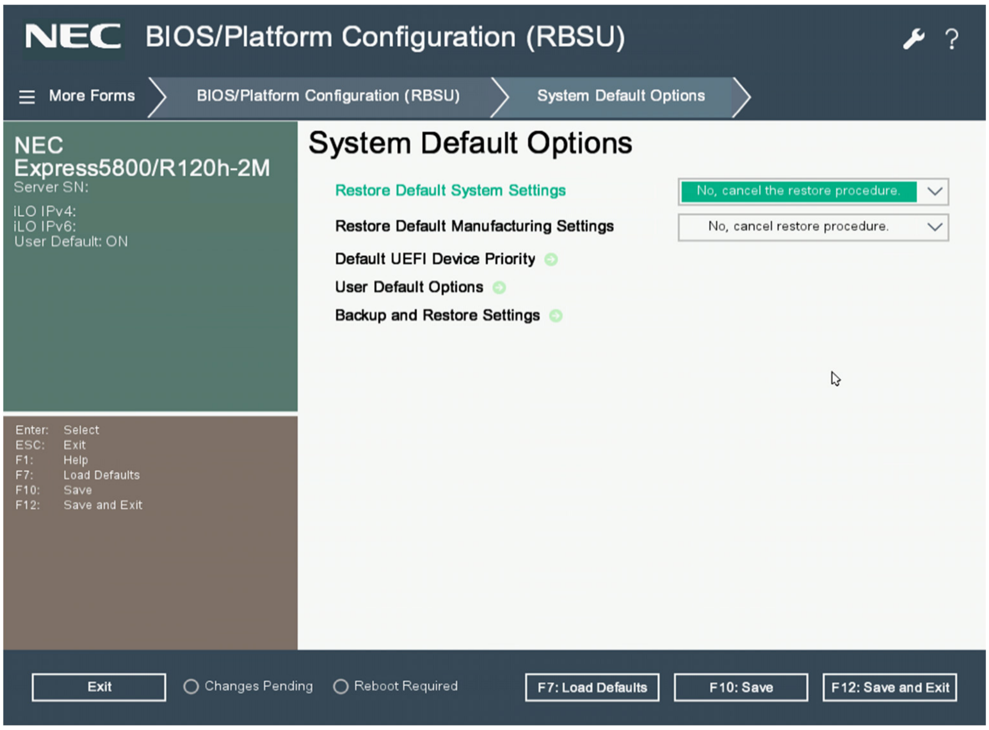
[ ]: Default setting

Tips

Check that the time, date, and time zone are correct.
Check the system clock about once every month. If you want to operate it with high accuracy, it is recommended that you use a time server (NTP server) or the like.
If the system clock significantly delays or advances over time even after you adjust it, contact your dealer or maintenance service company.

(14) System Default Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** from the System Utilities, the **System Default Options** menu appears.


NEC BIOS/Platform Configuration (RBSU)
More Forms
BIOS/Platform Configuration (RBSU)
System Default Options
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

System Default Options

Restore Default System Settings: No, cancel the restore procedure.

Restore Default Manufacturing Settings: No, cancel restore procedure.

Default UEFI Device Priority

User Default Options

Backup and Restore Settings

For details about the options, see the table below.

Option	Parameter	Description
Restore Default System Settings	[No, cancel the restore procedure.] Yes, restore the default settings.	When "Yes, restore the default settings" is selected, the setting in the "BIOS / Platform Configuration (RBSU)" menu is reset to the default value. However, if the user default is enabled with "User Default Options", it will be reset to the user default value. Rebooting the system is required to reset the setting. In addition, the following settings are not reset to default values. • Settings under "Secure Boot Settings" menu • Settings under "Data and Time" menu except "Time Format" • Settings of "ROM Selection" option

Option	Parameter	Description
Restore Default Manufacturing Settings	[No, cancel restore procedure.] Yes, restore the default settings.	If you select "Yes, restore the default settings.", the settings in the "BIOS / Platform Configuration (RBSU)" menu will be reset to their default values. However, if the user default is enabled with "User Default Options", it will be reset to the user default value. Rebooting the system is required to reset the setting. In addition, the following settings are not reset to default values. • Settings under "Data and Time" menu except "Time Format" • Settings of "ROM Selection" option If this option is selected, security settings such as the key database for secure boot will also be erased. If you do not want to reset to the user default value, delete the user default in "User Default Options > Erase User Defaults", then select "Yes, restore the default settings." for this option.
Default UEFI Device Priority	–	Use this option to change the UEFI device priority when system or manufacturing defaults are restored. The initial UEFI Boot Order list is created based on the priority defined in this setting. This setting only applies when user custom defaults are set.
User Default Options	–	Use this option to define default configuration settings. When the default configuration settings are loaded, the saved default settings are used instead of the factory defaults. Configure the system as necessary, and then enable this option to save the configuration as the default configuration.
Backup and Restore Settings	–	Use this option to back up or restore the BIOS/Platform Configuration (RBSU) settings. The settings can be backed up in a USB storage device or uploaded to a network location. The settings are stored with the .zip extension. In order to restore the settings on the same or different system correctly, the directory structure of the backup .zip file must be retained.

[ ]: Default setting

Note User default values are set at shipment for each model. Please reset the user default according to the environment to use referring the *Chapter 3 (2.4 Cases that Require Configuration)* in the *User's Guide* and the setting list of each additional optional parts.

(a). User Default Options Menu

When you select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** > **User Default Options** from the System Utilities, the **User Default Options** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Save User Defaults	[No, Cancel] Yes, Save	If you select "Yes, Save", you can save the settings in the current "BIOS / Platform Configuration (RBSU)" menu as user defaults. User defaults are saved when you exit System Utility by pressing the <F12> key. However, settings under the "Secure Boot Settings" menu are not saved.
Erase User Defaults	[No, Cancel] Yes, erase the current settings.	When "Yes, erase the current settings." is selected, the saved user default is erased. Rebooting of the system is required for erasing.

Option	Parameter	Description
User Defaults	(Display only)	Displays whether user default settings are enabled or disabled.

[ ]: Default setting

Important **For some options, default values have been set as user defaults at the time of factory shipment. When user default values are deleted, reset them by referring to *Chapter 3 (2.4 Cases that Require Configuration)* of the *User's Guide.***

(b). Backup and Restore Settings Menu

When you select **System Configuration > BIOS/Platform Configuration (RBSU) >** System **Default Options** > **Backup and Restore Settings**, the **Backup and Restore Settings** menu appears. To backup and restore BIOS settings, a USB storage device formatted in the FAT32 format is used. The backup and restore procedures are described in *"1.4 Backup and Restore of RBSU Settings"* of this document.

For the options, refer to the table below.

Option	Parameter	Description
Select Operation	[Backup] Restore	To back up the BIOS/Platform Configuration (RBSU) settings to a .zip file, select "Backup". To restore BOIS settings from a json file or .zip file, select "Restore".
Select File	–	When selecting "Backup", select or create a file with the .zip extension. When selecting "Restore", select a json file or .zip file that contains the BIOS/Platform Configuration (RBSU) settings to be restored.
Selected File:	(Display only)	Displays the location and name of the file selected for the backup or restore operation.
Start Operation	–	To start the backup or restore operation, select "Start Operation".

[ ]: Default setting

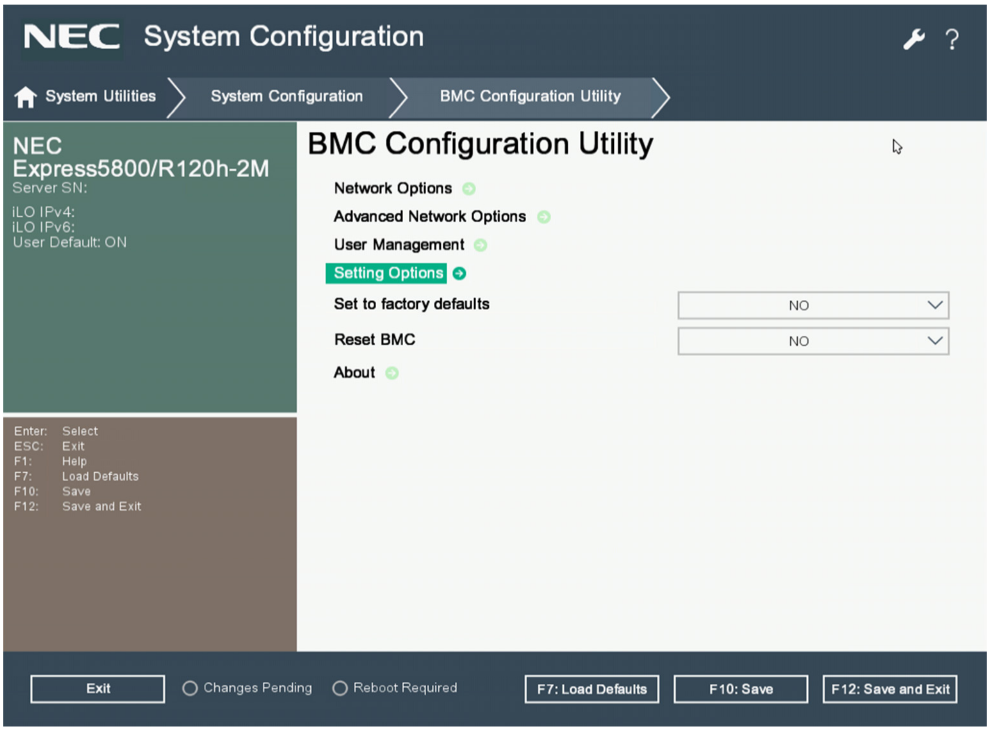
Important

- **Do not restore the Serial Number and Product ID unless performing a replacement with the maintenance mother board.**
- **The USB storage device with a backup must be kept under strict control. Be extremely careful at the time of disposal.**

1.2.3 BMC Configuration Utility

When you select **System Configuration** > **BMC Configuration Utility** from the System Utilities, the **BMC Configuration Utility** menu appears.

Important **When you change and save settings in "BMC Configuration Utility", iLO may be restarted. In this case, follow the steps as described in *"Operation for a restart of iLO"* in *"BMC Configuration Utility"* of System Utilities in *"2.3 Description on On-Screen Items and Key Usage"* in *Chapter 3* of the *User's Manual*.**


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
BMC Configuration Utility
Network Options
Advanced Network Options
User Management
Setting Options
About
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Set to factory defaults NO

Reset BMC NO

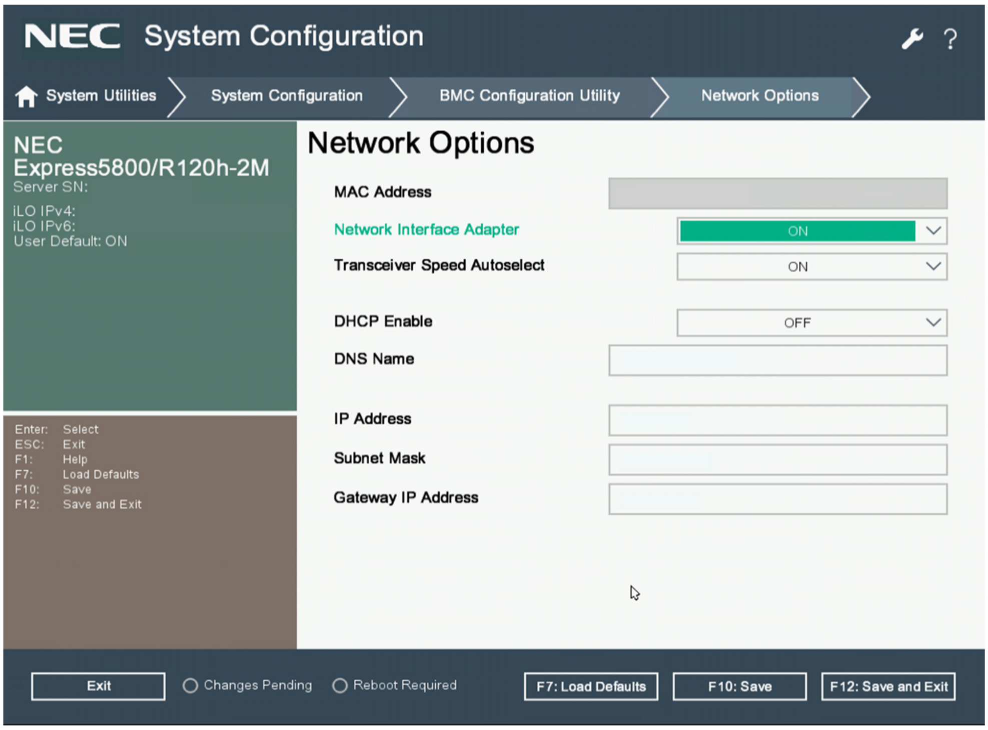
For details about the options, see the table below.

Option	Parameter	Description
Network Options	–	Select to enter the Network Options.
Advanced Network Options	–	Select to enter the Advanced Network Options.
User Management	–	Manage BMC user account.
Setting Options	–	Manage BMC Option Setting.
Set to factory defaults	[No] Yes	BMC configuration will be set to the factory default. BMC will be reset and this configuration utility will not be available until next system reboot.
Reset BMC	[No] Yes	BMC will be reset and this configuration utility will not be available until next system reboot. BMC remote console will be disconnected and BMC IP address may be changed after reset.
About	–	Display BMC information.

[ ]: Default setting

(1) Network Options Menu

When you select **System Configuration** > **BMC Configuration Utility** > **Network Options** from the System Utilities, the **Network Options** menu appears.


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
Network Options
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit

Network Options

MAC Address
Network Interface Adapter: ON
Transceiver Speed Autoselect: ON
DHCP Enable: OFF
DNS Name
IP Address
Subnet Mask
Gateway IP Address

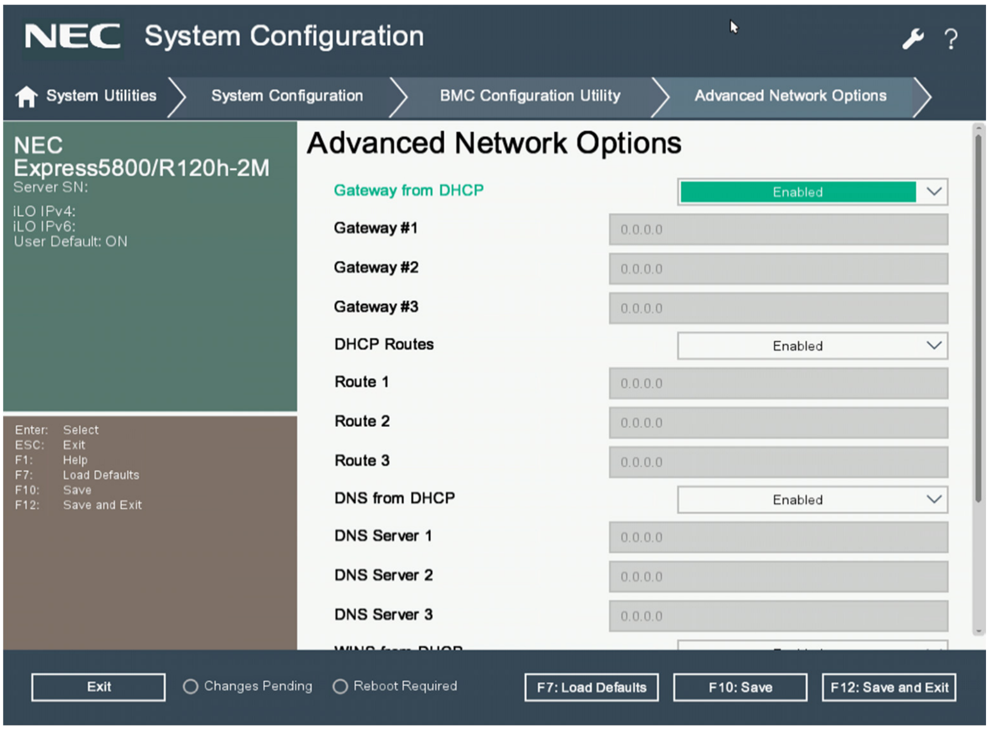
For details about the options, see the table below.

Option	Parameter	Description
MAC Address	(Display only)	Shows the MAC address of the selected BMC network interface.
Network Interface Adapter	[ON] OFF Shared Network Port - LOM Shared Network Port - FlexibleLOM	Selects the BMC network interface.
Transceiver Speed Autoselect	[ON] OFF	Enables or disables automatic selection of the transmission speed.
DHCP Enable	[ON] OFF	Enables or disables the DHCP server.
DNS Name	String of up to 50 alphanumeric characters	Sets the BMC DNS name.
IP Address	IP Address	Sets the BMC IP address.
Subnet Mask	IP Address	Sets the BMC subnetwork mask.
Gateway IP Address	IP Address	Sets the BMC gateway IP address.

[ ]: Default setting

(2) Advanced Network Options Menu

When you select **System Configuration** > **BMC Configuration Utility** > **Advanced Network Options** from the System Utilities, the **Advanced Network Options** menu appears.


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
Advanced Network Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Advanced Network Options

Gateway from DHCP: Enabled
Gateway #1: 0.0.0.0
Gateway #2: 0.0.0.0
Gateway #3: 0.0.0.0
DHCP Routes: Enabled
Route 1: 0.0.0.0
Route 2: 0.0.0.0
Route 3: 0.0.0.0
DNS from DHCP: Enabled
DNS Server 1: 0.0.0.0
DNS Server 2: 0.0.0.0
DNS Server 3: 0.0.0.0

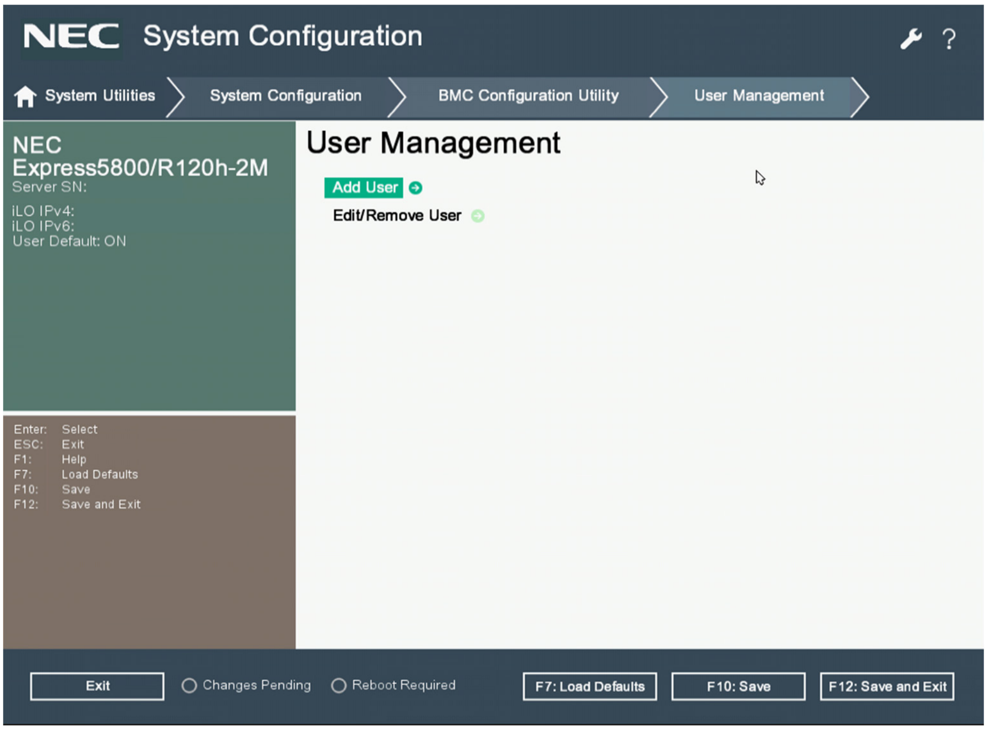
For details about the options, see the table below.

Option	Parameter	Description
Gateway from DHCP	[Enabled] Disabled	Enables or disables the BMC to use the gateway from DHCP.
Gateway #1	IP Address	Sets the Gateway #1 IP address.
Gateway #2	IP Address	Sets the Gateway #2 IP address.
Gateway #3	IP Address	Sets the Gateway #3 IP address.
DHCP Routes	[Enabled] Disabled	Enables or disables use of the route provided by DHCP.
Route 1	IP Address	Sets the Route 1 IP address.
Route 2	IP Address	Sets the Route 2 IP address.
Route 3	IP Address	Sets the Route 3 IP address.
DNS from DHCP	[Enabled] Disabled	Enables or disables use of WINS from DHCP.
DNS Server 1	IP Address	Sets the DNS Server 1 IP address.
DNS Server 2	IP Address	Sets the DNS Server 2 IP address.
DNS Server 3	IP Address	Sets the DNS Server 3 IP address.
WINS from DHCP	[Enabled] Disabled	Enables or disables use of WINS from DHCP.
Register with WINS Server	[Enabled] Disabled	Enables or disables registration in the WINS server.
WINS Server #1	IP Address	Sets the WINS Server #1 IP address.
WINS Server #2	IP Address	Sets the WINS Server #2 IP address.
Domain Name	Character string	Sets the BMC domain name.

[ ]: Default setting

(3) User Management Menu

When you select **System Configuration** > **BMC Configuration Utility** > **User Management** from the System Utilities, the **User Management** menu appears.


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
User Management
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
User Management
Add User
Edit/Remove User
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Add User	–	Adds a user.
Edit/Remove User	–	Edits or deletes a user.

(a) Add User Menu

When you select **System Configuration** > **BMC Configuration Utility** > **User Management** > **Add User** from the System Utilities, the **Add User** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
New User BMC Privileges	-	-
Administer User Accounts	[YES] NO	Enables or disables user account administration.
Remote Console Access	[YES] NO	Enables or disables use of remote console access.
Virtual Power and Reset	[YES] NO	Enables or disables the virtual power and reset.
Virtual Media	[YES] NO	Enables or disables the virtual media.
Configure Settings	[YES] NO	Enables or disables configuration of the settings.
Host BIOS	[YES] NO	The host BIOS settings can be configured using System Utility.
Host NIC	[YES] NO	The host NIC settings can be configured.

Option	Parameter	Description
Host Storage	[YES] NO	The host storage settings can be configured.
New User Information	-	-
New User Name	String of up to 39 characters	Sets a new user name.
Login Name	String of up to 39 characters	Sets the login name.
Password	String of up to 39 characters	Sets the password.

[ ]: Default setting

(b) Edit/Remove User Menu

When you select **System Configuration** > **BMC Configuration Utility** > **Edit/Remove User** from the System Utilities, the **Edit/Remove User** menu appears.

For details about the options, see the table below.

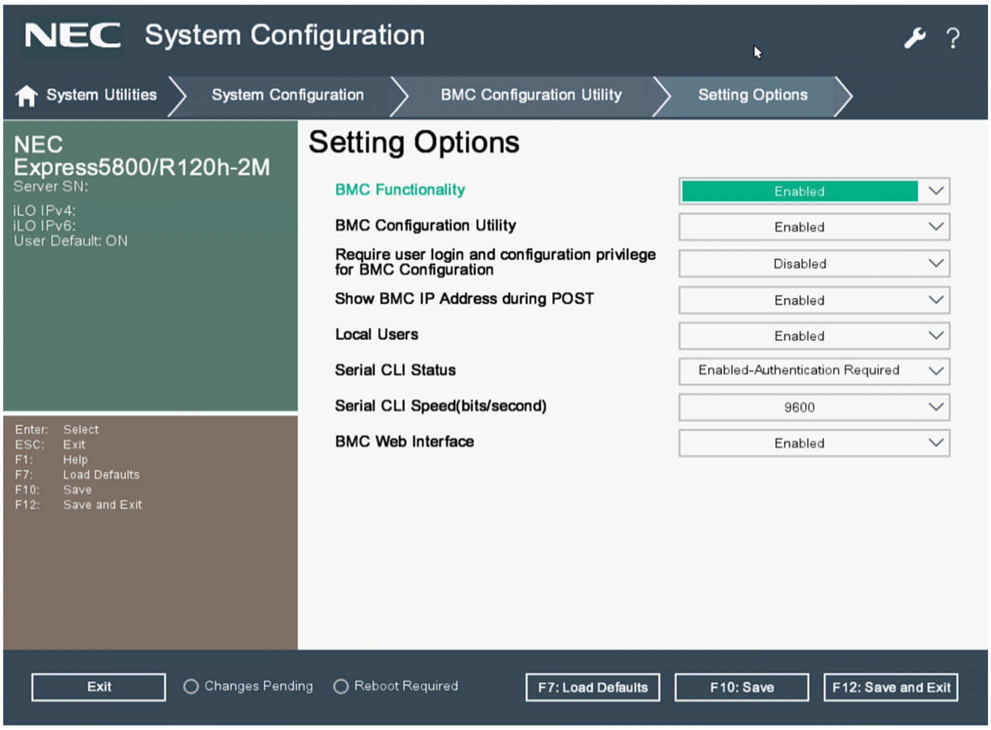
When you select **Edit** from **Action**, the items after **Loginname** are displayed.

Option	Parameter	Description
1. User Name	String of up to 39 characters	Sets a user name.
Action	[No Change] Delete Edit	Selects whether the user information is modified or deleted.
Loginname	String of up to 39 characters	Sets the login name.
Password	String of up to 39 characters	Sets the password.
Administrator User Accounts	[YES] NO	Enables or disables user account administration.
Remote Console Access	[YES] NO	Enables or disables remote console access.
Virtual Power and Reset	[YES] NO	Enables or disables the virtual power and reset.
Virtual Media	[YES] NO	Enables or disables the virtual media.
Configure Setting	[YES] NO	Enables or disables configuration of the settings.
Host BIOS	[YES] NO	The host BIOS settings can be configured using System Utility.
Host NIC	[YES] NO	The host NIC settings can be configured.
Host Storage	[YES] NO	The host storage settings can be configured.

[ ]: Default setting

(4) Setting Options Menu

When you select **System Configuration** > **BMC Configuration Utility** > **Setting Options** from the System Utilities, the **Setting Options** menu appears.


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
Setting Options
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit

Setting Options

BMC Functionality: Enabled
BMC Configuration Utility: Enabled
Require user login and configuration privilege for BMC Configuration: Disabled
Show BMC IP Address during POST: Enabled
Local Users: Enabled
Serial CLI Status: Enabled-Authentication Required
Serial CLI Speed(bits/second): 9600
BMC Web Interface: Enabled

For details about the options, see the table below.

Option	Parameter	Description
BMC Functionality	[Enabled] Disabled	You can enable or disable BMC functionality.
BMC Configuration Utility	[Enabled] Disabled	When BMC Configuration Utility is disabled, BMC Configuration Utility will not be part of the System Configuration Utility.
Require user login and configuration privilege for BMC Configuration	[Disabled] Enabled	This setting determines whether a user-credential prompt is displayed when a user accesses BMC configuration utility.
Show BMC IP Address during POST	[Enabled] Disabled	Show BMC IP Address during POST.
Local Users	[Enabled] Disabled	Enables or disables local users.
Serial CLI Status	[Enabled-Authentication Required] Enabled-No Authentication required Disabled	Sets the serial CLI status.
Serial CLI Speed(bits/second)	[9600] 19200 57600 115200	Sets the serial CLI speed (bits/s).
BMC Web Interface	[Enabled] Disabled	

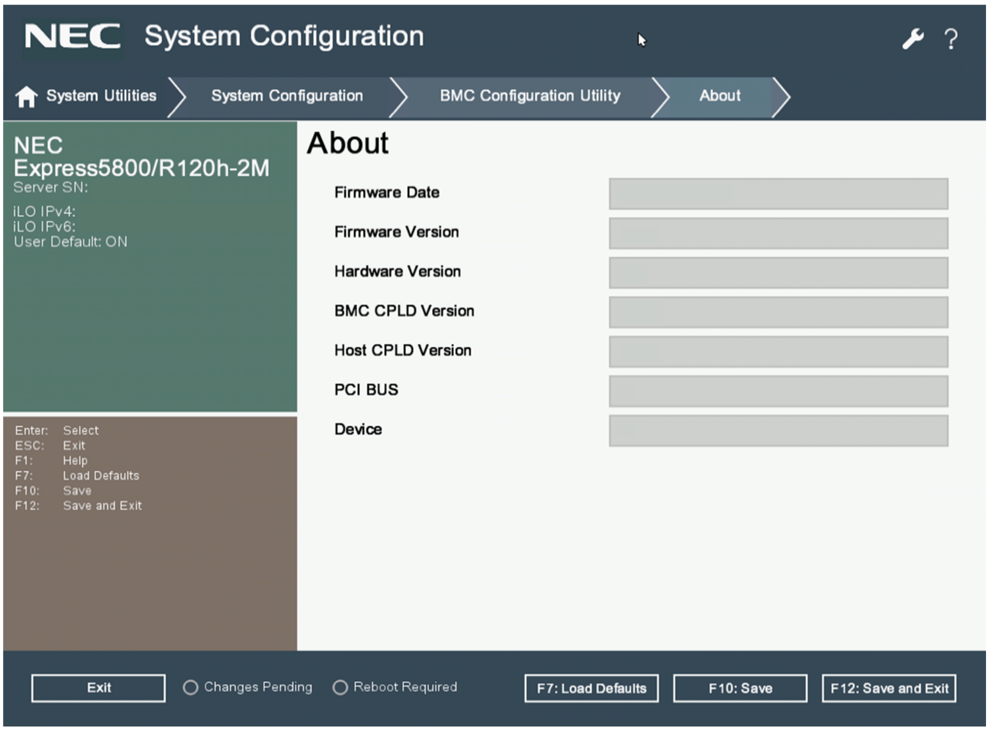
[ ]: Default setting

Tips

To protect the configuration of the BMC Configuration Utility, set the option **BMC Configuration Utility** > **Require user login and configuration privilege for BMC Configuration** to **Enabled**.

(5) About Menu

When you select **System Configuration** > **BMC Configuration Utility** > **About** from the System Utilities, the **About** menu appears.


NEC System Configuration
System Utilities
System Configuration
BMC Configuration Utility
About
About
Firmware Date
Firmware Version
Hardware Version
BMC CPLD Version
Host CPLD Version
PCI BUS
Device
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON

For details about the options, see the table below.

Option	Parameter	Description
Firmware Date	(Display only)	Shows the date of firmware revision.
Firmware Version	(Display only)	Shows the firmware version.
Hardware Version	(Display only)	Shows the software version.
BMC CPLD Version	(Display only)	Shows the CPLD version.
Host CPLD Version	(Display only)	Shows the host CPLD version.
PCI BUS	(Display only)	Shows the PCI BUS to which the processor is connected.
Device	(Display only)	Shows the device number assigned to the BMC within the PCI bus.

1.2.4 Embedded Device Information

(1) (Embedded RAID) Menu

When you select **System Configuration** > **(Embedded RAID)** from the System Utilities, the **(Embedded RAID)** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Controller Information	–	Provides the information of the controller like PCI Bus :Device:Function, Firmware Revision, UEFI Driver Version, Controller Temperature etc.
Enable/Disable Smart array Debug Messages	(Check Box)	Select or deselect the check box to enable or disable the Smart array debug message.
Configure Controller Settings	–	Configures the supported controller settings, advanced controller settings (if applicable) and clear the controller's current configuration.
Array Configuration	–	Creates new array(s) from the list of drives available and manages the existing arrays.
Disk Utilities	–	Displays the list of drives that are connected to the controller and allows the user to perform certain operations on the disks available.
Exit and launch Smart Storage Administrator(SSA)	–	Launch the Smart Storage Administrator (SSA) to configure RAID levels.

(2) (Embedded LOM) Menu

When you select **System Configuration** > **(Embedded LOM)** from the System Utilities, the **(Embedded LOM)** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Firmware Image Menu	–	Firmware image information.
MBA Configuration Menu	–	Sets the parameters of MBA (Multiple Boot Agent).
Disable HP Shared Memory features	Disabled [Enabled]	Disable usage of reserved memory regions to allow direct assignment of device to guest virtual machines.
Blink LEDs	[0]-X	Blink LEDs for a duration up to 15 seconds. (Default: 0)
Pre-boot Wake On LAN	Disabled [Enabled]	Configure Pre-boot Wake on LAN (WOL).
Chip Type	(Display only)	Shows the type and revision number of the chip.
PCI Device ID	(Display only)	Shows the PCI device ID.
Bus:Device:Function	(Display only)	Shows the "PCI_bus_number:device_number:function_number" of this device.
Link Status	(Display only)	Shows the link status.
Permanent MAC Address	(Display only)	Shows the fixed MAC address.
Virtual MAC Address	(Display only)	Shows the virtual MAC address.

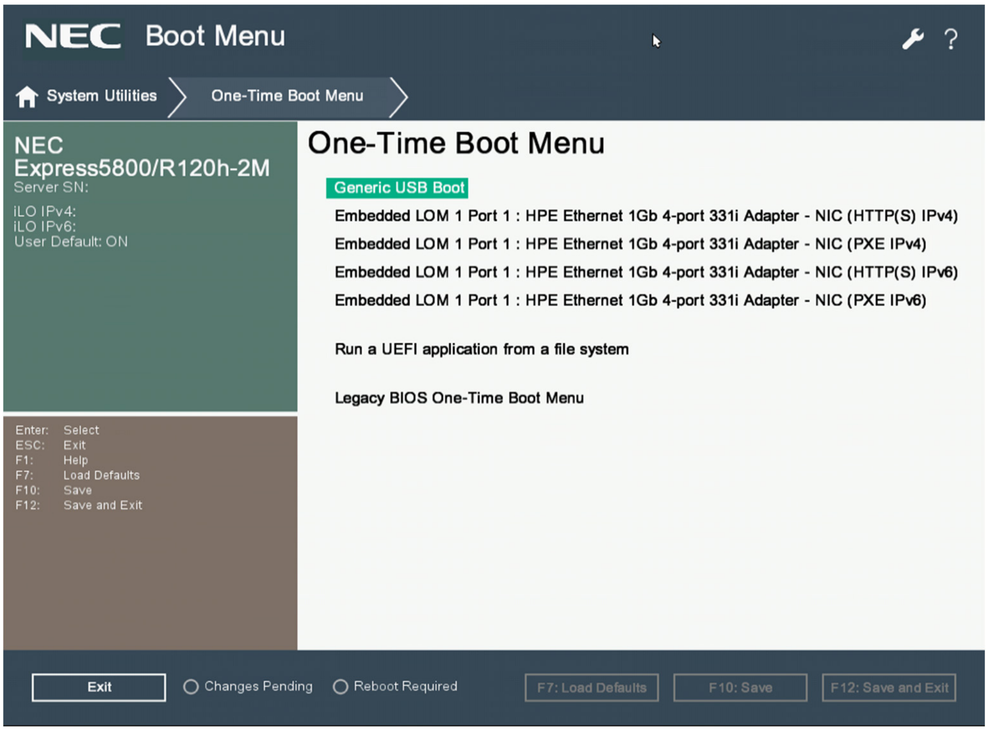
[ ]: Default setting

1.2.5 One-Time Boot Menu

When you select **One-Time Boot Menu** from the System Utilities or press the <F11> key on the POST screen, the **One-Time Boot** menu appears.

You can select the UEFI boot device using the **One-Time Boot Menu**.

Selecting this option does not change any predefined Boot Order settings.

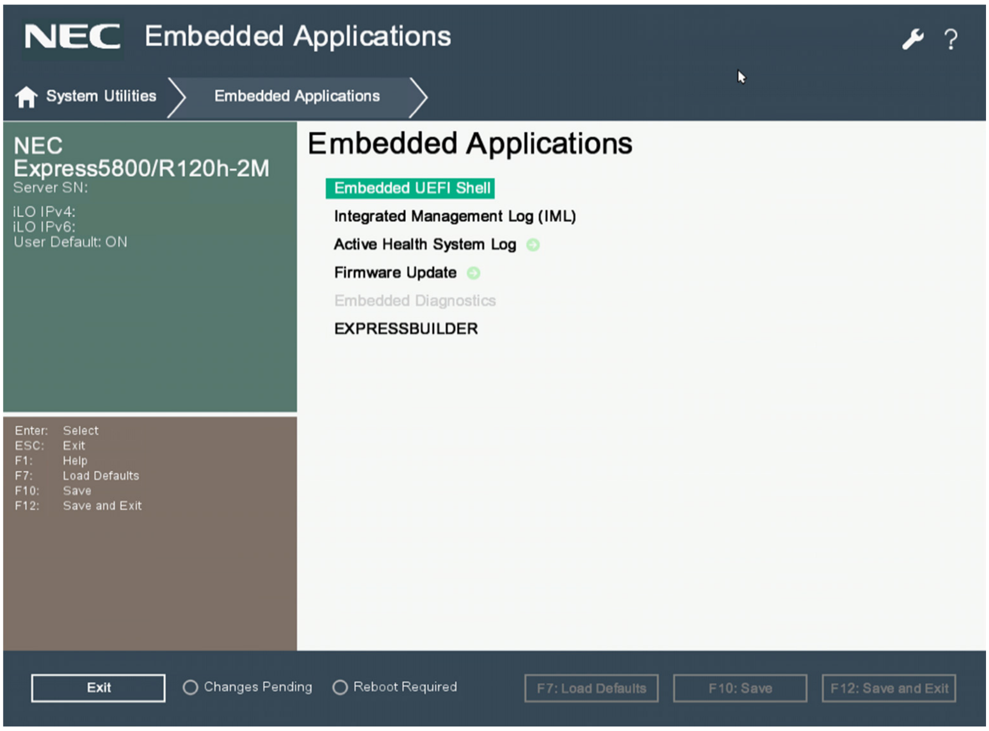

NEC Boot Menu
System Utilities
One-Time Boot Menu
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
One-Time Boot Menu
Generic USB Boot
Embedded LOM 1 Port 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC (HTTP(S) IPv4)
Embedded LOM 1 Port 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC (PXE IPv4)
Embedded LOM 1 Port 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC (HTTP(S) IPv6)
Embedded LOM 1 Port 1 : HPE Ethernet 1Gb 4-port 331i Adapter - NIC (PXE IPv6)
Run a UEFI application from a file system
Legacy BIOS One-Time Boot Menu
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

The options are as below.

Option	Parameter	Description
OS boot manager such as Windows Boot Manager	–	Boots the installed OS.
Generic USB Boot	–	Boots from the installed USB boot device. Provides the placeholder of the USB device bootable with UEFI. By setting the boot order of this option, you can retain the boot order when using the USB device that may be installed in the future.
Embedded LOM	–	Boots from the boot device connected to Embedded LOM.
Embedded UEFI Shell	–	Boots from Embedded UEFI Shell.
Embedded SATA Port	–	Boots from the boot device connected to Embedded SATA Port.
Run the UEFI application from the file system	–	Selects the UEFI applications that run from the file system. Shows all the FAT file systems available in the system.
Legacy BIOS One-Time Boot Menu	–	Launches **Legacy BIOS One-Time Boot Menu**.

1.2.6 Embedded Applications

When you select **Embedded Applications** from the System Utilities, the **Embedded Applications** menu appears.

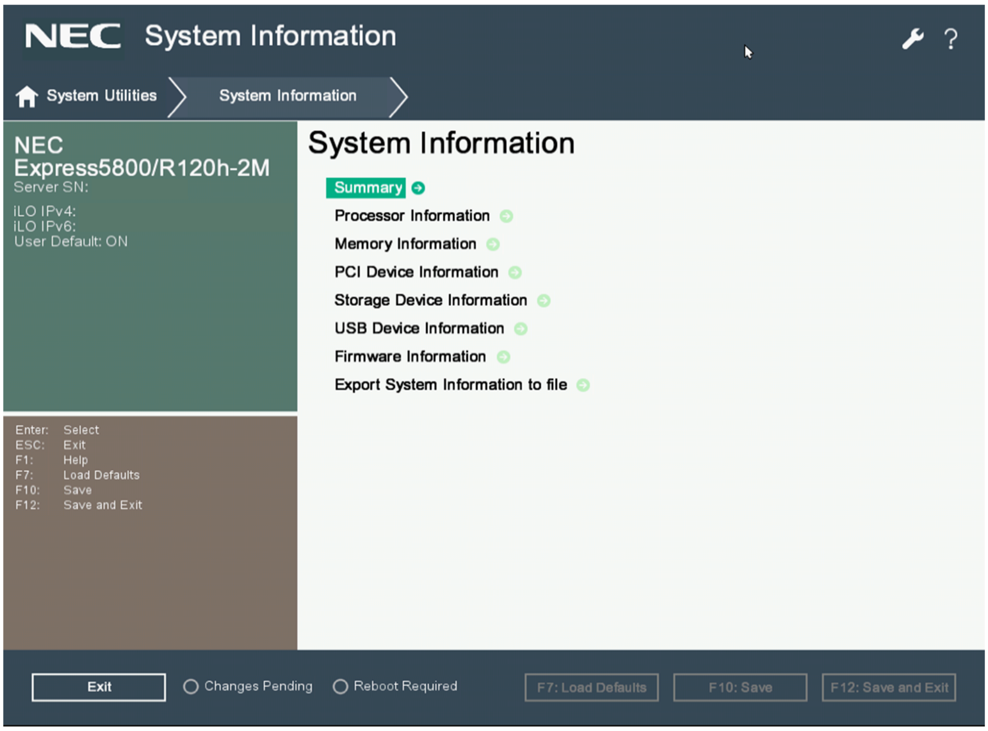

NEC Embedded Applications
System Utilities
Embedded Applications
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
Embedded Applications
Embedded UEFI Shell
Integrated Management Log (IML)
Active Health System Log
Firmware Update
Embedded Diagnostics
EXPRESSBUILDER
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Embedded UEFI Shell	–	Exits the System Utilities and launches the built-in UEFI shell which is used to script and run UEFI applications, such the UEFI boot loader, in the preboot command line environment.
Integrated Management Log (IML)	–	Displays [Integrated Management Log (IML)]. IML shows the log of the events that occurred on this machine. IML entries help diagnose problems or identify potential problems.
Active Health System Log	–	The Active Health System monitors and records changes in the server hardware and system configuration. The Active Health System assists in diagnosing problems and delivering rapid resolution when system failures occur.
Firmware Update	–	Select this option to update firmware components on your system.
Embedded Diagnostics	–	This server does not support this option.
EXPRESSBUILDER	–	Use this option to enable or disable the EXPRESSBUILDER functionality. When disabled, you are prevented from entering the EXPRESSBUILDER environment by pressing F10 during server boot. You must set this option to enabled to use EXPRESSBUILDER functionality.

1.2.7 System Information

When you select **System Information** from the System Utilities, the **System Information** menu appears.


NEC System Information
System Utilities
System Information
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
System Information
Summary
Processor Information
Memory Information
PCI Device Information
Storage Device Information
USB Device Information
Firmware Information
Export System Information to file
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
Summary	–	Displays a summary of System Information.
Processor Information	–	Displays detailed information about the CPU(s) on the system.
Memory Information	–	Displays detailed information about the memory on the system.
PCI Device Information	–	Displays detailed information about the PCI Devices found in the system.
Storage Device Information	–	Displays information about the storage devices on the system.
USB Device Information	–	Displays information about the USB devices on the system.
Firmware Information	–	Displays detailed information about the firmware images reported by the devices in the system.
Export System Information to file	–	Exports the System Information to a file.

(1) Summary Menu

When you select **System Information** > **Summary** from the System Utilities, the **Summary** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
System Name	(Display only)	Displays the system name and generation.
Serial Number	(Display only)	Displays the system serial number.
Product ID	(Display only)	Displays the Part Number.
System ROM	(Display only)	Displays the System ROM version and date.
Redundant System ROM	(Display only)	Displays the Redundant System ROM version and date.
Power Management Controller FW Version	(Display only)	Shows the firmware version of the power management controller.
User Defaults	(Display only)	Displays whether user default settings are enabled.
Boot Mode	(Display only)	Displays the Boot Mode setting.
Total DIMM Capacity	(Display only)	Displays the total memory installed in the system.
Total NVDIMM-N Capacity	(Display only)	Displays the total NVDIMM-N installed in the system.
Available System Memory	(Display only)	Displays the amount of configured system memory available for use in the system.
Processor 1	(Display only)	Displays processor information.
Processor 2	(Display only)	Displays processor information.
iLO Firmware Version	(Display only)	Shows the iLO firmware version.
iLO IPv4 address	(Display only)	Shows the iLO IPv4 address.
iLO IPv6 address	(Display only)	Shows the iLO IPv6 address.
Date and Time	(Display only)	Displays the system date and time in the following format. yyyy-mm-ddThh:mm:ss+Time_Zone
Network Devices	(Display only)	–
Embedded LOM x Port x	(Display only)	Shows the MAC address of the selected network device.

(2) Processor Information Menu

When you select **System Information** > **Processor Information** from the System Utilities, the **Processor Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
CPU	(Display only)	The CPU number as enumerated by BIOS.
Socket	(Display only)	The CPU socket as enumerated by BIOS.
Socket Locator	(Display only)	The CPU socket as labeled on the system board.
Populated	(Display only)	Whether the CPU socket is populated with a CPU package.
Manufacturer Description	(Display only)	A brief description of the CPU written by the CPU manufacturer. This string is retrieved from the CPU itself.
Characteristics	(Display only)	Functions that the processor supports.
Core Count	(Display only)	The number of physical cores found in the CPU package.
Enabled Core Count	(Display only)	The number of physical cores that are enabled in the CPU package.
Thread Count	(Display only)	The number of logical cores found in the CPU package.
Rated Speed	(Display only)	The nominal speed rating of the processor as defined by the manufacturer.
External Clock	(Display only)	The external clock speed of the processor as defined by the manufacturer.
Voltage	(Display only)	The nominal supply voltage of the processor as defined by the manufacturer.
Microcode Patches	–	A list of microcode patches that have been released from the processor manufacturer and are being installed by BIOS.
ID	(Display only)	Shows the processor microcode ID.
Date	(Display only)	Shows the release date of this microcode patch.
CPUID	(Display only)	Shows the CPUID associated to this microcode patch.
L1 Cache	–	Detailed information about the L1 cache for this processor.
Maximum Size	(Display only)	The total amount of cache found in the socket for this cache level.
Installed Size	(Display only)	The actual amount of cache installed for this cache level.
Speed	(Display only)	The rated speed of this cache device as defined by the manufacturer.
Associativity	(Display only)	The technique used to map this cache device to main memory.
ECC Type	(Display only)	The error correction technique used by this cache device.
Policy	(Display only)	The technique used to maintain data coherency for this cache device.
Supported SRAM Type	(Display only)	The type of SRAM technology that this cache device supports.
Current SRAM Type	(Display only)	The type of SRAM technology that this cache device is configured to use.
Type	(Display only)	The type of data that is being cached by this cache device.
L2 Cache	–	Detailed information about the L2 cache for this processor.

Option	Parameter	Description
Maximum Size	(Display only)	The total amount of cache found in the socket for this cache level.
Installed Size	(Display only)	The actual amount of cache installed for this cache level.
Speed	(Display only)	The rated speed of this cache device as defined by the manufacturer.
Associativity	(Display only)	The technique used to map this cache device to main memory.
ECC Type	(Display only)	The error correction technique used by this cache device.
Policy	(Display only)	The technique used to maintain data coherency for this cache device.
Supported SRAM Type	(Display only)	The type of SRAM technology that this cache device supports.
Current SRAM Type	(Display only)	The type of SRAM technology that this cache device is configured to use.
Type	(Display only)	The type of data that is being cached by this cache device.
L3 Cache	–	Detailed information about the L3 cache for this processor.
Maximum Size	(Display only)	The total amount of cache found in the socket for this cache level.
Installed Size	(Display only)	The actual amount of cache installed for this cache level.
Speed	(Display only)	The rated speed of this cache device as defined by the manufacturer.
Associativity	(Display only)	The technique used to map this cache device to main memory.
ECC Type	(Display only)	The error correction technique used by this cache device.
Policy	(Display only)	The technique used to maintain data coherency for this cache device.
Supported SRAM Type	(Display only)	The type of SRAM technology that this cache device supports.
Current SRAM Type	(Display only)	The type of SRAM technology that this cache device is configured to use.
Type	(Display only)	The type of data that is being cached by this cache device.

(3) Memory Information Menu

When you select **System Information** > **Memory Information** from the System Utilities, the **Memory Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Total System Memory	(Display only)	Shows the total amount of the detected system memory.
Total Memory Slots	(Display only)	Shows the total number of physical memory slots within this system.
Operating Frequency	(Display only)	The effective frequency of all the memory modules within the system in operation is determined from the bus rate, module rate, and others.
Operating Voltage	(Display only)	Shows the supply voltage of all the memory modules within the system.
Location	(Display only)	Shows the physical CPU package to which all the following memory modules are directly connected.
Total Memory	(Display only)	Shows the total amount of the system memory that is directly connected to this CPU package.
Number of Slot	(Display only)	Shows the total number of physical memory slots that are directly connected to this CPU package.
Installed Modules	(Display only)	Shows the number of memory modules that are directly connected to this CPU package.
Socket Locator	(Display only)	Shows the memory module socket labeled on the system board.
Status	(Display only)	Shows the currently known status of this memory module or socket.
Size	(Display only)	Shows the total amount of memory within this memory module.
Manufacturer	(Display only)	Shows the vendor of this memory module.
Memory Type	(Display only)	Shows the memory type used by the memory module.
Part Number	(Display only)	Shows the serial number of the memory module.
Device Type	(Display only)	Shows the type of this memory module. Example: DIMM, DDR
Technology	(Display only)	Shows the industry standard technology used by this memory module.
Maximum Supported Frequency	(Display only)	Shows the maximum effective frequency of this memory module.
Minimum Supported Voltage	(Display only)	Shows the minimum supply voltage supported by this memory module.
Maximum Supported Voltage	(Display only)	Shows the maximum supply voltage supported by this memory module.
Configured Voltage	(Display only)	Shows the supply voltage of this memory module although it is currently set.
Ranks	(Display only)	Shows the number of ranks on this memory module.
Data Width	(Display only)	Shows the data width (bits) supported by this memory module.
Total Width	(Display only)	Shows the total width (bits) supported by this memory module. This value can include other overhead such as error correction.
Error Correction	(Display only)	Shows the error correction technique used in this memory module.
Non-volatile Size	(Display only)	Displays the size (in bytes) of the non-volatile part of the memory device.
Volatile Size	(Display only)	Displays the size (in bytes) of the volatile part of the memory device.
Cache Size	(Display only)	Displays the size (in bytes) of the cache part of the memory device.
Logical Size	(Display only)	Displays the size (in bytes) of the logical memory device.

(4) PCI Device Information Menu

When you select **System Information** > **System Information** > **PCI Device Information** from the System Utilities, the **PCI Device Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Location	(Display only)	Shows the physical position (of this PCI device) within the system.
Slot Description	(Display only)	Shows details of this PCI slot.
UEFI Device Path	(Display only)	Shows that logical path to the device that was determined by the UEFI BIOS firmware.
UEFI Structured Name	(Display only)	Shows that logical name of the device that was determined by the UEFI BIOS firmware.
Populated	(Display only)	Specifies but shows whether a device is installed to this PCI slot.
Enabled	(Display only)	Specifies whether this PCI slot is enabled.
Device Name	(Display only)	Shows the device name.
Device Type	(Display only)	Shows the device type.
PCI Address	(Display only)	Shows the logical address of the PCI device within the PCI topology of the system.
PCI Vendor ID	(Display only)	Shows the hexadecimal number that signifies the 16-bit device vendor ID.
PCI Device ID	(Display only)	Shows the 16-bit device ID assigned with a hexadecimal number.
PCI Sub Vendor ID	(Display only)	Shows the 16-bit ID (hexadecimal number) with which the original design of the device may have been changed.
PCI Sub Device ID	(Display only)	Shows the PCI sub device ID (hexadecimal number).
PCI Class Code	(Display only)	Shows the general type of this PCI device. For details, see "Use of PCI".
PCI Sub Class Code	(Display only)	Shows a specific type of this PCI device. For details, see "Use of PCI".
Firmware	(Display only)	Shows the version of the firmware reported by the device. Note that it reports that the device has multiple firmware revisions.

(5) Storage Device Information Menu

When you select **System Information** > **System Information** > **Storage Device Information** from the System Utilities, the **Storage Device** Information menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Capacity	(Display only)	Displays the storage capacity of the device in megabytes.
Drive Type	(Display only)	Displays the classification of this storage device.
Location	(Display only)	Displays the physical location of the storage device.
Serial	(Display only)	Displays the serial number as a UTF-8 string.
Model Number	(Display only)	Displays the model number as a UTF-8 string.
Firmware Version	(Display only)	Displays the firmware version number as a UTF-8 string.

(6) USB Device Information Menu

When you select **System Information** > **System Information** > **USB Device Information** from the System Utilities, the **USB Device Information** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Location	(Display only)	Displays the physical location of this USB device within the system.
Name	(Display only)	Displays the name of this USB device.
UEFI Device Path	(Display only)	Displays the logical path to the device as determined by the UEFI BIOS firmware.
USB Vendor ID	(Display only)	Displays the 16-bit ID of the vendor of the device in hexadecimal.
USB Class Code	(Display only)	Displays the class code of this USB device. For details, refer to the USB specifications.
USB Sub Class and Protocol	(Display only)	Displays the sub class and protocol of this USB device. For details, refer to the USB specifications.
USB Product ID	(Display only)	Displays the 16-bit ID of the device in hexadecimal as assigned by the manufacturer.

(7) Firmware Information Menu

When you select **System Information** > **System Information** > **Firmware Information** from the System Utilities, the **Firmware Information** menu appears.

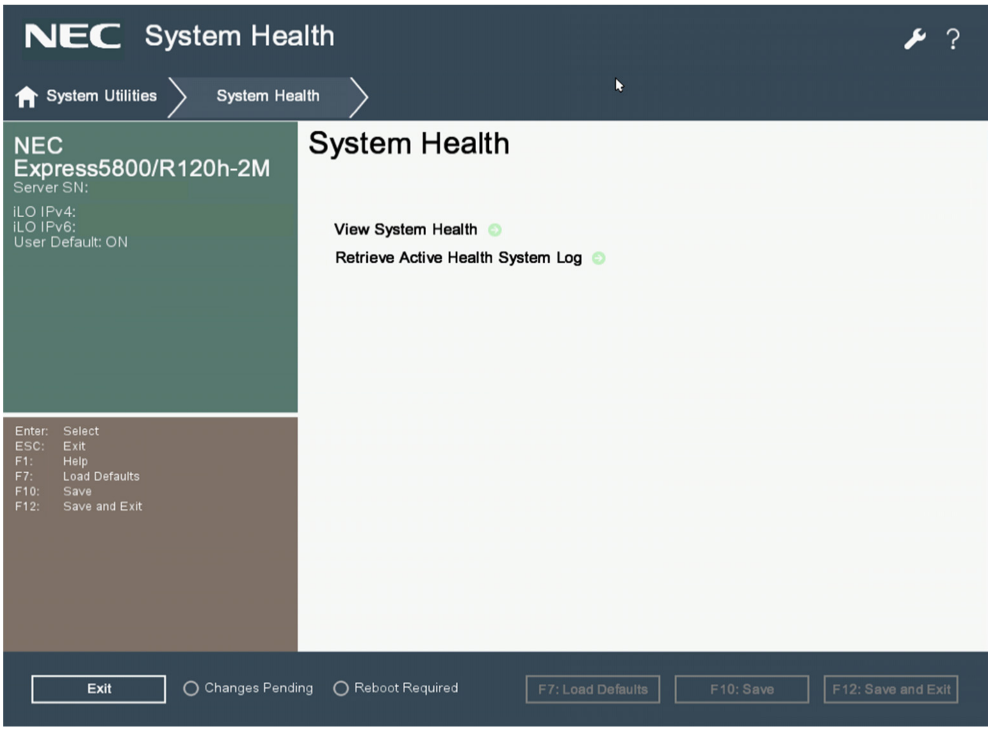
The number of options displayed increases or decreases, depending on whether or not a PCIe device is installed.

For details about the options, see the table below.

Option	Parameter	Description
System ROM	(Display only)	Shows the device name and firmware version reported by the device.
Redundant System ROM	(Display only)	Shows the device name and firmware version reported by the device.
Power Management Controller Firmware	(Display only)	Shows the device name and firmware version reported by the device.
Power Management Controller Firmware Bootloader	(Display only)	Shows the device name and firmware version reported by the device.
System Programmable Logic Device	(Display only)	Shows the device name and firmware version reported by the device.
Server Platform Services (SPS) Firmware	(Display only)	Shows the device name and firmware version reported by the device.
Intelligent Platform Abstraction Data	(Display only)	Shows the device name and firmware version reported by the device.
EXPRESSBUILDER	(Display only)	Shows the device name and firmware version reported by the device.
Innovation Engine(IE) Firmware	(Display only)	Shows the device name and firmware version reported by the device.
Embedded Video Controller	(Display only)	Shows the device name and firmware version reported by the device.
Network Controller	(Display only)	Shows the device name and firmware version reported by the device.
(Option part name)	(Display only)	Shows the device name and firmware version reported by the device.
iLO Firmware	(Display only)	Shows the iLO firmware version.

1.2.8 System Health

When you select **System Health** from the System Utilities, the **System Health** menu appears.


NEC System Health
System Utilities
System Health
NEC
Express5800/R120h-2M
Server SN:
iLO IPv4:
iLO IPv6:
User Default: ON
System Health
View System Health
Retrieve Active Health System Log
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

For details about the options, see the table below.

Option	Parameter	Description
View System Health	–	Displays the **View System Health** menu. Use this option to display the health status of all the devices within the system.
Retrieve Active Health System Log	–	Active Health System monitors and records changes in server hardware and system configuration. It assists in diagnosing the problem and solving it quickly when a system failure occurs.

(1) View System Health Menu

When you select **System Health** > **View System Health** from the System Utilities, the **View System Health** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
[Healthy] System BIOS	–	Shows the system status detected by the system BIOS.
[Healthy] BMC embedded health Device	–	Shows the BMC status.
[Healthy] (Device name) Example: SlotX PortY : Intel(R) Ethernet Controller	–	Shows the status of the selected device. The number of options displayed increases or decreases, depending on whether or not a PCIe device is installed.

(2) Retrieve Active Health System Log Menu

When you select **System Health** > **Retrieve Active Health System Log** from the System Utilities, the **Retrieve Active Health System Log** menu appears.

For details about the options, see the table below.

Option	Parameter	Description
Available Download Period	(Display only)	Shows the download period of the Active Health System Log available on the system.
Retrieve a Range	(Check Box)	Enables/disables the range specification of Active Health System Logs to download.
Range Start Date	–	Select a start range for the Active Health System log in days.
Range End Date	–	Select an end range for the Active Health System log in days.
Select File	–	Creates an Active Health System Log file. The file can be uploaded to a location on the HTTP(S) network or written to a local or virtual medium. The local or virtual medium requires a file system that allows for writing of a FAT16 or FAT32 partition.
Start Retrieve	–	Starts the AHS Log download process.

1.3 Workload Profiles

1.3.1 Overview

Workload Profiles allows you to tune the resources in your server by choosing a pre-configured workload profile. The server will automatically configure the BIOS/Platform Configuration (RBSU) settings to match the selected workload. There are multiple options that are available for BIOS/Platform Configuration (RBSU) configuration. Each profile is designed to obtain specific performance results and sets different options to meet those results. Not all profiles set the same options to specific settings.

The options that a profile sets are called dependencies.

All other options are unaffected by the Workload Profile and are referred to as nondependent settings.

1.3.2 Applying a Workload Profile

You apply a Workload Profile to have the system manage your workload according to predefined settings provided with the system. Dependent options cannot be changed and are grayed out. You can change any nondependent options in a profile.

Procedure

1. From the System Utilities screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Workload Profile**.
2. Select a **Workload Profile**.
3. Optional: Change any nondependent options that you want to change.
4. Save and reboot to apply your Workload Profile by pressing <F12>.

1.3.3 Changing dependent options after applying a profile

There may be one or more dependent options that you want to change in your Workload Profile. Dependent options cannot be changed for a predefined profile. You can change the dependent options in Custom mode. When you are in Custom mode, your deployment is no longer in profile mode and you can manually adjust option settings. When you enter Custom mode, all the settings from the previously applied profile are shown. The easiest way to change dependent settings is to modify an applied profile. First apply a Workload Profile that has most of the settings that you want to use then change to Custom mode. Then change only the settings you want to have new values.

Prerequisites

Apply a Workload Profile before you do this task.

Procedure

1. First, apply an approximate profile according to the procedure in "Applying a Workload Profile".
2. From the System Utilities screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Workload Profile**.
3. Select the Custom profile option. All of the settings from the previously applied Workload Profile are shown. All options are editable.
4. Change the options that you want to have new values.
5. Save and reboot to apply the changes by pressing <F12>.

1.3.4 Before changing to another Workload Profile

If you want to use another Workload Profile, it is recommended that the setting of **Restore Default System Settings** be restored to the default setting by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options**.

1.3.5 System provided Workload Profiles

The system provides Workload Profiles described below.

Profiles	Description
General Power Efficient Compute	This profile is the default profile for most servers. This profile applies the most common performance settings that benefit most application workloads while also enabling power management settings that have minimal impact to overall performance. The settings that are applied heavily favor a balanced approach between general application performances versus power efficiency. This profile is recommended for customers that do not typically tune their BIOS for their workload.
General Peak Frequency Compute	This profile is intended for workloads that generally benefit from processors or memory that must achieve the maximum frequency possible, for any individual core, at any time. Power management settings are applied when they ensure that any component frequency upside can be readily achieved. Processing speed is favored over any latencies that might occur. This profile is a general-purpose profile, so optimizations are done generically to increase processor core and memory speed. This profile benefits workloads that typically benefit from faster compute time.
General Throughput Compute	This profile is intended to be used for workloads where the total maximum sustained workload throughput is needed. Increased throughput does not always occur when the processor runs at the highest individual core speed. Increased throughput can occur when the processor is able to perform sustained work across all available cores during maximum utilization. Power management settings are disabled when they are known to have impact on maximum achievable bandwidth.
Virtualization - Power Efficient	This profile is intended to be used for virtualization environments. The profile ensures that all available virtualization options are enabled. Certain virtualization technologies can have possible performance impacts to non-virtualized environments and can be disabled in other profiles. Power management settings can have an impact on performance when running virtualization operating systems and this profile applies power management settings that are virtualization friendly.
Virtualization - Max Performance	This profile is intended to be used for virtualization environments. The profile ensures that all available virtualization options are enabled. Power management settings are disabled in favor of delivering maximum performance
Low Latency	This profile is intended to be used by customers who desire the least amount of computational latency for their workloads. Maximum speed and throughput are often sacrificed to lower overall computational latency. Power management and other management features that might introduce computational latency are also disabled. The profile benefits customers running Real-Time Operating Systems (RTOS) or other transactional latency sensitive workloads.
Mission Critical	This profile is intended to be used by customers who trade off performance for server reliability above the basic server defaults. The profile enables advanced memory reliability, availability, and serviceability (RAS) features that are known to have more than a measurable impact to computational performance. Enabling this profile will have an impact to maximum memory bandwidth and will increase memory latency.
Transactional Application Processing	This profile is intended to be used for business processing environments, such as online transaction processing (OLTP) applications that require a database back-end. For example, workloads typically comprised of a high number of user-based, transactional applications running on a single server with cohosted database component. The profile balances the requirement of managing both peak frequency and throughput.
High Performance Compute (HPC)	This profile is intended for customers running in a traditional HPC environment. Typically, these environments are clustered environments where each node performs at maximum utilization for extended periods of time to solve large-scale scientific and engineering workloads. The power management is typically disabled in favor of sustained available bandwidth and processor compute capacity. This profile is similar to the Low Latency profile except that some latency is accepted to achieve maximum throughput.

Profiles	Description
Decision Support	This profile is intended for Enterprise Business Database (Business Intelligence) workloads that are focused on operating and/or accessing data warehouses, such as data mining or online analytical processing (OLAP).
Graphic Processing	This profile is intended for workloads that are run on server configurations which utilize Graphics Processing Units (GPUs.) GPUs typically depend on maximum bandwidth between I/O and Memory. Power management features that have impact on the links between I/O and memory are disabled. Peer to Peer traffic is also critical and therefore virtualization is also disabled
I/O Throughput	This profile is intended to be used for configurations that depend on maximum throughput between I/O and memory. Processor utilization driven power management features that have performance impact to the links between I/O and memory are disabled.
Custom	This option on the Workload Profiles menu disables Workload Profiles. Use this option if you want to set specific options for your deployment manually. When you select Custom, all the settings for the previously selected profile are carried forward. You can edit all or some of the options. Custom is not a profile and settings that you specify are not saved as a template

1.3.6 Dependent options during configuration of Workload Profiles

Different options and values are set depending on the profile used. Options set by each profile are called dependent options, which are grayed out and cannot be changed. Other options that are not affected by the profile are called non-dependent options. The settings of such options can be adjusted manually. In the tables on the subsequent pages, options with setting values are dependent options. Options with "-" or no setting value are non-dependent options.

Table of Workload profile dependencies (1 of 4)

-: Option whose setting can be changed

Workload profile Settings			[General Power Efficient Compute]	General Peak Frequency Compute	General Throughput Compute
Breadcrumbs	Option	(default)			
BIOS/Platform Configuration (RBSU) > Processor Options	Processor x2APIC Support	[Enabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Memory Options	Advanced Memory Protection	[Advanced ECC Support]	-	-	-
	Memory Refresh Rate	[1x Refresh]	-	1x Refresh	1x Refresh
	Channel Interleaving	[Enabled]	Enabled	Enabled	Enabled
	Memory Bus Frequency	[Auto]	-	-	-
	Memory Patrol Scrubbing	[Enabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Virtualization Options	Intel(R) Virtualization Technology (Intel VT)	[Enabled]	-	-	-
	Intel(R) VT-d	[Enabled]	-	-	-
	SR-IOV	[Enabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options	Power Regulator	[Dynamic Power Savings Mode]	Dynamic Power Savings Mode	Static High Performance Mode	Static High Performance Mode
	Minimum Processor Idle Power Core C-State	[No C-states]	C6 State	-	-
	Minimum Processor Idle Power Package C-State	[No Package State]	Package C6(retention) State	Package C6(retention) State	Package C6(retention) State
	Intel(R) Turbo Boost Technology	[Enabled]	Enabled	Enabled	Enabled
	Energy/Performance Bias	[Balanced Performance]	Balanced Performance	-	Maximum Performance
	Collaborative Power Control	[Enabled]	Enabled	Disabled	Disabled
	Intel DMI Link Frequency	[Auto]	Auto	Auto	Auto
	NUMA Group Size Optimization	[Flat]	Flat	Clustered	Clustered
	Intel Performance Monitoring Support	[Disabled]	-	-	-
	Uncore Frequency Scaling	[Auto]	Auto	Maximum	-
	Sub-NUMA Clustering	[Disabled]	Disabled	-	Enabled
	Energy-Efficient Turbo	[Enabled]	Enabled	Disabled	Disabled
	Local/Remote Threshold	[Auto]	-	-	-
	LLC Dead Line Allocation	[Enabled]	-	-	-
	Stale A to S	[Disabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Processor Prefetcher Options	HW Prefetcher	[Enabled]	Enabled	Enabled	Enabled
	Adjacent Sector Prefetch	[Enabled]	Enabled	Enabled	Enabled
	DCU Stream Prefetcher	[Enabled]	Enabled	Enabled	Enabled
	DCU IP Prefetcher	[Enabled]	Enabled	Enabled	Enabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options > I/O Options	Intel NIC DMA Channels(IOAT)	[Enabled]	Enabled	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Intel UPI Options	UPI Link Power Management	[Enabled]	Enabled	Disabled	Disabled

Table of Workload profile dependencies (2 of 4)

-: Option whose setting can be changed

Workload profile Settings			Virtualization - Power Efficient	Virtualization - Max Performance	Low Latency
Breadcrumbs	Option	(default)			
BIOS/Platform Configuration (RBSU) > Processor Options	Processor x2APIC Support	[Enabled]	-	-	Disabled
BIOS/Platform Configuration (RBSU) > Memory Options	Advanced Memory Protection	[Advanced ECC Support]	-	-	Advanced ECC Support
	Memory Refresh Rate	[1x Refresh]	-	-	1x Refresh
	Channel Interleaving	[Enabled]	Enabled	Enabled	Enabled
	Memory Bus Frequency	[Auto]	-	-	-
	Memory Patrol Scrubbing	[Enabled]	-	-	Disabled
BIOS/Platform Configuration (RBSU) > Virtualization Options	Intel(R) Virtualization Technology (Intel VT)	[Enabled]	Enabled	Enabled	Disabled
	Intel(R) VT-d	[Enabled]	Enabled	Enabled	Disabled
	SR-IOV	[Enabled]	Enabled	Enabled	Disabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options	Power Regulator	[Dynamic Power Savings Mode]	OS Control Mode	Static High Performance Mode	Static High Performance Mode
	Minimum Processor Idle Power Core C-State	[No C-states]	C6 State	No C-states	No C-states
	Minimum Processor Idle Power Package C-State	[No Package State]	Package C6(retention) State	No Package State	No Package State
	Intel(R) Turbo Boost Technology	[Enabled]	-	Enabled	Disabled
	Energy/Performance Bias	[Balanced Performance]	Balanced Performance	Maximum Performance	Maximum Performance
	Collaborative Power Control	[Enabled]	Enabled	Disabled	Disabled
	Intel DMI Link Frequency	[Auto]	Auto	Auto	Auto
	NUMA Group Size Optimization	[Flat]	Clustered	Clustered	Clustered
	Intel Performance Monitoring Support	[Disabled]	-	-	-
	Uncore Frequency Scaling	[Auto]	Auto	Maximum	Maximum
	Sub-NUMA Clustering	[Disabled]	Disable	Enabled	-
	Energy-Efficient Turbo	[Enabled]	Enabled	Disabled	Disabled
	Local/Remote Threshold	[Auto]	-	-	-
	LLC Dead Line Allocation	[Enabled]	-	-	-
	Stale A to S	[Disabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Processor Prefetcher Options	HW Prefetcher	[Enabled]	-	-	Enabled
	Adjacent Sector Prefetch	[Enabled]	-	-	Enabled
	DCU Stream Prefetcher	[Enabled]	-	-	Enabled
	DCU IP Prefetcher	[Enabled]	-	-	Enabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options > I/O Options	Intel NIC DMA Channels(IOAT)	[Enabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Intel UPI Options	UPI Link Power Management	[Enabled]	Enabled	Disabled	Disabled

Table of Workload profile dependencies (3 of 4)

-: Option whose setting can be changed

Workload profile Settings			Mission Critical	Transactional Application Processing	High Performance Compute (HPC)
Breadcrumbs	Option	(default)			
BIOS/Platform Configuration (RBSU) > Processor Options	Processor x2APIC Support	[Enabled]	-	-	Disabled
BIOS/Platform Configuration (RBSU) > Memory Options	Advanced Memory Protection	[Advanced ECC Support]	Fault Tolerant (ADDDC)	-	Advanced ECC Support
	Memory Refresh Rate	[1x Refresh]	2x Refresh	-	1x Refresh
	Channel Interleaving	[Enabled]	Enabled	Enabled	Enabled
	Memory Bus Frequency	[Auto]	-	-	-
	Memory Patrol Scrubbing	[Enabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Virtualization Options	Intel(R) Virtualization Technology (Intel VT)	[Enabled]	-	-	Disabled
	Intel(R) VT-d	[Enabled]	-	-	Disabled
	SR-IOV	[Enabled]	-	-	Disabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options	Power Regulator	[Dynamic Power Savings Mode]	-	Static High Performance Mode	Static High Performance Mode
	Minimum Processor Idle Power Core C-State	[No C-states]	-	No C-states	No C-states
	Minimum Processor Idle Power Package C-State	[No Package State]	-	No Package State	No Package State
	Intel(R) Turbo Boost Technology	[Enabled]	-	Enabled	Enabled
	Energy/Performance Bias	[Balanced Performance]	-	Maximum Performance	Maximum Performance
	Collaborative Power Control	[Enabled]	-	-	Disabled
	Intel DMI Link Frequency	[Auto]	Auto	Auto	Auto
	NUMA Group Size Optimization	[Flat]	-	Clustered	Clustered
	Intel Performance Monitoring Support	[Disabled]	-	-	-
	Uncore Frequency Scaling	[Auto]	-	-	Maximum
	Sub-NUMA Clustering	[Disabled]	-	-	-
	Energy-Efficient Turbo	[Enabled]	-	-	Disabled
	Local/Remote Threshold	[Auto]	-	-	-
	LLC Dead Line Allocation	[Enabled]	-	-	-
	Stale A to S	[Disabled]	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Processor Prefetcher Options	HW Prefetcher	[Enabled]	Enabled	Enabled	Enabled
	Adjacent Sector Prefetch	[Enabled]	Enabled	Enabled	Enabled
	DCU Stream Prefetcher	[Enabled]	Enabled	Enabled	Enabled
	DCU IP Prefetcher	[Enabled]	Enabled	Enabled	Enabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options > I/O Options	Intel NIC DMA Channels(IOAT)	[Enabled]	-	Enabled	Enabled
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Intel UPI Options	UPI Link Power Management	[Enabled]	-	Disabled	Disabled

Table of Workload profile dependencies (4 of 4)

-: Option whose setting can be changed

Workload profile Settings			Decision Support	Graphic Processing	I/O Throughput	Custom
Breadcrumbs	Option	(default)				
BIOS/Platform Configuration (RBSU) > Processor Options	Processor x2APIC Support	[Enabled]	-	Disabled	-	-
BIOS/Platform Configuration (RBSU) > Memory Options	Advanced Memory Protection	[Advanced ECC Support]	-	-	-	-
	Memory Refresh Rate	[1x Refresh]	-	-	-	-
	Channel Interleaving	[Enabled]	Enabled	Enabled	Enabled	-
	Memory Bus Frequency	[Auto]	-	-	-	-
	Memory Patrol Scrubbing	[Enabled]	-	-	-	-
BIOS/Platform Configuration (RBSU) > Virtualization Options	Intel(R) Virtualization Technology (Intel VT)	[Enabled]	-	Disabled	-	-
	Intel(R) VT-d	[Enabled]	-	Disabled	-	-
	SR-IOV	[Enabled]	-	Disabled	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options	Power Regulator	[Dynamic Power Savings Mode]	-	-	-	-
	Minimum Processor Idle Power Core C-State	[No C-states]	-	-	-	-
	Minimum Processor Idle Power Package C-State	[No Package State]	-	-	-	-
	Intel(R) Turbo Boost Technology	[Enabled]	-	-	-	-
	Energy/Performance Bias	[Balanced Performance]	-	Maximum Performance	Maximum Performance	-
	Collaborative Power Control	[Enabled]	-	-	-	-
	Intel DMI Link Frequency	[Auto]	Auto	Auto	Auto	-
	NUMA Group Size Optimization	[Flat]	Clustered	Clustered	Clustered	-
	Intel Performance Monitoring Support	[Disabled]	-	-	-	-
	Uncore Frequency Scaling	[Auto]	-	Maximum	Maximum	-
	Sub-NUMA Clustering	[Disabled]	-	-	-	-
	Energy-Efficient Turbo	[Enabled]	-	-	-	-
	Local/Remote Threshold	[Auto]	-	-	-	-
	LLC Dead Line Allocation	[Enabled]	-	-	-	-
	Stale A to S	[Disabled]	-	-	-	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Processor Prefetcher Options	HW Prefetcher	[Enabled]	Enabled	Enabled	Enabled	-
	Adjacent Sector Prefetch	[Enabled]	Enabled	Enabled	Enabled	-
	DCU Stream Prefetcher	[Enabled]	Enabled	Enabled	Enabled	-
	DCU IP Prefetcher	[Enabled]	Enabled	Enabled	Enabled	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > I/O Options	Intel NIC DMA Channels(IOAT)	[Enabled]	-	-	Enabled	-
BIOS/Platform Configuration (RBSU) > Power and Performance Options > Intel UPI Options	UPI Link Power Management	[Enabled]	-	-	-	-

1.4 Backup and Restore of RBSU Settings

1.4.1 Overview

You can backup and restore RBSU settings by using the **Backup and Restore Settings** menu under **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** of System Utilities.

The settings that can be backed up in this menu are for the menus under **System Configuration** > **BIOS/Platform Configuration (RBSU)** of System Utilities.

☐ Items to prepare

- A USB storage device formatted in the FAT32 format

Tips

USB storage devices that are formatted in NTFS or ex-FAT cannot be used.

1.4.2 Important points

Make sure to read the following before performing a backup or restore of RBSU settings.

- **Do not restore** the Serial Number and Product ID **except when replacing the maintenance mother board**.

  If you restore the same Serial Number and Product ID in step 11 of "Restoring RBSU settings" when restoring RBSU settings on multiple servers using one backup file, problems may occur in server management depending on your software.
- The Serial Number and Product ID are device-specific information. Make a note of them and store it in a safe place.

1.4.3 Notes

- The backed up RBSU settings cannot be restored on a different model.
- The following information display menus cannot be backed up or restored.
  - Status
  - Firmware version/revision
- The User Default itself cannot be backed up or restored.

  The following BIOS/RBSU items are modified to the recommended Express sever settings at the time of factory shipment, and saved and enabled as the User Default.
  - **Fan Failure Policy: [Allow Operation with Critical Fan Failures]**
  - Thermal Shutdown: [Disabled]
  - Internal SD Card Slot: [Disabled]
  - Minimum Processor Idle Power Core C-State: [No C-states]
  - Minimum Processor Idle Power Package C-State: [No Package State]

  The current settings can be saved as the User Default of each server by performing the following procedure.

How to save the User Default setting

1. Select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** > **User Default Options**.
2. Specify **Yes, Save** for the **Save User Defaults** option, and then press the <F10> key to save the settings. When setting the **Save User Defaults** option, the pop-up is displayed. Click **OK**.
3. Press the <ESC> key several times to return to System Utilities, and select **Reboot the System** to reboot the server. Then, User Default changes to ON.

- Boot Order items uniquely registered by the OS are not backed up or restored.
  (Example: Windows Boot Manager, Red Hat Enterprise Linux)
  To register Boot Order items uniquely registered by the OS, refer to the procedure described in "Is OS Boot Manager registered in “UEFI Boot Order”?" under "[?] Unable to start OS" in "5. Troubleshooting" in Chapter 1 of the *Maintenance Guide*.
- If there is any difference in hardware configuration between at the time of the backup and at the time of the restore, part of system settings cannot be restored.
- It may take about several minutes to back up or restore system configuration files.

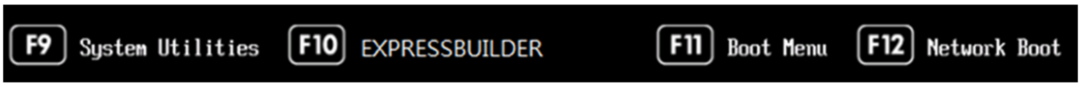
1.4.4 Backing up RBSU settings

This section describes how to back up RBSU settings.

Important **The Serial Number and Product ID are device-specific information. Make a note of them and store it in a safe place.**

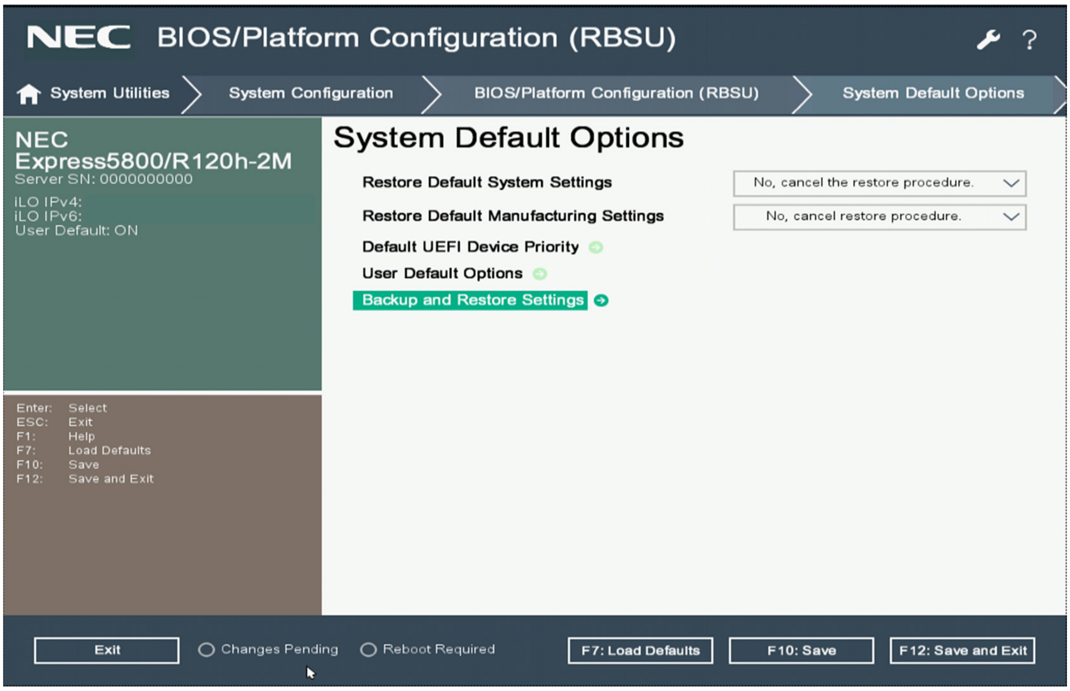
1. Connect the USB storage device to the server.
2. Turn on the power of the server, and proceed with POST.

   After a while, the following message is displayed at the bottom of the screen. Press the <F9> key to start System Utilities. (* The message may vary depending on the environment.)



F9 System Utilities F10 EXPRESSBUILDER F11 Boot Menu F12 Network Boot

3. From System Utilities, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** > **Backup and Restore Settings**.



NEC BIOS/Platform Configuration (RBSU)
?
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
System Default Options

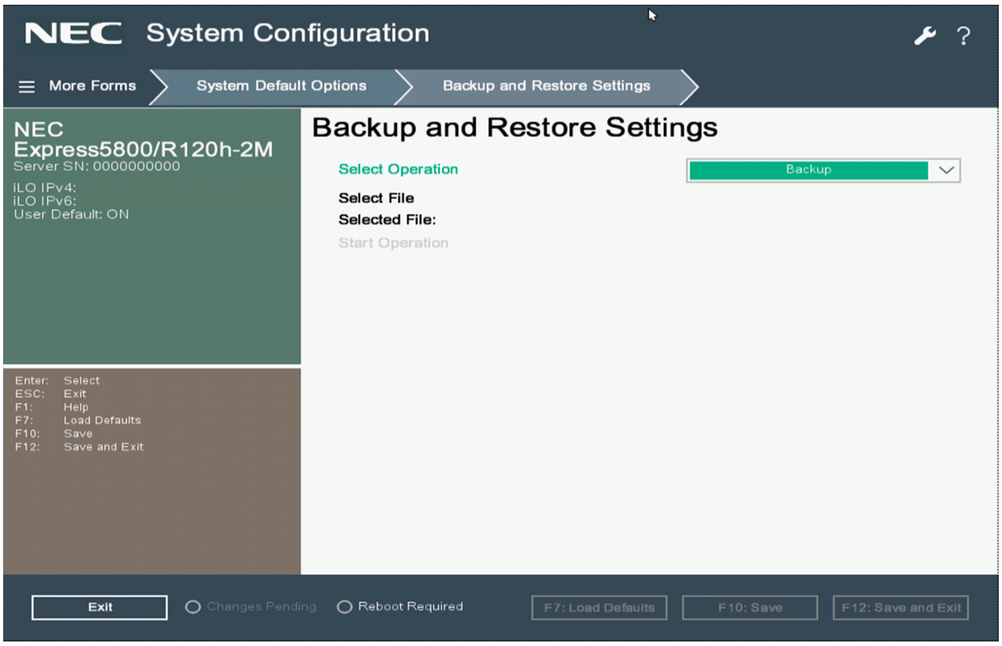
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

System Default Options

Restore Default System Settings: No, cancel the restore procedure.
Restore Default Manufacturing Settings: No, cancel restore procedure.

Default UEFI Device Priority
User Default Options
Backup and Restore Settings
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

4. In "Backup and Restore Settings", select **Backup** for **Select Operation**.


NEC System Configuration
More Forms
System Default Options
Backup and Restore Settings
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Backup and Restore Settings

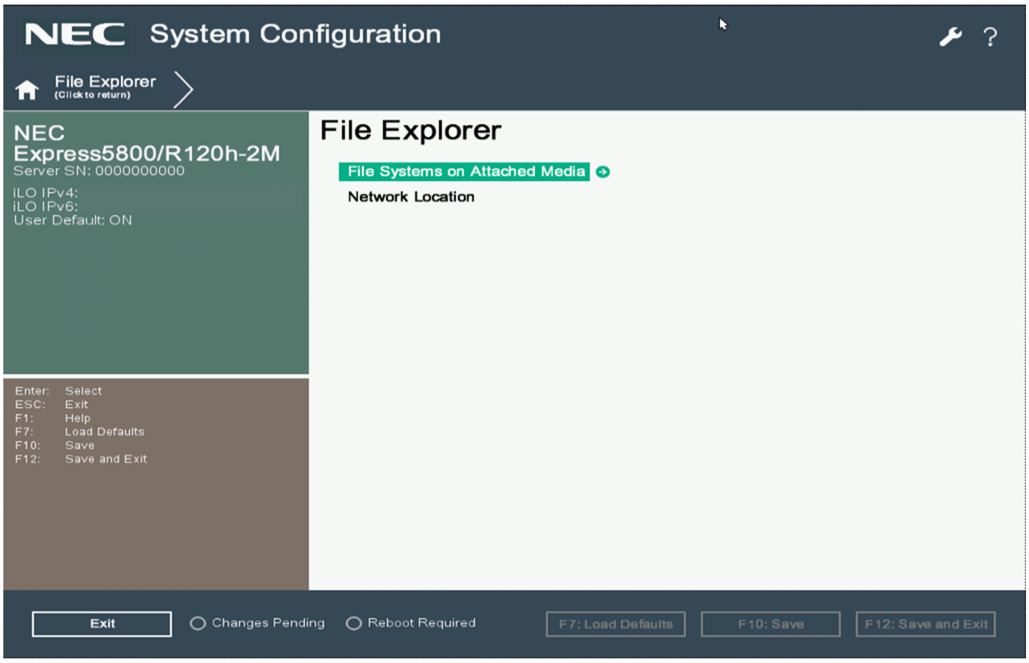
Select Operation: Backup

Select File

Selected File:

Start Operation

5. In "Backup and Restore Settings", select **Select File**.
6. Select **File System on Attached Media**.

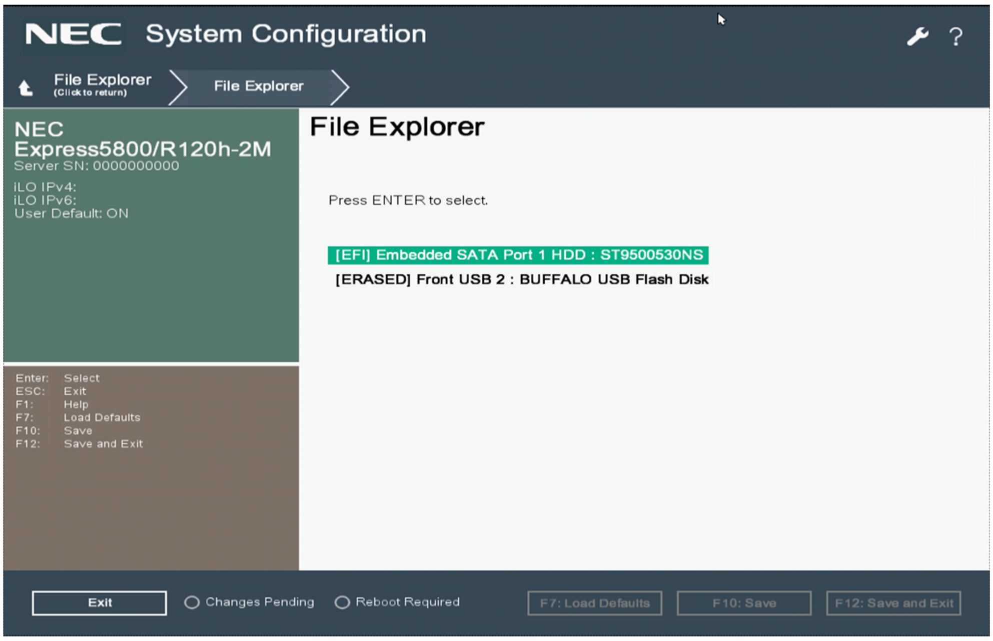

NEC System Configuration
File Explorer
(Click to return)
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

File Explorer

File Systems on Attached Media

Network Location

7. Select the USB storage device connected in step 1.

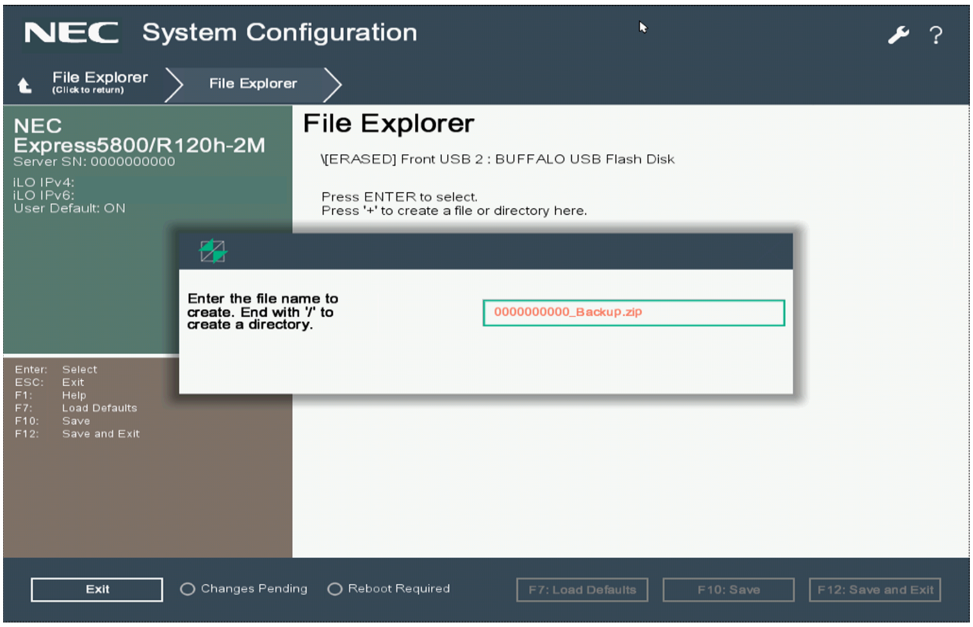

NEC System Configuration
File Explorer (Click to return)
File Explorer
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

File Explorer

Press ENTER to select.

[EFI] Embedded SATA Port 1 HDD : ST9500530NS
[ERASED] Front USB 2 : BUFFALO USB Flash Disk

8. On the USB storage device screen, press the <+> key on the keypad, or press the <+> key after pressing the <NumLock> key to display the pop-up, and enter the name of the file to save. The extension of the file must be ".zip".


NEC System Configuration
File Explorer (Click to return)
File Explorer
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

File Explorer

\[ERASED] Front USB 2 : BUFFALO USB Flash Disk

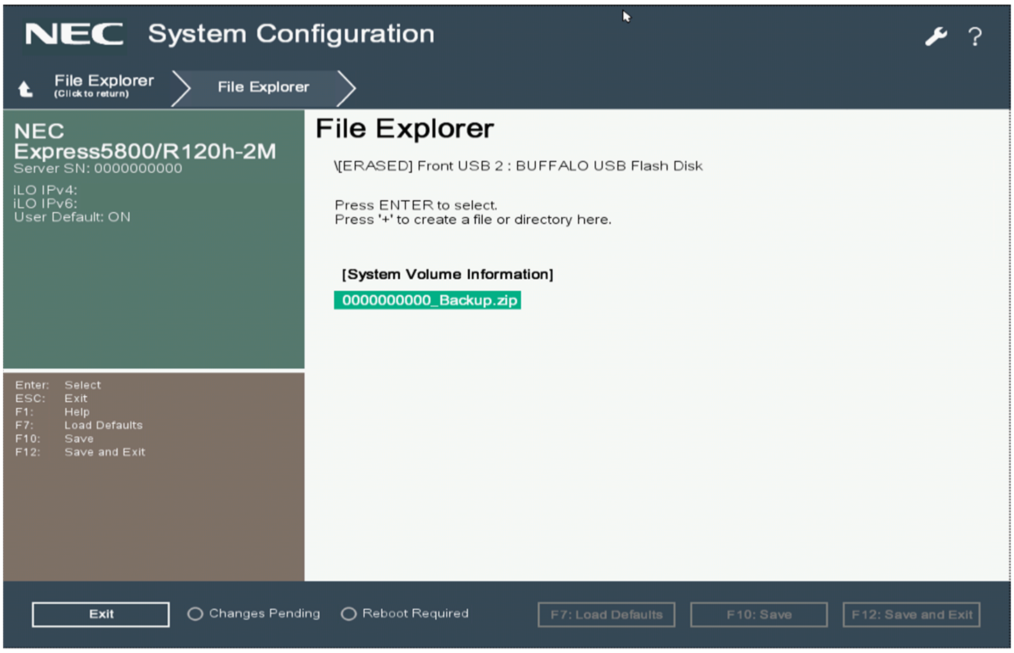
Press ENTER to select.
Press '+' to create a file or directory here.

Enter the file name to create. End with '/' to create a directory. 0000000000_Backup.zip

Tips It is recommended adding the Serial Number to the file name to associate the backup file with the server.
Example: 0000000000_Backup.zip ("0000000000" is the Serial Number.)

9. Select the file name entered in step 8.

   When you select the file name, the screen returns to the “Backup and Restore Settings” screen.


NEC System Configuration
File Explorer
(Click to return)
File Explorer
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

File Explorer

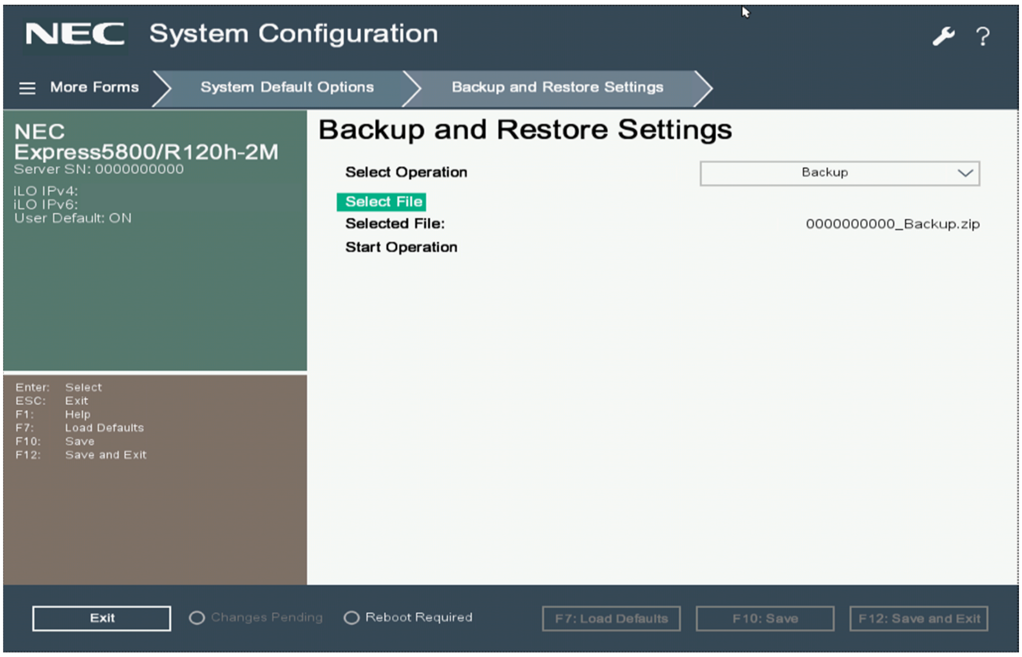
\[ERASED] Front USB 2 : BUFFALO USB Flash Disk

Press ENTER to select.
Press '+' to create a file or directory here.

[System Volume Information]
0000000000_Backup.zip

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

10. Check that the selected file name is displayed in **Select File:** On the “Backup and Restore Settings” screen. If no file name is displayed, go back to step 4.

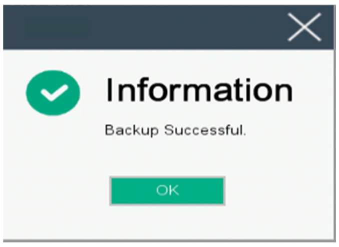

NEC System Configuration
More Forms
System Default Options
Backup and Restore Settings
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

Backup and Restore Settings

Select Operation: Backup
Select File
Selected File: 0000000000_Backup.zip
Start Operation

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

11. When you select **Start Operation**, the backup starts. When it is completed, the following pop-up is displayed. Click **OK**.



Information

Backup Successful.

The backup is now complete.

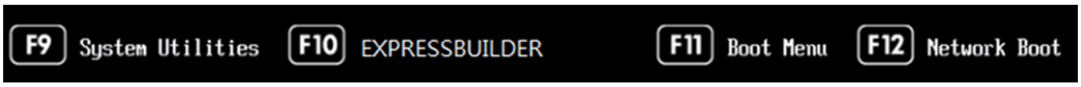
1.4.5 Restoring RBSU settings

This section describes how to restore RBSU settings.

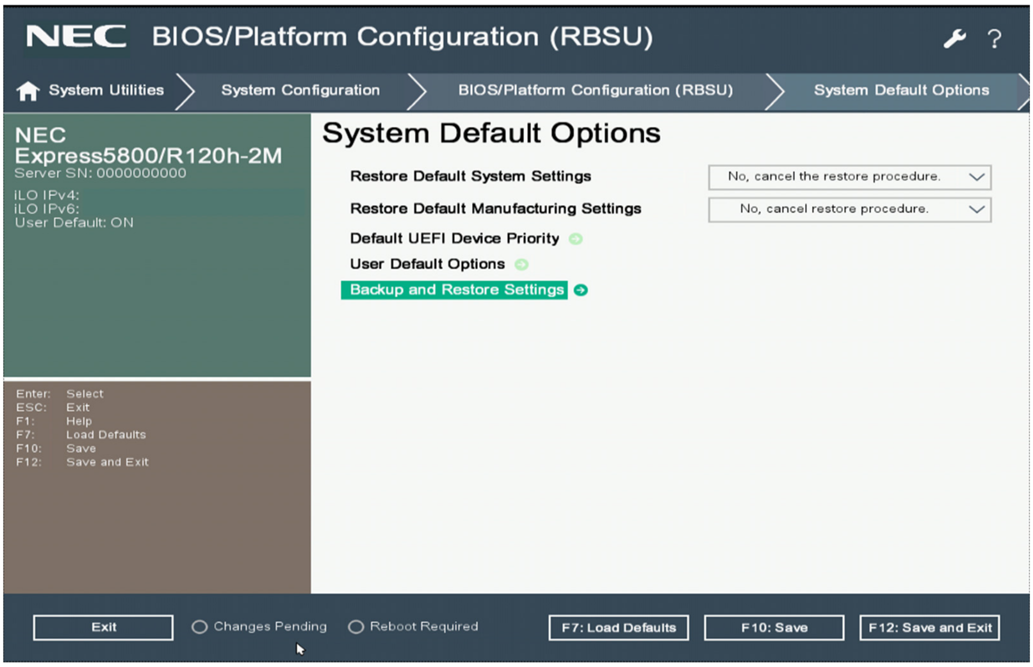
Important **Do not restore the serial number and product ID except when replacing the maintenance motherboard. When restoring the RBSU settings for multiple servers by using one backup file, restoring the same serial number and product ID in step 11 in the following procedure may cause server management problems depending on the software in use.**

1. Connect the USB storage device storing the file to be restored to the server.
2. Turn on the power of the server, and proceed with POST.

   After a while, the following message is displayed at the bottom of the screen. Press the <F9> key to start System Utilities. (* The message may vary depending on the environment.)


F9 System Utilities
F10 EXPRESSBUILDER
F11 Boot Menu
F12 Network Boot

3. From System Utilities, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** > **Backup and Restore Settings**.

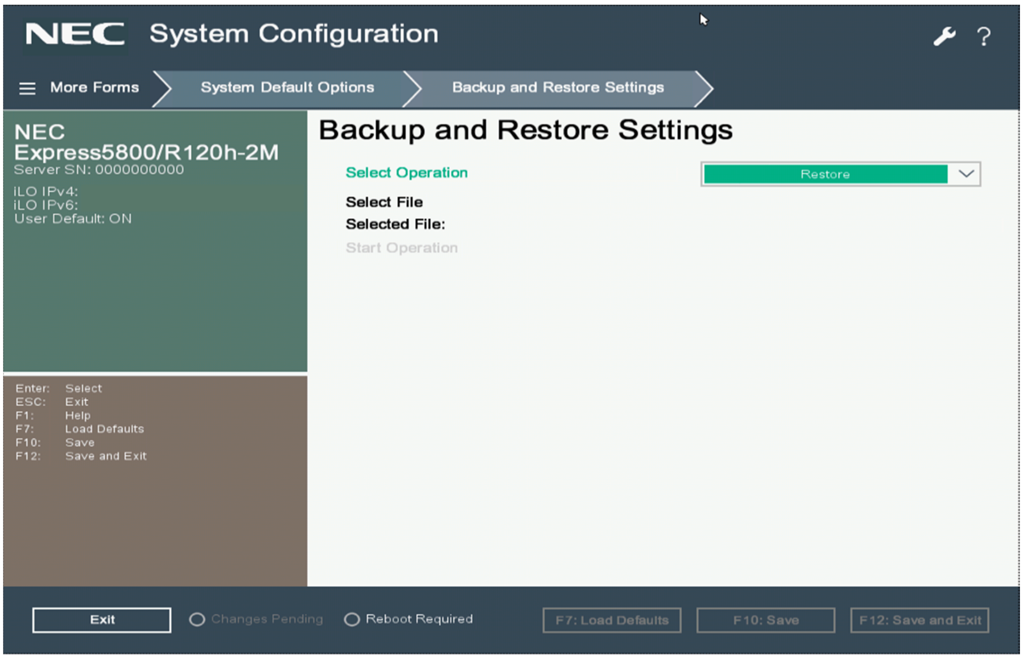

NEC BIOS/Platform Configuration (RBSU)
System Utilities
System Configuration
BIOS/Platform Configuration (RBSU)
System Default Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

System Default Options

Restore Default System Settings: No, cancel the restore procedure.
Restore Default Manufacturing Settings: No, cancel restore procedure.
Default UEFI Device Priority
User Default Options
Backup and Restore Settings

4. In "Backup and Restore Settings", select **Restore** for **Select Operation**.



Backup and Restore Settings

Select Operation: Restore

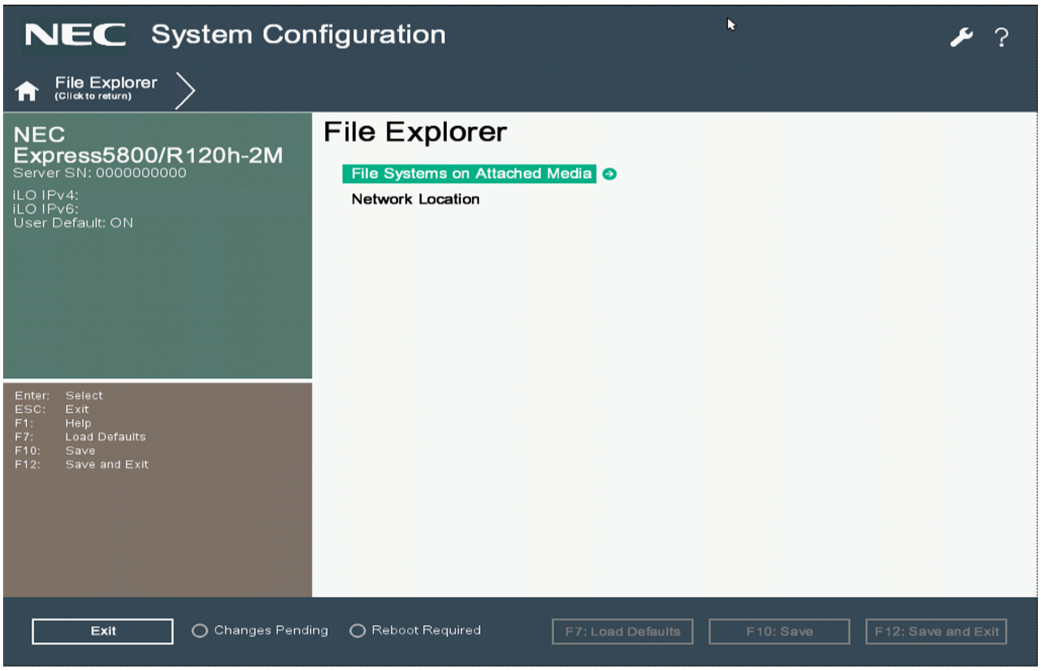
Select File

Selected File:

Start Operation

NEC System Configuration
More Forms
System Default Options
Backup and Restore Settings
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

5. In "Backup and Restore Settings", select **Select File**.
6. Select **File System on Attached Media**.



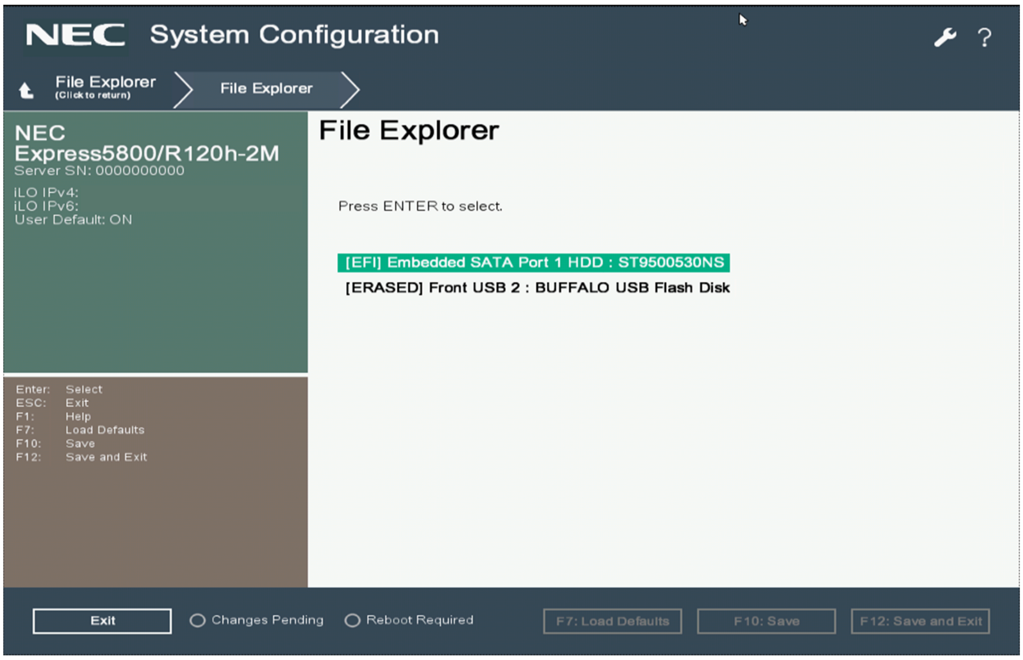
File Explorer

File Systems on Attached Media

Network Location

NEC System Configuration
File Explorer
(Click to return)
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

7. Select the USB storage device storing the file to be restored.


NEC System Configuration
File Explorer (Click to return)
File Explorer
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

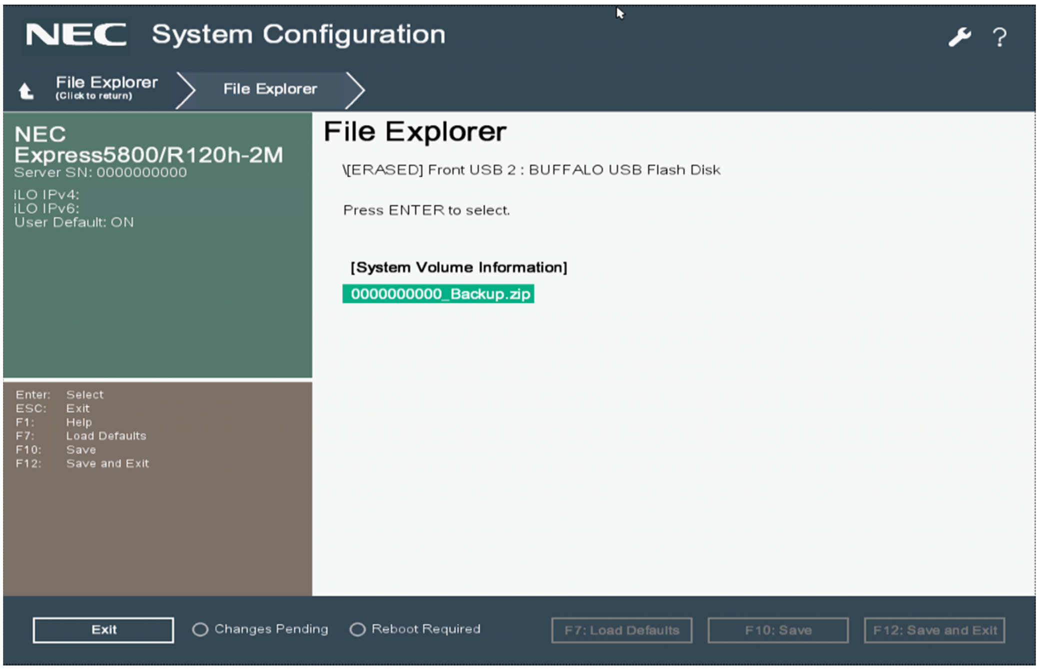
File Explorer

Press ENTER to select.

[EFI] Embedded SATA Port 1 HDD : ST9500530NS
[ERASED] Front USB 2 : BUFFALO USB Flash Disk

8. Select the backup file stored in the USB storage device. The formats of backup files that can be selected are ".zip" and ".json".

When you select the backup file, the screen returns to the "Backup and Restore Settings" screen.


NEC System Configuration
File Explorer (Click to return)
File Explorer
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
○ Changes Pending
○ Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

File Explorer

\[ERASED] Front USB 2 : BUFFALO USB Flash Disk

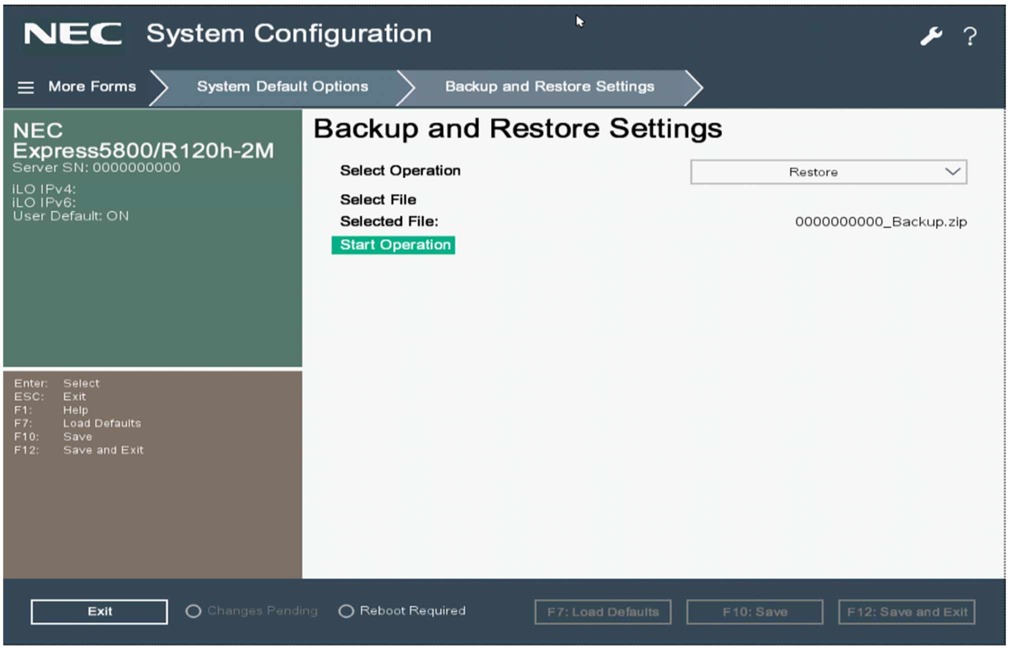
Press ENTER to select.

[System Volume Information]
0000000000_Backup.zip

9. Check that the file selected in step 8 is displayed in **Select File:** on the "Backup and Restore Settings" screen.

   If no file name is displayed, go back to step 4.

10. In "Backup and Restore Settings", select **Start Operation**.



NEC System Configuration
More Forms
System Default Options
Backup and Restore Settings
NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Start Operation
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

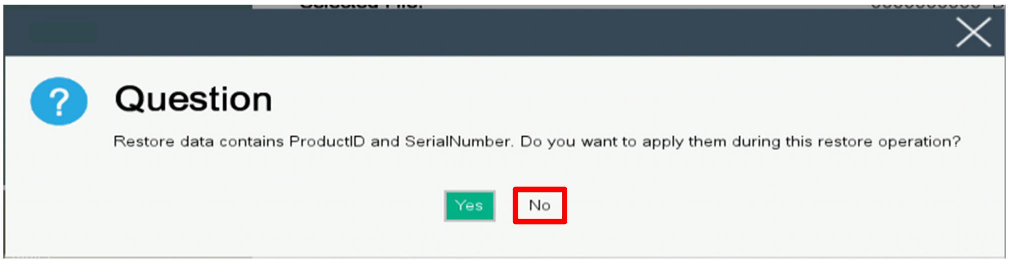
Backup and Restore Settings

Select Operation: Restore

Select File

Selected File: 0000000000_Backup.zip

11. When you select **Start Operation**, the pop-up as shown below is displayed. Click **No** except when replacing the motherboard. Do not restore the serial number and product ID.



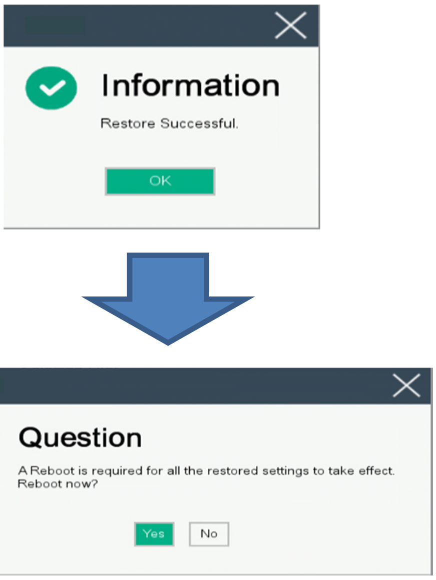
Question

Restore data contains ProductID and SerialNumber. Do you want to apply them during this restore operation?

12. When the restore is completed successfully, the following pop-up is displayed. Click **OK**.

13. When the restore is completed successfully, the following pop-up is displayed. Click **Yes**.

    When you click **Yes**, the server reboots.



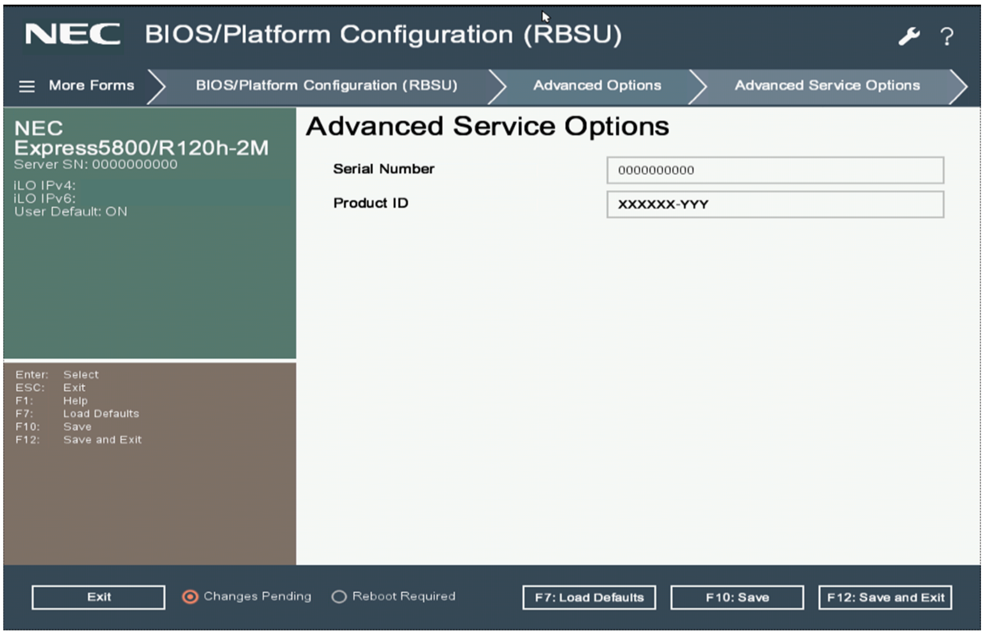
Information

Restore Successful.

Question

A Reboot is required for all the restored settings to take effect.
Reboot now?

14. After the reboot, press the <F9> key to start System Utilities.
15. From System Utilities, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced Service Options**. Check that the displayed Serial Number and Product ID are identical to the serial number and product ID provided on the slide tag of the target server.



BIOS/Platform Configuration (RBSU)

Advanced Service Options

Serial Number: 0000000000

Product ID: XXXXXX-YYY

NEC
Express5800/R120h-2M
Server SN: 0000000000
iLO IPv4:
iLO IPv6:
User Default: ON

NEC
More Forms
BIOS/Platform Configuration (RBSU)
Advanced Options
Advanced Service Options
Enter: Select
ESC: Exit
F1: Help
F7: Load Defaults
F10: Save
F12: Save and Exit
Exit
Changes Pending
Reboot Required
F7: Load Defaults
F10: Save
F12: Save and Exit

16. When they are the same, go to the next step.

    When they are not the same, enter the serial number and product ID provided on the slide tag in **Serial Number** and **Product ID**, respectively. Then, press the <F10> key to save the settings.

17. If necessary, change the boot order from the following menu.
    - For **UEFI Mode**

      System Configuration > **BIOS/Platform Configuration (RBSU)** > **Boot Options** > **UEFI Boot Settings** > **UEFI Boot Order**
    - For **Legacy BIOS Mode**

      System Configuration > **BIOS/Platform Configuration (RBSU)** > **Boot Options** > **Legacy BIOS Boot Order** > **Standard Boot Order(IPL)**
18. Press the <ESC> key several times to return to System Utilities, and select **Reboot the System** to reboot the system.
19. Since the changed RBSU settings are reflected during POST, wait until POST is complete.
    Check that the settings have been restored by using System Utilities.

The restore is now complete.

1.5 Time Format Settings during Installation of Windows

The table below shows "time format" settings during installation of Windows.

For details on how to set the time format, refer to *"2.4 Cases that Require Configuration"* in *"2. Description on System Utility"* in *Chapter 3* of the *User's Guide*.

Device name	System ROM version		
	v1.20 or earlier	v1.22 or later	v2.00 or later
R120h-1M, R120h-2M, R120h-1E, R120h-2E, T120h	Set [Local Time].	Perform setting according to *"Chapter 1 Installing Windows" of the "Installation Guide (Windows)"*.	Perform setting according to *"Chapter 1 Installing Windows" of the "Installation Guide (Windows)"*.
R120h-1M 2nd-Gen-CPU, R120h-2M 2nd-Gen-CPU, R120h-1E 2nd-Gen-CPU, R120h-2E 2nd-Gen-CPU, T120h 2nd-Gen-CPU	Not supported	Not supported	Perform setting according to *"Chapter 1 Installing Windows" of the "Installation Guide (Windows)"*.

1.6 Device Names Changed When Option ROM Is Set to Disabled

Some device names changes when **Disabled** is set to the **PCIe Option ROM** option of the **System Configuration** > **BIOS/Platform Configuartion (RBSU)** > **PCI Device Configuration** > **(Device name)** menu. The table below lists the device names when **PCIe Option ROM** is set to **Disabled**.

Device type	Device name when **PCIe Option ROM** is set to **Disabled**
Embedded RAID	Storage Controller
PCIe RAID	
Embedded LOM	Network Controller
Embedded Flexible LOM	
PCIe LOM	

Tips

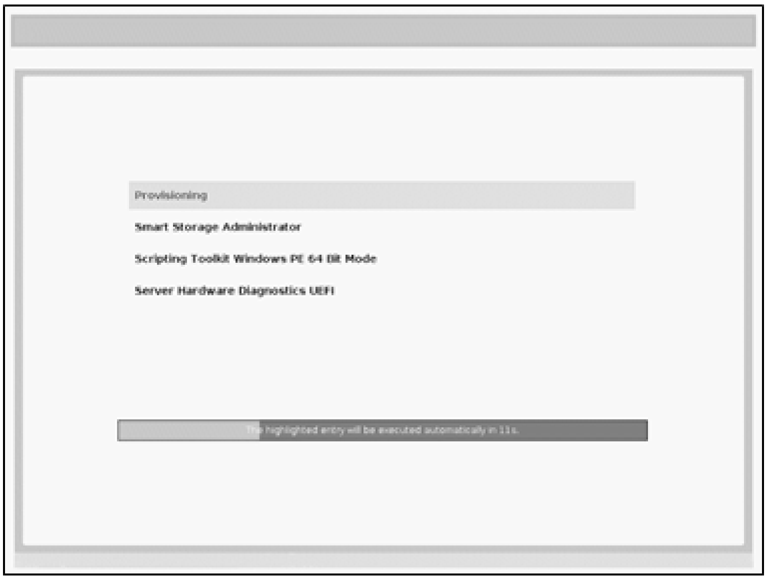
The example below shows the device names displayed when the **PCIe Option ROM** option is set to **Enabled** or **Disabled**.
Example: For Embedded LOM
When **Enabled** is set: HPE Ethernet 1Gb 4-port 331i Adapter – NIC
When **Disabled** is set: Network Controller

2. Details of EXPRESSBUILDER

2.1 Starting EXPRESSBUILDER

1. Turn on the server, or press <Ctrl> + <Alt> + <Delete> keys to restart it.
2. Press the <F10> key on the POST screen.

   The following menu will be displayed.

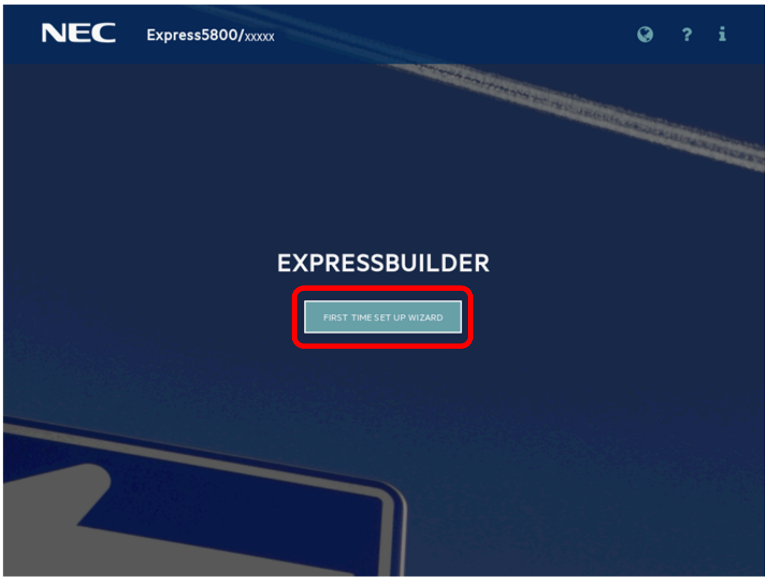

Provisioning
Smart Storage Administrator
Scripting Toolkit Windows PE 64 Bit Mode
Server Hardware Diagnostics UEFI

The highlighted entry will be executed automatically in 11s.

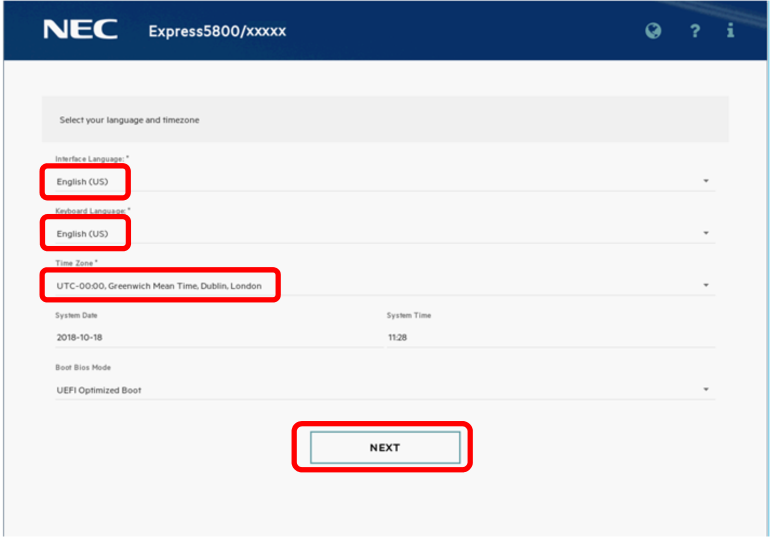
3. Select **Provisioning** on screen.

4. Set the following operating environment when using EXPRESSBUILDER for the first time.

   (1) Click **FIRST TIME SET UP WIZARD** on the screen below.


Express5800/xxxxx
EXPRESSBUILDER
FIRST TIME SET UP WIZARD

   (2) On the screen below, change **Interface Language** and **Keyboard Language** to your language and **Time Zone** to **UTC-00:00**, **Greenwich**, and then proceed to the next. Do not change any other settings.


Express5800/xxxxx
NEXT

Select your language and timezone

Interface Language: * English (US)

Keyboard Language: * English (US)

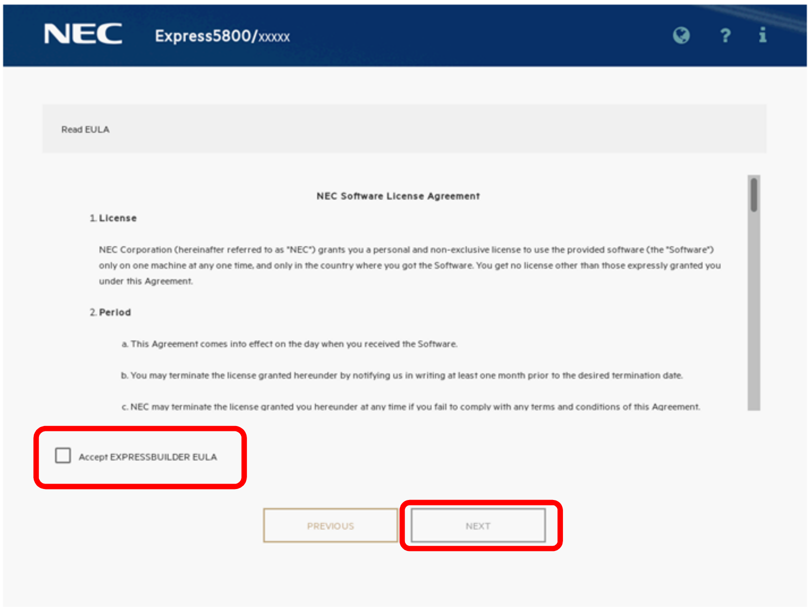
Time Zone * UTC-00:00, Greenwich Mean Time, Dublin, London

System Date 2018-10-18

System Time 11:28

Boot Bios Mode UEFI Optimized Boot

(3) On the screen below, read the End User License (EULA), fill in the check box, and then proceed to the next.



Read EULA

NEC Software License Agreement

1. **License**

NEC Corporation (hereinafter referred to as "NEC") grants you a personal and non-exclusive license to use the provided software (the "Software") only on one machine at any one time, and only in the country where you got the Software. You get no license other than those expressly granted you under this Agreement.

2. **Period**

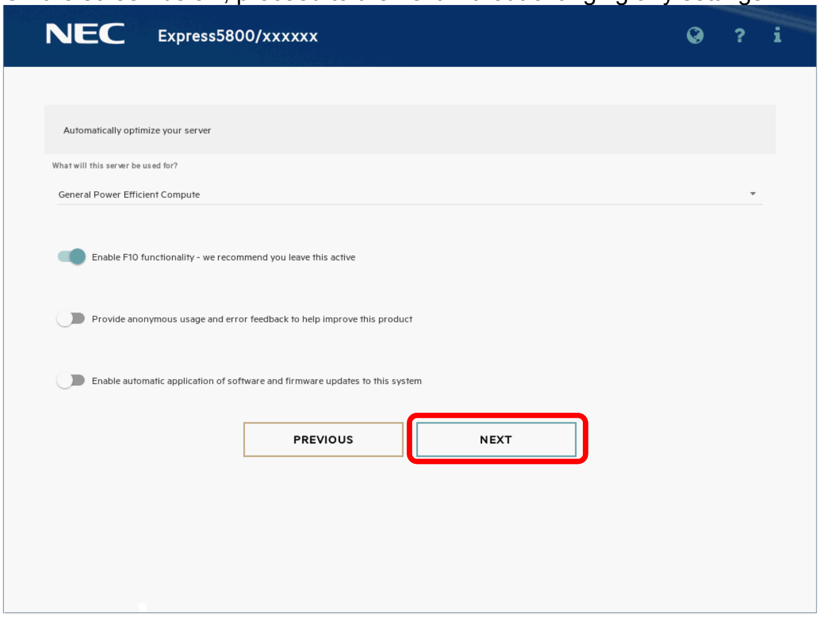
a. This Agreement comes into effect on the day when you received the Software.

b. You may terminate the license granted hereunder by notifying us in writing at least one month prior to the desired termination date.

c. NEC may terminate the license granted you hereunder at any time if you fail to comply with any terms and conditions of this Agreement.

☐ Accept EXPRESSBUILDER EULA

(4) On the screen below, proceed to the next without changing any settings.



Automatically optimize your server

What will this server be used for?

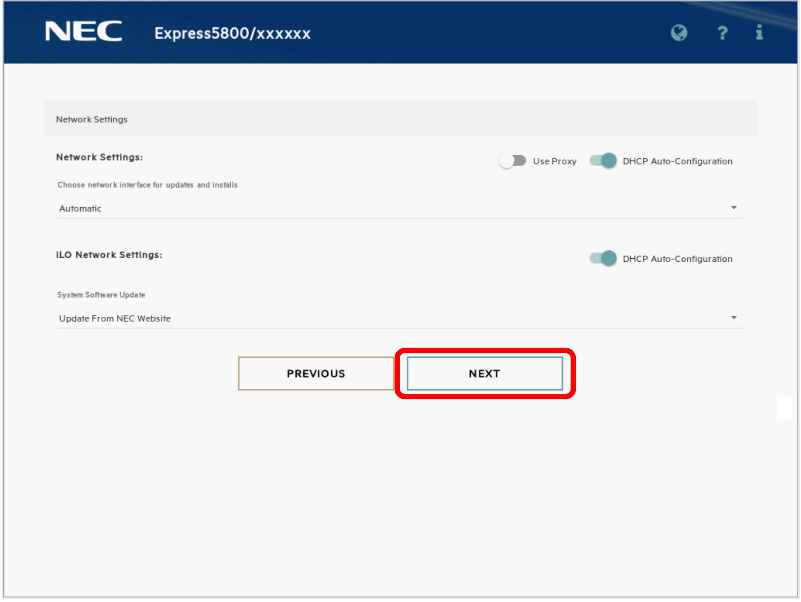
General Power Efficient Compute

● Enable F10 functionality - we recommend you leave this active

○ Provide anonymous usage and error feedback to help improve this product

○ Enable automatic application of software and firmware updates to this system

(5) On the screen below, change **iLO Network Settings** to your iLO network environment and then proceed to the next. The default of this setting is the current iLO network setting. Do not change other than **iLO Network Settings**.



Express5800/xxxxxx

Network Settings

Network Settings: ○ Use Proxy ● DHCP Auto-Configuration

Choose network interface for updates and installs: Automatic

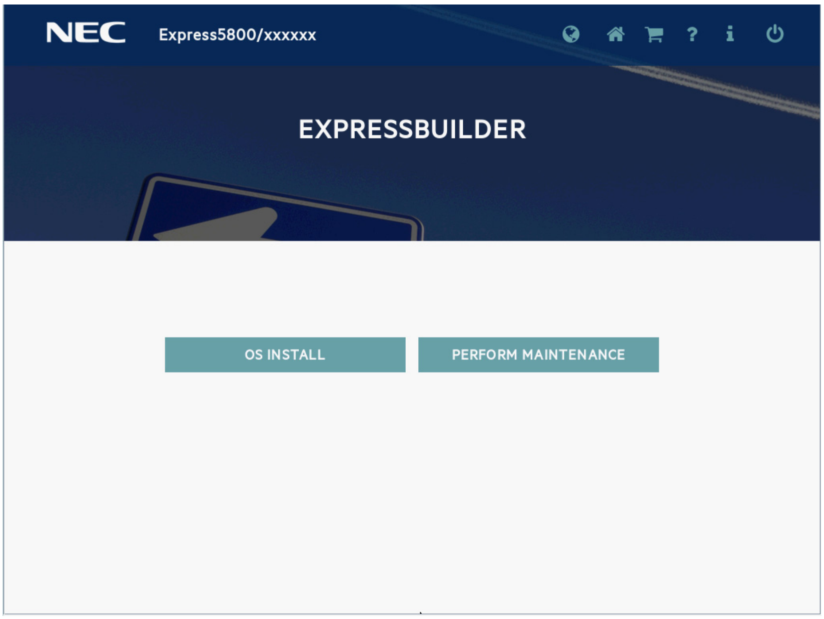
iLO Network Settings: ● DHCP Auto-Configuration

System Software Update: Update From NEC Website

(6) A confirmation dialog box will appear. Click **YES** to finish the wizard.

2.2 Menus of EXPRESSBUILDER

You can operate EXPRESSBUILDER using on screen menus.



a) OS INSTALL

Installs the OS. For details, see *Installation Guide (Windows)*.

This function clears the partitions on the installation destination disk and delete all data before starting a setup for both Auto and Manual options.

b) PERFORM MAINTENANCE

Starts the following maintenance tools individually.

(1) EXPRESSBUILDER Preferences

Configures the preferences explained at step 4 in *Chapter 2 (2.1 Starting EXPRESSBUILDER)*.

(2) Active Health System Log

Saves the AHS log for analysis of failure to external media.

(3) Deployment Settings

Deploys the server installation settings to one or more servers.

(4) BIOS/Platform Configuration

BIOS settings are available.

(5) iLO Configuration

Configures the iLO settings instead of web console.

(6) System Erase and Reset

Erases the preferences or the hard disk drive.

Choosing **All Hard Drives** erases the contents in all the HDDs connected to the server. Also, if **Wipe Hard Drives** is chosen, user data will be completely erased by overwriting random patterns several times for all HDDs.

Important

> **If you erase the HDD using this function, the data recorded in the HDD can not be recovered. In addition, for running Wipe Hard Drive, it may take several days to be completed depending on the capacity of the HDD connected.**

(7) RAID Configuration

Starts Smart Storage Administrator (SSA) that can configure RAID arrays with GUI.

3. Details of Starter Pack

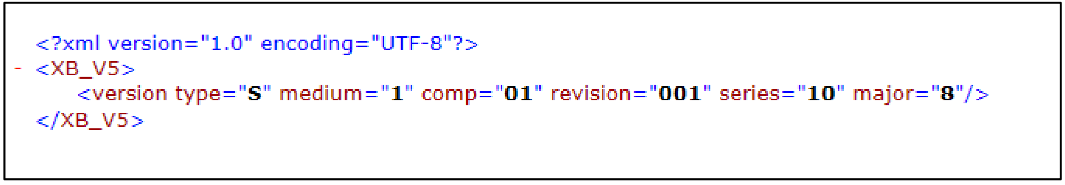
3.1 Starting the Menu

1. Prepare Starter Pack (optional product) or download it from the following web site.
   http://www.nec.com/express/

2. Start Windows on the server or any other computer.

3. Insert the medium prepared in Step 1 into the computer on which Windows operates in Step 2.

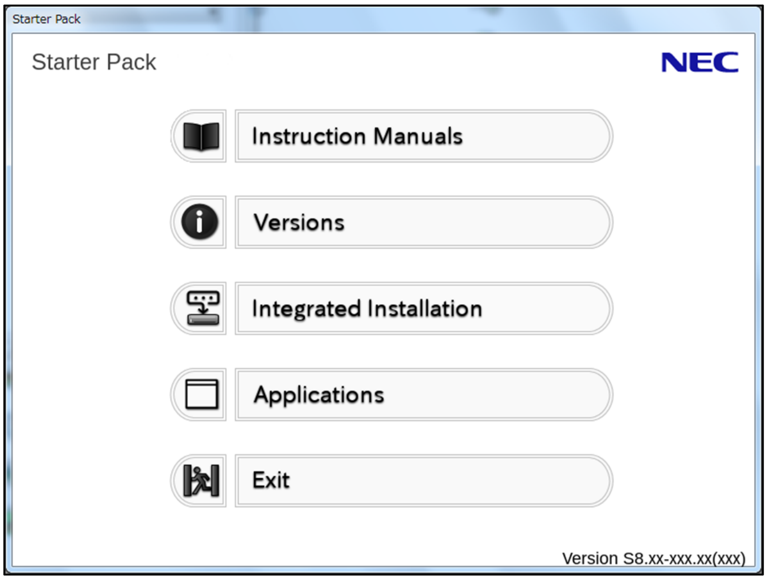
4. Run the Explorer, and double-click "version.xml" in the root folder of the DVD. When the web browser opens, confirm that the window appears as shown below, and then close this window.
   (The attribute values in the tag may vary depending on the downloaded medium)



```
  <?xml version="1.0" encoding="UTF-8"?>
- <XB_V5>
      <version type="S" medium="1" comp="01" revision="001" series="10" major="8"/>
  </XB_V5>
```

   (The figure is a sample and the displayed message is subject to change)

5. On the Explorer, start "start_up.bat" in the root folder of the DVD.
   The menu opens as shown below.


Starter Pack
Starter Pack
NEC
Instruction Manuals
Versions
Integrated Installation
Applications
Exit
Version S8.xx-xxx.xx(xxx)

3.2 Functions of Starter Pack

In the menu, you can select the following items listed in this order.

a) Instruction Manuals

Shows instruction manuals.

b) Versions

Shows the versions of the included software, and drivers.

c) Integrated Installation

Installs Standard Program Package (SPP) and the application for server management 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 applications individually.

e) Exit

Closes the menu.

NEC Express5800 Series
Express5800/R120h-1M, -2M, -1E, -2E, T120h

2

Appendix

1. **IML Error Message**
   A list on all error messages and error codes recorded in the Integrated Management Log (IML).

2. **Glossary**

3. **Revision Record**

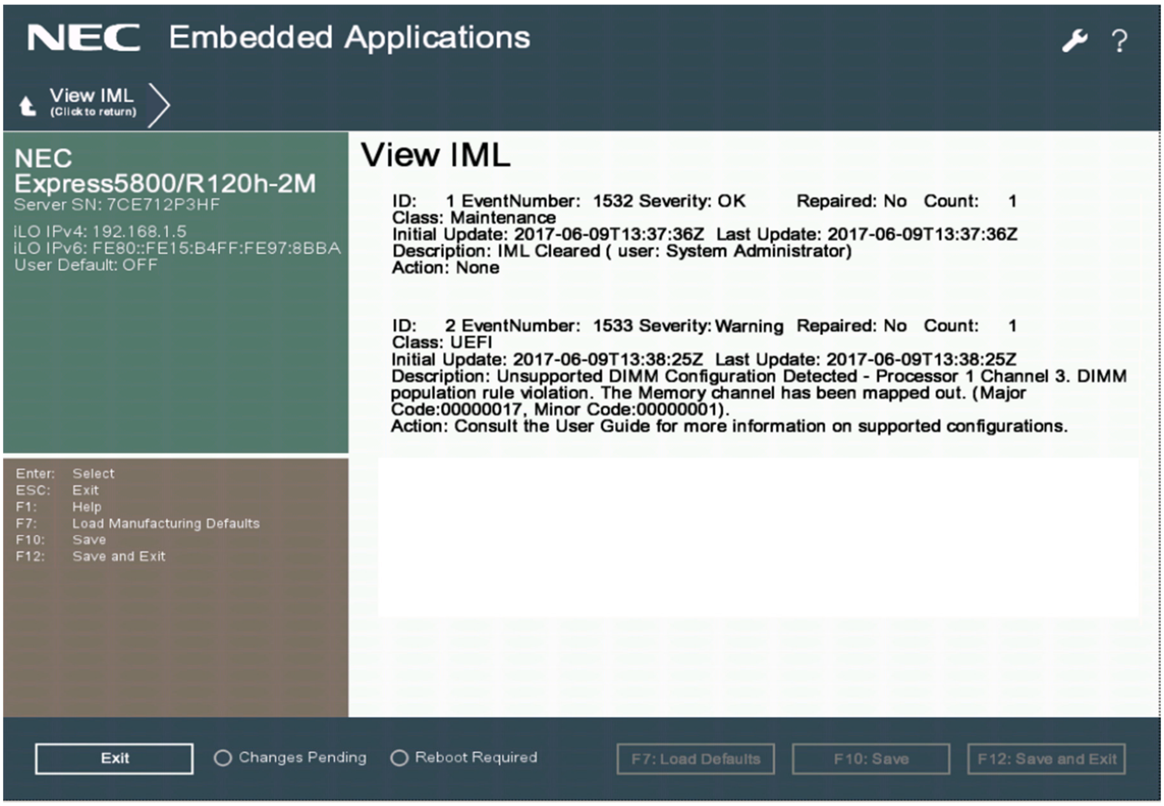
1. IML Error Message

A list on all error messages recorded in the Integrated Management Log (IML) and the error handling procedure. Depending on the system configuration and options, the recorded message varies. Therefore, error messages that are not displayed on the unit are also included in the list. In addition, messages which not showing errors, but only displaying information are included in the list.

Note

- For installing/ dismantling of options, refer to the user's guide of the device or the manuals of options.
- The contents of the list are subject to change without notice.
- In some cases, parts replacement is required to cope with a problem. Regarding the preparation of spare parts, ask the maintenance service company. In addition, in case trouble cannot be solved, ask the maintenance service company.

The message of the Integrated Management Log (IML) can be confirmed, such as via **Embedded Applications> Integrated Management Log (IML)** in the system utility.



NEC
Express5800/R120h-2M
Server SN: 7CE712P3HF
iLO IPv4: 192.168.1.5
iLO IPv6: FE80::FE15:B4FF:FE97:8BBA
User Default: OFF

View IML

```
ID:     1 EventNumber:  1532 Severity: OK        Repaired: No   Count:     1
Class: Maintenance
Initial Update: 2017-06-09T13:37:36Z  Last Update: 2017-06-09T13:37:36Z
Description: IML Cleared ( user: System Administrator)
Action: None


ID:     2 EventNumber:  1533 Severity: Warning  Repaired: No   Count:     1
Class: UEFI
Initial Update: 2017-06-09T13:38:25Z  Last Update: 2017-06-09T13:38:25Z
Description: Unsupported DIMM Configuration Detected - Processor 1 Channel 3. DIMM
population rule violation. The Memory channel has been mapped out. (Major
Code:00000017, Minor Code:00000001).
Action: Consult the User Guide for more information on supported configurations.
```

The example of the IML error message display

Important messages for the errors detected by Integrated Management Log (IML) will be shown as you can see in the following example.

```
Power Regulator Mode: Dynamic Power Savings
Advanced Memory Protection Mode: Advanced ECC Support
Boot Mode: UEFI
269 - IMPORTANT: Default configuration settings have been restored per user
request. If Sercure Boot was enabled, related security settings may have been lost.
Action: Restore any desired configuration settings.
```

Example of error message:
This message indicates that a default value has been set for the system settings.

Tips

- When you call the maintenance service company, inform an error message. It can be useful information for maintenance.
- In the list below, messages outputted by the option are not included. For the messages which the options output, refer to the manuals of options.
- The list below includes entries composed of % and [number], such as %1, %2, %3, %4, etc., in error messages. When they are displayed, these entries are replaced by numbers or letters indicating details of situation.

(1) List on Error messages related to the operating environment of the server

Class	Error code	Error message	Action
Environment	13	System Overheating (Temperature Sensor %1, Location %2, Temperature %3)	Check the ambient temperature where the unit is being operated. If the problem persists, contact your sales representative.
Environment	14	External Chassis Overheating (Chassis %1, Temperature Sensor %2, Location %3, Temperature %4)	Check the ambient temperature where the expansion chassis connected to the unit is being operated. If the problem persists, contact your sales representative.
Environment	15	%1 Storage System Overheating (%2Slot %3, Temperature Sensor %4, Location %5, Temperature %6)	Check the ambient temperature where the %1 connected to the unit is being operated. If the problem persists, contact your sales representative.
Environment	16	%1 Overheating (Temperature Sensor %2, Location %3, Temperature %4, %5)	Check the ambient temperature where the %1 connected to the unit is being operated. If the problem persists, contact your sales representative.
Environment	17	Fan Failure (Fan %1, Location %2)	Contact your sales representative.
Environment	18	External Chassis Fan Failure (Chassis %1, Fan %2, Location %3)	Contact your sales representative.
Environment	19	%1 Storage System Fan Failure (%2 Slot %3, Fan %4, Location %5)	Contact your sales representative.
Environment	1A	%1 Fan Failure (Fan %2, Location %3, %4)	Contact your sales representative.
Environment	1B	System Fan Removed (Fan %1, Location %2)	Contact your sales representative.
Environment	1C	External Chassis Fan Removed (Chassis %1, Fan %2, Location %3)	Action is not necessary.
Environment	1D	%1 Storage System Fan Removed (%2Slot %3, Fan %4, Location %5)	Action is not necessary.
Environment	1E	%1 Fan Removed (Fan %2, Location %3, %4)	Action is not necessary.
Environment	1F	System Fan Inserted (Fan %1, Location %2)	Action is not necessary.
Environment	20	External Chassis Fan Inserted (Chassis %1, Fan %2, Location %3)	Action is not necessary.
Environment	21	%1 Storage System Fan Inserted (%2Slot %3, Fan %4, Location %5)	Action is not necessary.
Environment	22	%1 Fan Inserted (Fan %2, Location %3, %4)	Disposal is not necessary.
Environment	23	System Fans Not Redundant (Location %1)	Contact your sales representative.
Environment	24	External Chassis Fans Not Redundant (Chassis %1, Location %2)	Contact your sales representative.
Environment	25	%1 Storage System Fans Not Redundant (%2Slot %3, Location %4)	Contact your sales representative.
Environment	26	%1 Fans Not Redundant (Location %2, %3)	Contact your sales representative.
Environment	27	Critical Temperature Threshold Exceeded	Check the ambient temperature where the unit is being operated. If the problem persists, contact your sales representative.
Environment	28	Critical Temperature Threshold Exceeded (Temperature Sensor %1, Location %2, Temperature %3C %4)	Check the ambient temperature where the unit is being operated. If the problem persists, contact your sales representative.
Environment	29	External Chassis Overheating (Chassis %1, Temperature Sensor %2, Location %3, Temperature %4)	Check the ambient temperature where the expansion chassis connected to the unit is being operated. If the problem persists, contact your sales representative.
Environment	2A	%1 Storage System Overheating (%2Slot %3, Temperature Sensor %4, Location %5, Temperature %6)	Check the ambient temperature where the %1 connected to the unit is being operated. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
Environment	2B	%1 Overheating (Temperature Sensor %2, Location %3, Temperature %4, %5)	Check the ambient temperature where the %1 connected to the unit is being operated. If the problem persists, contact your sales representative.
Environment	2C	Temperature exceeded on PCIe disk %1.	Contact your sales representative.
Environment	2D	Intrusion Alert Hardware installed.	No additional action is required, if the applicable HW has been added. If the problem persists, contact your sales representative.
Environment	2E	#ILO had detected the removal of the Intrusion Alert hardware.	No additional action is required, if the applicable HW has been removed. If the problem persists, contact your sales representative.
Environment	2F	Intrusion Alert Detection - The server chassis hood is currently not installed.	The cover of the unit has been removed. Please attach the cover. If it is not a record of the intended operation, the security of the unit may have been compromised. Please take an appropriate measure. If the problem persists, contact your sales representative.
Environment	30	The chassis hood has been replaced.	It detected that the cover of the unit has been removed. If it is not a record of the intended operation, the security of the unit may have been compromised. Please take an appropriate measure. If the problem persists, contact your sales representative.
Environment	31	%1 Storage Enclosure Fan Failure (Fan %2, Location %3, Box %4, %5)	Contact your sales representative.
Environment	32	%1 Storage Enclosure Overheating (Temperature Sensor %2, Location %3, Box %4, %5)	Contact your sales representative.
Environment	33	Fan Degraded (Fan %1, Location %2)	Contact your sales representative.
Environment	34	Insufficient Fan Solution	Check the FAN connected to the server. If the problem persists, contact your sales representative.
Environment	35	Insufficient power supply configuration.	From the LED indicator of PSU or the connection of AC cord, confirm whether electricity is supplied to the PSU of device. If it occurs directly after the change of configuration, confirm whether it is beyond the supply capacity of PSU due to addition or change of components. In case a problem is not resolved, call the maintenance service company.
Environment	36	Apollo Chassis Controller unresponsive	Contact your sales representative.
Environment	37	Power management module removed.	Action is not necessary.
Environment	38	Server is operational again after thermal shutdown	Action is not necessary.

(2) The list on the messages related to processor, UPI bus, and PCIe bus

Class	Error code	Error message	Action
CPU	3	Uncorrectable Machine Check Exception (Processor %2, APIC ID 0x%3, Bank 0x%4, Status 0x%5'%6, Address 0x%7'%8, Misc 0x%9'%10).	Contact your sales representative.
Host Bus	3	Uncorrectable UPI Error was detected on Processor %1	Contact your sales representative.
PCI Bus	2	Uncorrectable PCI Express Error Detected. Slot %1 (Segment 0x%2, Bus 0x%3, Device 0x%4, Function 0x%5). Uncorrectable Error Status: 0x%6	Contact your sales representative.
PCI Bus	3	Uncorrectable PCI Express Error Detected. Embedded %1 (Segment 0x%2, Bus 0x%3, Device 0x%4, Function 0x%5). Uncorrectable Error Status: 0x%6	Contact your sales representative.
PCI Bus	4	Uncorrectable PCI Express Error Detected. Slot %1 (Segment 0x%2, Bus 0x%3, Device 0x%4, Function 0x%5).	Contact your sales representative.
PCIe Disk	1	Temperature exceeded on PCIe disk %1.	Contact your sales representative.
PCIe Disk	2	The status of the PCIe disk at location %1 is %2	Contact your sales representative.
PCIe Disk	3	The PCIe disk wear status for the disk at location %1 is %2	Contact your sales representative.
PCIe Disk	4	A PCI device at %1 Bus %2, Device %3, Function %4 has been added to the system or powered on.	Action is not necessary.
PCIe Disk	5	A PCI device at %1 Bus %2, Device %3, Function %4 has been removed from the system or powered off.	Action is not necessary.
PCIe Disk	6	Drive Type %1 Signals %2 Bus %3 is Invalid %4.	Contact your sales representative.

(3) The list on the messages related to POST

Class	Error code	Error message	Action
UEFI	101	Option ROM Error. An option ROM for a PCIe device is invalid.	Contact your sales representative.
UEFI	104	ASR Timer Failure	Contact your sales representative.
UEFI	121	A Critical Error occurred prior to this power-up.	Contact your sales representative.
UEFI	218	DIMM Initialization Error - All DIMMs are mapped out due to memory errors except for one to allow the system to boot. Additional errors may be present on the remaining DIMM. System is booting in a degraded state.	Contact your sales representative.
UEFI	224	Power Fault Detected - FlexLOM %1	Turn off the power on the unit, disconnect the power cord, and check the installation of FlexLOM %1. Wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	225	Power Fault Detected-Mezzanine %1.	Turn off the power on the unit, disconnect the power cord, and check the installation of mezzanine %1. Wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	226	Power Fault Detected - Embedded Storage Controller %1.	Turn off the power on the unit, disconnect the power cord, and check the installation of internal storage controller %1. Wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	227	Power Fault Detected - M.2 riser	Turn off the power on the unit, disconnect the power cord, and check the installation of M.2 riser. Wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	244	IMPORTANT: The device in PCIe Slot %1 is SRIOV capable but is installed in a slot that does NOT support SRIOV.	When using the SRIOV, install an optional card in the slot where the SRIOV is supported. If the problem persists, contact your sales representative.
UEFI	251	IMPORTANT: Switches SW1 and SW3 are ON. This is only used to recover %1 functionality.	Set the maintenance switch to OFF unless the setting is specified in the operating procedure etc. When operating the maintenance switch, follow the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. If the problem persists, contact your sales representative.
UEFI	253	IMPORTANT: One or more embedded PCIe Device(s) are attached to a non-installed processor and will not function.	Some built-in devices are not available unless the processor is added. Add a processor if necessary. If the problem persists, contact your sales representative.
UEFI	254	IMPORTANT: The PCIe Device installed in Slot %1 has no corresponding processor installed and will not function.	The optional card is connected to a PCIe slot that is not available unless a processor is added. Change the slot which the PCIe expansion card is connected to, otherwise add a processor. If the problem persists, contact your sales representative.
UEFI	261	Server Platform Services Firmware requires update.	Update the server platform service firmware. If the problem persists, contact your sales representative.
UEFI	266	Non-Volatile Memory Corruption Detected. Configuration settings restored to defaults. If enabled, Secure Boot security settings may be lost.	The system configuration has been initialized to default. Make the necessary settings in the system utility. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	267	IMPORTANT: Default configuration settings have been restored at the request of the user.	The system configuration has been initialized to default. Make the necessary settings in the system utility. If the problem persists, contact your sales representative.
UEFI	268	UEFI Non-Volatile Variable Store Corruption Detected. If enabled, Secure Boot security settings may be lost.	The system configuration has been initialized to default. Make the necessary settings in the system utility. If the problem persists, contact your sales representative.
UEFI	269	IMPORTANT: Default configuration settings have been restored per user request. If Secure Boot was enabled, related security settings may have been lost.	The system configuration has been initialized to default. Make the necessary settings in the system utility. If the problem persists, contact your sales representative.
UEFI	271	Processor %1, DIMM %2 could not be authenticated as genuine %3. Enhanced and extended %4 features will not be active.	The DIMM failed to be authenticated as an authorized part. Check the DIMM connected to the unit. If the problem persists, contact your sales representative.
UEFI	272	IMPORTANT: Processor %1, DIMM %2 may not be a Genuine %3 DIMM.	The DIMM failed to be authenticated as an authorized part. Check the DIMM connected to the unit. If the problem persists, contact your sales representative.
UEFI	276	Option Card Configuration Error. An option card is requesting more memory mapped I/O than is available.	The memory space for the optional card failed to be allocated. Remove the added optional card so that the system can be booted. If the problem persists, contact your sales representative.
UEFI	277	Secure Boot Authentication Failure - The image on %1 failed authentication and was not executed.	If the error occurs due to adding of the optional card, check whether the added card supports the secure boot. If the problem persists, contact your sales representative.
UEFI	278	Secure Boot Authentication Failure - The image on %1 was not authorized due to revoked certificate(s) and was not executed.	If the error occurs due to adding an optional card, make sure whether the added card meets the conditions required for secure boot. If the problem persists, contact your sales representative.
UEFI	281	IMPORTANT: SW12 is ON indicating physical presence. This switch should only be ON to override certain security protections.	Set the maintenance switch SW12 to OFF unless the setting is specified in the operating procedure etc. When operating the maintenance switch, follow the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*.. If the problem persists, contact your sales representative.
UEFI	282	Invalid Server Serial Number and Product ID - The Serial Number and/or Product ID have been corrupted or lost.	The serial number and product ID for identifying the unit are not correctly set. Contact your maintenance service company.
UEFI	284	DIMM Failure - Uncorrectable Memory Error (Processor %1 DIMM %2)	Contact your sales representative.
UEFI	286	IMPORTANT: The removal of a storage device has been detected. The device has been removed from the Boot Controller Order.	Action is not necessary.
UEFI	287	IMPORTANT: The removal of a network device has been detected. The device has been removed from the Standard Boot Order (IPL)	Action is not necessary.
UEFI	288	IMPORTANT: A new storage device has been detected and has been added to the end of the Boot Controller Order.	Action is not necessary.

Class	Error code	Error message	Action
UEFI	289	A new network or storage device has been detected. This device will not be shown in the Legacy BIOS Boot Order options in RBSU until the system has booted once.	Action is not necessary.
UEFI	291	IMPORTANT: The Standard Boot Order (IPL) has been detected as corrupted and has been restored to default values.	Action is not necessary.
UEFI	292	Invalid %1 Software RAID Configuration. %2 SW RAID Mode is NOT supported when the Boot Mode is configured for legacy BIOS Mode.	When using the corresponding Software RAID, the boot mode must be changed to the UEFI mode. If the problem persists, contact your sales representative.
UEFI	297	IMPORTANT: iLO Security is disabled by the associated switch being set to the ON position. Platform security is DISABLED.	The maintenance switch SW1 should be set to OFF unless the setting is specified in the operating procedure etc. When operating the maintenance switch, follow the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. If the problem persists, contact your sales representative.
UEFI	311	%1 Configuration Error - The system has exceeded the installed energy pack capacity.	Add more batteries for the capacity increase, or reduce the number of devices that need battery backup. If the problem persists, contact your sales representative.
UEFI	312	%1 %2 Failure - Communication with the battery failed. Its output may not be enabled.	Make sure that the battery is correctly installed. If the problem persists, contact your sales representative.
UEFI	315	An uncorrectable memory error was detected prior to this system boot.	Contact your sales representative.
UEFI	319	An Unexpected Shutdown was detected prior to this boot.	Action is not necessary.
UEFI	320	Enclosure Power Event detected. Boot delayed until condition is resolved.	Action is not necessary.
UEFI	321	%1 Dual microSD Device Unsupported Configuration - A microSD card is not installed in Slot %2	Make sure whether the corresponding microSD card is correctly mounted. If the problem persists, contact your sales representative.
UEFI	322	%1 Dual microSD Device Unsupported Configuration - No microSD cards are installed.	Make sure whether the corresponding microSD card is correctly mounted. If the problem persists, contact your sales representative.
UEFI	323	%1 Dual microSD Device Error - The microSD card in Slot %2 has failed.	Contact your sales representative.
UEFI	324	%1 Dual microSD Device Error - Both microSD cards have failed.	Contact your sales representative.
UEFI	325	%1 Dual microSD Device Error - microSD cards have conflicting metadata. Configuration required.	Use the system utility to set up the primary microSD card. If the problem persists, contact your sales representative.
UEFI	326	%1 Dual microSD Device Error - The microSD card in Slot %2 has failed. A microSD card is not installed in Slot %3.	Contact your sales representative.
UEFI	327	AMP Configuration Error - An installed processor does NOT support the configured AMP Mode. System will operate in Advanced ECC Mode.	Contact your sales representative.
UEFI	328	Power Management Controller Firmware Error - The firmware is in Recovery Mode.	Update the firmware of the power management controller. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	329	Power Management Controller FW Error - Unable to communicate with the FW.	Please take actions in the following order. 1. Turn off the unit, disconnect the power cord, wait 30 seconds, and then restart it. 2. If the problem persists, contact your sales representative.
UEFI	333	%1 RESTful API Error - Unable to communicate with iLO FW. BIOS configuration resources may not be up-to-date.	Please take actions in the following order. 1. Reset the iLO following the procedure of *Chapter 1 (7. Resetting and Clearing the Server)* in this manual. Also, restart the unit. 2. If the problem persists, turn off the power of the unit, disconnect the power cord, wait 30 seconds, and then restart it. 3. If the problem persists, contact your sales representative.
UEFI	334	%1 RESTful API Error - RESTful API GET request failed (HTTP Status Code : %2). BIOS configuration resources were not consumed.	Please take actions in the following order. 1. Turn off the unit, disconnect the power cord, wait 30 seconds, and then restart it. 2. If the problem persists, reset the iLO following the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. 3. If the problem persists, updating the iLO firmware/system ROM may solve the problem. Update the iLO firmware/system ROM. 4. If the problem persists, contact your sales representative.
UEFI	335	%1 RESTful API Error - RESTful API PUT request failed (HTTP Status Code : %2). BIOS configuration resources may not be up-to-date.	Please take actions in the following order. 1. Turn off the unit, disconnect the power cord, wait 30 seconds, and then restart it. 2. If the problem persists, reset the iLO following the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. 3. If the problem persists, updating the iLO firmware/system ROM may solve the problem. Update the iLO firmware/system ROM. 4. If the problem persists, contact your sales representative.
UEFI	336	%1 RESTful API Error - One or more configuration settings could not be applied.	Refer to the Settings Result property of RESTful API to check the setting contents. If the problem persists, contact your sales representative.
UEFI	337	%1 RESTful API Error - Unable to communicate with %2 FW due to Datacenter Configuration Lock being enabled. BIOS configuration resources may not be up-to-date.	Disable data center configuration lock. If the problem persists, contact your sales representative.
UEFI	338	%1 RESTful API Error - Unable to communicate with iLO FW. BIOS configuration resources may not be up-to-date.	Restore the factory default settings using the **Restore Default Manufacturing Settings** option via **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** in the system utility. If the problem persists, contact your sales representative.
UEFI	340	NVDIMM Error - Backup Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). Persistent data backup failed and data is irrecoverably lost.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	341	NVDIMM Error - Restore Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). Persistent data restore failed and data is not available. Data is not lost unless the issue persists.	Contact your sales representative.
UEFI	342	NVDIMM Error - Uncorrectable Memory Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). This NVDIMM will not be available to the operating system and data may have been lost.	Contact your sales representative.
UEFI	343	IMPORTANT: NVDIMM backup power has been lost and a future backup is not possible. Data from the last successful backup is intact, but data modified after the last successful backup will be lost if power cannot be restored.	Check the backup power supply of the NVDIMM. Back up the contents recorded in the NVDIMM to other media to protect the data. If the problem persists, contact your sales representative.
UEFI	344	NVDIMM Error - NVDIMM Controller Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). An error was found with the NVDIMM controller. The OS will not use the NVDIMM. Data from last successful backup is still available, but will be lost if controller error persists.	Please take actions in the following order. 1. Back up the contents recorded in the NVDIMM to other media to protect the data. 2. Contact your sales representative.
UEFI	345	NVDIMM Error - Erase Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM could not be erased by the NVDIMM controller FW and future backups are not possible.	Please take actions in the following order. 1. Back up the contents recorded in the NVDIMM to other media to protect the data. 2. Contact your sales representative.
UEFI	346	NVDIMM Error - Arming Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM could not be armed and future backups are not possible.	Please take actions in the following order. 1. Back up the contents recorded in the NVDIMM to other media to protect the data. 2. Contact your sales representative.
UEFI	351	IMPORTANT: %1 is not charged sufficiently to support the energy-backed persistent memory installed in the system. The system will wait for the battery to charge sufficiently before continuing boot.	Perform one of the following actions. 1. Wait until the battery is fully charged so that the unit can continue to be operated. 2. Press the <ESC> key to continue operating without waiting for the battery fully charged.
UEFI	352	IMPORTANT: %1 is not charged sufficiently to support the energy-backed persistent memory installed in the system. System configured to not wait for battery to charge. Persistent memory regions may not be available in the OS.	Perform one of the following actions. 1. Wait until the battery is fully charged so that the unit can continue to be operated. 2. Change to the setting where the unit operation is suspended until the battery is fully charged.
UEFI	353	IMPORTANT: Possible Password Corruption. The PW authentication algorithm detected an issue which has been corrected.	Reset your password. To clear the currently set password, follow the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. If the problem persists, contact your sales representative.
UEFI	354	Unsupported NVDIMM-N Configuration Detected - Processor %1 DIMM %2. The installed NVDIMM-N is not supported.	A connection of unavailable NVDIMM-N has been detected. Check the installation of the NVDIMM - N. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	355	IMPORTANT: Processor %1, DIMM %2 (SN:%3-%4-%5-%6) - This NVDIMM-N was selected for Sanitizing/Erasing. All data saved in the NVDIMM has been erased.	Action is not necessary.
UEFI	356	NVDIMM Error - Sanitization Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6) - This NVDIMM-N was selected for Sanitizing/Erasing, but this process was not successful.	Please take actions in the following order. 1. Restart sanitization of the NVDIMM. 2. Contact your sales representative.
UEFI	357	IMPORTANT: Processor %1, DIMM %2 - This NVDIMM is NOT a %3 NVDIMM. Only %4 NVDIMMs are supported. NVDIMM will be used as a standard DIMM.	Contact your sales representative.
UEFI	360	IMPORTANT: The System Programmable Logic Device revision in this system does not meet minimum requirements for operation with NVDIMMs. All NVDIMM functionality has been disabled.	Update the system programmable logic device. If the problem persists, contact your sales representative.
UEFI	361	IMPORTANT: The Processor RAPL wattage value is configured to an invalid value. User provided value was %1, but %2 has been assigned since it is closest to %3.	Please take actions in the following order. 1. Set an appropriate value for **Processor RAPL wattage value**. 2. If the problem persists, contact your sales representative.
UEFI	362	IMPORTANT: The DRAM RAPL wattage value is configured to an invalid value. User provided value was %1, but %2 has been assigned since it is closest to %3.	Please take actions in following order. 1. Set an appropriate value for **DRAM RAPL wattage value**. 2. If the problem persists, contact your sales representative.
UEFI	363	IMPORTANT: New NVDIMM(s) detected on Processor %1. All NVDIMMs on Processor %2 have been disabled.	Sanitize the NVDIMM connected to the corresponding processor. If the problem persists, contact your sales representative.
UEFI	364	NVDIMM Error - NVDIMM Controller Error - Processor %1, DIMM %2. The controller firmware has been corrupted. The OS will not use the NVDIMM.	Please take actions in following order. 1. Update the NVDIMM firmware. 2. Contact your sales representative.
UEFI	371	IMPORTANT: Processor %1, DIMM %2. New NVDIMM detected and has been disabled.	Sanitize the NVDIMM connected to the corresponding processor. If the problem persists, contact your sales representative.
UEFI	372	IMPORTANT: Processor %1, DIMM %2. New NVDIMM detected and has been disabled.	Sanitize the NVDIMM connected to the corresponding processor. If the problem persists, contact your sales representative.
UEFI	373	IMPORTANT: NVDIMM(s) have been removed from Processor %1. All NVDIMMs on Processor %2 have been disabled.	Please take actions in following order. 1. Sanitize the NVDIMM connected to the corresponding processor. 2. If the problem persists, contact your sales representative.
UEFI	374	NVDIMM Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6) received a memory initialization or uncorrectable error. All NVDIMMs on Proc %7 are disabled. Data on NVDIMM may have been lost	Please take actions in following order. 1. Sanitize the NVDIMM. 2. Contact your sales representative.

Class	Error code	Error message	Action
UEFI	375	NVDIMM Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6) received a memory initialization or uncorrectable error. All NVDIMMs on Proc %7 are disabled. Data on NVDIMM may have been lost.	Please take actions in following order. 1. Sanitize the NVDIMM. 2. Contact your sales representative.
UEFI	376	NVDIMM Error - Processor %1, DIMM %2. NVDIMM set for interleaving disabled but system configured for interleaving enabled. All NVDIMMs on Processor %3 are disabled.	Set **NVDIMM Interleaving** to **Disabled**, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	377	NVDIMM Error - Processor %1, DIMM %2. NVDIMM set for interleaving enabled but system configured for interleaving disabled. NVDIMM has been disabled.	Set **NVDIMM Interleaving** to **Enabled**, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	378	NVDIMM Error - Processor %1, DIMM %2. NVDIMM is configured for a different processor type. All NVDIMMs on Processor %3 are disabled.	Sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	379	NVDIMM Error - Processor %1, DIMM %2. NVDIMM is configured for a different processor type. NVDIMM has been disabled.	Sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	380	NVDIMM Error - Processor %1, DIMM %2. NVDIMM location changed. All NVDIMMs on Processor %3 are disabled.	Install the NVDIMM in the corresponding DIMM slot, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	381	NVDIMM Error - Processor %1, DIMM %2. NVDIMM location changed. NVDIMM has been disabled.	Install the NVDIMM in the corresponding DIMM slot, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	382	NVDIMM Error - Proc %1, DIMM %2 is NOT configured for Sub-NUMA Clustering but system is configured for Sub-NUMA Clustering. All NVDIMMs on Proc %3 are disabled.	Set **Sub-Numa Clustering** to **Disabled**, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	383	NVDIMM Error - Proc %1, DIMM %2 is configured for Sub-NUMA Clustering but system is NOT configured for Sub-NUMA Clustering. All NVDIMMs on Proc %3 are disabled.	Set **Sub-Numa Clustering** to **Enabled**, or sanitize the NVDIMM. .If the problem persists, contact your sales representative.
UEFI	384	NVDIMM Error - Processor %1, DIMM %2. NVDIMM set for Channel Interleaving disabled but system configured for enabled. All NVDIMMs on Processor %3 are disabled.	Set **Channel Interleaving** to **Disabled**, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	385	NVDIMM Error - Processor %1, DIMM %2. NVDIMM set for Channel Interleaving enabled but system configured for disabled. All NVDIMMs on Processor %3 are disabled.	Set **Channel Interleaving** to **Enabled**, or sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	386	NVDIMM Error - Processor %1, DIMM %2. NVDIMM Metadata is corrupted. All NVDIMMs on Processor %3 are disabled.	Sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	387	NVDIMM Error - Processor %1, DIMM %2. NVDIMM Metadata is corrupted. NVDIMM is disabled.	Sanitize the NVDIMM. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	388	Uncorrectable Memory Error - The failed memory module could not be determined.	Contact your sales representative.
UEFI	391	NVDIMM Configuration Error - Node Interleaving is Enabled. This is NOT supported with NVDIMMs installed. All NVDIMMs are disabled.	Set **Node Interleaving** to **Disabled**. If the problem persists, contact your sales representative.
UEFI	392	NVDIMM Configuration Error - The Advanced Memory Protection mode is not Advanced ECC. Only Advanced ECC is supported with NVDIMMs. All NVDIMMs are disabled.	Set **Advanced Memory Protection** to **Advanced ECC Support**. If the problem persists, contact your sales representative.
UEFI	393	IMPORTANT: New NVDIMM(s) detected and all NVDIMMs have been disabled.	Sanitize the NVDIMM. If the problem persists, contact your sales representative.
UEFI	394	NVDIMM Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). Unable to set event notification for this NVDIMM to generate alerts for health changes, including a loss of data persistency.	Updating the system ROM and the innovation engine firmware may solve the error. Please update the system ROM and the innovation engine firmware. If the problem persists, contact your sales representative.
UEFI	395	NVDIMM Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM Persistency is lost and future data backup is not available.	Please take actions in following order. 1. Back up the contents recorded in the NVDIMM to other media to protect the data. 2. Contact your sales representative.
UEFI	396	IMPORTANT: Processor %1, DIMM %2 - NVDIMM Persistency is restored and future data backup is available.	Action is not necessary.
UEFI	397	WARNING: Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM lifetime has reached.	Please take actions in following order. 1. Back up the contents recorded in the NVDIMM to other media to protect the data. 2. Contact your sales representative.
UEFI	398	NVDIMM Configuration Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). Backup power is not available to this DIMM slot. NVDIMM is disabled.	Install the NVDIMM in the slot where the NVDIMM is available. If the problem persists, contact your sales representative.
UEFI	399	INFORMATION: Processor %1, DIMM %2 (SN:%3-%4-%5-%6). Extended Diagnostic Information (Data1 : 0x%7, Data2 : 0x%8, Data3 : 0x%9, Data4 : 0x%10).	Action is not necessary. However, if the error is recorded repeatedly, please contact your sales representative.
UEFI	400	Intrusion Alert Detection - The server chassis hood is currently not installed.	An intrusion warning has been detected. The cover of the server has not been installed. Check the installation of the cover. If the problem persists, contact your sales representative.
UEFI	401	Intrusion Alert Detection - The server chassis hood was removed prior to this power on.	An intrusion warning has been detected. It detected that the server cover has been once removed. Check the status of the server. If the problem persists, contact your sales representative.
UEFI	402	Intrusion Alert Detection - The required intrusion detection cable is missing.	An intrusion warning has been detected. The intrusion detection cable is not connected. Check the status of the server. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	403	Intrusion Alert Configuration Error - Intrusion Alert Detection cable is installed but the feature is not enabled.	An intrusion warning has been detected. While the intrusion detection cable has been connected, its function is not enabled. Check the settings of the server. If the problem persists, contact your sales representative.
UEFI	410	Innovation Engine Error - The Innovation Engine is not operating properly. (Error Code %1).	Updating the system ROM and the innovation engine firmware may solve the error. Please update the system ROM and the innovation engine firmware. If the problem persists, contact your sales representative.
UEFI	411	Innovation Engine Error - The Innovation Engine is operating in recovery mode.	Set the maintenance switch SW12 to OFF unless the setting is specified in the operating procedure etc. When operating the maintenance switch, follow the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. If the problem persists, contact your sales representative.
UEFI	414	Server Platform Services Firmware Error - The SPS Firmware is not operating properly. (Error Code %1).	Updating the latest server platform service firmware may solve the error. Please update the server platform service firmware. If the problem persists, contact your sales representative.
UEFI	415	IMPORTANT: The Innovation Engine Firmware revision in this system does not meet minimum requirements for operation with NVDIMMs. All NVDIMM functionality has been disabled.	Updating to the latest Innovation Engine Firmware may solve the error. Please update the Innovation Engine Firmware. If the problem persists, contact your maintenance service provider.
UEFI	420	TLS certificate verification error 0x%1 while downloading from %2:%3.	Register the certificate required for authentication, and check the TLS setting.
UEFI	421	TLS certificate verification failed due to hostname mismatch.	Check whether the certificate required for authentication has been registered, or check the TLS setting.
UEFI	422	TLS certificate verification failed. The passed certificate is self-signed and the same certificate cannot be found in the list of trusted certificates.	Check whether the certificate required for authentication has been registered, or check the TLS setting.
UEFI	423	TLS certificate verification failed. The issuer certificate of a looked up certificate could not be found. This normally means the list of trusted certificates is not complete.	Check whether the certificate required for authentication has been registered, or check the TLS setting.
UEFI	424	No TLS certificate enrolled. At least one certificate authority must be enrolled when TLS verification mode is set to PEER.	Register the certificate required for authentication, and check the TLS setting.
UEFI	430	Scalable Persistent Memory uncorrectable memory error on %1 Logical NVDIMM %2. The memory region will not be available to the OS and data may have been lost.	Contact your sales representative.
UEFI	431	Scalable Persistent Memory backup failed on %1 Logical NVDIMM %2. Persistent data has been lost.	Contact your sales representative.
UEFI	432	Scalable Persistent Memory restore failed for %1 Logical NVDIMM %2. Persistent data may have been lost.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	433	Scalable Persistent Memory backup device failure on Box %1 Bay %2. Persistent data may have been lost.	Please take actions in following order. 1. Back up the contents recorded in the nonvolatile memory to other media to protect the data. 2. Contact your sales representative.
UEFI	434	Scalable Persistent Memory configuration data on backup device Box %1 Bay %2 is invalid. Persistent data may be lost.	Reinitialize the backup device of Box %1, Bay %2. If the problem persists, contact your sales representative.
UEFI	435	Scalable Persistent Memory backup device on Box %1 Bay %2 is missing.	Contact your sales representative.
UEFI	437	Scalable Persistent Memory backup media write error on %1 Logical NVDIMM %2. Persistent data may have been lost.	Contact your sales representative.
UEFI	438	Scalable Persistent Memory backup media read error on %1 Logical NVDIMM %2. Persistent data may have been lost.	Contact your sales representative.
UEFI	439	New Scalable Persistent Memory configuration rejected. System has reverted to the previous configuration.	Review the setting of the nonvolatile memory. If the problem persists, contact your sales representative.
UEFI	440	Persistent Memory Address Range Scrub has detected an error at 0x%1'%2.	Contact your sales representative.
UEFI	441	NVDIMM Configuration Error - Scalable Persistent Memory functionality is not supported when an NVDIMM-N is present in the system. Scalable Persistent Memory functionality has been disabled.	When using the nonvolatile memory, remove the NVDIMM-N from the server. If the problem persists, contact your sales representative.
UEFI	442	Scalable Persistent Memory backup media write error on Box %1 Bay %2. Persistent data may have been lost.	Contact your sales representative.
UEFI	443	Scalable Persistent Memory backup media read error on Box %1 Bay %2. Persistent data may have been lost.	Contact your sales representative.
UEFI	444	Scalable Persistent Memory arming error on %1, Logical NVDIMM %2. The Logical NVDIMM could not be armed and future backups are not possible.	Back up the contents recorded in the non-volatile memory of the NVDIMM to other media. Contact your sales representative.
UEFI	445	Scalable Persistent Memory backup device error on Box %1 Bay %2.	Contact your sales representative.
UEFI	446	IMPORTANT: The Scalable Persistent Memory backup power requirements have exceeded the available backup battery power. Logical NVDIMM persistency has been lost.	Contact your sales representative.
UEFI	447	IMPORTANT: %1 is not charged sufficiently to support the energy-backed persistent memory installed in the system. The charging process was skipped by the user. Persistent memory regions may not be available in the OS.	Depending on the situation, reboot the device. If a continuous recording is a problem, contact your sales representative.
UEFI	448	IMPORTANT: %1 is not charged sufficiently to support the energy-backed persistent memory installed in the system. The charging process timed out and did not complete. Persistent memory regions may not be available in the OS.	Reboot the device. If a continuous recording is a problem, contact your sales representative.

Class	Error code	Error message	Action
UEFI	449	Scalable Persistent Memory Address Range Scrub error threshold exceeded on %1, Logical NVDIMM %2. Logical NVDIMM Persistency is lost and future data backups are not possible.	Contact your sales representative.
UEFI	451	Unsupported NVDIMM-N Configuration Detected - Processor %1 DIMM %2. The installed NVDIMM-N is not supported.	A connection of unavailable NVDIMM-N has been detected. Updating the system ROM may solve the error. Please update the system ROM. If the problem persists, contact your sales representative.
UEFI	454	NVDIMM Error - Persistent Memory Address Range Scrub error threshold exceeded on Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM Persistency is lost and future data backups are not possible.	Contact your sales representative.
UEFI	455	IMPORTANT: The %1 in Bay %2 will soon be incapable of supporting the Scalable Persistent Memory backup.	Contact your sales representative.
UEFI	456	IMPORTANT: The %1 in Bay %2 cannot support the Scalable Persistent Memory backup. Logical NVDIMM persistency has been lost.	Contact your sales representative.
UEFI	460	Correctable Memory Error Threshold Exceeded (%1 %2, DIMM %3).	Contact your sales representative.
UEFI	461	High rate of corrected memory errors, performance may be degraded (%1 %2, DIMM %3).	Contact your sales representative.
UEFI	463	Mirrored Memory Engaged due to an Uncorrectable Memory Error (%1 %2, DIMM %3).	Contact your sales representative.
UEFI	464	Online Spare Memory Copy Process Started for Faulty Module (%1 %2, DIMM %3).	Contact your sales representative.
UEFI	465	Online Spare Memory Switchover Complete.	Action is not necessary.
UEFI	466	Correctable Memory Error Threshold Exceeded (%1 %2, Channel %3).	Contact your sales representative.
UEFI	467	Uncorrectable Error was detected on Processor %1.	Contact your sales representative.
UEFI	468	Memory Channel Error - Correctable Memory Error Threshold Exceeded (%1 %2, Channel %3).	Contact your sales representative.
UEFI	470	SATA device on Controller %1 Port %2 is unresponsive.	Contact your sales representative.
UEFI	480	IMPORTANT: Processor %1, DIMM %2 - NVDIMM-N firmware updated. Current version is %3.	Action is not necessary.
UEFI	481	NVDIMM Error - Firmware Update Error - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM-N firmware was not updated. Current version is %7.	Contact your sales representative.
UEFI	482	NVDIMM Error - Invalid Firmware Image Detected - Processor %1, DIMM %2 (SN:%3-%4-%5-%6). NVDIMM-N switching to backup image. Current version is %7.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	483	NVDIMM Error - NVDIMM(s) cannot be initialized due to internal error (Code : %1). NVDIMM functionality might be impacted	Updating the system ROM and the innovation engine firmware may solve the error. Please update the system ROM and the innovation engine firmware. If the problem persists, contact your sales representative.
UEFI	490	System Health Error. A critical system health error requires the system to be shutdown.	Contact your sales representative.
UEFI	491	System Health Error. A critical system health error has kept the system from booting. -System Halted!	Contact your sales representative.
UEFI	500	ASR NMI Detected - The Automatic Server Recovery (ASR) NMI has been signaled (per the system configuration policy).	Contact your sales representative.
UEFI	501	IPMI Watchdog NMI Detected - The IPMI Watchdog NMI has been signaled (per the system configuration policy).	Contact your sales representative.
UEFI	502	Application Watchdog NMI Detected - The Application Watchdog NMI has been signaled (per the system configuration policy).	Contact your sales representative.
UEFI	510	The installed number of DIMMs on one or more processors results in an unbalanced memory configuration across memory controllers. This may result in non-optimal memory performance.	Referring to the user’s guide, change the mounting positions or number of DIMM. In case a problem is not resolved, contact your sales representative.
UEFI	511	One or more DIMMs have been mapped out due to a memory error, resulting in an unbalanced memory configuration across memory controllers. This may result in non-optimal memory performance.	Contact your sales representative.
UEFI	520	Backplane Configuration Error: A storage controller is installed in the incorrect drive backplane. The controller will not be usable.	Contact your sales representative.
UEFI	521	Backplane Configuration Error: Unsupported drive backplane configuration detected.	Contact your sales representative.
UEFI	522	PCIe Isolation Event Detected - A PCIe device signaled an error and was disabled.	Contact your sales representative.
UEFI	530	Core Boost Technology Disabled.	System Configuration > BIOS/Platform Configuration (RBSU) > Power and Performance Option -> From [Advanced Performance Tuning Options], set the [Core Boosting] option to [Enabled]. If the problem persists, contact your sales representative.
UEFI	531	Core Boost Technology missing required iLO License.	Contact your sales representative.
UEFI	550	Box %1, Bay %2 - NVMe firmware updated from version %3 to version %4.	Action is not necessary.
UEFI	551	Firmware Update Error - Box %1, Bay %2 - NVMe firmware was not updated. Current version is %3.	Contact your sales representative.
UEFI	554	%1 firmware updated from version %2 to version %3.	Action is not necessary.

Class	Error code	Error message	Action
UEFI	555	Firmware Update Error - Trusted Platform Module firmware not updated. Current version is %1.	Contact your sales representative.
UEFI	557	Firmware Update Error - Server Platform Services firmware not updated. Current version is %1.	Contact your sales representative.
UEFI	558	%1 %2 - PCIe device firmware updated from version %3 to version %4.	Action is not necessary.
UEFI	559	Firmware Update Error - %1 %2 - PCIe device firmware was not updated. Current version is %3.	Contact your sales representative.
UEFI	1626	Unsupported Power Supply Configuration - Unsupported Power Supply detected.	Contact your sales representative.
UEFI	1636	%1 Trusted Platform Module Error.	Contact your sales representative. The motherboard and the TPM module must be replaced as a set.
UEFI	1637	Unsupported Option Enabled - Platform Trust Technology (PTT) is not supported on this server. Earlier System ROM revisions allow enabling this option, but a chipset issue results in this feature not working reliably. PTT should be disabled.	Disable Platform Trust Technology (PTT).
UEFI	1809	Slot %1 Encryption Failure - Communication issue prevents drive keys from being retrieved. Encrypted logical drives are offline. System may not boot.	Refer to the page of the iLO key manager to check the corrective action.
UEFI	1810	Slot %1 Encryption Failure - Master Key is incorrect on or not retrieved from Remote Key Manager. Encrypted logical drives may be offline. System may not boot.	Correct the problem with the Key Manager.
UEFI	1811	Slot %1 Encryption Failure - Drive Keys not retrieved from the Remote Key Manager. Dependent encrypted logical drives are offline. System may not boot.	Correct the problem with the Key Manager.
UEFI	1812	Slot %1 Encryption Failure - Invalid Drive Keys on Remote Key Manager. Encrypted logical drives may be offline. System may not boot.	Restore the correct version of the drive key with the Key Manager.
UEFI	1814	Slot %1 Encryption Failure - Communication issue prevents keys from being retrieved. Dependent encrypted logical drives are offline. System may not boot.	After turning off the server power and disconnecting the power cord, check the installation of the Slot% 1 controller (card). Wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	1822	Slot %1 Encryption Failure - Imported encrypted logical drives are offline. Matching Local Master Key required. System may not boot.	Enter the local master key using the Smart Storage Administrator.
UEFI	1900	Slot %1 Smart Array - Controller Failure. %2	Please take actions in following order. 1. After turning off the unit power and disconnecting the power cord, check the installation of the Slot% 1 controller (card). Wait 30 seconds, and then restart it. 2. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	1901	Slot %1 Smart Array - Controller failed on previous power-up due to lock up code 0x%2	Contact your sales representative.
UEFI	1902	Slot %1 Smart Array - Controller not configured.	Check the connection between the Slot% 1 controller (card) and back plane and hard disk drive. Configure the drive using the Smart Storage Administrator.
UEFI	1903	Slot %1 Smart Array - Memory error occurred during self-test.	Contact your sales representative.
UEFI	1904	Slot %1 Smart Array - Redundant ROM programming failure.	Updating the firmware of the Slot% 1 controller (card) to the latest version may solve the error. Please update the corresponding firmware. If the problem persists, contact your sales representative.
UEFI	1905	Slot %1 Smart Array - Redundant ROM image checksum error. Backup ROM activated.	Updating the firmware of the Slot% 1 controller (card) to the latest version may solve the error. Please update the corresponding firmware. If the problem persists, contact your sales representative.
UEFI	1906	Slot %1 Smart Array - Last configuration not committed. %2	Set the configuration of the Slot% 1 controller again.
UEFI	1910	Slot %1 Smart Array - One or more drives could not be authenticated as genuine drives. Smart Array will not control the LEDs to these drives.	The hard disk drive connected to the Slot% 1 controller (card) could not be verified as an authorized part. To confirm the corresponding hard disk drive, check it via the Smart Storage Administrator.
UEFI	1911	Slot %1 Smart Array - Drive(s) are failed: %2	Contact your sales representative.
UEFI	1912	Slot %1 Smart Array - Drive(s) are overheated: %2	Contact your sales representative.
UEFI	1913	Slot %1 Smart Array - Drive Erase Operation In Progress (or Queued). The following drive(s) will be erased upon completion: %2	Action is not necessary.
UEFI	1914	Slot %1 Smart Array - Predictive drive failure: %2	Contact your sales representative.
UEFI	1920	Slot %1 Smart Array - Storage enclosure firmware problem detected: %2. %3	Contact your sales representative.
UEFI	1921	Slot %1 Smart Array - Storage enclosure firmware problem detected: %2. %3	Contact your sales representative.
UEFI	1922	Slot %1 Smart Array - More devices attached than this controller supports. Some devices are ignored.	Please take actions in the following order. 1. Updating the firmware of the Slot% 1 controller to the latest version may solve the error. Refer to the release notes to check if there are related improvements. If there are related improvements, update the firmware of the Slot% 1 controller. 2. Reduce the number of hard disk drives connected to the Slot% 1 controller.
UEFI	1930	Slot %1 Smart Array - Valid data found in write-back Cache. Data will automatically be written to the logical drive(s).	Although the power has been turned off with the data still in the write-back cache, the data was automatically written to the logical drive. If the data is not recorded repeatedly, no action is required. To prevent data from remaining in the write-back cache, perform a normal shutdown of the system. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	1931	Slot %1 Smart Array - Data in write-back cache has been lost.	Perform the following measures 1. Check the integrity of the data stored in the drive. 2. To prevent data from remaining in the write-back cache, perform a normal shutdown of the system. 3. If the data is missing, restore the previous backup data.
UEFI	1932	Slot %1 Smart Array - Cache Status: Disabled (Error Code: %2)	Take either of the following steps. 1. Change the drive array configuration back to what matches the cache. 2. Clear the data in the cache by executing the storage software.
UEFI	1933	Slot %1 Smart Array - Consecutive power loss during I/O transactions on degraded write-back volumes. This might have resulted in data integrity issues.	Please take actions in following order. 1. Make sure the controller (card) in slot %1 to be installed. 2. Make sure the power supply and the batteries have no problem.
UEFI	1934	Slot %1 Smart Array - Cache Status: Disabled (Error Code: Missing Energy Pack)	Install the cache module battery.
UEFI	1935	Slot %1 Smart Array - Cache Status: Temporary Disabled (Error Code: Energy Pack Charging)	Action is not necessary.
UEFI	1936	Slot %1 Smart Array - Cache Self-Test Error Occurred. %2	Contact your sales representative.
UEFI	1937	Slot %1 Smart Array – Cache Status: Disabled (Error Code: Missing Controller Backup Power Cable)	Make sure the battery cable for the controller is properly connected. Make sure the cable is properly connected to the connector. If the problem persists, contact your sales representative.
UEFI	1940	Slot %1 Smart Array - The following logical drives are failed: %2.	Contact your sales representative.
UEFI	1941	Slot %1 Smart Array - The following logical drives are missing: %2	Make sure all cables are properly connected. Make sure all hard disk drives are connected. Make sure the power is supplied to the back plane when the hard disk drive is connected through the back plane. If the problem persists, contact your sales representative.
UEFI	1942	Slot %1 Smart Array - Configured physical drives are missing: %2	Please take actions in following order. 1. Turn the unit’s power OFF. 2. Turn the power OFF if the hard disk drive external enclosure is connected. 3. Make sure all cables are properly connected. 4. Make sure all hard disk drives are properly connected. 5. Turn ON the power of the unit and the hard disk drive external enclosure to determine whether the problem still exists. 6. If the problem persists, contact your sales representative.
UEFI	1943	Slot %1 Smart Array - Foreign configuration found on drive. Not able to import configuration to the controller.	Reconnect the hard disk drives to the controllers to which they was originally connected. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	1944	Slot %1 Smart Array - Foreign configuration found on drive. Configuration mis-match between controller and drives.	Import the configuration settings of the inserted storage, or remove the appropriate RAID volume. If the problem persists, contact your sales representative.
UEFI	2150	Corrected Memory Error (%1 %2, DIMM %3, Address 0x%4'%5, Count %6)	The action is not necessary unless the failure of recording occurs repeatedly. If the problem persists, contact your sales representative.
UEFI	2200	Secure Boot - Secure Boot has been enabled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2201	Secure Boot - Secure Boot has been disabled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2202	Secure Boot - A new Platform Key (PK) has been enrolled	Action is not necessary unless an unintended consequence occurs.
UEFI	2203	Secure Boot - A new entry in the Key Exchange Key (KEK) security database has been enrolled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2204	Secure Boot - A new entry in the db security database has been enrolled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2205	Secure Boot - A new entry in the dbx security database has been enrolled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2206	Secure Boot - A new entry in the dbt security database has been enrolled.	Action is not necessary unless an unintended consequence occurs.
UEFI	2207	Secure Boot - All of the keys have been reset to defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2208	Secure Boot - Key Exchange Keys (KEK) have been reset to the platform defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2209	Secure Boot - Platform Keys (PK) have been reset to the platform defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2210	Secure Boot - db keys have been reset to the platform defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2211	Secure Boot - dbx keys have been reset to the platform defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2212	Secure Boot - dbt keys have been reset to the platform defaults.	Action is not necessary unless an unintended consequence occurs.
UEFI	2213	Secure Boot - All of the keys in the platform have been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2214	Secure Boot - The Platform Key (PK) Secure Boot variable has been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2215	Secure Boot - The Key Exchange Key (KEK) Secure Boot variable has been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2216	Secure Boot - The db Secure Boot variable has been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2217	Secure Boot - The dbx Secure Boot variable has been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2218	Secure Boot - The dbt Secure Boot variable has been deleted.	Action is not necessary unless an unintended consequence occurs.
UEFI	2219	Secure Boot - A Key Exchange Key (KEK) entry has been deleted from KEK database.	Action is not necessary unless an unintended consequence occurs.
UEFI	2220	Secure Boot - A db entry has been deleted from db database.	Action is not necessary unless an unintended consequence occurs.
UEFI	2221	Secure Boot - A dbx entry has been deleted from dbx database.	Action is not necessary unless an unintended consequence occurs.

Class	Error code	Error message	Action
UEFI	2222	Secure Boot - A dbt entry has been deleted from dbt database.	Action is not necessary unless an unintended consequence occurs.
UEFI	2223	Secure Boot - Unable to enable/disable secure boot. Only a physically present user can enable/disable Secure Boot.	Change the settings from the local console.
UEFI	2224	Secure Boot - Unable to enroll a new entry.	Set the required settings again using the System Utility after restoring factory default settings by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** - **Restore Default Manufacturing Settings** options from the menu of the System Utility. If the problem persists, contact your sales representative.
UEFI	2225	Secure Boot - Unable to reset one or more keys.	Set the required settings again using the System Utility after restoring factory default settings by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** - **Restore Default Manufacturing Settings** options from the menu of the System Utility. If the problem persists, contact your sales representative.
UEFI	2226	Secure Boot - Unable to delete one or more variables.	Set the required settings again using the System Utility after restoring factory default settings by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** - **Restore Default Manufacturing Settings** options from the menu of the System Utility. If the problem persists, contact your sales representative.
UEFI	2227	Secure Boot - Unable to delete one or more entries.	Set the required settings again using the System Utility after restoring factory default settings by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** - **Restore Default Manufacturing Settings** options from the menu of the System Utility. If the problem persists, contact your sales representative.
UEFI	2319	Test event. This is only a test.	Action is not necessary.
UEFI	2320	iLO Debug Certificate Detected	Action is not necessary.
UEFI	2400	Slot %1 SAN Error - SAN link is down. SAN connection not possible.	Confirm the SAN switches and the configuration. Then reconnect SAN ports or restart the server.
UEFI	2401	Slot %1 SAN Error - Fabric Login (FLOGI) failed. SAN connection not possible.	Confirm the SAN switches and the configuration. Then reconnect SAN ports or restart the server.
UEFI	2402	Slot %1 SAN Error - Name Server login failed. Boot from SAN not possible.	Confirm the SAN switches and the configuration. Then reconnect SAN ports or restart the server.
UEFI	2403	Slot %1 SAN Error - No targets found. Boot from SAN not possible.	Confirm the SAN switches and the configuration. Then reconnect SAN ports or restart the unit.
UEFI	2404	Slot %1 SAN Error - Adapter restart failed. Firmware not ready. Boot from SAN not possible.	Reconnect SAN ports or restart the server. If the problem persists, contact your sales representative.
UEFI	2405	Slot %1 Error - Vital Product Data (VPD) is not available.	Update the firmware of the card in slot %1. If the problem persists, contact your sales representative.
UEFI	2406	Slot %1 NIC Error - NIC personality (Ethernet, iSCSI, or FCoE) could not be changed. FW may require update.	Update the firmware of the NIC card in slot %1 before restarting the server.
UEFI	2407	Slot %1 Error - The firmware update did not complete successfully.	Update the firmware of the card again after confirming the firmware image of the card in slot %1 is correct.

Class	Error code	Error message	Action
UEFI	2408	Slot %1 Error - Firmware image recovery not successful.	Restart the unit. If the problem persists, contact your sales representative.
UEFI	2409	Slot %1 Error - Failure to apply Virtual Connect (VC) settings.	Confirm the VC configuration. Apply the VC configuration again after restarting the server.
UEFI	2410	Slot %1 Error - Controller I/O timeout failure.	Restart the unit. If the problem persists, contact your sales representative.
UEFI	2411	%1: iSCSI Error - Failed to acquire DHCP client network address.	Check the network cables and the DHCP server configuration. Restart the server.
UEFI	2412	%1: iSCSI Error - Failed to acquire DHCP target network address.	Check the network cables and the DHCP server configuration. Restart the server.
UEFI	2413	%1: iSCSI Error - Failed to acquire DHCP iSNS Server IP address.	Check the network cables, the DHCP server configuration and the iSNS server configuration. Restart the server.
UEFI	2414	%1: iSCSI Error - iSCSI login failed.	Confirm and set the cable connection, the controller configuration, and the configurations of iSCSI initiator and the target properly. Then restart the server.
UEFI	2415	%1: iSCSI Error - Boot LUN not available.	Confirm and set the controller configuration and the iSCSI server configuration properly. Then restart the server.
UEFI	2416	%1: Error - Controller firmware not ready.	Restart the unit. If the problem continues, update FW. If the problem persists, contact your sales representative.
UEFI	2419	%1 %2 Error - Rx/Tx is disabled on this device because an unsupported SFP+ or QSFP module type was detected.	Contact your sales representative.
UEFI	2420	%1 %2 Error - The UEFI driver for the device detected an older version of the NVM image than expected.	Update the NVM image. If the problem persists, contact your sales representative.
UEFI	2421	%1 %2 Error - The UEFI driver for the device detected a newer version of the NVM image than expected.	Update the NVM UEFI driver to the latest version. If the problem persists, contact your sales representative.
UEFI	2422	%1 %2 Error - The UEFI driver for the device stopped because the NVM image is newer than expected.	Update the NVM UEFI driver to the latest version. If the problem persists, contact your sales representative.
UEFI	3100	Trusted Platform Module (TPM) was successfully bound to system.	Action is not necessary. The unit restarts automatically.
UEFI	3101	Unbound Trusted Platform Module (TPM) detected.	Action is not necessary. The TPM is integrated into the unit after being cleared.
UEFI	3102	Unused Scalable Persistent Memory backup device detected in Box %1 Bay %2.　This device will be available for operating system usage and will NOT be used for Scalable Persistent Memory backup.	Check the configuration of the backup device in Box %1, Bay %2. If the problem persists, contact your maintenance service provider.
UEFI	3103	NVDIMM Error: Unsupported NVDIMM-N configuration detected. All NVDIMMs are disabled.	Check the DIMM configuration, and change it to make it compliant with the population rules. For details on DIMM configuration, refer to the User's Guide.
UEFI	3105	Unsupported PCIe Card Configuration. The PCIe device installed in Slot %1 is not supported in the current location.	Check the PICe option card configuration, and change it to make it compliant with the population rules. For details on PICe option card configuration, refer to the User's Guide. If the problem persists, contact your maintenance service provider.
UEFI	3106	Server Configuration Lock has detected a discrepancy with the DIMM (%1 %2 DIMM %3) Digital Fingerprint.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	3107	Server Configuration Lock has detected a discrepancy with the System Board Digital Fingerprint.	Contact your sales representative.
UEFI	3108	Server Configuration Lock has detected a discrepancy with the Processor %1 Digital Fingerprint.	Contact your sales representative.
UEFI	3109	Server Configuration Lock has detected a discrepancy with the PCI Device slot %1 Digital Fingerprint.	Contact your sales representative.
UEFI	3110	Server Configuration Lock has detected a discrepancy with the Security Configuration Digital Fingerprint.	Contact your sales representative.
UEFI	3111	Server Configuration Lock has detected a discrepancy with the Firmware Revisions Digital Fingerprint.	Contact your sales representative.
UEFI	3112	IMPORTANT: The System Programmable Logic Device revision in this system does not meet minimum requirements for operation with HPE Scalable Persistent Memory. HPE Scalable Persistent Memory functionality has been disabled.	Contact your sales representative.
UEFI	3118	Intel Optane DC Persistent Memory Spare Blocks Alert - Processor %1 DIMM %2 - The Intel Optane Memory Module has %3 percent or less of its spare blocks remaining.	Contact your sales representative.
UEFI	3119	Intel Optane DC Persistent Memory Spare Blocks Alert - Processor %1 DIMM %2 - The Intel Optane Memory Module has 1 percent of its spare blocks remaining. Future errors on this Intel Optane Memory Module may result in loss of data.	Contact your sales representative.
UEFI	3121	Transaction Timeout Error Detected. Slot %1 (Segment 0x%2, Bus 0x%3, Device 0x%4, Function 0x%5).	Contact your sales representative.
UEFI	3126	Scalable Persistent Memory region on %1, Logical NVDIMM %2, is being sanitized. All existing data will be lost.	Action is not necessary.
UEFI	3127	Transaction Timeout Error Detected. Embedded %1 (Segment 0x%2, Bus 0x%3, Device 0x%4, Function 0x%5).	Contact your sales representative.
UEFI	3128	The Scalable Persistent Memory backup operation has detected a failure on a backup device. The backup operation will be attempted using the remaining backup devices.	Contact your sales representative.
UEFI	3129	A change was detected in NVDIMM availability to the Operating System. NVDIMM device mapping in the Operating System may be affected.	If a new NVDIMM was added or the populated slot of a NVDIMM was changed, no action is required.
UEFI	3130	IMPORTANT: The current power supply configuration setting is not recommended for the number of power supplies installed. Ensure that the Power Supply Requirements setting in Platform Configuration (RBSU) properly matches the number of installed power supplies.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	3132	The Scalable Persistent Memory backup device in Box %1 Bay %2 has been mapped out. Persistent data may be lost. Logical NVDIMM-N regions will not be armed until the device is replaced.	Contact your sales representative.
UEFI	3134	One-button secure erase Error - Trusted Platform Module.	Contact your sales representative.
UEFI	120	A Critical Error Event that has kept the system from booting. -System Halted!	Contact your sales representative.
UEFI	163	Time & Date Not Set.	Set the date and time of the server.
UEFI	209	Unsupported DIMM Configuration Detected - Installed DIMM configuration does NOT support configured AMP Mode. System will operate in Advanced ECC Mode. (Major Code:%1 Minor Code:%2).	For the details of the DIMM configuration required to use the AMP mode, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	210	Unsupported DIMM Configuration Detected - Installed DIMMs could not support the currently configured interleave mode. (Major Code:%1, Minor Code:%2).	For the details of the DIMM configuration required to use the interleaved mode, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	211	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. The DIMM does not support ECC. (Major Code:%3, Minor Code:%4).	Remove the DIMM which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	212	Processor UPI Initialization Error. A processor UPI initialization error was detected. %1 (Major Code:%2, Minor Code:%3).	Contact your sales representative.
UEFI	213	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. The DIMM has more ranks than is supported by this system. (Major Code:%3, Minor Code:%4).	Contact your sales representative.
UEFI	214	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. The DIMM requires a frequency not supported by the system. (Major Code:%3, Minor Code:%4).	Contact your sales representative.
UEFI	215	DIMM Initialization Error - Processor %1 DIMM %2. The identified processor and memory failed to initialize properly. %3 (Major Code:%4, Minor Code:%5).	Contact your sales representative.
UEFI	216	DIMM Initialization Error. A fatal error was detected while initializing memory. %1 (Major Code:%2, Minor Code:%3).	Contact your sales representative.
UEFI	217	DIMM Initialization Error - Processor %1 DIMM %2. The identified processor and memory are operating at an incorrect voltage. %3 (Major Code:%4, Minor Code:%5).	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	219	Memory Configuration Error - One or more of the installed processors has a total amount of memory installed which exceeds the amount supported by that processor. %1 (Major Code:%2, Minor Code:%3).	Contact your sales representative.
UEFI	220	KTI Initialization Error - A fatal KTI initialization error has been detected. %1 (Major Code: %2, Minor Code: %3).	Contact your sales representative.
UEFI	221	Unknown Initialization Error. The system has experienced a fatal initialization error. %1 (Major Code: %2, Minor Code: %3).	Contact your sales representative.
UEFI	223	DIMM Initialization Error - Processor %1 Channel %2. The identified memory channel could not be properly trained and has been mapped out. (Major Code:%3, Minor Code:%4).	Contact your sales representative.
UEFI	228	Unsupported DIMM Configuration Detected - Processor %1 Channel %2. DIMM population rule violation. The Memory channel has been mapped out. (Major Code:%3, Minor Code:%4).	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	229	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. The identified DIMM is not supported in the system. (Major Code:%3, Minor Code:%4).	Remove the DIMM which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	230	Unsupported DIMM Configuration Detected - Processor %1 Channel %2. The number of installed DIMM ranks exceeds the number supported by the channel. (Major Code:%3, Minor Code:%4).	Remove the DIMM of the memory channel which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	231	Memory Configuration Error - No memory is available. If DIMMs are installed, verify that the corresponding processor is installed. %1 (Major Code:%2, Minor Code:%3).	Contact your sales representative.
UEFI	232	DIMM Initialization Error - A memory initialization error was detected. %1 (Major Code:%2, Minor Code:%3).	Contact your sales representative.
UEFI	233	DIMM Initialization Error - Processor %1 Channel %2. The identified memory channel could not be properly trained and has been mapped out. (Major Code:%3, Minor Code:%4).	Contact your sales representative.
UEFI	234	DIMM Initialization Error - Processor %1 DIMM %2. The identified DIMM could not be properly trained and has been mapped out. (Major Code:%3, Minor Code:%4).	Contact your sales representative.
UEFI	235	Unsupported DIMM Configuration Detected - Mixed DIMM configurations are not support on this system. %1 (Major Code:%2, Minor Code:%3).	Remove the DIMM which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	236	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. The DIMM does not support the required voltage. (Major Code:%3, Minor Code:%4).	Remove the DIMM which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	237	Unsupported DIMM Configuration Detected - Octal and Quad Rank DIMMs are not supported on the same memory channel . (Major Code:%1, Minor Code:%2).	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the User's Guide. If the problem persists, contact your sales representative.
UEFI	238	Unsupported DIMM Configuration Detected - Mixing 3DS LRDIMMs with non-3DS LRDIMMs is not supported. %1 (Major Code:%2, Minor Code:%3).	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the User's Guide. If the problem persists, contact your sales representative.
UEFI	239	Unsupported DIMM Configuration Detected - Mixed DIMM configurations are not supported on this system. The system can only have one DIMM type (such as RDIMM or LRDIMM) installed at a time. %1 (Major Code:%2, Minor Code:%3).	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the User's Guide. If the problem persists, contact your sales representative.
UEFI	242	Unsupported Processor Configuration Detected - System does not support booting with three processors installed.	Make sure the processor is properly installed. If the problem persists, contact your sales representative.
UEFI	243	Unsupported Processor Configuration Detected - The installed processors are not 4-socket capable and this server only supports 4-socket capable processors.	Make sure the processor is properly installed. If the problem persists, contact your sales representative.
UEFI	259	Unsupported Processor Configuration Detected. All installed processors do not have the same model number.	Make sure the processor is properly installed. If the problem persists, contact your sales representative.
UEFI	264	Server Platform Services Firmware in Recovery Mode. SPS Firmware Update Switch 12 of the Maintenance Switch is in the ON position.	Set the maintenance switch SW12 to OFF unless other setting is specified in an operation procedure, etc. Operate the maintenance switches according to the procedure in *Chapter 1 (7. Resetting and Clearing the Server)* of the *"Maintenance Guide"*. If the problem persists, contact your maintenance service provider.
UEFI	265	System Configuration Error. The system configuration has exceeded the non-volatile storage capacity of the server and certain settings may be lost.	Set the required settings again using the System Utility after restoring factory default settings by selecting **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** - **Restore Default Manufacturing Settings** options from the menu of the System Utility. If the problem persists, contact your sales representative.
UEFI	270	%1 FW Communication Issue - Unable to communicate with %2 FW. Certain management functionality is not available.	Turn off the power of this device, pull off the power code and after 30 minutes, reboot the device. In case a problem is not resolved, contact your sales representative.
UEFI	275	Unsupported Processor Detected - Processor stepping not supported.	Contact your sales representative.
UEFI	298	IMPORTANT: The Boot Mode has been changed to Legacy Boot Mode for this boot only. On the next reboot, the Boot Mode will return to UEFI Boot Mode.	Action is not necessary.

Class	Error code	Error message	Action
UEFI	299	The Boot Mode has been changed to UEFI Boot Mode for this boot only. On the next reboot, the Boot Mode will return to Legacy Boot Mode.	Action is not necessary.
UEFI	316	Configuration Error - The installed Smart Storage battery does not support NVDIMMs	Check that supported NVDIMMs are mounted. If the problem persists, contact your maintenance service provider.
UEFI	318	Trusted Platform Module (TPM) Self-Test Error.	Turn off the unit, disconnect the power cord, wait 30 seconds, and then restart it. If the problem persists, contact your sales representative.
UEFI	330	Unsupported Processor Configuration Detected - Processors are installed in the incorrect order.	Make sure the processor is properly installed. If the problem persists, contact your sales representative.
UEFI	347	NVDIMM Population Error - %1 NVDIMMs are present %2. Only %3 NVDIMMs are supported.	Make sure the NVDIMM is properly installed. If the problem persists, contact your sales representative.
UEFI	348	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. Registered DIMMs are only supported when an Intel Optane DC Persistent Memory Module is present in the system. (Major Code:%3, Minor Code:%4).	Remove the DIMM which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	349	NVDIMM Population Error - NVDIMMs and LRDIMMs are installed in this system. NVDIMMs are only supported with RDIMMs on this system.	Remove the LRDIMM. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	350	NVDIMM Population Error - Processor %1, DIMM %2. NVDIMMs and RDIMMs are in the incorrect order on Channel %3. NVDIMMs on the channel should be closest to the CPU.	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	358	IMPORTANT: Processor %1, DIMM %2 - The installed NVDIMM has a Supercap attached. This is not supported.	Remove the Supercap which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	359	NVDIMM Population Error - Processor 1 must have at least one RDIMM installed when NVDIMMs are present in the system.	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the User's Guide. If the problem persists, contact your sales representative.
UEFI	365	Unsupported NVDIMM-N Configuration Detected - The installed NVDIMM-Ns are not compatible with each other. (Major Code:%1, Minor Code:%2).	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	367	System ROM Authentication Error - The System ROM image could not be authenticated or recovered.	Update the system ROM and the redundant ROM. If the problem persists, contact your sales representative.
UEFI	368	System ROM Authentication Error - The BIOS image could not be authenticated.	An attempt will be made to recover automatically. If the problem persists, contact your sales representative.
UEFI	369	System ROM Authentication Error - The system is operating on a recovered or redundant image. Redundant ROM functionality is NOT available.	Confirm the revision of the system ROM. Update the ROM to restore the redundancy of the system ROM. If the problem persists, contact your sales representative.

Class	Error code	Error message	Action
UEFI	370	Redundant ROM Image Authentication Error - The Redundant ROM image could not be authenticated. Redundant ROM functionality is NOT available.	Update the system ROM and the redundant ROM. If the problem persists, contact your sales representative.
UEFI	389	Unexpected Shutdown and Restart - An undetermined error type resulted in a reboot of the server.	If the problem persists, contact your sales representative.
UEFI	412	Server Platform Services Firmware Error - The Server Platform Services firmware is operating in factory mode.	Update the system ROM and Server Platform Services Firmware. If the problem persists, contact your sales representative.
UEFI	413	Innovation Engine Image Authentication Error. The Innovation Engine image could not be authenticated.	Update Innovation Engine Firmware. If the problem persists, contact your sales representative.
UEFI	436	Scalable Persistent Memory on %1 Logical NVDIMM %2 does not have enough memory to initialize.	Confirm an additional DIMM is unnecessary. Instead, confirm an additional record about a memory error in Integrated Management Log (IML). If there is an additional record, follow on how to deal with the additional record. If the problem persists, contact your sales representative.
UEFI	450	%1 is in High Security Mode and there is no System ROM Admin Password set.	Restart the unit after setting the Admin password for the system ROM.
UEFI	452	%1 FW Communication Issue - Unable to communicate with %2 FW. One or more configuration settings may be used from the last system boot. One or more configuration changes since the last boot may not have taken affect.	Take action in the following steps. 1. Turn off the power of the unit, disconnect the power cord, wait for 30 seconds, and then reboot it. 2. If the problem persists, updating the firmware may resolve the problem. Please update the firmware. 3. If the problem persists, contact your maintenance service provider.
UEFI	453	Unsupported DIMM Configuration Detected - Processor %1 DIMM %2. Unsupported persistent memory module is present in the system. This module is not supported by the installed processor(s). - System Halted!	Remove the persistent memory which was pointed out. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	457	%1 FW Communication Issue - Unable to communicate with %2 FW (Error Code 0x%3). Unexpected %4 behavior may occur.	Take action in the following steps. 1. Turn off the power of the unit, disconnect the power cord, wait for 30 seconds, and then reboot it. 2. If the problem persists, updating the firmware may resolve the problem. Please update the firmware. 3. If the problem persists, contact your maintenance service provider.
UEFI	462	Uncorrectable Memory Error Threshold Exceeded (%1 %2, DIMM %3). The DIMM is mapped out and is currently not available.	Contact your sales representative.
UEFI	469	Uncorrectable Error Detected on the Previous Boot. Error information logged to the Integrated Management Log.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	471	IMPORTANT: The UEFI Variable space is close to exceeding the non-volatile storage capacity. This may impact OS installations and may limit the ability to configure certain options.	Restore the factory default settings using the “Restore Default Manufacturing Settings” option via **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **System Default Options** in the system utility. If the problem persists, contact your sales representative.
UEFI	3010	MemBIST RMT: %1 margin out of range at CPU %2 DIMM %3 - Count %4	Contact your sales representative.
UEFI	3011	MemBIST MEMTEST: UnCorrectable Memory Error found at CPU %1 DIMM %2 Rank %3 - UC Count %4	Contact your sales representative.
UEFI	3012	MemBIST MEMTEST: Correctable Memory Error found at CPU %1 DIMM %2 Rank %3 Strobe %4 - CE Count %5	Contact your sales representative.
UEFI	3013	Processor Built-In Self-Test (BIST) Failure. Processor %1, Error Code : 0x%2.	Contact your sales representative.
UEFI	3016	Memory Configuration Error - No memory is available. If DIMMs are installed, verify that the DIMMs are installed properly. - System Halted!	Check and change the DIMM configuration for the rules of the installation. For the details of the DIMM configuration, refer to the *User's Guide*. If the problem persists, contact your sales representative.
UEFI	3017	Server Platform Services Authentication Failure - The Server Platform Services (SPS) firmware image failed authentication and may be compromised. -System Halted!	Please update the SPS firmware. If the problem persists, contact your maintenance service provider.
UEFI	3018	Server Platform Services Authentication Failure - The Server Platform Services (SPS) firmware image could not be authenticated because the image is out of date.	Please update the SPS firmware. If the problem persists, contact your maintenance service provider.
UEFI	3019	Server Platform Services Firmware in Recovery Mode. SPS firmware image is corrupted. -System Halted!	Please update the SPS firmware. If the problem persists, contact your maintenance service provider.
UEFI	3020	PCIe Slot %1 failed to train at Gen %2 speed and x%3 width.	Contact your sales representative.
UEFI	3021	PCIe Slot %1 failed to train.	Contact your sales representative.
UEFI	3022	PCIe Slot %1 failed to train or no device detected on a bifurcated slot.	Contact your sales representative.
UEFI	3023	FlexibleLOM %1 failed to train.	Contact your sales representative.
UEFI	3024	FlexibleLOM %1 failed to train at Gen %2 speed and x%3 width.	Contact your sales representative.
UEFI	3027	HPE Factory Memory Test Initiated	Action is not necessary.
UEFI	3028	HPE Factory Memory Test Completed	Action is not necessary.
UEFI	3029	HPE Factory Memory Test Repair - The HPE Factory Memory test repaired a DIMM. Processor %1 DIMM %2.	Action is not necessary.
UEFI	3140	One-button secure erase of System Firmware configuration data has failed.	Contact your sales representative.
UEFI	3150	One-button secure erase status for drive %1 (SN: %2) - %3.	Contact your sales representative.
UEFI	3151	One-button secure erase of drive at Port %1 Box %2 Bay %3 (SN: %4) has failed.	Contact your sales representative.

Class	Error code	Error message	Action
UEFI	3152	One-button secure erase Status for %1 (SN: %2) - %3.	Contact your sales representative.
UEFI	3154	Encryption policy for Self Encrypting Devices changed to Remote Key Management System (RKMS).	Action is not necessary.
UEFI	3158	Resetting the configuration for PCI controller : %1 failed.	Contact your sales representative.
UEFI	3160	Innovation Engine Error - The Innovation Engine is operating in Diagnostic mode.	Updating to the latest Innovation Engine Firmware may solve the error. Please update the Innovation Engine Firmware. If the problem persists, contact your maintenance service provider.
UEFI	3161	Processor Jitter Control failed to find a jitter-free frequency in auto-tuned mode. Jitter Control mode has been automatically switched to disabled to prevent significant performance impact.	Check that the power control functions such as C-State are not enabled, and set the Processor Jitter Control function again. If the problem persists, contact your maintenance service provider.
UEFI	3162	Server Configuration Lock has encountered an unexpected error (code 0x%1)."	Contact your sales representative.
UEFI	3163	Server Configuration Lock has detected tampering with the system Digital Fingerprint.	Contact your sales representative.
UEFI	3164	The system failed to complete the One-button secure erase operation on some devices after two attempts. The system will power off and other erase operations will continue.	Contact your sales representative.
UEFI	3165	Innovation Engine Firmware Error - The Innovation Engine firmware is corrupt or not operating properly.	Contact your sales representative.
UEFI	3166	Remote Key Management System (RKMS) connection failed.	Contact your sales representative.

(4) The list of messages about the power supply

Class	Error code	Error message	Action
Power	15	Mismatched Power Supply Installed	Confirm the PSU mounted on the unit. If the problem persists, contact your sales representative.
Power	1B	System Board Power Protection Fault	Contact your sales representative.
Power	1C	Power Supply or Power Backplane Detection Error	Contact your sales representative.
Power	1E	Smart Storage Energy Pack Removed (Energy Pack %1)	Contact your sales representative.
Power	24	Power On Denied (Service Information: %1)	Contact your sales representative.
Power	28	System Power Supply: %1 (Power Supply %2)	Contact your sales representative.
Power	29	External Chassis Power Supply: %1 (Chassis %2, Power Supply %3)	Contact your sales representative.
Power	2A	%1 Storage System Power Supply: %2 (%3Slot %4, Power Supply %5)	Contact your sales representative.
Power	2B	%1 Power Supply: %2 (Power Supply %3, %4)	Contact your sales representative.
Power	2C	System Power Supply Removed (Power Supply %1)	Action is not necessary.
Power	2D	External Chassis Power Supply Removed (Chassis %1, Power Supply %2)	Action is not necessary.
Power	2E	%1 Storage System Power Supply Removed (Chassis %2 Slot %3, Power Supply %4)	Action is not necessary.
Power	2F	%1 Power Supply Removed (Power Supply %2, Enclosure Address %3)	Action is not necessary.
Power	30	%1 Power Supply Removed (Power Supply %2, Enclosure Serial Number %3)	Action is not necessary.
Power	31	System Power Supply Inserted (Power Supply %1)	Action is not necessary.
Power	32	External Chassis Power Supply Inserted (Chassis %1, Power Supply %2)	Action is not necessary.
Power	33	%1 Storage System Power Supply Inserted (Chassis %2 Slot %3, Power Supply %4)	Action is not necessary.
Power	34	%1 Power Supply Inserted (Power Supply %2, Enclosure Address %3)	Action is not necessary.
Power	35	%1 Power Supply Inserted (Power Supply %2, Enclosure Serial Number %3)	Action is not necessary.
Power	36	System Power Supplies Not Redundant	Contact your sales representative.
Power	37	External Chassis Power Supplies Not Redundant (Chassis %1)	Contact your sales representative.
Power	38	%1 Storage System Power Supplies Not Redundant (Chassis %2 Slot %3)	Contact your sales representative.
Power	3A	%1 Power Supplies Not Redundant (Enclosure Serial Number %2)	Contact your sales representative.
Power	3B	%1 Power Supplies Not Redundant (Enclosure Address %2)	Action is not necessary.
Power	3C	System Power Fault Detected (XR: %1 %2 MID: %3)	Action is not necessary.
Power	3D	System Power Fault Detected (XR: %1 %2 MID: %3)	Contact your sales representative.
Power	3E	Smart Storage Energy Pack failure (Energy Pack %1, service information: %2).	Contact your sales representative.

Class	Error code	Error message	Action
Power	3F	Smart Storage Energy Pack did not charge at the expected rate, indicating a faulty energy pack (Energy Pack %1, service information: 0x03)	Contact your sales representative.
Power	40	Smart Storage Energy Pack disabled due to high ambient temperature, will be re-enabled when temp is lowered (Energy Pack %1, service information: 0x04)	Contact your sales representative.
Power	41	Smart Storage Energy Pack discharged to below minimum voltage, resulting in the inability of the energy pack to recharge properly (Energy Pack %1, service information: 0x05)	Contact your sales representative.
Power	42	Smart Storage Energy Pack has exceeded the maximum amount of devices supported (Energy Pack %1, service information: 0x07)	Contact your sales representative.
Power	43	Smart Storage Energy Pack failure (Energy Pack %1)	Contact your sales representative.
Power	44	%1 Storage Enclosure Power Supply Failure (Power Supply %2, Box %3, %4)	Contact your sales representative.
Power	52	System Power Supply: %1 (Power Supply %2)	Contact your sales representative.
Power	53	Server power: %1W exceeded the redundant power capacity threshold: %2W	If the error occurred immediately after a configuration change, check if the capacity of the PSU is exceeded due to an addition or change of components. If the problem persists, contact your maintenance service provider.
Power	54	System Power Supply: %1 (Power Supply %2)	Contact your sales representative.
Power	55	Battery Backup Unit: %1 (Power Supply %2)	Contact your sales representative.
Power	56	Smart Storage Energy Pack pre-failure (Energy Pack %1)	Contact your sales representative.
Power	57	The Battery Backup Unit in Power Supply bay %1 is discharging.	Contact your sales representative.
Power	58	The Enhanced Processor Performance power mode has been disabled to allow the system to power on.	Action is not necessary.
Power	59	Server power: %1W exceeded the power capacity threshold: %2W	If the error occurred immediately after a configuration change, check if the capacity of the PSU is exceeded due to an addition or change of components. If the problem persists, contact your maintenance service provider.
Power (52)	1	Power supply %1 has exceeded the current limit. Power Supply output will be disabled.	Contact your sales representative.
Power (52)	2	Chassis operating at reduced performance level (> %1 Percentage) for past %2 %3	Contact your sales representative.
Power (52)	3	Power Regulator: Zone %1 operating at reduced performance level (> %2 Percentage) for past %3 %4	Contact your sales representative.

(5) The list of messages about the rack infrastructure

Class	Error code	Error message	Action
Rack Infrastructure	1B	%1 Inadequate Power To Power On: %2 (Enclosure Serial Number %3, Slot %4)	Contact your sales representative.
Rack Infrastructure	1C	%1 Inadequate Power To Power On: %2 (Enclosure Address %3, Slot %4)	Action is not necessary.
Rack Infrastructure	1D	%1 Rack Name Changed (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	1E	%1 Rack Name Changed (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	1F	%1 Name Changed (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	20	%1 Name Changed (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	21	%1 Service Change (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	22	%1 Service Change (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	23	%1 Rack Name Conflict (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	24	%1 Rack Name Conflict (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	25	%1 Rack Unique ID Changed (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	26	%1 Rack Unique ID Changed (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	27	%1 LAN Settings Changed (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	28	%1 LAN Settings Changed (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	29	%1 UID LED State Changed (Enclosure Serial Number %2)	Action is not necessary.
Rack Infrastructure	2A	%1 UID LED State Changed (Enclosure Address %2)	Action is not necessary.
Rack Infrastructure	2B	%1 Rack Infrastructure Changed (Enclosure Serial Number %2, Type %3)	Action is not necessary.
Rack Infrastructure	2C	%1 Rack Infrastructure Changed (Enclosure Address %2, Type %3)	Action is not necessary.
Rack Infrastructure	2D	Chassis Enclosure Serial Number %1 requires minimum firmware revision 0x%2.0x%3. It is currently 0x%4.0x%5.	Updating the firmware to the latest version can resolve the problems. Update the firmware of the enclosure whose serial number is %1. If the problem persists, contact your sales representative.
Rack Infrastructure	2E	Chassis Enclosure Address %1 requires minimum firmware revision 0x%2.0x%3. It is currently 0x%4.0x%5.	Updating the firmware to the latest version can resolve the problems. Update the firmware of the enclosure whose address is %1. If the problem persists, contact your sales representative.
Rack Infrastructure	2F	%1 Power Request Denied: %2 %3 (Enclosure Serial Number %4, Slot %5)	Contact your sales representative.
Rack Infrastructure	30	%1 Power Request Denied: %2 %3 (Enclosure Serial Number %4, Bay %5)	Action is not necessary.

(6) The list of the other messages

Class	Error code	Error message	Action
ASR	1	ASR Detected by System ROM	Contact your sales representative.
ASR	3	ASR Reset Limit Detected by System ROM	Contact your sales representative.
OS	2	Automatic Operating System Shutdown %1	Contact your sales representative.
OS	4	A User initiated NMI Switch event detected	If the record results from the NMI switch operation, an additional action is not required.
OS	6	A User initiated remote NMI Switch event detected	If the record results from the NMI switch operation, an additional action is not required.
Network	8	Network Adapter Link Down (Slot %1, Port %2)	Contact your sales representative.
Network	9	Network Adapter Link Down (Chassis %1, Slot %2, Port %3)	Contact your sales representative.
Network	A	%1 Connectivity status changed to %2 for adapter in slot %3, port %4	Contact your sales representative.
Network	B	Fibre Channel Host Controller has a new Status %1	Contact your sales representative.
Network	C	Redundancy status changed to %1 by adapter in slot %2, port %3	Contact your sales representative.
Network	D	All links are down in adapter %1 in slot %2	Contact your sales representative.
Network	E	At least one of the links is up in adapter %1 in slot %2	Action is not necessary.
iSCSI (18)	1	iSCSI link/session is up	Action is not necessary.
iSCSI (18)	2	iSCSI link/session is down	Contact your sales representative.
Drive Array	12	%1 Smart Array - Controller Failure (Status: %2)	Contact your sales representative.
Drive Array	13	Drive Array Controller Failure (Chassis %1, Slot %2)	Contact your sales representative.
Drive Array	14	%1 Smart Array â€“ Drive is failed: Port %2 Box %3 Bay %4	Contact your sales representative.
Drive Array	15	%1 Smart Array - SSD Wear Status Level %2: Port %3 Box %4 Bay %5	Contact your sales representative.
Drive Array	16	%1 Smart Array - Predictive drive is failed: Port %2 Box %3 Bay %4	Contact your sales representative.
Drive Array	17	%1 Smart Array - Cache Status: %2 (Error Code: %3)	Contact your sales representative.
Drive Array	18	%1 Smart Array - Drive could not be authenticated as genuine drive. Smart Array will not control the LEDs: Port %2 Box %3 Bay %4	Contact your sales representative.
Drive Array	1E	%1 Smart Array - Drive status changed. Status is : %2	Contact your sales representative.
Drive Array	1F	Solid state disk wear status is now %1 for drive at location %2 connected to controller in %3.	Contact your sales representative.
Drive Array	20	ATA disk drive status is now %1 for drive %2	Contact your sales representative.
Drive Array	21	%1 Smart Array - Logical drive status changed to %2	Contact your sales representative.
Drive Array	23	%1 Smart Array - Cache module board lost backup power	Contact your sales representative.
Drive Array	24	%1 Smart Array - Cache module board backup power source status is failed	Contact your sales representative.

Class	Error code	Error message	Action
Drive Array	28	Storage system fan status changed to %1 for location %2 connected to controller %3	Contact your sales representative.
Drive Array	29	Storage system temperature status changed to %1 for location %2 connected to controller %3.	Contact your sales representative.
Drive Array	2A	Storage system power supply status changed to %1 for location %2 connected to controller %3	Contact your sales representative.
Drive Array	2B	Storage system connection status changed to %1 for location %2 connected to controller %3	Contact your sales representative.
Drive Array	2C	%1 Smart Array - Spare status is changed to %2	Contact your sales representative.
System Error	5	Unrecoverable I/O Error has occurred. System Firmware will log additional details in a separate IML message entry if possible.	Contact your sales representative.
System Error	7	Server Critical Fault (Service Information: %1)	Contact your sales representative.
System Error	8	Enclosure Induced Event (Service Information: Enclosure Power Loss, %1)	Action is not necessary.
System Error	9	A degraded power event has been detected and the server system board should be replaced.	Contact your sales representative.
System Revision	2	Firmware flashed (%1)	Action is not necessary.
System Revision	3	#ILO detected invalid %1 firmware.	If the record continues, contact your maintenance service company.
System Revision	4	#ILO was unable to automatically repair the %1 firmware.	Update the server platform service firmware. If the problem persists, contact your sales representative.
System Revision	7	#ILO completed the firmware integrity scan and detected an anomaly.	Action is not necessary.
System Revision	8	Firmware recovery is requested by %1	Action is not necessary.
Maintenance	1	IML Cleared (%1 user: %2)	Action is not necessary.
Maintenance	2	Maintenance note: %1	Action is not necessary.
Maintenance	3	Secure System Erase completed. User data erase status: %1. System settings erase status: %2.	Contact your sales representative.
Power Cap	1	Processor(s) Operating at Reduced Performance Level Due to a Low Power Cap	Contact your sales representative.
Power Cap	3	Power Cap Cannot Be Reached With Current System Configuration (Power Cap %1W)	Contact your sales representative.
Power Cap	4	Power allocation not optimized. Increased power allocation requested. Server performance is not degraded	Contact your sales representative.
Flash Media	1	Boot From Flash Error (%1)	Connect the USB memory device again.
Flash Media	2	A read error occurred on the Flash Media in Slot %1 of a USB storage device attached to the system	Contact your sales representative.
Flash Media	3	A write error occurred on the Flash Media in Slot %1 of a USB storage device attached to the system	Contact your sales representative.

Class	Error code	Error message	Action
Flash Media	4	Redundancy is lost on a USB storage device attached to the system. Flash Media in Slot %1 has failed	Contact your sales representative.
Flash Media	5	Sync operation to restore redundancy failed on a USB storage device attached to the system	Contact your sales representative.
Flash Media	6	Secure Erase of the management processor's embedded media device has failed.	Contact your sales representative.
Interlock	1	Improperly seated or missing device (%1, %2)	Contact your sales representative.
Performance	1	Performance monitoring has detected that %1 crossed the user defined %2 threshold.	Check that the threshold is appropriate for the unit configuration. If the problem persists, contact your maintenance service provider.

2. Glossary

Terms	Description
AHS	Active Health System (AHS) monitors the status/configuration of the server, and records it to a log file if any changes occur. AHS log is used for maintenance to investigate the failure.
AMP	Advanced Memory Protection (AMP) is a technology for realizing a fault tolerance of the server by memory redundancy (such as mirroring).
AMS	Agentless Management Service (AMS) is an OS service for sending information (such as OS events) that iLO cannot collect directly. iLO records the information received by AMS, and send it to Agentless Management.
EXPRESSBUILDER	Software for setting up the server. EXPRESSBUILDER can be started by pressing <F10> key during POST.
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.
Hexalobular	A type of screw head characterized by a 6-point star-shaped pattern. This is often called as "Torx" (the Torx is a third party’s trademark). Head sizes are described from T1 to T100. This is sometimes abbreviated as 6lobe.
iLO	A built-in controller that supports the IPMI version 2.0 protocol. The controller is called as iLO5 because this server adopts a generation 5 version controller.
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.
NEC ESMPRO Manager	Software for managing a number of servers on network.
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 Report Service	This service monitors the RAID status and notifies failures.
RBSU	ROM-Based Setup Utility (RBSU) is a built-in utility that can configure connected devices and BIOS settings. RBSU is called from System Utilities.
RESTful Interface Tool	A tool that supports API based on Representational State Transfer (REST) architecture. You can send maintenance commands in JSON format to iLO by HTTP protocol after installing this tool.
SID	System Insight Display (SID) is an optional product that can indicate the statuses of each device on motherboard.
SPP	Standard Program Package (SPP) is a software package that includes BIOS, FW, driver, and other basic software. SPP is included in Starter Pack.
SSA	Smart Storage Administrator (SSA) is a utility that can configure RAID arrays. SSA is provided for Windows/Linux and can also start from F10 key function.
Starter Pack	A software package that includes SPP, instruction manual, application, and other software for the server. This must be installed before using OS on the server. Starter Pack is provided as an optional product and ISO data on our website.
System Maintenance Switch	A DIP switch on motherboard. This switch can enable/disable initialization, password, iLO settings, and other functions of maintenance.
System Utilities	System Utilities is a built-in utility that provides system information, calling RBSU, collecting system log, and other system utilities. You can start System Utilities by F9 key during POST.
TPM Kit	An optional product of Trusted Platform Module for the server.

3. Revision Record

Revision (Document Number)	Date Issued	Description
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Express5800/R120h-1M, R120h-2M
Express5800/R120h-1E, R120h-2E
Express5800/T120h
(2nd-Gen)
Maintenance Guide (Common)

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