

Installation Guide (Windows)

NEC Express Server
Express5800 Series

**Express5800/R120h-1M, R120h-2M
(3rd-Gen)**

EXP804, EXP805

**(N8100-2834F/2835F/2836F/2837F/
2838F/2839F)**

Chapter 1 Installing Windows

Chapter 2 Installing Bundled Software

Manuals

Booklets

Safety Precautions and Regulatory Notices	Describes points of caution to ensure the safe use of this server. <u>Read these cautions before using this server.</u>
Getting Started	Describes how to use this server, from unpacking to operations. See this guide first and read the outline of this product.

The electronic edition has been published on a website (<https://www.58support.nec.co.jp/global/download/>).

User's Guide

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

Installation Guide (Windows)

Chapter 1: Installing Windows	Installation of Windows and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, 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

Contents

Manuals	2
Contents	3
Conventions Used in This Document	6
Notations used in the text	6
Optical disk drive	6
Hard disk drive	6
Abbreviations of Operating Systems (Windows)	7
POST	7
Trademarks	8
License Notification	9
Warnings and Additions to This Document	12
Latest editions	12
Chapter 1 Installing Windows	13
1. Information of Windows Installation	14
1.1 Starting EXPRESSBUILDER	15
1.2 Supported Windows OS	15
1.3 Supported Mass Storage Controllers	16
1.4 Supported Optional LAN board	17
2. Flow of Windows Installation	18
3. Installing Windows Server 2019	19
3.1 Precautions of Windows Server 2019 Installation	19
3.2 Manual installation	24
3.2.1 Setup flow	24
3.2.2 Requirements for Setup	25
3.2.3 Installation procedure	25
3.3 Standard Program Package Installation	34
3.3.1 Installing Standard Program Package on Desktop Experience	34
3.3.2 Installing Standard Program Package on Server Core	36
3.4 Setting for collecting specific event logs	37
3.4.1 Desktop Experience	37
3.4.2 Server Core	37
3.5 Setup of Device Drivers	38
3.5.1 Installing the LAN drivers	38
3.5.2 Setting up LAN drivers	39
3.5.3 Using Graphics Accelerator	40
3.5.4 Using SAS Controller (N8103-184/E184)	40
3.5.5 Using SAS Controller (N8103-197)	40
3.5.6 Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)	40
3.5.7 Using Fibre Channel Controller (N8190-163/164/165/166/171/172)	40
3.6 License Authentication	41
3.6.1 Desktop Experience	41
3.6.2 Server Core installation	46
3.7 Setup of Windows Server 2019 NIC Teaming (LBFO)	47
3.7.1 Launching the NIC teaming setup tool	47
3.7.2 Creating a team	47
3.7.3 Removing a team	48
3.7.4 Notes and restrictions	48
3.8 Installing Applications	50
4. Installing Windows Server 2016	52

4.1	Precautions of Windows Server 2016 Installation	52
4.2	Assisted installation	58
4.2.1	Setup flow	58
4.2.2	Requirements for Setup	59
4.2.3	Installation procedure	59
4.3	Manual installation	67
4.3.1	Setup flow	67
4.3.2	Requirements for Setup	68
4.3.3	Installation procedure	68
4.4	Standard Program Package Installation	77
4.4.1	Installing Standard Program Package on Desktop Experience	77
4.4.2	Installing Standard Program Package on Server Core	79
4.5	Setup of Device Drivers	80
4.5.1	Installing the LAN drivers	80
4.5.2	Setting up LAN drivers	81
4.5.3	Using Graphics Accelerator	82
4.5.4	Using SAS Controller (N8103-197)	82
4.5.5	Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)	82
4.5.6	Using Fibre Channel Controller (N8190-165/166)	82
4.6	License Authentication	83
4.6.1	Desktop Experience	83
4.6.2	Server Core installation	87
4.7	Setup of Windows Server 2016 NIC Teaming (LBFO)	88
4.7.1	Launching the NIC teaming setup tool	88
4.7.2	Creating a team	88
4.7.3	Notes and restrictions	89
4.8	Installing Applications	90
5.	Installing Windows Server 2012 R2	91
5.1	Precautions of Windows Server 2012 R2 Installation	91
5.2	Installation with Assisted Installation	97
5.2.1	Setup flow	97
5.2.2	Requirements for Setup	98
5.2.3	Installation procedure	98
5.3	Manual installation	106
5.3.1	Installation flow	106
5.3.2	Requirements for Setup	107
5.3.3	Installation procedure	107
5.4	Standard Program Package Installation	116
5.4.1	Installing Standard Program Package on Desktop Experience	116
5.4.2	Installing Standard Program Package on Server Core	118
5.5	Setup of Device Drivers	119
5.5.1	Installing the LAN drivers	119
5.5.2	Setting up LAN drivers	120
5.5.3	Using Graphics Accelerator	121
5.5.4	Using SAS controller (N8103-197)	121
5.5.5	Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)	121
5.5.6	Using Fibre Channel Controller (N8190-163/164/165/166/171/172)	121
5.6	License Authentication	122
5.6.1	Server with a GUI	122
5.6.2	Server Core installation	125
5.7	Setup of Windows Server 2012 R2 NIC Teaming (LBFO)	126
5.7.1	Launching the NIC teaming setup tool	126
5.7.2	Creating a team	126
5.7.3	Notes and restrictions	127
5.8	Installing Applications	128
6.	Setting up for Maintenance	129
6.1	Specifying Memory Dump Settings (Debug Information)	129
6.1.1	Windows Server 2019	129
6.1.2	Windows Server 2016	135
6.1.3	Windows Server 2012 R2	140
6.2	How to Create a User-mode Process Dump File	145
6.2.1	Windows Server 2019	145
6.2.2	Windows Server 2016	146

6.2.3	Windows Server 2012 R2	147
7.	Backup of system information	148
Chapter 2	Installing Bundled Software	149
1.	Bundled Software for the Server.....	150
1.1	RESTful Interface Tool (Windows version).....	150
1.2	NEC ESMPRO ServerAgentService (for Windows).....	150
1.3	Smart Storage Administrator.....	151
1.3.1	Setup of Smart Storage Administrator	151
1.3.2	RAID Report Service	151
1.4	Express Report Service / Express Report Service (HTTPS).....	152
1.5	NEC Product Info Collection Utility.....	153
1.5.1	Installation	153
1.5.2	Uninstallation	153
2.	Bundled Software for "PC for Management"	154
2.1	NEC ESMPRO Manager.....	154
2.2	Express Report Service (MG).....	155
	Glossary	156
	Revision Record	157

Conventions Used in This Document

Notations used in the text

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

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

Optical disk drive

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

- DVD-ROM drive
- DVD Super MULTI drive

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this document refer to 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)* 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

POST

POST described in this manual refers to the following.

- Power On Self-Test

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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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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.

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-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

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

1

Installing Windows

This manual explains the setup procedure for a physical environment.
Read through this chapter to set up the Windows correctly.

1. Information of Windows Installation

Describes Supported Windows OS and mass storage controllers which is supported by EXPRESSBUILDER/Starter Pack.

2. Flow of Windows Installation

Describes the flow chart of Windows installation.

3. Installing Windows Server 2019

Describes how to install Windows Server 2019.

4. Installing Windows Server 2016

Describes how to install Windows Server 2016.

5. Installing Windows Server 2012 R2

Describes how to install Windows Server 2012 R2.

6. Setting up for Maintenance

Describes the features that should be set up for maintenance in advance.

7. Backup of system information

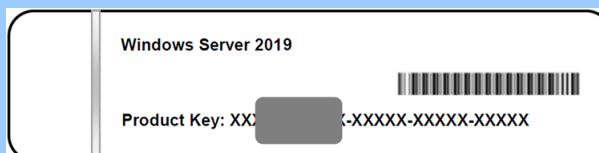
Describes how to back up the setting information of the system in advance of troubles.

1. Information of Windows Installation

This section describes the points of using EXPRESSBUILDER/Starter Pack to install Windows operating system.

Important

The product key on the Certificate of Authenticity (COA) label is necessary information when authenticate the license.



Scrape off with a coin or the like lightly the scratch that covers a part of the product key. When you scrape, be careful not to break the part that the product key is printed on.

The label cannot be reissued if it is lost or stained. It is recommended to write down the product key and keep it with other accessories.

Refer to the following for the installation of virtual OS.

If your virtualization infrastructure is Hyper-V:

Refer to the following web site for the Hyper-V setting and the installation procedure of the guest OS and so on.

Windows Server 2019:

<https://www.58support.nec.co.jp/global/download/w2019/hyper-v/hyper-v-ws2019.html>

Windows Server 2016:

<https://www.58support.nec.co.jp/global/download/w2016/hyper-v/hyper-v-ws2016.html>

Windows Server 2012 R2:

<https://www.58support.nec.co.jp/global/download/w2012r2/hyper-v/hyper-v-ws2012r2.html>

If your virtualization infrastructure is not Hyper-V:

Refer to the manual provided by virtualization infrastructure vendor to prepare the virtual environment. Prepare a media or an ISO image of the OS to install.

1. Start a virtual machine from the media or ISO image of the OS to install.
2. Follow the on-screen instruction to complete the OS installation.
3. Refer to the manual provided by virtualization infrastructure vendor to install the necessary services and applications.

1.1 Starting EXPRESSBUILDER

Use EXPRESSBUILDER to reconfigure RAID arrays or re-install the OS.

For details, see *Chapter 2 (3. Details of EXPRESSBUILDER) in Maintenance Guide*.

Usage

Remove a CD/DVD and removable media from the server, restart the server and press <F10> key (EXPRESSBUILDER) during POST.

1.2 Supported Windows OS

You can install the following editions of Windows operating system.

EB : Assisted installation

OS : Install using Manual option

Name of Windows OS		Boot mode		Installation method	
		UEFI	Legacy	EB	OS
Windows Server 2019 ^{*2}	Standard	✓	N/A	N/A	✓
	Datacenter	✓	N/A	N/A	✓
Windows Server 2016 ^{*2}	Standard	✓	N/A	✓	✓
	Datacenter	✓	N/A	✓	✓
Windows Server 2012 R2	Standard	✓	N/A	✓ ^{*1}	✓
	Datacenter	✓	N/A	✓ ^{*1}	✓

✓ : Supported

^{*1} "Server Core" is not supported.

^{*2} "Nano Server" is not supported.

1.3 Supported Mass Storage Controllers

The table below lists the controllers for this server, supported by EXPRESSBUILDER/Starter Pack.

If a controller not mentioned below is connected, set it up while referring to the instructions supplied with the controller.

	Windows Server 2019	Windows Server 2016	Windows Server 2012 R2
RAID controller supporting the installation of OS at EXPRESSBUILDER			
Onboard RAID Controller	✓	✓	✓
N8103-189 RAID Controller (RAID 0/1)	✓	✓	✓
N8103-190 RAID Controller (2GB, RAID 0/1/5/6)	✓	✓	✓
N8103-191 RAID Controller (4GB, RAID 0/1/5/6)	✓	✓	✓
N8103-192 RAID Controller (RAID 0/1)	✓*	✓*	✓*
N8103-193 RAID Controller (2GB, RAID 0/1/5/6)	✓*	✓*	✓*
N8103-194 RAID Controller (4GB, RAID 0/1/5/6)	✓*	✓*	✓*
N8103-195 RAID Controller (RAID 0/1)	✓	✓	✓
N8103-201 RAID Controller (2GB, RAID 0/1/5/6)	✓	✓	✓
Other options			
N8103-196 RAID Controller (2GB, RAID 0/1/5/6)	✓	✓	✓
N8103-197 SAS Controller	✓	✓	✓
N8190-163 Fibre Channel Controller (1ch)	✓	✓	✓
N8190-164 Fibre Channel Controller (2ch)	✓	✓	✓
N8190-165 Fibre Channel Controller(1ch)	✓	✓	✓
N8190-166 Fibre Channel Controller(2ch)	✓	✓	✓
N8190-171 Fibre Channel Controller (1ch)	✓	✓	✓
N8190-172 Fibre Channel Controller (2ch)	✓	✓	✓

✓: Supported

* Support Express5800/R120h-1M only

1.4 Supported Optional LAN board

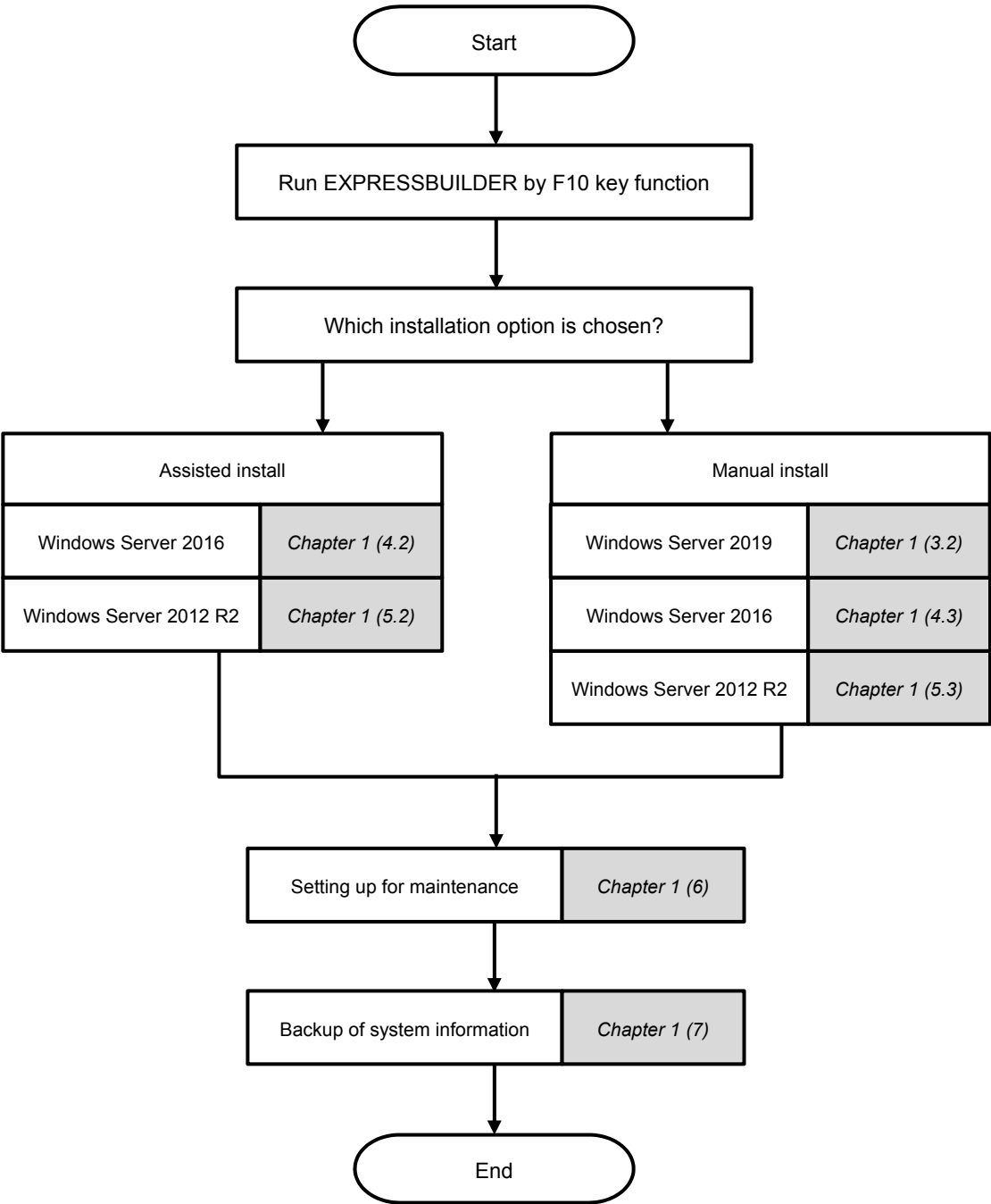
The table below lists the optional LAN boards for this server, supported by Starter Pack.

	Windows Server 2019	Windows Server 2016	Windows Server 2012 R2
N8104-172 Quad Port 1000BASE-T LOM Card	✓	✓	✓
N8104-175 Dual Port 10GBASE-T LOM Card	✓	✓	✓
N8104-178 Dual Port 1000BASE-T Adapter	✓	✓	✓
N8104-179 Quad Port 1000BASE-T Adapter	✓	✓	✓
N8104-180 Dual Port 1000BASE-T Adapter	✓	✓	✓
N8104-181 Quad Port 1000BASE-T Adapter	✓	✓	✓
N8104-182 Dual Port 10GBASE-T Adapter	✓	✓	✓
N8104-183 Dual Port 10GBASE-T Adapter	✓	✓	✓
N8104-184 Dual Port 10GBASE-T Adapter	✓	✓	✓
N8104-185 Dual Port 10GBASE SFP+ Adapter	✓	✓	✓
N8104-186 Dual Port 10GBASE SFP+ Adapter	✓	✓	✓
N8104-187 Dual Port 25GBASE SFP28 Adapter	✓	✓	✓

✓: Supported

2. Flow of Windows Installation

Read a proper section to install Windows according to the following figure.



Important After building environment, back up the setting information of the system in advance of any troubles.

3. Installing Windows Server 2019

Important

The application procedure and OS installation procedure may vary depending on the version of Starter Pack. Check the procedures of each Starter Pack on the download page below.

<https://www.58support.nec.co.jp/global/download/>

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3.1 Precautions of Windows Server 2019 Installation

Read the precautions explained this section before installing.

OS : Manual installation

BIOS setting	
- OS	<p>Change Boot Mode to UEFI Mode. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Boot Options → Boot Mode → UEFI Mode</p>
- OS	<p>Select Enabled for X2APIC feature of processor. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Processor Options → Processor X2APIC Support → Enabled</p>
Hardware configuration	
The following hardware configurations require special procedures.	
- OS	<p>Using RAID controllers</p> <p>When using RAID controllers before starting the installation of Windows Server 2019, build the RAID system beforehand by referring to <i>Chapter 2 (2. RAID System Configuration)</i> in <i>Maintenance Guide</i>.</p>
- OS	<p>Setup when multiple logical drives exist</p> <p>If you select a wrong hard disk drive while installing Windows Server 2019, existing data may be deleted unintentionally. Determine the target disk drive based on the displayed capacity and partition sizes of the hard disk drive.</p>
- OS	<p>Reinstalling to a mirrored volume</p> <p>When you install Windows Server 2019 in an environment with a mirrored volume created using Windows, disable mirroring before installing the operating system and enable it again after the installation. Use [Computer Management] – [Disk Management] to create, disable, or remove the mirrored volume.</p>
- OS	<p>Peripherals such as RDX/MO</p> <p>Remove an MO device before installing. Some peripherals need to be halted before installation. Refer to the manual provided with the peripherals for how to set a device appropriate to installation.</p>
- OS	<p>DAT, LTO, and similar media</p> <p>Do not set media that is unnecessary to installation during setup.</p>

-	<div data-bbox="343 185 379 219" data-label="Image"></div> Reinstalling to dynamic disks If the hard disk drive has been upgraded to a dynamic disk, the Windows cannot be reinstalled to it with the existing partitions. Install Windows with Manual installation.
-	<div data-bbox="343 286 379 320" data-label="Image"></div> Setup when mass memory is installed <p>If mass memory is installed in your system, the large size of paging file is required at installation, and the partition size for storing debug information (dump file) cannot be allocated.</p> <p>If you fail to create the partition, allocate the required size to multiple disks according to the following steps.</p> <ol style="list-style-type: none"> 1. Set the system partition size to a size sufficient to install the OS and paging file. 2. Specify another disk as the destination to save the debug information (required dump file size) according to <i>Chapter 1 (6. Setting up for Maintenance)</i>. <p>If the hard disk drive does not have enough free area to write the debug information, set the partition size to a size sufficient to install the OS and paging file, and then add another hard disk drive for the dump file.</p> <div data-bbox="435 748 485 770" data-label="Section-Header">Note</div> <div data-bbox="560 748 1369 824" data-label="Text"> <p>If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.</p> </div> <p>If sufficient free area cannot be allocated for the paging file, perform either of the following after install Windows.</p> <ul style="list-style-type: none"> - Specify a hard disk drive other than the system drive as the location to store the paging file for collecting memory dump <p>Create a paging file of "installed memory size + 400 MB (installed memory size + 1,100 MB when the size is 4 TB or more)" or more in a drive other than the system drive.</p> <div data-bbox="485 1234 1318 1451" data-label="Text"> <p>The paging file that exists in the first drive (in the order of drive letter C, D, E, ...) is used as the temporary memory dump location.</p> <p>Therefore, make sure that the size of the paging file that exists in the first drive is at least "installed memory size + 400 MB (installed memory size + 1,100 MB when the installed physical memory is 4 TB or more)".</p> <p>Paging files in dynamic volumes are not used for dumping memory. The setting is applied after restarting the system.</p> </div> <div data-bbox="505 1518 780 1541" data-label="Section-Header">Example of correct setting</div> <div data-bbox="539 1592 780 1617" data-label="Text"> <p>C: No paging file exists</p> </div> <div data-bbox="539 1624 1272 1648" data-label="Text"> <p>D: Paging file whose size is "installed memory size + 400 MB" or more</p> </div> <div data-bbox="539 1686 1276 1744" data-label="Text"> <p>→ The paging file in drive D can be used for collecting memory dump because its size satisfies the requirement.</p> </div>

Example of incorrect setting 1**C: Paging file whose size is smaller than the installed memory size****D: Paging file whose size is "installed memory size + 400 MB* " or more**

→ The paging file in drive C is used for collecting memory dump, but collection may fail because the size of the paging file is smaller than the installed memory size.

Example of incorrect setting 2**C: Paging file whose size is "installed memory size × 0.5"****D: Paging file whose size is "installed memory size × 0.5"****E: Paging file whose size is 400 MB***

→ The total paging file size in all drives is "installed memory size + 400 MB* ", but collection may fail because only the paging file in drive C is used for collecting memory dump.

Example of incorrect setting 3**C: No paging file exists****D: Paging file whose size is "installed memory size + 400 MB* " or more (in dynamic volume)**

→ Paging files in a dynamic volume cannot be used for collecting memory dump. Thus, collecting memory dump fails.

* This value is installed memory size +1,100 MB when the installed memory size is 4 TB or more.

- **Specify a drive other than the system drive for "Dedicated Dump File".**

Create the registry shown below by using the Registry Editor and specify the name of Dedicated Dump File.

<For example: "dedicateddumpfile.sys" in drive D>

Key:	HKEY_LOCAL_MACHINE\SYSTEM CurrentControlSet\Control\CrashControl
Name:	DedicatedDumpFile
Type:	REG_SZ
Data:	D:\dedicateddumpfile.sys

Note the following when specifying Dedicated Dump File:

- The setting is applied after restarting the system.
- Specify a drive that has free space of "installed memory size + 400 MB (installed memory size + 1,100 MB when the installed memory size is 4 TB or more)" or more.
- Dedicated Dump File cannot be placed in dynamic volumes.
- Dedicated Dump File is only used for collecting memory dump, and is not used as virtual memory. Specify the paging file size so that sufficient virtual memory can be allocated in the entire system.

System partition size																								
-	OS	<p>The system partition size can be calculated by using the following formula.</p> <p>Size required to install the OS + paging file size + dump file size + application size</p> <p>Desktop Experience</p> <table><tr><td>Size required to install the OS</td><td>= 12,400 MB</td></tr><tr><td>Paging file size (recommended)</td><td>= installed memory size + 400 MB</td></tr><tr><td>Dump file size</td><td>= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)</td></tr><tr><td>Application size</td><td>= as required by the application</td></tr></table> <p>Server Core</p> <table><tr><td>Size required to install the OS</td><td>= 8,600 MB</td></tr><tr><td>Paging file size (recommended)</td><td>= installed memory size + 400 MB</td></tr><tr><td>Dump file size</td><td>= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)</td></tr><tr><td>Application size</td><td>= as required by the application</td></tr></table> <p>For example, if the installed memory size is 2 GB (2,048 MB), and application size is 100 MB, the partition size is calculated as follows:</p> $12,400\text{ MB} + (2,048\text{ MB} + 400\text{ MB}) + 2,048\text{ MB} + 400\text{ MB} + 100\text{ MB}$ $= 17,396\text{ MB}$ <p>The above mentioned partition size is the minimum partition size required for system installation. Ensure that the partition size is sufficient for system operations.</p> <p>The following partition sizes are recommended.</p> <table><tr><td>Desktop Experience</td><td>:</td><td>32,768 MB (32 GB) or more</td></tr><tr><td>Server Core installations</td><td>:</td><td>32,768 MB (32 GB) or more</td></tr></table> <p>*1 GB = 1,024 MB</p> <p>Note</p> <ul style="list-style-type: none">• The above paging file sizes are recommended for collecting debug information (dump file). The initial size of the Windows partition paging file must be large enough to store dump files. Make sure you set a sufficient paging file size. If the paging file is insufficient, there will be a virtual memory shortage that may result in an inability to collect correct debug information.• Regardless of the sizes of internal memory and write debug information, the maximum size of the dump file is "installed memory size + 400 MB (installed memory size + 1,100 MB when installed memory size is 4 TB or more)".• When installing other applications or other items, add the amount of space needed by the application to the partition.	Size required to install the OS	= 12,400 MB	Paging file size (recommended)	= installed memory size + 400 MB	Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)	Application size	= as required by the application	Size required to install the OS	= 8,600 MB	Paging file size (recommended)	= installed memory size + 400 MB	Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)	Application size	= as required by the application	Desktop Experience	:	32,768 MB (32 GB) or more	Server Core installations	:	32,768 MB (32 GB) or more
Size required to install the OS	= 12,400 MB																							
Paging file size (recommended)	= installed memory size + 400 MB																							
Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)																							
Application size	= as required by the application																							
Size required to install the OS	= 8,600 MB																							
Paging file size (recommended)	= installed memory size + 400 MB																							
Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)																							
Application size	= as required by the application																							
Desktop Experience	:	32,768 MB (32 GB) or more																						
Server Core installations	:	32,768 MB (32 GB) or more																						

If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.

● **When installing using Manual installation**

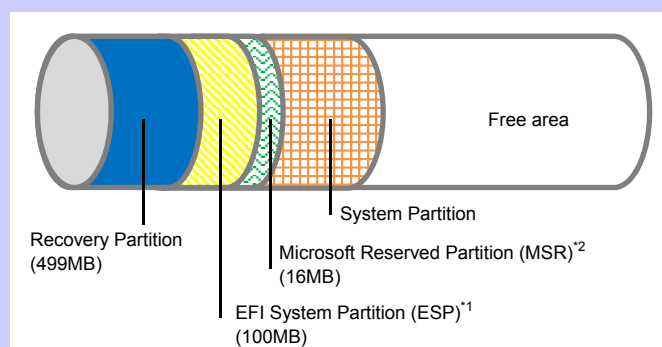
Tips

When creating a partition, Windows OS creates the following partitions at the top of hard disk drive.

- Recovery Partition: 499 MB
- EFI System Partition (ESP): 100 MB *1
- Microsoft Reserved Partition (MSR): 16 MB *2

615 MB is allocated for these three partitions out of the specified partition size. For example, when 61,440 MB (60 GB) is specified for partition size, the area available free area is calculated as follows:

$$61,440 \text{ MB} - (499 \text{ MB} + 100 \text{ MB} + 16 \text{ MB}) = 60,825 \text{ MB}$$



*1 May be 300 MB in size depending on hard disk drive type.

*2 MSR is not displayed on **Disk Management**.

Windows Server 2019 Hyper-V support

- OS

Refer to the following web site for information related to Windows Server 2019 Hyper-V.

<https://www.58support.nec.co.jp/global/download/w2019/hyper-v/hyper-v-ws2019.html>

Using BitLocker

If using BitLocker, note the following.

- Be sure to keep the recovery password secure. Do not keep it near a server running BitLocker.

Important

If the recovery password is not entered, the OS cannot be started, and the content of the partition encrypted by BitLocker cannot be referenced any more. The recovery password might be required at startup of the OS after the following:

- Replacement of motherboard
 - Change of BIOS setting
 - Initialization of trusted platform module (TPM) *
- * Depending on your system, it may not be supported.
Refer to the Instruction Manuals about hardware.

- To reinstall the operating system into a partition that is encrypted with BitLocker, delete the BitLocker-encrypted partition prior to reinstallation.

Support for NIC teaming in Windows Server 2019

- OS

The NIC teaming feature, which used to be provided by network interface card (NIC) vendors, is built into Windows Server 2019. In Windows Server 2019, this feature is also called "load balancing and failover (LBFO)".

Refer to 3.7 *Setup of Windows Server 2019 NIC Teaming (LBFO)* and specify any required settings.

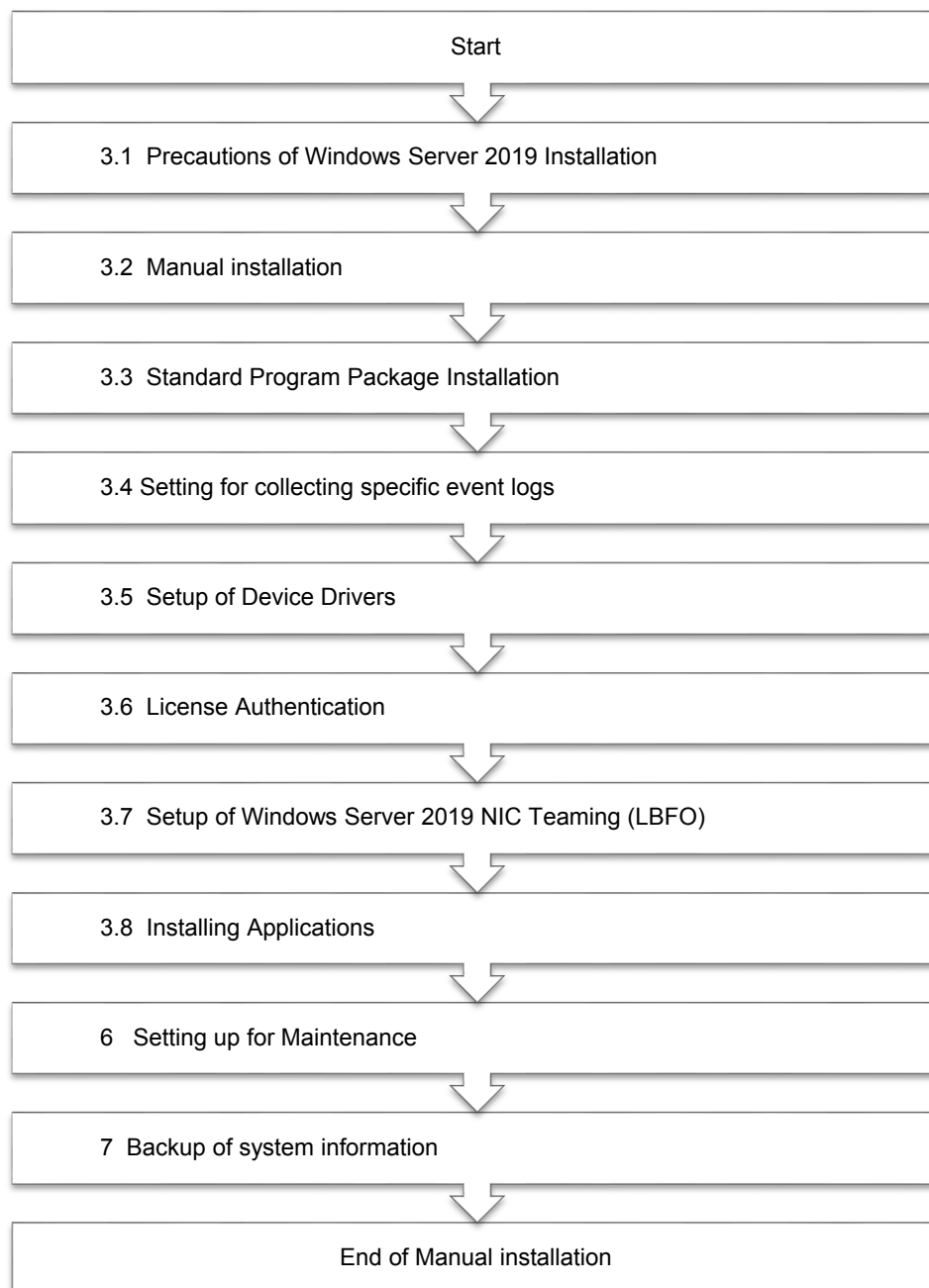
3.2 Manual installation

This section describes Manual installation.

Important

“Manual installation” installs the OS without using EXPRESSBUILDER. Note that all data on the hard disk drive where the OS is installed will be deleted when you install the OS with EXPRESSBUILDER.

3.2.1 Setup flow



3.2.2 Requirements for Setup

Prepare the following media and instruction manuals before starting setup.

- Either of the following OS installation media
 - **NEC operating system installation media** (hereafter referred to as *Backup DVD-ROM*)
 - **Microsoft operating system installation media** (hereafter referred to as *Windows Server 2019 DVD-ROM*)
- Starter Pack
 - **Starter Pack DVD** (Optional or downloading from our website)

Note

If using the onboard RAID controller and the internal optical disk drive, the driver is loaded from a removable media device.

Copy and prepare the following files onto a removable media in advance.

<Starter Pack>:\software\006\drivers\sw_raid1_driver

3.2.3 Installation procedure

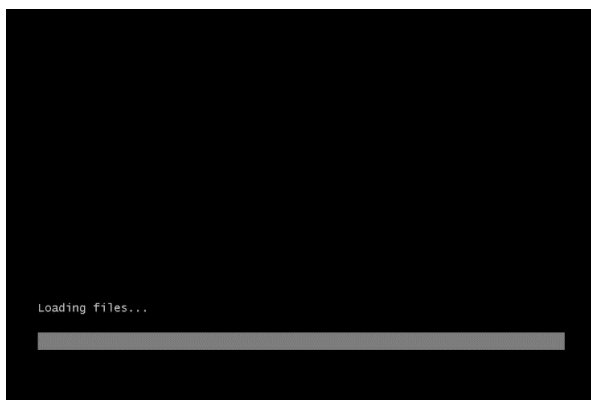
Note

Read the precautions in *Chapter 1 (3.1 Precautions of Windows Server 2019 Installation)* in advance.

1. Turn on peripherals (such as a display), and then turn on the server.
Insert OS installation media into the drive.
2. To start the Boot Menu, press the <F11> key during POST.
On the **One-Time Boot Menu**, select the optical disk drive in which the OS installation media was inserted.
3. The system starts from the OS installation media.
The message "Press any key to boot from CD or DVD..." is displayed on the top of the screen.

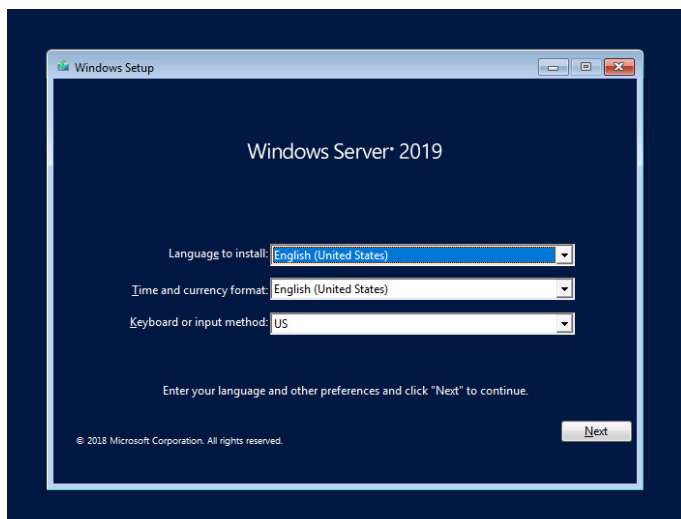
Press the <Enter> key to start from the media.

When the boot proceeds, the following screen is displayed.

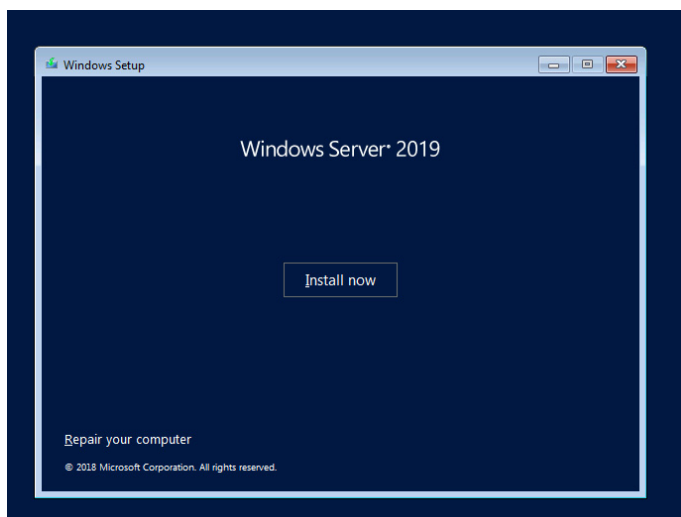
**Note**

If the Windows Setup screen (the screen in the next step) is not displayed, the <Enter> key was not properly pressed. Turn the system power on again, and then start again.

4. Click **Next**.



5. Click **Install now**.



If the following message is displayed: Go to step 6.

If the following message is not displayed: Go to step 8.



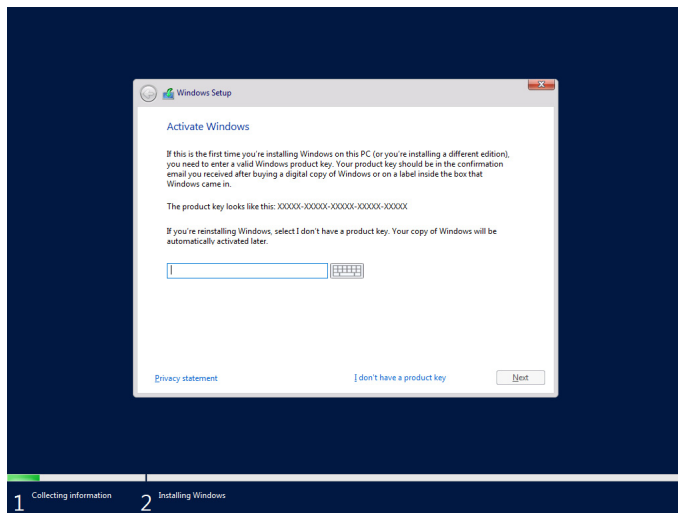
6. After connecting the removable media where the onboard RAID controller driver was copied, specify the path and click **OK**.

<Removable media>:\sw_raid1_driver

7. Select the following driver from the displayed list of drivers, and click **Next**.

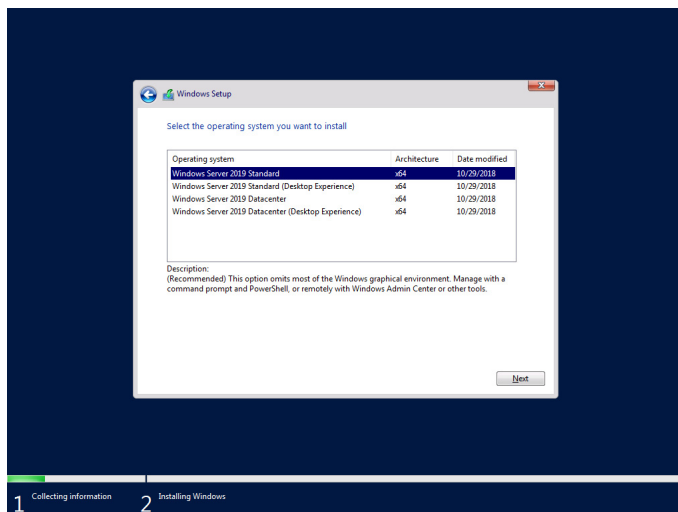
HPE Smart Array S100i SR Gen10 SW RAID

8. Type the product key, and then click **Next**.

**Tips**

If you are using Backup DVD-ROM, this screen does not appear.

9. Choose an operating system you want to install and click **Next**.



The displayed options vary depending on the installation media you are using.

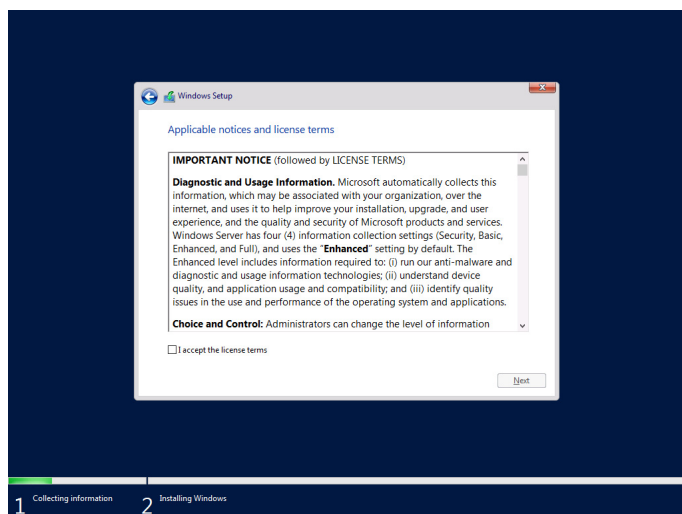
Tips

Read the message of the screen, and then choose an installation option.

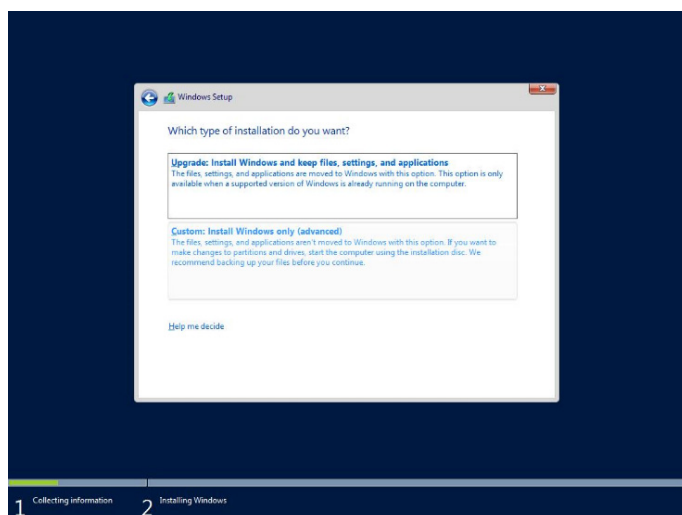
- Windows Server 2019 Standard or Windows Server 2019 Datacenter
→ Described as “Server Core” by this manual
- Windows Server 2019 Standard (Desktop Experience) or Windows Server 2019 Datacenter (Desktop Experience)
→ Described as “Desktop Experience” by this manual

10. Read the license terms carefully.

If you agree, check **I accept the license terms** and click **Next**.



11. Select **Custom: Install Windows only (advanced)**.



12. The “Select Windows installation location” screen is displayed.

If the driver was loaded in steps 6 and 7, or if the onboard RAID controller is not in use, proceed to step 15.
If you select **Load driver** here, the following screen will be displayed.



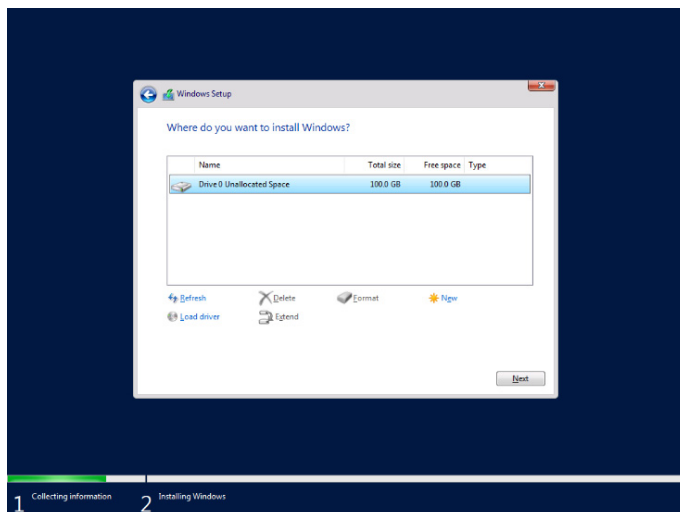
13. After mounting the Starter Pack DVD on the optical disk drive, specify the path and click **OK**.

`<Starter Pack DVD>:\software\006\drivers\sw_raid1_driver`

14. Select the following driver from the displayed list of drivers, and click **Next**.

HPE Smart Array S100i SR Gen10 SW RAID

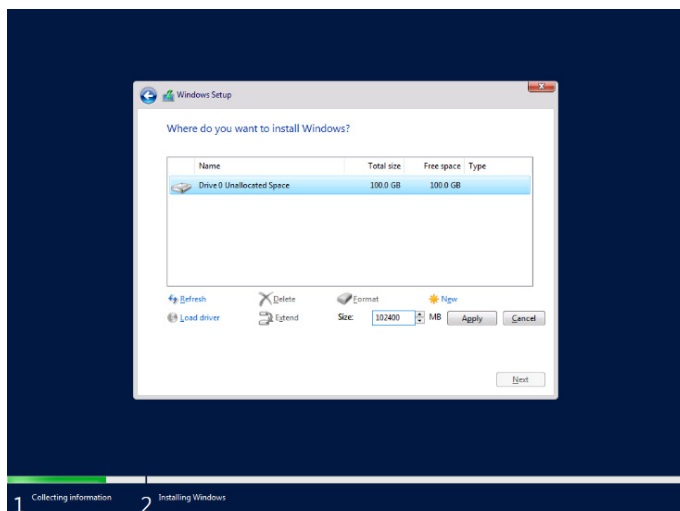
15. Click **New**. If a partition has been created, proceed to step 18.



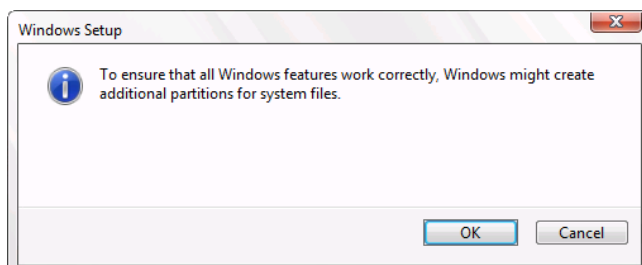
Tips

If **New** is not displayed on the screen, click **Drive options (advanced)**.

16. Specify the partition size in the text box, and then click **Apply**.



When the following window appears, click **OK**.



Tips

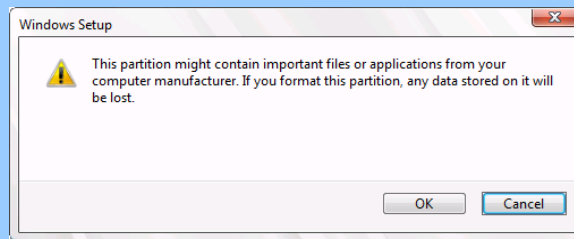
When creating a partition, the OS creates the following partitions at top of the hard disk drive.

- Recovery Partition
- EFI System Partition (ESP)
- Microsoft Reserved Partition (MSR)

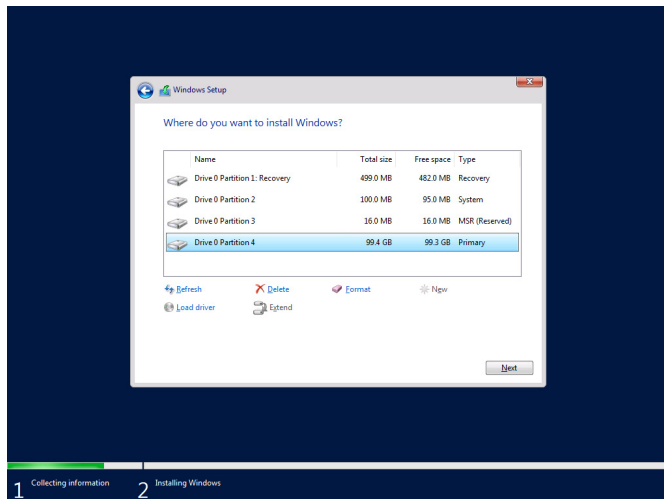
17. Select the partition created in step 16, and then click **Format**.

Important

When the following screen appears, read the message and click [OK]. Carefully select the partition to be formatted because data in the partition will be erased.

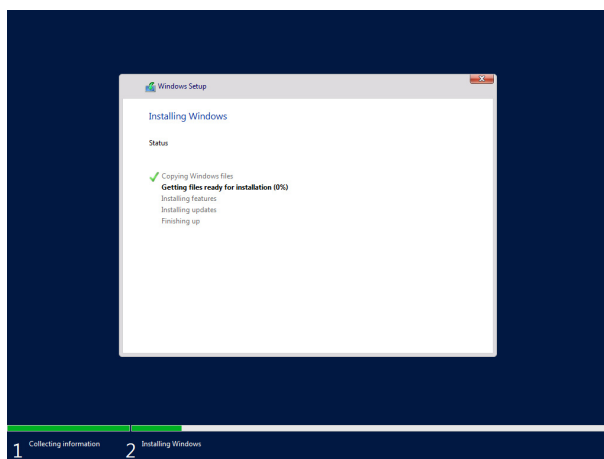


18. Select the created partition, and then click **Next**.

**Tips**

The number of partitions displayed differs depending on the hardware configuration.

If the Starter Pack DVD is mounted, replace it with the OS media, and click **Refresh**. When the following message appears, Windows installation starts automatically.

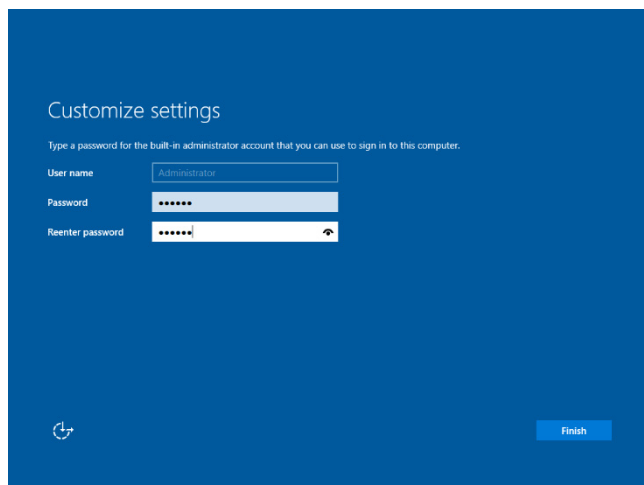


The server will automatically restart after Windows Server 2019 is installed. You will proceed to Windows setup after restart.

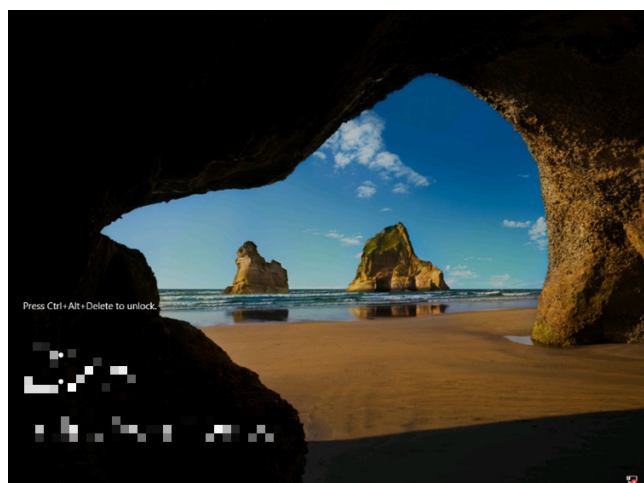
19. Set user settings according to operating system chosen in step 9.

Desktop Experience

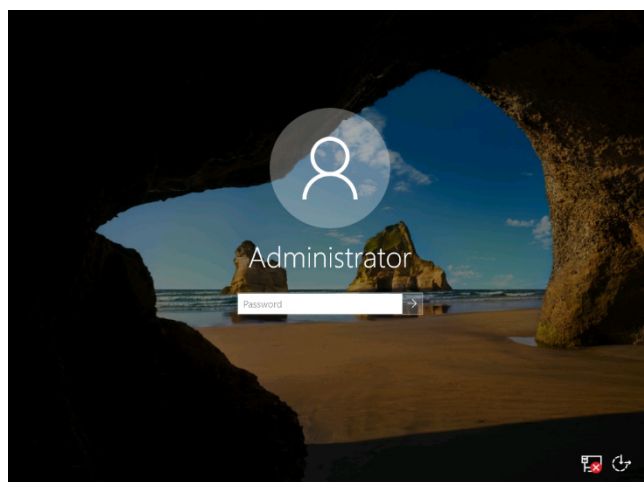
Type a password and click **Finish**.



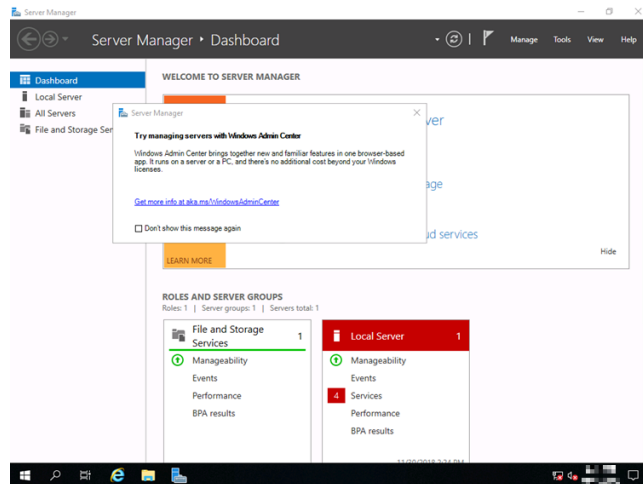
Press <Ctrl> + <Alt> + <Delete> keys to unlock.



Type the password and press <Enter>key.

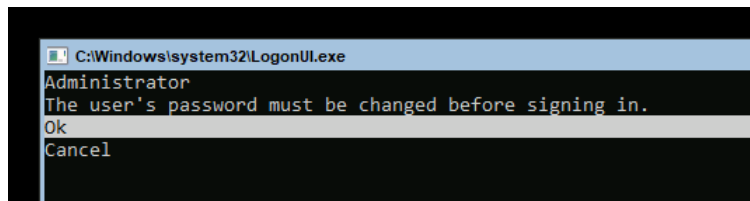


Windows Server 2019 starts.

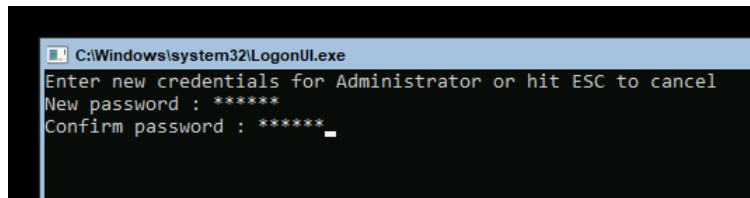


Server Core

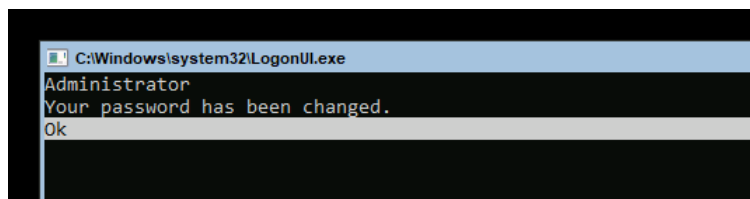
The password is needed to change. Choose **OK** and press <Enter> key.



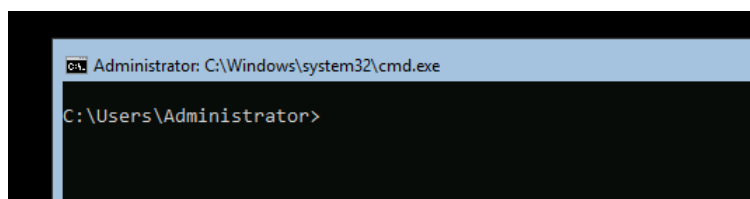
Enter a new password and press <Enter> key.



Choose **OK** and press <Enter> key after the following message is displayed.



Windows Server 2019 starts.



20. See *Chapter 1 (3.3 Standard Program Package Installation)* to install SPP.
21. See *Chapter 1 (3.4 Setting for collecting specific event logs)* to set it.
22. Install drivers and specify detailed settings according to *Chapter 1 (3.5 Setup of Device Drivers)*.
23. Confirm if Windows is activated according to *Chapter 1 (3.6 License Authentication)*.
24. See *Chapter 1 (3.7 Setup of Windows Server 2019 NIC Teaming (LBFO))* to setup a team as needed.
25. Install the applications as needed according to *Chapter 1 (3.8 Installing Applications)*.
26. Set the other OS settings according to *Chapter 1 (6. Setting up for Maintenance)*.
27. See *Chapter 1 (7. Backup of system information)* to back up the system.

The Manual installation is now complete.

3.3 Standard Program Package Installation

Standard Program Package (SPP) contains drivers customized for this server.
Make sure to install SPP before running the server system.

Important After attaching the internal option, application of Standard Program Package may be required. For details, see *Chapter 1 (3.5 Setup of Device Drivers)*.

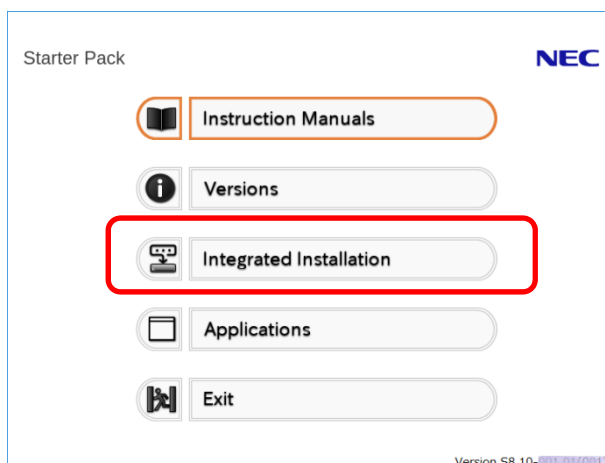
3.3.1 Installing Standard Program Package on Desktop Experience

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

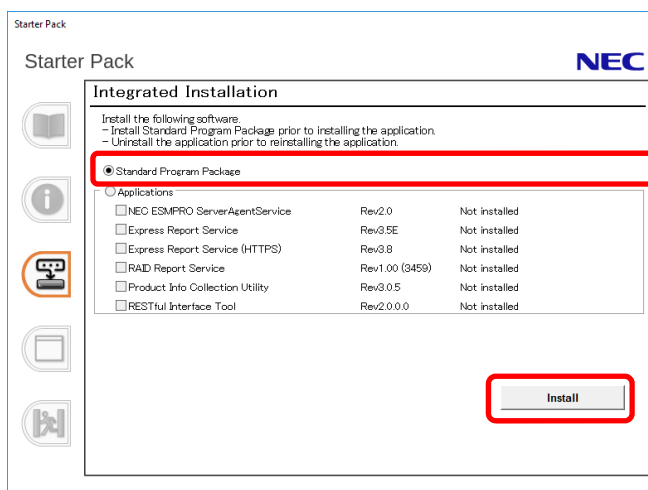
Note

- If N8104-182/185 is installed, execute "`\packages\cp036669.exe`" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute "`\packages\cp040553.exe`" on the DVD to install the driver separately. After the installation, reboot Windows.

3. Run the **start_up.bat** under the root folder on DVD.
4. Click **Integrated Installation** on the menu.



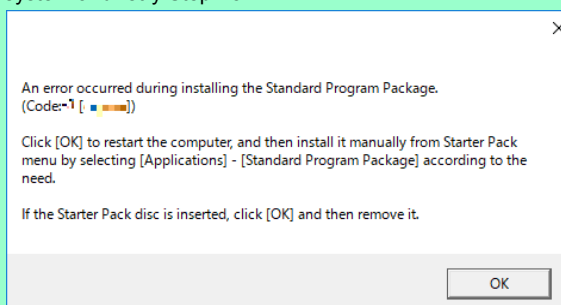
5. Choose **Standard Program Package** on the following screen, and then click **Install**.



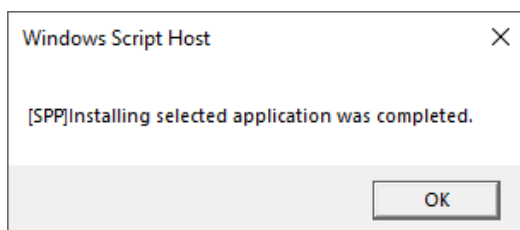
Wait a while until the installation is complete (about 5 to 15 minutes).

Note

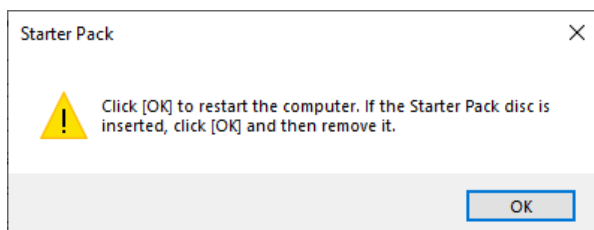
If the following message displayed during installing the Standard Program Package, restart the system and retry Step1-5.



6. Click **OK**.



7. Windows Server 2019 restarts automatically.
Then, remove the Starter Pack DVD.



SPP installation is now complete.

3.3.2 Installing Standard Program Package on Server Core

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

Note

- If N8104-182/185 is installed, execute "**packages\cp036669.exe**" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute "**packages\cp040553.exe**" on the DVD to install the driver separately. After the installation, reboot Windows.

3. From the command prompt, type the following command.
In the example below, the optical disk drive is the D drive.

```
cd /d D:\software\006\win\seamless
```

```
C:\Users\administrator>cd /d D:\software\006\win\seamless
```

4. Type the following command, and then press <Enter> key.

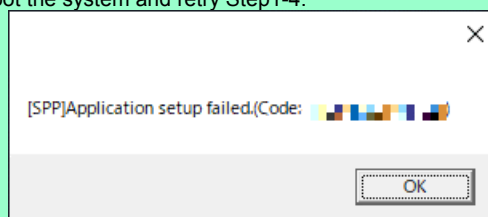
```
instcmd.vbs spp /s
```

```
D:\software\006\win\seamless >instcmd.vbs spp /s
```

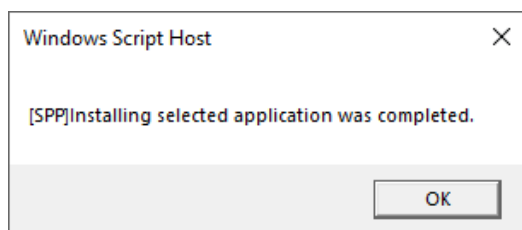
Wait until installation completes (about 5 to 15 minutes).

Note

If the following message displayed during installing the Standard Program Package, reboot the system and retry Step1-4.



5. Click OK.



6. After removing the Starter Pack DVD, restart Windows Server 2019 manually.

SPP installation is now complete.

3.4 Setting for collecting specific event logs

3.4.1 Desktop Experience

Sign-in to the account with an Administrators privilege for following settings.

1. Press <Windows logo> + <R> key to start **Run**.
2. Type "**gpedit.msc**", and then press <Enter> key.
The Local Group Policy Editor is displayed.
3. Click **Computer Configuration > Administrative Templates > System** on the left pane.
4. Right-click **Enable Persistent Time Stamp** on the right pane, and then click **Edit**.
5. Check **Enable** on Enable Persistent Time Stamp screen.
6. Click **Apply**, and then confirm the contents and click **OK**.

The setting is now complete. Close Local Group Policy Editor.

3.4.2 Server Core

Sign-in with the built-in Administrators privilege to Windows Server system which can recognize the Server Core Environment that have applied SPP by above procedure, for the following settings.

1. Press <Windows logo> + <R>key to start **Run**.
2. Type "**mmc.exe**", and then press <Enter> key. Console window is displayed.
3. Click **Add/Remove Snap-in ... of File**.
4. Select **Group Policy Object Editor**, and click **Add**.
5. Click **Browse...** of Select Group Policy Object window, and select **Another Computer**.
6. Input IP address or computer name, and click **OK**.
7. Click **OK** on **Add or Remove Snap-ins** window.
8. Click <Server Core Environment> **Policy > Computer Configuration > Administrative Templates > System** on the left pane of Console window.
9. Right-click **Enable Persistent Time Stamp** on the right pane, and then click **Edit**.
10. Check **Enabled** on Enable Persistent Time Stamp screen.
11. Click **Apply**, and then confirm the contents and click **OK**.

The setting is now complete. Save settings as needed, and close Console window.

3.5 Setup of Device Drivers

Install and set up device drivers provided for the standard configuration of the server.

For details regarding the installation and setup of a driver for an optional device, refer to the manual supplied with the optional device.

3.5.1 Installing the LAN drivers

(1) LAN drivers

When the installation is performed with the Manual installation, LAN drivers are installed when the SPP is applied.

Important

Wake On LAN (WOL) is supported by N8104-172/175 only. Wake On LAN is available after installing the LAN driver.
For Wake On LAN of N8104-172/175, when using Wake On LAN see Chapter 1(3.5.2 Setting up LAN drivers - (3) Setting up Wake On LAN).
BIOS settings, check Maintenance

Note

- To change the LAN driver settings, sign in to the system from a local console using an administrator's account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.
- Choose the **Internet Protocol (TCP/IP)** check box when specifying an IP address.

(2) Optional LAN board

This server supports the following optional LAN boards.

N8104-172/175/178/179/180/181/182/183/184/185/186/187

If you install the LAN boards after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (3.3 Standard Program Package Installation)*.

(3) Network adapter name

After installing the LAN drivers, the following network adapter names will be displayed on the Device Manager.

If connecting with an optional LAN board:

[N8104-172]	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx (*1)
[N8104-175]	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx (*1)
[N8104-178]	HPE Ethernet 1Gb 2-port 332T Adapter #xx (*1)
[N8104-179]	HPE Ethernet 1Gb 4-port 331T Adapter #xx (*1)
[N8104-180]	HPE Ethernet 1Gb 2-port 361T Adapter #xx (*1)
[N8104-181]	HPE Ethernet 1Gb 4-port 366T Adapter #xx (*1)
[N8104-182]	HPE Ethernet 10Gb 2-port 530T Adapter #xx (*1)
[N8104-183]	HPE Ethernet 10Gb 2-port 521T Adapter #xx (*1)
[N8104-184]	HPE Ethernet 10Gb 2-port 562T Adapter #xx (*1)
[N8104-185]	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx (*1)
[N8104-186]	Port1: HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx (*1) Port2: HPE Ethernet 10Gb 562SFP+ Adapter #xx (*1)
[N8104-187]	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx (*1)

*1: If there are adapters with the same name, a different identification number will be assigned to xx.

Tips

The ID for N8104-182/183/185/187 might be a number of two or more digits. This is due to the LAN driver specifications and not an error. This number cannot be changed.

Tips

The network adaptor name displayed in the device manager may be different from the one listed above. In this case, the correct network adaptor name can be displayed by following the procedure below.

1. Start **Device Manager**.
2. Open **Network Adaptor**, right click on the relevant adaptor, and select **Uninstall Device**. Do not check the **Delete the driver software of this device** checkbox.
3. Select **Scan hardware change** from **Control**.

3.5.2 Setting up LAN drivers

(1) Setting link speed

The transfer rate and duplex mode of the network adapter must be the same as those of the switching hub. Follow the procedure below to specify the transfer rate and duplex mode.

Tips

If you are using a network adaptor for N8104-185/187, the network adaptor settings can be set to "10 Gbps Full Duplex" or "25 Gbps Full Duplex", and the connected switching hub settings can be set to "Auto Negotiation".

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure. The properties of the network adapter will be displayed.
3. On the **Advanced** tab, set the **Speed & Duplex** values to the same as those of the switching hub.
4. Click **OK** in the **Network Adapter Properties** dialog box.
5. Restart the system.

The link speed setting is now complete.

(2) Setting up Flow Control

Flow Control sends a pause frame to the link partner to temporarily halt the transmission of frames when the receive buffer is almost full. When receiving a pause frame, it limits the transmission. Follow the procedure below to set up Flow Control.

Tips

Make sure to make the Tx/Rx settings of the network adapter and link partner consistent. For example, if Flow Control is set to Rx Enabled on the link partner, set it to Tx Enabled on the target device.

1. Open the Device Manager.
2. Expand Network Adapters, and then double-click the name of the network adapter you want to configure. The properties of the network adapter will be displayed.
3. Select the Advanced tab, and click Flow Control to show Value.
4. Change the setting in Value with the down-arrow button.
5. Click OK, and then restart the system.

The Flow Control setting is now complete.

(3) Setting up Wake on LAN

When using N8104-172/175 with the server, follow the procedure below to set it.

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure. The properties of the network adapter will be displayed.
3. Open **Advanced** tab, click **Enable PME** to show Value.
4. Change the value to **Enabled** by the down-arrow button.
5. Click **OK**, and then restart the system.

Setup is now complete.

3.5.3 Using Graphics Accelerator

The drivers are installed by Standard Program Package.

3.5.4 Using SAS Controller (N8103-184/E184)

The driver for the SAS controller (N8103-184/E184) is automatically installed by Windows Plug-and-Play.

3.5.5 Using SAS Controller (N8103-197)

The drivers are installed by Standard Program Package.

If you install the SAS controller (N8103-197) after applying the Standard Program Package, make sure to apply the Standard Program Package again by referring to *Chapter 1 (3.3 Standard Program Package Installation)*.

3.5.6 Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)

The drivers are installed by Standard Program Package.

If you install the RAID controller (N8103-189/190/191/192/193/194/195/196/201) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (3.3 Standard Program Package Installation)*.

3.5.7 Using Fibre Channel Controller (N8190-163/164/165/166/171/172)

The drivers are installed by Standard Program Package.

If you install the Fibre Channel controller (N8190-163/164/165/166/171/172) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (3.3 Standard Program Package Installation)*.

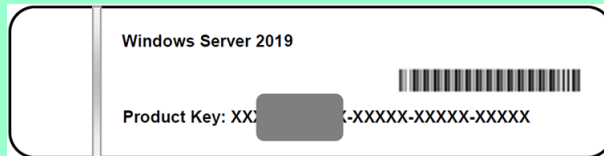
3.6 License Authentication

To use Windows Server 2019, you need finish the license authentication procedure.

Confirm if the license is authenticated or not in the next step.

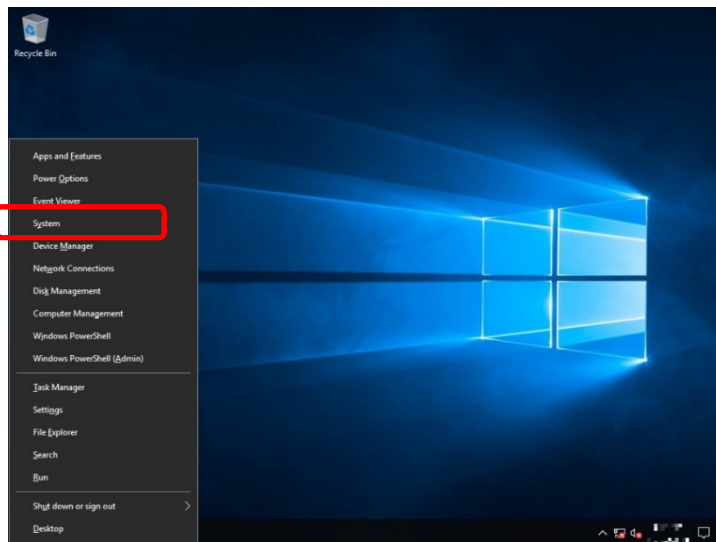
Note

To activate Windows Server 2019, enter the Product Key written on the COA (Certificate of Authenticity) label. The COA label of Windows Server 2019 is attached to the operating system media package.

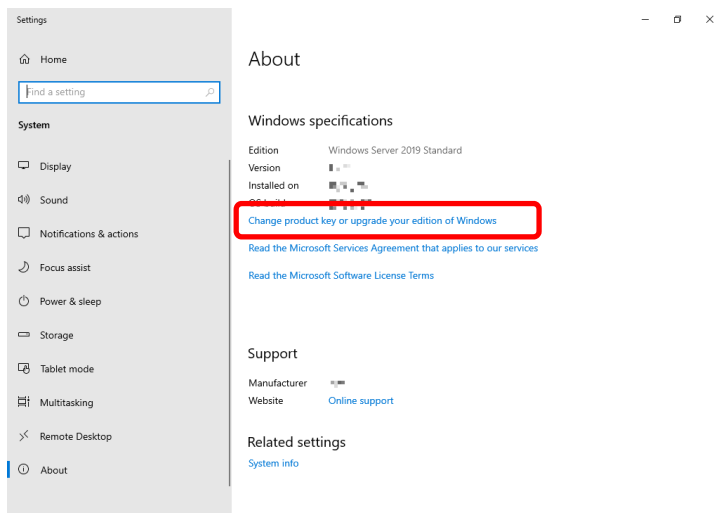


3.6.1 Desktop Experience

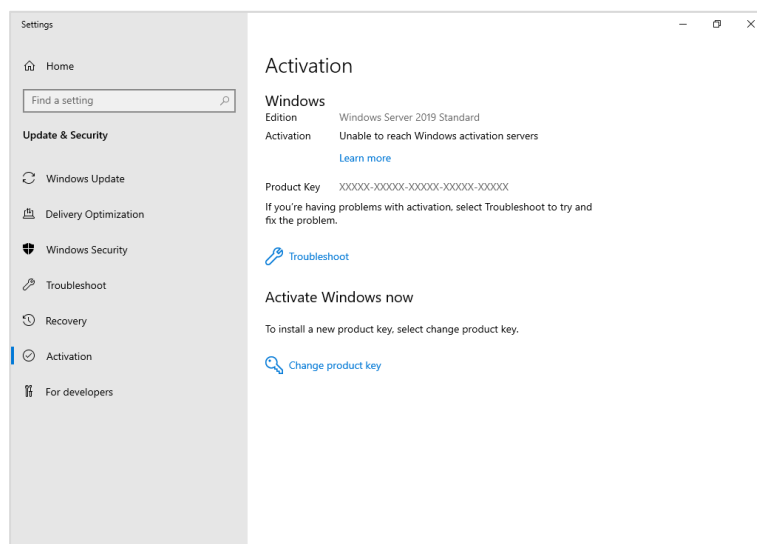
1. Right-click the lower left of the screen, and click **System** from the menu displayed.



2. Click **Change product key or upgrade your edition of Windows**.



3. Perform license authentication.



When connected to the Internet:

Click **Change product key**.

Complete license authentication process according to the message.

When not connected to the Internet:

Go to Step 4.

4. Perform the license authentication by phone.

Go to the appropriate step according to OS installation media you are using.

Backup DVD-ROM:

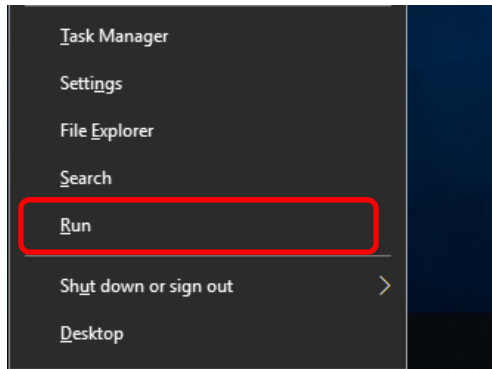
Go to Step 5.

Windows Server 2019 DVD-ROM:

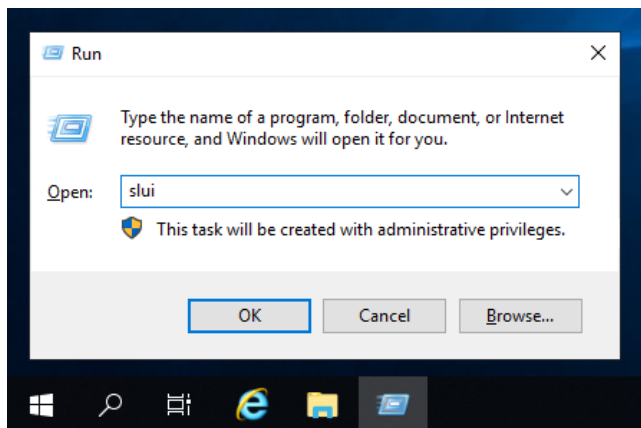
Product key is already entered: Go to step 8.

Product key is not entered: Go to Step 5.

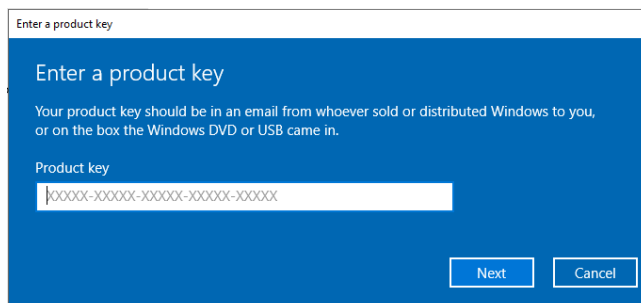
5. Right-click the lower left of the screen, and click **Run** from the menu displayed.



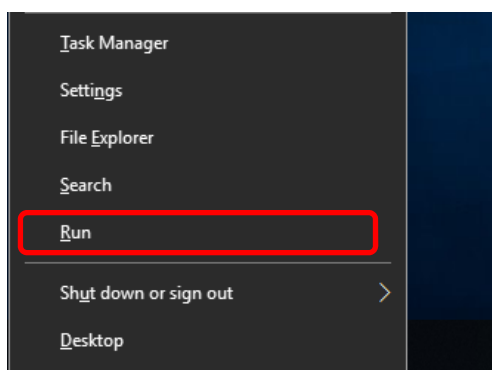
6. Type "slui", and then press <Enter> key.



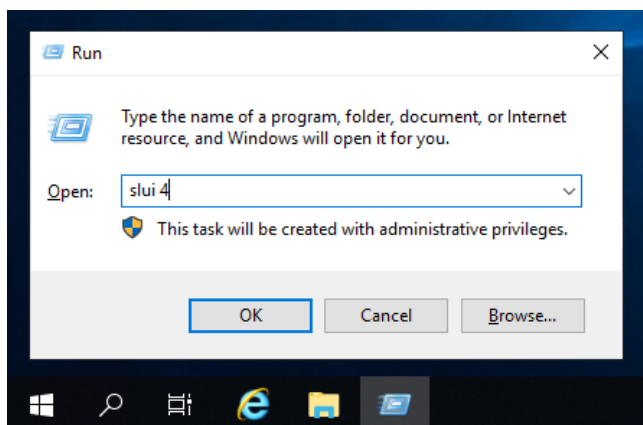
7. Change the product key. On the next screen, type the product key.



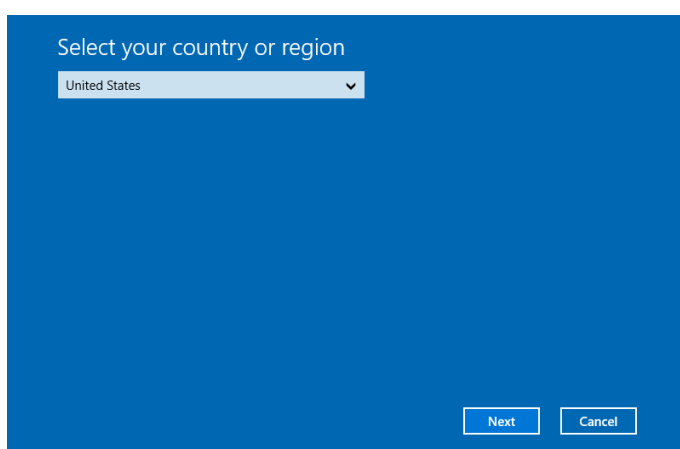
8. Right-click the lower left of the screen, and click **Run** from the menu displayed.



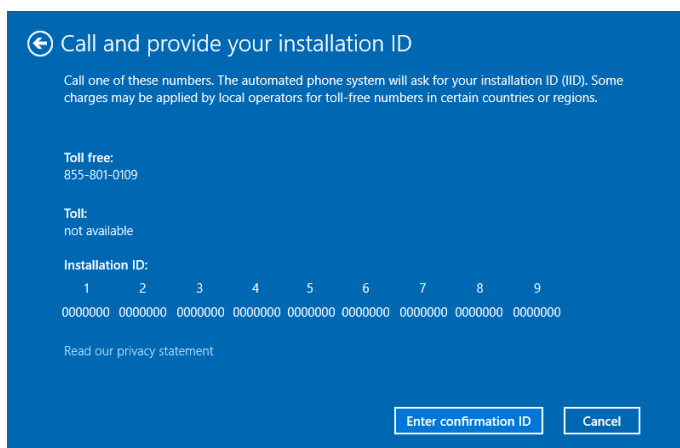
9. Type "slui 4", and then press <Enter> key.



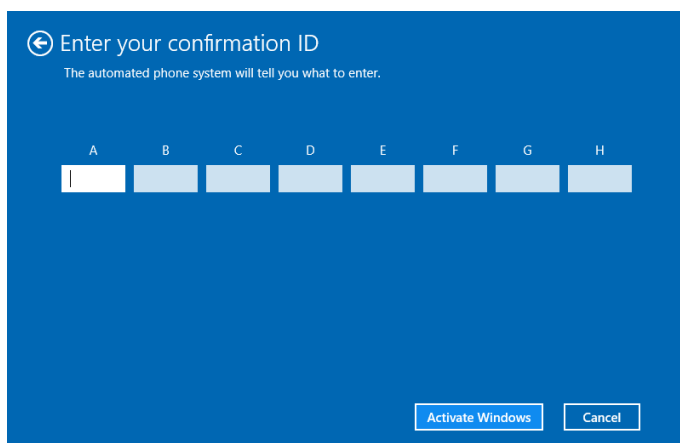
10. On the next screen, choose your country, and then click **Next**.



Get the installation ID required for license activation.



11. Call the Microsoft license activation hotline and then tell your installation ID. Type the confirmation ID, and then click **Activate Windows**.



← Enter your confirmation ID

The automated phone system will tell you what to enter.

A	B	C	D	E	F	G	H
I							

Activate Windows Cancel

The authentication is now complete.

3.6.2 Server Core installation

1. Confirm if your license is activated.

At the command prompt, type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -dli
```

When license authentication is required, go to the next step.

When your license is already authenticated, you can skip the next and the subsequent steps.

2. Change the product key.

Using Backup DVD-ROM:

Type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -ipk <Product key on COA label>
```

Using Windows Server 2019 DVD-ROM:

You do not need to change the product key.

Go to the next step.

3. Perform license authentication.

The server connects to the Internet:

License authentication is performed via the Internet.

Type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -ato
```

This completes authentication.

The server does not connect to the Internet:

Use telephone for license authentication.

Type the following command to get an Install ID for authentication, and then press <Enter> key.

```
C:\Users\administrator>slmgr -dti
```

Acquire the installation ID required for license activation.

Refer to the file %systemroot%\system32\sppui\phone.inf to confirm the telephone number of Microsoft Licensing Center.

Call Microsoft Licensing Center and tell them your Install ID.

Type the confirmation ID you have received in the following command line, and then press <Enter> key.

```
C:\Users\administrator>slmgr -atp <Confirmation ID>
```

The authentication is now complete.

3.7 Setup of Windows Server 2019 NIC Teaming (LBFO)

Set up the network adapter teaming feature as shown below.

3.7.1 Launching the NIC teaming setup tool

1. Launch **Server Manager**.
2. Select **Local Server**.
3. In the **Properties** window, click **Enable** or **Disable** for **NIC teaming**.

The NIC teaming setup tool will launch.

Tips

The NIC teaming setup tool can also be launched by opening the **Run** dialog box, typing "lbfoadmin /server .", and then pressing <Enter> key.

3.7.2 Creating a team

Create a team by using the NIC teaming setup tool.

1. In the **Servers** section, select the name of the server to set up.
If there is only one server connected, the name of the server is selected automatically.
2. In the **Teams** section, under **Tasks**, select **New Team**. The **New Team** wizard then starts.
3. Type the name of the team to create, and then select the network adapter to include in the team from the **Member adapters** list.
4. Click **Additional properties**.
5. Specify the required settings, and then click **OK**.

Teaming mode

Static Teaming	Configures static aggregation between the NIC and switches.
Switch Independent	Configures teaming on the NIC side without depending on the switch settings.
LACP	Configures dynamic aggregation between the NIC and switches.

Load balancing mode

Address Hash	Distributes the load based on IP addresses and port numbers.
Hyper-V Port	Distributes the load to each of the virtual switch ports used by the virtual machines.
Dynamic	<ul style="list-style-type: none"> • Distributes the load based on IP addresses and port numbers in sending. • Distributes the load same to "Hyper-V Port" in receiving.

Standby adapter

Select one adapter to be set to standby mode from the adapters in the team.

Setting all adapters to active mode is also possible.

Primary team interface

Any VLAN ID can be specified for the primary team interface.

3.7.3 Removing a team

Remove a team by using the NIC teaming setup tool.

1. In the **Servers** section, select the name of the server to set up.
If there is only one server connected, the name of the server is selected automatically.
2. In the Teams section, select the team to remove.
3. In the Teams section, under **Tasks**, select **Delete**.
4. The message box to confirm appears, then click Delete team.

3.7.4 Notes and restrictions

- NIC teaming on a guest OS is not supported.
- Teaming of virtual NICs on the host OS is not supported in the Hyper-V environment.
- When STP (Spanning Tree Protocol) is enabled on network switch ports to which network adapters of the team are connected, network communications may be disrupted. Disable STP, or configure "PortFast" or "EdgePort" to the ports.
* About setting the network switch of the connection destination, see the manual of the network switch.
- All NICs in the team must be connected to the same subnet.
- Teaming of different speed NICs is not supported.
- Teaming of different vendor's NICs is not supported.
- When teaming is configured in a Network Load Balancing (NLB) environment, you should select multicast mode on the NLB cluster.
- When a team is removed, the following error message may be logged in the system event log. You can safely ignore this error message.

Level	Error
Source	Microsoft-Windows-NDIS
Event ID	10317
Task category	PnP
Message	<p>Miniport Microsoft Network Adapter Multiplexor Driver, {xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx}, has event Network Interface deleted while PNP Device still exists.</p> <p>Note that this event is provided for informational purpose and might not be an error always. (Eq: In case of vSwitch which was recently un-installed or a LBFO team was removed)</p>

- In a Windows Server Failover Cluster environment, heartbeat interruption or failover may occur if you configure Active-Standby teaming. To avoid this, you should configure multiple NICs in Active Mode in a team so that all the NICs do not fail simultaneously.

- In a Hyper-V environment, the following warning message may appear when a teaming adapter is bound to a virtual switch. There is no problem for the operation unless this message is output multiple times at one time.

Level	Warning
Source	Microsoft-Windows-MsLbfoSysEvtProvider
Event ID	16945
Message	MAC conflict: A port on the virtual switch has the same MAC as one of the underlying team members on Team Nic Microsoft Network Adapter Multiplexor Driver

Refer to the following website for the latest information.

<https://www.58support.nec.co.jp/global/download/w2019/index.html>

- [Technical Information] - [NIC Teaming (LBFO)]

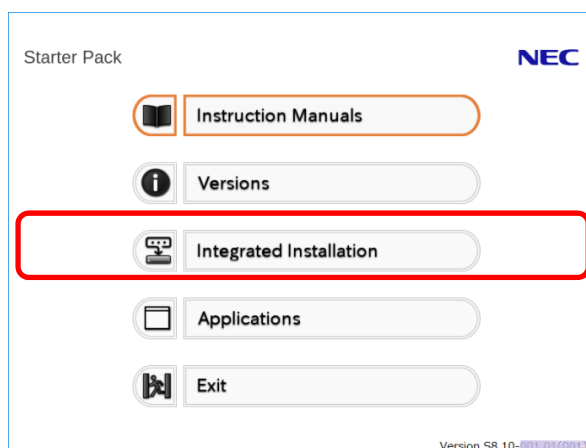
3.8 Installing Applications

Some applications included in Starter Pack can be installed easily by performing the procedures described below. When installing these applications individually, see the manuals of the applications. **This feature is only available on Desktop Experience.**

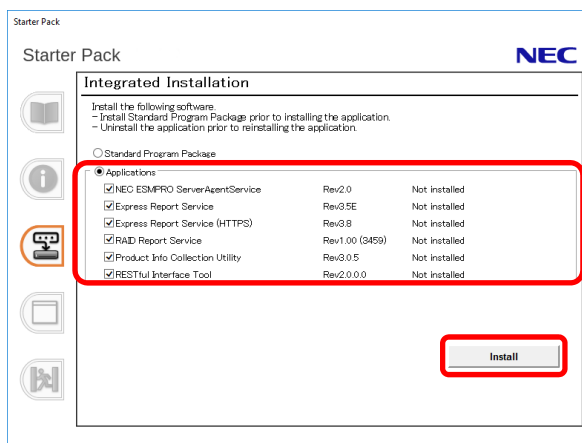
Tips

This function supports clean installation of applications only. If you re-install installed application, refer to *the manual of each applications*.

1. Sign-in to the Windows with an Administrators privilege.
2. Insert the Starter Pack DVD into the optical disk drive.
3. Run the start_up.bat under the root folder on DVD.
4. Click **Integrated Installation** on the menu.



5. On the following screen, choose the check boxes corresponding to the applications you want to install, and then click **Install**. The chosen applications are automatically installed.



Note

- Applications available for installation are chosen by default.
- If your system environment does not satisfy the prerequisite for an application, you cannot install it. For details, see the on-screen information and the manuals of the applications.
- To collect product information using a device information collection utility, RESTful interface tool needs to be installed. If it is not installed, some logs required for the maintenance may not be gathered.

6. When a message indicating restart appears, click **OK** to restart the server.
7. See *the manual of each applications* to install the bundled software or confirm that the software is appropriate to your operating environment.

Now installation of applications is complete.

4. Installing Windows Server 2016

Important

The application procedure and OS installation procedure may vary depending on the version of Starter Pack. Check the procedures of each Starter Pack on the download page below.

<https://www.58support.nec.co.jp/global/download/>

-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

4.1 Precautions of Windows Server 2016 Installation

Read the precautions explained this section before installing.

EB : Assisted installation

OS : Manual installation

BIOS setting	
EB OS	<p>Change Boot Mode to UEFI Mode. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Boot Options → Boot Mode → UEFI Mode</p>
EB OS	<p>Select Enabled for X2APIC feature of processor. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Processor Options → Processor X2APIC Support → Enabled</p>
Hardware configuration	
The following hardware configurations require special procedures.	
EB OS	<p>Using RAID controllers</p> <p>When using RAID controllers before starting the installation of Windows Server 2016, build the RAID system beforehand by referring to <i>Chapter 2 (2. RAID System Configuration)</i> in <i>Maintenance Guide</i>.</p>
EB OS	<p>Setup when multiple logical drives exist</p> <p>If you select a wrong hard disk drive while installing Windows Server 2016, existing data may be deleted unintentionally. Determine the target disk drive based on the displayed capacity and partition sizes of the hard disk drive.</p>
EB OS	<p>Reinstalling to a mirrored volume</p> <p>When you install Windows Server 2016 in an environment with a mirrored volume created using Windows, disable mirroring before installing the operating system and enable it again after the installation. Use [Computer Management] – [Disk Management] to create, disable, or remove the mirrored volume.</p>
EB OS	<p>Peripherals such as RDX/MO</p> <p>Remove an MO device before installing. Some peripherals need to be halted before installation. Refer to the manual provided with the peripherals for how to set a device appropriate to installation.</p>

<div>EB</div> <div>OS</div>	DAT, LTO, and similar media Do not set media that is unnecessary to installation during setup.
<div>EB</div> <div>OS</div>	Reinstalling to dynamic disks If the hard disk drive has been upgraded to a dynamic disk, the Windows cannot be reinstalled to it with the existing partitions. Install Windows with Manual installation.
<div>EB</div> <div>OS</div>	Setup when mass memory is installed <p>If mass memory is installed in your system, the large size of paging file is required at installation, and the partition size for storing debug information (dump file) cannot be allocated.</p> <p>If you fail to create the partition, allocate the required size to multiple disks according to the following steps.</p> <ol style="list-style-type: none"> 1. Set the system partition size to a size sufficient to install the OS and paging file. 2. Specify another disk as the destination to save the debug information (required dump file size) according to <i>Chapter 1 (6. Setting up for Maintenance)</i>. <p>If the hard disk drive does not have enough free area to write the debug information, set the partition size to a size sufficient to install the OS and paging file, and then add another hard disk drive for the dump file.</p> <div data-bbox="435 840 1380 929"> <p>Note If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.</p> </div> <p>If sufficient free area cannot be allocated for the paging file, perform either of the following after install Windows.</p> <ul style="list-style-type: none"> – Specify a hard disk drive other than the system drive as the location to store the paging file for collecting memory dump <p>Create a paging file of "installed memory size + 400 MB (installed memory size + 1,100 MB when the size is 4 TB or more)" or more in a drive other than the system drive.</p> <div data-bbox="486 1328 1316 1547"> <p>The paging file that exists in the first drive (in the order of drive letter C, D, E, ...) is used as the temporary memory dump location.</p> <p>Therefore, make sure that the size of the paging file that exists in the first drive is at least "installed memory size + 400 MB (installed memory size + 1,100 MB when the installed physical memory is 4 TB or more)".</p> <p>Paging files in dynamic volumes are not used for dumping memory. The setting is applied after restarting the system.</p> </div> <div data-bbox="505 1592 1291 1874"> <p>Example of correct setting</p> <p>C: No paging file exists D: Paging file whose size is "installed memory size + 400 MB" or more</p> <p>→ The paging file in drive D can be used for collecting memory dump because its size satisfies the requirement.</p> </div>

Example of incorrect setting 1**C: Paging file whose size is smaller than the installed memory size****D: Paging file whose size is "installed memory size + 400 MB* " or more**

→ The paging file in drive C is used for collecting memory dump, but collection may fail because the size of the paging file is smaller than the installed memory size.

Example of incorrect setting 2**C: Paging file whose size is "installed memory size × 0.5"****D: Paging file whose size is "installed memory size × 0.5"****E: Paging file whose size is 400 MB***

→ The total paging file size in all drives is "installed memory size + 400 MB* ", but collection may fail because only the paging file in drive C is used for collecting memory dump.

Example of incorrect setting 3**C: No paging file exists****D: Paging file whose size is "installed memory size + 400 MB* " or more (in dynamic volume)**

→ Paging files in a dynamic volume cannot be used for collecting memory dump. Thus, collecting memory dump fails.

* This value is installed memory size +1,100 MB when the installed memory size is 4 TB or more.

- **Specify a drive other than the system drive for "Dedicated Dump File".**

Create the registry shown below by using the Registry Editor and specify the name of Dedicated Dump File.

<For example: "dedicateddumpfile.sys" in drive D>

Key:	HKEY_LOCAL_MACHINE\SYSTEM CurrentControlSet\Control\CrashControl
Name:	DedicatedDumpFile
Type:	REG_SZ
Data:	D:\dedicateddumpfile.sys

Note the following when specifying Dedicated Dump File:

- Pay strict attention when editing the registry.
- The setting is applied after restarting the system.
- Specify a drive that has free space of "installed memory size + 400 MB (installed memory size + 1,100 MB when the installed memory size is 4 TB or more)" or more.
- Dedicated Dump File cannot be placed in dynamic volumes.
- Dedicated Dump File is only used for collecting memory dump, and is not used as virtual memory. Specify the paging file size so that sufficient virtual memory can be allocated in the entire system.

System partition size																								
EB	OS	<p>The system partition size can be calculated by using the following formula.</p> <p>Size required to install the OS + paging file size + dump file size + application size</p> <p>Desktop Experience</p> <table><tr><td>Size required to install the OS</td><td>= 15,200 MB</td></tr><tr><td>Paging file size (recommended)</td><td>= installed memory size × 1.5</td></tr><tr><td>Dump file size</td><td>= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)</td></tr><tr><td>Application size</td><td>= as required by the application</td></tr></table> <p>Server Core</p> <table><tr><td>Size required to install the OS</td><td>= 10,300 MB</td></tr><tr><td>Paging file size (recommended)</td><td>= installed memory size × 1.5</td></tr><tr><td>Dump file size</td><td>= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)</td></tr><tr><td>Application size</td><td>= as required by the application</td></tr></table> <p>For example, if the installed memory size is 2 GB (2,048 MB), and application size is 100 MB, the partition size is calculated as follows:</p> $15,200\text{ MB} + (2,048\text{ MB} \times 1.5) + 2,048\text{ MB} + 400\text{ MB} + 100\text{ MB}$ $= 20,820\text{ MB}$ <p>The above mentioned partition size is the minimum partition size required for system installation. Ensure that the partition size is sufficient for system operations.</p> <p>The following partition sizes are recommended.</p> <table><tr><td>Desktop Experience</td><td>:</td><td>32,768 MB (32 GB) or more</td></tr><tr><td>Server Core installations</td><td>:</td><td>32,768 MB (32 GB) or more</td></tr></table> <p>*1 GB = 1,024 MB</p> <p>Note</p> <ul style="list-style-type: none">• The above paging file sizes are recommended for collecting debug information (dump file). The initial size of the Windows partition paging file must be large enough to store dump files. Make sure you set a sufficient paging file size. If the paging file is insufficient, there will be a virtual memory shortage that may result in an inability to collect correct debug information.• Regardless of the sizes of internal memory and write debug information, the maximum size of the dump file is "installed memory size + 400 MB (installed memory size + 1,100 MB when installed memory size is 4 TB or more)".• When installing other applications or other items, add the amount of space needed by the application to the partition.	Size required to install the OS	= 15,200 MB	Paging file size (recommended)	= installed memory size × 1.5	Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)	Application size	= as required by the application	Size required to install the OS	= 10,300 MB	Paging file size (recommended)	= installed memory size × 1.5	Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)	Application size	= as required by the application	Desktop Experience	:	32,768 MB (32 GB) or more	Server Core installations	:	32,768 MB (32 GB) or more
Size required to install the OS	= 15,200 MB																							
Paging file size (recommended)	= installed memory size × 1.5																							
Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)																							
Application size	= as required by the application																							
Size required to install the OS	= 10,300 MB																							
Paging file size (recommended)	= installed memory size × 1.5																							
Dump file size	= installed memory size + 400 MB (installed memory size is 4 TB or less) = installed memory size + 1,100 MB (installed memory size is exceeding 4 TB)																							
Application size	= as required by the application																							
Desktop Experience	:	32,768 MB (32 GB) or more																						
Server Core installations	:	32,768 MB (32 GB) or more																						

If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.

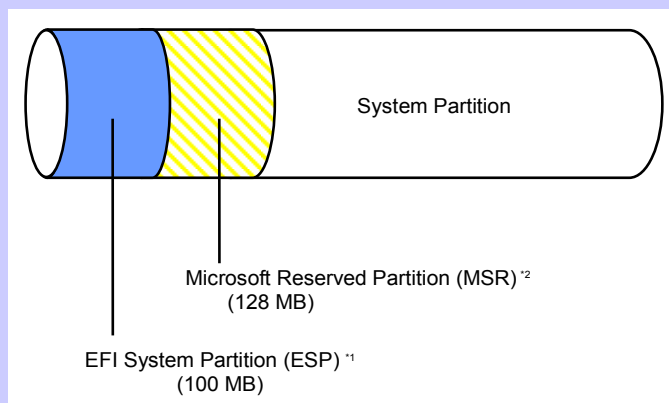
● **When installing using Assisted Installation**

Tips

Windows is installed using the entire disk space of the hard disk drive. The Windows OS creates two partitions at the head of the hard disk drive.

- EFI System Partition (ESP): 100 MB *1
- Microsoft Reserved Partition (MSR): 128 MB *2

228 MB of disk space is allotted to the two partitions at the head.



*1 May be 300 MB in size depending on hard disk drive type.

*2 MSR is not displayed on **Disk Management**.

● When installing using Manual installation

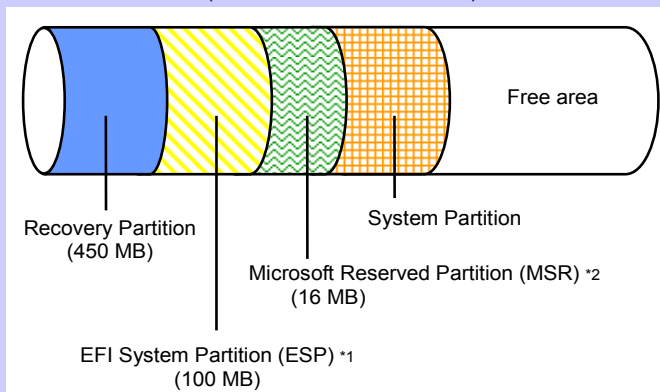
Tips

When creating a partition, Windows OS creates the following partitions at the top of hard disk drive.

- Recovery Partition: 450 MB
- EFI System Partition (ESP): 100 MB *1
- Microsoft Reserved Partition (MSR): 16 MB *2

566 MB is allocated for these three partitions out of the specified partition size. For example, when 61,440 MB is specified for partition size, the area available free area is calculated as follows:

$$61,440 \text{ MB} - (450 \text{ MB} + 100 \text{ MB} + 16 \text{ MB}) = 60,874 \text{ MB}$$



*1 May be 300 MB in size depending on hard disk drive type.

*2 MSR is not displayed on **Disk Management**.

Windows Server 2016 Hyper-V support

EB

OS

Refer to the following web site for information related to Windows Server 2016 Hyper-V.

<https://www.58support.nec.co.jp/global/download/w2016/hyper-v/hyper-v-ws2016.html>

Using BitLocker

If using BitLocker, note the following.

- Be sure to keep the recovery password secure. Do not keep it near a server running BitLocker.

Important

If the recovery password is not entered, the OS cannot be started, and the content of the partition encrypted by BitLocker cannot be referenced any more. The recovery password might be required at startup of the OS after the following:

- Replacement of motherboard
- Change of BIOS setting
- Initialization of trusted platform module (TPM) *

*** Depending on your system, it may not be supported.**

Refer to the Instruction Manuals about hardware.

- To reinstall the operating system into a partition that is encrypted with BitLocker, delete the BitLocker-encrypted partition prior to reinstallation.

Support for NIC teaming in Windows Server 2016

EB

OS

The NIC teaming feature, which used to be provided by network interface card (NIC) vendors, is built into Windows Server 2016. In Windows Server 2016, this feature is also called "load balancing and failover (LBFO)".

Refer to *4.7 Setup of Windows Server 2016 NIC Teaming (LBFO)* and specify any required settings.

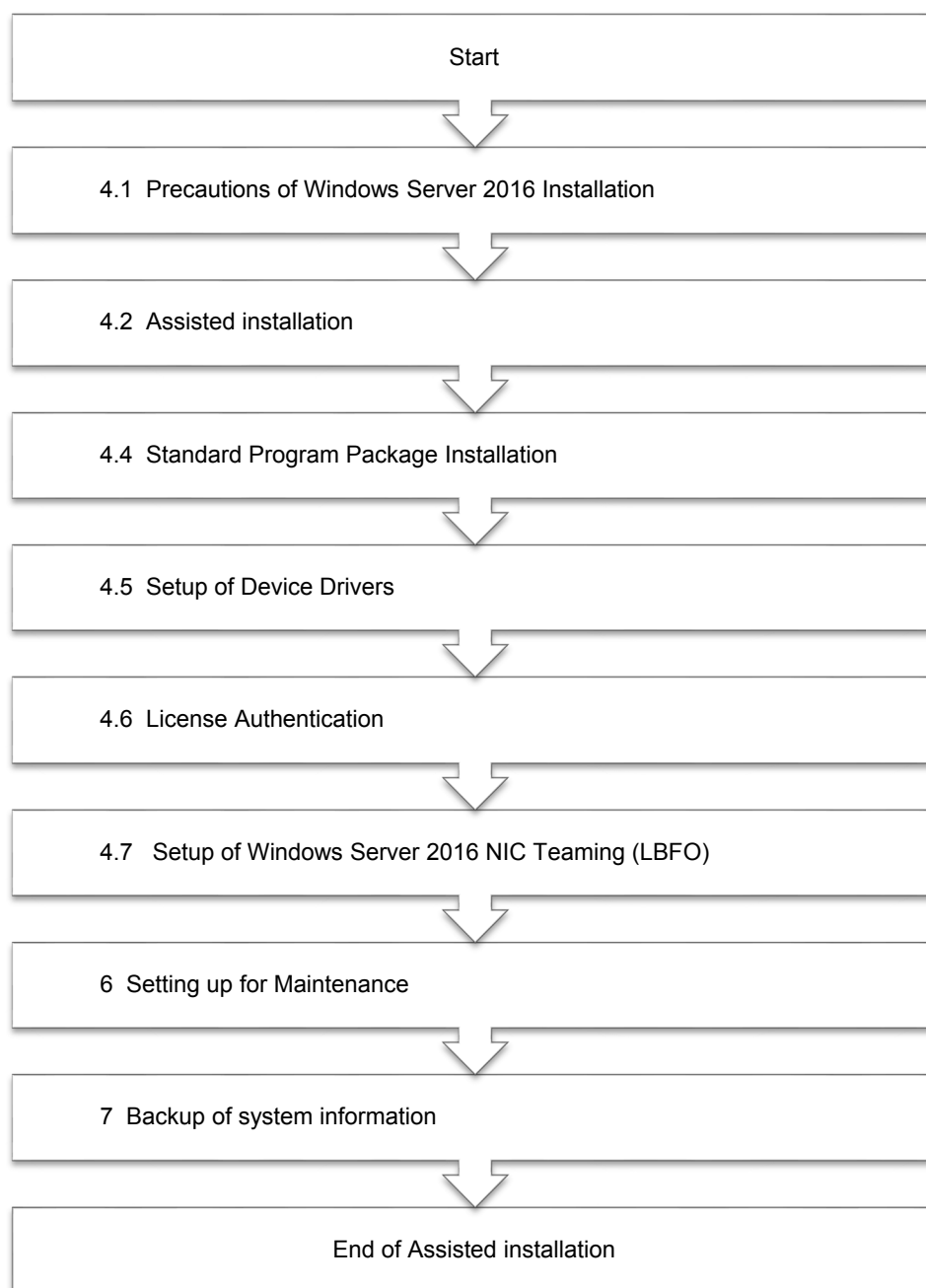
4.2 Assisted installation

This section describes how to install Windows Server 2016 with the Assisted option.

Important

- Setup will delete all data of the hard disk drive.
- Disconnect hard disk drives from the RAID controller that is not to be setup.

4.2.1 Setup flow



4.2.2 Requirements for Setup

Prepare the following media and instruction manuals before starting setup.

- Either of the following OS installation media
 - **NEC operating system installation media** (hereafter referred to as *Backup DVD-ROM*)
 - **Microsoft operating system installation media** (hereafter referred to as *Windows Server 2016 DVD-ROM*)
- Starter Pack
 - **Starter Pack DVD** (Optional or downloading from our website)

4.2.3 Installation procedure

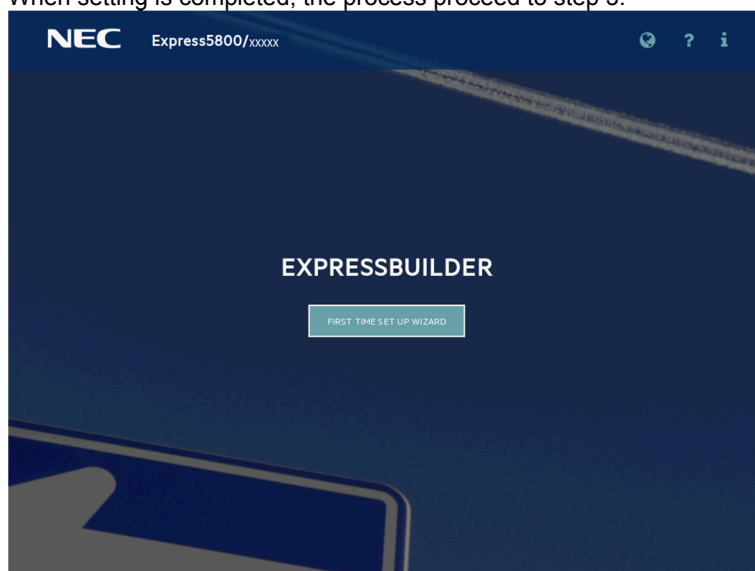
When installing with the Assisted option, configure each of the items in the wizard format.

Note that the old version of Windows will be deleted.

Note

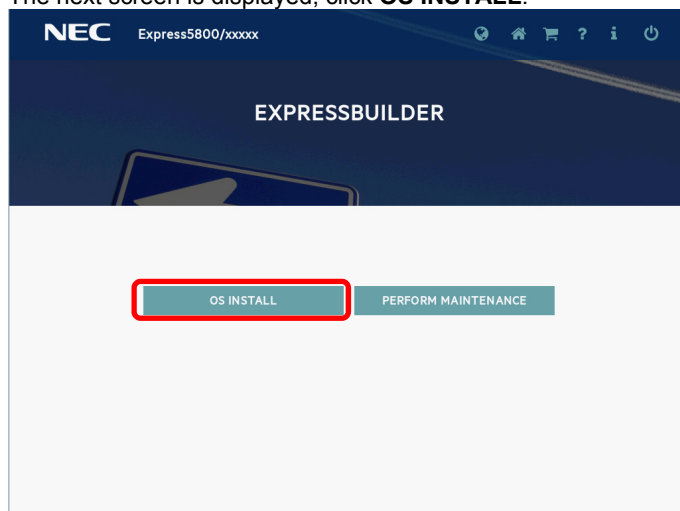
Read the precautions in *Chapter 1 (4.1 Precautions of Windows Server 2016 Installation)* in advance.

1. Turn on peripherals (such as a display), and then turn on the server.
2. To run EXPRESSBUILDER, press <F10> key during POST.
Only when running an OS for the first time, operating environment of EXPRESSBUILDER is set.
When the following screen appears, click FIRST TIME SET UP WIZARD.
When setting is completed, the process proceed to step 3.



For details on EXPRESSBUILDER and **FIRST TIME SET UP WIZARD**, see to *Chapter 2 (3. Details of EXPRESSBUILDER)* in *Maintenance Guide*.

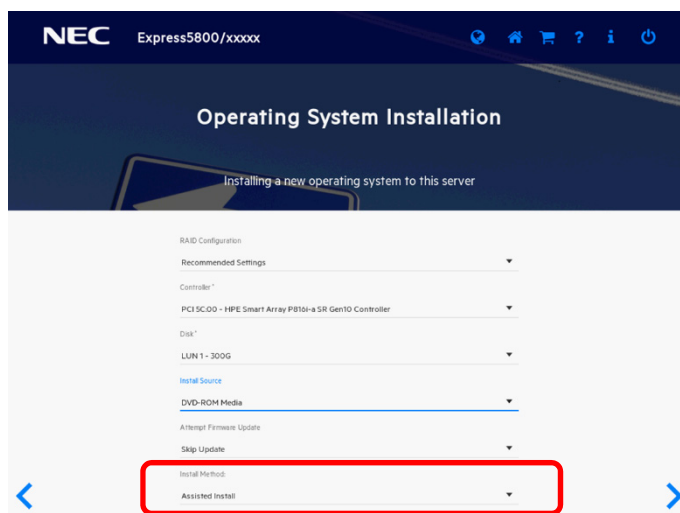
3. The next screen is displayed, click **OS INSTALL**.



4. Choose **Assisted Install** of **Install Method**.
Specify the following if necessary, and then click the ">" icon of the lower right of the screen.

Note

When choosing **DVD-ROM Media** or **File on a USB drive**, click ">" icon after setting the media.



- **RAID Configuration**
Choose Keep Current Setting after configuring a RAID array by SSA or System Utilities when using RAID controller.
- **Controller**
Choose the controller of installation destination.
- **Disk**
Choose the disk of installation destination.

- Install Source

Choose an OS installation source from the following types.

DVD-ROM Media	DVD-ROM
File on USB drive	USB flash drive
SMB/CIFS (Windows Share)	Network sharing folder
An anonymous FTP server	This option is not available.
Install ClearOS from the Internet	This option is not available.

Each media supports the following file format.

File on USB drive	Flat, ISO
SMB/CIFS (Windows Share)	Flat, ISO

Flat: a standard folder/file structure

ISO: single ISO or UDF file

- Attempt Firmware Update

Choose **Skip Update**. The other options are not available.

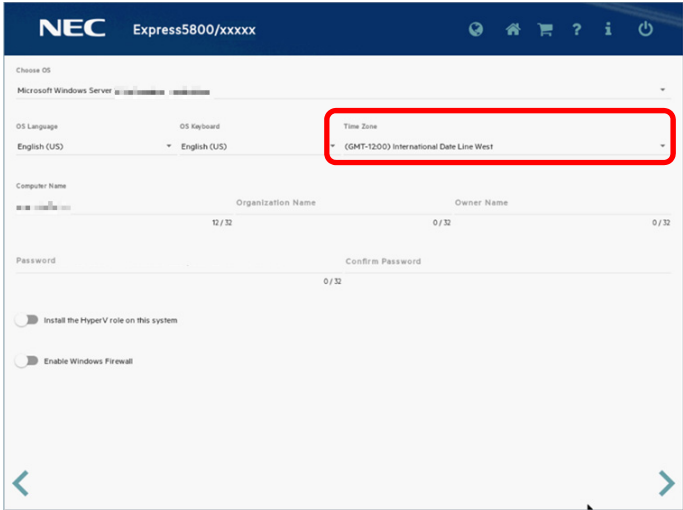
- Install Method

Choose **Assisted Install**.

5. Choose an OS source media depending on the media type of **Install Source** chosen at step 4.

DVD-ROM Media	Automatically detects on OS installation media. If the detection fails, return to step 4 and retry.
File on USB drive	Choose OS installation file on USB flash drive connected. Only USB drives formatted in the FAT or exFAT format are supported.
SMB/CIFS (Windows Share)	Set the network settings of network sharing that includes OS installation file, and then choose OS installation file after connecting the network sharing. <ul style="list-style-type: none"> ● Server Name/IP Address ● Share Name ● Domain Name ● Network Share User ● Network Share Password

6. On the following screen, specify settings for the OS installation.



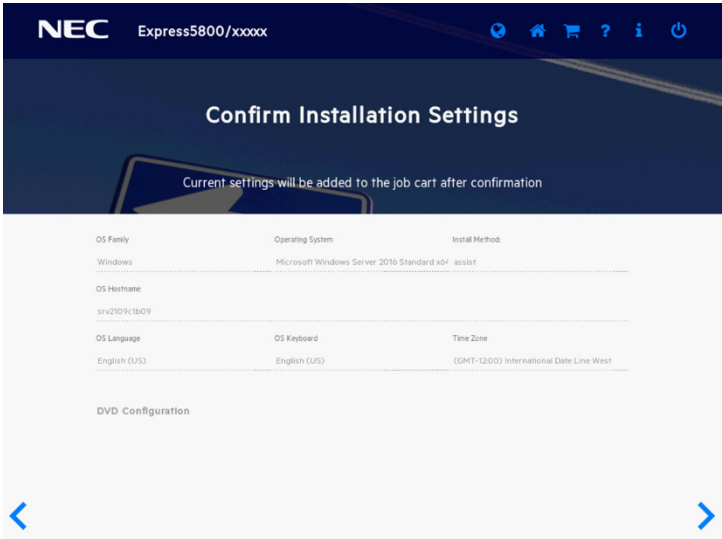
You can enable the functions of Windows, if necessary.

Install the HyperV role on this system	The HyperV role can be Enabled.
Enable Windows Firewall	Windows Firewall can be Enabled.

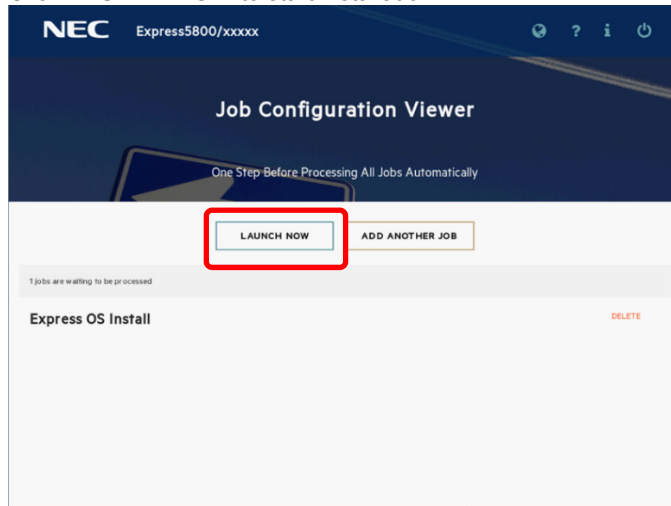
Note

- For **Choose OS**, select the OS to be installed.
- **Optional Password** can be used alphanumeric characters only.
- Specify **Organization Name** and **Owner Name** using uppercase and lowercase alphanumeric characters.

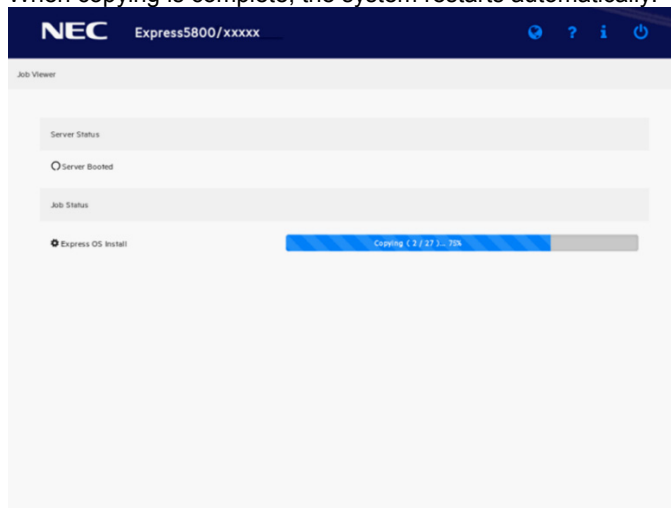
7. Confirm the settings and modify them as needed.



8. When the following screen is displayed, the setting is complete.
Click **LAUNCH NOW** to start installation.



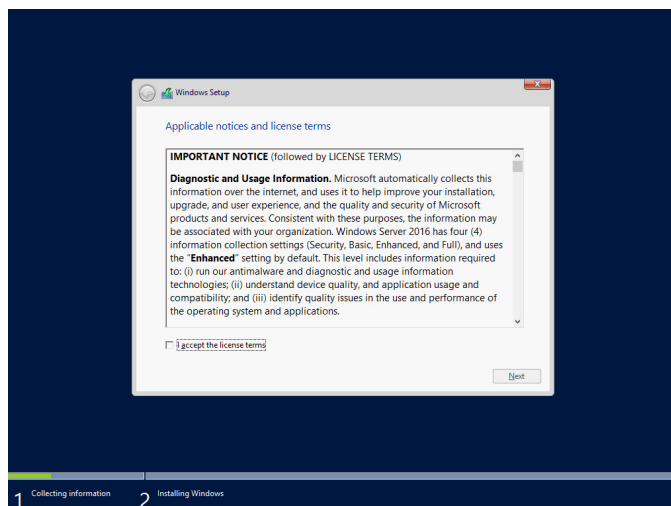
9. When copying is complete, the system restarts automatically.



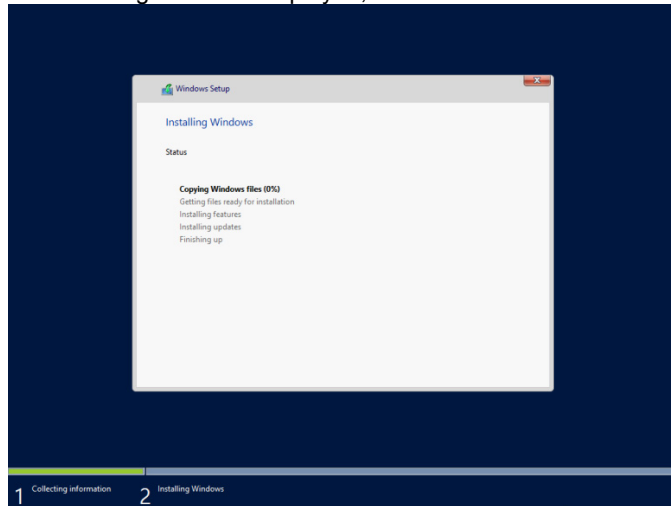
10. Confirm the license terms.
Click **I accept the license terms** if you accept this license, and then click **Next**.

Tips

If a choosing installation OS screen appears, the inserted OS media is different from the setting of step 6. Retry the setting from the beginning.



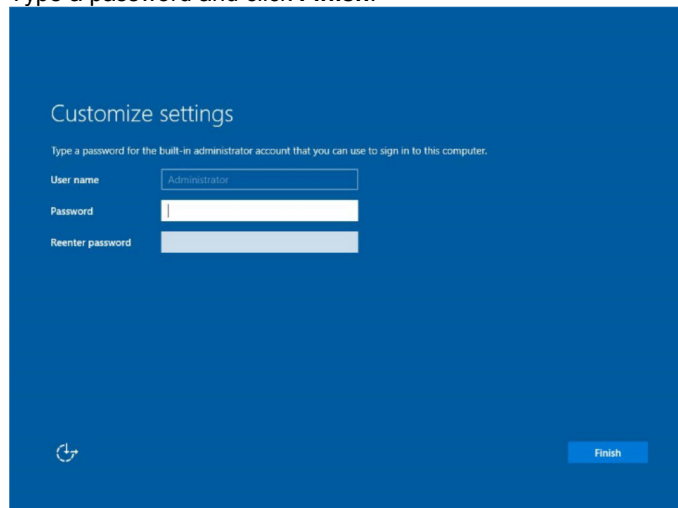
The following screen is displayed, and Windows installation automatically starts.



11. The following screen appears depending on the setting of step 6.

Desktop Experience

Type a password and click **Finish**.



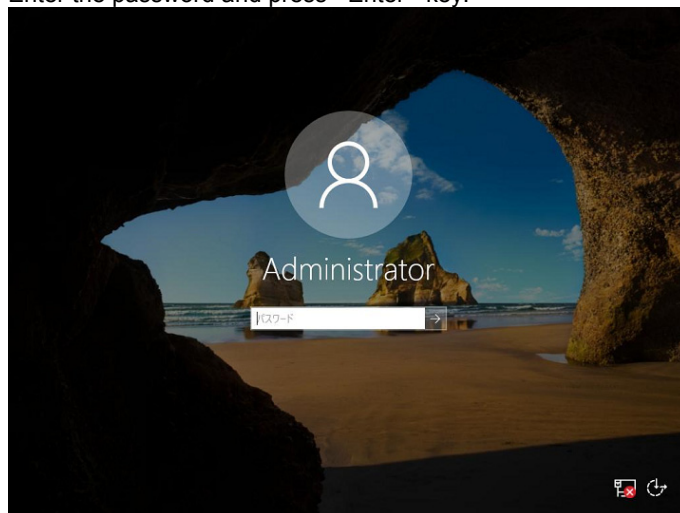
Tips

If you entered a password in step 6, the next screen is not displayed.

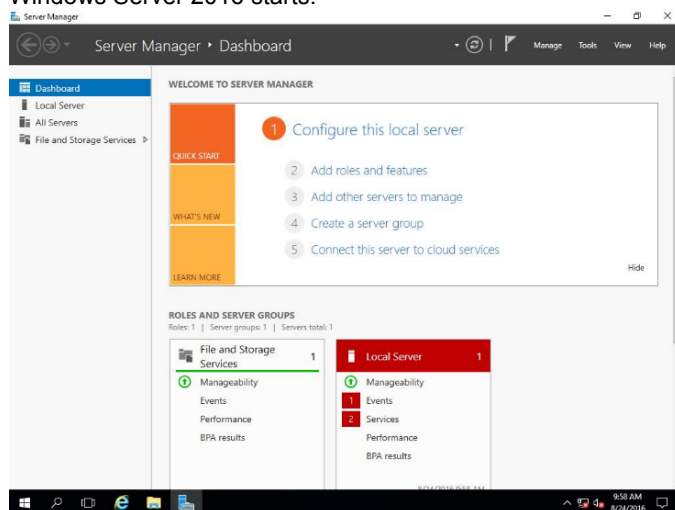
Press <Ctrl> + <Alt> + <Delete> keys to unlock.



Enter the password and press <Enter> key.

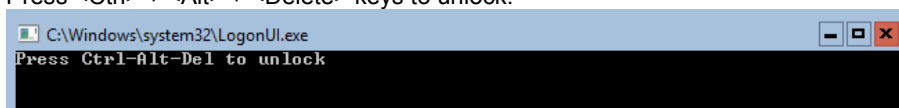


Windows Server 2016 starts.



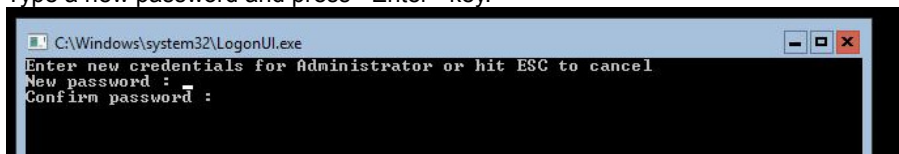
Server Core

Press <Ctrl> + <Alt> + <Delete> keys to unlock.

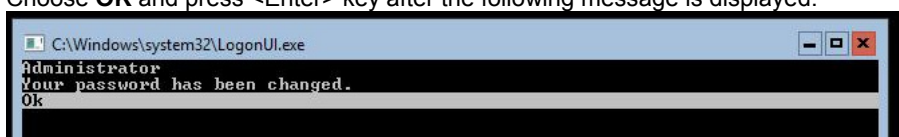


The next two screens do not appear when the password is set at step 6.

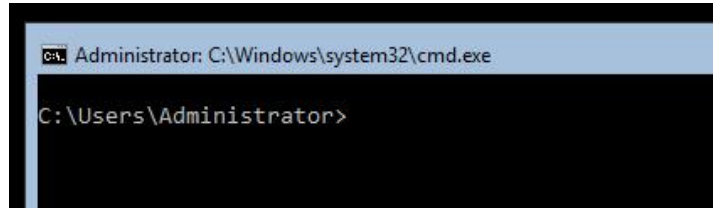
Type a new password and press <Enter> key.



Choose **OK** and press <Enter> key after the following message is displayed.



Windows Server 2016 starts.



12. After signing in, installation automatically resumes.
After installation is complete, the system automatically restarts.
13. See *Chapter 1 (4.4 Standard Program Package Installation)* to install SPP.
14. Install drivers and specify detailed settings according to *Chapter 1 (4.5 Setup of Device Drivers)*.
15. Confirm if Windows is activated according to *Chapter 1 (4.6 License Authentication)*.
16. See *Chapter 1 (4.7 Setup of Windows Server 2016 NIC Teaming (LBFO))* to setup a team as needed.
17. Install the applications as needed according to *Chapter 1 (4.8 Installing Applications)*.
18. Set the other OS settings according to *Chapter 1 (6. Setting up for Maintenance)*.
19. See *Chapter 1 (7. Backup of system information)* to back up the system.

The Windows installation with Assisted option is now complete.

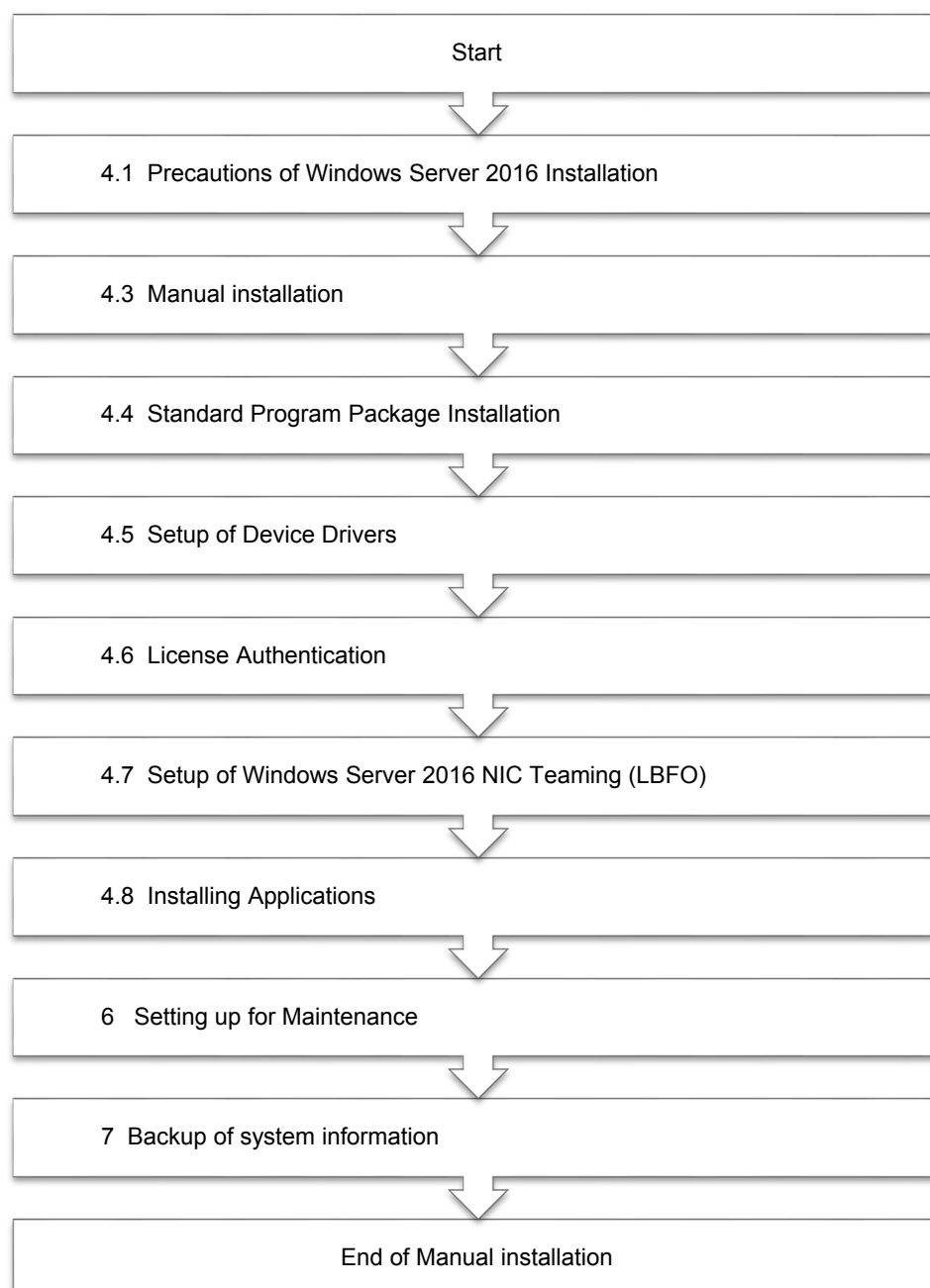
4.3 Manual installation

This section describes Manual installation.

Important

Manual installation installs the OS without using EXPRESSBUILDER. Note that all data on the hard disk drive where the OS is installed will be deleted when you install the OS with EXPRESSBUILDER.

4.3.1 Setup flow



4.3.2 Requirements for Setup

Prepare the following media and instruction manuals before starting setup.

- Either of the following OS installation media
 - **NEC operating system installation media** (hereafter referred to as *Backup DVD-ROM*)
 - **Microsoft operating system installation media** (hereafter referred to as *Windows Server 2016 DVD-ROM*)
- Starter Pack
 - **Starter Pack DVD** (Optional or downloading from our website)

Note

If using the onboard RAID controller and the internal optical disk drive, the driver is loaded from a removable media device.

Copy and prepare the following files onto a removable media in advance.

<DVD>:\software\006\drivers\sw_raid1_driver

4.3.3 Installation procedure

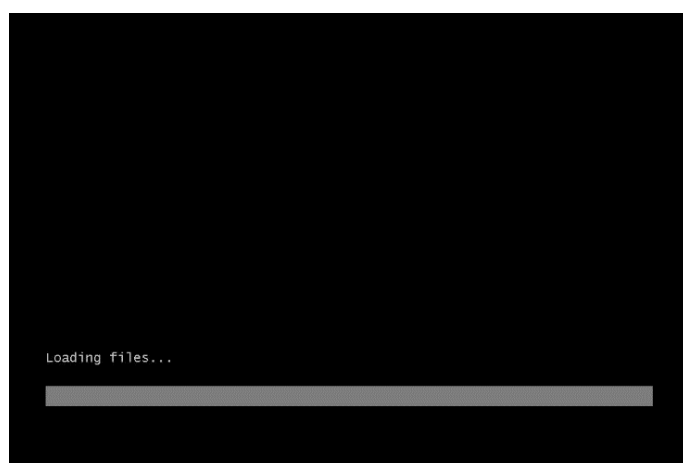
Note

Read the precautions in **Chapter 1 (4.1 Precautions of Windows Server 2016 Installation)** in advance.

1. Turn on peripherals (such as a display), and then turn on the server.
Insert OS installation media into the drive.
2. To start the Boot Menu, press <F10> key during POST.
On the **One-Time Boot Menu**, select the optical disk drive in which the OS installation media was inserted.
3. The system starts from the OS installation media.
The message "Press any key to boot from CD or DVD..." is displayed on the top of the screen.

Press the <Enter> key to start from the media.

When the boot proceeds, the following screen is displayed.

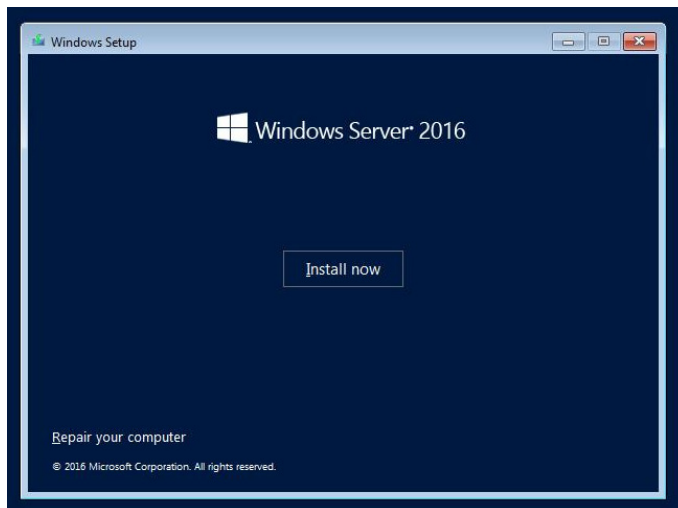
**Note**

If the Windows Setup screen (the screen in the next step) is not displayed, the <Enter> key was not properly pressed. Turn the system power on again, and then start again.

4. Click **Next**.



5. Click **Install now**.



If the following message is displayed: Go to step 6.

If the following message is not displayed: Go to step 8.

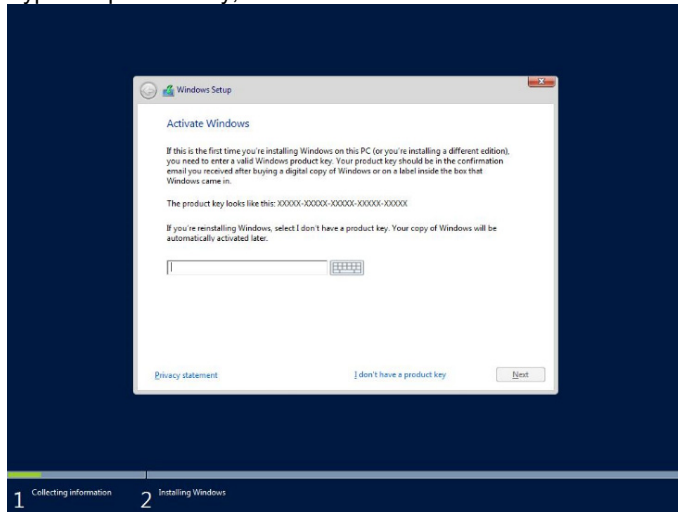


6. After connecting the removable media where the onboard RAID controller driver was copied, specify the path and click **OK**.

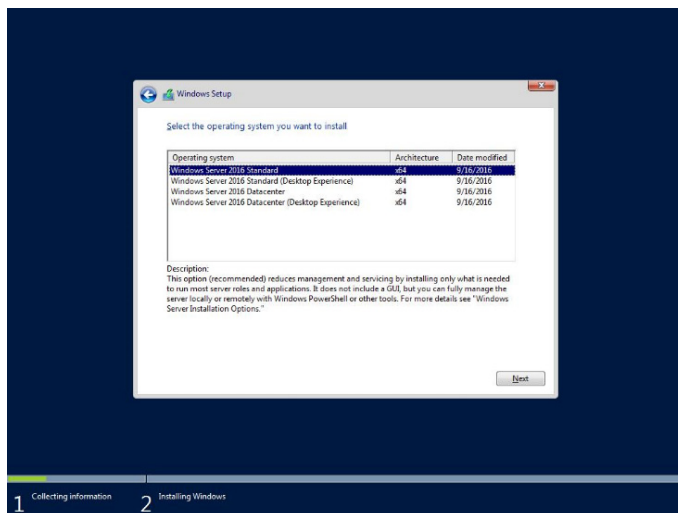
<Removable media>:\sw_raid1_driver

7. Select the following driver from the displayed list of drivers, and click **Next**.

HPE Smart Array S100i SR Gen10 SW RAID

8. Type the product key, and then click **Next**.**Tips**

If you are using Backup DVD-ROM, this screen does not appear.

9. Choose an operating system you want to install and click **Next**.

The displayed options vary depending on the installation media you are using.

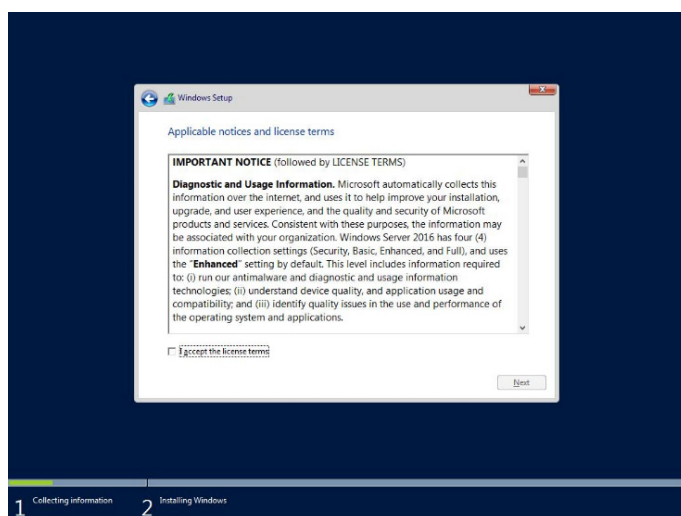
Tips

Read the message of the screen, and then choose an installation option.

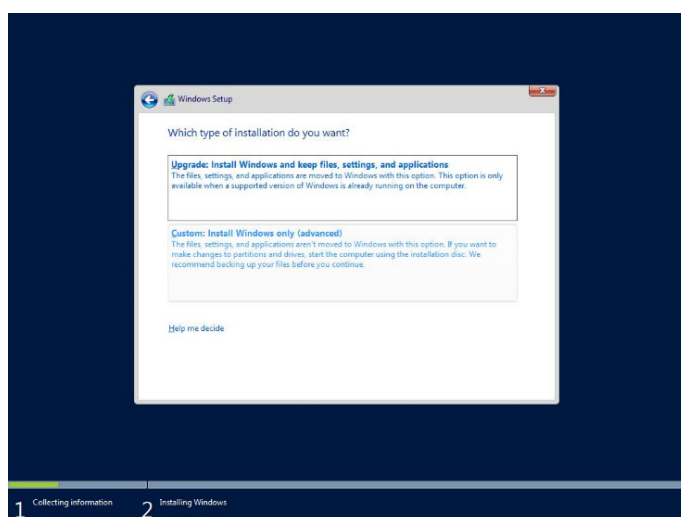
- Windows Server 2016 Standard or Windows Server 2016 Datacenter
→ Described as “Server Core” by this manual
- Windows Server 2016 Standard (Desktop Experience) or Windows Server 2016 Datacenter (Desktop Experience)
→ Described as “Desktop Experience” by this manual

10. Read the license terms carefully.

If you agree, check **I accept the license terms** and click **Next**.



11. Select **Custom: Install Windows only (advanced)**.



12. The “Select Windows installation location” screen is displayed.

If the driver was loaded in steps 6 and 7, or if the onboard RAID controller is not in use, proceed to step 15. If you select **Load driver** here, the following screen will be displayed.



13. After mounting the Starter Pack DVD on the optical disk drive, assign a file directory, and click **OK**.

- Onboard RAID controller
<Starter Pack DVD>:\software\006\drivers\sw_raid1_driver
- RAID controller (N8103-189/190/191/192/193/194/195/201)
<Starter Pack DVD>:\software\006\drivers\dac1_driver

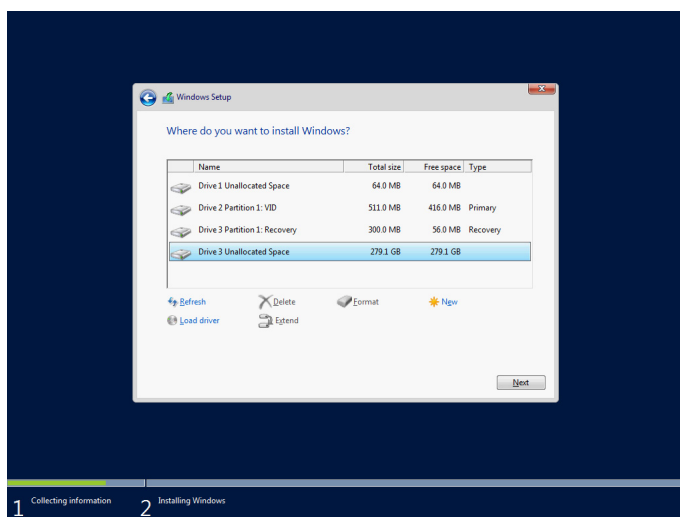
14. Select the following driver from the displayed list of drivers, and click **Next**.

- Onboard RAID controller
HPE Smart Array S100i SR Gen10 SW RAID
- Using the RAID controller (N8103-189/192)
HPE Smart Array E208i-a SR Gen10
- Using the RAID controller (N8103-190/193)
HPE Smart Array P408i-a SR Gen10
- Using the RAID controller (N8103-191/194)
HPE Smart Array P816i-a SR Gen10
- Using the RAID controller (N8103-195)
HPE Smart Array E208i-p SR Gen10
- Using the RAID controller (N8103-201)
HPE Smart Array P408i-p SR Gen10

Tips

For the RAID controller (N8103-189/190/191/192/193/194/195/201), some parts of a character string may not be displayed correctly. In this case, identify the driver to use from the part displayed correctly.

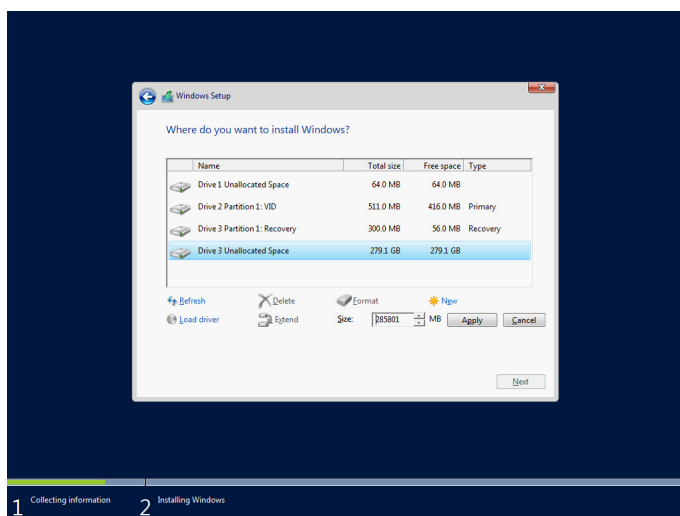
15. Click **New**. If a partition has been created, proceed to step 18.



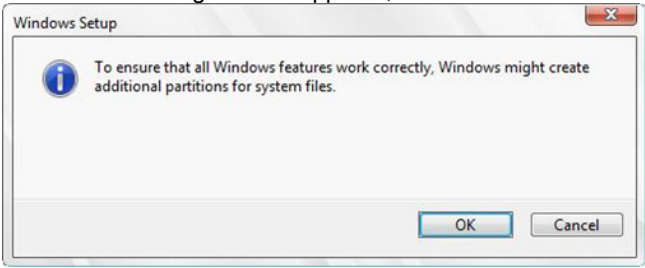
Tips

If **New** is not displayed on the screen, click **Drive options (advanced)**.

16. Specify the partition size in the text box, and then click **Apply**.



When the following window appears, click **OK**.



Tips

When creating a partition, the OS creates the following partitions at top of the hard disk drive.

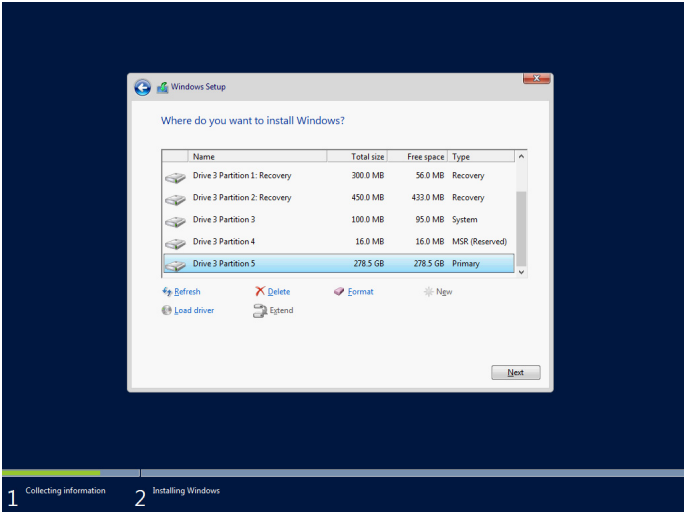
- Recovery Partition
- EFI System Partition (ESP)
- Microsoft Reserved Partition (MSR)

17. Select the partition created in step 16, and then click **Format**.

Important

When the following screen appears, read the message and click [OK]. Carefully select the partition to be formatted because data in the partition will be erased.

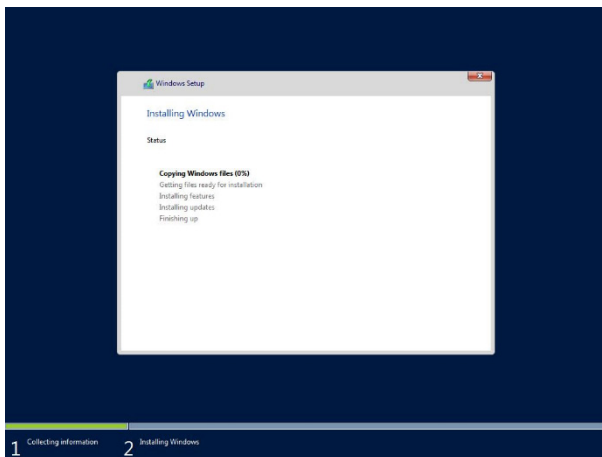
18. Select the created partition, and then click **Next**.



Tips

The number of partitions displayed differs depending on the hardware configuration.

If the Starter Pack DVD is mounted, replace it with the OS media, and click **Refresh**. When the following message appears, Windows installation starts automatically.

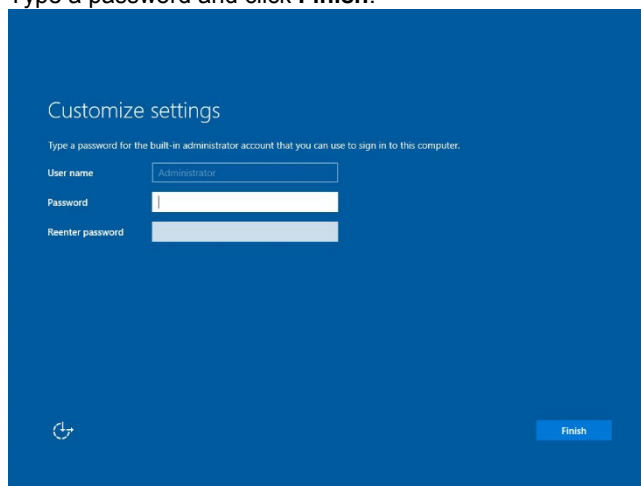


The server will automatically restart after Windows Server 2016 is installed. You will proceed to Windows setup after restart.

19. Set user settings according to operating system chosen in step 9.

Desktop Experience

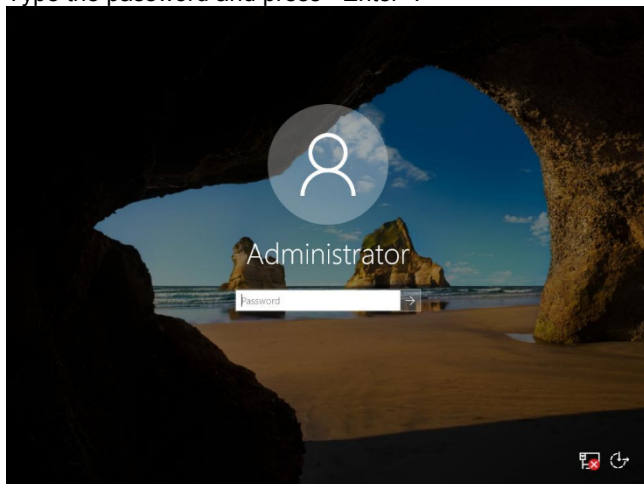
Type a password and click **Finish**.



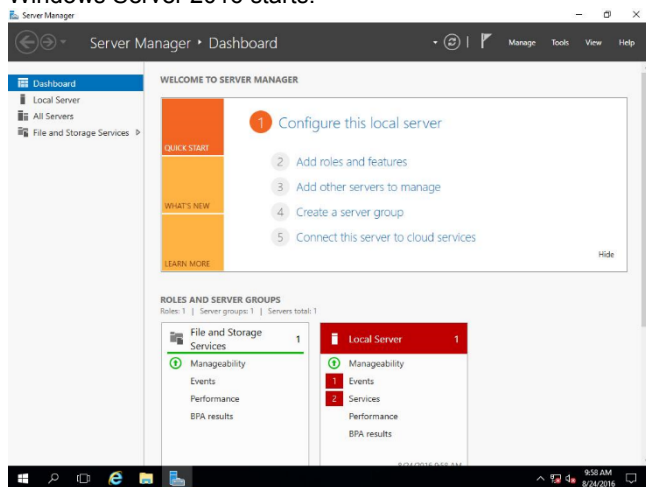
Press <Ctrl> + <Alt> + <Delete> to unlock.



Type the password and press <Enter>.



Windows Server 2016 starts.

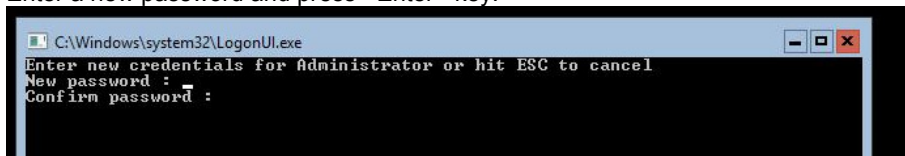


Server Core

The password is needed to change. Choose **OK** and press <Enter> key.



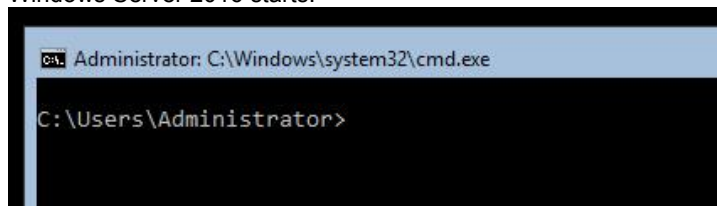
Enter a new password and press <Enter> key.



Choose **OK** and press <Enter> key after the following message is displayed.



Windows Server 2016 starts.

**Tips**

Refer to the following website for more details.

Configure and Manage Server Core Installations

<http://technet.microsoft.com/us-en/library/jj574091.aspx>

20. See *Chapter 1 (4.4 Standard Program Package Installation)* to install SPP.
21. Install drivers and specify detailed settings according to *Chapter 1 (4.5 Setup of Device Drivers)*.
22. Confirm if Windows is activated according to *Chapter 1 (4.6 License Authentication)*.
23. See *Chapter 1 (4.7 Setup of Windows Server 2016 NIC Teaming (LBFO))* to setup a team as needed.
24. Install the applications as needed according to *Chapter 1 (4.8 Installing Applications)*.
25. Set the other OS settings according to *Chapter 1 (6. Setting up for Maintenance)*.
26. See *Chapter 1 (7. Backup of system information)* to back up the system.

The Manual installation is now complete.

4.4 Standard Program Package Installation

Standard Program Package (SPP) contains drivers customized for this server.
Make sure to install SPP before running the server system.

Important

After attaching the internal option, application of Standard Program Package may be required. For details, see *Chapter 1 (4.5 Setup of Device Drivers)*.

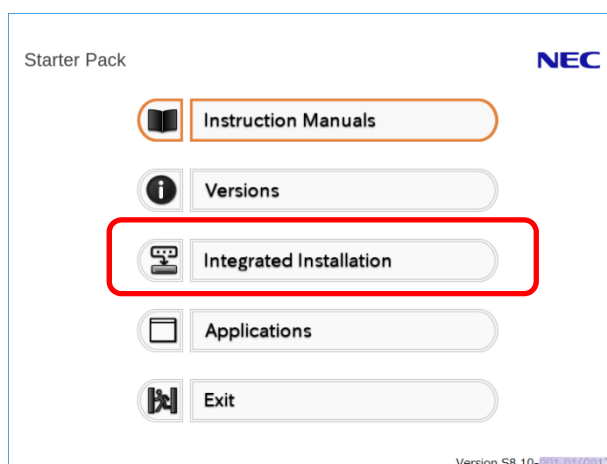
4.4.1 Installing Standard Program Package on Desktop Experience

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

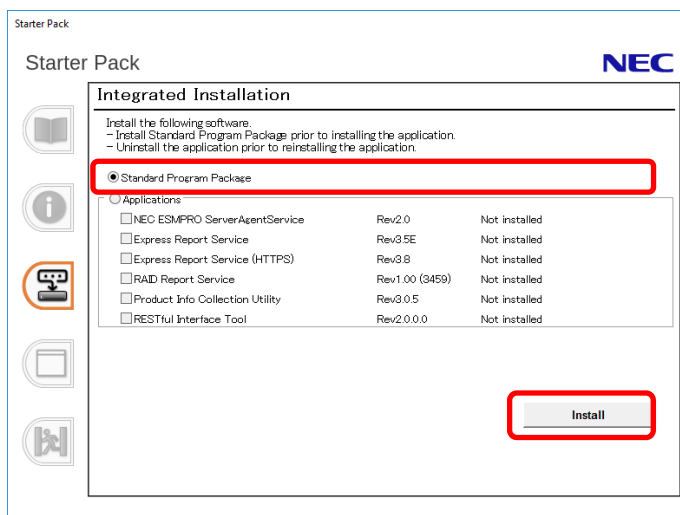
Note

- If N8104-172/175/180/181/184/186 is installed to the server, run the following file on the DVD. After that, restart the server to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After that, restart the server.
N8104-172/180/181 : \packages\cp037389.exe
N8104-175/184 : \packages\cp037945.exe
N8104-186 : \packages\cp036338.exe
- If N8104-182/185 is installed, execute "\packages\cp036669.exe" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8104-183/187 is installed, execute "\packages\cp035071.exe" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. Some of the messages of the installer may not be displayed correctly, but there is no problem affecting operations. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute "\packages\cp040553.exe" on the DVD to install the driver separately. After the installation, reboot Windows.

3. Run the start_up.bat under the root folder on DVD.
4. Click **Integrated Installation** on the menu.



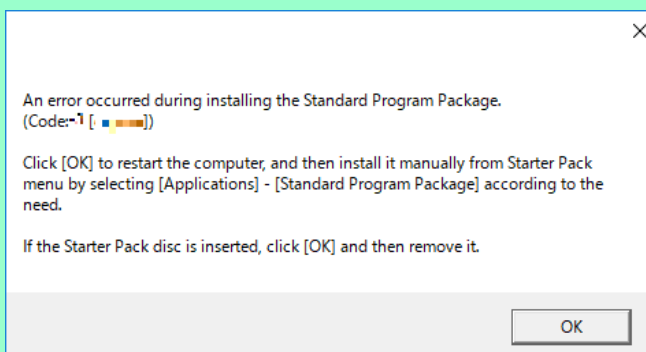
5. Choose **Standard Program Package** on the following screen, and then click **Install**.



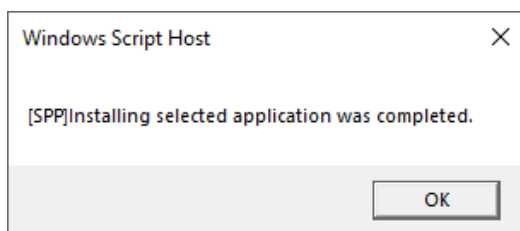
Wait a while until the installation is complete (about 5 to 15 minutes).

Note

When the following message is displayed after the SPP is applied, retry steps 1 through 5 after a reboot.

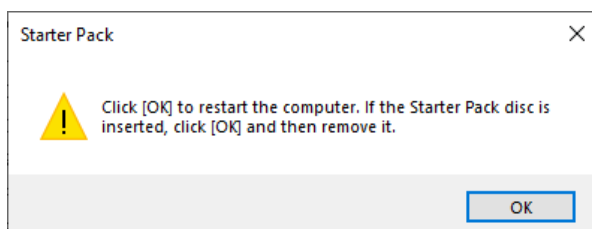


6. Click **OK**.



7. Windows Server 2016 restarts automatically.

Then, remove the Starter Pack DVD.



SPP installation is now complete.

4.4.2 Installing Standard Program Package on Server Core

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

Note

- If N8104-172/175/180/181/184/186 is installed to the server, run the following file on the DVD. After that, restart the server to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After that, restart the server.
N8104-172/180/181 : \packages\cp037389.exe
N8104-175/184 : \packages\cp037945.exe
N8104-186 : \packages\cp036338.exe
- If N8104-182/185 is installed, execute "\packages\cp036669.exe" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8104-183/187 is installed, execute "\packages\cp035071.exe" on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. Some of the messages of the installer may not be displayed correctly, but there is no problem affecting operations. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute "\packages\cp040553.exe" on the DVD to install the driver separately. After the installation, reboot Windows.

3. From the command prompt, type the following command.
In the example below, the optical disk drive is the D drive.

```
cd /d D:\software\006\win\seamless
```

```
C:\Users\administrator>cd /d D:\software\006\win\seamless
```

4. Type the following command, and then press <Enter> key.

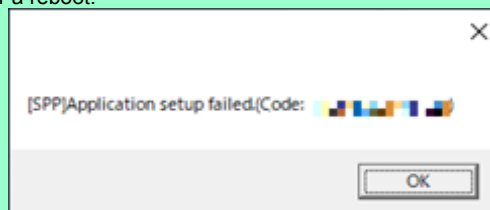
```
instcmd.vbs spp /s
```

```
D:\software\006\win\seamless >instcmd.vbs spp /s
```

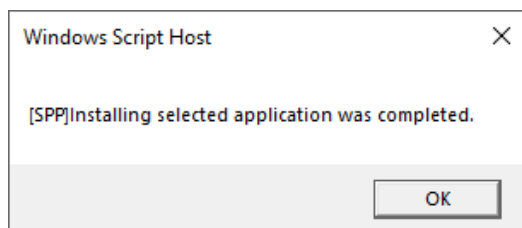
Wait until installation completes (about 5 to 15 minutes).

Note

When the following message is displayed after the SPP is applied, retry steps 1 through 4 after a reboot.



5. Click **OK**.



6. After removing the Starter Pack DVD, restart Windows Server 2016 manually.

SPP installation is now complete.

4.5 Setup of Device Drivers

Install and set up device drivers provided for the standard configuration of the server.

For details regarding the installation and setup of a driver for an optional device, refer to the manual supplied with the optional device.

4.5.1 Installing the LAN drivers

(1) LAN drivers

When the installation is performed with the Assisted option or Manual installation, LAN drivers are installed when the SPP is applied.

Important Wake On LAN (WOL) is supported by N8104-172/175 only.
Wake On LAN is available after installing the LAN driver.
When using Wake On LAN of N8104-172/175, see *Chapter 1(4.5.2 Setting up LAN drivers - (3) Setting up Wake On LAN)*.
BIOS settings, see *Maintenance Guide*.

Note

- To change the LAN driver settings, sign in to the system from a local console using an administrator's account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.
- Choose the **Internet Protocol (TCP/IP)** check box when specifying an IP address.

(2) Optional LAN board

This server supports the following optional LAN boards.

Optional LAN boards: N8104-172/175/178/179/180/181/182/183/184/185/186/187

If you install the LAN boards after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (4.4 Standard Program Package Installation)*.

(3) Network adapter name

After installing the LAN drivers, the following network adapter names will be displayed on the Device Manager.

If connecting with an optional LAN board:

[N8104-172]	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx (*1)
[N8104-175]	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx (*1)
[N8104-178]	HPE Ethernet 1Gb 2-port 332T Adapter #xx (*1)
[N8104-179]	HPE Ethernet 1Gb 4-port 331T Adapter #xx (*1)
[N8104-180]	HPE Ethernet 1Gb 2-port 361T Adapter #xx (*1)
[N8104-181]	HPE Ethernet 1Gb 4-port 366T Adapter #xx (*1)
[N8104-182]	HPE Ethernet 10Gb 2-port 530T Adapter #xx (*1)
[N8104-183]	HPE Ethernet 10Gb 2-port 521T Adapter #xx (*1)
[N8104-184]	HPE Ethernet 10Gb 2-port 562T Adapter #xx (*1)
[N8104-185]	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx (*1)
[N8104-186]	Port1: HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx (*1) Port2: HPE Ethernet 10Gb 562SFP+ Adapter #xx (*1)
[N8104-187]	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx (*1)

*1: If there are adapters with the same name, a different identification number will be assigned to xx.

Tips

The ID for N8104-182/183/185/187 might be a number of two or more digits. This is due to the LAN driver specifications and not an error. This number cannot be changed.

Tips

The network adaptor name displayed in the device manager may be different from the one listed above.

In this case, the correct network adaptor name can be displayed by following the procedure below.

1. Start **Device Manager**.
2. Open **Network Adaptor**, right click on the relevant adaptor, and select **Delete**.
Do not check the **Delete the driver software of this device** checkbox.
3. Select **Scan hardware change** from **Control**.

4.5.2 Setting up LAN drivers

(1) Setting link speed

The transfer rate and duplex mode of the network adapter must be the same as those of the switching hub. Follow the procedure below to specify the transfer rate and duplex mode.

Tips

If you are using a network adaptor for N8104-185/187, the network adaptor settings can be set to "10 Gbps Full Duplex" or "25 Gbps Full Duplex", and the connected switching hub settings can be set to "Auto Negotiation".

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. On the **Advanced** tab, set the **Speed & Duplex** values to the same as those of the switching hub.
4. Click **OK** in the **Network Adapter Properties** dialog box.
5. Restart the system.

The link speed setting is now complete.

(2) Setting up Flow Control

Flow Control sends a pause frame to the link partner to temporarily halt the transmission of frames when the receive buffer is almost full. When receiving a pause frame, it limits the transmission. Follow the procedure below to set up Flow Control.

Tips

Make sure to make the Tx/Rx settings of the network adapter and link partner consistent. For example, if Flow Control is set to Rx Enabled on the link partner, set it to Tx Enabled on the target device.

1. Open the Device Manager.
2. Expand Network Adapters, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. Select the Advanced tab, and click Flow Control to show Value.
4. Change the setting in Value with the down-arrow button.
5. Click OK, and then restart the system.

The Flow Control setting is now complete.

(3) Setting up Wake on LAN

When using N8104-172/175 with the server, follow the procedure below to set it.

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. Open **Advanced** tab, click **Enable PME** to show Value.
4. Change the value to **Enabled** by the down-arrow button.
5. Click **OK**, and then restart the system.

Setup is now complete.

4.5.3 Using Graphics Accelerator

The standard graphic accelerator driver is automatically installed by Standard Program Package.

4.5.4 Using SAS Controller (N8103-197)

For installation with the Assisted option or Manual installation, the drivers are installed by Standard Program Package.

When you install the SAS controller (N8103-197) after applying the Standard Program Package, make sure to apply the Standard Program Package again by referring to *Chapter 1 (4.4 Standard Program Package Installation)*.

4.5.5 Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)

For installation with the Assisted option or Manual installation, the drivers are installed by Standard Program Package.

If you install the RAID controller (N8103-189/190/191/192/193/194/195/196/201) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (4.4 Standard Program Package Installation)*.

4.5.6 Using Fibre Channel Controller (N8190-163/164/165/166/171/172)

For installation with the Assisted option or Manual installation, the drivers are installed by Standard Program Package.

If you install the Fibre Channel controller (N8190-163/164/165/166/171/172) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (4.4 Standard Program Package Installation)*.

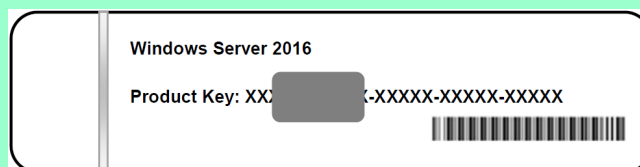
4.6 License Authentication

To use Windows Server 2016, you need finish the license authentication procedure.

Confirm if the license is authenticated or not in the next step.

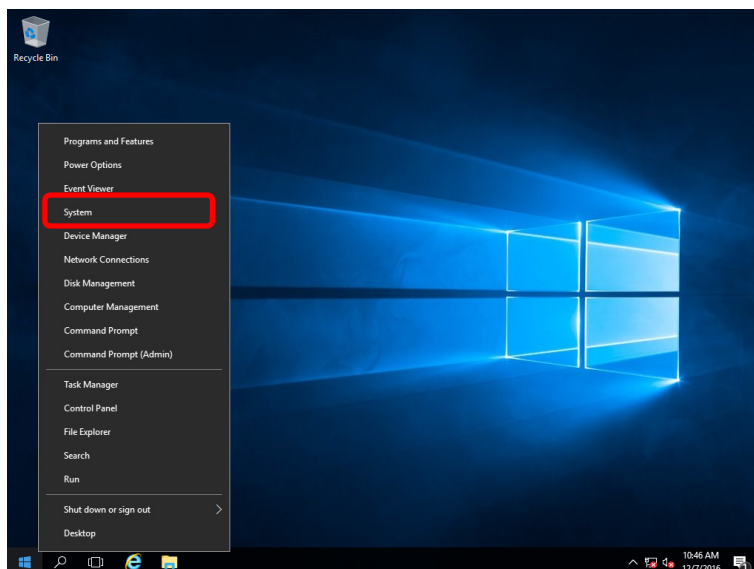
Note

To activate Windows Server 2016, enter the Product Key written on the COA (Certificate of Authenticity) label. The COA label of Windows Server 2016 is attached to the operating system media package.



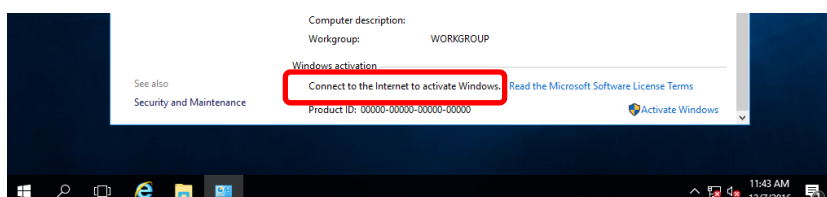
4.6.1 Desktop Experience

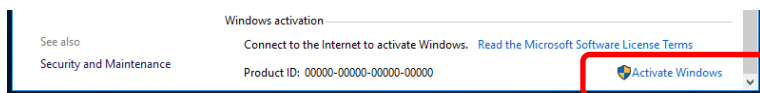
1. Right-click the lower left of the screen, and click **System** from the menu displayed.



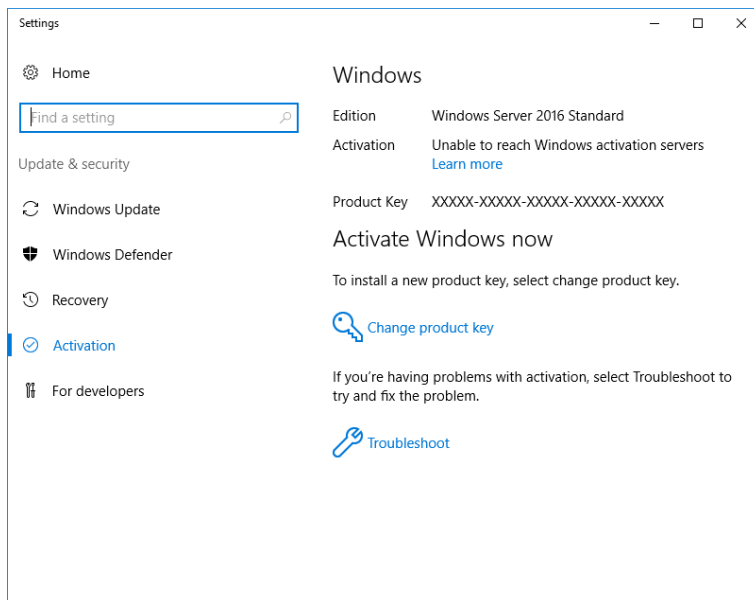
2. Check Windows license authentication.

- When "Windows is activated." is displayed, you do not need to perform this procedure. The authentication is complete.
- When "Connect to the internet to activate Windows." is displayed, go to step 3.



3. Click **Activate Windows**.

4. Perform license authentication.



- When the server connects to the Internet, click **Change product key**. Complete license authentication process according to the message.
 - When the server does not connect to the Internet, go to step 5.
5. Perform the license authentication by phone. Go to the appropriate step according to OS installation media you are using.

Backup DVD-ROM:

Go to Step 6.

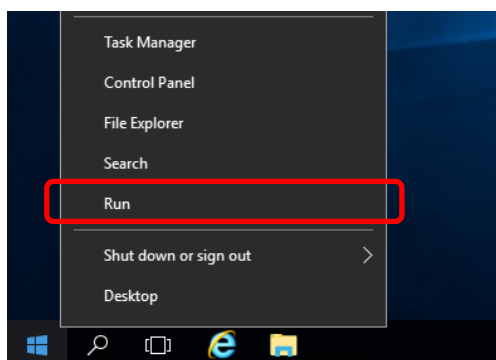
Windows Server 2016 DVD-ROM:

Product key is already entered:

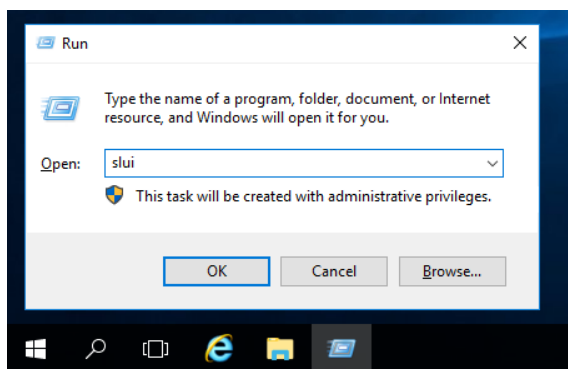
Go to Step 9.

Product key is not entered:

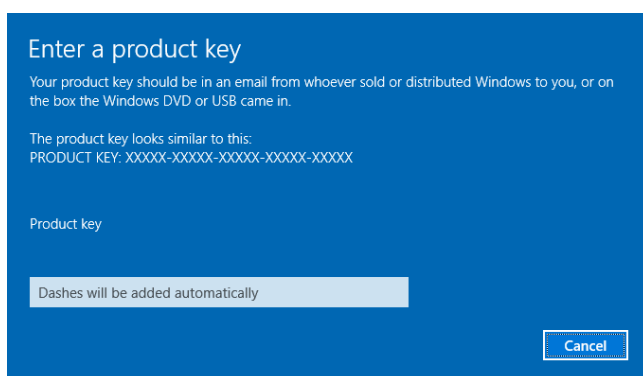
Go to Step 6.

6. Right-click the lower left of the screen, and click **Run** from the menu displayed.

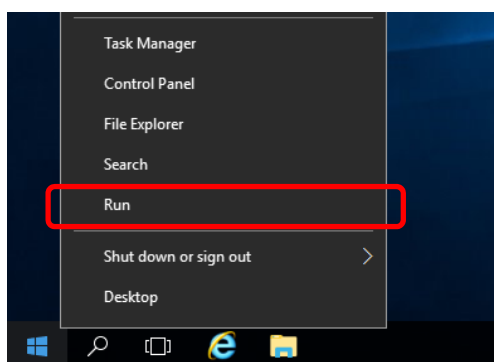
7. Type "slui", and then press <Enter> key.



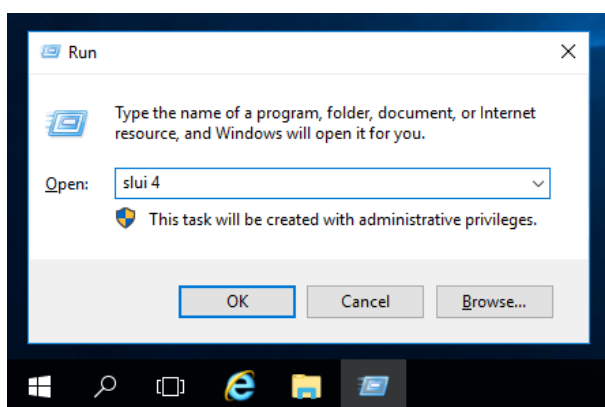
8. Change the product key. On the next screen, type the product key.



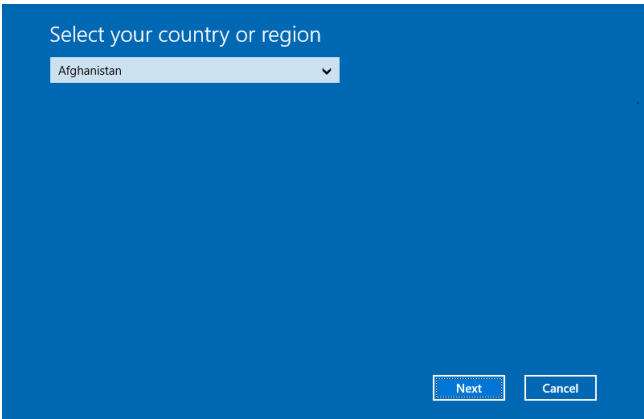
9. Right-click the lower left of the screen, and click **Run** from the menu displayed.



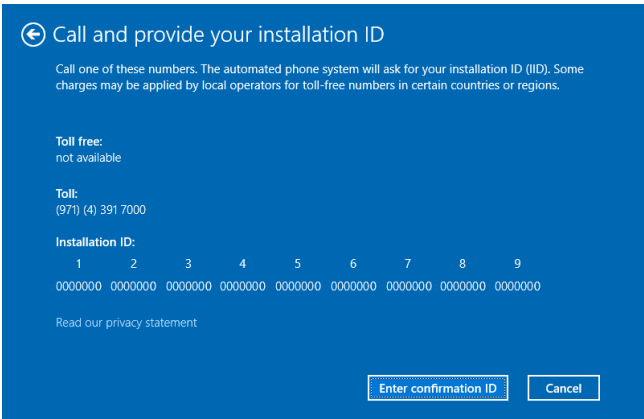
10. Type "slui 4", and then press <Enter> key.



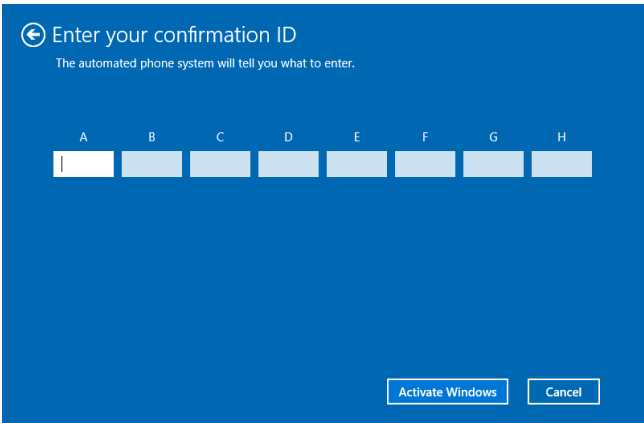
- 11. On the next screen, choose your country, and then click **Next**.



Get the installation ID required for license activation.



- 12. Call the Microsoft license activation hotline and then tell your installation ID. Type the confirmation ID, and then click **Activate Windows**.



The authentication is now complete.

4.6.2 Server Core installation

1. Confirm if your license is activated.

At the command prompt, type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -dli
```

When license authentication is required, go to the next step.

When your license is already authenticated, you can skip the next and the subsequent steps.

2. Change the product key.

Using Backup DVD-ROM:

Type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -ipk <Product key on COA label>
```

Using Windows Server 2016 DVD-ROM:

You do not need to change the product key.

Go to the next step.

3. Perform license authentication.

The server connects to the Internet:

License authentication is performed via the Internet.

Type the following command, and then press <Enter> key.

```
C:\Users\administrator>slmgr -ato
```

This completes authentication.

The server does not connect to the Internet:

Use telephone for license authentication.

Type the following command to get an Install ID for authentication, and then press <Enter> key.

```
C:\Users\administrator>slmgr -dti
```

Acquire the installation ID required for license activation.

Refer to the file %systemroot%\system32\sppui\phone.inf to confirm the telephone number of Microsoft Licensing Center.

Call Microsoft Licensing Center and tell them your Install ID.

Type the confirmation ID you have received in the following command line, and then press <Enter> key.

```
C:\Users\administrator>slmgr -atp <Confirmation ID>
```

The authentication is now complete.

4.7 Setup of Windows Server 2016 NIC Teaming (LBFO)

Set up the network adapter teaming feature as shown below.

4.7.1 Launching the NIC teaming setup tool

1. Launch **Server Manager**.
2. Select **Local Server**.
3. In the **Properties** window, click **Enable** or **Disable** for **NIC teaming**.

The NIC teaming setup tool will launch.

Tips

The NIC teaming setup tool can also be launched by opening the **Run** dialog box, typing "lbfoadmin /server .", and then pressing <Enter> key.

4.7.2 Creating a team

Create a team by using the NIC teaming setup tool.

1. In the **Servers** section, select the name of the server to set up.
If there is only one server connected, the name of the server is selected automatically.
2. In the **Teams** section, under **Tasks**, select **New Team**. The **New Team** wizard then starts.
3. Type the name of the team to create, and then select the network adapter to include in the team from the **Member adapters** list.
4. Click **Additional properties**.
5. Specify the required settings, and then click **OK**.

Teaming mode

Static Teaming	Configures static aggregation between the NIC and switches.
Switch Independent	Configures teaming on the NIC side without depending on the switch settings.
LACP	Configures dynamic aggregation between the NIC and switches.

Load balancing mode

Address Hash	Distributes the load based on IP addresses and port numbers.
Hyper-V Port	Distributes the load to each of the virtual switch ports used by the virtual machines.
Dynamic	<ul style="list-style-type: none"> • Distributes the load based on IP addresses and port numbers in sending. • Distributes the load same to "Hyper-V Port" in receiving.

Standby adapter

Select one adapter to be set to standby mode from the adapters in the team.

Setting all adapters to active mode is also possible.

Primary team interface

Any VLAN ID can be specified for the primary team interface.

4.7.3 Notes and restrictions

- NIC teaming on a guest OS is not supported.
- Teaming of virtual NICs on the host OS is not supported in the Hyper-V environment.
- When STP (Spanning Tree Protocol) is enabled on network switch ports to which network adapters of the team are connected, network communications may be disrupted. Disable STP, or configure "PortFast" or "EdgePort" to the ports.
 - * About setting the network switch of the connection destination, see the manual of the network switch.
- All NICs in the team must be connected to the same subnet.
- Teaming of different speed NICs is not supported.
- Teaming of different vendor's NICs is not supported.
- When teaming is configured in a Network Load Balancing (NLB) environment, you should select multicast mode on the NLB cluster.

Refer to the following website for the latest information.

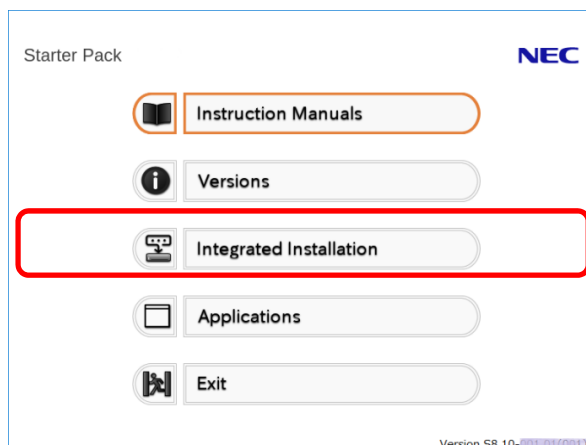
<https://www.58support.nec.co.jp/global/download/w2016/index.html>

- [Technical Information] - [NIC Teaming (LBFO)]

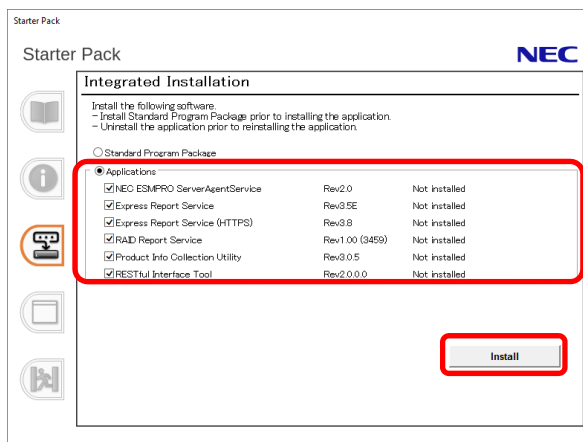
4.8 Installing Applications

Some applications included in Starter Pack can be installed easily by performing the procedures described below. When installing these applications individually, see the manuals of the applications. **This feature is only available on Desktop Experience.**

1. Sign-in to the Windows with an Administrators privilege.
2. Insert the Starter Pack DVD into the optical disk drive.
3. Run the start_up.bat under the root folder on DVD.
4. Click **Integrated Installation** on the menu.



5. On the following screen, choose the check boxes corresponding to the applications you want to install, and then click **Install**. The chosen applications are automatically installed.



Note

- Applications available for installation are chosen by default.
- If your system environment does not satisfy the prerequisite for an application, you cannot install it. For details, see the on-screen information and the manuals of the applications.
- To collect product information using a device information collection utility, RESTful interface tool needs to be installed. If it is not installed, some logs required for the maintenance may not be gathered.

6. When a message indicating restart appears, click **OK** to restart the server.
7. Configure and check the software according to your environment by referring to the manuals of the applications.

Now installation of applications is complete.

5. Installing Windows Server 2012 R2

Important

The application procedure and OS installation procedure may vary depending on the version of Starter Pack. Check the procedures of each Starter Pack on the download page below.

<https://www.58support.nec.co.jp/global/download/>

-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

5.1 Precautions of Windows Server 2012 R2 Installation

Read the precautions explained this section before installing.

EB : Assisted installation

OS : Manual installation

BIOS setting	
EB OS	<p>Change Boot Mode to UEFI Mode. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Boot Options → Boot Mode → UEFI Mode</p>
EB OS	<p>Select Enabled for X2APIC feature of processor. For details, see <i>Chapter 1 (1. System Utilities)</i> in <i>Maintenance Guide (Common)</i>.</p> <p>System Configuration → BIOS/Platform Configuration(RBSU) → Processor Options → Processor X2APIC Support → Enabled</p>
Hardware configuration	
The following hardware configurations require special procedures.	
EB OS	<p>Using RAID controllers</p> <p>When using RAID controllers before starting the installation of Windows Server 2012 R2, build the RAID system beforehand by referring to <i>Chapter 2 (2. RAID System Configuration)</i> in <i>Maintenance Guide</i>.</p>
EB OS	<p>Setup when multiple logical drives exist</p> <p>If you select a wrong hard disk drive while installing Windows Server 2012 R2, existing data may be deleted unintentionally. Determine the target disk drive based on the displayed capacity and partition sizes of the hard disk drive.</p>
EB OS	<p>Reinstalling to a mirrored volume</p> <p>When you install Windows Server 2012 R2 in an environment with a mirrored volume created using Windows, disable mirroring before installing the operating system and enable it again after the installation. Use [Computer Management] – [Disk Management] to create, disable, or remove the mirrored volume.</p>
EB OS	<p>Peripherals such as RDX/MO</p> <p>Remove an MO device before installing. Some peripherals need to be halted before installation. Refer to the manual provided with the peripherals for how to set a device appropriate to installation.</p>

<div>EB</div> <div>OS</div>	DAT, LTO, and similar media Do not set media that is unnecessary to installation during setup.
<div>EB</div> <div>OS</div>	Reinstalling to dynamic disks If the hard disk drive has been upgraded to a dynamic disk, the Windows cannot be reinstalled to it with the existing partitions. Install Windows with Manual installation.
<div>EB</div> <div>OS</div>	Setup when mass memory is installed <p>If mass memory is installed in your system, the large size of paging file is required at installation, and the partition size for storing debug information (dump file) cannot be allocated.</p> <p>If you fail to create the partition, allocate the required size to multiple disks according to the following steps.</p> <ol style="list-style-type: none"> 1. Set the system partition size to a size sufficient to install the OS and paging file. 2. Specify another disk as the destination to save the debug information (required dump file size) by according to <i>Chapter 1 (6. Setting up for Maintenance)</i>. <p>If the hard disk drive does not have enough free area to write the debug information, set the partition size to a size sufficient to install the OS and paging file, and then add another hard disk drive for the dump file.</p> <p>Note If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.</p> <p>If sufficient free area cannot be allocated for the paging file, perform either of the following after install Windows.</p> <ul style="list-style-type: none"> – Specify a hard disk drive other than the system drive as the location to store the paging file for collecting memory dump <p>Create a paging file of "installed memory size + 400 MB" or more in a drive other than the system drive.</p> <div> <p>The paging file that exists in the first drive (in the order of drive letter C, D, E, ...) is used as the temporary memory dump location.</p> <p>The size of the paging file must be "installed memory size + 400 MB" or more. Paging files in dynamic volumes are not used for dumping memory. The setting is applied after restarting the system.</p> <div> <p>Example of correct setting</p> <p>C: No paging file exists D: Paging file whose size is "installed memory size + 400 MB" or more</p> <p>→ The paging file in drive D can be used for collecting memory dump because its size satisfies the requirement.</p> </div> </div>

Example of incorrect setting 1

C: Paging file whose size is smaller than the installed memory size
D: Paging file whose size is "installed memory size + 400 MB" or more

→ The paging file in drive C is used for collecting memory dump, but collection may fail because the size of the paging file is smaller than the installed memory size.

Example of incorrect setting 2

C: Paging file whose size is "installed memory size × 0.5"
D: Paging file whose size is "installed memory size × 0.5"
E: Paging file whose size is 400 MB

→ The total paging file size in all drives is "installed memory size + 400 MB", but collection may fail because only the paging file in drive C is used for collecting memory dump.

Example of incorrect setting 3

C: No paging file exists
D: Paging file whose size is "installed memory size + 400 MB" or more (in dynamic volume)

→ Paging files in a dynamic volume cannot be used for collecting memory dump. Thus, collecting memory dump fails.

- Specify a drive other than the system drive for "Dedicated Dump File".

Create the registry shown below by using the Registry Editor and specify the name of Dedicated Dump File.

<For example: "dedicateddumpfile.sys" in drive D>

Key:	HKEY_LOCAL_MACHINE\SYSTEM CurrentControlSet\Control\CrashControl
Name:	DedicatedDumpFile
Type:	REG_SZ
Data:	D:\dedicateddumpfile.sys

Note the following when specifying Dedicated Dump File:

- Pay strict attention when editing the registry.
- The setting is applied after restarting the system.
- Specify a drive that has free space of "installed memory size + 400 MB" or more.
- Dedicated Dump File cannot be placed in dynamic volumes.
- Dedicated Dump File is only used for collecting memory dump, and is not used as virtual memory. Specify the paging file size so that sufficient virtual memory can be allocated in the entire system.

System partition size		
EB	OS	The system partition size can be calculated by using the following formula.
		Size required to install the OS + paging file size + dump file size + application size
		Server with a GUI
		Size required to install the OS = 9,200 MB
		Paging file size (recommended) = installed memory size × 1.5
		Dump file size = installed memory size + 400 MB
		Application size = as required by the application
		For example, if the installed memory size is 1 GB (1,024 MB), application size is 100 MB, and Server with a GUI is selected, the partition size is calculated as follows:
		9,200 MB + (1,024 MB × 1.5) + 1,024 MB + 400 MB + 100 MB
		= 12,260 MB
The above mentioned partition size is the minimum partition size required for system installation. Ensure that the partition size is sufficient for system operations.		
The following partition sizes are recommended.		
Server with a GUI	:	32,768 MB (32 GB) or more
*1 GB = 1,024 MB		
Note	<ul style="list-style-type: none">• The above paging file sizes are recommended for collecting debug information (dump file). The initial size of the Windows partition paging file must be large enough to store dump files. Make sure you set a sufficient paging file size. If the paging file is insufficient, there will be a virtual memory shortage that may result in an inability to collect correct debug information.• Regardless of the sizes of internal memory and write debug information, the maximum size of the dump file is "size of internal memory + 400 MB".• When installing other applications or other items, add the amount of space needed by the application to the partition.	
If the partition size for installing Windows is smaller than the recommended size, expand the partition size or add another hard disk drive.		

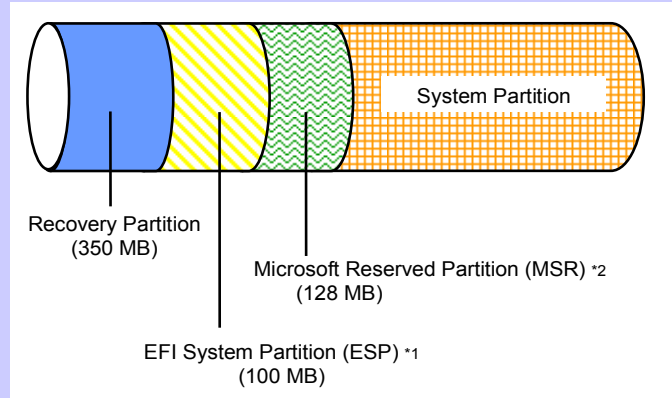
- **Installation with Assisted installation**

Tips

Windows is installed using the entire disk space of the hard disk drive. The Windows OS creates three partitions at the head of the hard disk drive.

- Recovery Partition: 350 MB
- EFI System Partition (ESP): 100 MB *1
- Microsoft Reserved Partition (MSR): 128 MB *2

578 MB of disk space is allotted to the three partitions at the head.



*1 May be 260 MB in size depending on hard disk drive type.

*2 MSR is not displayed on **Disk Management**.

● Manual installation

Tips

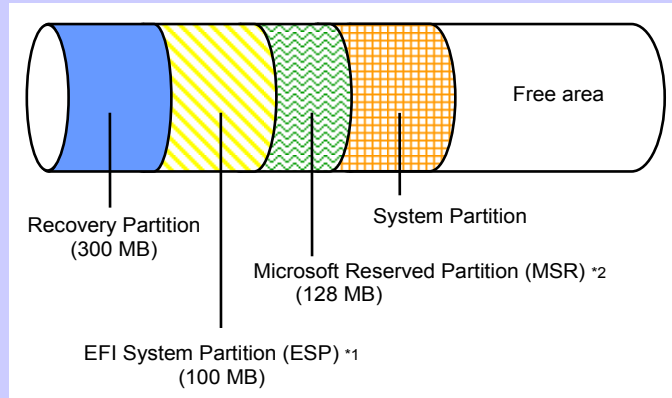
When creating a partition, Windows OS creates the following partitions at the top of hard disk drive.

- Recovery Partition: 300 MB
- EFI System Partition (ESP): 100 MB *1
- Microsoft Reserved Partition (MSR): 128 MB *2

528MB is allocated for these three partitions out of the specified partition size.

For example, when 61,440 MB is specified for partition size, the area available free area is calculated as follows:

$$61,440 \text{ MB} - (300 \text{ MB} + 100 \text{ MB} + 128 \text{ MB}) = 60,912 \text{ MB}$$



*1 May be 260 MB in size depending on hard disk drive type.

*2 MSR is not displayed on **Disk Management**.

Windows Server 2012 R2 Hyper-V support

EB

OS

Refer to the following web site for information related to Windows Server 2012 R2 Hyper-V.

<https://www.58support.nec.co.jp/global/download/w2012r2/hyper-v/hyper-v-ws2012r2.html>

Using BitLocker

If using BitLocker, note the following.

- Be sure to keep the recovery password secure. Do not keep it near a server running BitLocker.

Important

If the recovery password is not entered, the OS cannot be started, and the content of the partition encrypted by BitLocker cannot be referenced any more. The recovery password might be required at startup of the OS after the following:

- Replacement of motherboard
 - Change of BIOS setting
 - Initialization of trusted platform module (TPM) *
- * Depending on your system, it may not be supported.
Refer to the Instruction Manuals about hardware.

- To reinstall the operating system into a partition that is encrypted with BitLocker, delete the BitLocker-encrypted partition prior to reinstallation.

Support for NIC teaming in Windows Server 2012 R2

EB

OS

The NIC teaming feature, which used to be provided by network interface card (NIC) vendors, is built into Windows Server 2012 R2. In Windows Server 2012 R2, this feature is also called "load balancing and failover (LBFO)".

Refer to *5.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO)* and specify any required settings.

5.2 Installation with Assisted Installation

This section describes how to install Windows Server 2012 R2 with Assisted option.

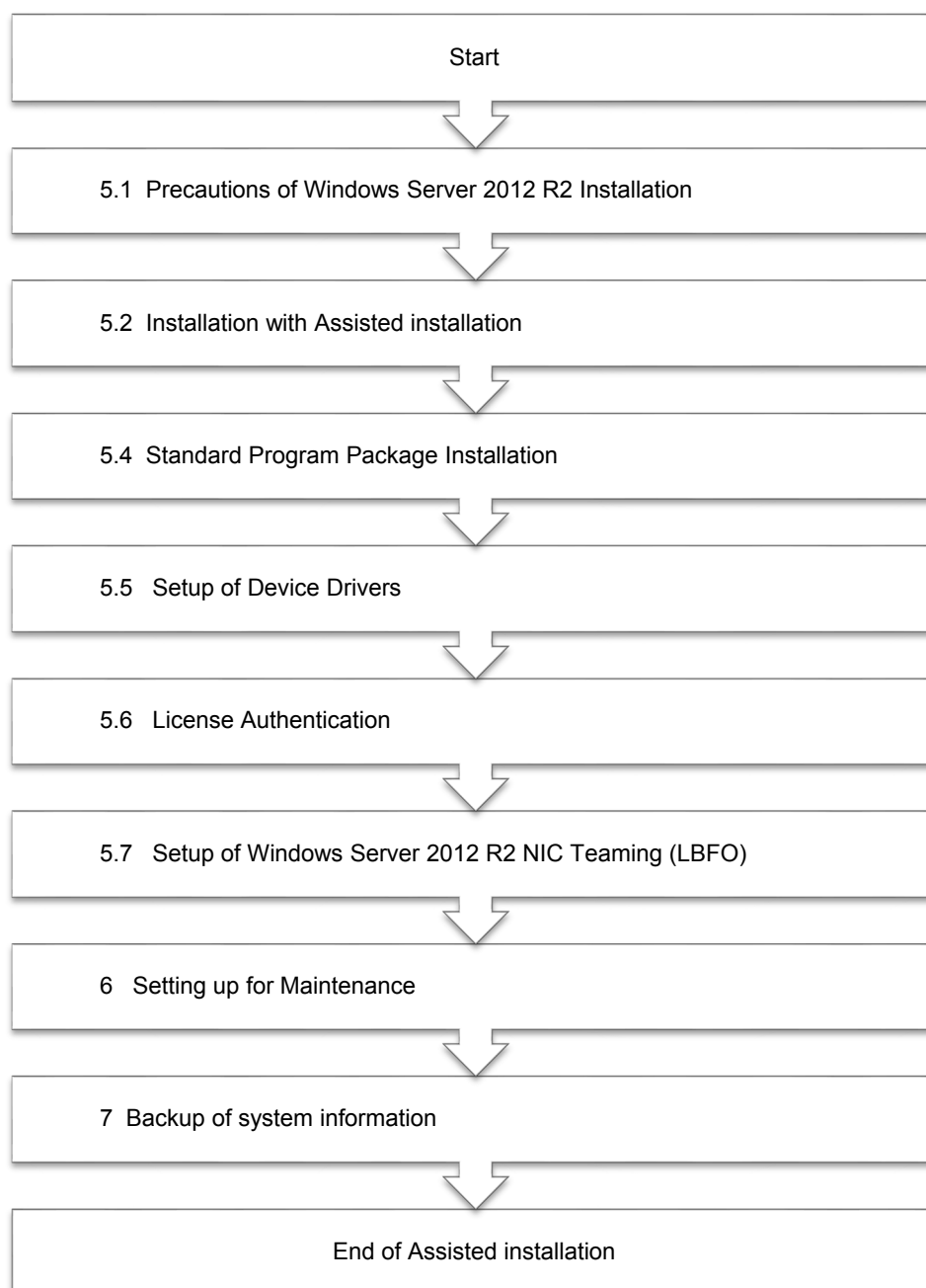
Important

- Setup will delete all data of the hard disk drive.
- Disconnect hard disk drives from the RAID Controller that is not to be setup.

Note

If installing Server Core, install the Windows OS by referring to 5.3 *Manual installation*.

5.2.1 Setup flow



5.2.2 Requirements for Setup

Prepare the following media and instruction manuals before starting setup.

- Either of the following OS installation media
 - **NEC operating system installation media** (hereafter referred to as *Backup DVD-ROM*)
 - **Microsoft operating system installation media** (hereafter referred to as *Windows Server 2012 R2 DVD-ROM*)
- Starter Pack
 - **Starter Pack DVD** (Optional or downloading from our website)

5.2.3 Installation procedure

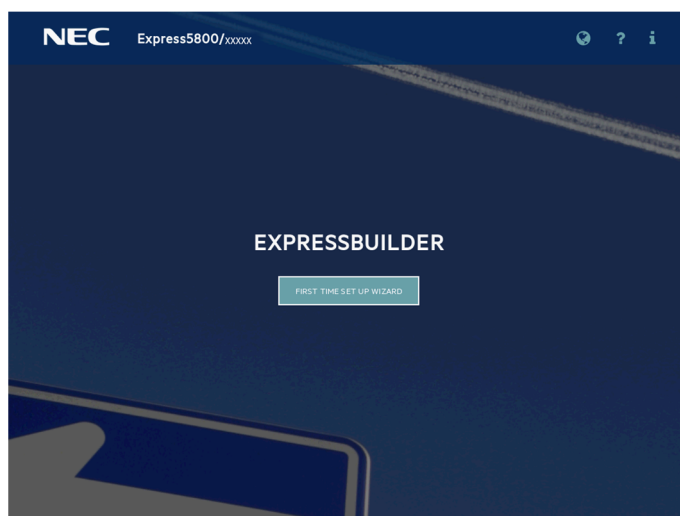
When installing with Assisted option, configure each of the items in the wizard format.

Note

Read the precautions in *Chapter 1 (5.1 Precautions of Windows Server 2012 R2 Installation)* in advance.

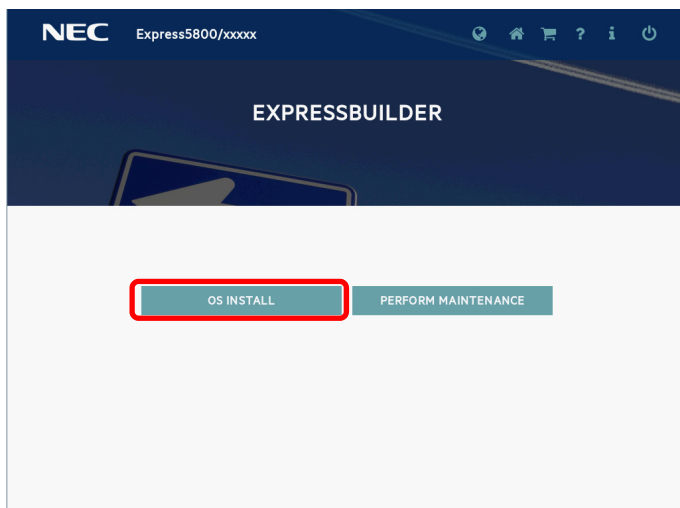
1. Check that no media is inserted in the drive. Then, turn on peripherals (such as a display), and then turn on the server.
2. To start EXPRESSBUILDER, press the <F10> key during POST.

Configure the operating environment of EXPRESSBUILDER only when starting it for the first time. On the screen below, click **FIRST TIME SET UP WIZARD**. When you finish various settings, the screen proceeds to step 4.



For details on EXPRESSBUILDER and the **FIRST TIME SET UP WIZARD**, refer to *Chapter 2 (3. Details of EXPRESSBUILDER)* in *Maintenance Guide*.

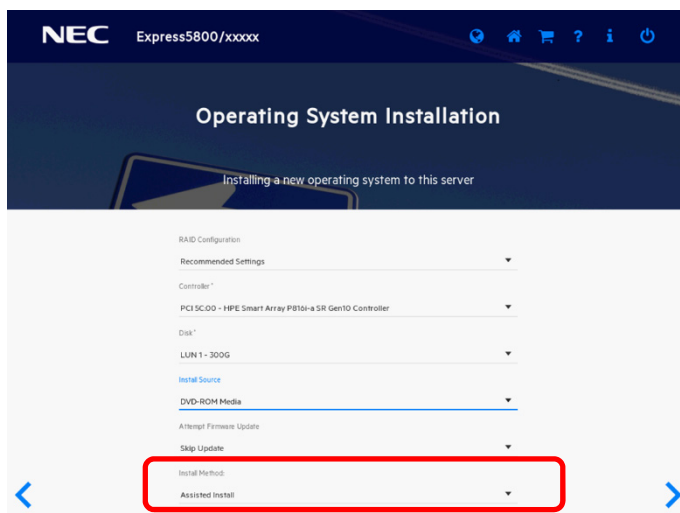
3. On the screen below, click **OS INSTALL**.



4. Choose **Assisted Install** of **Install Method**.
Specify the following settings if necessary, and then click the ">" icon at the lower right of the screen.

Note

When choosing **DVD-ROM Media** or **File on USB drive** at **Install Source**, mount the media and click ">" icon at the lower right corner of the screen.



- **RAID Configuration**
Choose **Keep Current Setting** after configuring a RAID array by SSA or System Utilities when using RAID controller.
- **Controller**
Choose the controller of installation destination.
- **Disk**
Choose the disk of installation destination.

- **Install Source**

Choose an OS installation source from the following types.

DVD-ROM Media	DVD-ROM
File on USB drive	USB flash drive
SMB/CIFS (Windows Share)	Network sharing folder
An anonymous FTP server	This option is not available.
Install ClearOS from the Internet	This option is not available.

Each media supports the following file format.

File on USB drive	Flat, ISO
SMB/CIFS (Windows Share)	Flat, ISO

Flat: a standard folder/file structure

ISO: single ISO or UDF file

- **Attempt Firmware Update**

Choose **Skip Update**. The other options are not available.

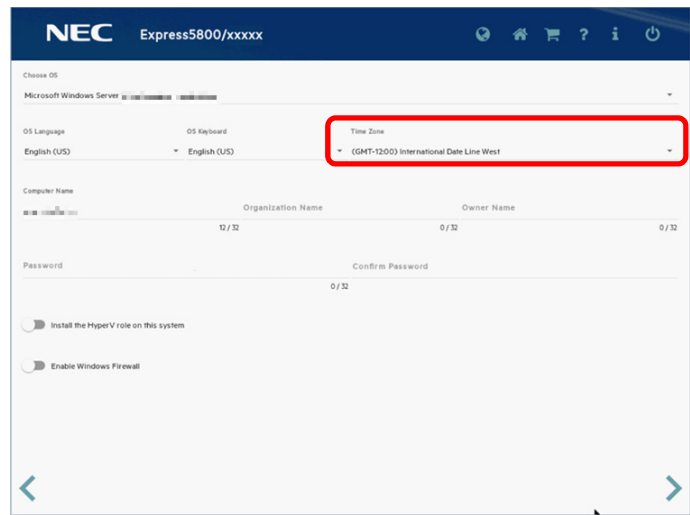
- **Install Method**

Choose **Assisted Install**.

5. Choose an OS source media according to the media type of **Install Source** chosen at step 4.

DVD-ROM Media	Automatically detects on OS installation media. If the detection fails, return to step 4 and retry.
File on USB drive	Choose OS installation file on the connected USB drive. Only USB drives formatted in the FAT or exFAT format are supported.
SMB/CIFS (Windows Share)	Set the network settings of network sharing that includes OS installation file, and then choose OS installation file after connecting the network sharing. <ul style="list-style-type: none"> • Server Name/IP Address • Share Name • Domain Name • Network Share User • Network Share Password

6. On the following screen, specify settings for the OS installation.



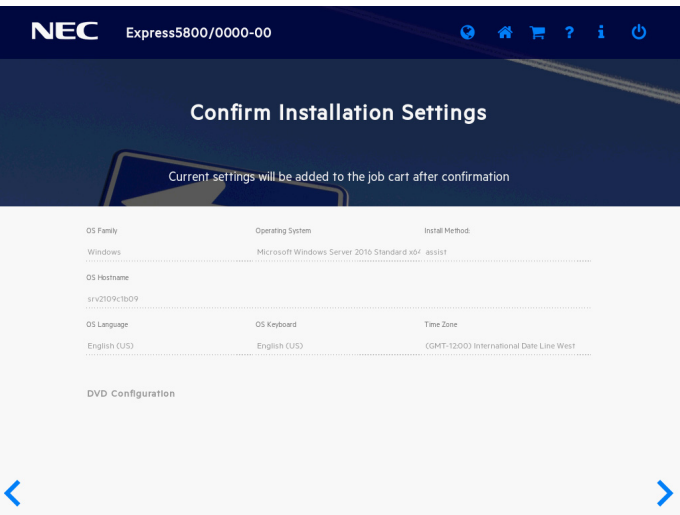
You can enable the functions of the Windows OS as needed.

Install the Hyper-V role on this system	Enables the Hyper-V function.
Enable Windows Firewall	Enables the Firewall.

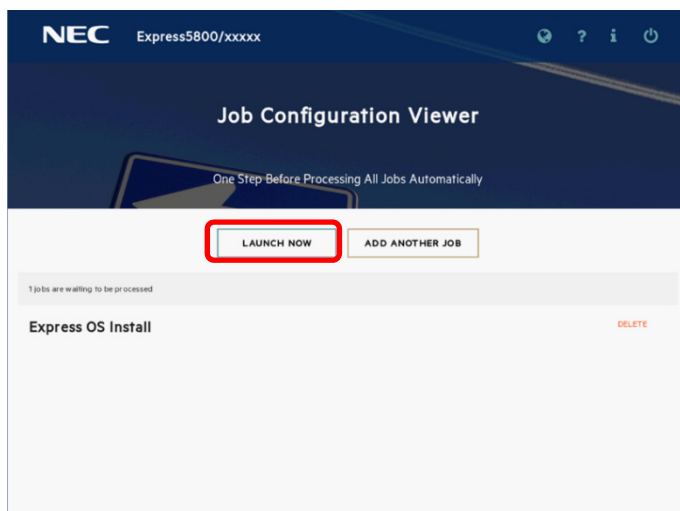
Note

- For **Choose the OS**, select the OS to be installed.
- **Optional Password** can be used alphanumeric characters only.
- Specify **Organization Name** and **Owner Name** using uppercase and lowercase alphanumeric characters.

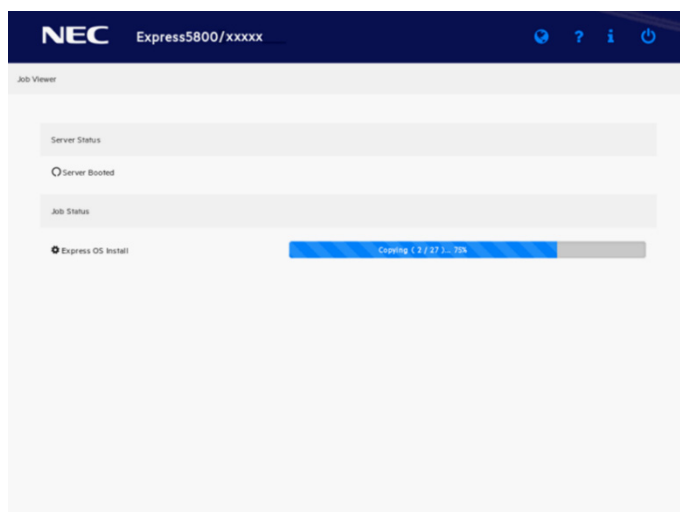
7. Confirm the settings and modify them as needed.



8. When the following screen is displayed, the setting is complete. Click **LAUNCH NOW** to start installation.



9. When copying is complete, the system restarts automatically.

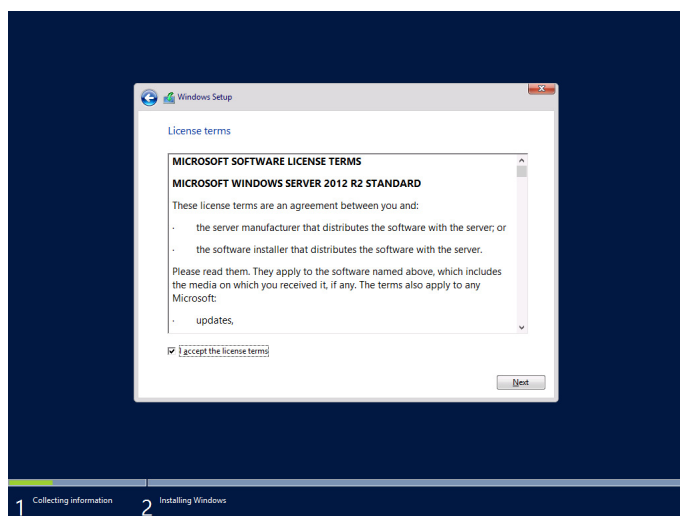


10. Confirm the license terms.

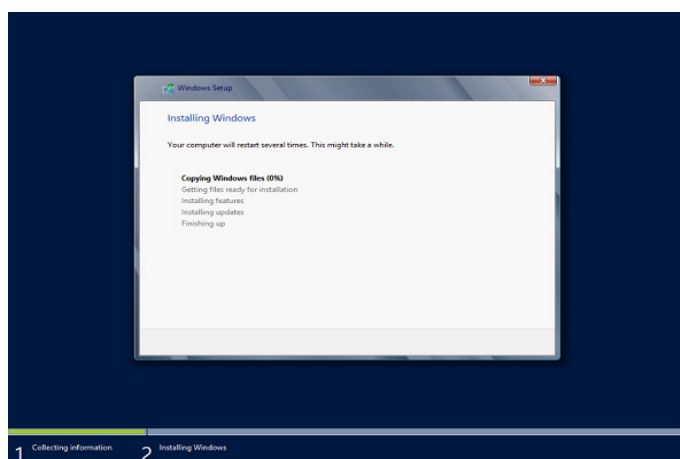
Click **I accept the license terms** if you accept this license, and then click **Next**.

Tips

If the install OS selection screen is displayed, there may be an error in the OS and install media settings selected in step 6. Specify the settings all over again.



The following screen is displayed, and Windows installation automatically starts.



The system automatically restarts after installing Windows Server 2012 R2.

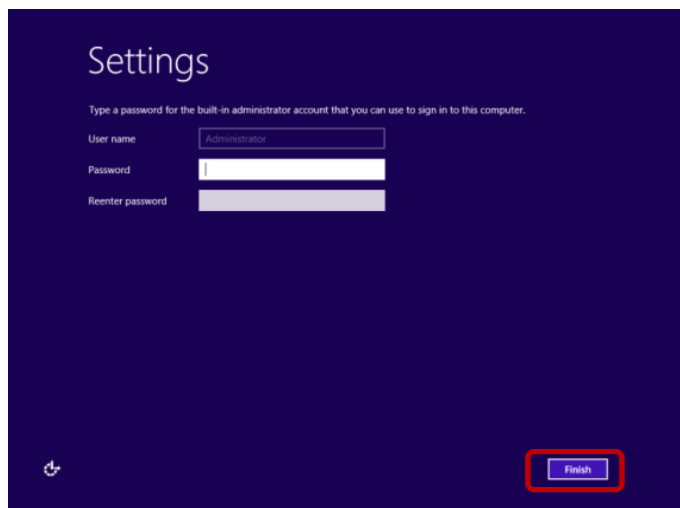
Windows setup resumes after the system restarts.

11. Click **Skip** without entering the product key.

Note

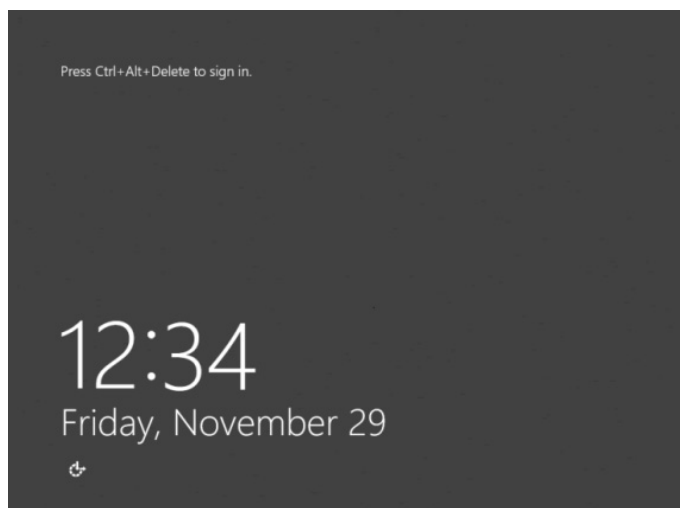
If you perform setup using our backup DVD-ROM, the product key input screen is displayed. Click **Skip** here without entering anything. After installation is complete, license authentication is done in *Chapter 1 (5.6 License Authentication)*.

12. Type a password and click **Finish**.

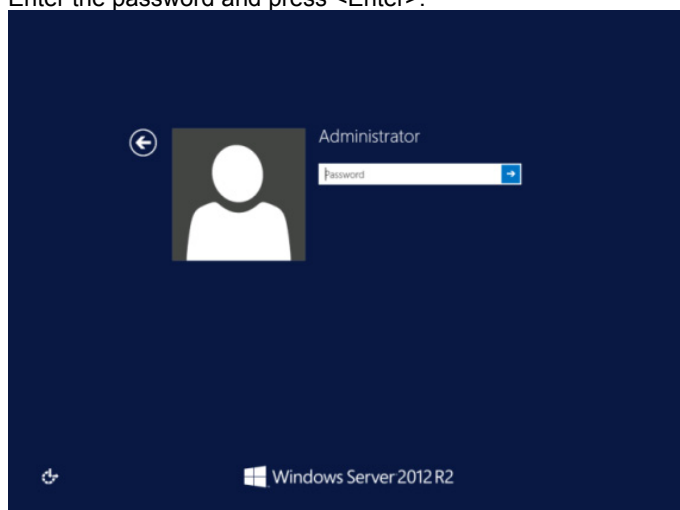
**Tips**

The next two screens do not appear when the password is set at step 6.

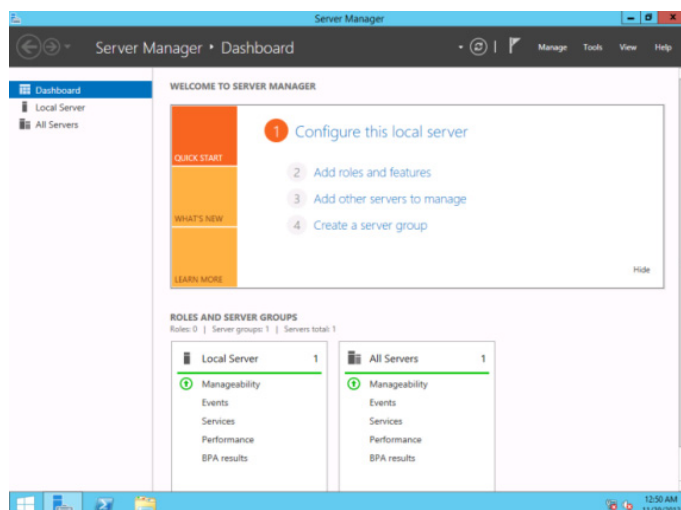
Press <Ctrl>+<Alt>+ to sign-in.



Enter the password and press <Enter>.



Windows Server 2012 R2 starts.



13. After signing in, installation automatically resumes.
After installation is complete, the system automatically restarts.
14. See *Chapter 1 (5.4 Standard Program Package Installation)* to install SPP.
15. Install drivers and specify detailed settings according to *Chapter 1 (5.5 Setup of Device Drivers)*.
16. Confirm if Windows is activated according to *Chapter 1 (5.6 License Authentication)*.
17. See *Chapter 1 (5.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO))* to setup a team as needed.
18. Install the applications as needed according to *Chapter 1 (5.8 Installing Applications)*.
19. Set the other OS settings according to *Chapter 1 (6. Setting up for Maintenance)*.
20. See *Chapter 1 (7. Backup of system information)* to back up the system.

The Windows installation with Assisted option is now complete.

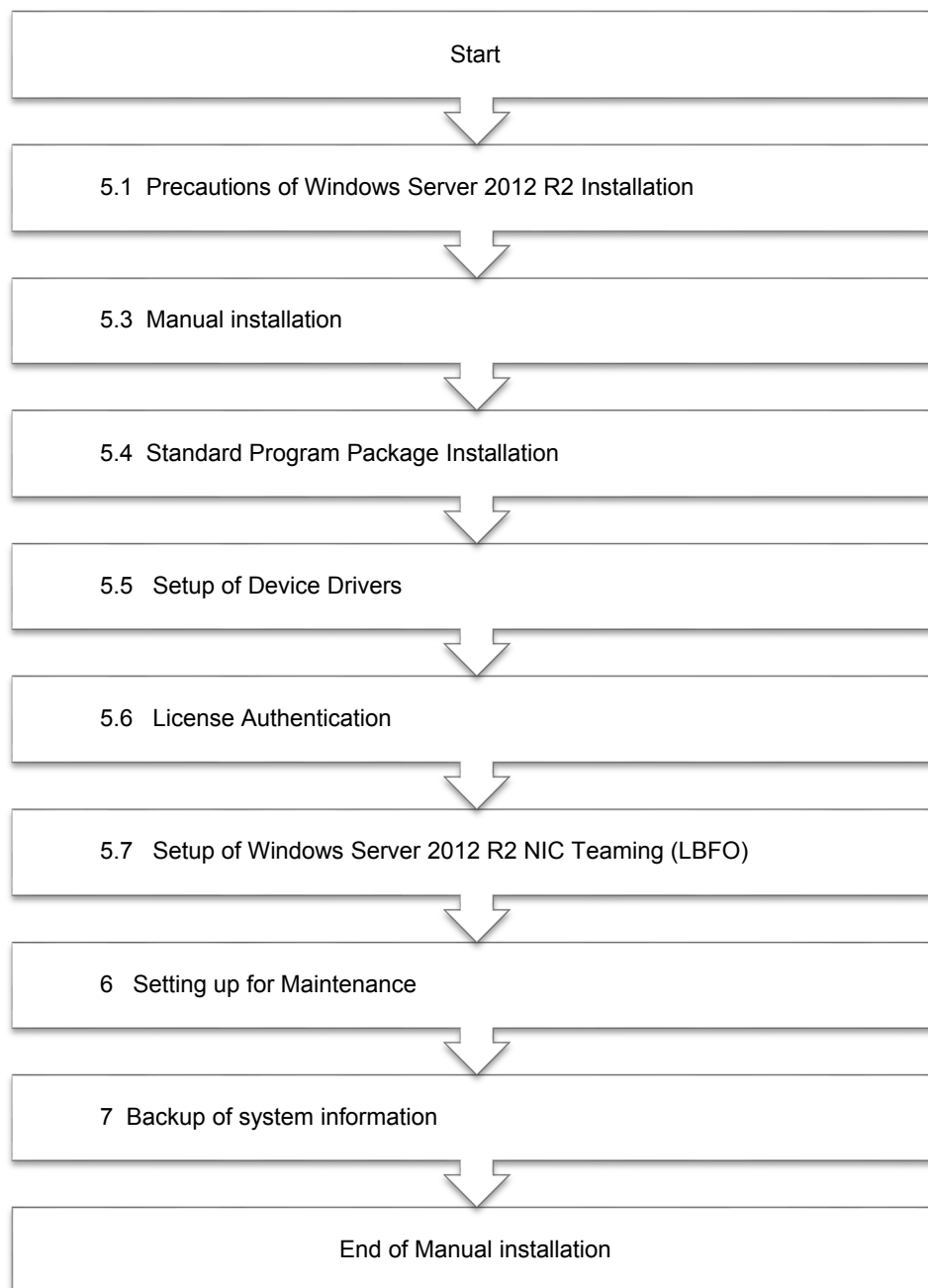
5.3 Manual installation

This section describes Manual installation .

Important

- Manual installation installs the OS without using EXPRESSBUILDER. Note that all data on the hard disk drive where the OS is installed will be deleted when you install the OS with EXPRESSBUILDER.
- Make sure to remove all hard disk drives connected to RAID controllers other than the target RAID controller before a setup.

5.3.1 Installation flow



5.3.2 Requirements for Setup

Prepare the following media and instruction manuals before starting setup.

- Either of the following OS installation media
 - **NEC operating system installation media** (hereafter referred to as *Backup DVD-ROM*)
 - **Microsoft operating system installation media** (hereafter referred to as *Windows Server 2012 R2 DVD-ROM*)
- Starter Pack
 - **Starter Pack DVD** (Optional or downloading from our website)

Note

If using the onboard RAID controller and the internal optical disk drive, the driver is loaded from a removable media device.

Copy and prepare the following files onto a removable media in advance.

<DVD>:\software\006\drivers\sw_raid1_driver

5.3.3 Installation procedure

Note

Read the precautions in *Chapter 1 (5.1 Precautions of Windows Server 2012 R2 Installation)* in advance.

1. Check that no media is inserted in the drive, Then, turn on peripherals (such as a display), and then turn on the server.

Important

If using the onboard RAID controller, insert the OS installation media and go to step 9.

2. To start the Boot Menu, press the <F10> key during POST.

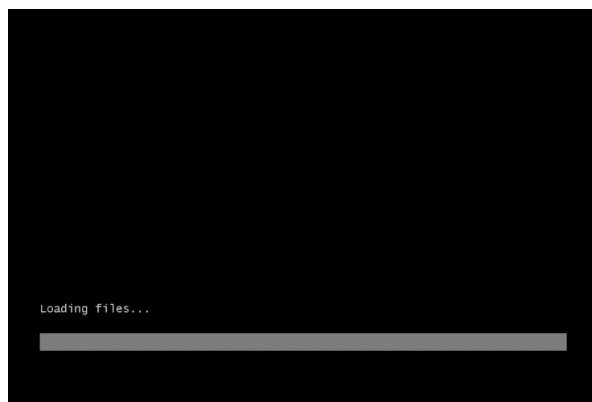
From **One-Time Boot Menu**, select the optical disk drive to which the OS installation media is inserted.

3. The system starts from the OS installation media.

The message "Press any key to boot from CD or DVD..." is displayed on the top of the screen.

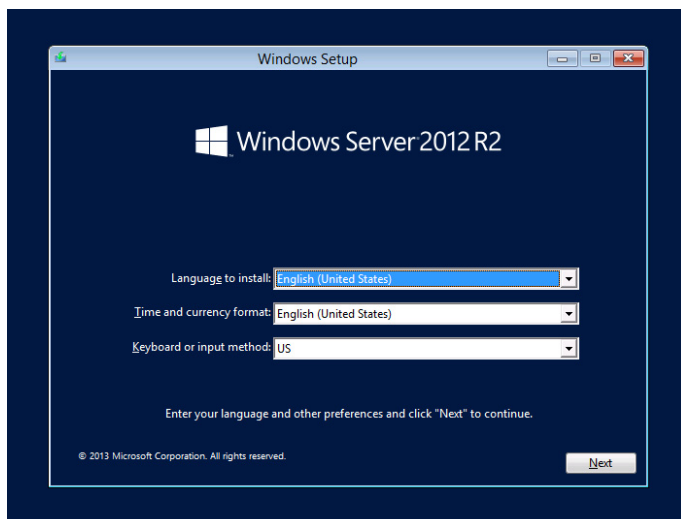
Press the <Enter> key to start from the media.

When the boot proceeds, the following screen is displayed.

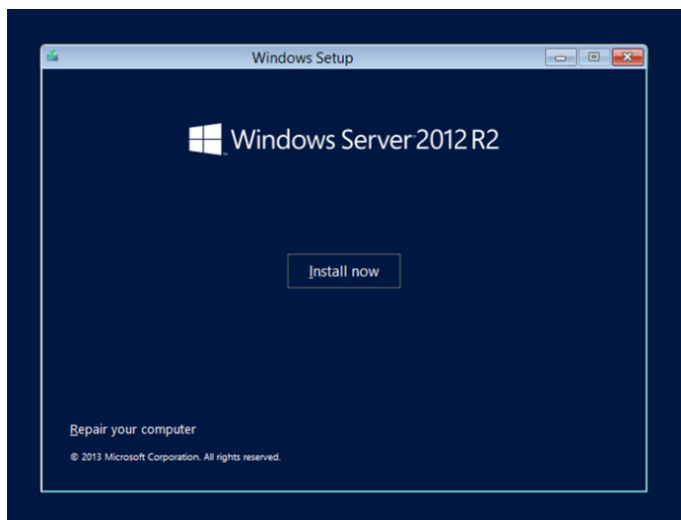
**Note**

If the Windows Setup screen (the screen in the next step) is not displayed, the <Enter> key was not properly pressed. Turn the system power on again, and then start again.

4. Click **Next**.



5. Click **Install Now**.



If the following message is displayed: Go to step 6.

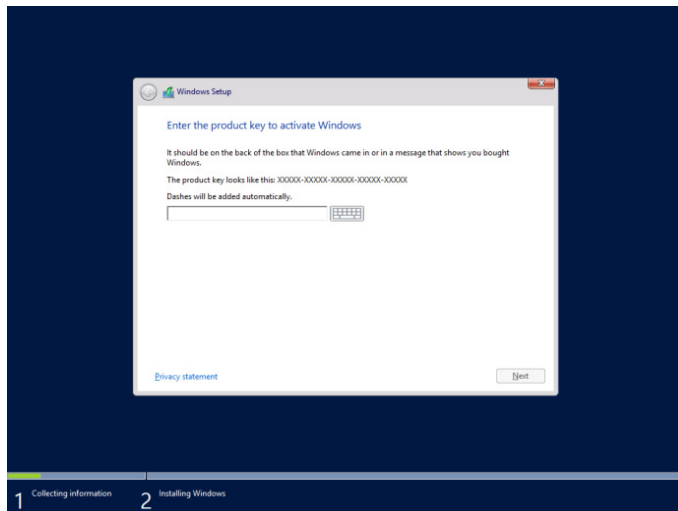
If the following message is not displayed: Go to step 8.



6. After connecting the removable media where the onboard RAID controller driver was copied, specify the path and click **OK**.
<Removable media>:\sw RAID1_driver
7. Select the above driver from the displayed list of drivers, and click **Next**.

HPE Smart Array S100i SR Gen10 SW RAID

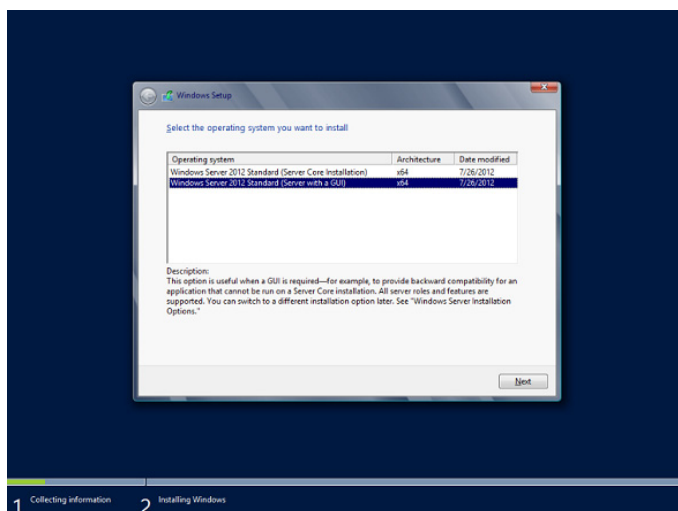
8. Type the product key, and then click **Next**.



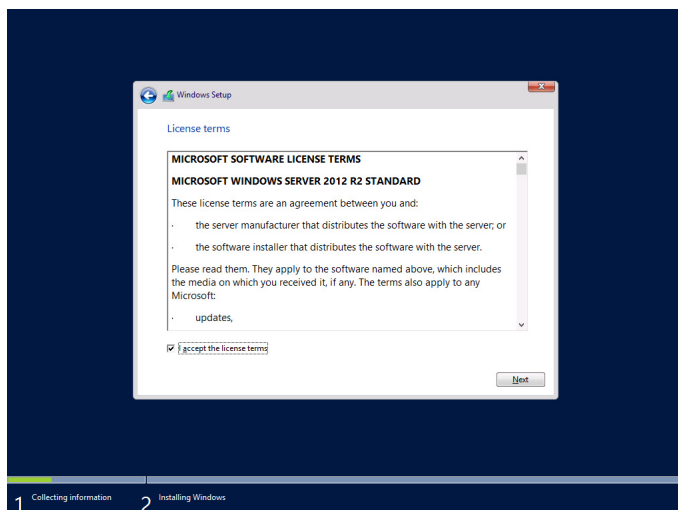
Tips

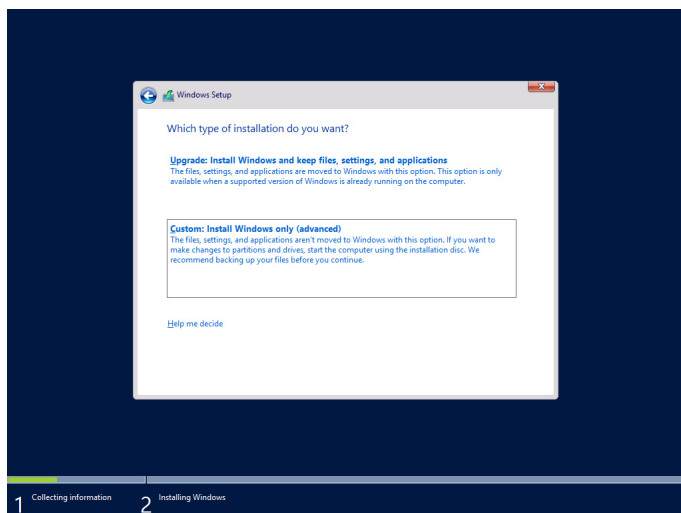
If you are using Backup DVD-ROM, this screen does not appear.

9. Choose an operating system you want to install, and click **Next**.
The displayed options vary depending on the installation media you are using.



10. Read the license terms carefully.
If you agree, check **I accept the license terms** and click **Next**.



11. Select **Custom: Install Windows only (advanced)**.

12. The “Select Windows installation location” screen is displayed.

If the driver was loaded in steps 6 and 7, or if the RAID controller is not in use, proceed to step 15.

If you select **Load driver** here, the following screen will be displayed.

13. After mounting the Starter Pack DVD in the UBS-DVD drive, specify the file directory, and click **OK**.

- Onboard RAID controller
<Starter Pack DVD>:\software\006\drivers\sw_raid1_driver
- RAID controller (N8103-189/190/191/192/193/194/195/201)
<Starter Pack DVD>:\software\006\drivers\dac1_driver

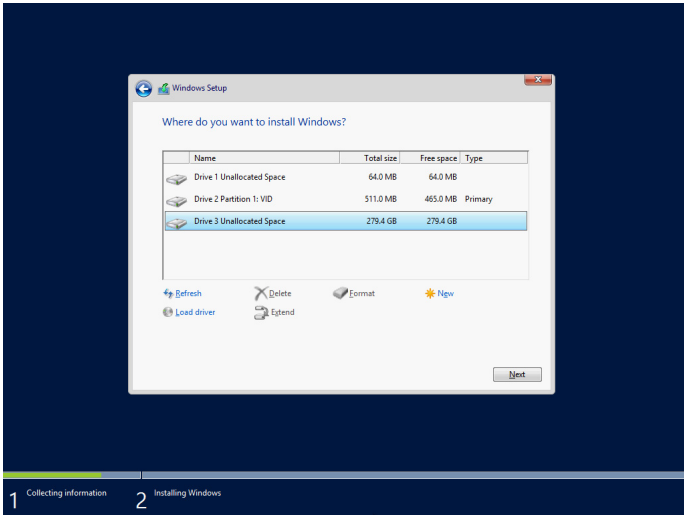
14. Select the following driver from the displayed list of drivers, and click **Next**.

- Onboard RAID controller
HPE Smart Array S100i SR Gen10 SW RAID
- Using the RAID controller (N8103-189/192)
HPE Smart Array E208i-a SR Gen10
- Using the RAID controller (N8103-190/193)
HPE Smart Array P408i-a SR Gen10
- Using the RAID controller (N8103-191/194)
HPE Smart Array P816i-a SR Gen10
- Using the RAID controller (N8103-195)
HPE Smart Array E208i-p SR Gen10
- Using the RAID controller (N8103-201)
HPE Smart Array P408i-p SR Gen10

Tips

For the RAID controller (N8103-189/190/191/192/193/194/195/201), some parts of a character string may not be displayed correctly. In this case, identify the driver to use from the part displayed correctly.

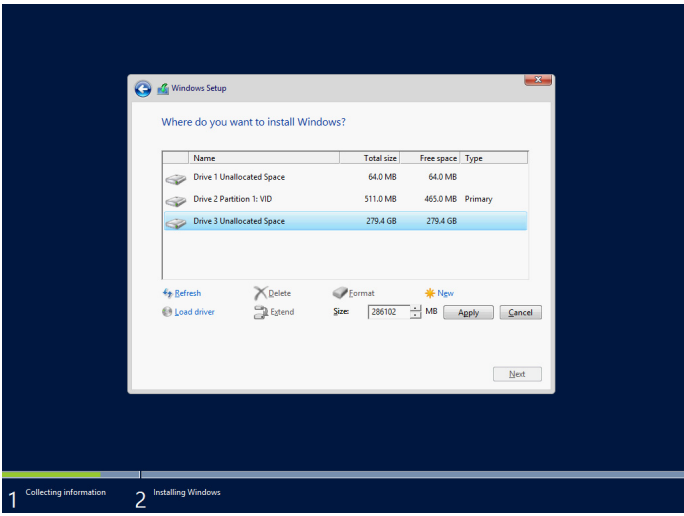
15. Click **New**. If a partition has been created, proceed to step 18.



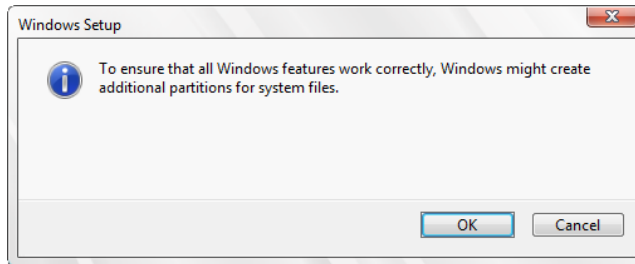
Tips

If **New** is not displayed on the screen, click **Drive options (advanced)**.

16. Specify the partition size in the text box, and the click **Apply**.



When the following window appears, click **OK**.



Tips

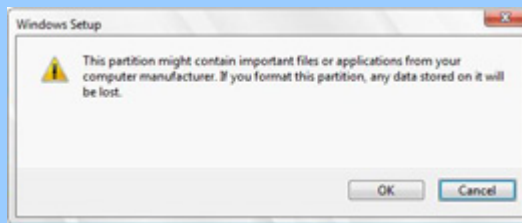
When creating a partition, the OS creates the following partitions at top of the hard disk drive.

- Recovery Partition
- EFI System Partition (ESP)
- Microsoft Reserved Partition (MSR)

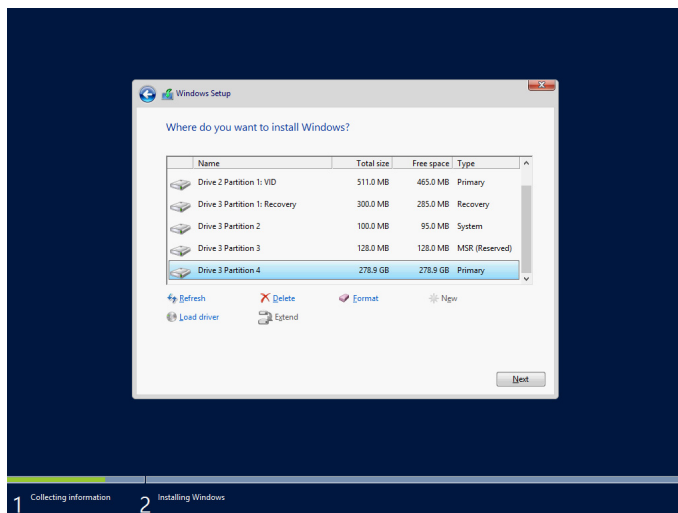
17. Select the partition created in step 16, and then click **Format**.

Important

When the following screen appears, read the message and click [OK]. Carefully select the partition to be formatted because data in the partition will be erased.



18. Select the created partition, and then click **Next**.



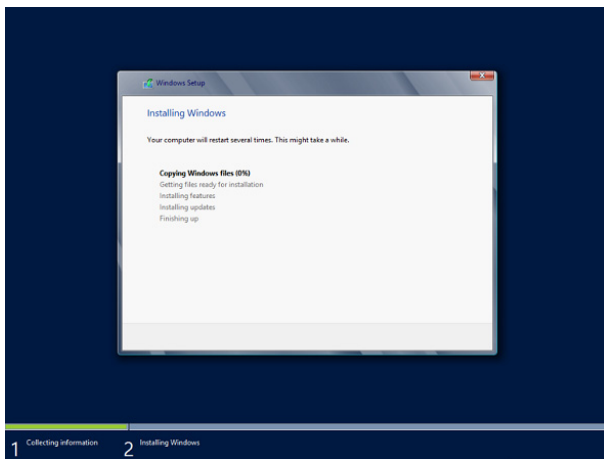
Important

If the four partition types Recovery, System, MSR (Reserved), and Primary have not been created in the created partition, it means that you failed to create the partition. Delete the partition you attempted to create, and then create a new partition. If you have connected a data disk to a partition, be careful not to delete that partition.

Tips

The number of partitions displayed differs depending on the hardware configuration.

If the Starter Pack DVD is mounted, replace it with the OS media, and click **Refresh**. When the following message appears, Windows installation starts automatically.

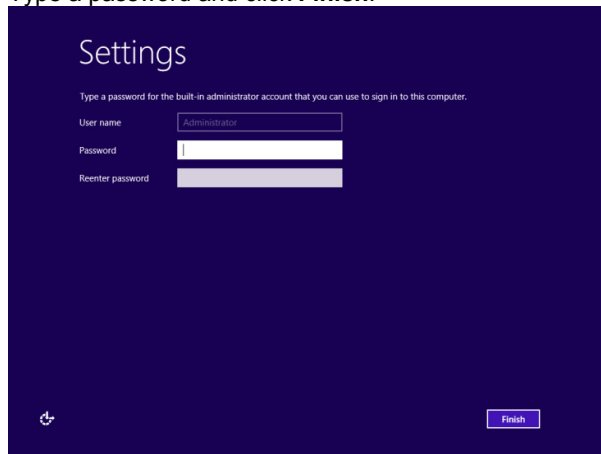


The server will automatically restart after Windows Server 2012 R2 is installed. You will proceed to Windows setup after restart.

19. Set user settings according to operating system chosen in step 9.

Server with a GUI

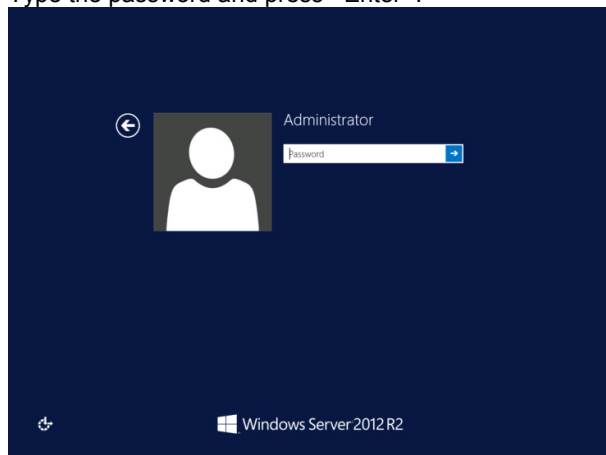
Type a password and click **Finish**.



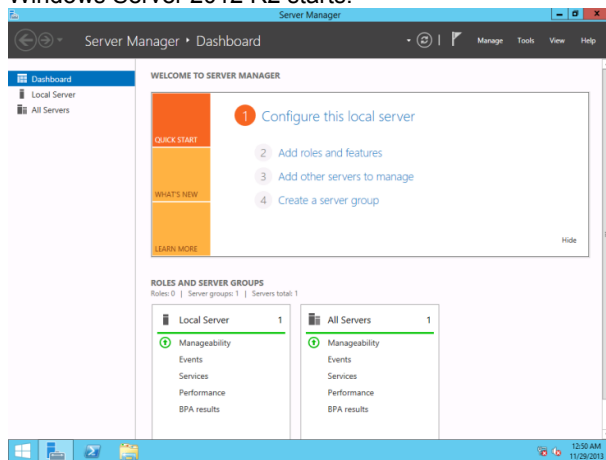
Press <Ctrl>+<Alt>+<Delete> to sign-in.



Type the password and press <Enter>.

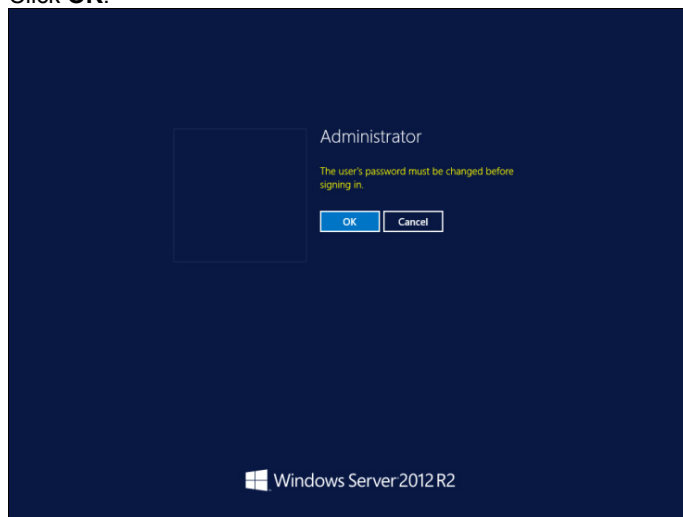


Windows Server 2012 R2 starts.

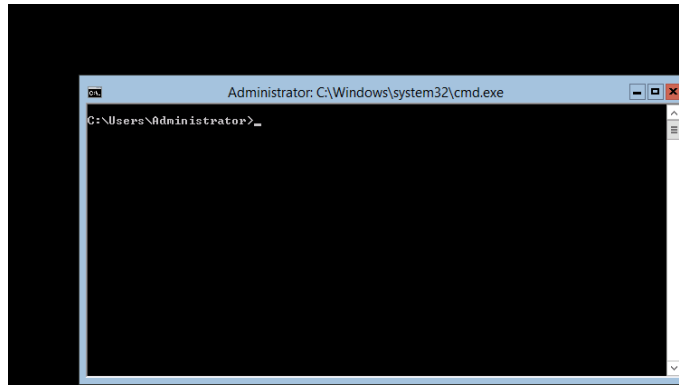


Server Core Installations

Click **OK**.



Windows Server 2012 R2 starts.

**Tips**

Refer to the following Website for more details.

Configure and Manage Server Core Installations

<http://technet.microsoft.com/us-en/library/jj574091.aspx>

20. See *Chapter 1 (5.4 Standard Program Package Installation)* to install SPP.
21. Install drivers and specify detailed settings according to *Chapter 1 (5.5 Setup of Device Drivers)*.
22. Confirm if Windows is activated according to *Chapter 1 (5.6 License Authentication)*.
23. See *Chapter 1 (5.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO))* to setup a team as needed.
24. Install the applications as needed according to *Chapter 1 (5.8 Installing Applications)*.
25. Set the other OS settings according to *Chapter 1 (6. Setting up for Maintenance)*.
26. See *Chapter 1 (7. Backup of system information)* to back up the system.

The Manual installation is now complete.

5.4 Standard Program Package Installation

Standard Program Package (SPP) contains drivers customized for this server.
Make sure to install SPP before running the server system.

Important After attaching the internal option, application of Standard Program Package may be required. For details, see *Chapter 1 (5.5 Setup of Device Drivers)*.

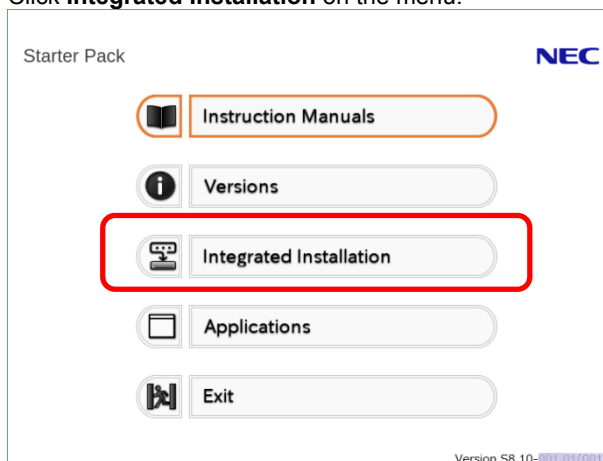
5.4.1 Installing Standard Program Package on Desktop Experience

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

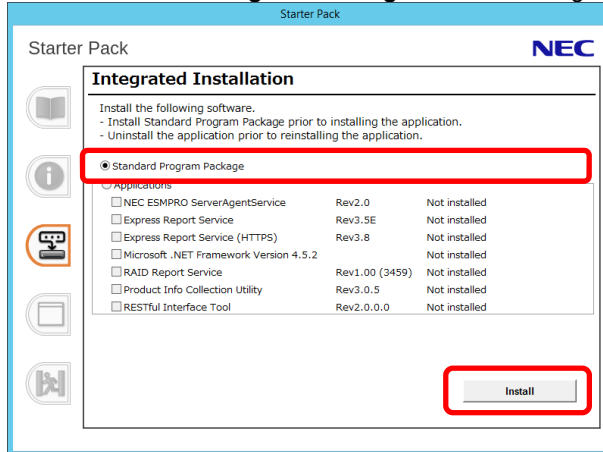
Note

- If N8104-182/185 is installed, execute “\packages\cp036669.exe” on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8104-183/187 is installed, execute “\packages\cp035071.exe” on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. Some of the messages of the installer may not be displayed correctly, but there is no problem affecting operations. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute “\packages\cp040553.exe” on the DVD to install the driver separately. After the installation, reboot Windows.

3. Run the start_up.bat under the root folder on DVD.
4. Click **Integrated Installation** on the menu.

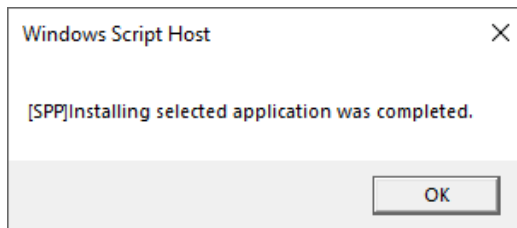


5. Choose **Standard Program Package** on the following screen, and then click **Install**.



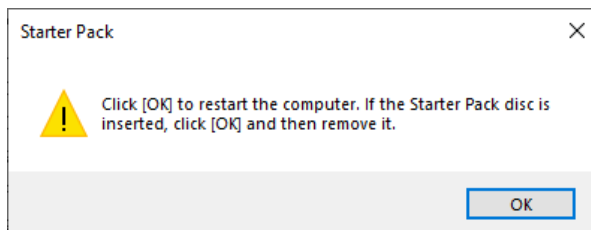
Wait until installation completes (about 5 to 15 minutes).

6. Click **OK**.



7. Windows Server 2012 R2 restarts automatically.

Then, remove the Starter Pack DVD.



SPP installation is now complete.

5.4.2 Installing Standard Program Package on Server Core

1. Sign-in to the Windows with an Administrators privilege.
2. Set the Starter Pack DVD to the drive.

Note

- If N8104-182/185 is installed, execute “\packages\cp036669.exe” on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. After the installation, reboot Windows.
- If N8104-183/187 is installed, execute “\packages\cp035071.exe” on the DVD to install the driver separately. The message may be displayed informing you that the latest version has been installed. Proceed with the installation. Some of the messages of the installer may not be displayed correctly, but there is no problem affecting operations. After the installation, reboot Windows.
- If N8103-189/190/191/192/193/194/195/196/197/201 is installed, execute “\packages\cp040553.exe” on the DVD to install the driver separately. After the installation, reboot Windows.

3. From the command prompt, type the following command.
In the example below, the optical disk drive is the D drive.

```
cd /d D: software\006\win\seamless
```

```
C:\Users\administrator>cd /d D: software\006\win\seamless
```

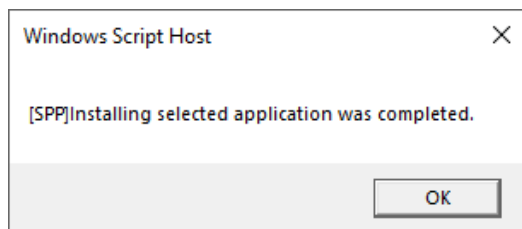
4. Type the following command, and then press <Enter> key.

```
instcmd.vbs spp /s
```

```
D:\software\006\win\seamless >instcmd.vbs spp /s
```

Wait until installation completes (about 5 to 15 minutes).

5. Click **OK**.



6. After removing the Starter Pack DVD, restart Windows Server 2012 R2 manually.

SPP installation is now complete.

5.5 Setup of Device Drivers

Install and set up device drivers provided for the standard configuration of the server.

For details regarding the installation and setup of a driver for an optional device, refer to the manual supplied with the optional device.

5.5.1 Installing the LAN drivers

(1) LAN drivers

When the installation is performed with Assisted option or Manual installation, LAN drivers are installed when the SPP is applied.

Important Wake On LAN (WOL) is supported by N8104-172/175 only.
Wake On LAN is available after installing the LAN driver.
For Wake On LAN of N8104-172/175, see *Chapter 1 (5.5.2 Setting up LAN drivers - (2) Setting up Wake on LAN)*.
BIOS settings, see *Maintenance Guide*.

Note

- To change the LAN driver settings, sign in to the system from a local console using an administrator's account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.
- Choose the **Internet Protocol (TCP/IP)** check box when specifying an IP address.

(2) Optional LAN board

This server supports the following optional LAN boards.

Optional LAN boards: N8104-172/175/178/179/180/181/182/183/184/185/186/187

If you install the LAN boards after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (5.4 Standard Program Package Installation)*.

(3) Network adapter name

After installing the LAN drivers, the following network adapter names will be displayed on the Device Manager.

If connecting with an optional LAN board:

[N8104-172]	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx (*1)
[N8104-175]	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx (*1)
[N8104-178]	HPE Ethernet 1Gb 2-port 332T Adapter #xx (*1)
[N8104-179]	HPE Ethernet 1Gb 4-port 331T Adapter #xx (*1)
[N8104-180]	HPE Ethernet 1Gb 2-port 361T Adapter #xx (*1)
[N8104-181]	HPE Ethernet 1Gb 4-port 366T Adapter #xx (*1)
[N8104-182]	HPE Ethernet 10Gb 2-port 530T Adapter #xx (*1)
[N8104-183]	HPE Ethernet 10Gb 2-port 521T Adapter #xx (*1)
[N8104-184]	HPE Ethernet 10Gb 2-port 562T Adapter #xx (*1)
[N8104-185]	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx (*1)
[N8104-186]	Port1: HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx (*1) Port2: HPE Ethernet 10Gb 562SFP+ Adapter #xx (*1)
[N8104-187]	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx (*1)

*1: If there are adapters with the same name, a different identification number will be assigned to xx.

Tips

The ID for N8104-182/183/185/187 might be a number of two or more digits. This is due to the LAN driver specifications and not an error. This number cannot be changed.

5.5.2 Setting up LAN drivers

(1) Setting link speed

The transfer rate and duplex mode of the network adapter must be the same as those of the switching hub. Follow the procedure below to specify the transfer rate and duplex mode.

Tips

If you are using a network adaptor for N8104-185/187, the network adaptor settings can be set to "10 Gbps Full Duplex" or "25 Gbps Full Duplex", and the connected switching hub settings can be set to "Auto Negotiation".

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. On the **Advanced** tab, set the **Speed & Duplex** values to the same as those of the switching hub.
4. Click **OK** in the **Network Adapter Properties** dialog box.
5. Restart the system.

The link speed setting is now complete.

(2) Setting up Flow Control

Flow Control sends a pause frame to the link partner to temporarily halt the transmission of frames when the receive buffer is almost full. When receiving a pause frame, it limits the transmission. Follow the procedure below to set up Flow Control.

Tips

Make sure to make the Tx/Rx settings of the network adapter and link partner consistent. For example, if Flow Control is set to Rx Enabled on the link partner, set it to Tx Enabled on the target device.

1. Open the Device Manager.
2. Expand Network Adapters, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. Select the Advanced tab, and click Flow Control to show Value.
4. Change the setting in Value with the down-arrow button.
5. Click OK, and then restart the system.

The Flow Control setting is now complete.

(3) Setting up Wake on LAN

When using N8104-172/175 with the server, follow the procedure below to set it.

1. Open the **Device Manager**.
2. Expand **Network Adapters**, and then double-click the name of the network adapter you want to configure.
The properties of the network adapter will be displayed.
3. Open **Advanced** tab, click **Enable PME** to show Value.
4. Change the value to **Enabled** by the down-arrow button.

5. Click **OK**, and then restart the system.

Setup is now complete.

5.5.3 Using Graphics Accelerator

The standard graphics accelerator driver is automatically installed by Standard Program Package.

5.5.4 Using SAS controller (N8103-197)

For installation with Assisted option or Manual installation, the drivers are installed by Standard Program Package.

If you install the SAS controller (N8103-197) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (5.4 Standard Program Package Installation)*.

5.5.5 Using RAID Controller (N8103-189/190/191/192/193/194/195/196/201)

Standard Program Package Installation, the drivers are installed by Standard Program Package.

If you install the RAID controller (N8103-189/190/191/192/193/194/195/196/201) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (5.4 Standard Program Package Installation)*.

5.5.6 Using Fibre Channel Controller (N8190-163/164/165/166/171/172)

For installation with Assisted option or Manual installation, the drivers are installed by Standard Program Package.

If you install the Fibre Channel controller (N8190-163/164/165/166/171/172) after installing Standard Program Package, install Standard Program Package again according to *Chapter 1 (5.4 Standard Program Package Installation)*.

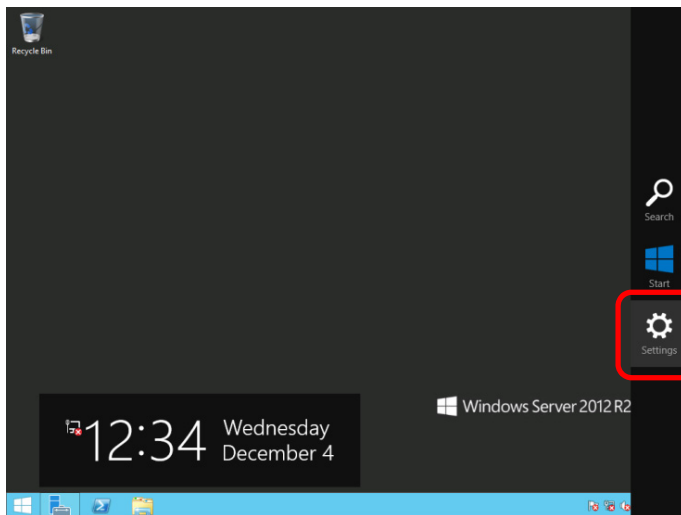
5.6 License Authentication

To use Windows Server 2012 R2, you need finish the license authentication procedure.

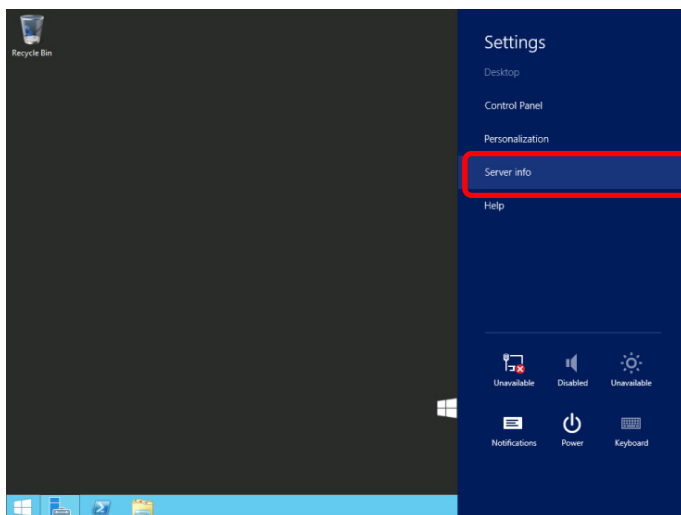
Confirm if your license is authenticated. If not, perform the following procedures to have your license authenticated.

5.6.1 Server with a GUI

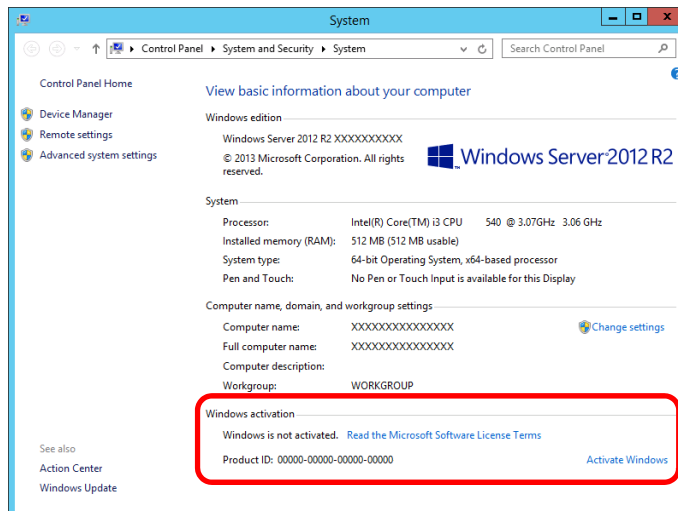
1. Click **Settings** on the **Charms** bar.



2. Click **Server info**.

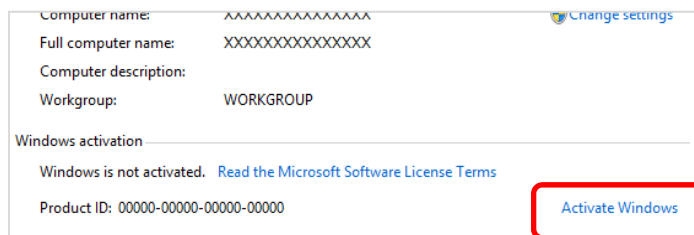


3. Check Windows license authentication.

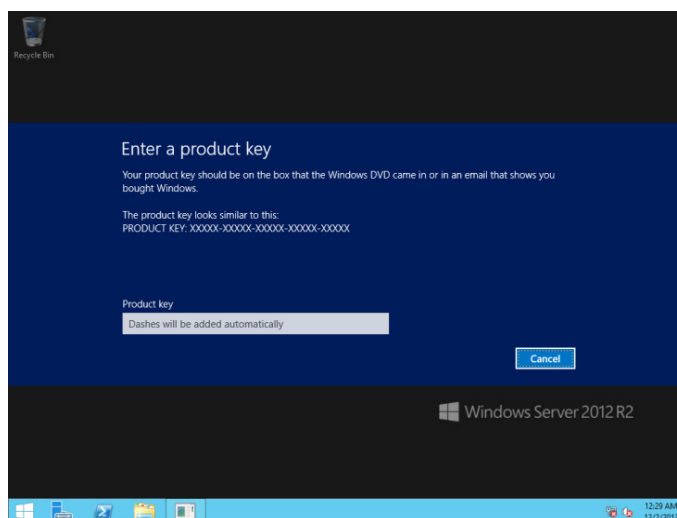


- ☐ If "Windows is activated" is displayed:
You do not need to perform this procedure.
- ☐ If "Windows is not activated" is displayed:
 - When the server is connected to the Internet: Go to step 4.
 - When the server is not connected to the Internet: Go to step 5.

4. When the server is connected to Internet, perform the following process.

4-(1) Click **Activate Windows**.

4-(2) Enter the product key.



License is activated after the entry of the product key.
Complete license authentication process according to the message.

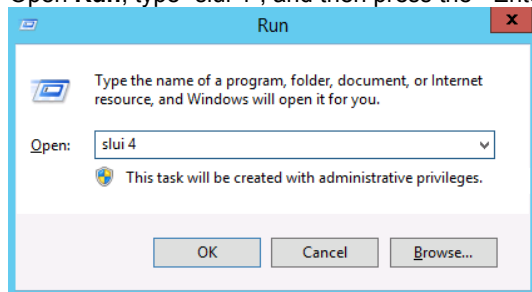
5. When the server is connected to Internet, perform the following process.

5-(1) Open the command prompt as Administrator, type the following and then press <Enter> key.

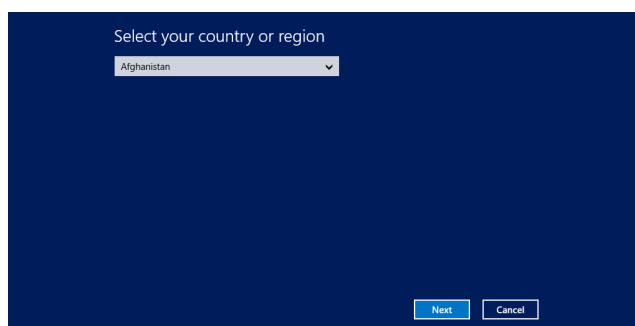
```
slmgr /ipk <product key>
```

5-(2) Activate your license by phone.

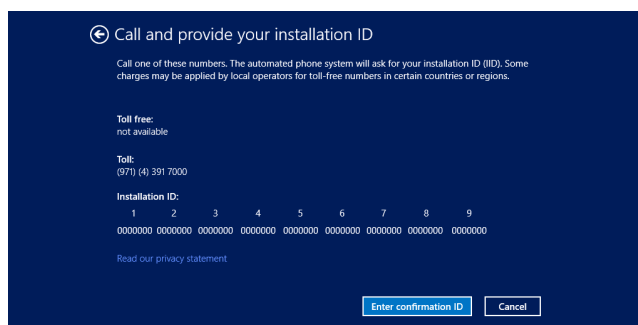
Open **Run**, type "slui 4", and then press the <Enter> key.



5-(3) On the next screen, select your country, and then click **Next**.

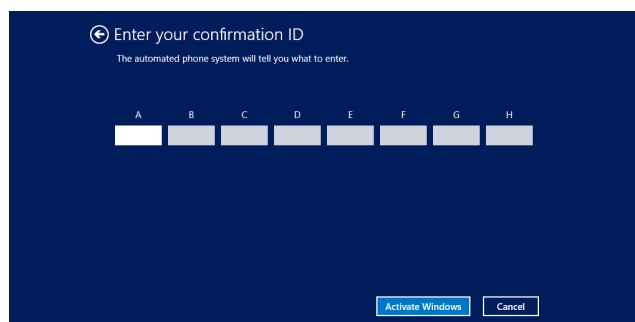


Acquire the installation ID required for license activation.



5-(4) Call the Microsoft license activation hotline and then tell your installation ID.

Type the acquired confirmation ID, and then click **Activate Windows**.



This completes authentication.

5.6.2 Server Core installation

1. Confirm if your license is activated.

At the command prompt, enter the following, and then press <Enter> key.

```
C:\Users\administrator>slmgr -dli
```

If license authentication is required, go to the next step.

If your license is already authenticated, you can skip the next and the subsequent steps.

2. Change the product key.

When using Backup DVD-ROM:

Type the following command, and then press the <Enter> key.

```
C:\Users\administrator>slmgr -ipk <Product key>
```

When using Windows Server 2012 R2 DVD-ROM:

You do not need to change the product key.

Go to the next step.

3. Perform license authentication.

When connected to the Internet:

License authentication is performed via the Internet.

Type the following command, and then press the <Enter> key.

```
C:\Users\administrator>slmgr -ato
```

This completes authentication.

When not connected to the Internet:

Use telephone for license authentication.

Type the following command to get an Install ID for authentication, and then press the <Enter> key.

```
C:\Users\administrator>slmgr -dti
```

Acquire the installation ID required for license activation.

Refer to the file %systemroot%\system32\sppui\phone.inf to confirm the telephone number of Microsoft Licensing Center.

Call Microsoft Licensing Center and tell them your Install ID.

Type the confirmation ID you have received in the following command line, and then press the <Enter> key.

```
C:\Users\administrator>slmgr -atp <Confirmation ID>
```

This completes authentication.

5.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO)

Set up the network adapter teaming feature as shown below.

5.7.1 Launching the NIC teaming setup tool

1. Launch **Server Manager**.
2. Select **Local Server**.
3. In the **Properties** window, click **Enable** or **Disable** for **NIC teaming**.

The NIC teaming setup tool will launch.

Tips

The NIC teaming setup tool can also be launched by opening the **Run** dialog box, typing `lbfoadmin`, and then pressing <Enter> key.

5.7.2 Creating a team

Create a team by using the NIC teaming setup tool.

1. In the **Servers** section, select the name of the server to set up.
If there is only one server connected, the name of the server is selected automatically.
2. In the **Teams** section, under **Tasks**, select **New Team**. The **New Team** wizard then starts.
3. Type the name of the team to create, and then select the network adapter to include in the team from the **Member adapters** list.
4. Click **Additional properties**.
5. Specify the required settings, and then click **OK**.

Teaming mode

Static Teaming	Configures static link aggregation between the NIC and switches.
Switch Independent	Configures teaming on the NIC side without depending on the switch settings.
LACP	Configures dynamic link aggregation between the NIC and switches.

Load balancing mode

Address Hash	Distributes the load based on IP addresses and port numbers.
Hyper-V Port	Distributes the load to each of the virtual switch ports used by the virtual machines.
Dynamic	<ul style="list-style-type: none"> • Distributes the load based on IP addresses and port numbers in sending. • Distributes the load same to "Hyper-V Port" in receiving.

Standby adapter

Select one adapter to be set to standby mode from the adapters in the team.

Setting all adapters to active mode is also possible.

Primary team interface

Any VLAN ID can be specified for the primary team interface.

5.7.3 Notes and restrictions

- NIC teaming on a guest OS is not supported.
- Teaming of virtual NICs on the host OS is not supported in the Hyper-V environment.
- When STP (Spanning Tree Protocol) is enabled on network switch ports to which network adapters of the team are connected, network communications may be disrupted. Disable STP, or configure "PortFast" or "EdgePort" to the ports.
 - * About setting the network switch of the connection destination, see the manual of the network switch.
- All NICs in the team must be connected to the same subnet.
- Teaming of different speed NICs is not supported.
- Teaming of different vendor's NICs is not supported.

Refer to the following website for the latest information.

<https://www.58support.nec.co.jp/global/download/w2012r2/index.html>

- [Technical Information] - [NIC Teaming (LBFO)]

5.8 Installing Applications

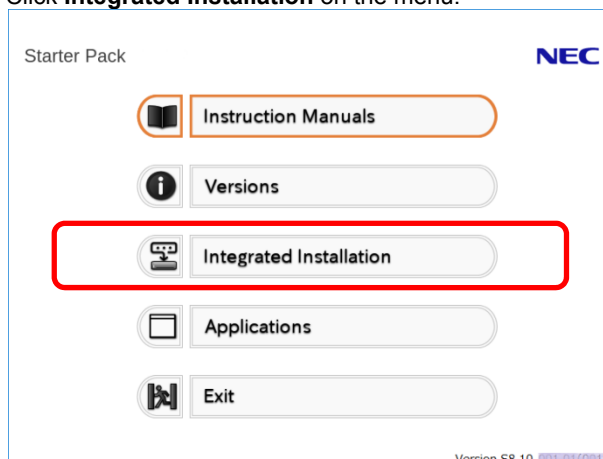
Some applications included in Starter Pack can be installed easily by performing the procedures described below. When installing these applications individually, see the manuals of the applications.

This feature is **only available on the server with a GUI**.

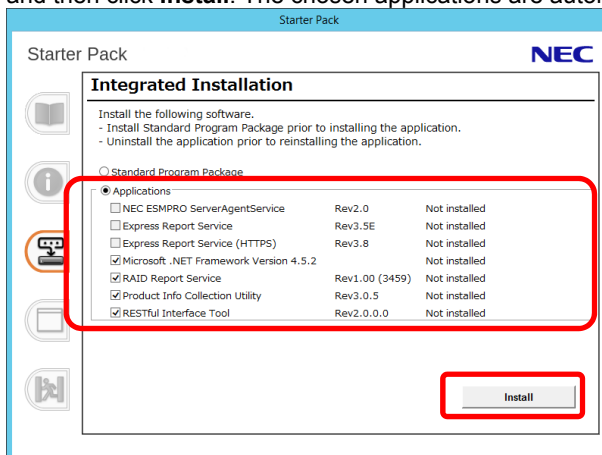
Tips

This feature supports only new installation of applications. For the installed applications, see the manuals of the applications.

1. Sign-in to the Windows with an Administrators privilege.
2. Insert the Starter Pack DVD into the optical disk drive.
3. Run the start_up.bat under the root folder on DVD.
4. Click **Integrated Installation** on the menu.



5. On the following screen, choose the check boxes corresponding to the applications you want to install, and then click **Install**. The chosen applications are automatically installed.



Note

- Applications available for installation are chosen by default.
- If your system environment does not satisfy the prerequisite for an application, you cannot install it. For details, see the on-screen information and the manuals of the applications.

6. When a message indicating restart appears, click **OK** to restart the server.
7. Configure and check the software according to your environment by referring to the manuals of the applications.

Now installation of applications is complete.

6. Setting up for Maintenance

We recommend setting up the following features for maintenance.

6.1 Specifying Memory Dump Settings (Debug Information)

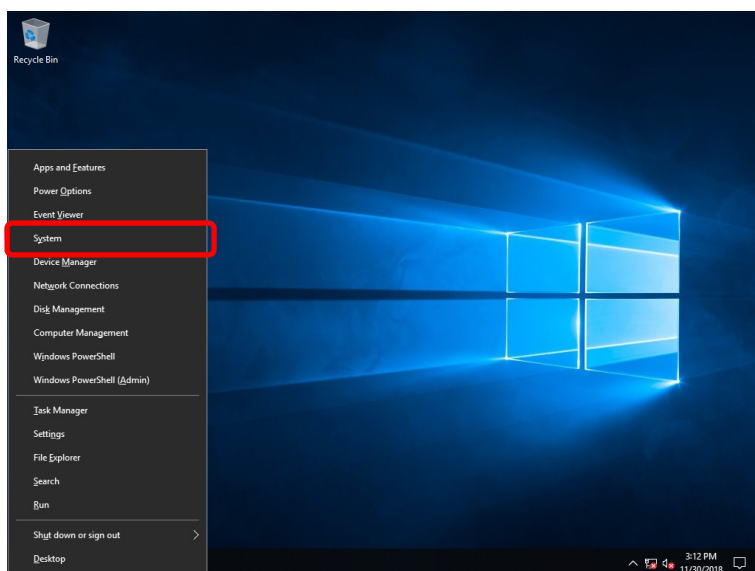
This section explains the procedures for collecting a memory dump (debug information) in the server.

Important

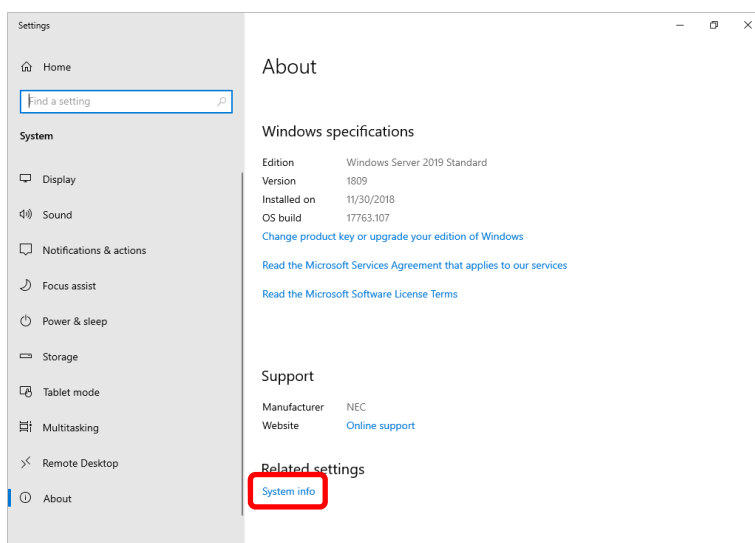
Do not reset during dumping memory or restarting the server even if the message of virtual memory shortage appears.

6.1.1 Windows Server 2019

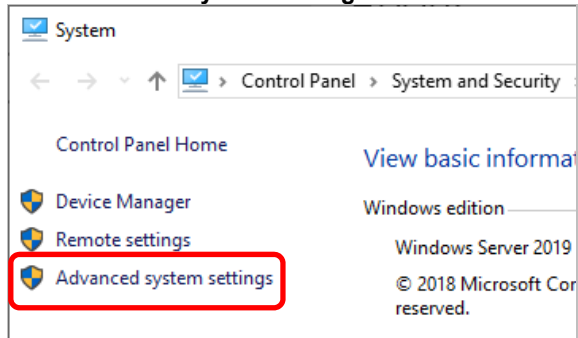
1. Right-click the lower left of the screen, and click **System** from the menu displayed.



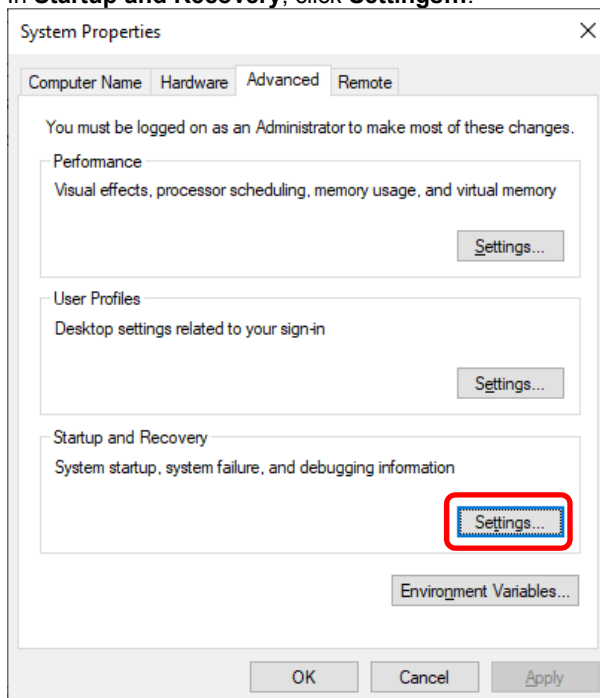
2. Click **System info**.



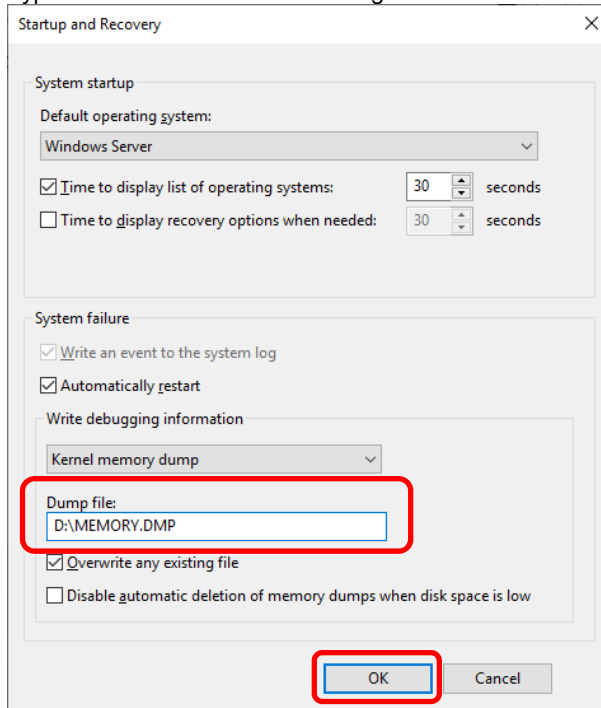
3. Click **Advanced system settings**.



4. In **Startup and Recovery**, click **Settings...**



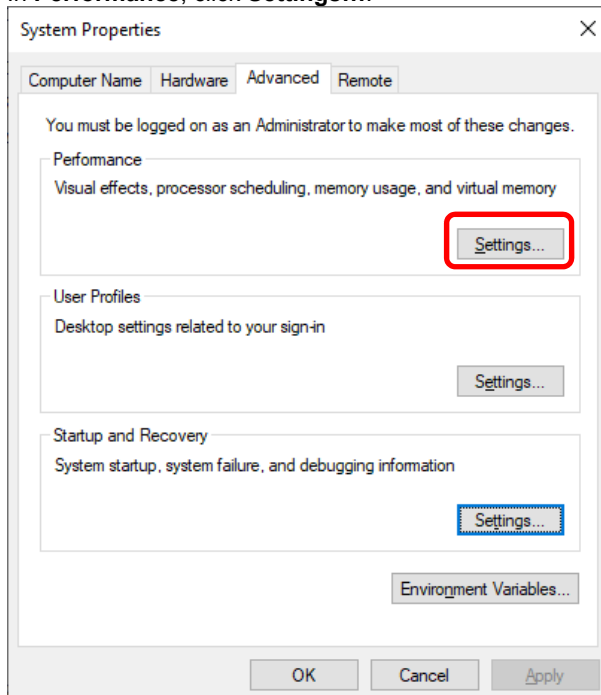
5. Type a file name to store the debug information in the **Dump file** text box, and then click **OK**.



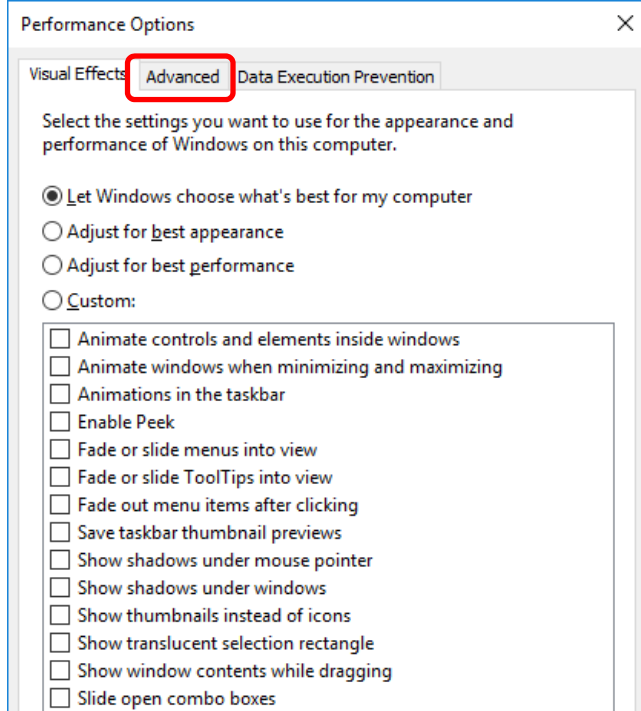
Note the following when specifying a dump file:

- We recommend specifying **Kernel memory dump** for **Write debugging information**.
- Specify a drive that has a free area of at least "total size of physical memory" + 400 MB (total size of physical memory + 1,100 MB when the total size is 4 TB or more).
- The size of debug information (memory dump) to be collected changes as memory is added. Therefore, when adding memory, check the free area size of the dump file write destination.

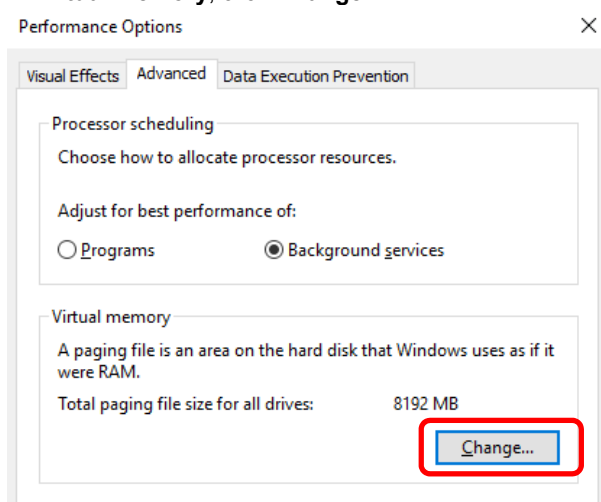
6. In **Performance**, click **Settings...**



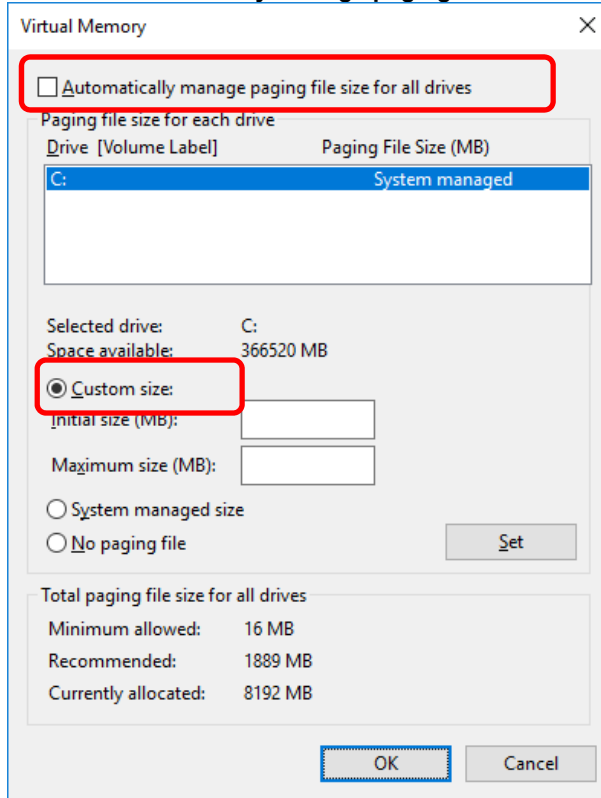
7. Click the **Advanced** tab on the **Performance Options** window.



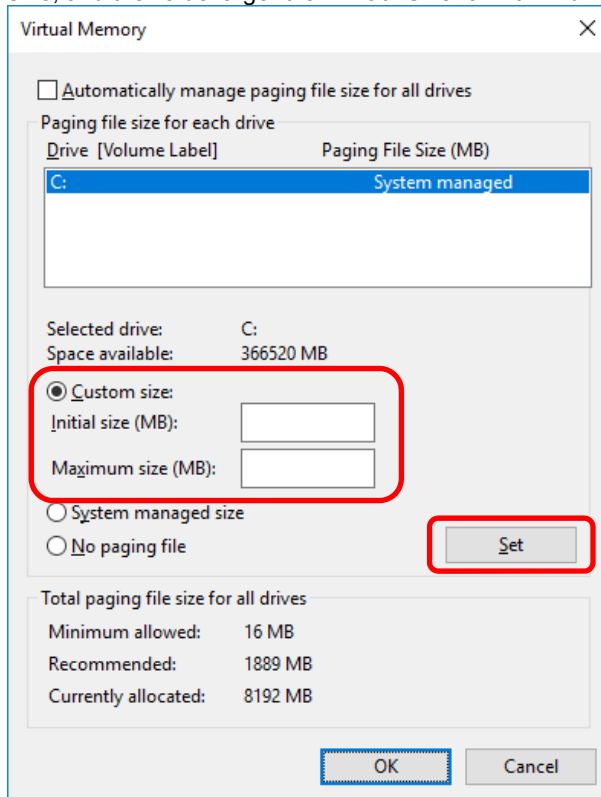
8. In **Virtual memory**, click **Change...**



9. Clear the **Automatically manage paging file size for all drives** check box, and then click **Custom size**.



10. In **Paging file size for each drive**, enter the value equal or larger than the recommended value for **Initial size**, and the value larger than **Initial size** for **Maximum size**, and then click **Set**.



Note the following when specifying a paging file size:

- The paging file is used to collect debug information (dump file). The boot volume must have a paging file of its initial size ("total size of physical memory" + 400 MB (total size of physical memory + 1,100 MB when the total size is 4 TB or more) or more) is enough to store the dump file. Make sure to specify a sufficient paging file size.
- See "System Partition" in *Chapter 1 (3.1 Precautions of Windows Server 2019 Installation)* for recommended value.
- When adding memory, reconfigure the paging file according to the memory size.
- If an error occurs in configuring the paging file for a drive exceeding 2 TB, close **Virtual Memory** and **Performance Options**, and then configure the paging file as follows:

ex. Setting the paging file in drive C with 4096 MB as Initial size, 8192MB as Maximum size.

- (1) Start command prompt as Administrator and execute the following command.

```
wmic computersystem set AutomaticManagedPagefile=false  
wmic pagefileset delete
```

- (2) Restart the Windows system.

- (3) Start command prompt as Administrator and execute the following command.

```
wmic pagefileset create name="C:\pagefile.sys"  
wmic pagefileset set InitialSize=4096, MaximumSize=8192
```

- (4) Restart the Windows system.

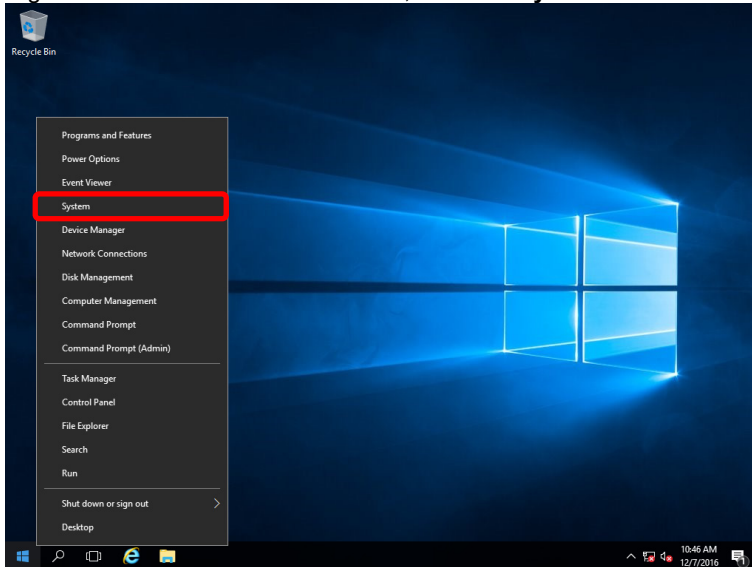
11. Click **OK**.

If a message to restart Windows appears, restart the system according to on-screen message.

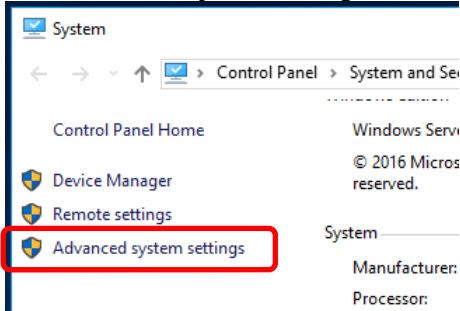
Specification of the memory dump settings is now complete.

6.1.2 Windows Server 2016

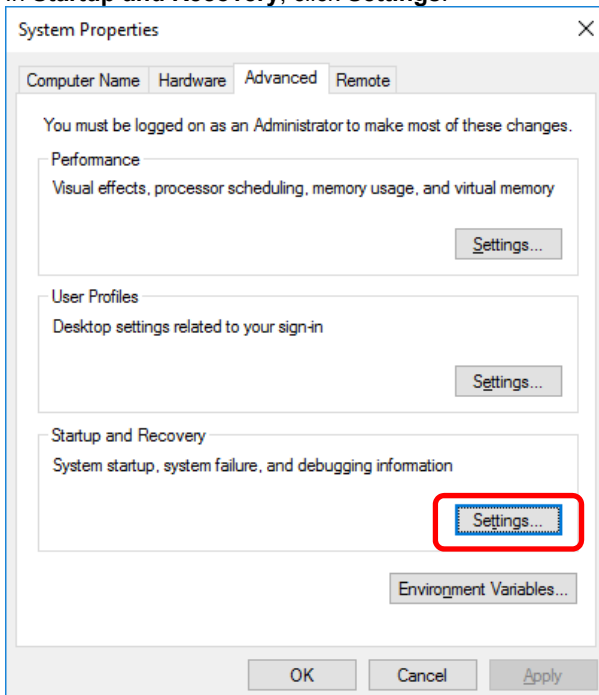
1. Right-click the lower left of the screen, and click **System** from the menu displayed.



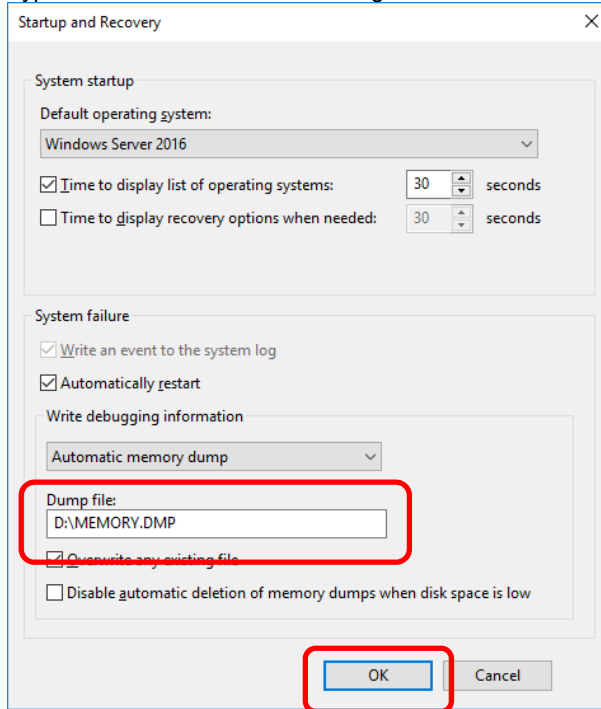
2. Click **Advanced system settings**.



3. In **Startup and Recovery**, click **Settings**.



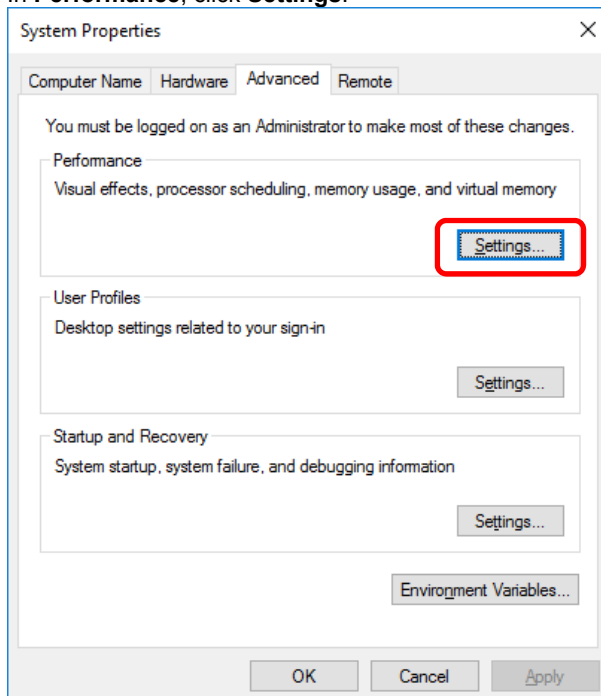
4. Type a file name to store the debug information in the **Dump file** text box, and then click **OK**.



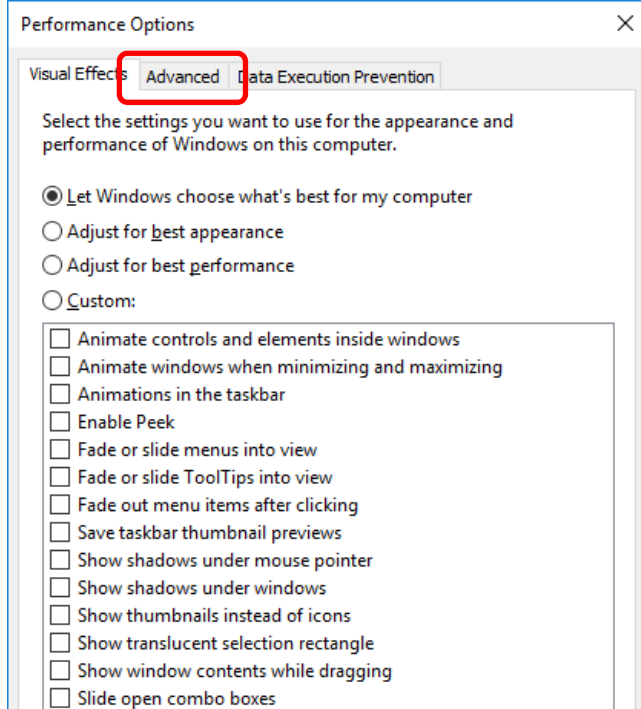
Note the following when specifying a dump file:

- We recommend specifying **Kernel memory dump** for **Write debugging information**.
- Specify a drive that has a free area of at least "total size of physical memory" + 400 MB (total size of physical memory + 1,100 MB when the total size is 4 TB or more).
- The size of debug information (memory dump) to be collected changes as memory is added. Therefore, when adding memory, check the free area size of the dump file write destination.

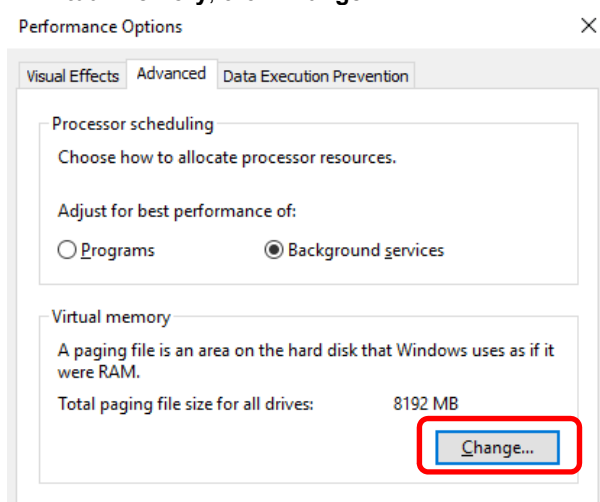
5. In **Performance**, click **Settings**.



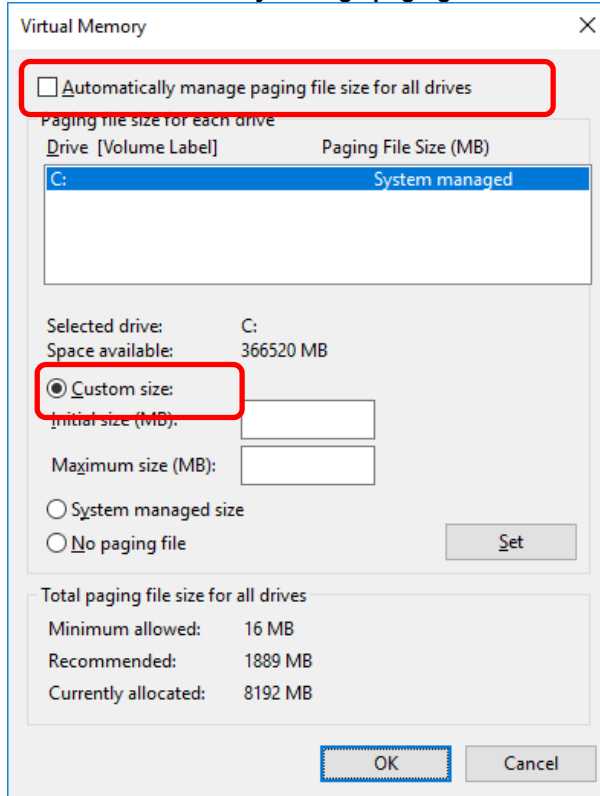
6. Click the **Advanced** tab on the **Performance Options** window.



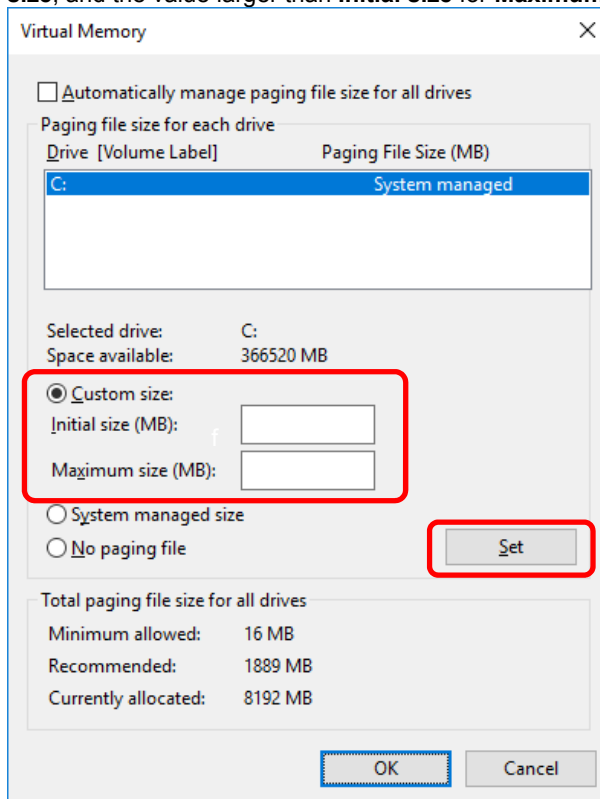
7. In **Virtual memory**, click **Change**.



8. Clear the **Automatically manage paging file size for all drives** check box, and then click **Custom size**.



9. In **Paging file size for each drive**, enter the value equal or larger than the recommended value for **Initial size**, and the value larger than **Initial size** for **Maximum size**, and then click **Set**.



Note the following when specifying a paging file size:

- The paging file is used to collect debug information (dump file). The boot volume must have a paging file of its initial size ("total size of physical memory" + 400 MB (total size of physical memory + 1,100 MB when the total size is 4 TB or more) or more) is enough to store the dump file. Make sure to specify a sufficient paging file size. Recommended size: "the installed memory size" x1.5 or more
- See "System Partition" in *Chapter 1 (4.1 Precautions of Windows Server 2016 Installation)* for recommended value.
- When adding memory, reconfigure the paging file according to the memory size.

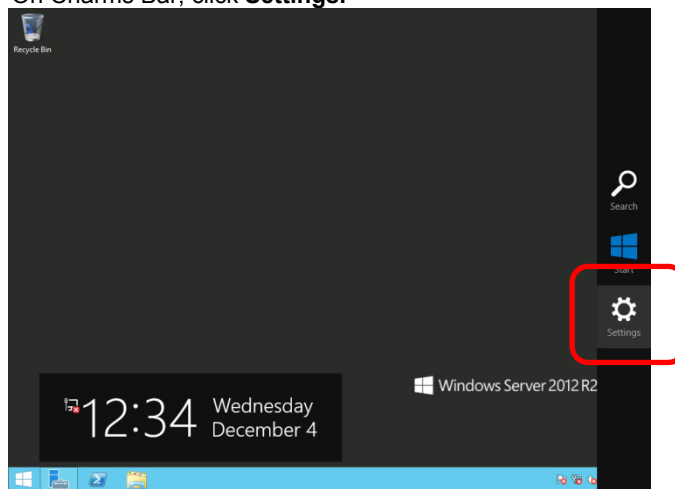
10. Click **OK**.

If a message to restart Windows appears, restart the system according to on-screen message.

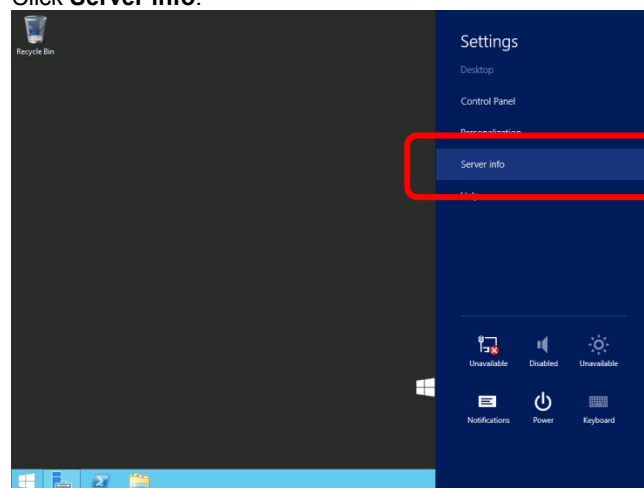
Specification of the memory dump settings is now complete.

6.1.3 Windows Server 2012 R2

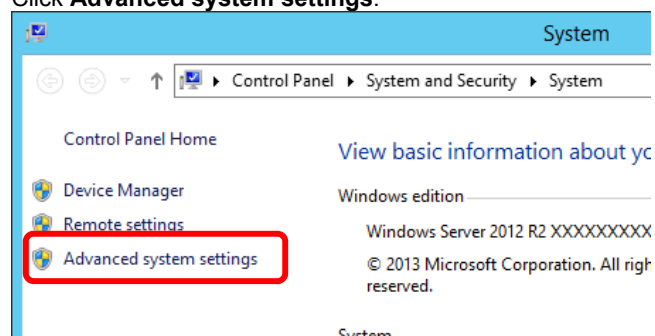
1. On Charms Bar, click **Settings**.



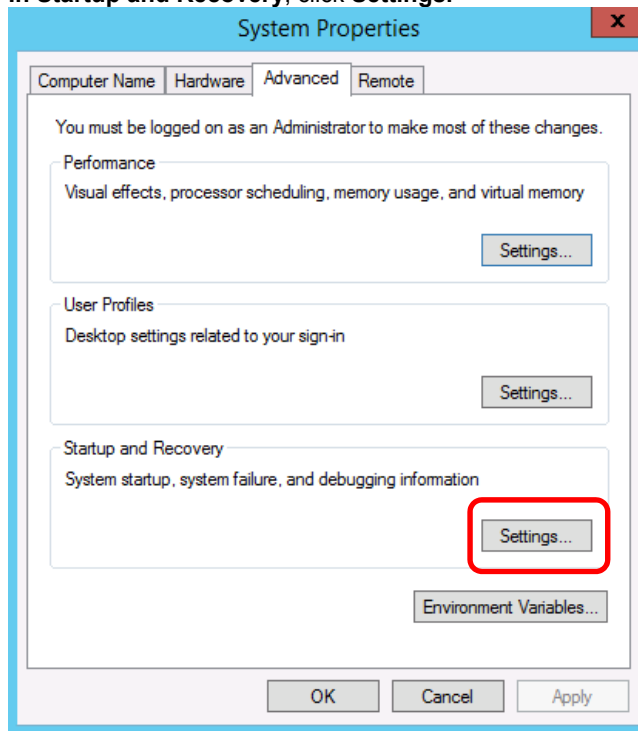
2. Click **Server info**.



3. Click **Advanced system settings**.

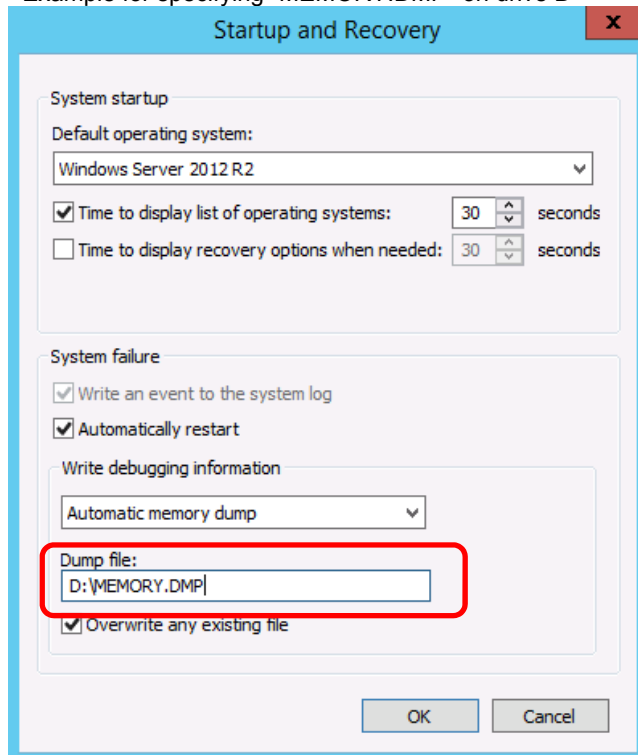


4. In **Startup and Recovery**, click **Settings**.



5. Type the path to a dump file in **Dump file**, and then click **OK**.

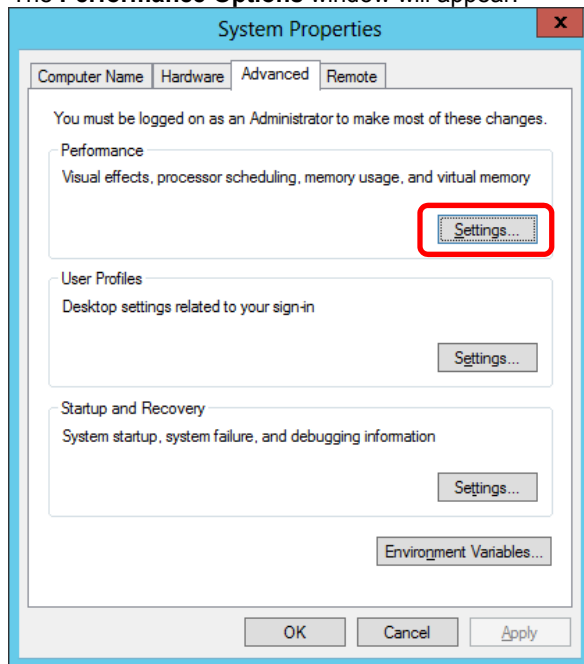
<Example for specifying "MEMORY.DMP" on drive D>



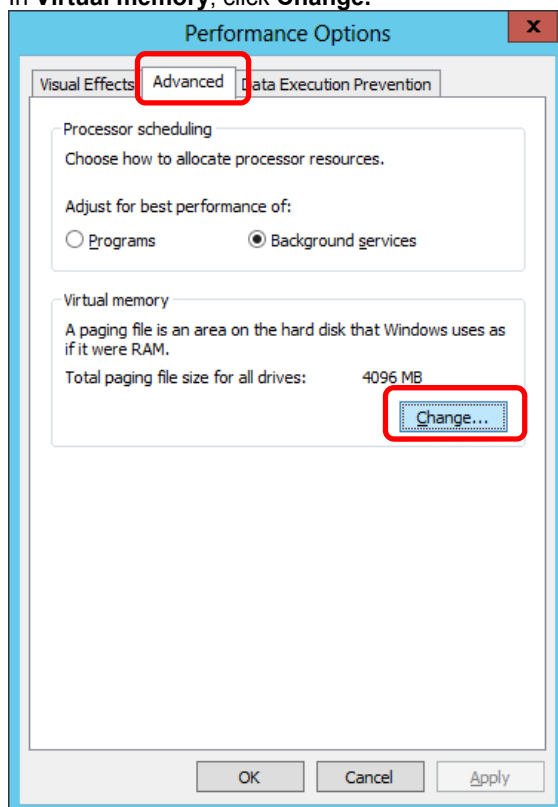
Note the following when specifying a dump file:

- We recommend specifying **Kernel memory dump** for **Write debugging information**.
- Specify a drive that has a free area of at least "total size of physical memory" + 400 MB.
- The size of debug information (memory dump) to be collected changes as memory is added. Therefore, when adding memory, check the free area size of the dump file write destination.

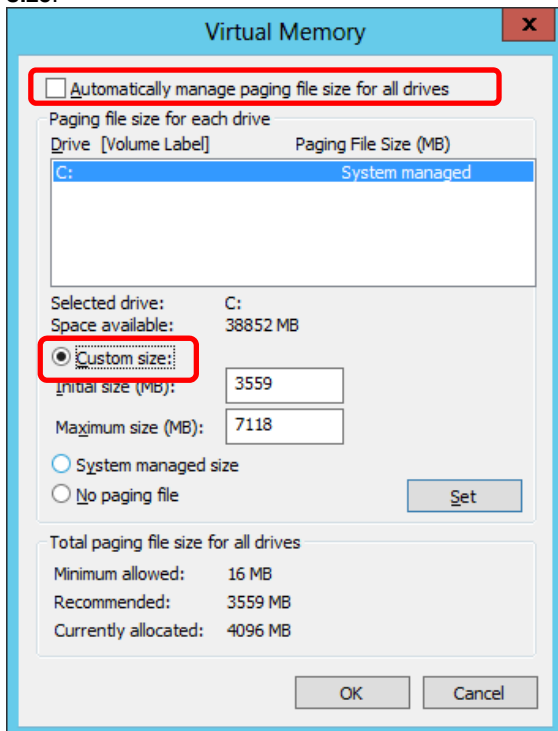
6. In **Performance**, click **Settings**.
The **Performance Options** window will appear.



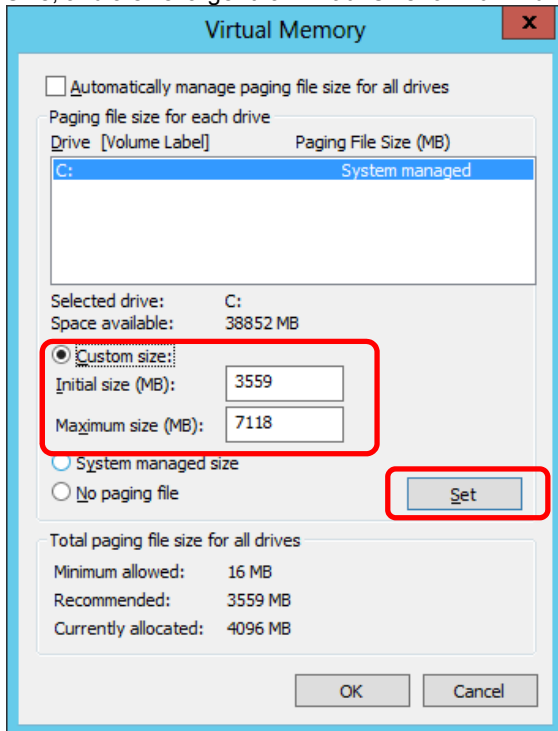
7. Click the **Advanced** tab on the **Performance Options** window.
In **Virtual memory**, click **Change**.



8. Clear the **Automatically manage paging file size for all drives** check box, and then click **Custom size**.



9. In **Paging file size for each drive**, type a size equal or larger than the recommended size for **Initial size**, and a size larger than **Initial size** for **Maximum size**, and then click **Set**.



Note the following when specifying a paging file size:

- The paging file is used to collect debug information (dump file). The boot volume must have a paging file of its initial size ("total size of physical memory" + 400 MB or more) is enough to save the dump file.

- Make sure to specify a sufficient paging file size. Recommended size: "total size of physical memory" x 1.5 or more
- See "System Partition" in *Chapter 1 (5.1 Precautions of Windows Server 2012 R2 Installation)* for recommended value.
- When adding memory, reconfigure the paging file according to the memory size.

10. Click **OK**.

If a message to restart Windows appears, restart the server according to on-screen message.

Specification of the memory dump settings is now complete.

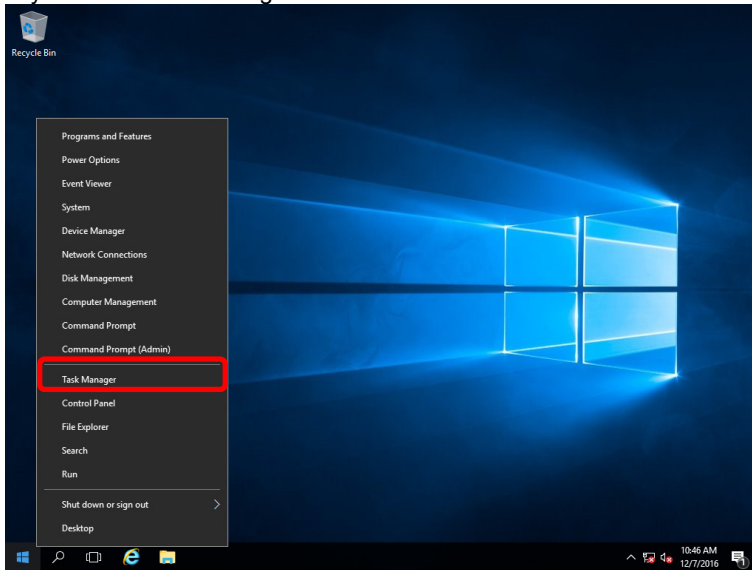
6.2 How to Create a User-mode Process Dump File

The user-mode process dump file records debugging information if an application error occurs.

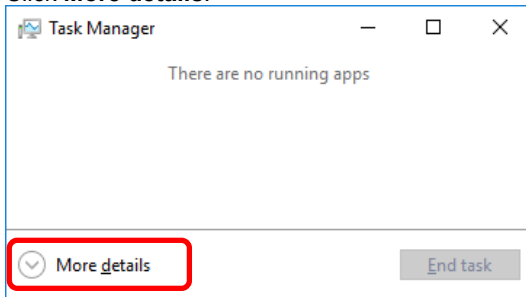
You can get a user-mode process dump file using the following procedures without closing the pop-up window that reported the error:

6.2.1 Windows Server 2019

1. Right-click an empty area of the taskbar and then click **Task Manager** or press <Ctrl> + <Shift> + <Esc> keys to start Task Manager.



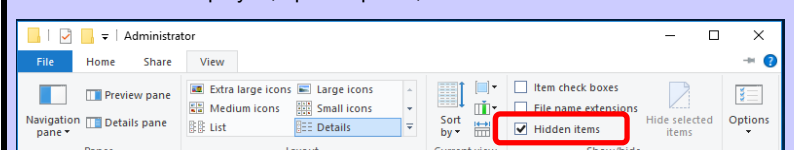
2. Click **More details**.



3. Click the **Processes** tab.
4. Right-click the name of the process that you want to get dump information for, and then click **Create Dump File**.
5. A dump file for the process is created in the following folder:
C:\Users\user name\AppData\Local\Temp

Tips

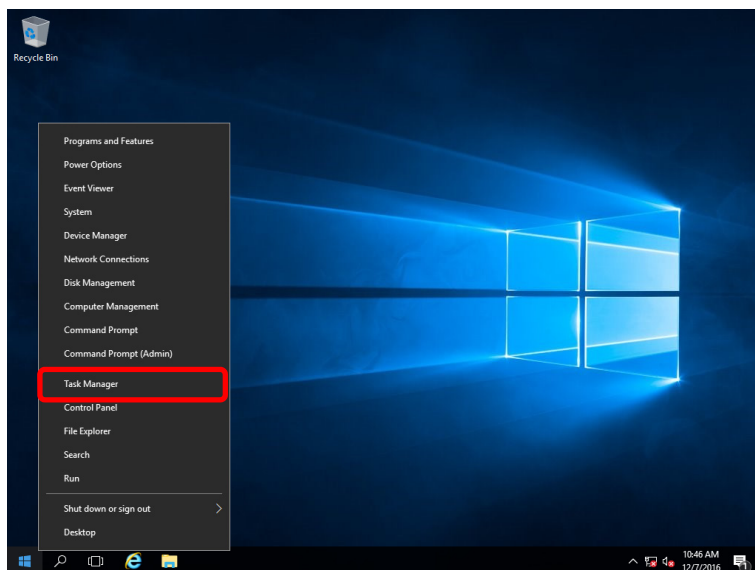
If the folder is not displayed, open Explorer, select **Hidden items** on the **View** tab.



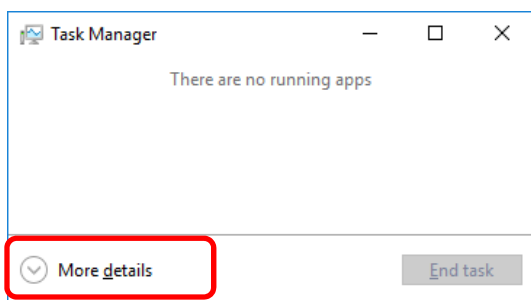
Get the user-mode process dump file from the folder shown in step 5.

6.2.2 Windows Server 2016

1. Right-click an empty area of the taskbar and then click **Task Manager** or press <Ctrl> + <Shift> + <Esc> keys to start **Task Manager**.



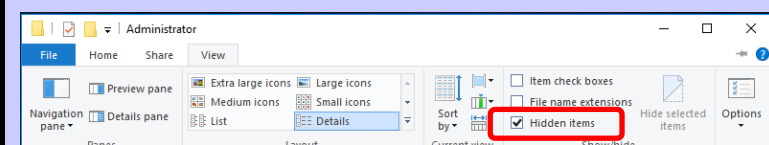
2. Click **More details**.



3. Click the **Processes** tab.
4. Right-click the name of the process that you want to get dump information for, and then click **Create Dump File**.
5. A dump file for the process is created in the following folder:
C:\Users\user name\AppData\Local\Temp

Tips

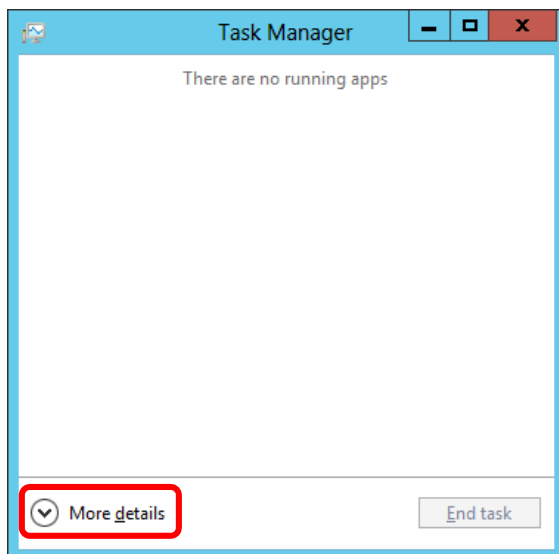
If the folder is not displayed, open Explorer, select **Hidden items** on the **View** tab.



Get the user-mode process dump file from the folder shown in step 5.

6.2.3 Windows Server 2012 R2

1. Right-click an empty area of the taskbar and then click **Task Manager** or press <Ctrl> + <Shift> + <Esc> keys to start **Task Manager**.
2. Click **More details**.

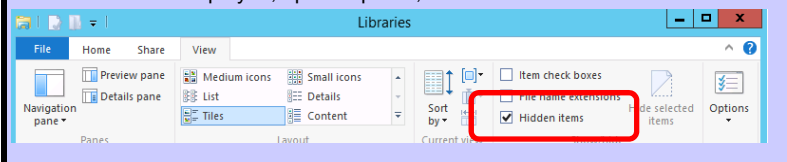


3. Click the **Processes** tab.
4. Right-click the name of the process that you want to get debugging information, and then click **Create Dump File**.
5. A dump file for the process is created in the following folder:

C:\Users\user name\AppData\Local\Temp

Tips

If the folder is not displayed, open Explorer, select **Hidden items** on the **View** tab.



Get the user-mode process dump file from the folder shown in step 5.

7. Backup of system information

After environment building, back up the setting information of the system in advance of any troubles.

- Back up system settings contained in system utility.
See *User's Guide (Chapter 3, 2. Description on System Utility)* for details of system utility.
- Back up detail information of iLO 5.
See "*iLO 5 User's Guide*" for details of procedure.

Installing Bundled Software

This chapter explains the bundled software and how to install them.

1. Bundled Software for the Server

Describes the bundled software to be installed in the server.

2. Bundled Software for "PC for Management"

Describes the bundled software to be installed in "PC for Management" that is used to monitor and manage the server.

1. Bundled Software for the Server

This section explains the software bundled in the server. Refer to the documentation that comes with software for details.

1.1 RESTful Interface Tool (Windows version)

RESTful Interface Tool is a command line interface tool able to control systems using iLO RESTful API. If you use a device information collection utility, you should install this tool.

Follow the steps below to install.

1. After logging on the Windows which you installed in this device, set Starter Pack DVD in the optical disk drive.
2. With Explorer, kick the "start_up.bat" under the root folder of DVD.
The menu of Starter Pack starts.
3. From the menu, select in the following order: [applications]-[RESTful interface tool].
In the default program, it is installed in [C:¥Program Files ¥OEM¥RESTful Interface Tool] folder.
(C: is the system drive to which Windows was installed.)

1.2 NEC ESMPRO ServerAgentService (for Windows)

NEC ESMPRO ServerAgentService (for Windows) is an application used to monitor the server.

When installing NEC ESMPRO ServerAgentService (for Windows) individually, see "*NEC ESMPRO ServerAgentService Installation Guide (Windows)*" in Starter Pack.

1.3 Smart Storage Administrator

Smart Storage Administrator is an application used to manage and monitor the following RAID controllers:

- Onboard RAID Controller
- N8103-189 RAID Controller (0GB, RAID 0/1)
- N8103-190 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-191 RAID Controller (4GB, RAID 0/1/5/6)
- N8103-192 RAID Controller (0GB, RAID 0/1)
- N8103-193 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-194 RAID Controller (4GB, RAID 0/1/5/6)
- N8103-195 RAID Controller (0GB, RAID 0/1)
- N8103-201 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-196 RAID Controller (4GB, RAID 0/1/5/6)

For details about Smart Storage Administrator, see *Smart Storage Administrator User's Guide* on the following website.

NEC corporate site: <https://www.58support.nec.co.jp/global/download/>
-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

If the system requirements for Smart Storage Administrator described in *Smart Storage Administrator User's Guide* differ from *User's Guide* of the server, follow *User's Guide* of the server.

1.3.1 Setup of Smart Storage Administrator

(1) Setup using Starter Pack

To install Smart Storage Administrator from Starter Pack, run the menu, and then click "Integrated Installation" or "Applications". You can install Smart Storage Administrator by installing Standard Program Package.

For details, see *Chapter 2 (4. Details of Starter Pack)* in *Maintenance Guide*.

(2) Setup using the program

See the *Smart Storage Administrator User's Guide* if installing Smart Storage Administrator downloaded from the web.

1.3.2 RAID Report Service

This service monitors the RAID status and notifies failures.

See the *Smart Storage Administrator User's Guide* for information on the RAID Report Service, including installation, operation, and function details.

1.4 Express Report Service / Express Report Service (HTTPS)

To avoid system failures or to maintain the server quickly, Express Report Service / Express Report Service (HTTPS) informs the support center of the failure information, preventive maintenance information by E-Mail, modem, or HTTPS. If you want to use this service, contact your sales representative and install NEC ESMPRO ServerAgentService before using this service.

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

1.5 NEC Product Info Collection Utility

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

1.5.1 Installation

Follow the steps below to install this utility.

1. Log on to Windows as an Administrator, and then insert Starter Pack DVD into the optical disk drive.
2. Run "start_up.bat" located under the DVD route folder using Explorer.
The Starter Pack menu will appear.
3. Click **Applications** from the menu and then click **Product Info Collection Utility**.
The installation will start. Follow the instructions in the dialog boxes until installation is complete.
This utility is usually installed to the `C:\ezclct` folder.

Tips

- Log on using an account with an administrator right.
- The installation drive requires a free space of at least 2.5 GB.
- Restart the server after installing this utility on Windows Server 2016 or Windows Server 2019, but you do not need to restart after updating.
- To collect device information with this tool, RESTful interface tool needs to be installed. If it is not installed, some logs required for the maintenance may not be gathered.

1.5.2 Uninstallation

Uninstall the utility depending on the Windows installation type:

- **Full installation (Server with GUI):**

Choose **Add/Remove Programs** from **Control Panel** and then click **Product Info Collection Utility (Vx.x.x)**. Follow the instructions in the dialog boxes.

- **Server Core installation:**

Run the following command at the command prompt:

```
Wmic product where name="Product Info Collection Utility" call uninstall
```

2. Bundled Software for "PC for Management"

This section describes the bundled software required to configure "PC for Management" used to manage the server system via network.

2.1 NEC ESMPRO Manager

NEC ESMPRO Manager can remotely control and monitor the hardware of the server.

To use these features, install the bundled software for the server such as NEC ESMPRO ServerAgentService.

NEC ESMPRO Manager installer and manual can be downloaded from the website below.

<https://www.58support.nec.co.jp/global/download/index.html>

For details about NEC ESMPRO Manager, see *NEC ESMPRO Manager Installation Guide*.

2.2 Express Report Service (MG)

To avoid system failures or to maintain the server quickly, Express Report Service (MG) informs the support center of the failure information or preventive maintenance information by E-Mail, modem, or HTTPS.

To use this feature, NEC ESMPRO ServerAgentService is required because Express Report Service usually works with it.

If NEC ESMPRO ServerAgentService cannot be installed to the server, you can install Express Report Service (MG) into NEC ESMPRO Manager instead of it.

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

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 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.

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NEC Express Server
Express5800/R120h-1M, R120h-2M
(3rd-Gen)
Installation Guide (Windows)

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