Installation Guide (Windows)

NEC Express Server
Express5800 Series

Express5800/D120h
EXP710, EXP711, EXP712

10.117.01-102.02
November 2017

Manuals

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

Contents

Conventions Used in This Document

Signs and symbols for safety

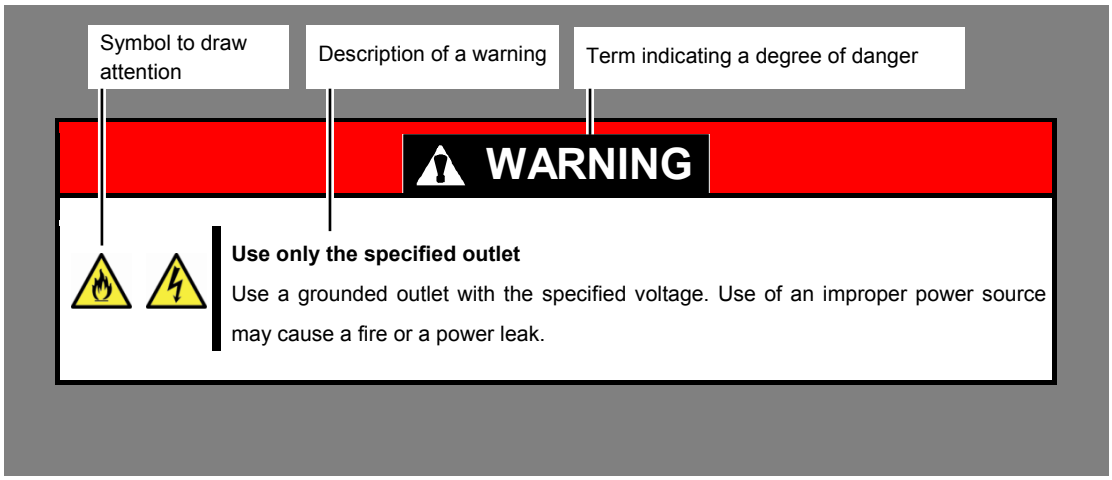
WARNING and CAUTION are used in this guide as following meaning.

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

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

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

(Example in this guide)



Notations used in the text

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

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

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**
- **DVD Dual drive**

Hard disk drive

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

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

Removable media

Unless otherwise stated, *removable media* described in this document refers to the following.

- **USB flash drive**
- **Flash FDD**

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

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

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

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UEFI NETWORK STACK 2

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

http://www.nec.com/

Safety notes

To use this server safely, read thoroughly *Safety Precautions and Regulatory Notices* that comes with your server.

NEC Express5800 Series
Express5800/D120h

1 Installing Windows

This chapter describes how to install Windows. Read through this chapter to set up the Windows correctly.

1. **Before Starting Setup**

   Describes Service Packs and mass storage controllers which is supported by EXPRESSBUILDER.

2. **Setting Up the Operating System**

   Describes the flow chart of setting up the operating system.

3. **Setting Up Windows Server 2016**

   Describes how to set up Windows Server 2016.

4. **Setting Up Windows Server 2012 R2**

   Describes how to set up Windows Server 2012 R2.

5. **Setting Up for Solving Problems**

   Describes the features that must be set up in advance so that the server can recover from any trouble early and precisely.

6. **Windows OS Parameter File**

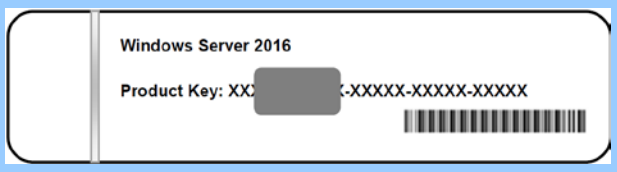
   Describes how to create the parameter file.

1. Before Starting Setup

This section describes the points of using EXPRESSBUILDER to set up Windows operating systems.

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.

1.1 Starting EXPRESSBUILDER

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

For details, see *Chapter 2* (*6. Details of EXPRESSBUILDER*) in *Maintenance Guide*.

Usage

Insert the EXPRESSBUILDER DVD that comes with the module enclosure into the drive connected to the server module and restart it.

1.2 Supported Windows OS

You can install the following editions of Windows operating system.

EB : Setup with EXPRESSBUILDER

OS : Setup with Windows Standard Installer

Windows OS		Boot mode		Installation option	
		UEFI	Legacy	EB	OS
Windows Server 2016 *	Standard	✓	N/A	✓	✓
	Datacenter	✓	N/A	✓	✓
Windows Server 2012 R2	Standard	✓	N/A	✓	✓
	Datacenter	✓	N/A	✓	✓

✓ : Supported

* “Nano Server” is not supported on Express 5800 series server.

1.3 Supported Service Pack

The following installation media and the Service Pack installations are supported by EXPRESSBUILDER.

OS installation media	No Service Pack installation	Service Pack 1 installation
Windows Server 2016	✓	N/A
Windows Server 2012 R2	✓	N/A

✓ : Supported

1.4 Mass Storage Controllers Supported by EXPRESSBUILDER

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

If an optional board not mentioned below is connected, set it up while referring to the instructions supplied with the board and *Chapter 1 (1.6 Using Mass Storage Controller Not Supported by EXPRESSBUILDER*).

	Windows Server 2016	Windows Server 2012 R2
RAID Controllers supporting OS installation by EXPRESSBUILDER		
N8103-176 RAID Controller (1GB, RAID 0/1)	✓	✓
|N8103-177 RAID Controller (1GB, RAID 0/1/5/6)	✓	✓
N8103-178 RAID Controller (2GB, RAID 0/1/5/6)	✓	✓
N8103-188 RAID Controller (RAID 0/1)	✓	✓
Other options		
N8103-184 SAS Controller	✓	✓
N8190-157A Fibre Channel Controller(1ch) (16Gbps/Optical)	✓	✓
N8190-158A Fibre Channel Controller(2ch) (16Gbps/Optical)	✓	✓
N8190-161 Fibre Channel Controller(1ch)	✓	✓
N8190-162 Fibre Channel Controller(2ch)	✓	✓

✓: Supported

1.5 LAN Boards Supported by EXPRESSBUILDER

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

	Windows Server 2016	Windows Server 2012 R2
LAN board supporting OS installation by EXPRESSBUILDER		
None	N/A	N/A
Other options		
N8104-149 10GBASE Adapter (SFP+/2ch)	✓	✓
N8104-150 1000BASE-T Adapter	✓	✓
N8104-151 Dual Port 1000BASE-T Adapter	✓	✓
N8104-152 Quad Port 1000BASE-T Adapter	✓	✓
N8104-157 Dual Port 10GBASE-T Adapter	✓	✓
N8104-168 Quad Port 1000BASE-T Card	✓	✓
N8104-170 Dual Port 10GBASE-SFP+ Card	✓	✓

✓: Supported

1.6 Using Mass Storage Controller Not Supported by EXPRESSBUILDER

To install the Windows when using a mass storage controller not supported by EXPRESSBUILDER such as the newest RAID controller, follow the steps below.

You do not need to perform the following instructions usually.

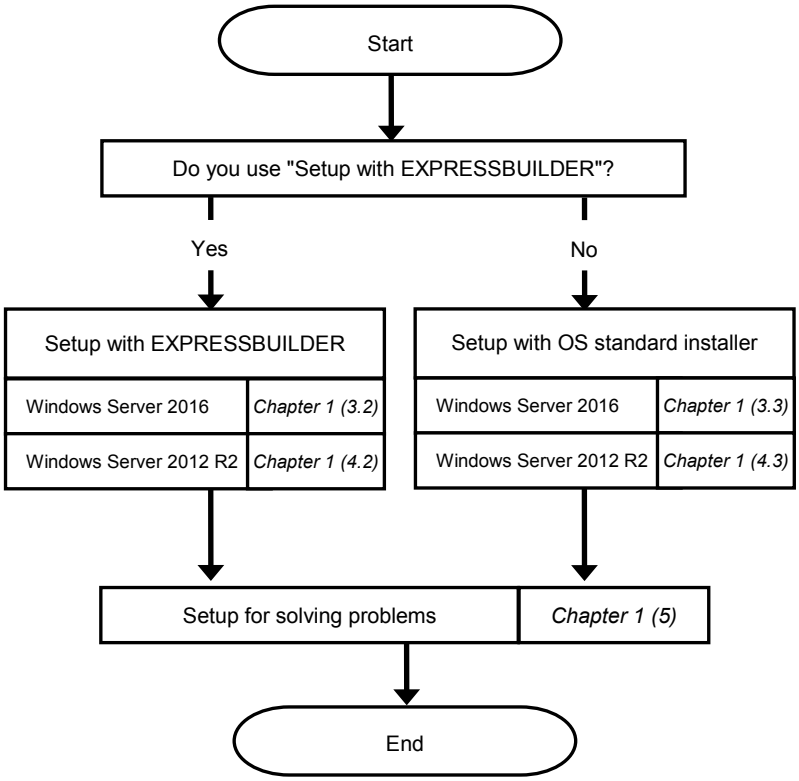
1. Have the instructions for the mass storage controller ready.

   Note If the contents of this document differ from that of the mass storage controller, prioritize the contents of the controller's document.

2. If you use a RAID controller, follow the controller instructions to configure a RAID system.
3. See *Setup with Windows Standard Installer* of each Windows family in this guide.

2. Setting Up the Operating System

See the figure below to find a section appropriate to your OS installation.



3. Setting Up Windows Server 2016

Set up Windows Server 2016.

3.1 Before Starting Setup

Read through the cautions explained here before starting setup.

EB : Setup with EXPRESSBUILDER

OS : Setup with Windows standard installer

BIOS settings		
EB	OS	Change **Boot Mode** to **UEFI Mode**. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Boot → Boot mode select → UEFI**
EB	OS	Select **Enabled** for X2APIC feature of processor. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Chipset → Processor Configuration → Extended APIC→ Enabled**
EB	OS	**Disable** the CSM support function. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Advanced → CSM Configuration → CSM Support**
EB	OS	At re-installation, open **FIXED BOOT ORDER Priorities** in BIOS SETUP to make sure that the higher boot priority than **Windows Boot Manager** is specified for optical disk drive. **Example of correct setting** **[Boot]–[FIXED BOOT ORDER Priorities]** **– Boot Option #1 [UEFI: Optical Disk Drive]** **– Boot Option #2 [Windows Boot Manager]** → The system can boot from OS installation media. **Example of incorrect setting** **[Boot]–[FIXED BOOT ORDER Priorities]** **– Boot Option #1 [Windows Boot Manager]** **– Boot Option #2 [UEFI: Optical Disk Drive]** → The system cannot boot from OS installation media. **Note** • Before opening BIOS SETUP, be sure to insert OS installation media into optical disk drive. • If **Windows Boot Manager** is not displayed in **FIXED BOOT ORDER Priorities**, you need not to confirm the boot priority.

Hardware configuration		
The following hardware configurations require special procedures.		
EB	OS	**Reinstalling to a mirrored volume** 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.
EB	OS	**Peripheral devices such as RDX/MO** Remove an MO device before installing an OS. Some peripheral devices need to be halted before installation. Refer to the manual provided with the peripheral devices for how to set a device appropriate to installation.
EB	OS	**DAT, LTO, and similar media** Do not set media that is unnecessary to installation during setup.
EB	OS	**Installing in internal or external multiple hard disk drives (logical drives)** For details on installing operating systems to a system in which two or more RAID Controller exist, or to an external disk drive* that is not subject to setup, see *Chapter 1* (*3.9 Installation When Multiple Logical Drives Exist)*. * Disk array unit (such as iStorage) or hard disk drive in Disk Expansion Unit.
EB	OS	**Reinstalling to hard disk drives that have been upgraded to dynamic disks** If the hard disk drive has been upgraded to a dynamic disk, the operating system cannot be reinstalled to it with the existing partitions. Set up the operating system with the Windows standard installer.

EB OS

Setup when mass memory is installed

If mass memory is installed in your system, the large size of paging file is required at installation. Thus, the partition size for storing debug information (dump file) may not be secured.

If you fail to secure the dump file size, allocate the required file space to multiple disks by performing the following steps.

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 store the debug information (required dump file size) by referring to *Chapter 1 (5. Setup for Solving Problems)*.

If the hard disk drive does not have enough space 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.

Note

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

If sufficient space cannot be secured for the paging file, perform either of the following after installing Windows.

– **Specify a hard disk drive other than the system drive as the location to store the paging file for collecting memory dump**

Create a paging file of the installed memory size + 400 MB or more in a drive other than the system drive.

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. Therefore, 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.

Example of correct setting

C: No paging file exists
D: Paging file whose size is "installed memory size + 400 MB" or more

→ The paging file in drive D can be used for collecting memory dump because its size satisfies the requirement.

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.

<When specifying the file named "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 to edit 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

Desktop Experience

Size required to install the OS	= 15,200MB
Paging file size (recommended)	= installed memory size × 1.5
Dump file size	= installed memory size + 400MB
Application size	= as required by the application

Server Core

Size required to install the OS	= 10,300MB
Paging file size (recommended)	= installed memory size × 1.5
Dump file size	= installed memory size + 400MB
Application size	= as required by the application

For example, if the installed memory size is 2GB(2,048MB), application size is 100MB, and Server with a GUI is selected, the partition size is calculated as follows:

15,200MB ＋ (2,048MB × 1.5) ＋ 2,048MB ＋ 400MB ＋ 100MB

= 20,820 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.

Desktop Experience : **32,768MB (32GB) or more**

Server Core : **32,768MB (32GB) or more**

*1 GB = 1,024 MB

Note

- 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.

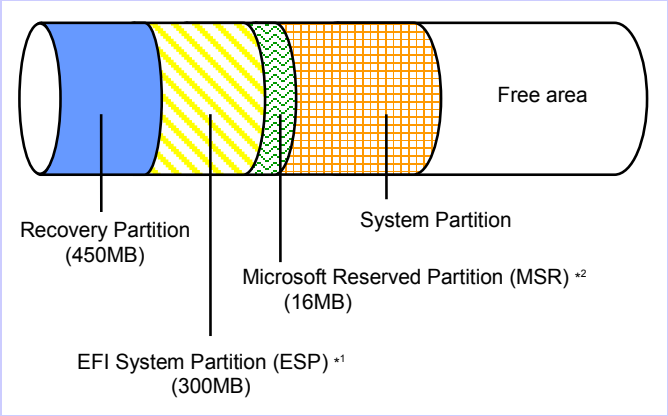
Tips

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

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

528MB is allocated for these three partitions out of the specified partition size.
For example, when 61,440MB is specified for partition size, the area available free area is calculated as follows:

61,440MB – (450MB + 100MB + 16MB) = 60,874MB



*1 May be 100MB in size depending on hard disk drive type.
300MB partition will be created in case of setup with EXPRESSBUILDER.

*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.
http://www.58support.nec.co.jp/global/download/w2016/hyper-v/hyper-v-ws2016.html

Using BitLocker

EB OS

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 document 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)". See *3.7 Setup of Windows Server 2016 NIC Teaming (LBFO)* and specify any required settings.

3.2 Setup with EXPRESSBUILDER

This section describes how to install Windows with EXPRESSBUILDER.

This feature automatically recognizes the RAID controller connected to the server and configures the RAID system. Therefore the hardware installation of the server needs to be finished by following "*User's Guide*".

Important

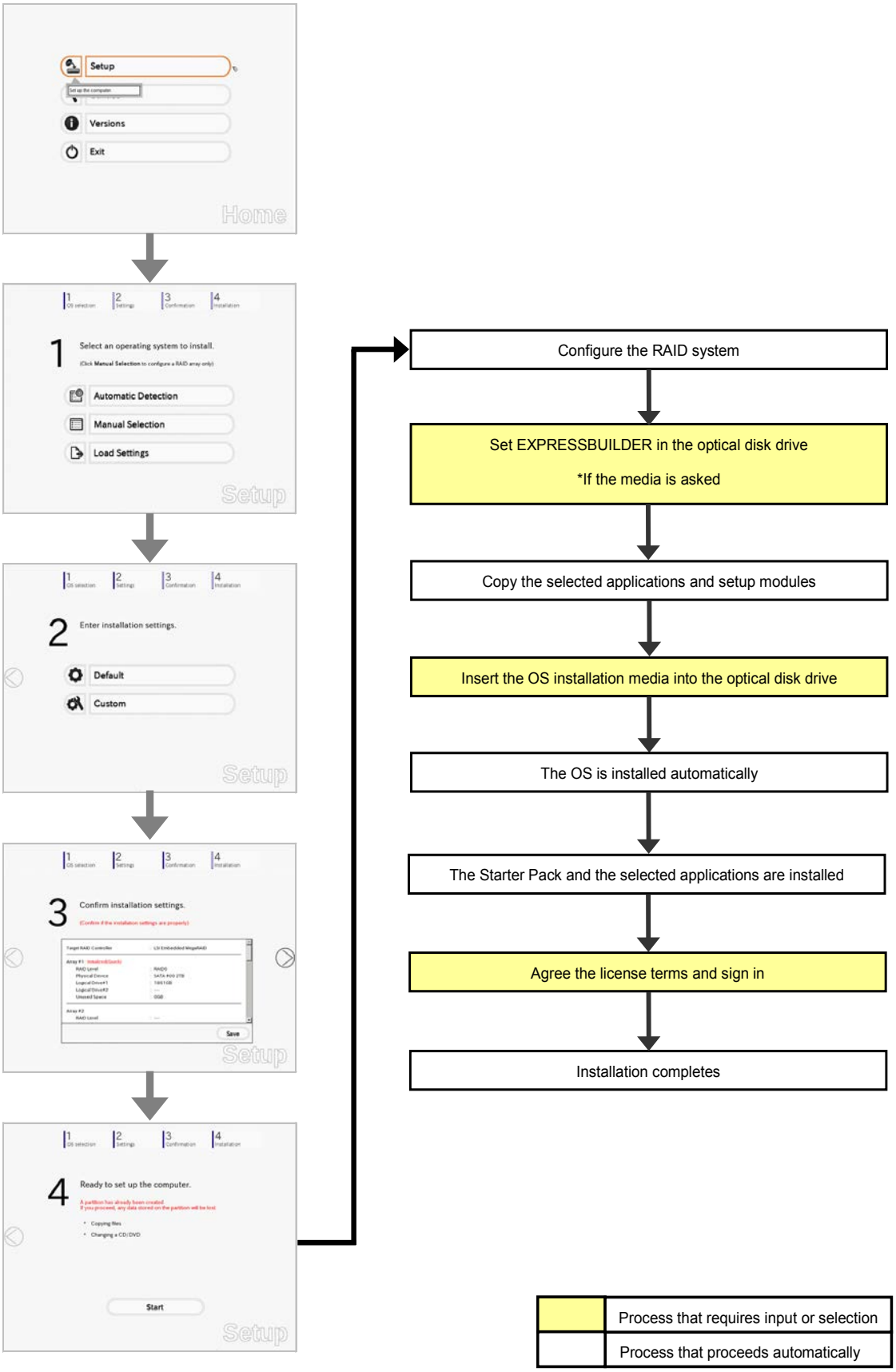
- **Setup with EXPRESSBUILDER may delete all data of the hard disk drive depending on the settings. Pay attention to input parameters. You must be especially careful when configuring the following:**
  - **RAID settings**
  - **Partition Settings**

  Backing up user data, as needed, is recommended.
- **Before starting setup, be sure to disconnect hard disk drives from the RAID Controller that is not to be setup. Install those hard disk drives after setup has completed. Conducting setup with hard disk drives being connected with RAID Controller may cause existing data to be erased unintentionally. It is recommended to make backup copy of user data before starting setup.**

Tips

- Setup with EXPRESSBUILDER allows you to use a pre-specified parameter file or save the parameters specified in setup as a parameter file on removable media.
- For details on creating a parameter file, see *Chapter 1 (6. Windows OS Parameter File).*

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 2016 DVD-ROM*)

- The following EXPRESSBUILDER
  - **EXPRESSBUILDER DVD**

- Prepare if needed:
  - **Removable media for Windows OS parameter file**

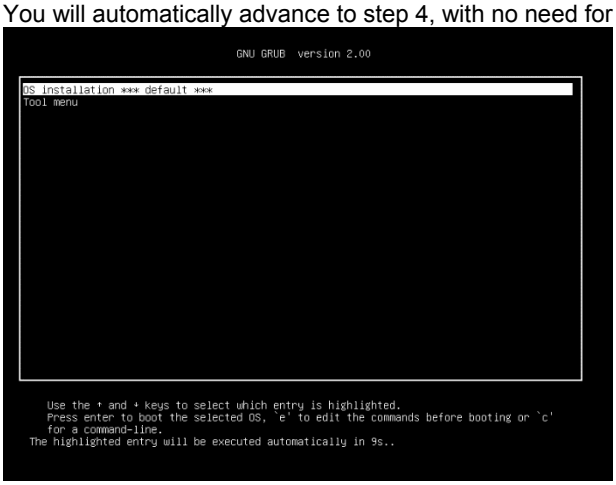
3.2.3 Setup procedure

During Setup with EXPRESSBUILDER, parameters are specified through the wizard.
You can also save the settings that have been input into the removable media.

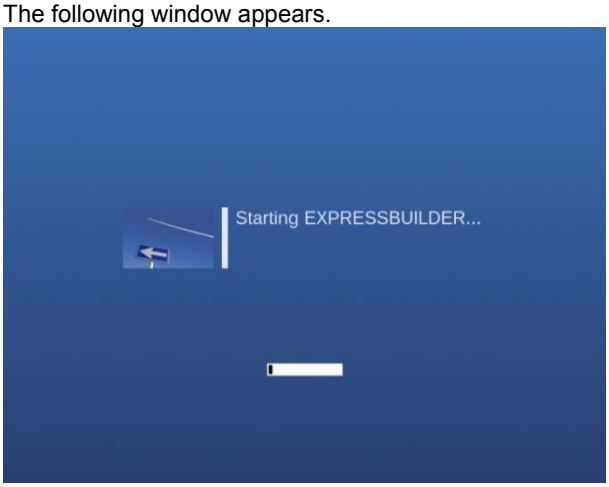
Note

Read through the items in *Chapter 1* (*3.1 Before Starting Setup*) prior to installing Windows.

1. Turn peripheral device (such as a display) power on, and then turn the server power on.
2. Start EXPRESSBUILDER according to *Chapter 1 (1.1 Starting EXPRESSBUILDER)*.
3. Select **OS installation *** default *****.
   You will automatically advance to step 4, with no need for further input.



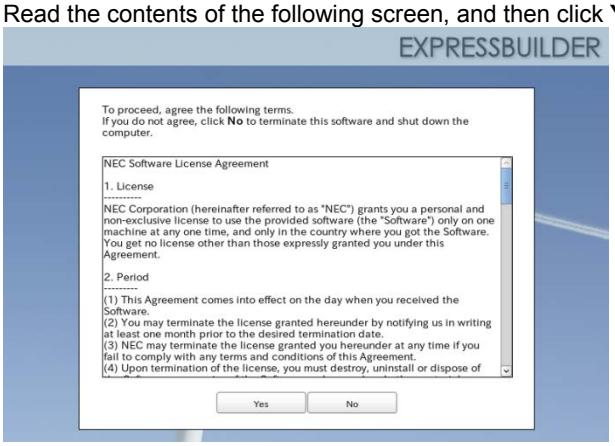
The following window appears.



The server starts from EXPRESSBUILDER.

4. Select **English** on the language selection window, and then click **OK**.

5. Read the contents of the following screen, and then click **Yes**.



6. Click **Setup**.

7. On the following screen, select the OS to install or specify the parameter file.

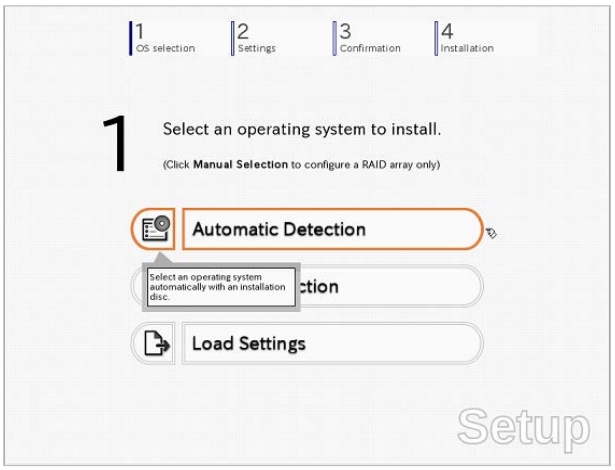
☐ When *not using* a parameter file : Select **Automatic Detection**, and then go to Step 8.
Select **Manual Selection**, and then go to Step 9.

☐ When *using* a parameter file : Select **Load Settings**, and then go to Step 10.

Note When setting up again, parameter input via the wizard can be omitted by loading the saved parameter file.

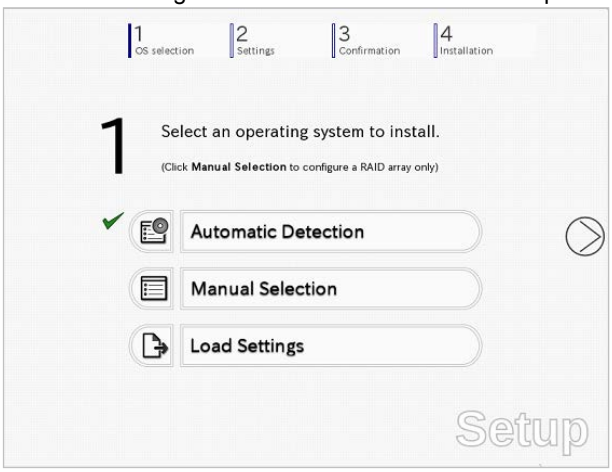
8. When *not using* a parameter file, let the OS on the installation media be recognized by using the following procedure.

8-(1) Click **Automatic Detection**.



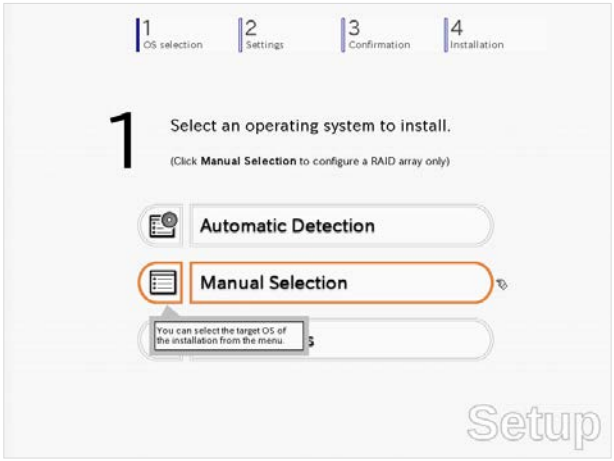
8-(2) Insert the OS installation media, and then click **OK**.

8-(3) Click ▷ on the right side of the screen. → Go to step 11.

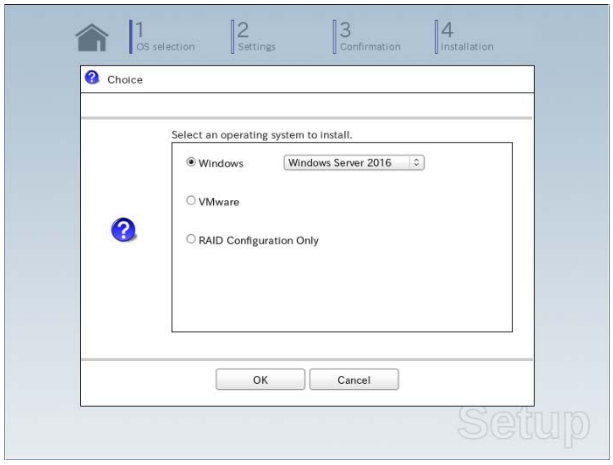


9. When *not using* a parameter file, select an OS by using the following procedure.

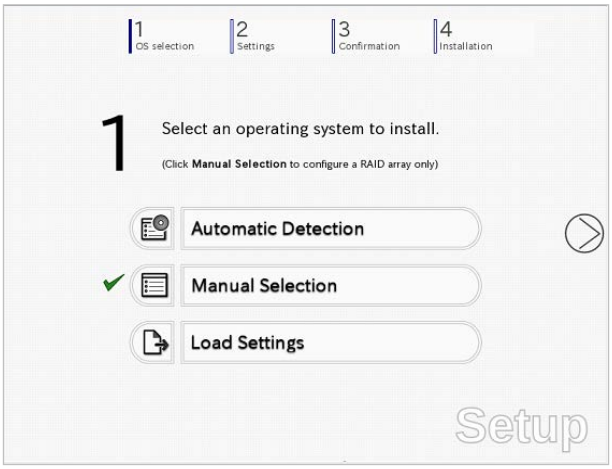
9-(1) Click **Manual Selection**.



9-(2) From the **Windows** list, select **Windows Server 2016**, and then click **OK**.

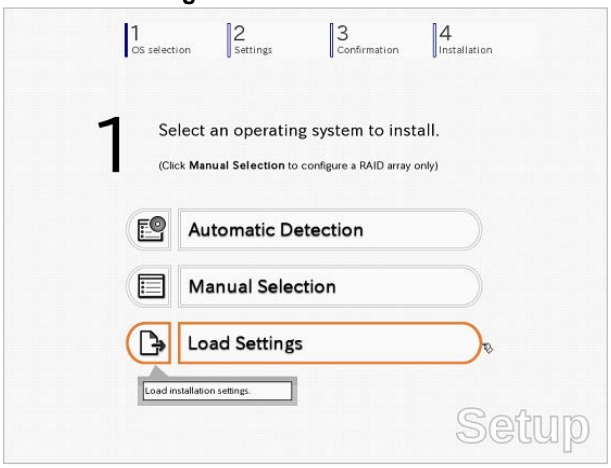


9-(3) Click ▷ on the right side of the screen. → Go to step 11.

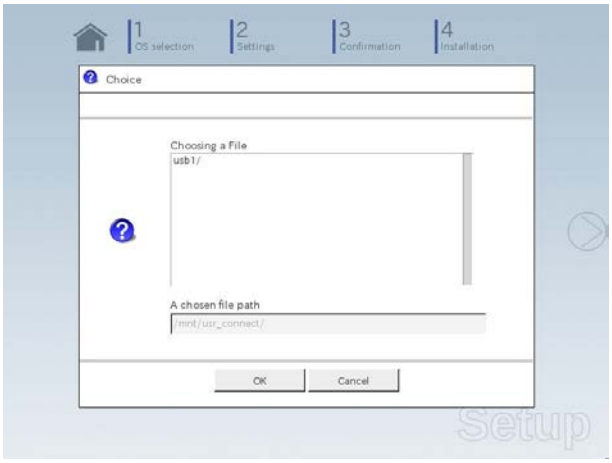


10. When *using* the parameter file, load the parameter file by using the following procedure.

10-(1) Click **Load Settings**.

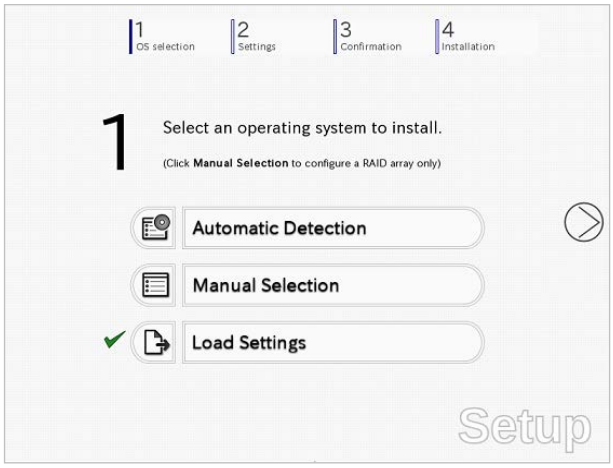


10-(2) Follow the on-screen instruction to load the parameter file (*.tre).



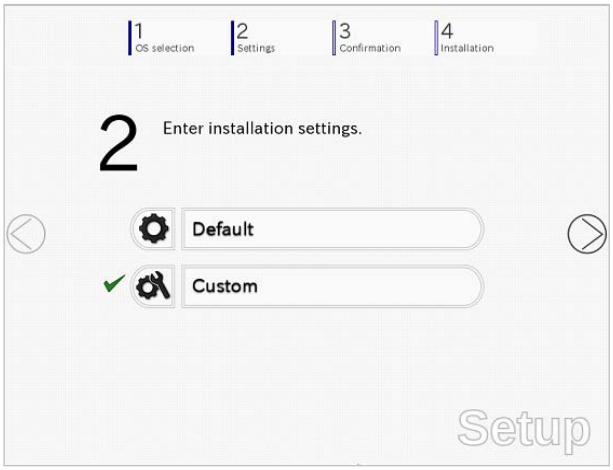
Tips For the removable media in which the parameter file is saved, see **"/mnt/usr_connect/usb*"** (* indicates a number).

10-(3) Click ▷ on the right side of the screen.



10-(4) When the parameter file is correctly loaded, click ▷ on the right side of the screen.
→ Go to step 14.

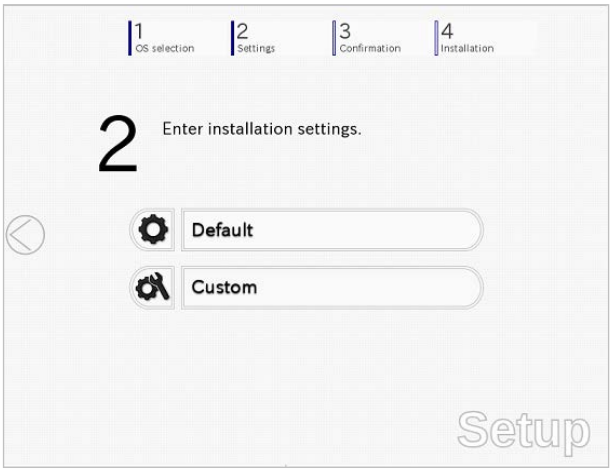
Click **Custom** to check and modify the setting in the wizard.
→ Go to step 13-(1).



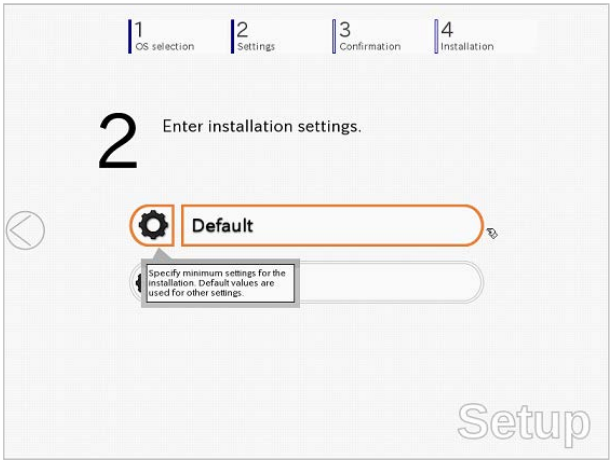
11. Specify the setup parameters by using either of the following methods:

☐ When selecting **Default** : Go to Step 12.

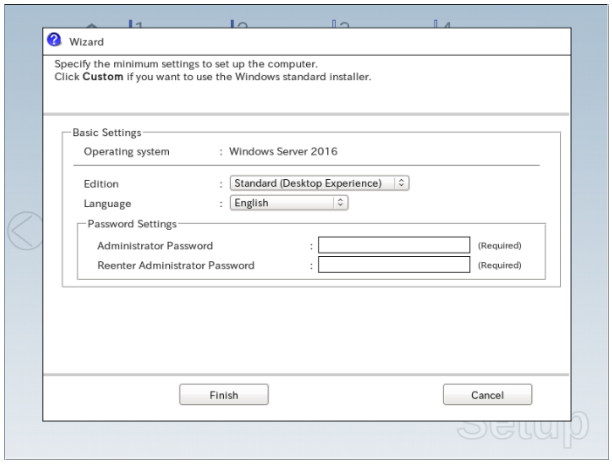
☐ When selecting **Custom** : Go to Step 13.



12. Click **Default**.



12-(1) Select the edition of the OS to install from the **Edition** list.
Type the password, and then click **Finish**.

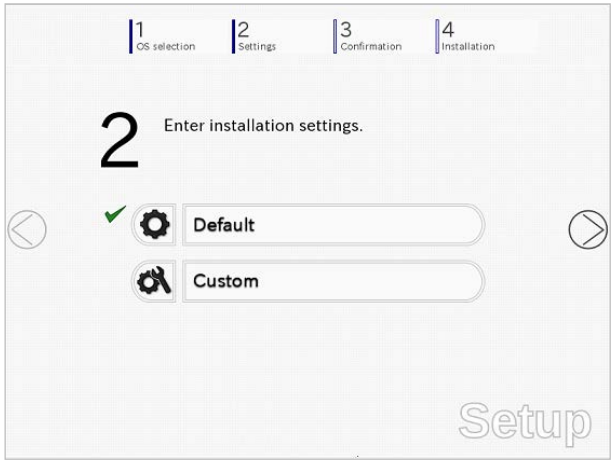


Note

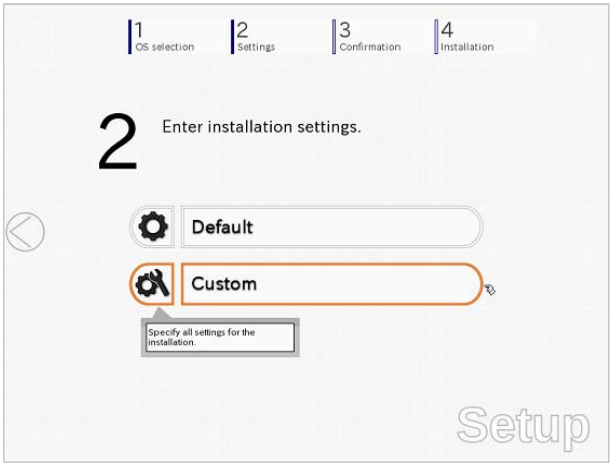
Computer name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains 6 or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z) , and symbols.

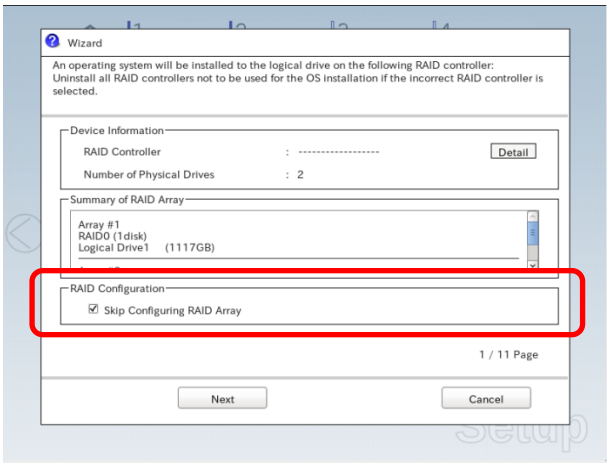
12-(2) Click ▷ on the right side of the screen. → Go to step 14.



13. Click **Custom**.



13-(1) Use this menu to configure the RAID system and logical drives as needed.



When creating new logical drives

With the **Skip Configuring RAID Array** check box cleared, click **Next**.
Set up the logical drives according to the wizard.

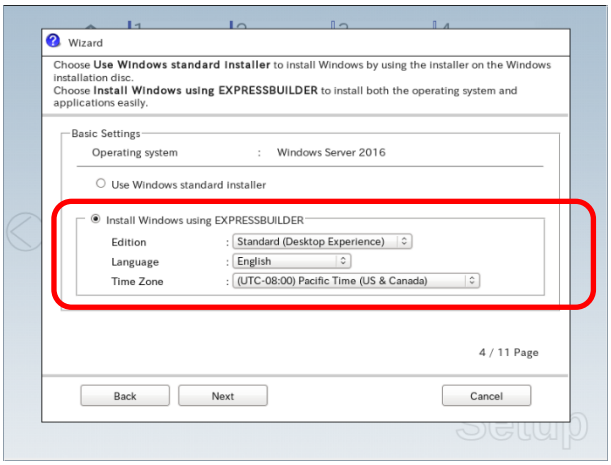
Important **If you proceed with wizard, the existing RAID system is destructed and the contents of hard disk drive will be erased.**

When skipping the creation of new logical drives

Select the **Skip Configuring RAID Array** check box, and then click **Next**.

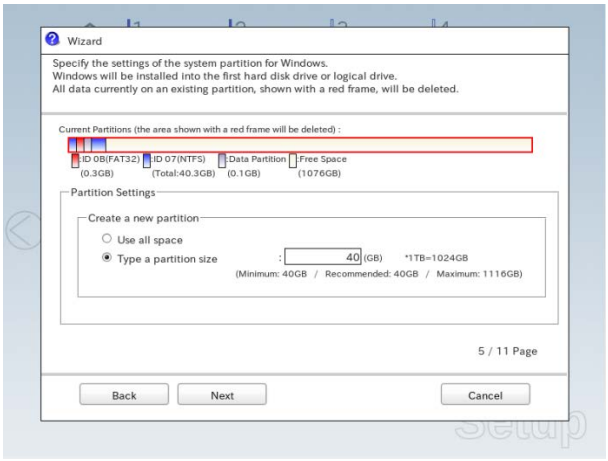
13-(2) Check the settings specified for **Basic Settings**.

Choose **Install Windows using EXPRESSBUILDER**, and then click **Next**.



13-(3) Check the settings specified for **Partition Settings**.

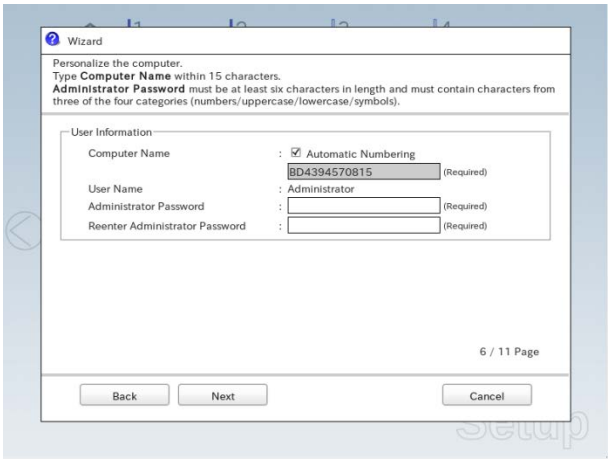
Modify the settings as needed, and then click **Next**.



Important

- **Partition size**
  - **Specify a partition size larger than the minimum required for installing the operating system. See *Chapter 1 (3.1 Before Starting Setup)*.**
  - **The maximum partition size is 2,097,152 MB.**
- **The entire contents of the destination hard disk drive will be deleted.**

13-(4) Enter the user information, and then click **Next**.



Note

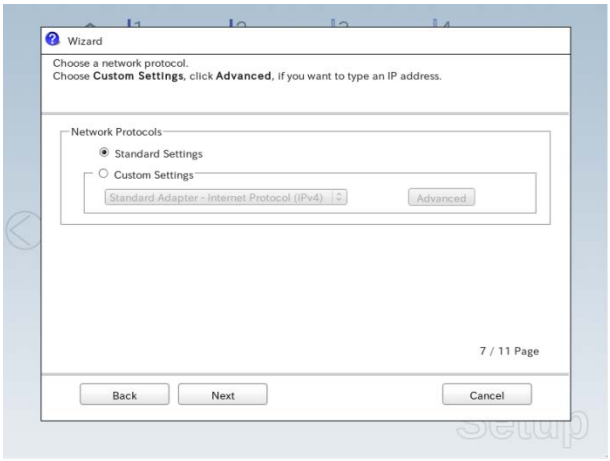
Computer name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains six or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z), and symbols.

Tips

- The Computer name has been assigned by automatic assignment function. If you need to assign another computer name, remove the checkmark from "Auto", and enter the desired computer name.
- If a parameter file is used for setup or if you return to a previous screen, •••••• is displayed in the Administrator password and Reenter Administrator password text boxes.

13-(5) Check the settings specified for **Network Protocols**.
Modify the settings as needed, and then click **Next**.



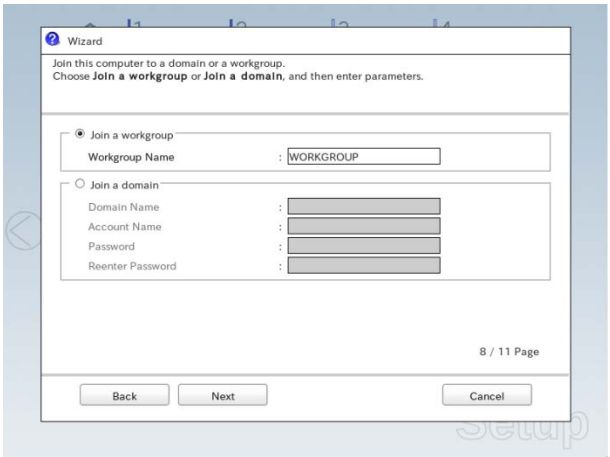
Tips

The order of entry in **Custom settings** may differ from the numbering of LAN ports.

Note

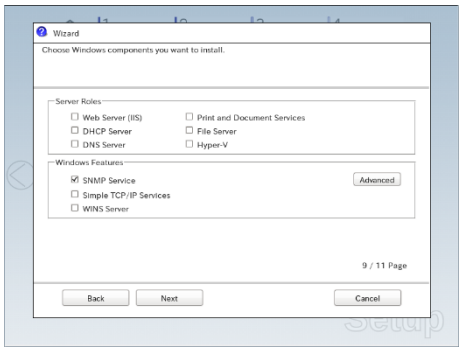
Even when an optional network board is connected, **Custom settings** only shows standard network boards.
After finishing Setup with EXPRESSBUILDER, specify the optional network settings again.

13-(6) Specify the workgroup settings.
If you want to use the domain, change the settings after installing Windows.
Check the settings, modify them as needed, and then click **Next**.

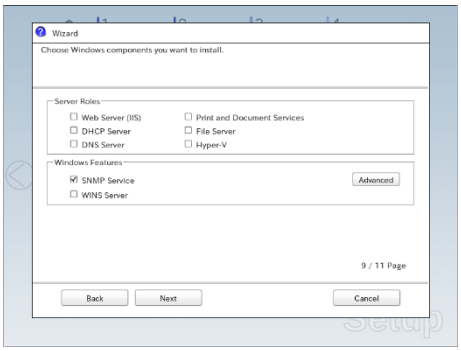


13-(7) Check the settings of Windows components.

Modify the settings as needed, and then click **Next**.

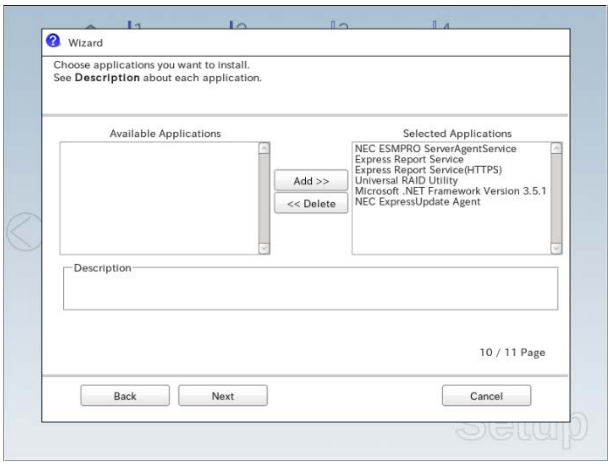


Desktop Experience

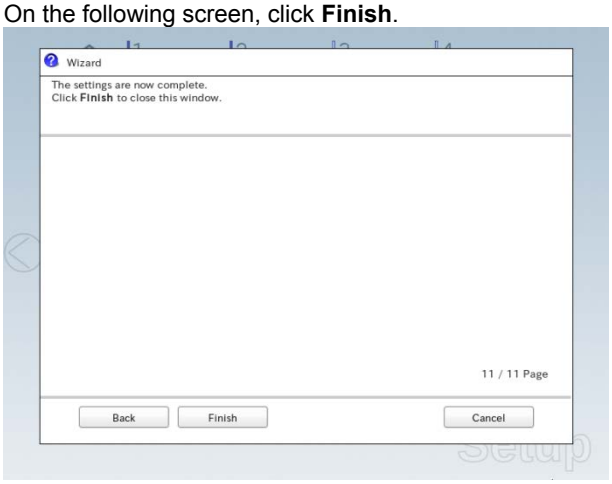


Server Core

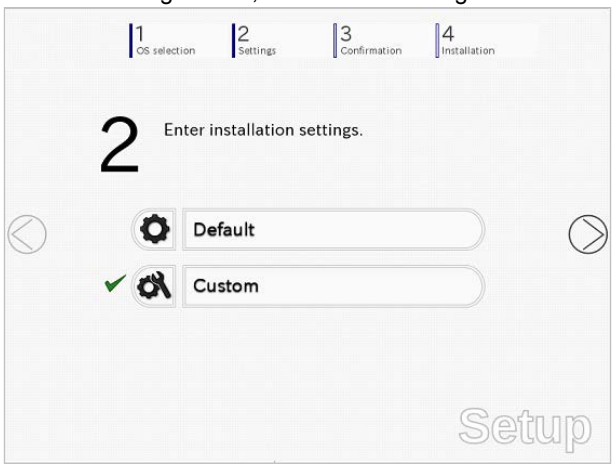
13-(8) Check the settings of applications. Modify the settings as needed, and then click **Next**.



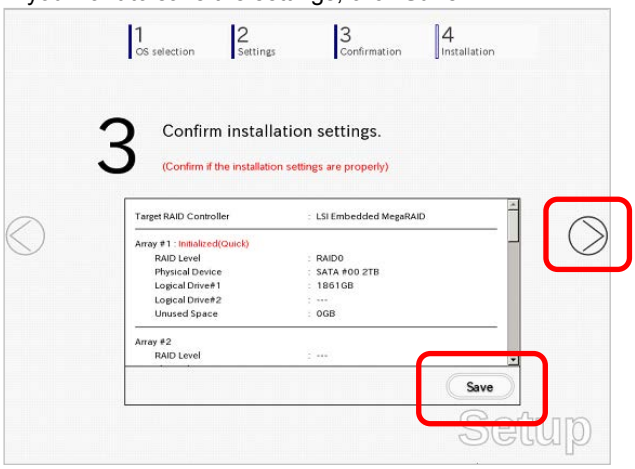
On the following screen, click **Finish**.



On the following screen, click ▷ on the right side of the screen.



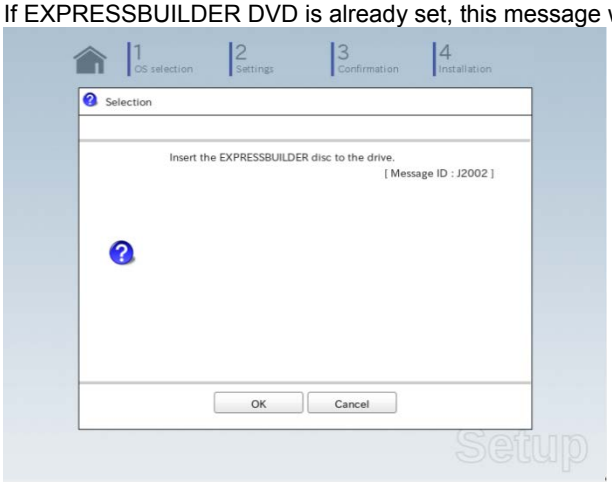
14. Check the parameter settings.
    If you want to save the settings, click **Save**.



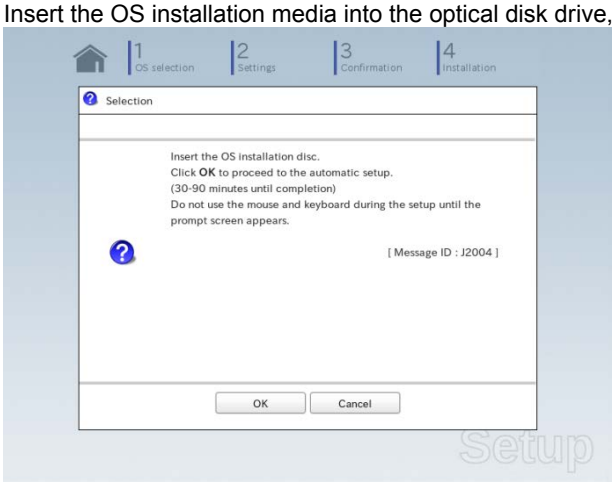
    Click ▷ on the right side of the screen.

15. The setup process starts. Click **Start** to continue setup.

16. If the server has started from the EXPRESSBUILDER DVD, insert the EXPRESSBUILDER disk into the optical disk drive, and then click **OK**.
    If EXPRESSBUILDER DVD is already set, this message will not appear.

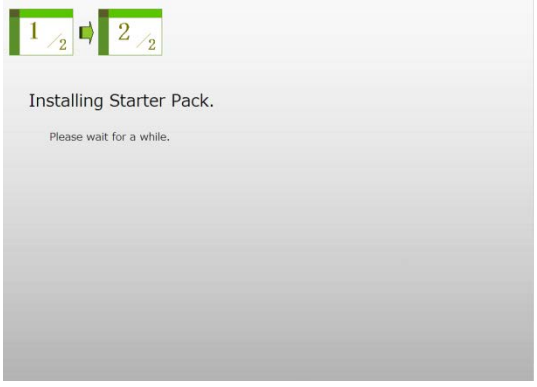


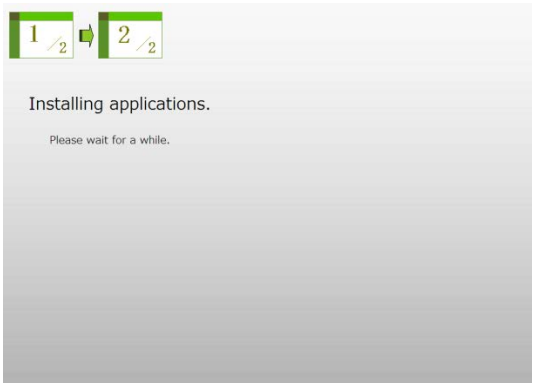
17. Insert the OS installation media into the optical disk drive, and then click **OK**.



    Windows Server 2016 is installed automatically.
    Wait for completion (about 40 minutes) without performing any operation.

18. The Starter Pack and the selected applications are automatically installed.
    Wait for completion without performing any operation.

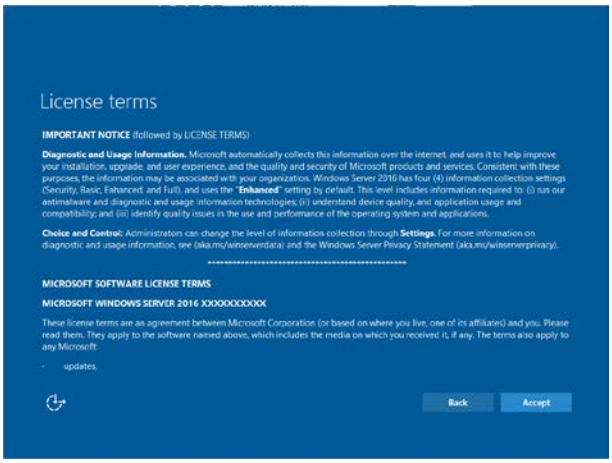




19. Set according to operating system selected in step 12-(1) or 13-(2).

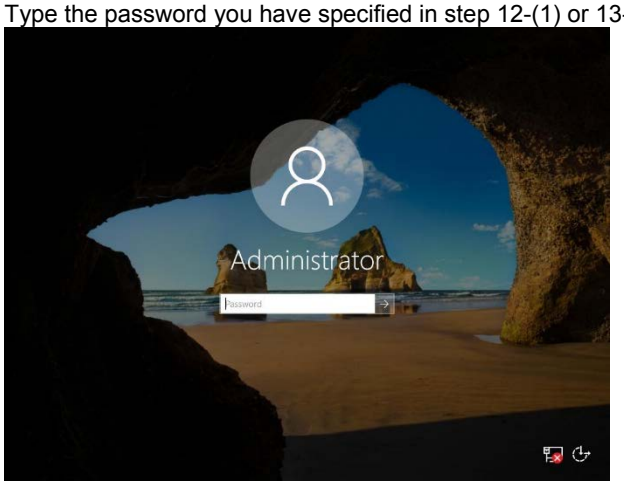
Desktop Experience

Read the terms of License Agreement. Click **Accept**.

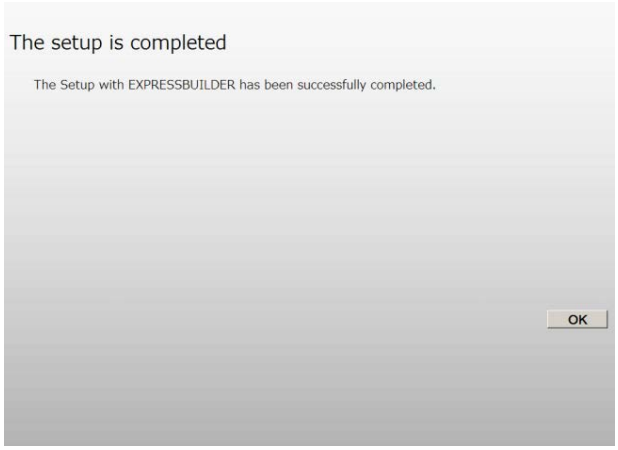


Press <Ctrl> + <Alt> + <Delete> keys to unlock.

Type the password you have specified in step 12-(1) or 13-(4).

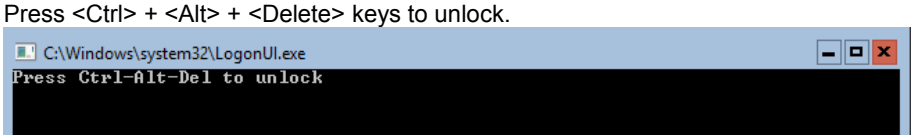


Click **OK**.

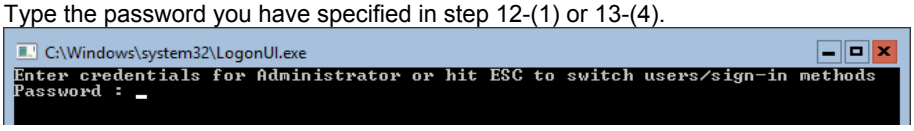


Server Core

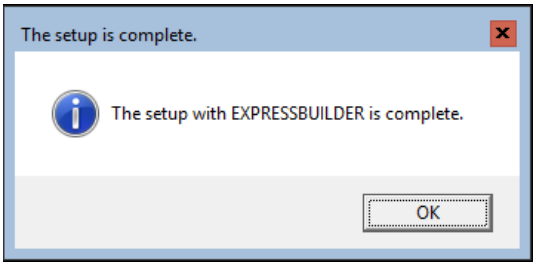
Press <Ctrl> + <Alt> + <Delete> keys to unlock.



Type the password you have specified in step 12-(1) or 13-(4).



Click **OK**.



20. Follow the instructions described in *Chapter 1 (3.5 Setting Up Device Drivers)* to set up the device drivers.
21. Confirm if Windows is activated according to *Chapter 1 (3.6 License Authentication)*.
22. See *Chapter 1 (3.7 Setup of Windows Server 2016 NIC Teaming (LBFO))* to setup a team as needed.
23. Run the setup by following the instructions described in *Chapter 1 (5. Setup for Solving Problems)*.

24. See *Chapter 2 Installing Bundled Software* to install the bundled software or confirm that the software is appropriate to your operating environment.

Setup with EXPRESSBUILDER is now complete.

3.3 Setup with Windows Standard Installer

This section describes how to install Windows with Windows Standard Installer.

This feature automatically recognizes the RAID controller connected to the server and configures the RAID system. Therefore the hardware installation of the server needs to be finished by following "*User's Guide*".

Important

Setup with Windows standard Installer may delete all data of the hard disk drive depending on the settings. Pay attention to input parameters.
You must be especially careful when configuring the following:

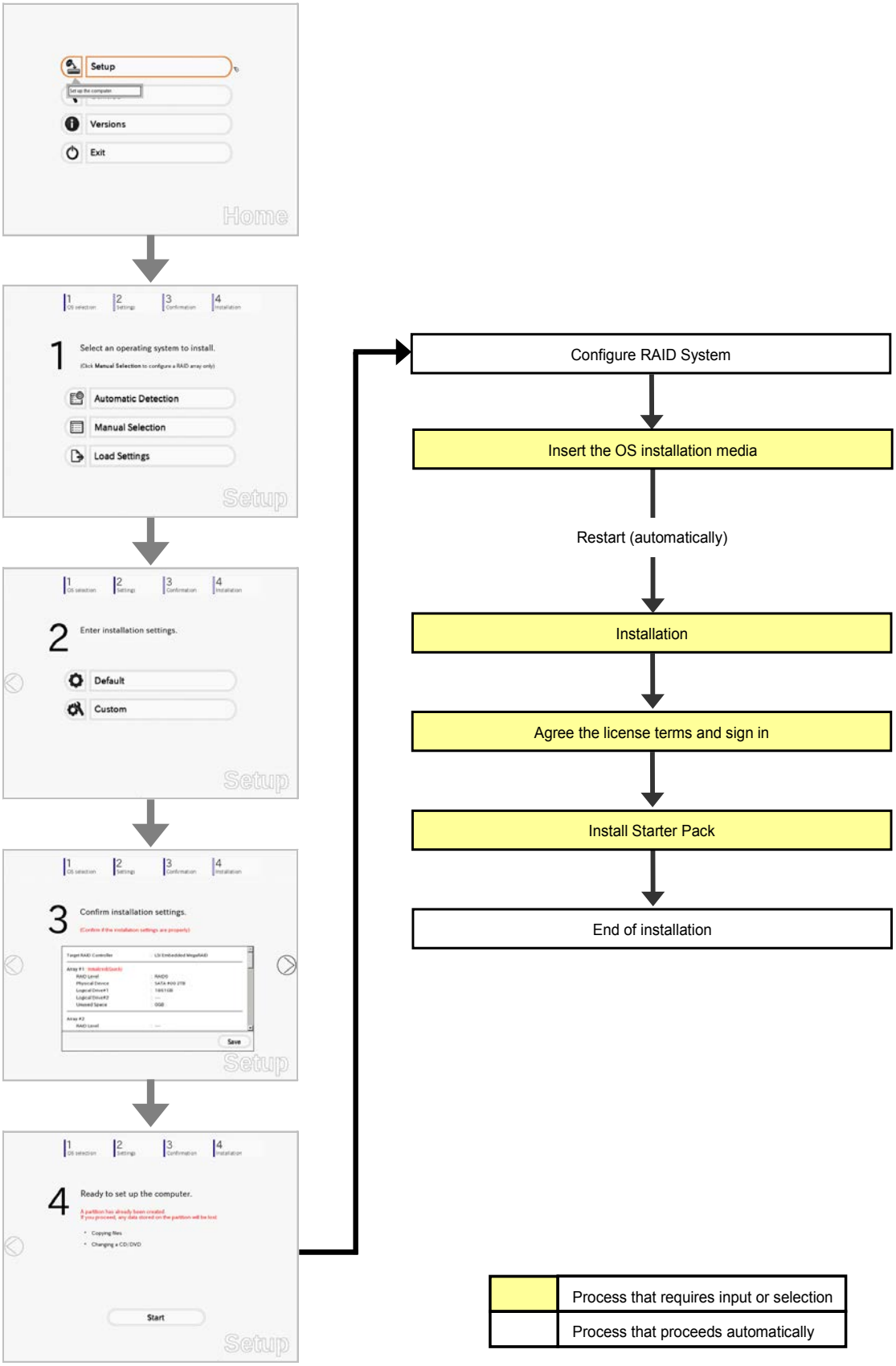
- **RAID settings**

When re-installing an OS, backing up user data, as needed, is recommended.

Tips

- Setup with Windows Standard Installer allows you to use a pre-specified parameter file or save the parameters specified in setup as a parameter file on removable media.
- For details on creating a parameter file, see *Chapter 1 (6. Windows OS Parameter File)*.

3.3.1 Setup flow



3.3.2 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*)
- The following EXPRESSBUILDER
  - **EXPRESSBUILDER DVD**
- Prepare if needed:

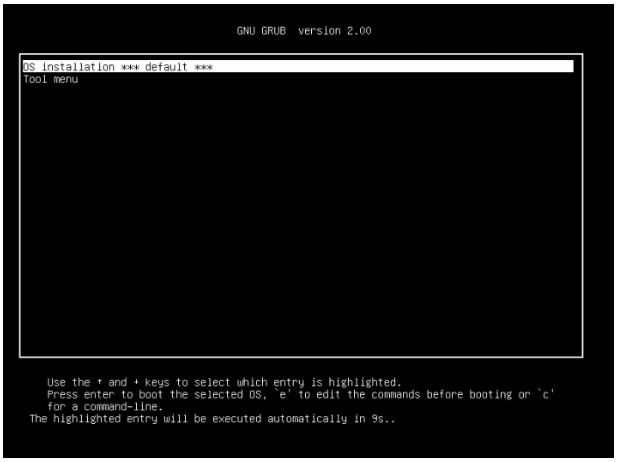
  Removable media for Windows OS parameter file

3.3.3 Setup procedure

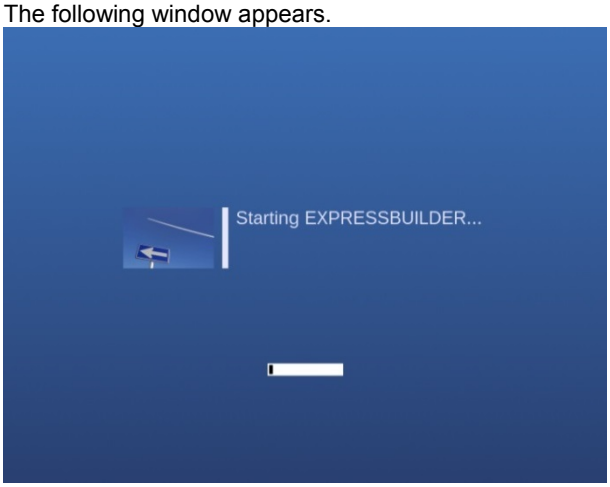
Note Read through the items in *Chapter 1 (3.1 Before Starting Setup)* prior to installing Windows.

1. Turn peripheral device (such as a display) power on, and then turn the server power on.
2. Start EXPRESSBUILDER according to *Chapter 1 (1.1 Starting EXPRESSBUILDER)*.
3. Select **OS installation *** default *****.

   You will automatically advance to step 4, with no need for further input.



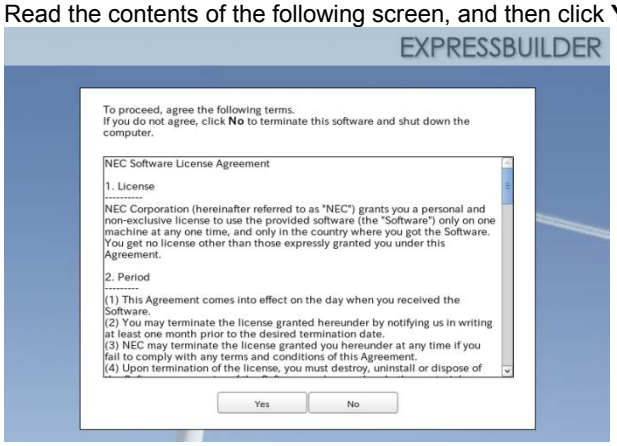
The following window appears.



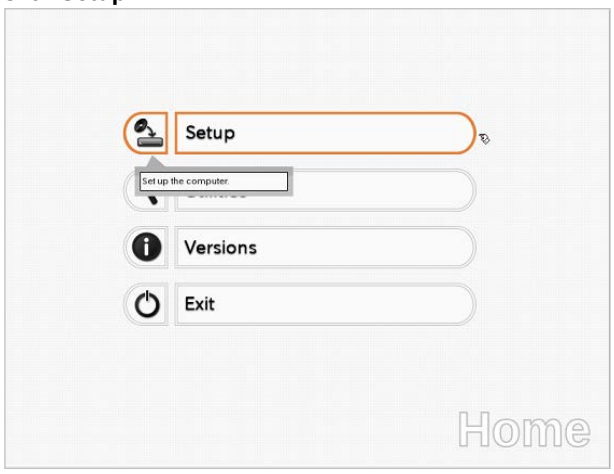
The server starts from EXPRESSBUILDER.

4. Select **English** on the language selection window, and then click **OK**.

5. Read the contents of the following screen, and then click **Yes**.



6. Click **Setup**.



7. On the following screen, select the OS to install or specify the parameter file.

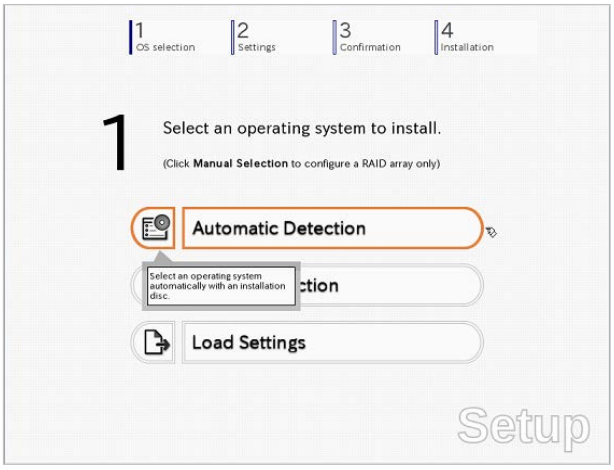
☐ When *not using* a parameter file : Select **Automatic Detection**, and then go to Step 8.
: Select **Manual Selection**, and then go to Step 9.

☐ When *using* a parameter file : Select **Load Settings**, and then go to Step 10.

Note When setting up again, parameter input via the wizard can be omitted by loading the saved parameter file.

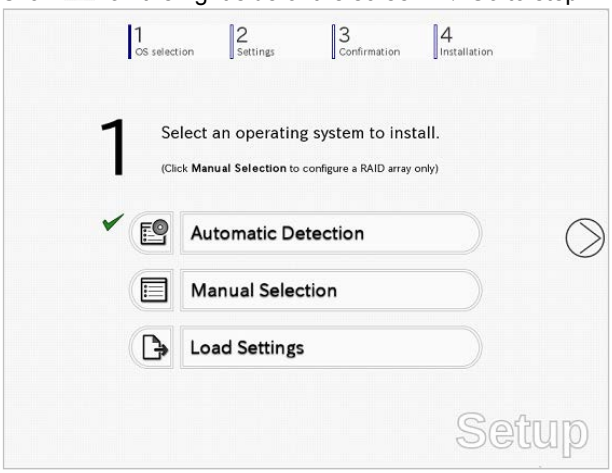
8. When *not using* a parameter file, let the OS on the installation media be recognized by using the following procedure.

8-(1) Click **Automatic Detection**.



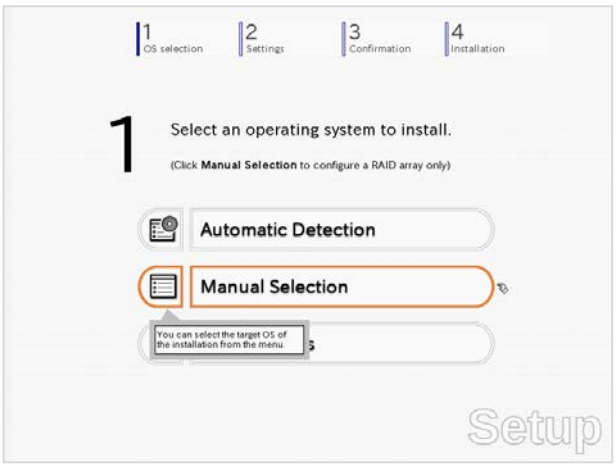
8-(2) Insert the OS installation media, and then click **OK**.

8-(3) Click ▷ on the right side of the screen. → Go to step 11.

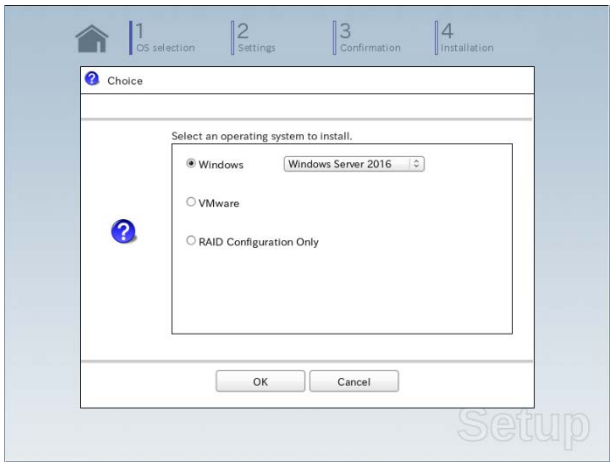


9. When *not using* a parameter file, select an OS by using the following procedure.

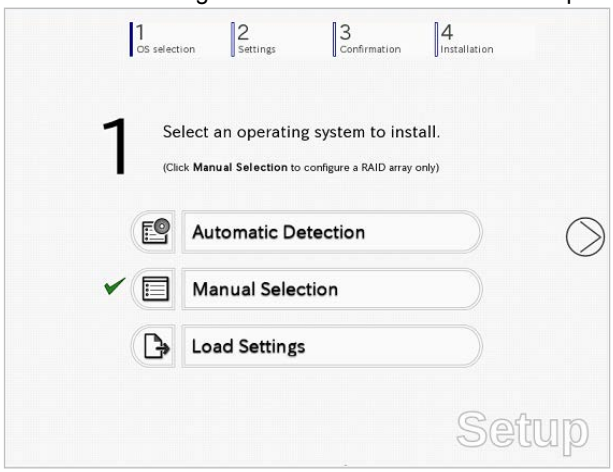
9-(1) Click **Manual Selection**.



9-(2) From the **Windows** list, select **Windows Server 2016**, and then click **OK**.

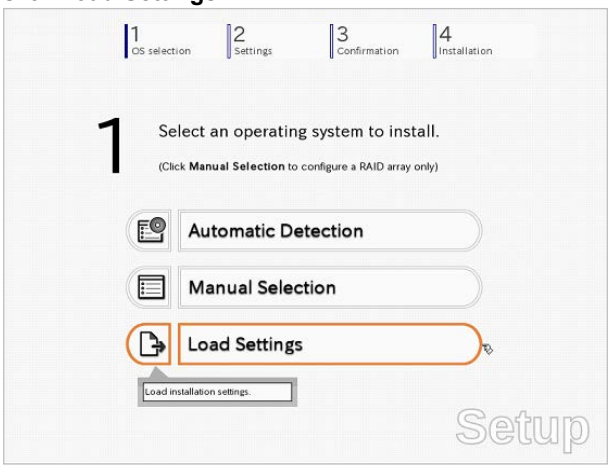


9-(3) Click ⓒ on the right side of the screen. → Go to step 11.

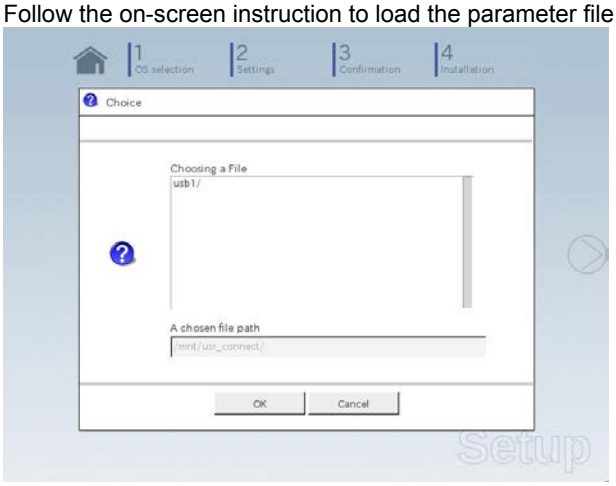


10. When *using* the parameter file, load the parameter file by using the following procedure.

10-(1) Click **Load Settings**.



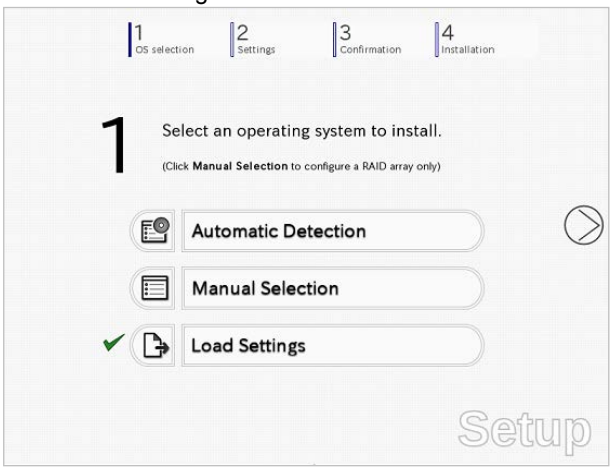
10-(2) Follow the on-screen instruction to load the parameter file (*.tre).



Tips

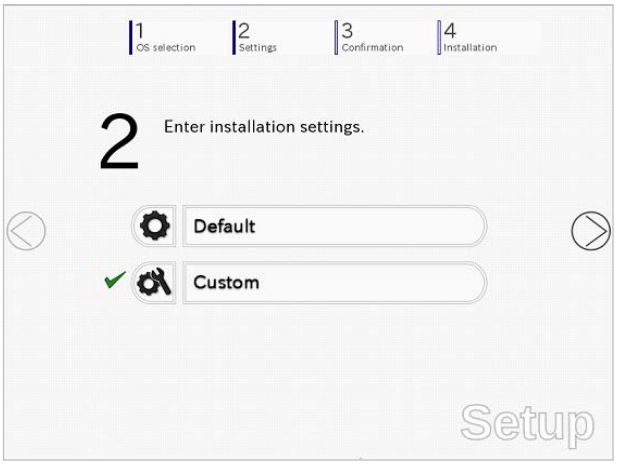
For the removable media in which the parameter file is saved, see **"/mnt/usr_connect/usb*"** (* indicates a number).

10-(3) Click ▷ on the right side of the screen.

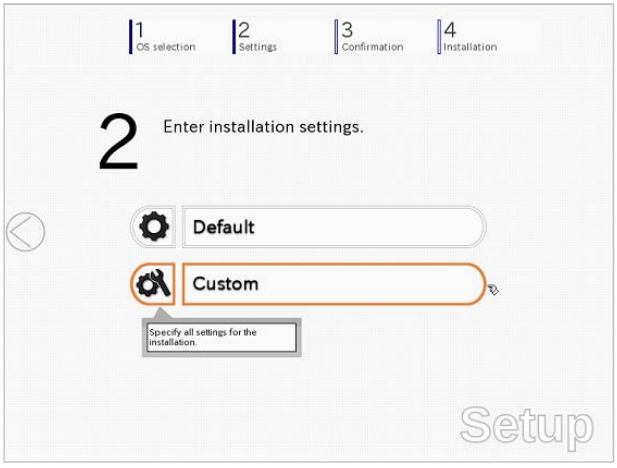


10-(4) When the parameter file is correctly loaded, click ▷ on the right side of the screen.
→ Go to step 12.

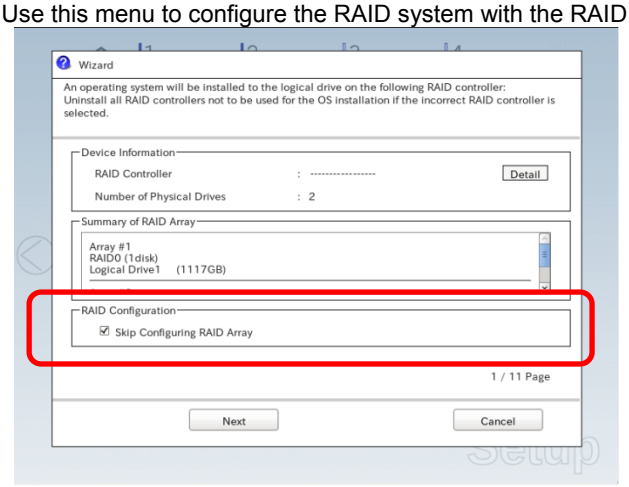
Click **Custom** to check and modify the setting in the wizard.
→ Go to step 11-(1).



11. Click **Custom**.



11-(1) Use this menu to configure the RAID system with the RAID controller detected automatically.



When creating new logical drives

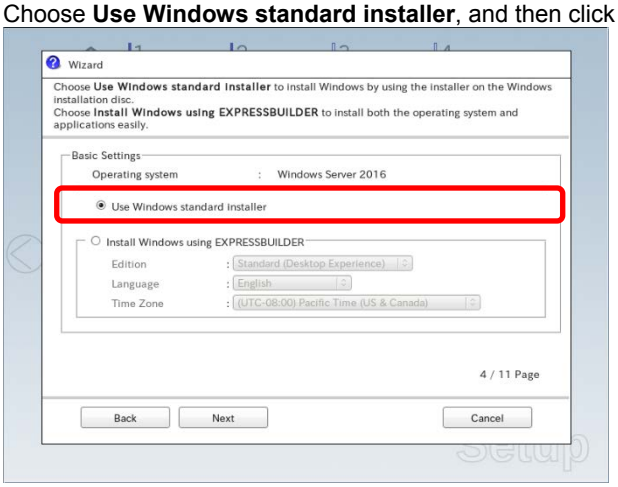
With the **Skip Configuring RAID Array** check box cleared, click **Next**.
Set up the logical drives according to the wizard.

Important **If you proceed with wizard, the existing RAID system is destructed and the contents of hard disk drive will be erased.**

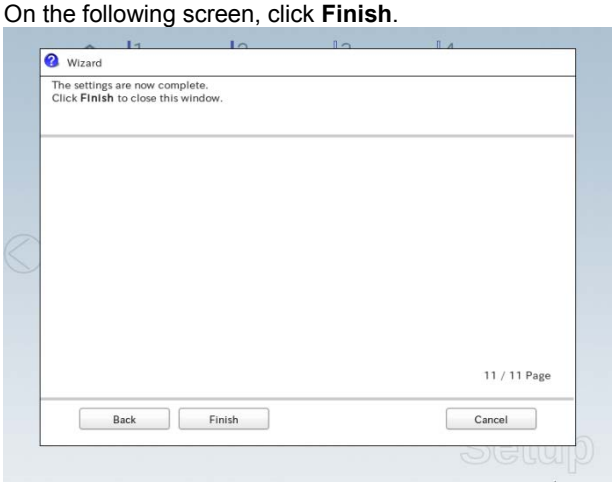
When skipping the creation of new logical drives

Select the **Skip Configuring RAID Array** check box, and then click **Next**.

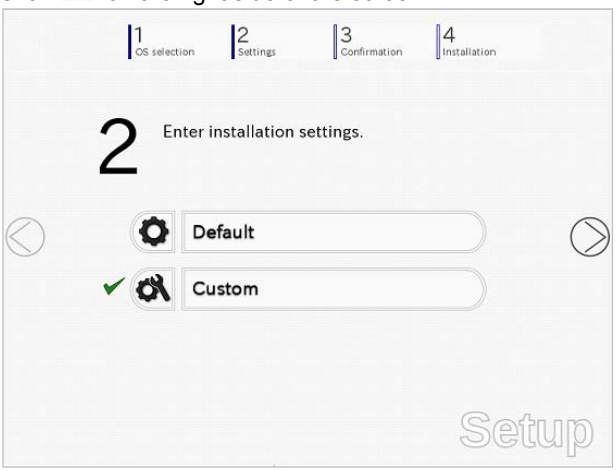
11-(2) Check the settings specified for **Basic Settings**.
Choose **Use Windows standard installer**, and then click **Next**.



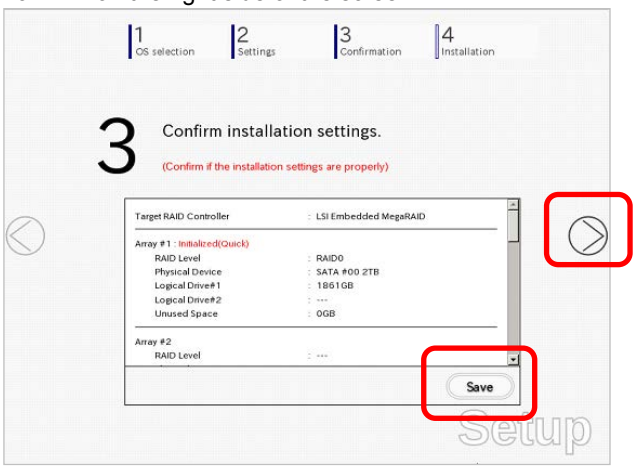
On the following screen, click **Finish**.



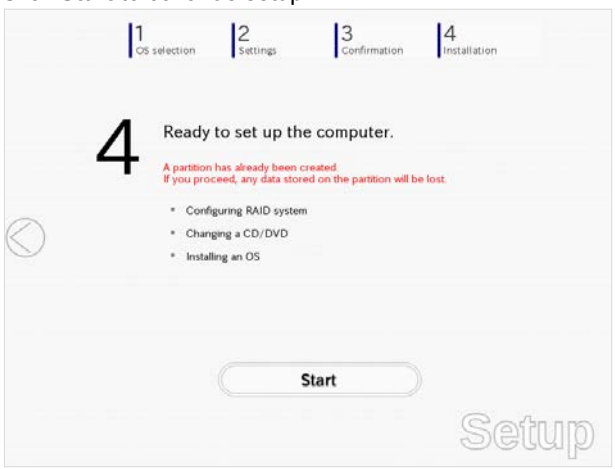
11-(3) Click ▷ on the right side of the screen.



12. Check the parameter settings. If you want to save the settings, click **Save**.
    Click ⊘ on the right side of the screen.



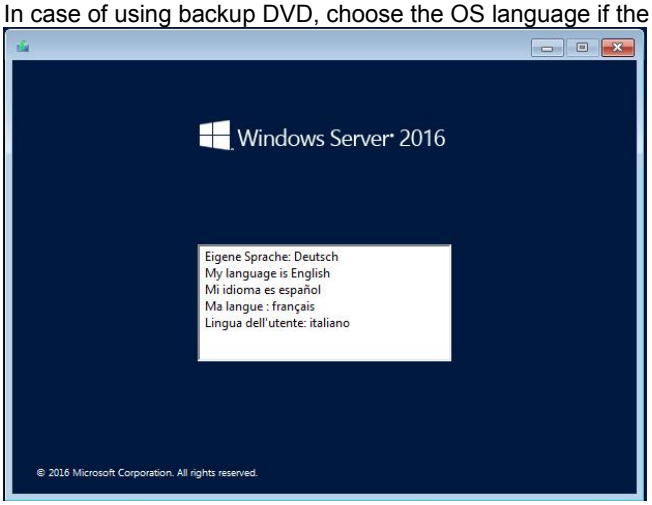
13. The setup process starts.
    Click **Start** to continue setup.



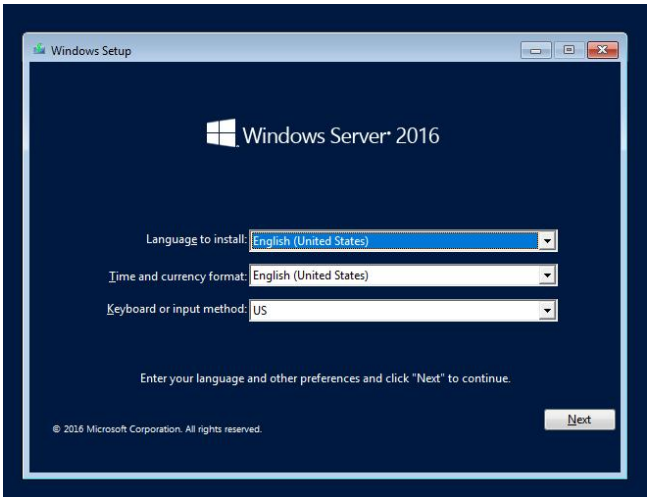
14. Insert the OS installation media into the disk drive, and then click **OK**.

15. 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 <Enter> key to start the system from the installation media.
    The boot sequence proceeds and the message “Windows is loading files…” appears.

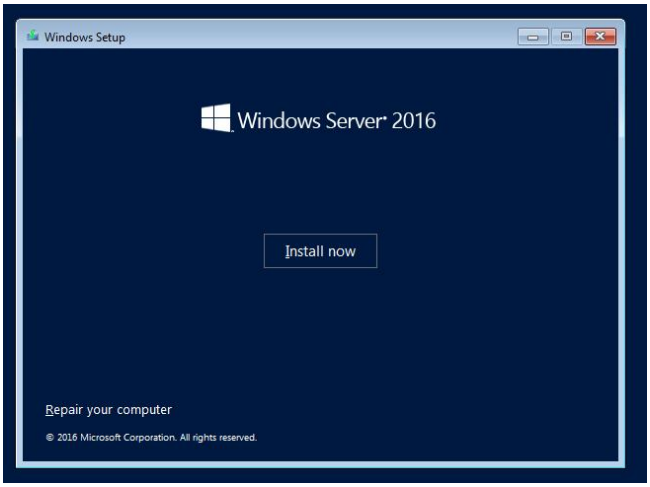
16. In case of using backup DVD, choose the OS language if the following screen appears.



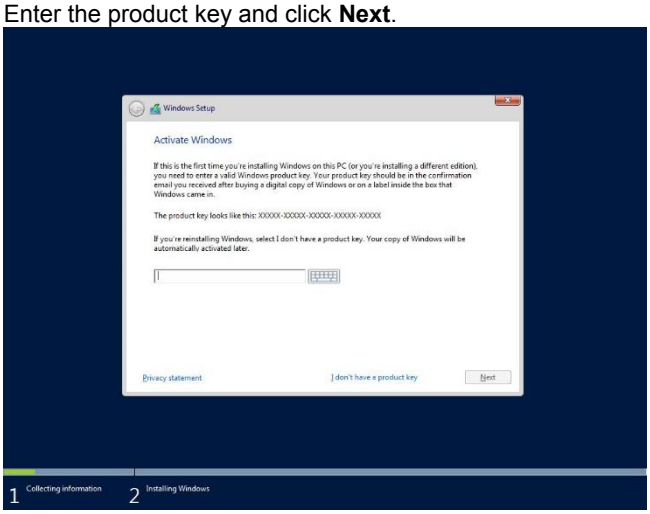
17. Click **Next**.



18. Click **Install now**.

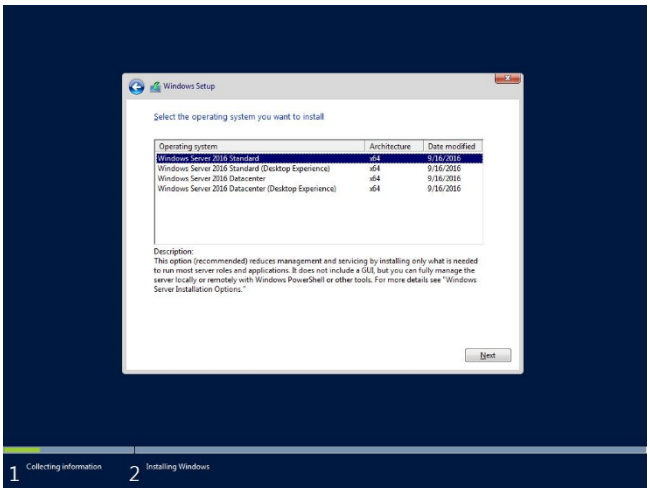


19. Enter the product key and click **Next**.



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

20. Select the operating system you want to install and click **Next**.



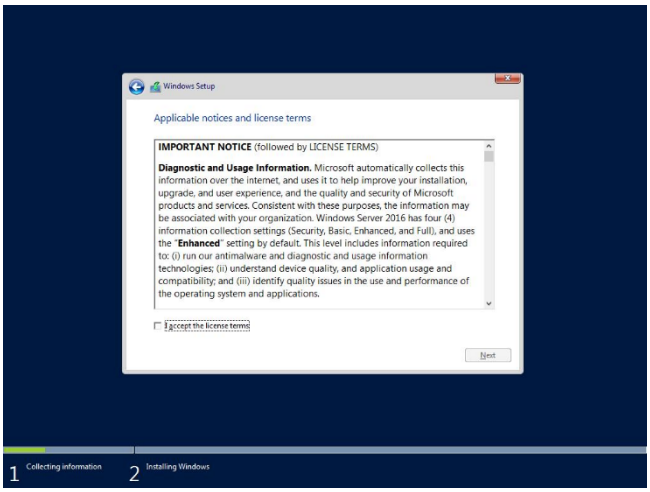
The options listed on the screen vary depending on the installation media you are using.

Tips

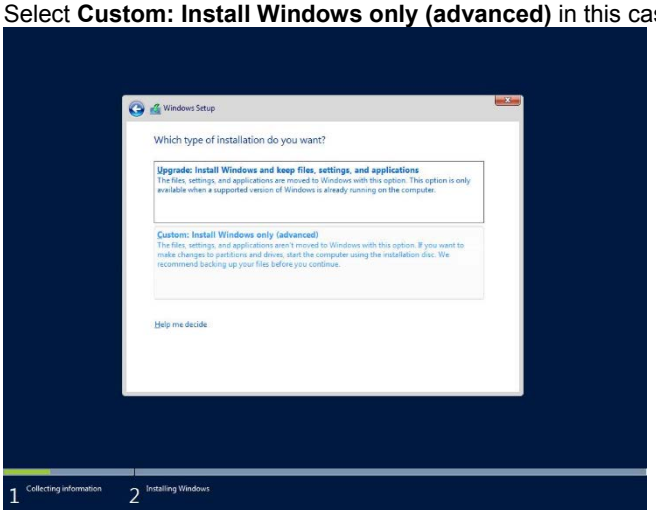
Read the message of the screen, and then choose an installation option.

- 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.

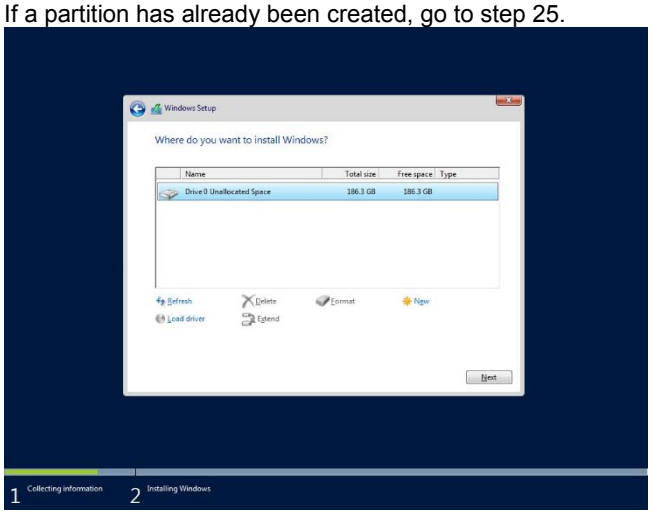
21. Read the license terms carefully.
    If you agree, check **I accept the license terms** and click **Next**.



22. Select the installation type.
    Select **Custom: Install Windows only (advanced)** in this case.

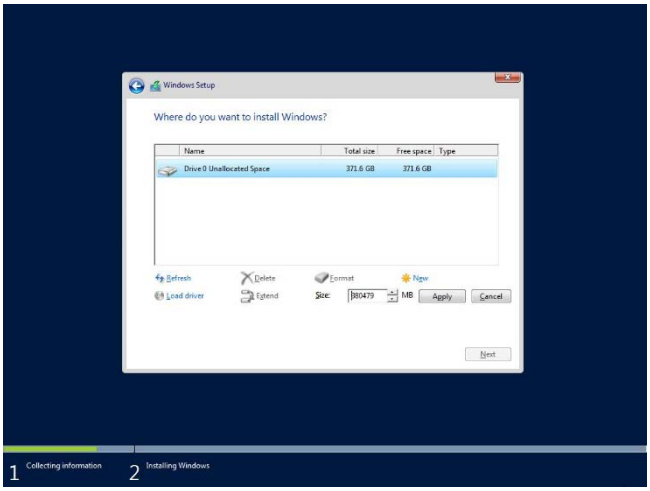


23. Click **New**.
    If a partition has already been created, go to step 25.

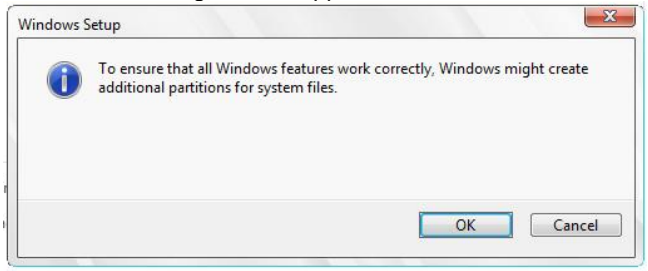


Tips If **New** is not displayed on the screen, click **Drive options (advanced)**.

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



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



Tips

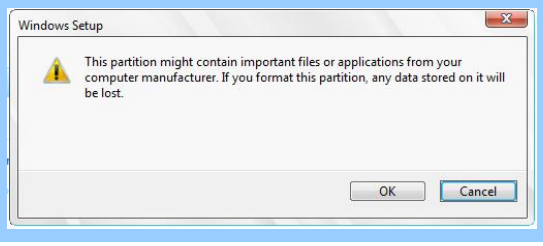
When creating a partition, the OS creates the following partitions at top of the hard disk drive.

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

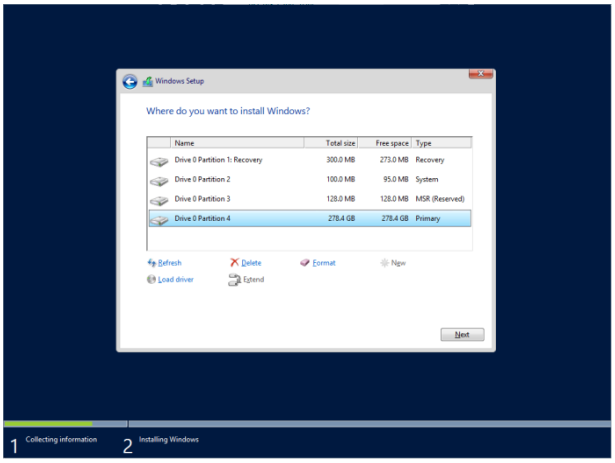
25. Select the partition created in step 24, and then click **Format**.

Important

When the following screen appears, read the contents and click [OK].
Take extreme care to specify the format destination since the data in the partition is cleared.

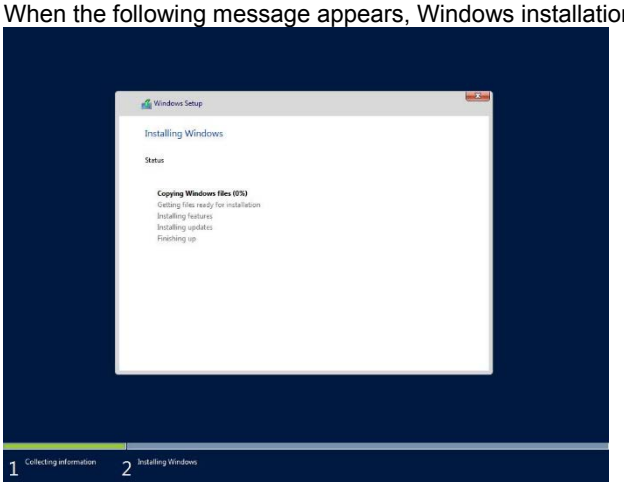


26. Select the created partition, and then click **Next**.



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

When the following message appears, Windows installation starts automatically.

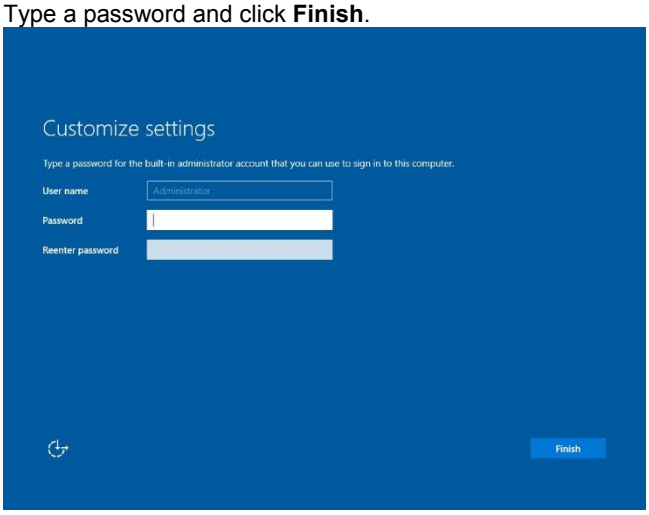


The server will automatically restart after Windows Server 2016 is installed.
You will proceed to Windows setup after restart.

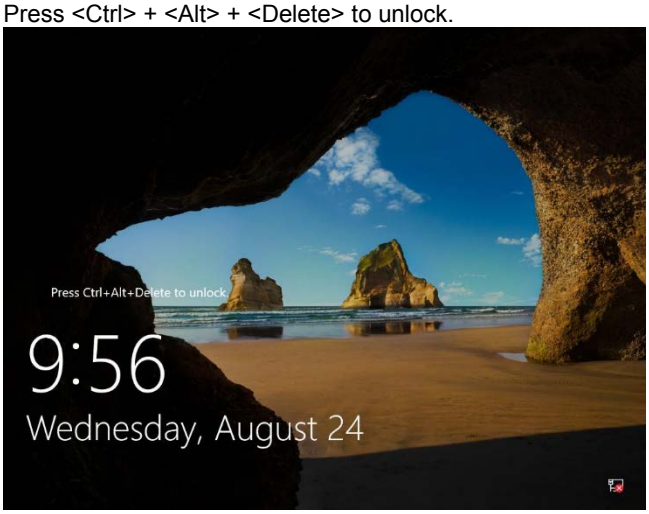
27. Set according to operating system selected in Step 20.

Desktop Experience

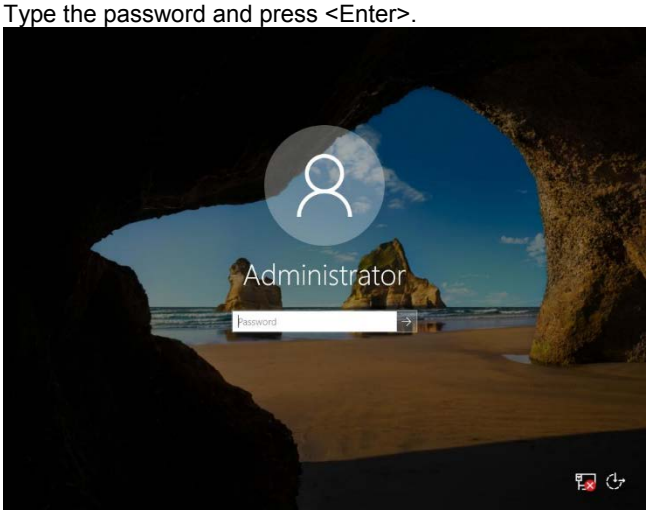
Type a password and click **Finish**.



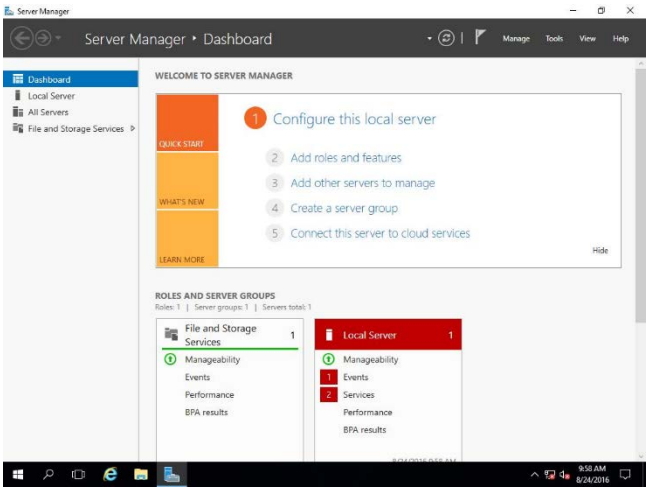
Press <Ctrl> + <Alt> + <Delete> to unlock.



Type the password and press <Enter>.

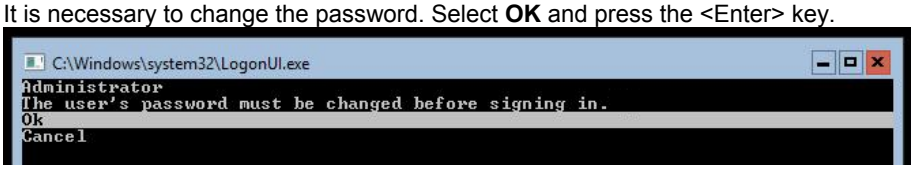


Windows Server 2016 starts.

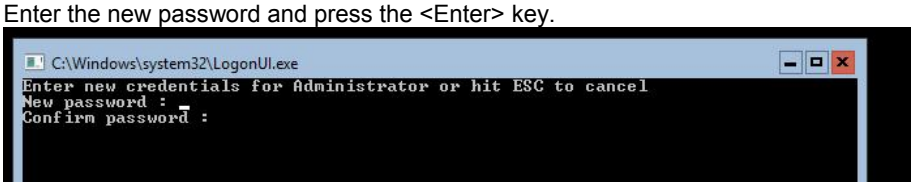


Server Core

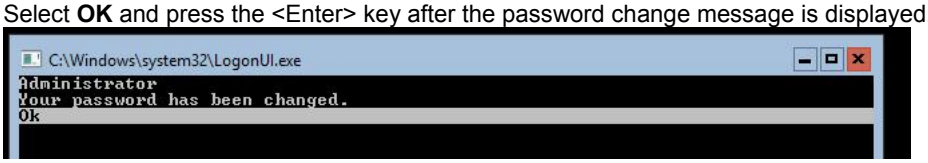
It is necessary to change the password. Select **OK** and press the <Enter> key.



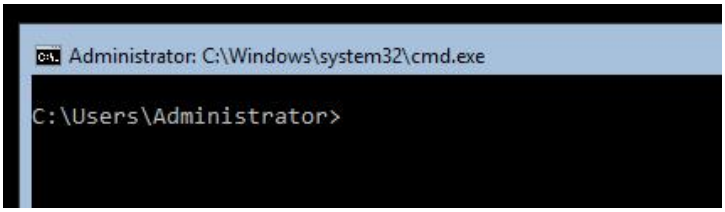
Enter the new password and press the <Enter> key.



Select **OK** and press the <Enter> key after the password change 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

28. Install Starter Pack by referring to *Chapter 1* (*3.4 Installing Starter Pack)*.
29. Install drivers and specify detailed settings by referring to *Chapter 1 (3.5 Setting Up Device Drivers)*.
30. Confirm if Windows is activated according to *Chapter 1 (3.6 License Authentication)*.
31. See *Chapter 1 (3.7 Setup of Windows Server 2016 NIC Teaming (LBFO))* to setup a team as needed.

32. Install the applications as needed by referring to *Chapter 1* (*3.8 Installing the Applications*).
33. Execute setup by following the instructions described in *Chapter 1 (5. Setup for Solving Problems)*.

Setup with Windows standard installer is now complete.

3.4 Installing Starter Pack

Starter Pack contains drivers customized for this server.
When Starter Pack is not installed on the server, in the case such as the server is set up using Windows Standard installer, be sure to apply Starter Pack before running the system.

Important

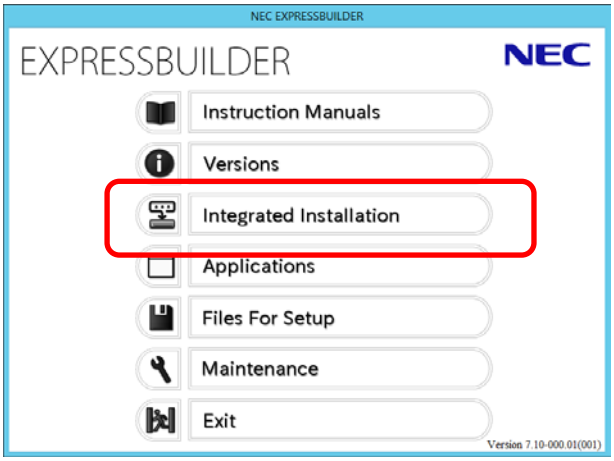
- **Also install Starter Pack in the following cases.**
  - **The motherboard of the server has been replaced (If a dialog box prompting you to reboot the system is displayed, reboot the system according to the on-screen instructions, and then apply the Starter Pack.)**
  - **If the system was restored using a restore process**
  - **If a system has been restored using the backup tool**
- **After installing build-in options, you may need to install Starter Pack. For detail, see *Chapter 1(3.5 Setting Up Device Drivers)*.**

Tips

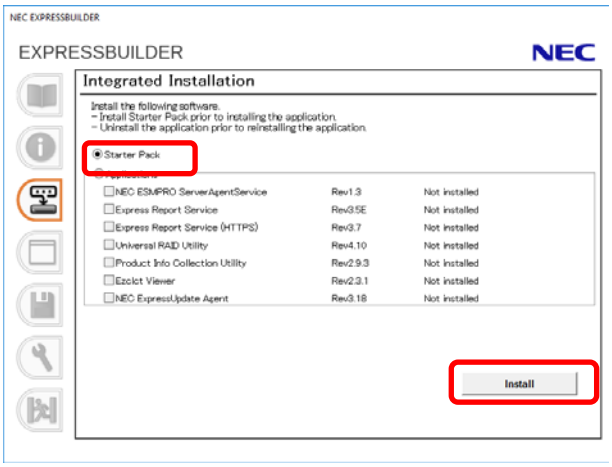
If the OS is installed by using EXPRESSBUILDER, Starter Pack is already applied. If the configuration is not changed, you do not need to apply Starter Pack again.

3.4.1 Installation from Windows (Desktop Experience)

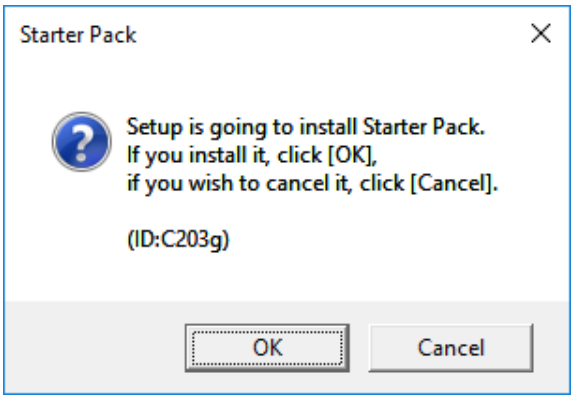
1. Sign-in to the system with the administrator account.
2. Insert EXPRESSBUILDER DVD into the optical disk drive.
3. Click **Integrated Installation** on the following screen.



4. Select **Starter Pack** on the following screen, and then click **Install**.



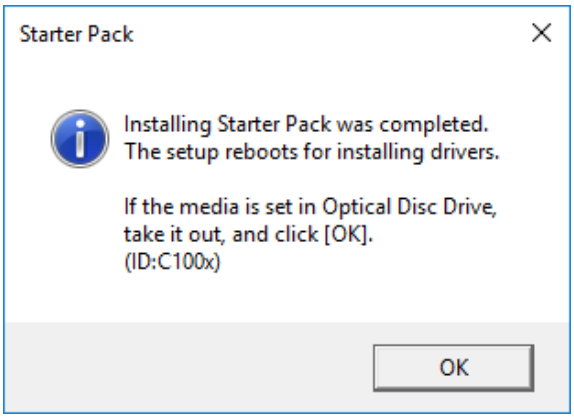
5. Read the message, and then click **OK**.



Wait until the installation of the Starter Pack is complete. (About 2 to 5 minutes)

Note The screen may black out instantaneously or resolution may change while Starter Pack is installed, but it is not a failure.

6. Click **OK** to restart the system.



Installation of Starter Pack is now complete.

3.4.2 Installation from Windows (Server Core)

1. Sign-in to the system with the administrator account.
2. Insert EXPRESSBUILDER DVD into the optical disk drive.
3. From the command prompt, type the following command.
   In the example below, the optical disk drive is the D drive.

   cd /d D:\017\win\winnt\bin

   ```
   C:\Users\administrator>cd /d D:\017\win\winnt\bin
   ```

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

   pkgsetup.vbs

   ```
   D:\017\win\winnt\bin>pkgsetup.vbs
   ```

   Wait until installation completes (about 1 to 3 minutes).

Installation of Starter Pack is now complete.

3.5 Setting Up Device Drivers

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

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

For the system that network adapter is connected, if it is setup with EXPRESSBUILDER, the LAN driver will automatically be installed.
For the system that network adapter is connected, if it is setup with Windows standard installer, apply StarterPack to install the LAN driver.

Important **Wake On LAN (WOL) is supported by the standard network adapters only. For Wake On LAN, refer to Chapter 1(3.5.2 Setting up LAN drivers - (4) Setting up Wake on LAN). For BIOS settings, check the "User's 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.
- Be sure to select the **Internet Protocol (TCP/IP)** check box when specifying an IP address.

(2) Optional LAN board

This server supports the following optional LAN boards.

N8104-149/150/151/152/157/168/170

If you additionally attach the controller N8104-157/168 to the target server, the corresponding LAN driver is automatically installed by Windows Plug-and-Play feature.

When you additionally attach the controller N8104-149/150/151/152/170 to the target server, the corresponding LAN driver is automatically installed by Windows Plug-and-Play feature if you have attached the same controller in advance.
If not, the driver is not installed.
In that case, install the LAN drivers by the following steps.

N8104-149/170

Note When **QLogic Driver Installer** is shown to **Programs and Features**, this step is unnecessary.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file at the command prompt.

   ```
   \017\win\winnt\drivers\02_network\1_as_04\install_ws2016.bat
   ```

2. When the following message appears, restart the system.

   QLOGIC Driver Installation Completed!

3. When LAN board is new addition, configure each LAN board by referring to Chapter 1(3.5.2 Setting up LAN drivers).

Setup is now completed.

N8104-150/151/152

Note

When **Broadcom Gigabit Integrated Controller** is shown to **Programs and Features**, this step is unnecessary.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file at the command prompt.

   ```
   \017\win\winnt\drivers\02_network\1_ah_03\install_ws2016.bat
   ```

2. When the following message appears, restart the system.

   BCOM Driver Installation Completed!

3. When LAN board is new addition, configure each LAN board by referring to Chapter 1(3.5.2 Setting up LAN drivers).

Setup is now completed.

(3) Network adapter name

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

Network adapters for the standard configuration

Intel(R) Ethernet Controller X550 #xx *1

If connecting with an optional LAN board:

[N8104-149/170] : QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx *1

[N8104-150/151/152] : Broadcom NetXtreme Gigabit Ethernet #xx *1

[N8104-157] : Intel(R) Ethernet Controller X550 #xx *1

[N8104-168] : Intel(R) I350 Gigabit Network Connection #xx *1

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

Tips

The ID for N8104-149/170 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.

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

When using N8104-149/170, you can specify "10 Gb Full" for network adapter and "Auto Negotiation" to switching hub.

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**.
5. Restart the system.

The link speed setting is now complete.

(2) Configuring Flow Control

Flow Control is a feature to stop transmitting frames temporarily by sending a pause frame to the destination device when the receive buffer is about to run out. When it receives a pause frame, it regulates the transmission. Configure the Flow Control following the procedure below.

Tips The settings of Transmit/Receive of the network adapter should match those of the destination device. For example, if Flow Control in the destination device is set as Receive only, that in the server should be set as Transmit only.

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 and click **Flow Control** to show **Value**.
4. The **Value** can be changed by the down-arrow button.
5. Click **OK**.
6. Restart the system.

The Flow Control setting is now complete.

(3) When using N8104-150/151/152

When using N8104-150/151/152 with the server, follow the procedure below to set it.

Note This procedure can be used when you replace a motherboard.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file.

   `\017\win\winnt\drivers\02_network\1_ah_03\pgdyavd_disable.vbs`

2. When the following message appears, click **OK**.

   ```
   Configuration Completed
   [Option:PopUp RLV Disabled(Action:Done)]
   Reboot the system
   ```

   Tips The message “Action:Non” indicates that the LAN driver is already set.

3. Restart the system.

Setup is now completed.

(4) Setting up Wake on LAN

Using Wake on LAN by standard network adapters, 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 and click **Enable PME** to show **Value**.
4. Change the Value to **Enabled** by the down-arrow button.
5. Click **OK** in the Network adapter properties dialog box.
6. Restart the system.

Setup is now completed.

3.5.3 Graphics accelerator driver

Standard graphics accelerator driver is installed automatically at the time of OS installation.

Tips The resolution of the screen is established automatically according to the connected display, and it can't be changed.

3.5.4 Using SAS controller (N8103-184)

The driver for SAS controller N8103-184 is automatically installed by Windows Plug-and-Play.
Driver customized for the Express5800 Series is installed by applying the Starter Pack.

3.5.5 Using RAID Controller (N8103-176/177/178/188)

The driver for RAID Controller N8103-176/177/178/188 is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.

3.5.6 Using Fibre Channel controller (N8190-157A/158A)

The driver for Fibre Channel controller N8190-157A/158A is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.
After applying Starter Pack, run the following file in the EXPRESSBUILDER DVD.

```
\017\win\winnt\drivers\01_storage\1_ao_04\utl\cli_inst.bat
```

3.5.7 Using Fibre Channel controller (N8190-161/162)

The driver for Fibre Channel controller N8190-161/162 is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.
However, if you additionally equip a Fibre Channel controller (N8190-161/162), run the following file in the EXPRESSBUILDER DVD.

```
\017\win\winnt\drivers\01_storage\1_au_01\utl\cli_inst.bat
```

3.6 License Authentication

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

Be sure to perform the license authentication procedure.

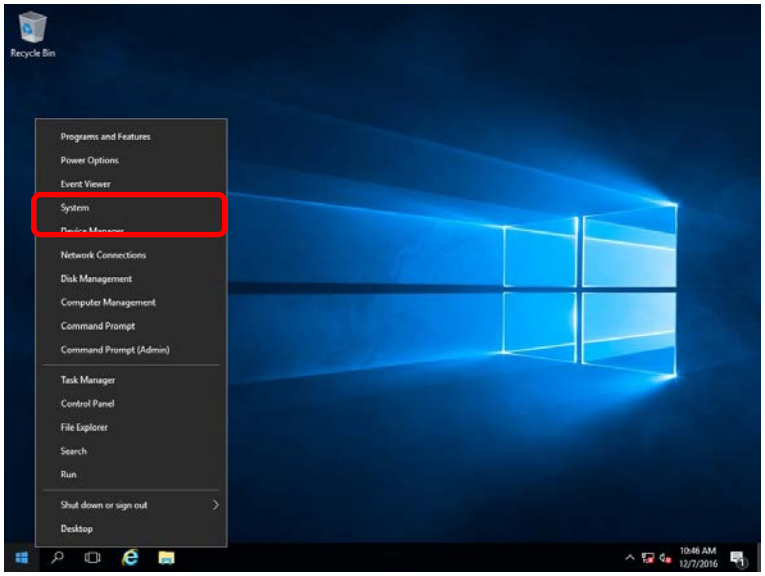
Confirm if the license is authenticated or not in the next step.

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.

3.6.1 Desktop Experience

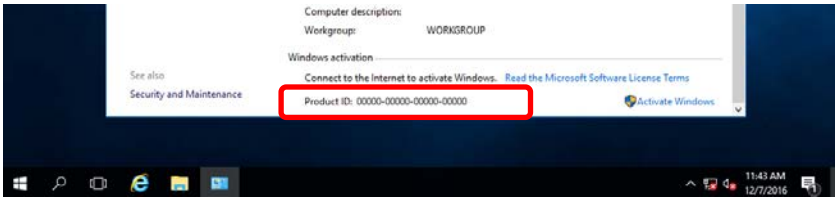
1. Right-click the left bottom of screen, and click **System** from the menu displayed.



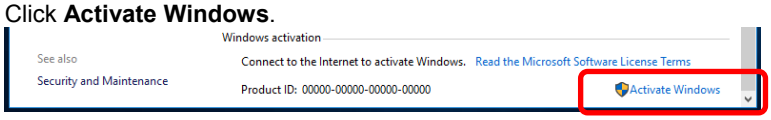
2. Check Windows license authentication.

☐ If "Windows is activated." is displayed:
You do not need to perform this procedure **(The subsequent procedures are not required.)**.

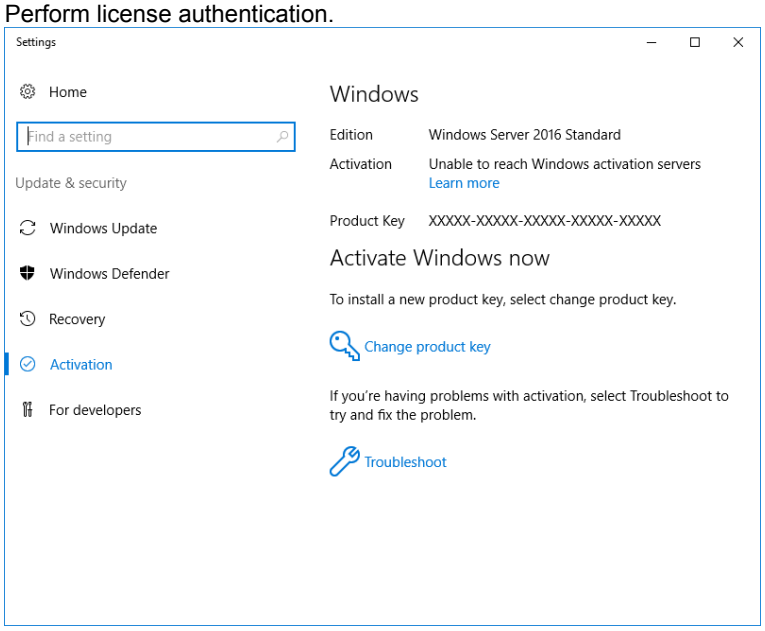
☐ If "Connect to the internet to activate Windows." is displayed:
Go to Step 3.



3. Click **Activate Windows**.



4. Perform license authentication.



☐ When connected to Internet:
Click **Change product key**.
Complete license authentication process according to the message.

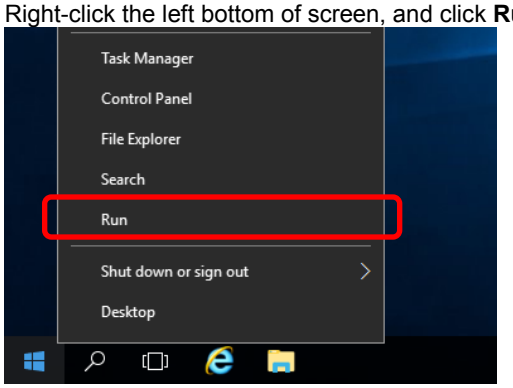
☐ When not connected to the Internet:
Go to Step 5.

5. Perform the license authentication by phone. Go to the appropriate step according to OS install media you are using.

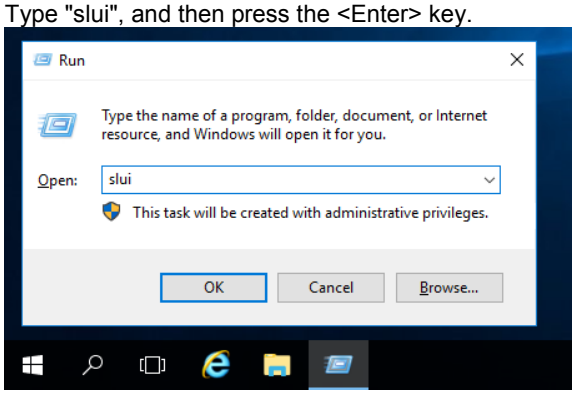
☐ Backup DVD-ROM : Go to Step 6

☐ Windows Server 2016 DVD-ROM
- Product key is already entered: Go to Step 9.
- Product key is not entered: Go to Step 6.

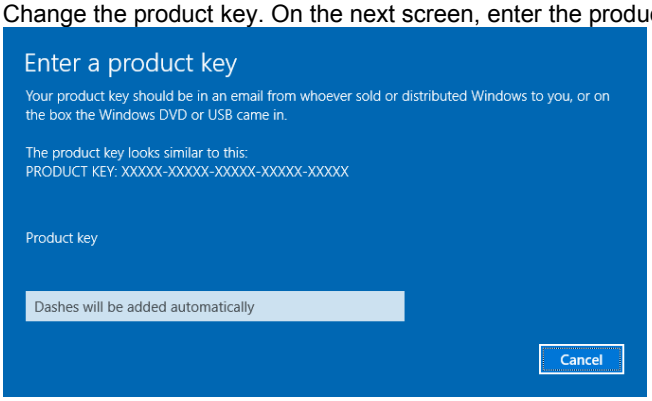
6. Right-click the left bottom of screen, and click **Run** from the menu displayed.



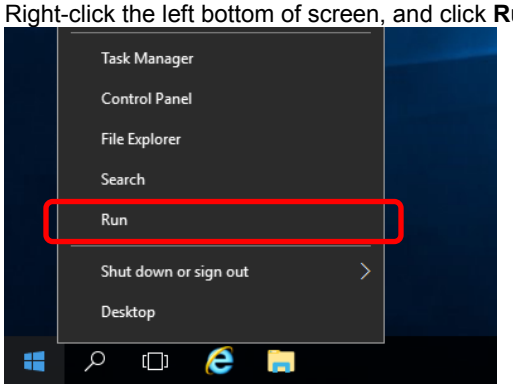
7. Type "slui", and then press the <Enter> key.



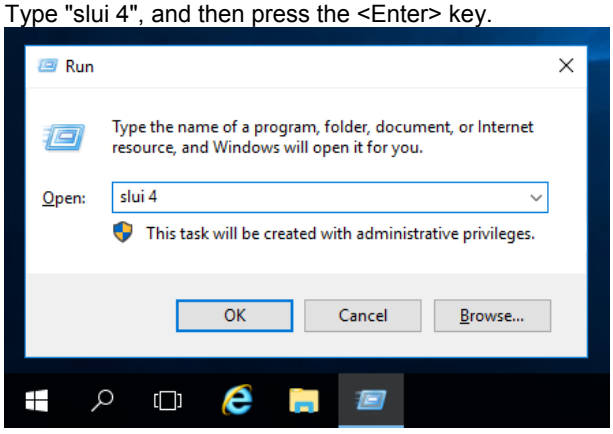
8. Change the product key. On the next screen, enter the product key.



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

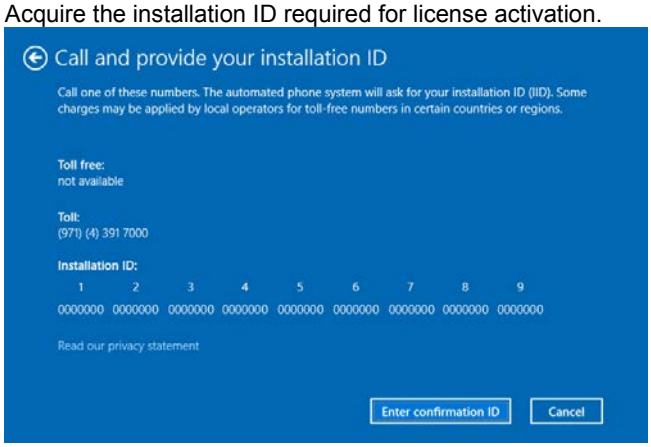


10. Type "slui 4", and then press the <Enter> key.

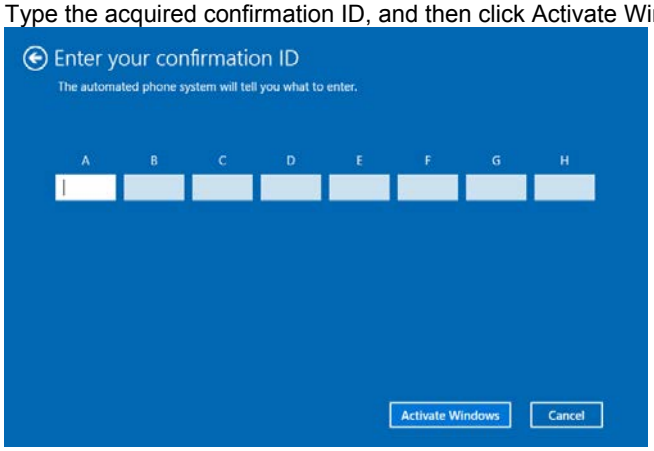


11. On the next screen, select your country, and then click **Next**.

Acquire the installation ID required for license activation.



12. 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.

3.6.2 Server Core

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 on COA label>
```

   When using Windows Server 2016 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.

3.7 Setup of Windows Server 2016 NIC Teaming (LBFO)

Set up the network adapter teaming feature as shown below.

(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 the <Enter> key.

(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	● 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) 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.

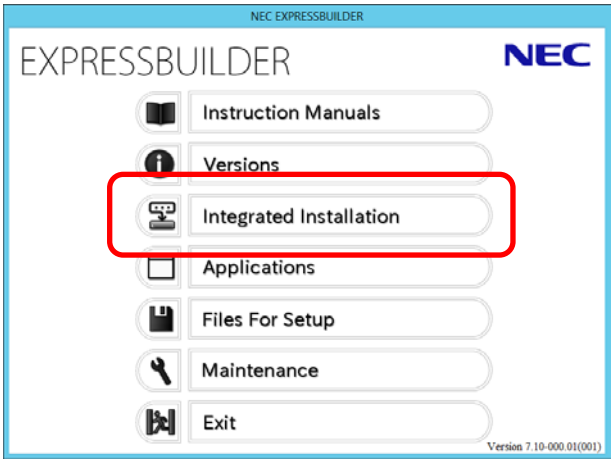
http://www.58support.nec.co.jp/global/download/w2016/index.html

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

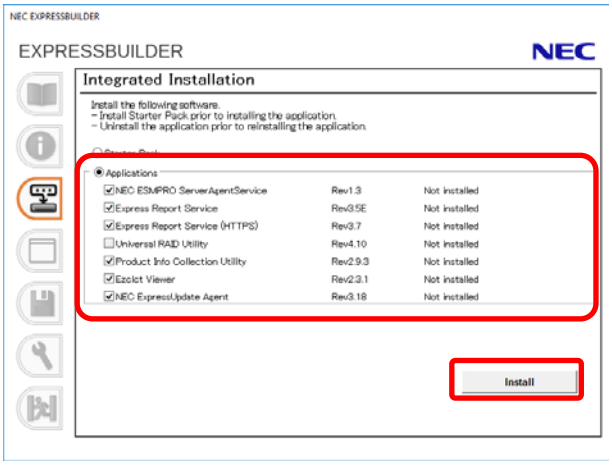
3.8 Installing the Applications

Some applications stored in EXPRESSBUILDER can be installed collectively by performing the procedures described below. When installing these applications individually, see *Chapter 2* (*Installing Bundled Software*). This feature is *only available on the server with a GUI*.

1. Sign-in to the system with the built-in administrator, which has administrative privileges.
2. Insert the EXPRESSBUILDER DVD into the optical disk drive.
3. Click **Integrated Installation** on the menu.



4. Select **Applications**, select the check boxes corresponding to the applications to be installed, and then click **Install**.
   The selected applications are automatically installed.



Note

- Applications available for installation are selected by default.
- If your system environment does not satisfy the prerequisite for an application, you cannot install it. (For details, refer to the on-screen information and *Chapter 2*.)

5. When a message indicating reboot appears, click **OK** to reboot the server.
6. See *Chapter 2 Installing Bundled Software* to install the bundled software or confirm that the software is appropriate to your operating environment.

Now installation of applications is completed.

3.9 Installation When Multiple Logical Drives Exist

Before starting installation, backup data for future use in case of data loss.

(1) Installation process

– Setup with EXPRESSBUILDER

Important

- **Before starting setup, be sure to disconnect hard disk drives from the RAID Controller that is not used for setup, if the server has two or more RAID Controllers installed.**
- **Disconnect an external disk (*) from the server by turning the power of it off or disconnecting cables. Install those hard disk drives and cables after setup has completed. Conducting setup with those being connected with the server may cause existing data to be erased unintentionally.**

* Disk array unit (such as iStorage) or hard disk drive in Disk Expansion Unit

See *Chapter 1 (3.2 Setup with EXPRESSBUILDER),* and proceed with setup.

In this case, EXPRESSBUILDER installs the Windows on the first detected hard disk drive or logical drive.

– Setup with Windows standard installer

1. See *Chapter 1 (3.3 Setup with Windows Standard Installer)*, and start setup.
2. When the following message appears, select the partition to which you want to install the operating system.

```
Select the location to which Windows will be installed
```

The order and numbers of the disks displayed on the screen **might not match the server's slot** of the hard disk drives. **Distinguish between the hard disk drives by viewing the hard disk drive capacity and partition size** displayed on the screen, and then select a drive to install the Windows system.
Selecting an improper drive might cause an unintentional corruption of the existing data. Be careful when selecting a hard disk drive on which to install the system.

Important

- **For details, refer to the following website:**
  http://support.microsoft.com/kb/937251/en-us
- **You cannot edit the drive letters for the system volume or boot volume after setup is complete. Make sure that the drive letters assigned in this window are correct, and then proceed with setup.**

3. See *Chapter 1 (3.3 Setup with Windows Standard Installer)*, and proceed to setup Windows with Windows standard installer and the instructions.

Tips

The drive letter might change after installation. If you want to change the drive letter, use the procedure shown in
Changing drive letter assignments below.

(2) Changing drive letter assignments

To change the drive letter, follow the steps below. However, these steps cannot change drive letter assignments for the system volume or boot volume.

1. Right-click the left bottom of screen, and click **Computer Management**.
2. From the window on the left, select **Storage**, and then **Disk Management**.
3. Right-click the volume whose drive letter you want to change, and then select **Change drive letter and paths**.
4. Click **Change** and **Assign the following drive letter**, and then select the drive letter you want to assign.
5. Click **OK**.
6. Close the **Server Manager**.

4. Setting Up Windows Server 2012 R2

Set up Windows Server 2012 R2.

4.1 Before Starting Setup

Read through the cautions explained here before starting setup.

EB : Confirm during Setup with EXPRESSBUILDER

OS : Confirm during Setup with Windows standard installer

BIOS setting		
EB	OS	Change **Boot Mode** to **UEFI Mode**. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Boot → Boot mode select → UEFI**
EB	OS	Select **Enabled** for X2APIC feature of processor. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Chipset → Processor Configuration → Extended APIC→ Enabled**
EB	OS	**Disable** the CSM support function. See *Chapter 2 (1. System BIOS)* in *Maintenance Guide* for details. **Advanced → CSM Configuration → CSM Support**
EB	OS	At re-installation, open **FIXED BOOT ORDER Priorities** in BIOS SETUP to make sure that the higher boot priority than **Windows Boot Manager** is specified for optical disk drive. **Example of correct setting** **[Boot]–[FIXED BOOT ORDER Priorities]** **– Boot Option #1 [UEFI: Optical Disk Drive]** **– Boot Option #2 [Windows Boot Manager]** → The system can boot from OS installation media. **Example of incorrect setting** **[Boot]–[FIXED BOOT ORDER Priorities]** **– Boot Option #1 [Windows Boot Manager]** **– Boot Option #2 [UEFI: Optical Disk Drive]** → The system cannot boot from OS installation media. **Note** • Before opening BIOS SETUP, be sure to insert OS installation media into optical disk drive. • If **Windows Boot Manager** is not displayed in **FIXED BOOT ORDER Priorities**, you need not to confirm the boot priority.

Hardware configuration		
The following hardware configurations require special procedures.		
EB	OS	**Reinstalling to a mirrored volume** 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.
EB	OS	**Peripheral devices such as RDX/MO** Remove an MO device before installing an OS. Some peripheral devices need to be halted before installation. Refer to the manual provided with the peripheral devices for how to set a device appropriate to installation.
EB	OS	**DAT, LTO, and similar media** Do not set media that is unnecessary to installation during setup.
EB	OS	**Installing in internal or external multiple hard disk drives (logical drives)** For details on installing operating systems to a system in which two or more RAID Controller exist, or to an external disk drive* that is not subject to setup, refer to *Chapter 1* (*4.9 Installation When Multiple Logical Drives Exist)*. * Disk array unit (such as iStorage) or hard disk drive in Disk Expansion Unit.
EB	OS	**Reinstalling to hard disk drives that have been upgraded to dynamic disks** If the hard disk drive has been upgraded to a dynamic disk, the operating system cannot be reinstalled to it with the existing partitions. Set up the operating system with the Windows standard installer.

EB OS

Setup when mass memory is installed

If mass memory is installed in your system, the large size of paging file is required at installation. Thus, the partition size for storing debug information (dump file) may not be secured.

If you fail to secure the dump file size, allocate the required file space to multiple disks by performing the following steps.

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 store the debug information (required dump file size) by referring to *Chapter 1 (5. Setup for Solving Problems)*.

If the hard disk drive does not have enough space 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.

Note

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

If sufficient space cannot be secured for the paging file, perform either of the following after installing Windows.

– **Specify a hard disk drive other than the system drive as the location to store the paging file for collecting memory dump**

Create a paging file of the installed memory size + 400 MB or more in a drive other than the system drive.

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. Therefore, 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.

Example of correct setting
C: No paging file exists **D: Paging file whose size is "installed memory size + 400 MB" or more** → The paging file in drive D can be used for collecting memory dump because its size satisfies the requirement.

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.

<When specifying the file named "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 to edit 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	= 9,200MB
Paging file size (recommended)	= installed memory size × 1.5
Dump file size	= installed memory size + 400MB
Application size	= as required by the application

Server Core installations

Size required to install the OS	= 6,400MB
Paging file size (recommended)	= installed memory size × 1.5
Dump file size	= installed memory size + 400MB
Application size	= as required by the application

For example, if the installed memory size is 1 GB (1,024 MB), application size is 100MB, and Server with a GUI is selected, the partition size is calculated as follows:

9,200MB + (1,024MB × 1.5) + 1,024MB + 400MB + 100MB

= 12,260MB

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 : 32,768MB (32GB) or more

Server Core installations : 32,768MB (32GB) or more

*1 GB = 1,024 MB

Note

- 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.

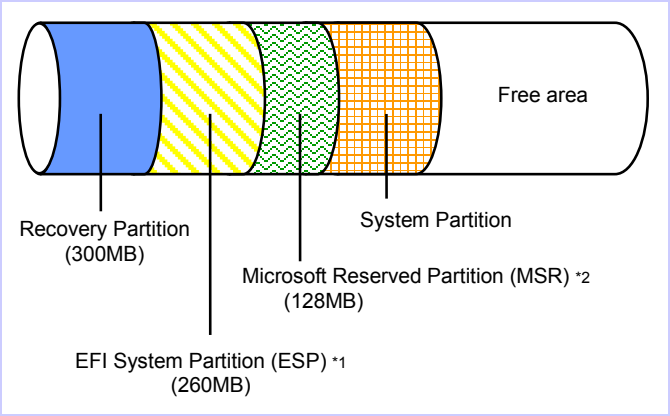
Tips

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

- Recovery Partition: 300MB
- EFI System Partition (ESP): 260MB *1
- Microsoft Reserved Partition (MSR): 128MB *2

528MB is allocated for these three partitions out of the specified partition size.
For example, when 61,440MB is specified for partition size, the area available free area is calculated as follows:

61,440MB – (300MB + 260MB + 128MB) = 60,752MB



*1 May be 100MB in size depending on hard disk drive type.
260MB partition will be created in case of setup with EXPRESSBUILDER.

*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.
http://www.58support.nec.co.jp/global/download/w2012r2/hyper-v/hyper-v-ws2012r2.html

Using BitLocker

EB OS

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 document 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 *4.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO)* and specify any required settings.

4.2 Setup with EXPRESSBUILDER

This section describes how to install Windows with EXPRESSBUILDER.

This feature automatically recognizes the RAID controller connected to the server and configures the RAID system. Therefore the hardware installation of the server needs to be finished by following "*User's Guide*".

Important

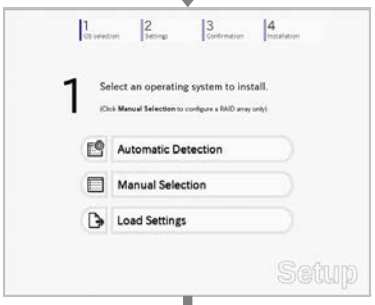
- **Setup with EXPRESSBUILDER may delete all data of the hard disk drive depending on the settings. Pay attention to input parameters. You must be especially careful when configuring the following:**
  - **RAID settings**
  - **Partition Settings**

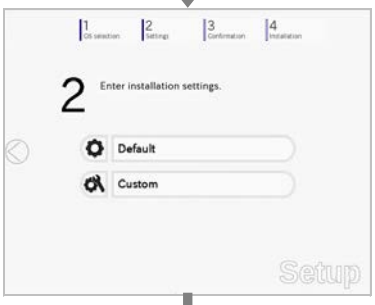
  Backing up user data, as needed, is recommended.
- **Before starting setup, be sure to disconnect hard disk drives from the RAID Controller that is not to be setup. Install those hard disk drives after setup has completed. Conducting setup with hard disk drives being connected with RAID Controller may cause existing data to be erased unintentionally. It is recommended to make backup copy of user data before starting setup.**

Tips

- Setup with EXPRESSBUILDER allows you to use a pre-specified parameter file or save the parameters specified in setup as a parameter file on removable media.
- For details on creating a parameter file, refer to *Chapter 1 (6. Windows OS Parameter File)*.

4.2.1 Setup flow





Configure the RAID system

Set EXPRESSBUILDER in the optical disk drive

*If the media is asked

Copy the selected applications and setup modules

Insert the OS installation media into the optical disk drive

The OS is installed automatically

The Starter Pack and the selected applications are installed

Agree the license terms and sign in

Installation completes

	Process that requires input or selection
	Process that proceeds automatically

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 2012 R2 DVD-ROM*)
- The following EXPRESSBUILDER
  - **EXPRESSBUILDER DVD**
- Prepare if needed:
  - **Removable media for Windows OS parameter file**

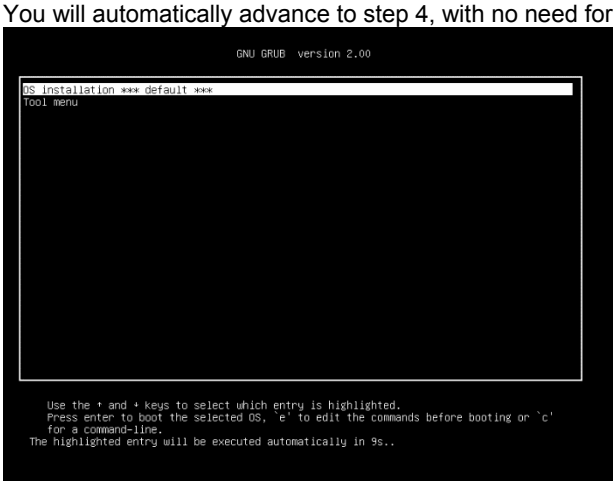
4.2.3 Setup procedure

During Setup with EXPRESSBUILDER, parameters are specified through the wizard.
You can also save the parameters as one file (a parameter file) to removable media.

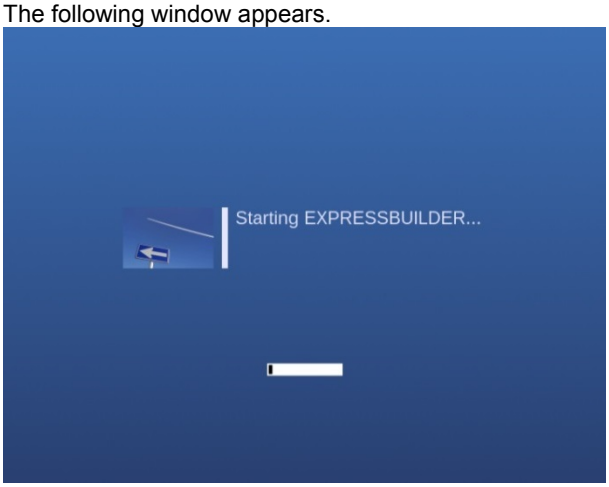
Note

Read through the items in *Chapter 1* (*4.1 Before Starting Setup*) prior to installing Windows.

1. Turn peripheral device (such as a display) power on, and then turn the server power on.
2. Start EXPRESSBUILDER according to *Chapter 1 (1.1 Starting EXPRESSBUILDER)*.
3. Select **OS installation *** default *****.
   You will automatically advance to step 4, with no need for further input.



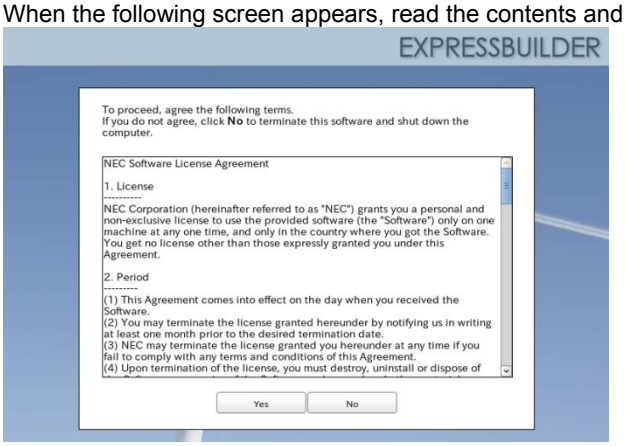
The following window appears.



The server starts from EXPRESSBUILDER.

4. Select **English** on the language selection window, and then click **OK**.

5. When the following screen appears, read the contents and click **Yes**.



6. Click **Setup**.

7. On the **OS selection** menu, select the OS to install or specify the parameter file.

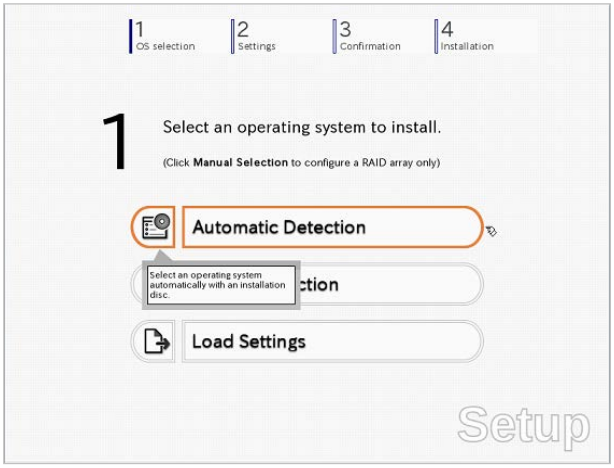
☐ When *not using* a parameter file : Select **Automatic Detection**, and then go to Step 8.
Select **Manual Selection**, and then go to Step 9.

☐ When *using* a parameter file : Select **Load Settings**, and then go to Step 10.

Note When setting up again, parameter input via the wizard can be omitted by loading the saved parameter file.

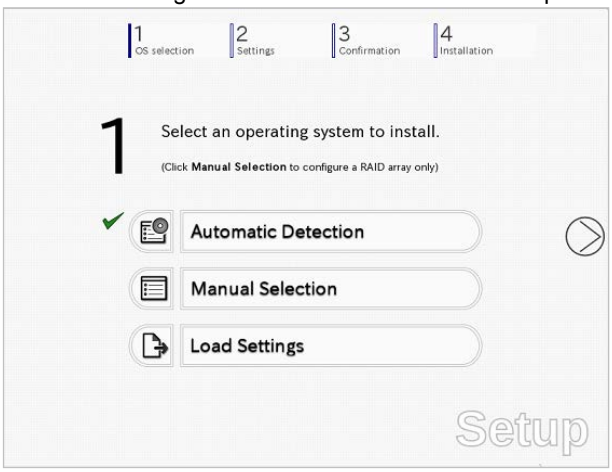
8. When *not using* a parameter file, let the OS on the installation media be recognized by using the following procedure.

8-(1) Click **Automatic Detection**.



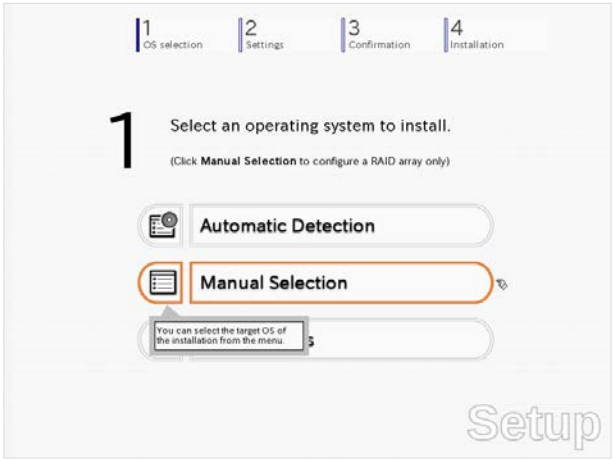
8-(2) Insert the OS installation media, and then click **OK**.

8-(3) Click ▷ on the right side of the screen. → Go to step 11.

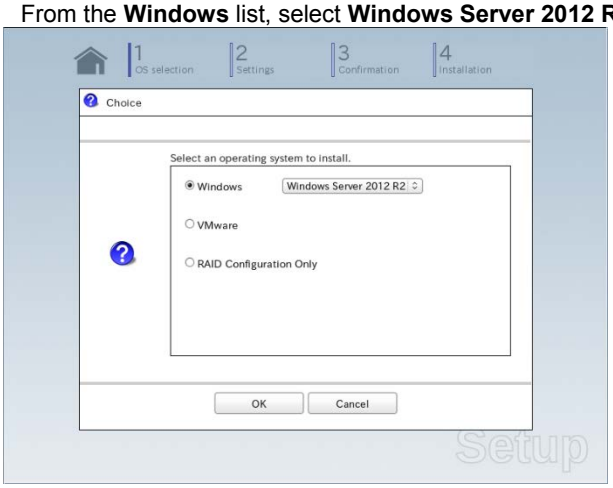


9. When *not using* a parameter file, select an OS by using the following procedure.

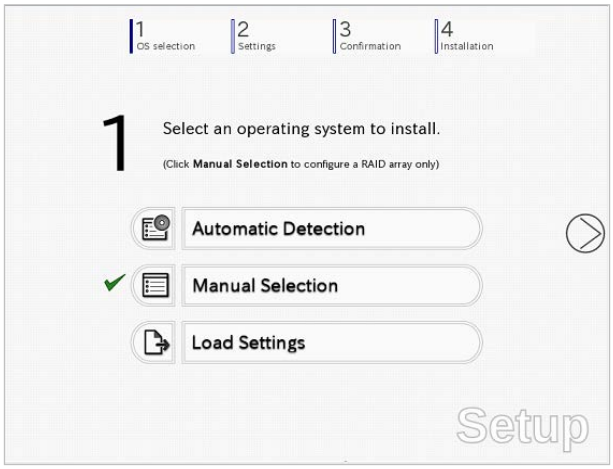
9-(1) Click **Manual Selection**.



9-(2) From the **Windows** list, select **Windows Server 2012 R2**, and then click **OK**.

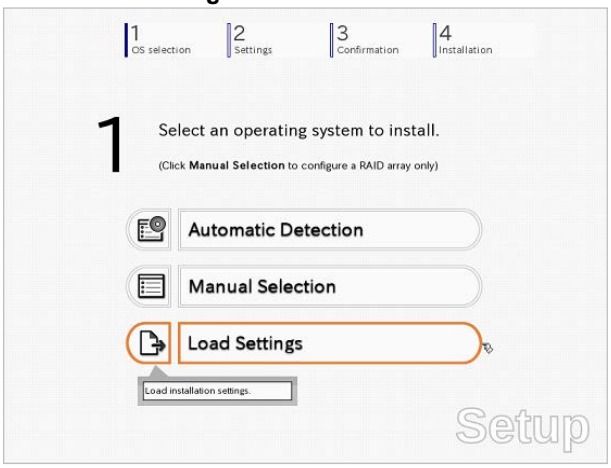


9-(3) Click ▷ on the right side of the screen. → Go to step 11.

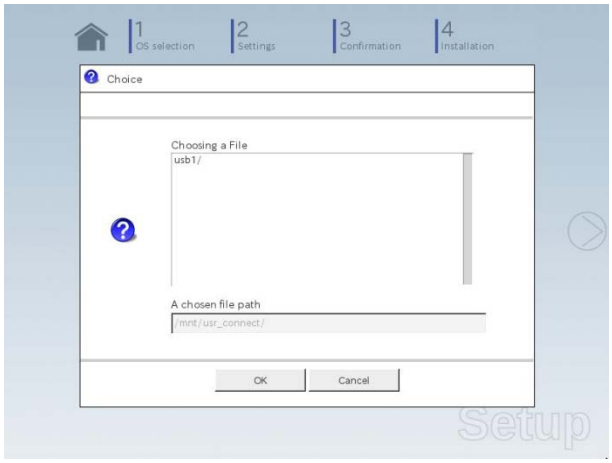


10. When *using* the parameter file, load the parameter file by using the following procedure.

10-(1) Click **Load Settings**.

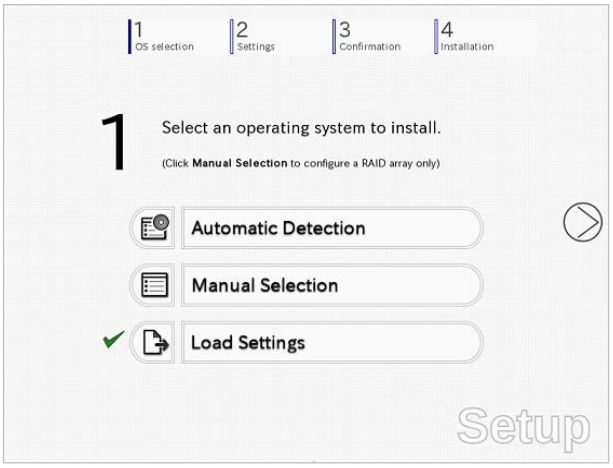


10-(2) Follow the on-screen instruction to load the parameter file (*.tre).



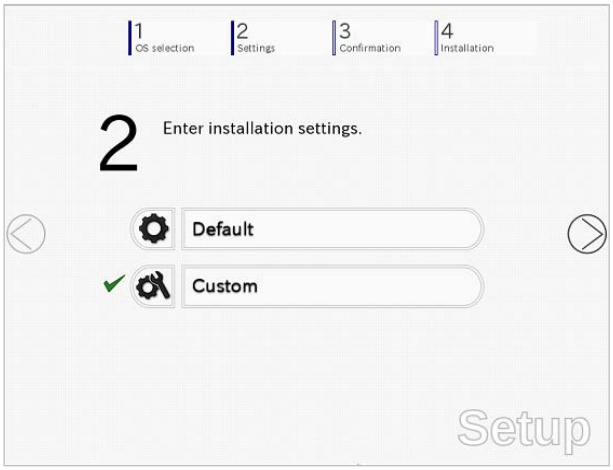
Tips For the removable media in which the parameter file is saved, see **"/mnt/usr_connect/usb*"** (* indicates a number).

10-(3) Click ▷ on the right side of the screen.



10-(4) When the parameter file is correctly loaded, click ▷ on the right side of the screen.
→ Go to step 14.

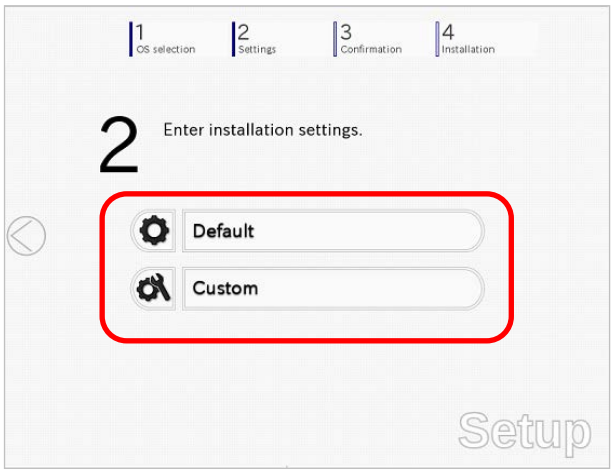
Click **Custom** to check and modify the setting in the wizard.
→ Go to step 13-(1).



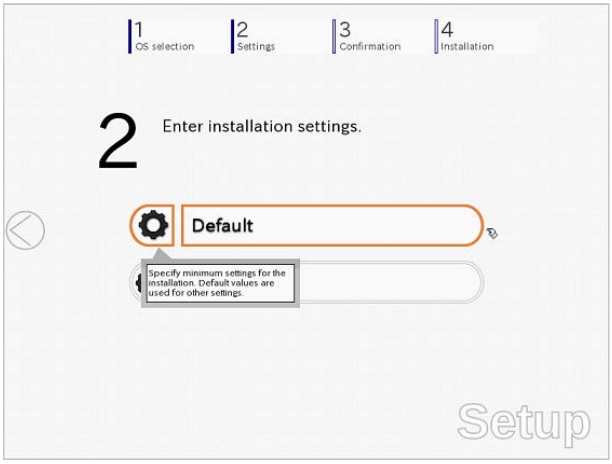
11. Specify the setup parameters by using either of the following methods:

☐ When selecting **Default** : Go to Step 12.

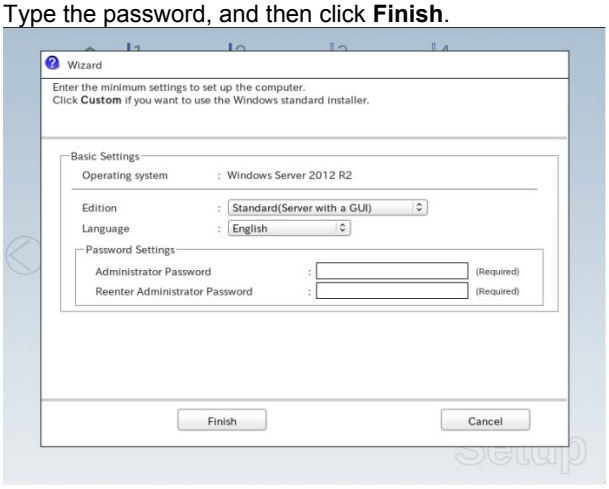
☐ When selecting **Custom** : Go to Step 13.



12. Click **Default**.



12-(1) Select the edition of the OS to install from the **Edition** list.
Type the password, and then click **Finish**.

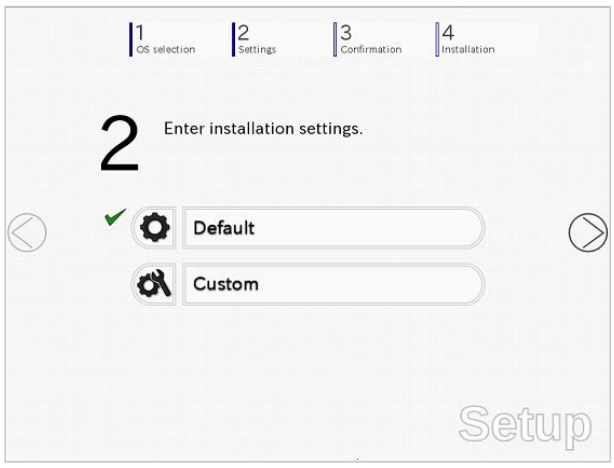


Note

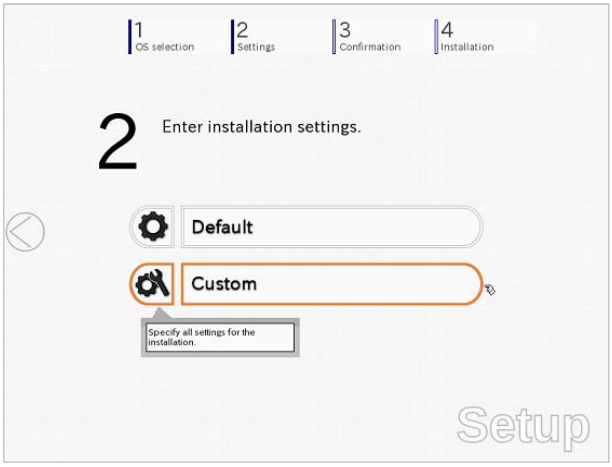
Computer name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains 6 or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z) , and symbols.

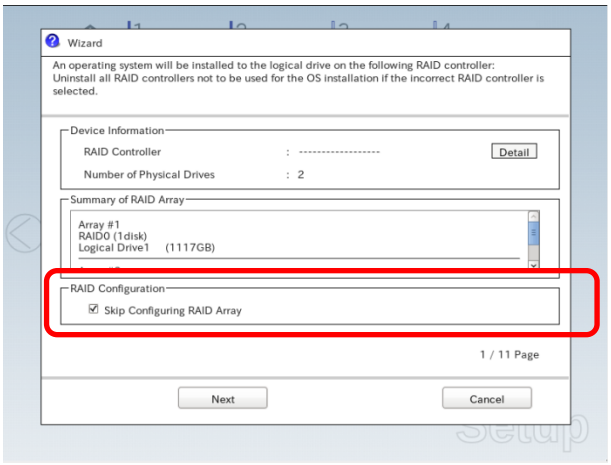
12-(2) Click ▷ on the right side of the screen. → Go to step 14.



13. Click **Custom**.



13-(1) Use this menu to configure the RAID system and logical drives as needed.



When creating new logical drives

With the **Skip Configuring RAID Array** check box cleared, click **Next**.
Set up the logical drives according to the wizard.

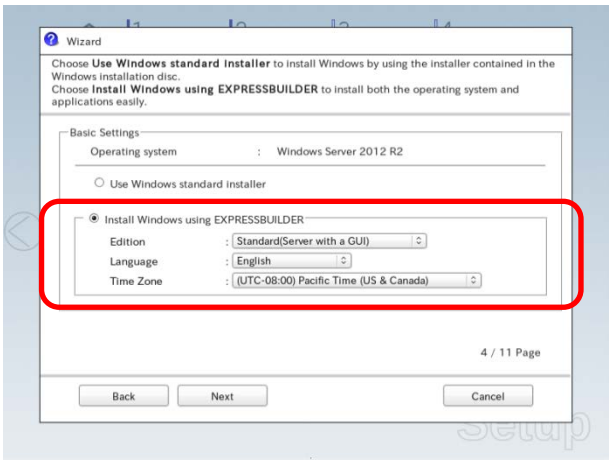
Important **If you proceed with wizard, the existing RAID system is destructed and the contents of hard disk drive will be erased.**

When skipping the creation of new logical drives

Select the **Skip Configuring RAID Array** check box, and then click **Next**.

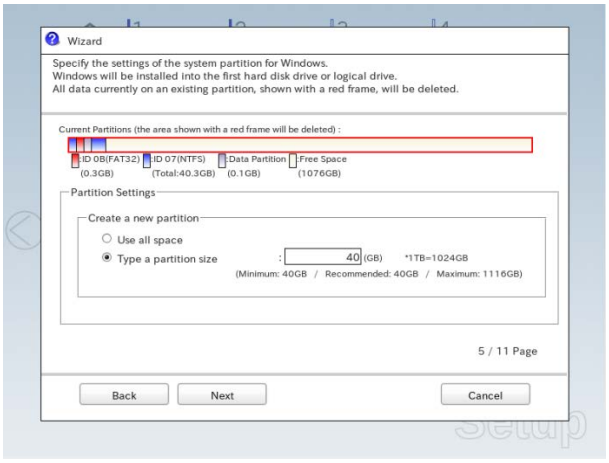
13-(2) Check the settings specified for **Basic Settings**.

Choose **Install Windows using EXPRESSBUILDER**, and then click **Next**.



13-(3) Check the settings specified for **Partition Settings**.

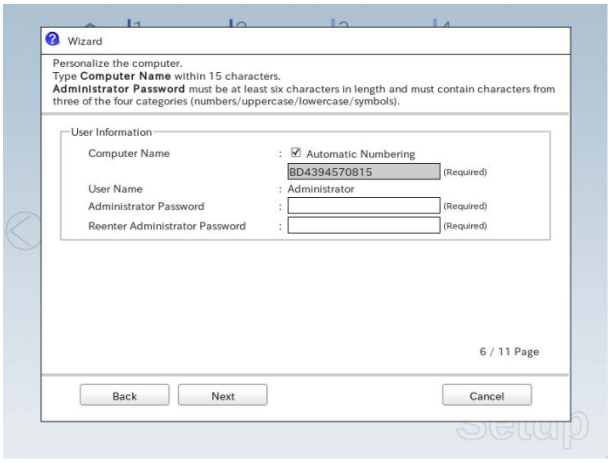
Modify the settings as needed, and then click **Next**.



Important

- **Partition size**
  - **Specify a partition size larger than the minimum required for installing the operating system. (Refer to *Chapter 1 (4.1 Before Starting Setup)*.)**
  - **The maximum partition size is 2,097,152 MB.**
- **The entire contents of the destination hard disk drive will be deleted.**

13-(4) Enter the user information, and then click **Next**.



Note

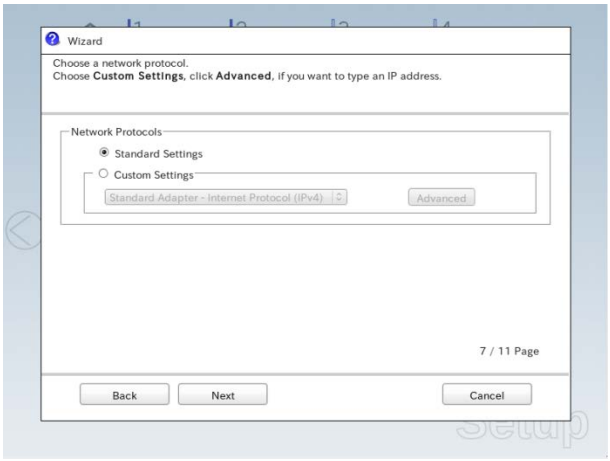
Computer name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains 6 or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z), and symbols.

Tips

- The Computer name has been assigned by automatic assignment function. If you need to assign another computer name, remove the checkmark from "Auto", and enter the desired computer name.
- If a parameter file is used for setup or if you return to a previous screen, •••••• is displayed in the Administrator password and Reenter Administrator password text boxes.

13-(5) Check the settings specified for **Network Protocols**.
Modify the settings as needed, and then click **Next**.



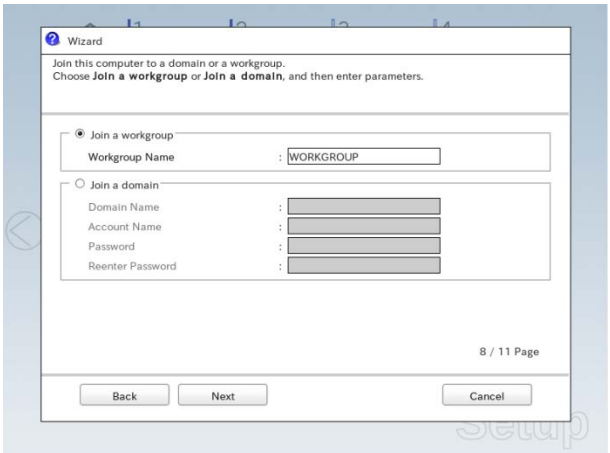
Tips

The order of entry in **Custom settings** may differ from the numbering of LAN ports.

Note

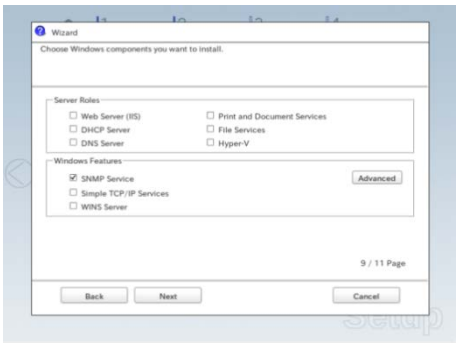
Even when an optional network board is connected, **Custom settings** only shows standard network boards.
After finishing Setup with EXPRESSBUILDER, specify the optional network settings again.

13-(6) Specify the domain or workgroup.
Check the settings, modify them as needed, and then click **Next**.

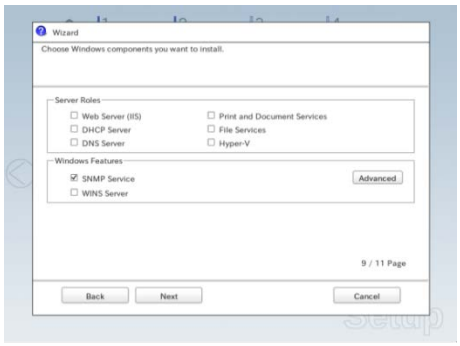


13-(7) Check the settings of Windows components.

Modify the settings as needed, and then click **Next**.

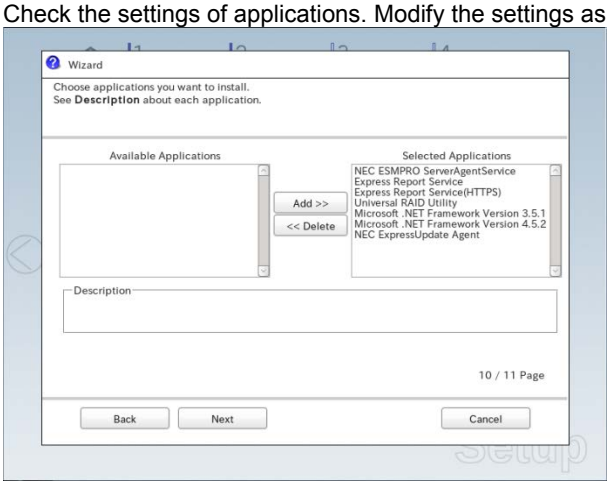


Server with a GUI

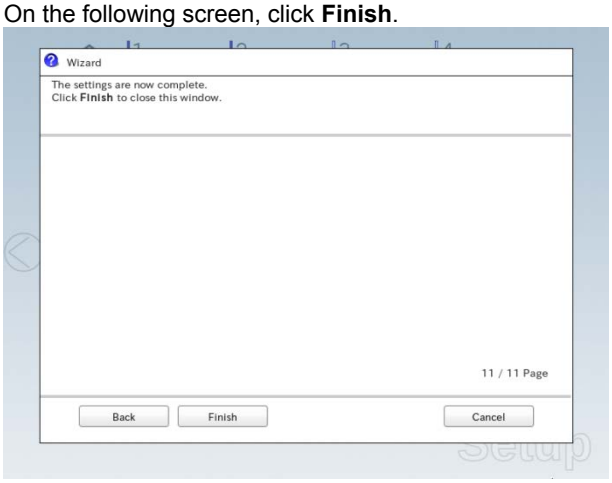


Server Core Installations

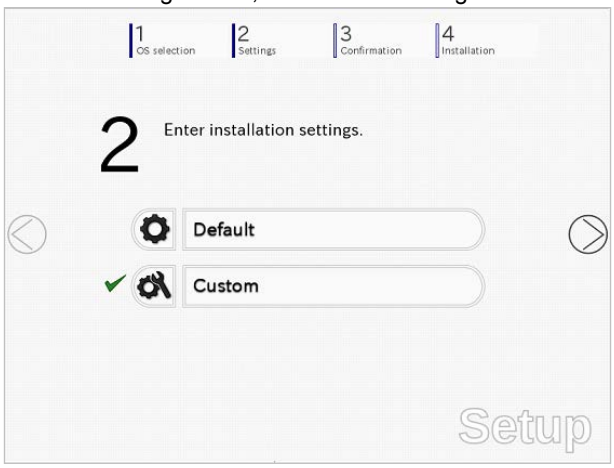
13-(8) Check the settings of applications. Modify the settings as needed, and then click **Next**.



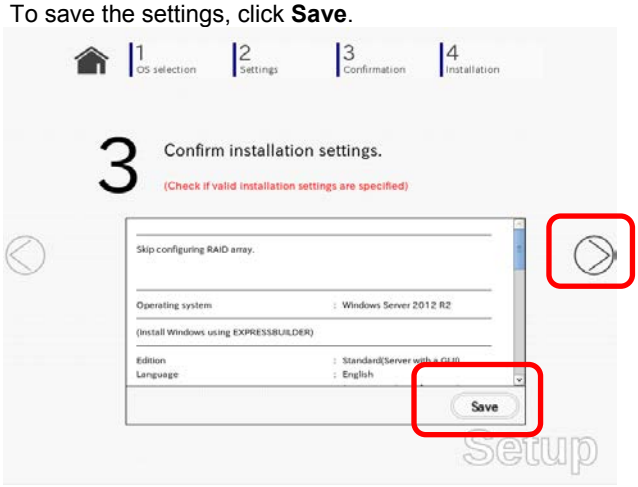
On the following screen, click **Finish**.



On the following screen, click ▷ on the right side of the screen.



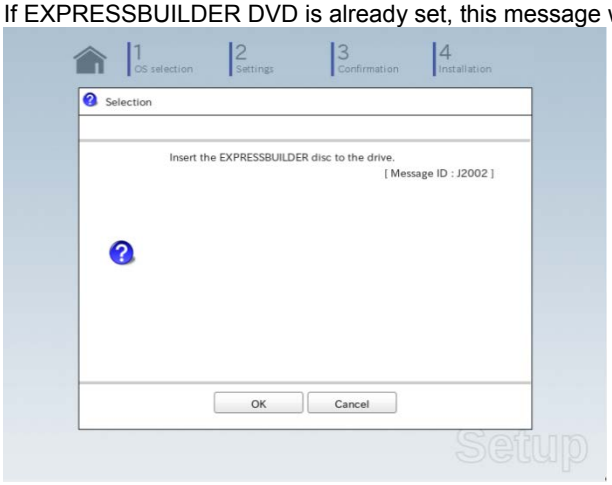
14. Check the parameter settings.
    To save the settings, click **Save**.



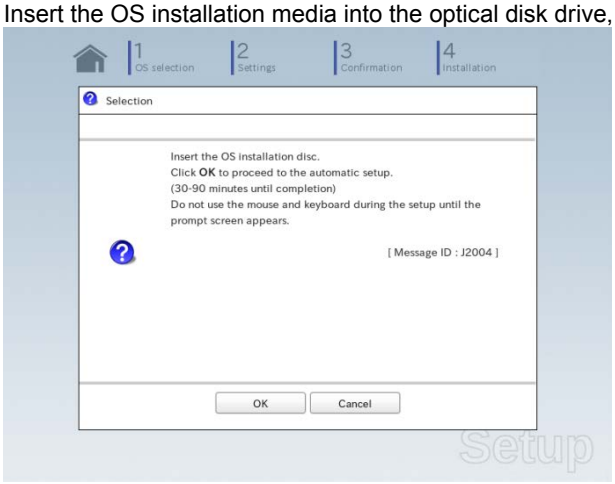
Click ▷ on the right side of the screen.

15. The setup process starts. Click **Start** to continue setup.

16. If the server has started from the EXPRESSBUILDER DVD, insert the EXPRESSBUILDER disk into the optical disk drive, and then click **OK**.
    If EXPRESSBUILDER DVD is already set, this message will not appear.

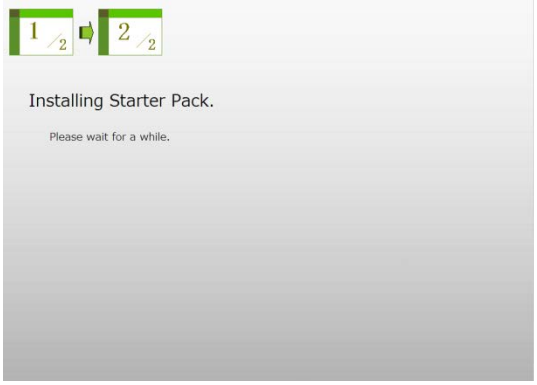


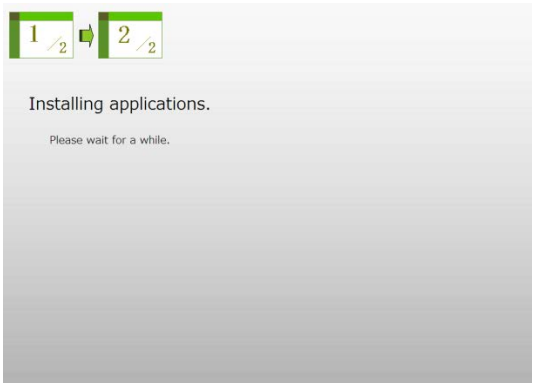
17. Insert the OS installation media into the optical disk drive, and then click **OK**.



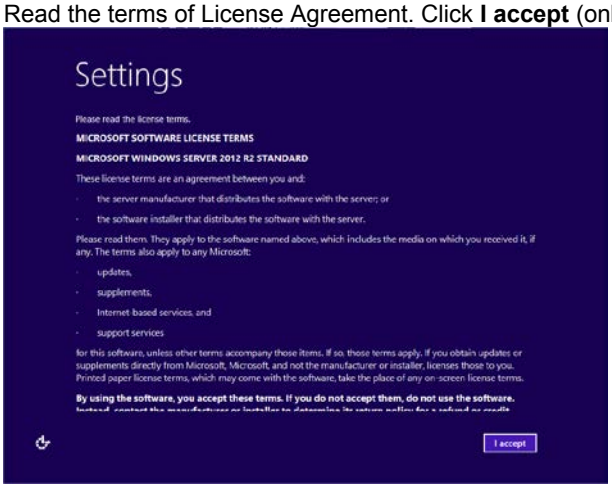
    Windows Server 2012 R2 is installed automatically.
    Wait for completion (about 40 minutes) without performing any operation.

18. The Starter Pack and the selected applications are automatically installed.
    Wait for completion without performing any operation.

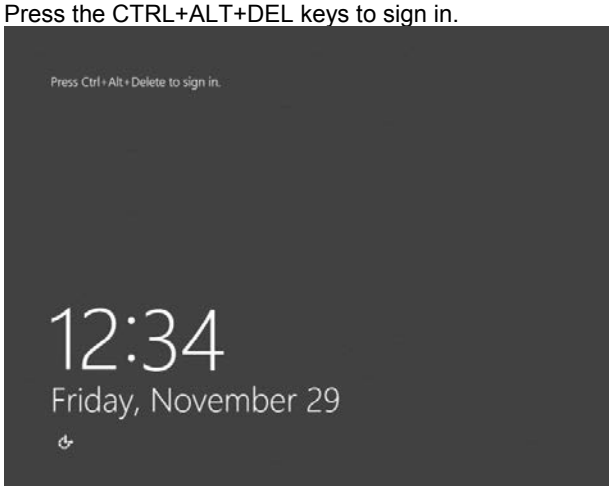




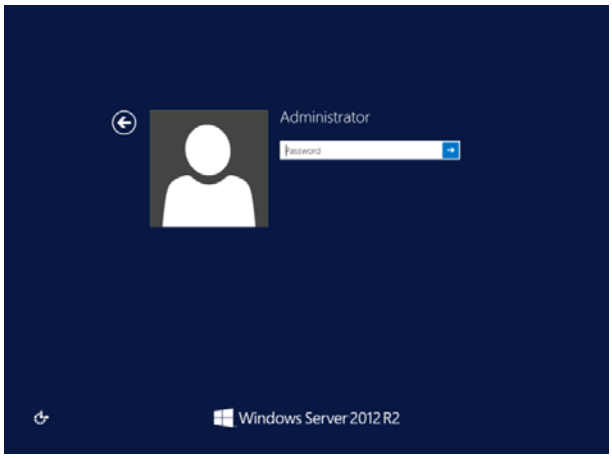
19. Read the terms of License Agreement. Click **I accept** (only in the server with a GUI).



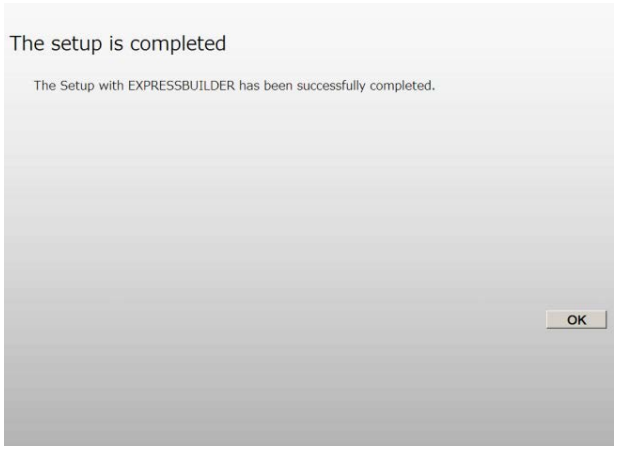
20. Press the CTRL+ALT+DEL keys to sign in.



Type the password you have specified in step 12-(1) or 13-(4).



21. Click **OK**.



22. Follow the instructions described in *Chapter 1 (4.5 Setting Up Device Drivers)* to set up the device drivers.
23. Confirm if Windows is activated according to *Chapter 1 (4.6 License Authentication)*.
24. See *Chapter 1 (4.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO))* to setup a team as needed.
25. Execute setup by following the instructions described in *Chapter 1 (5. Setup for Solving Problems)*.
26. See *Chapter 2 Installing Bundled Software* to install the bundled software or confirm that the software is appropriate to your operating environment.

Setup with EXPRESSBUILDER is now complete.

4.3 Setup with Windows Standard Installer

This section describes how to install Windows with Windows Standard Installer.

This feature automatically recognizes the RAID controller connected to the server and configures the RAID system. Therefore the hardware installation of the server needs to be finished by following "*User's Guide*".

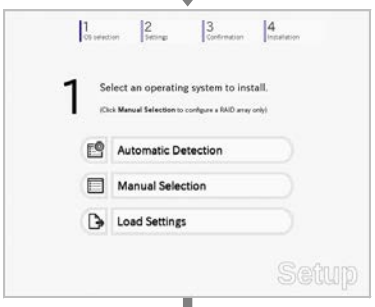
Important

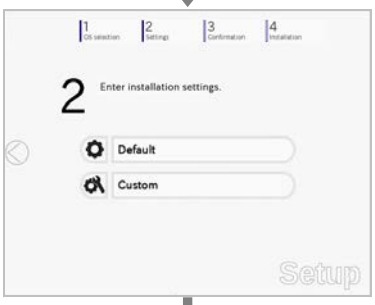
Setup with Windows standard Installer may delete all data of the hard disk drive depending on the settings. Pay attention to input parameters.
You must be especially careful when configuring the following:
– RAID settings
When re-installing an OS, backing up user data, as needed, is recommended.

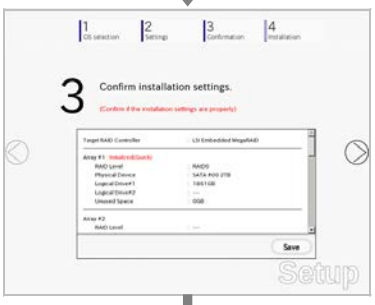
Tips

- Setup with Windows Standard Installer allows you to use a pre-specified parameter file or save the parameters specified in setup as a parameter file on removable media.
- For details on creating a parameter file, refer to *Chapter 1 (6. Windows OS Parameter File)*.

4.3.1 Setup flow







Configure RAID System

Insert the OS installation media

Restart (automatically)

Installation

Agree the license terms and sign in

Install Starter Pack

End of installation

	Process that requires input or selection
	Process that proceeds automatically

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 2012 R2 DVD-ROM*)

- The following EXPRESSBUILDER
  - **EXPRESSBUILDER DVD**

- Prepare if needed:

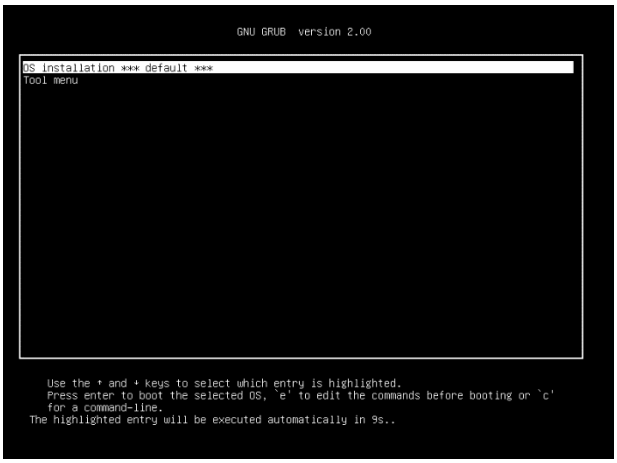
  Removable media for Windows OS parameter file

4.3.3 Setup procedure

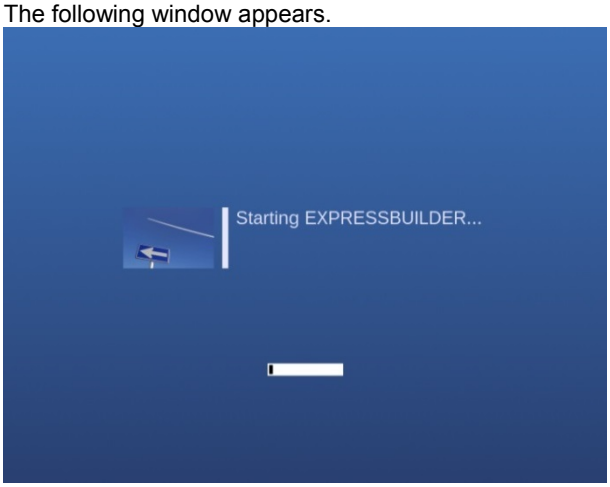
Note Read through the items in *Chapter 1* (*4.1 Before Starting Setup*) prior to installing Windows.

1. Turn peripheral device (such as a display) power on, and then turn the server power on.
2. Start EXPRESSBUILDER according to *Chapter 1 (1.1 Starting EXPRESSBUILDER)*.
3. Select **OS installation *** default *****.

   You will automatically advance to step 4, with no need for further input.

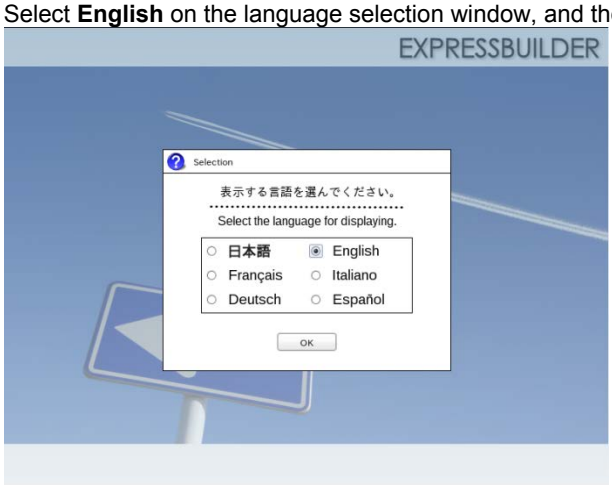


The following window appears.

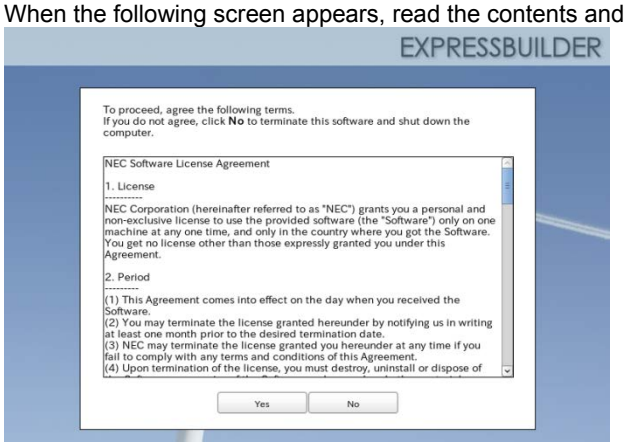


The server starts from EXPRESSBUILDER.

4. Select **English** on the language selection window, and then click **OK**.

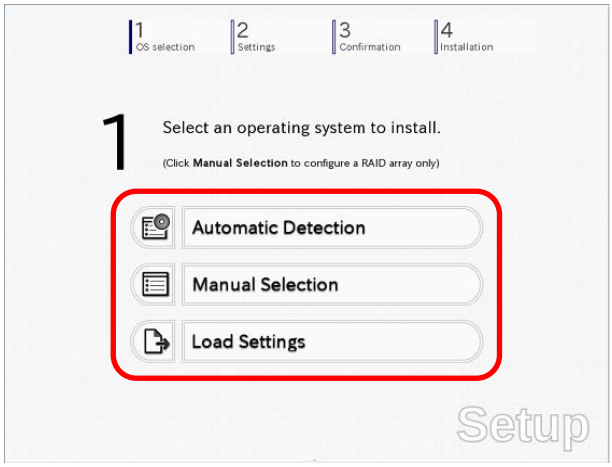


5. When the following screen appears, read the contents and click **Yes**.



6. Click **Setup**.

7. On the **OS selection** menu, select the OS to install or specify the parameter file.



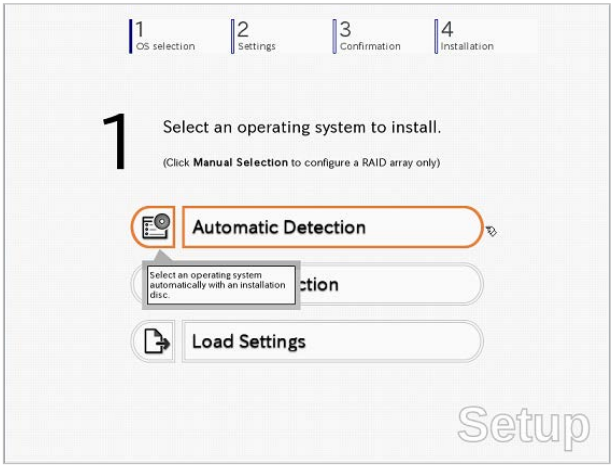
☐ When *not using* a parameter file : Select **Automatic Detection**, and then go to Step 8.
: Select **Manual Selection**, and then go to Step 9.

☐ When *using* a parameter file : Select **Load Settings**, and then go to Step 10.

Note When setting up again, parameter input via the wizard can be omitted by loading the saved parameter file.

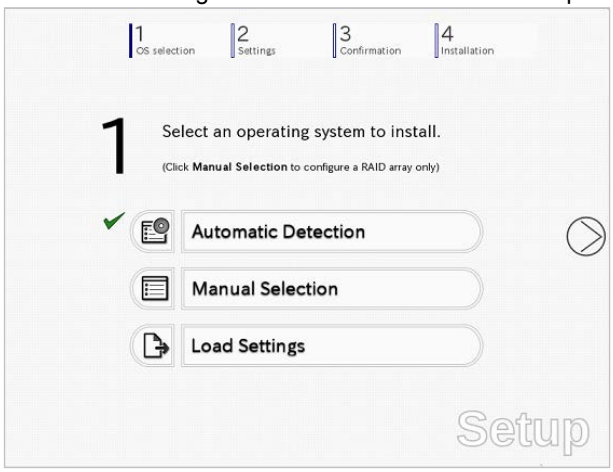
8. When *not using* a parameter file, let the OS on the installation media be recognized by using the following procedure.

8-(1) Click **Automatic Detection**.



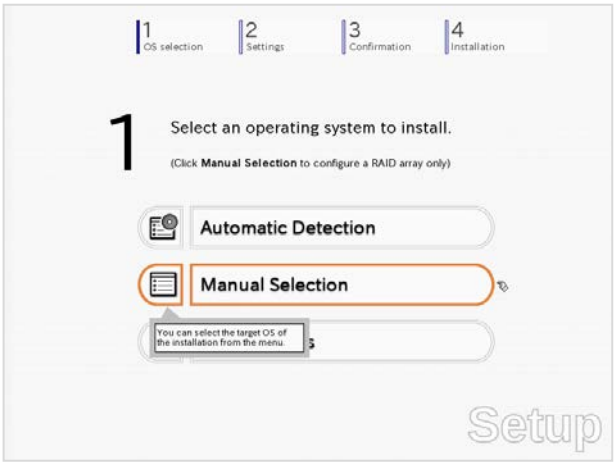
8-(2) Insert the OS installation media, and then click **OK**.

8-(3) Click ⊳ on the right side of the screen. → Go to step 11.

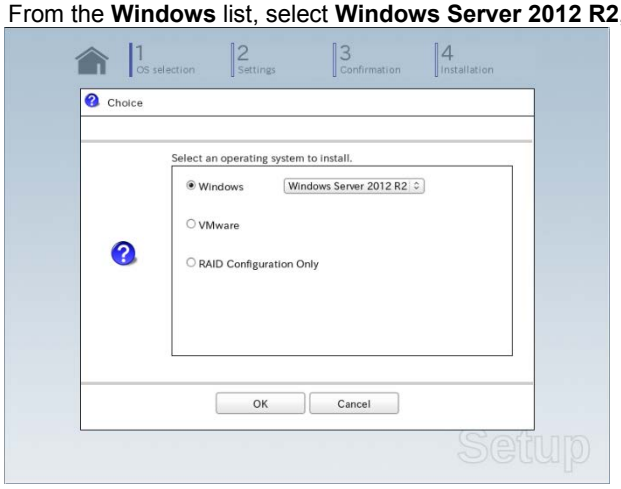


9. When *not using* a parameter file, select an OS by using the following procedure.

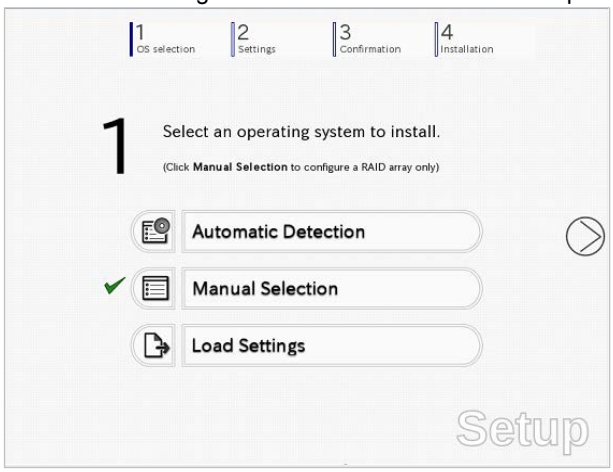
9-(1) Click **Manual Selection**.



9-(2) From the **Windows** list, select **Windows Server 2012 R2**, and then click **OK**.

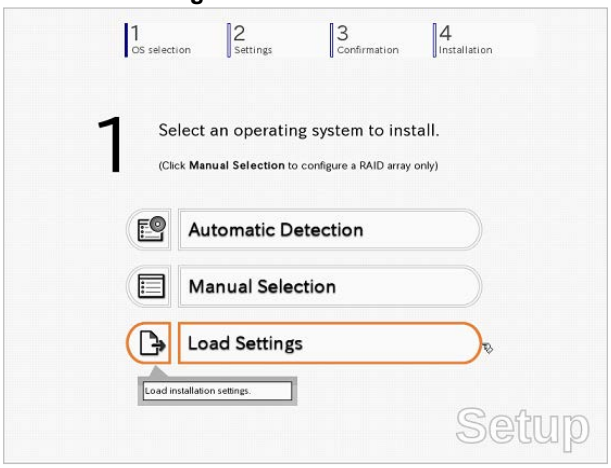


9-(3) Click ▷ on the right side of the screen. → Go to step 11.

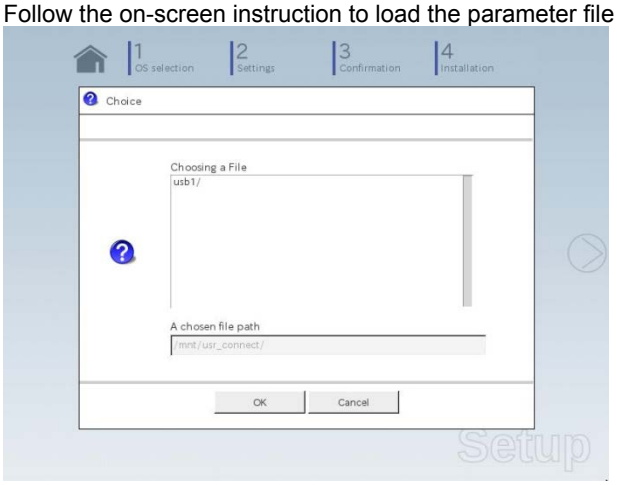


10. When *using* the parameter file, load the parameter file by using the following procedure.

10-(1) Click **Load Settings**.

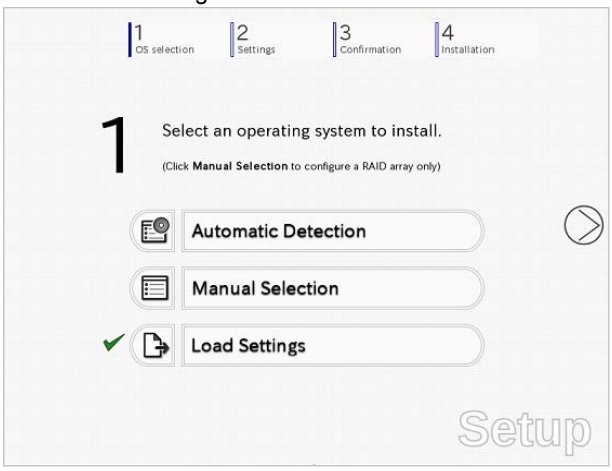


10-(2) Follow the on-screen instruction to load the parameter file (*.tre).



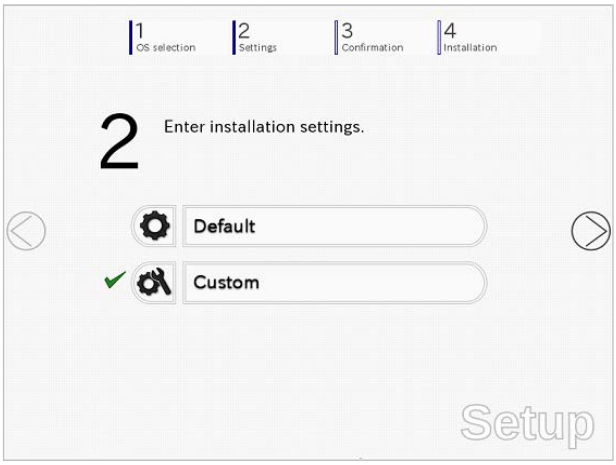
Tips For the removable media in which the parameter file is saved, see **"/mnt/usr_connect/usb*"** (* indicates a number).

10-(3) Click ▷ on the right side of the screen.

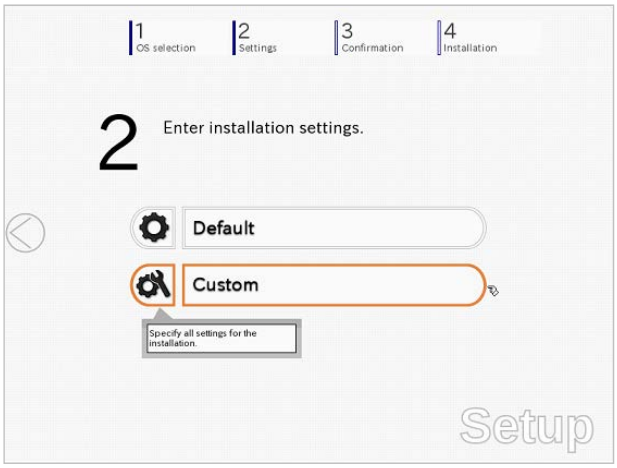


10-(4) When the parameter file is correctly loaded, click ▷ on the right side of the screen.
→ Go to step 12.

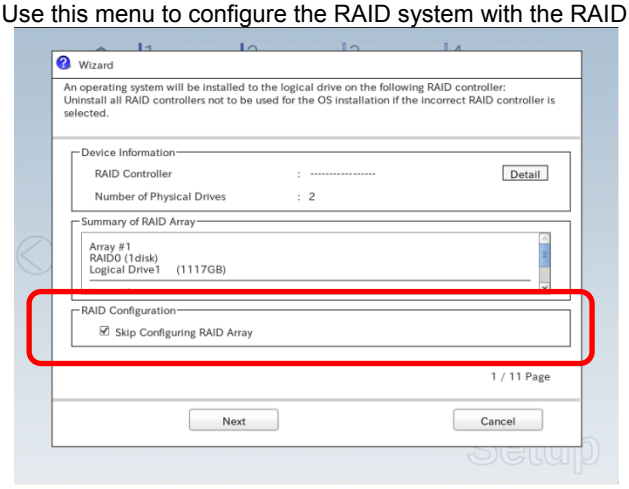
Click **Custom** to check and modify the setting in the wizard.
→ Go to step 11-(1).



11. Click **Custom**.



11-(1) Use this menu to configure the RAID system with the RAID controller detected automatically.



When creating new logical drives

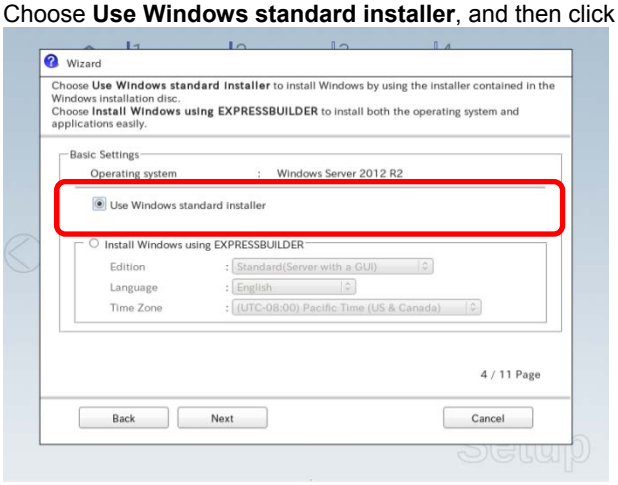
With the **Skip Configuring RAID Array** check box cleared, click **Next**.
Set up the logical drives according to the wizard.

Important **If you proceed with wizard, the existing RAID system is destructed and the contents of hard disk drive will be erased.**

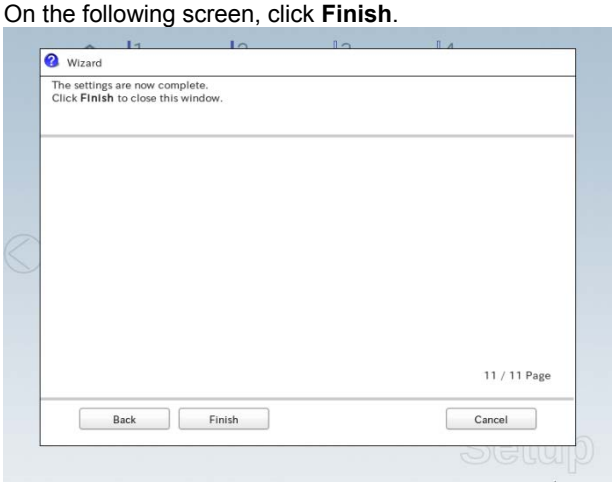
When skipping the creation of new logical drives

Select the **Skip Configuring RAID Array** check box, and then click **Next**.

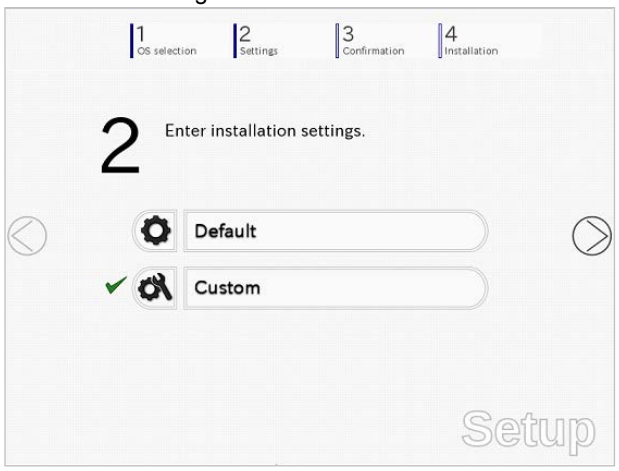
11-(2) Check the settings specified for **Basic Settings**.
Choose **Use Windows standard installer**, and then click **Next**.



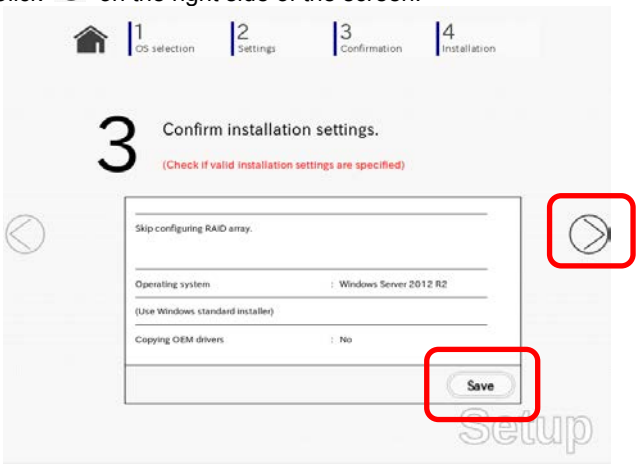
On the following screen, click **Finish**.



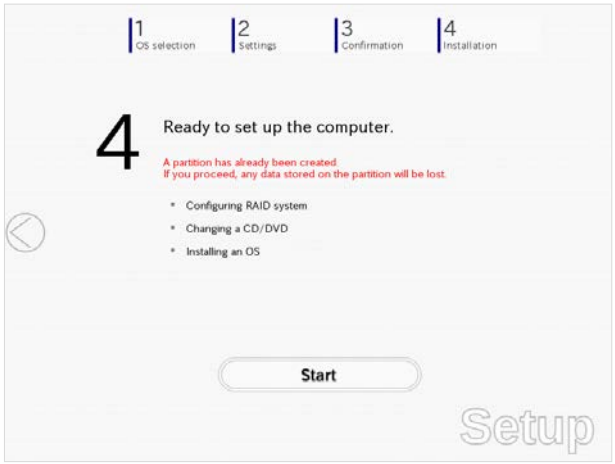
11-(3) Click ▷ on the right side of the screen.



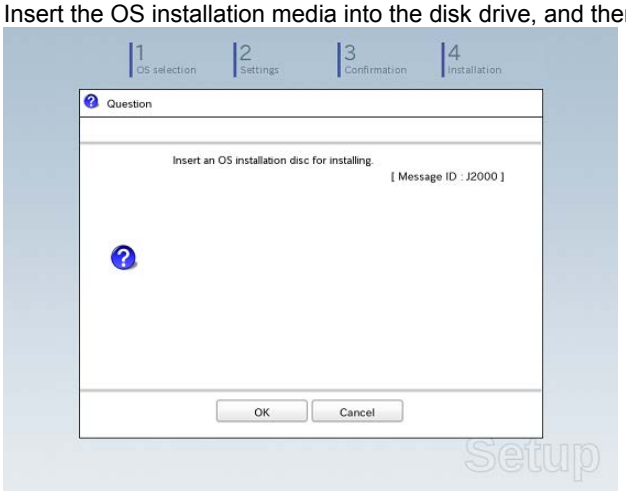
12. Check the parameter settings.To save the settings, click **Save**.
Click ▷ on the right side of the screen.



13. The setup process starts.
Click **Start** to continue setup.



14. Insert the OS installation media into the disk drive, and then click **OK**.



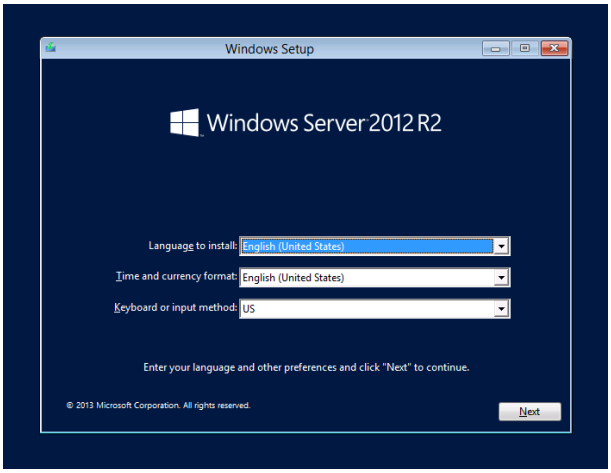
15. The system starts from the OS installation media.

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

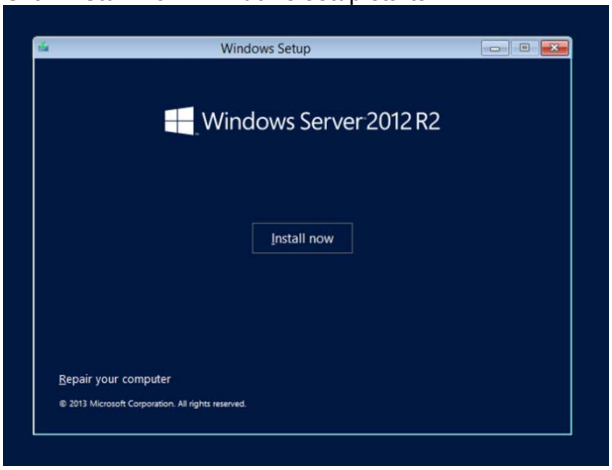
    Press <Enter> key to start the system from the installation media.
    The boot sequence proceeds and the message “Windows is loading files…” appears.

Note If “Windows is loading files...” message does not appear, <Enter> key was not pressed correctly. Reboot and retry.

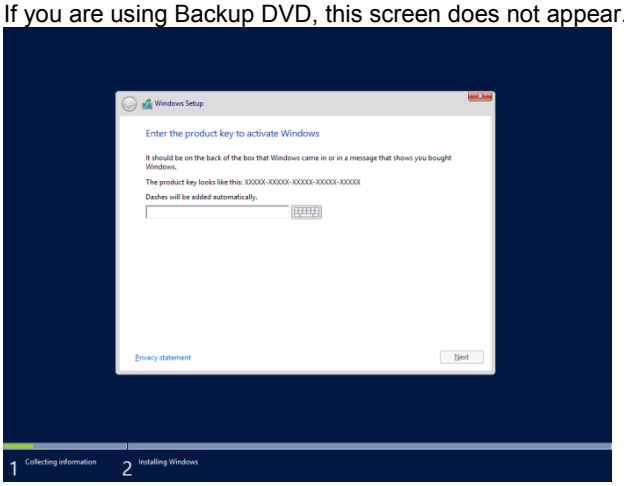
16. Click **Next**.



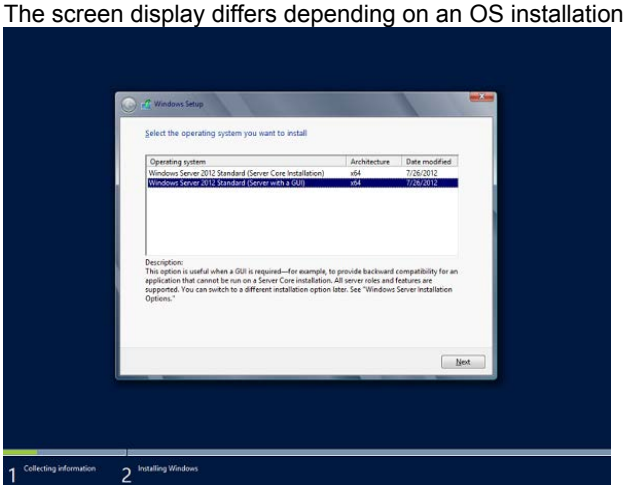
17. Click **Install now**. Windows setup starts.



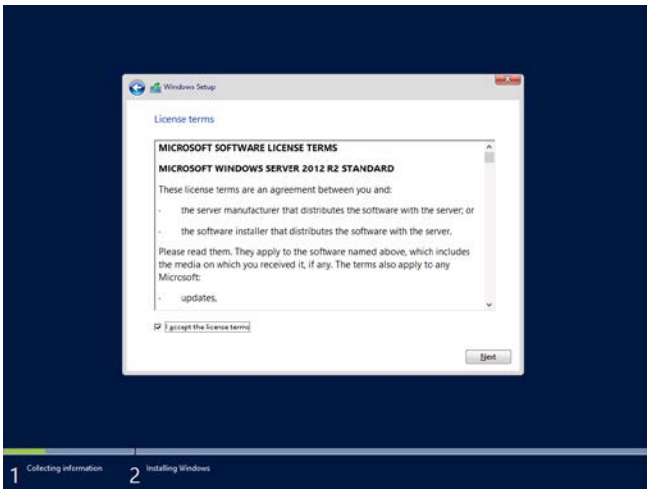
18. Type the product key, and then click **Next.**
    If you are using Backup DVD, this screen does not appear. Go to the next step.



19. Select the operating system to install, and the click **Next**.
    The screen display differs depending on an OS installation media you are using.

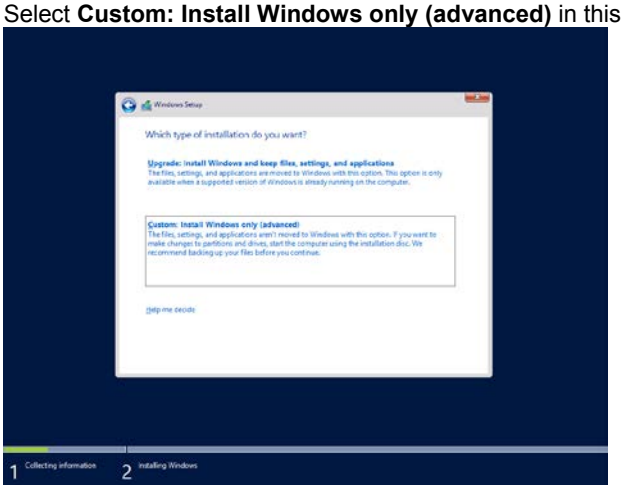


20. When the following window appears, confirm the content of the license agreement.
    If you agree, select **I accept the license terms** and then click **Next**.



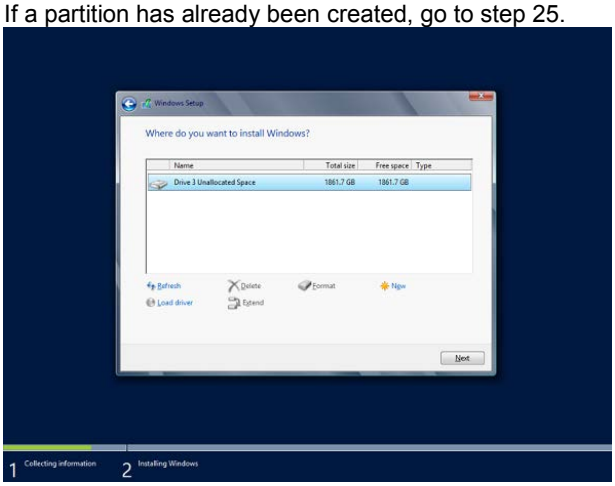
21. Select the installation type.

    Select **Custom: Install Windows only (advanced)** in this case.



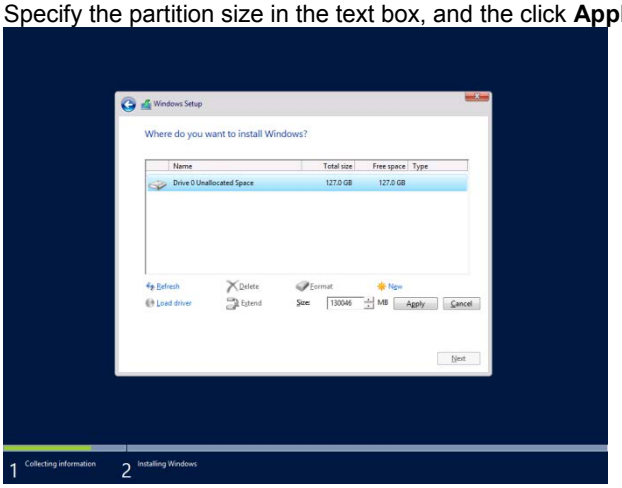
22. Click **New**.

    If a partition has already been created, go to step 25.

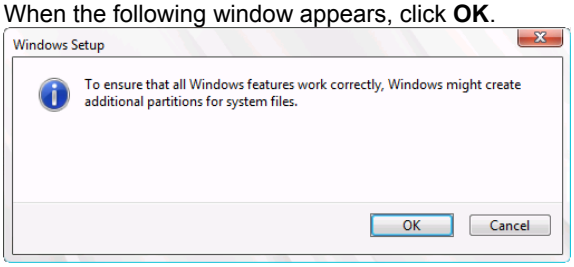


Tips If **New** is not displayed on the screen, click **Drive options (advanced)**.

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



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

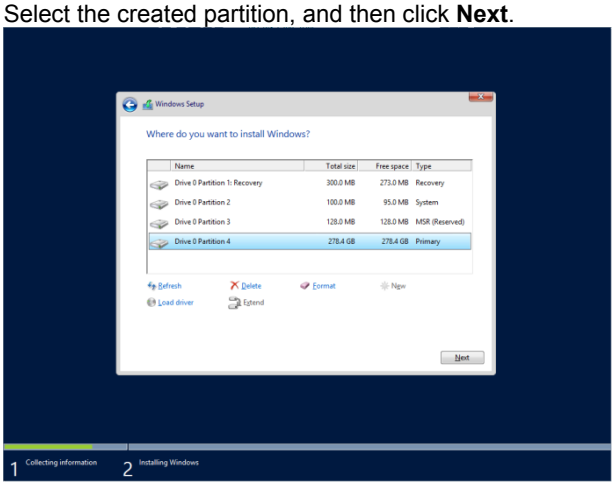


Tips

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)

24. Select the partition created in step 23, and then click **Format**.
25. Select the created partition, and then click **Next**.



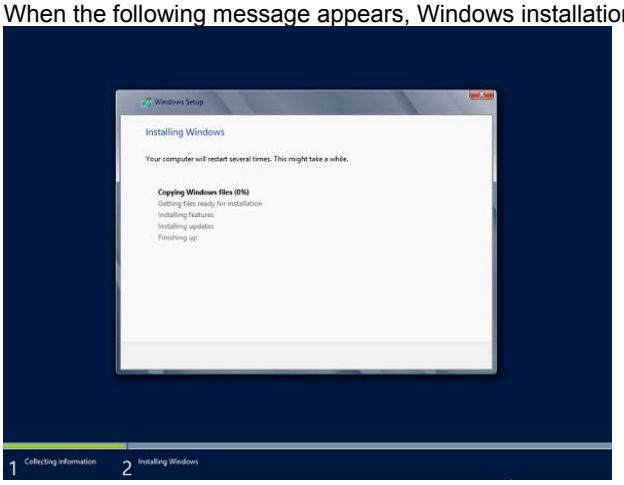
Important

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.

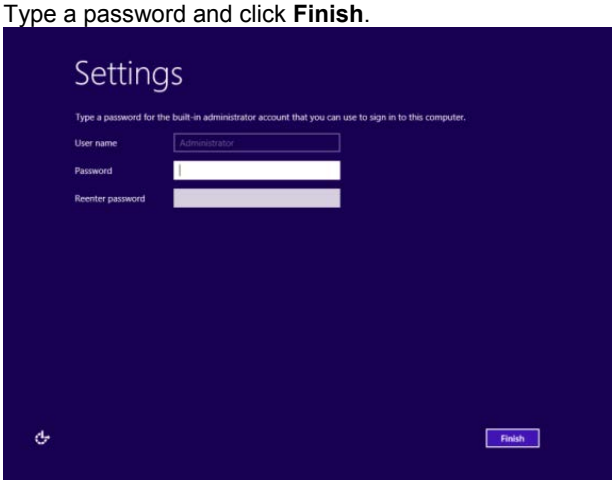
When the following message appears, Windows installation starts automatically.



26. The following screen appears according to the operating system selected in Step 19.

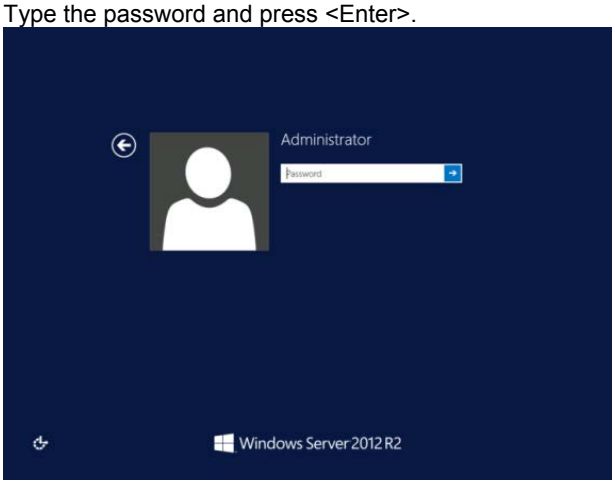
Server with a GUI

Type a password and click **Finish**.

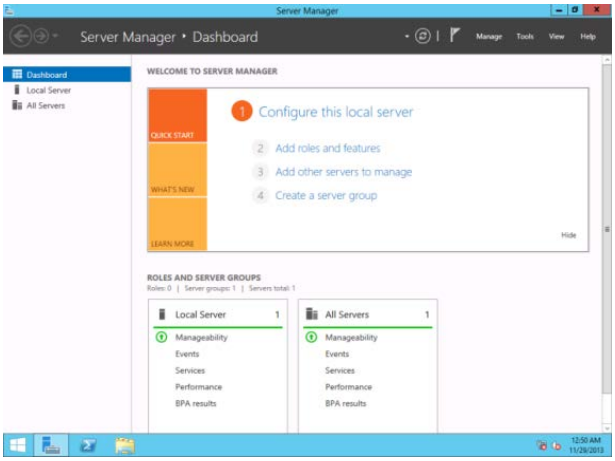


Press <Ctrl>+<Alt>+<Del> to sign-in.

Type the password and press <Enter>.

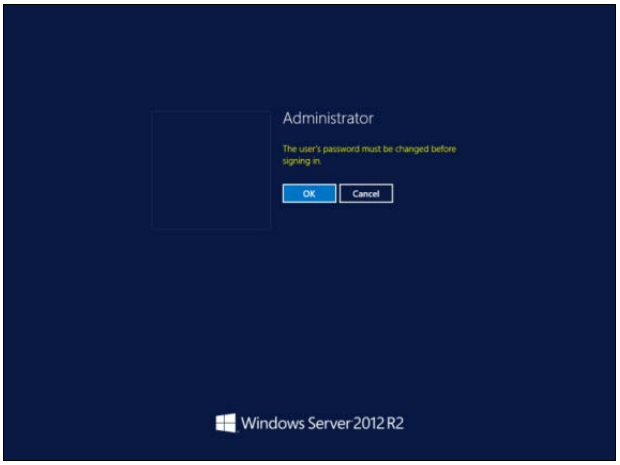


Windows Server 2012 R2 starts.

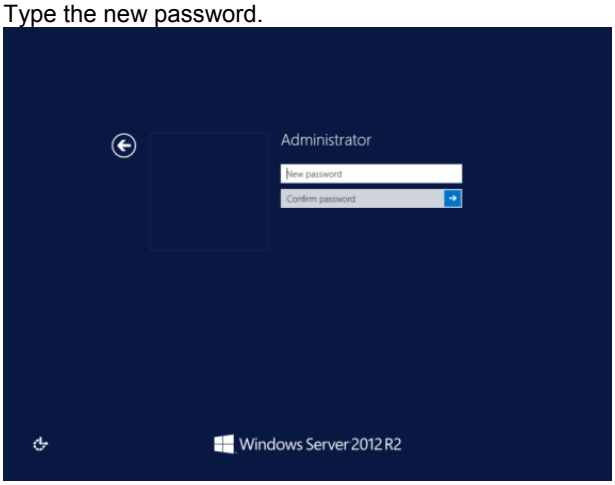


Server Core Installations

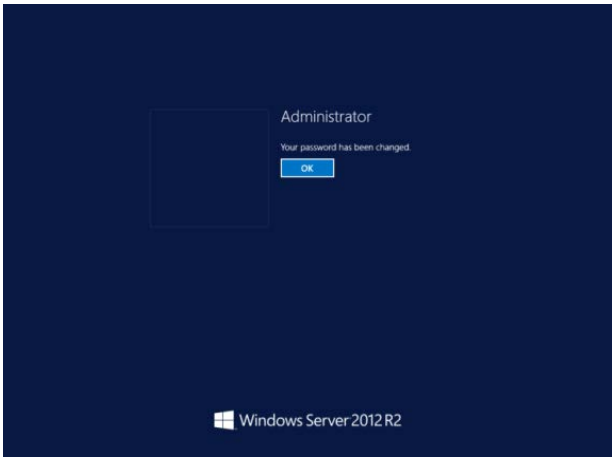
Click **OK**.



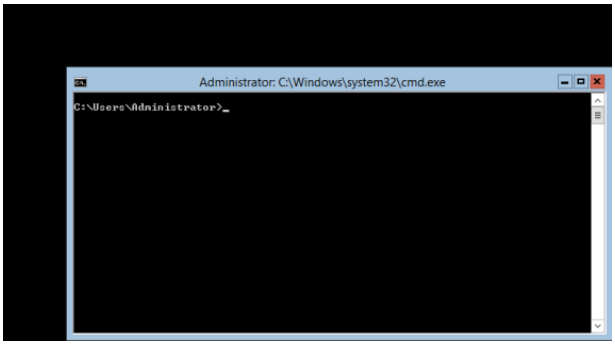
Type the new password.



Click **OK**.



Windows Server 2012 R2 starts.



Tips

Refer to Microsoft Website for more details.
Configure and Manage Server Core Installations
http://technet.microsoft.com/us-en/library/jj574091.aspx

27. Install Starter Pack by referring to *Chapter 1* (*4.4 Installing Starter Pack)*.
28. Install drivers and specify detailed settings by referring to *Chapter 1 (4.5 Setting Up Device Drivers)*.
29. Confirm if Windows is activated according to *Chapter 1 (4.6 License Authentication)*.
30. See *Chapter 1 (4.7 Setup of Windows Server 2012 R2 NIC Teaming (LBFO))* to setup a team as needed.
31. Install the applications as needed by referring to *Chapter 1* (*4.8 Installing the Applications*).
32. Execute setup by following the instructions described in *Chapter 1 (5. Setup for Solving Problems)*.

Setup with Windows standard installer is now complete.

4.4 Installing Starter Pack

Starter Pack contains drivers customized for this server.
When Starter Pack is not installed on the server, in the case such as the server is set up using Windows Standard installer, be sure to apply Starter Pack before running the system.

Important

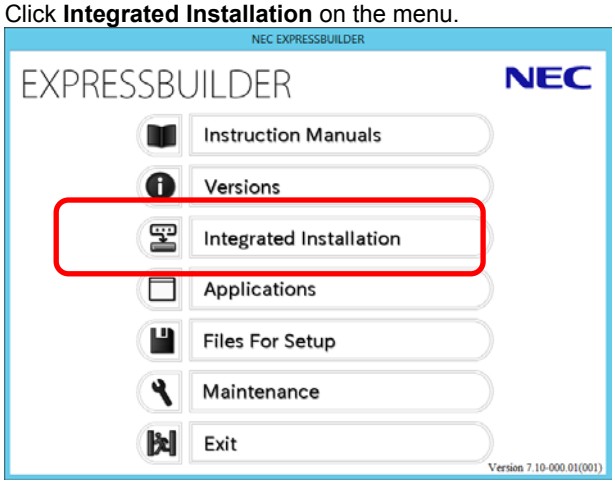
- **Also install Starter Pack in the following cases.**
  - **The motherboard of the server has been replaced (If a dialog box prompting you to reboot the system is displayed, reboot the system according to the on-screen instructions, and then apply the Starter Pack.)**
  - **If the system was restored using a restore process**
  - **If a system has been restored using the backup tool**
- **After installing build-in options, you may need to install Starter Pack. For detail, refer to *Chapter 1 (4.5 Setting Up Device Drivers)*.**

Tips

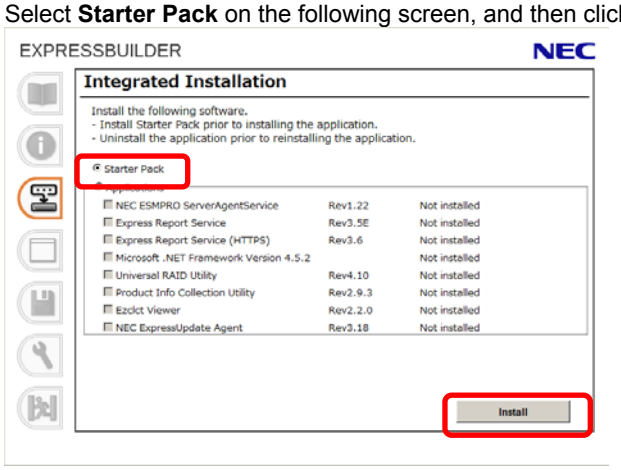
If the OS is installed by using EXPRESSBUILDER, Starter Pack is already applied. If the configuration is not changed, you do not need to apply Starter Pack again.

4.4.1 Installation from Windows (Server with a GUI)

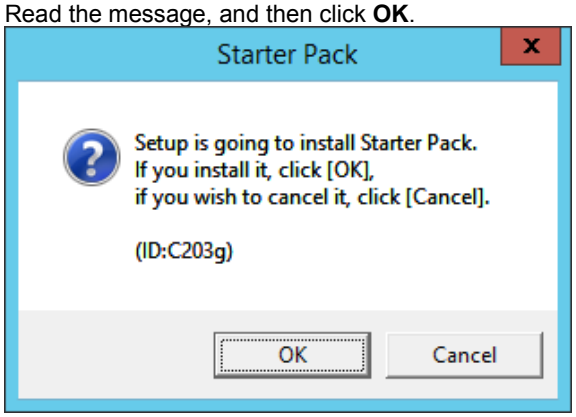
1. Sign-in to the system with the administrator account.
2. Insert EXPRESSBUILDER DVD into the optical disk drive.
3. Click **Integrated Installation** on the menu.



4. Select **Starter Pack** on the following screen, and then click **Install**.



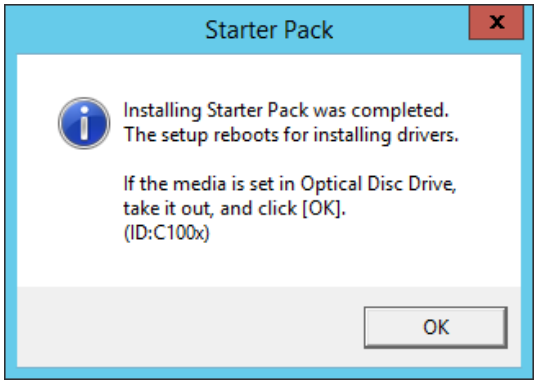
5. Read the message, and then click **OK**.



Wait until the installation of the Starter Pack is complete. (About 3 to 5 minutes)

Note The screen may black out instantaneously or resolution may change while Starter Pack is installed, but it is not a failure.

6. Click **OK** to restart the system.



Installation of Starter Pack is now complete.

4.4.2 Installation from Windows (Server Core Installation)

1. Sign-in to the system with the administrator account.
2. Insert EXPRESSBUILDER DVD into the optical disk drive.
3. From the command prompt, type the following command.
   In the example below, the optical disk drive is the D drive.

   cd /d D:\017\win\winnt\bin

   ```
   C:\Users\administrator>cd /d D:\017\win\winnt\bin
   ```

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

   pkgsetup.vbs

   ```
   D:\017\win\winnt\bin>pkgsetup.vbs
   ```

   Wait until installation completes (about 1 to 3 minutes).

Installation of Starter Pack is now complete.

4.5 Setting Up Device Drivers

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

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

For the system that network adapter is connected, if it is setup with EXPRESSBUILDER, the LAN driver will automatically be installed.
For the system that network adapter is connected, if it is setup with Windows standard installer, apply Starter Pack to install the LAN driver.

Important

Wake On LAN (WOL) is supported by the standard network adapters only. For Wake On LAN, refer to Chapter 1(4.5.2 Setting up LAN drivers - (4) Setting up Wake on LAN).
For BIOS settings, check the "User's 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.
- Be sure to select the **Internet Protocol (TCP/IP)** check box when specifying an IP address.

(2) Optional LAN board

This server supports the following optional LAN boards.

N8104-149/150/151/152/157/168/170

If you additionally attach the controller N8104-157/168 to the target server, the corresponding LAN driver is automatically installed by Windows Plug-and-Play feature.

When you additionally attach the controller N8104-149/150/151/152/170 to the target server, the corresponding LAN driver is automatically installed by Windows Plug-and-Play feature if you have attached the same controller in advance. If not, the driver is not installed.
In that case, please install the driver by the following steps.

N8104-149/170

Note

When **QLogic Driver Installer** is shown to **Programs and Features**, this step is unnecessary.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file at the command prompt.

   ```
   \017\win\winnt\drivers\02_network\1_as_02\install_ws2012r2.bat
   ```

2. When the following message appears, restart the system.

   QLOGIC Driver Installation Completed!

3. When LAN board is new addition, configure each LAN board by referring to Chapter 1(4.5.2 Setting up LAN drivers).

Setup is now completed.

N8104-150/151/152

Note

When **Broadcom Gigabit Integrated Controller** is shown to **Programs and Features**, this step is unnecessary.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file at the command prompt.

   \017\win\winnt\drivers\02_network\1_ah_02\install_ws2012r2.bat

2. When the following message appears, restart the system.

   BCOM Driver Installation Completed!

3. When LAN board is new addition, configure each LAN board by referring to Chapter 1(4.5.2 Setting up LAN drivers).

Setup is now completed.

(3) Network adapter name

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

Network adapters for the standard configuration

Intel(R) Ethernet Controller X550 #xx *1

If connecting with an optional LAN board:

[N8104-149/170] : QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx *1

[N8104-150/151/152] : Broadcom NetXtreme Gigabit Ethernet #xx *1

[N8104-157] : Intel(R) Ethernet Controller X550 #xx *1

[N8104-168] : Intel(R) I350 Gigabit Network Connection #xx *1

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

Tips

The ID for N8104-149/170 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.

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 When using N8104-149/170, you can specify "10 Gb Full" for network adapter and "Auto Negotiation" to switching hub.

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**.
5. Restart the system.

The link speed setting is now complete.

(2) Configuring Flow Control

Flow Control is a feature to stop transmitting frames temporarily by sending a pause frame to the destination device when the receive buffer is about to run out. When it receives a pause frame, it regulates the transmission. Configure the Flow Control following the procedure below.

Tips The settings of Transmit/Receive of the network adapter should match those of the destination device. For example, if Flow Control in the destination device is set as Receive only, that in the server should be set as Transmit only.

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 and click **Flow Control** to show **Value**.
4. The **Value** can be changed by the down-arrow button.
5. Click **OK**.
6. Restart the system.

The Flow Control setting is now complete.

(3) When using N8104-150/151/152

When using N8104-150/151/152 with the server, follow the procedure below to set it.

Note This procedure can be used when you replace a motherboard.

1. Insert the EXPRESSBUILDER DVD into the optical disk drive, run the following file.

   ```
   \017\win\winnt\drivers\02_network\1_ah_02\pgdyavd_disable.vbs
   ```

2. When the following message appears, click **OK**.

   ```
   Configuration Completed
   [Option:PopUp RLV Disabled(Action:Done)]
   Reboot the system
   ```

Tips The message “Action:Non” indicates that the LAN driver is already set.

3. Restart the system.

Setup is now completed.

(4) Setting up Wake on LAN

Using Wake on LAN by standard network adapters, 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 set. 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** in the Network adapter properties dialog box.
6. Restart the system.

Setup is now completed.

4.5.3 Graphics accelerator driver

The graphics accelerator driver for standard configurations is installed when Starter Pack is installed from EXPRESSBUILDER.

The graphic accelerator driver is automatically installed on setup with EXPRESSBUILDER.

To install drivers separately, take the following steps.

1. Double-click the `install.bat` icon in the following folder.
   - When using EXPRESSBUILDER DVD:
     `\017\win\winnt\drivers\03_graphics\1_aj_07\install.bat`
2. Restart the system.

Graphic accelerator driver installation is now complete.

4.5.4 When using a SAS controller (N8103-184)

The driver for SAS controller N8103-184 is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.

4.5.5 When using a RAID Controller (N8103-176/177/178/188)

The driver for RAID Controller N8103-176/177/178/188 is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.

4.5.6 When using a Fibre Channel controller (N8190-157A/158A)

The driver for Fibre Channel controller N8190-157A/158A is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.
After applying Starter Pack, run the following file in the EXPRESSBUILDER DVD.

`\017\win\winnt\drivers\01_storage\1_ao_03\utl\cli_inst.bat`

4.5.7 When using a Fibre Channel controller (N8190-161/162)

The driver for Fibre Channel controller N8190-161/162 is automatically installed by Windows Plug-and-Play.
Drivers customized for the Express5800 Series are installed by applying the Starter Pack.
However, if you additionally equip a Fibre Channel controller (N8190-161/162), run the following file in the EXPRESSBUILDER DVD.

`\017\win\winnt\drivers\01_storage\1_au_03\utl\cli_inst.bat`

4.6 License Authentication

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

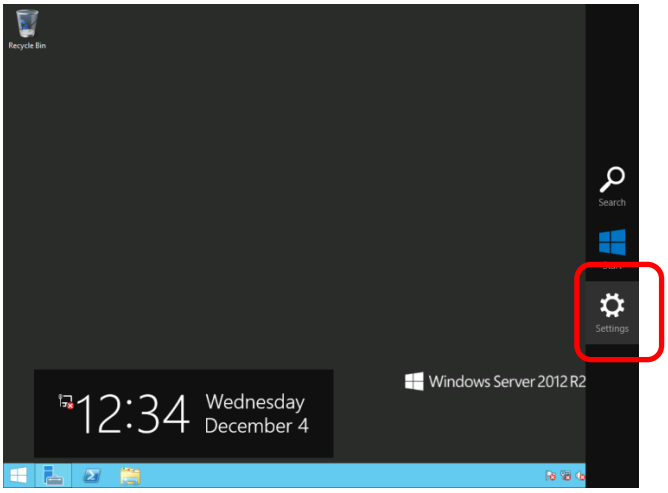
Confirm if your license is authenticated. If not, perform the following procedures to have your license authenticated.

Connect to the Internet to perform the authentication procedure.

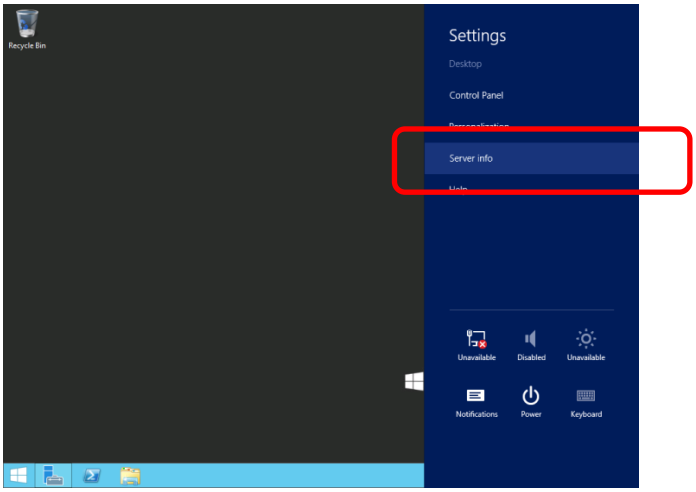
Or, use the telephone to perform the authentication procedure.

(1) Server with a GUI

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



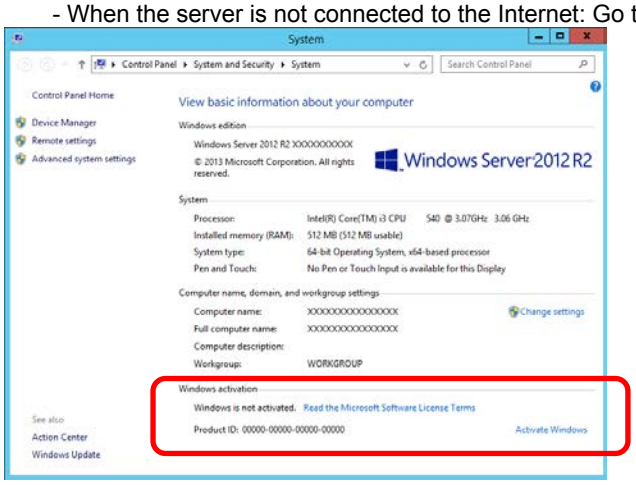
2. Click **Server info**.



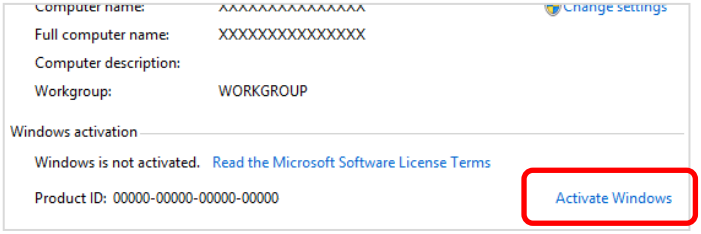
3. Check Windows license authentication.

   ☐ If "Windows is activated" is displayed:
   You do not need to perform this procedure.

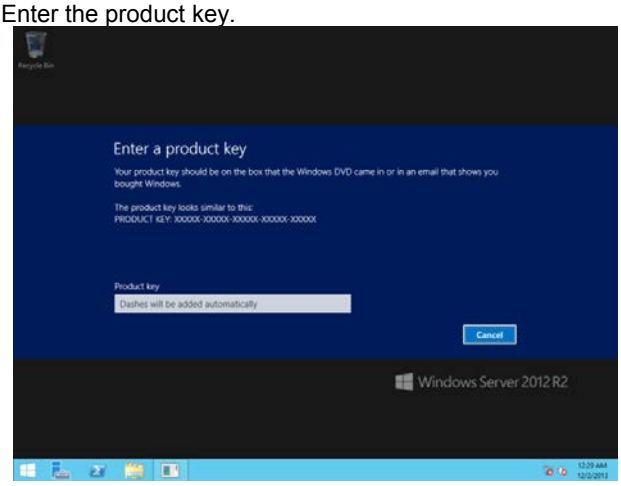
   ☐ If "Windows is not activated" is displayed:
   - When the server is connected to the Internet: Go to step 4.
   - When the server is not connected to the Internet: Go to step 6.



4. Click **Activate Windows**.



5. Enter the product key.

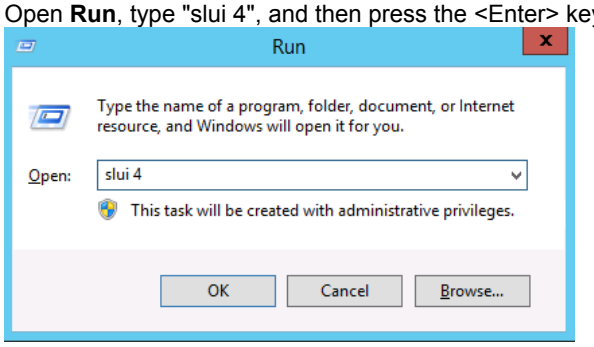


License is activated after entering the product key.
Complete license authentication process according to the message.

6. When the server is not connected to the Internet, launch the command prompt with an administrator right, enter the following command.

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

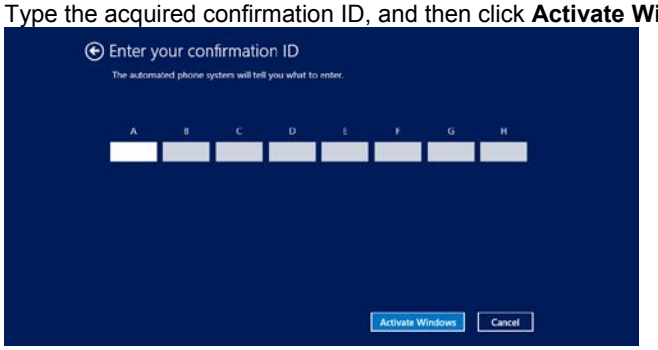
7. Activate your license by phone.
   Open **Run**, type "slui 4", and then press the <Enter> key."



8. On the next screen, select your country, and then click **Next**.

   Acquire the installation ID required for license activation

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



(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 on COA label>
```

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.

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

Set up the network adapter teaming feature as shown below.

(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 the <Enter> key.

(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	● 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) 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.

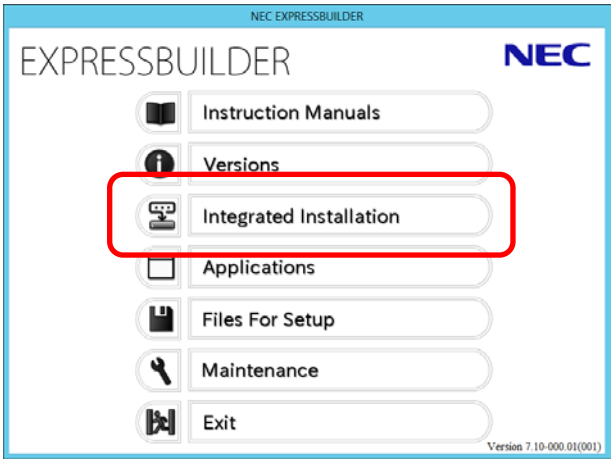
http://www.58support.nec.co.jp/global/download/w2012r2/index.html

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

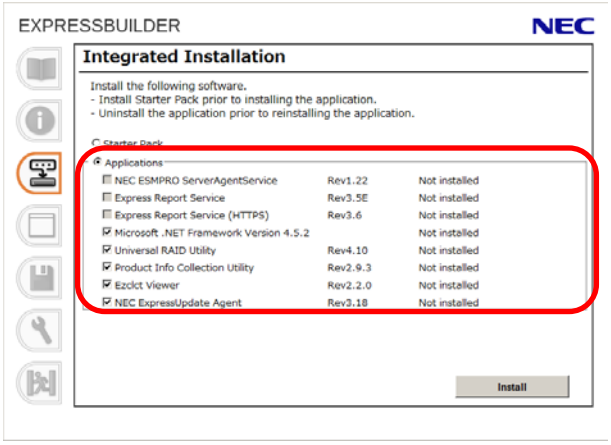
4.8 Installing the Applications

Some applications stored in EXPRESSBUILDER can be installed collectively by performing the procedures described below. When installing these applications individually, see *Chapter 2* (*Installing Bundled Software*). This feature is *only available on the server with a GUI*.

1. Sign-in to the system with the built-in administrator, which has administrative privileges.
2. Insert the EXPRESSBUILDER DVD into the optical disk drive.
3. Click **Integrated Installation** on the menu.



4. Select **Applications**, select the check boxes corresponding to the applications to be installed, and then click **Install**.
   The selected applications are automatically installed.



Note

- Applications available for installation are selected by default.
- If your system environment does not satisfy the prerequisite for an application, you cannot install it. (For details, refer to the on-screen information and *Chapter 2*.)

5. When a message indicating reboot appears, click **OK** to reboot the server.
6. See *Chapter 2 Installing Bundled Software* to install the bundled software or confirm that the software is appropriate to your operating environment.

Now installation of applications is completed.

4.9 Installation When Multiple Logical Drives Exist

Before starting installation, backup data for future use in case of data loss.

(1) Installation process

– Setup with EXPRESSBUILDER

Important

- **Before starting setup, be sure to disconnect hard disk drives from the RAID Controller that is not used for setup, if the server has two or more RAID Controllers installed.**
- **Disconnect an external disk (*) from the server by turning the power of it off or disconnecting cables. Install those hard disk drives and cables after setup has completed. Conducting setup with those being connected with the server may cause existing data to be erased unintentionally.**

  *** Disk array unit (such as iStorage) or hard disk drive in Disk Expansion Unit**

Refer to *Chapter 1 (4.2 Setup with EXPRESSBUILDER),* and proceed with setup.

In this case, EXPRESSBUILDER installs the Windows on the first detected hard disk drive or logical drive.

– Setup with Windows standard installer

1. Refer to *Chapter 1 (4.3 Setup with Windows Standard Installer)*, and start setup.
2. When the following message appears, select the partition to which you want to install the operating system.

   ```
   Select the location to which Windows will be installed
   ```

   The order and numbers of the disks displayed on the screen **might not match the server's slot** of the hard disk drives. **Distinguish between the hard disk drives by viewing the hard disk drive capacity and partition size** displayed on the screen, and then select a drive to install the Windows system.
   Selecting an improper drive might cause an unintentional corruption of the existing data. Be careful when selecting a hard disk drive on which to install the system.

   Important

   - **For details, refer to the following Microsoft website:**
     http://support.microsoft.com/kb/937251/en-us
   - **You cannot edit the drive letters for the system volume or boot volume after setup is complete. Make sure that the drive letters assigned in this window are correct, and then proceed with setup.**

3. Refer to *Chapter 1 (4.3 Setup with Windows Standard Installer)*, and proceed to setup Windows with Windows standard installer and the instructions.

   Tips

   The drive letter might change after installation. If you want to change the drive letter, use the procedure shown in *Changing drive letter assignments* below.

(2) Changing drive letter assignments

To change the drive letter, follow the steps below. However, these steps cannot change drive letter assignments for the system volume or boot volume.

1. Right-click the left bottom of screen, and click **Computer Management**.
2. From the window on the left, select **Storage**, and then **Disk Management**.
3. Right-click the volume whose drive letter you want to change, and then select **Change drive letter and paths**.
4. Click **Change** and **Assign the following drive letter**, and then select the drive letter you want to assign.
5. Click **OK**.
6. Close the **Server Manager**.

5. Setup for Solving Problems

We recommend installing the following features for solving the server failure quickly.

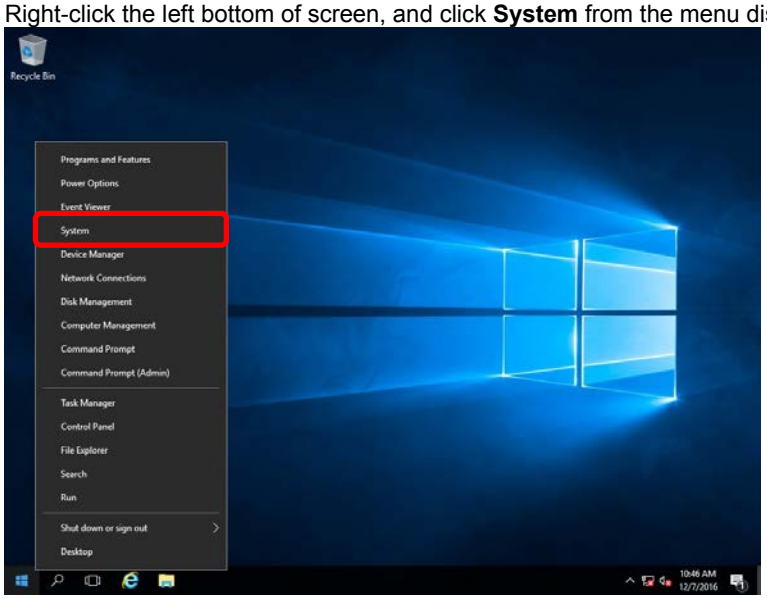
5.1 Specifying Memory Dump Settings (Debug Information)

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

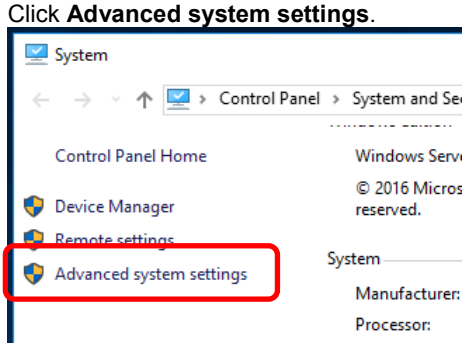
Important **Do not reset during dumping memory or restarting the server even if the message of virtual memory shortage appears.**

5.1.1 For Windows Server 2016

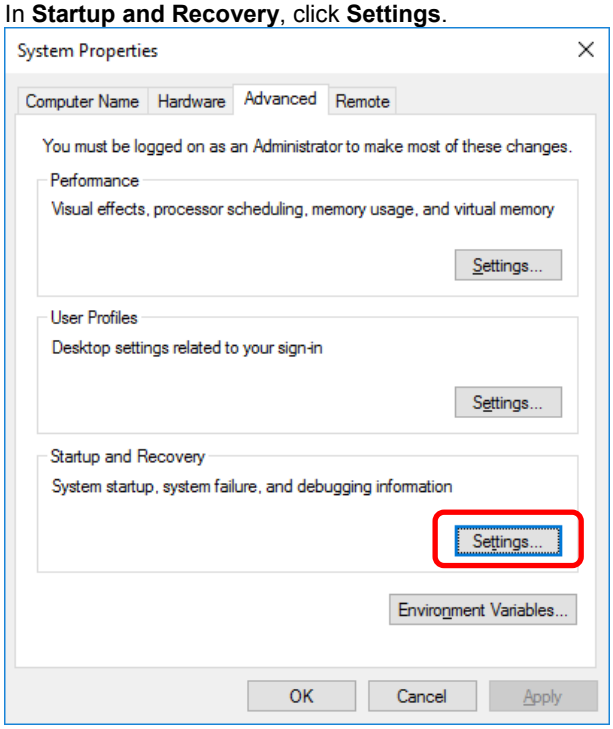
1. Right-click the left bottom of screen, and click **System** from the menu displayed.



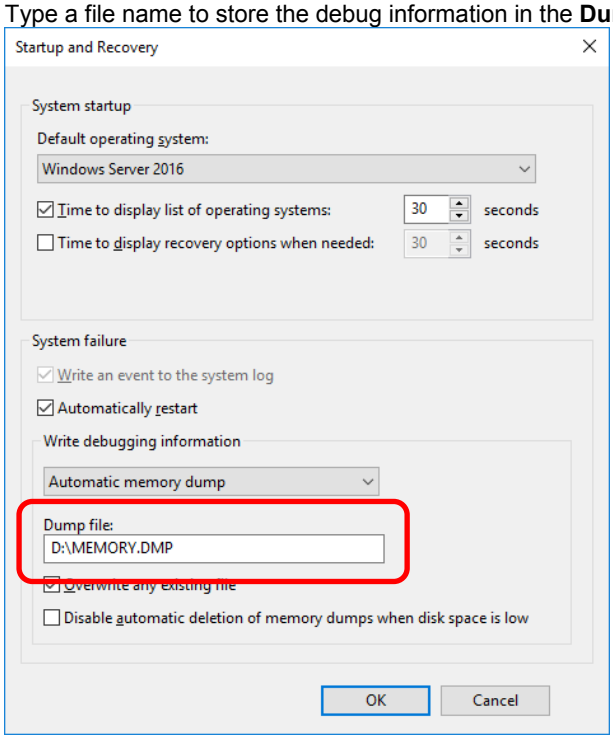
2. Click **Advanced system settings**.



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



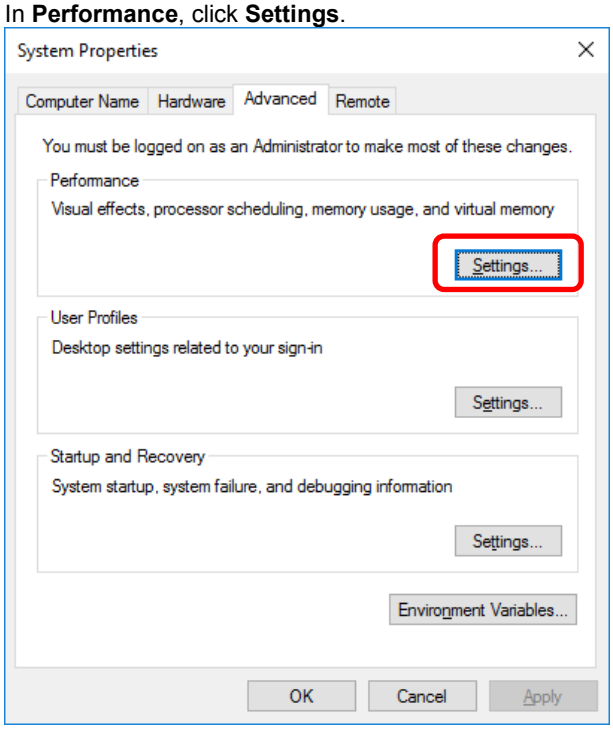
4. Type a file name to store the debug information in the **Dump file** text box, and then click **OK**.



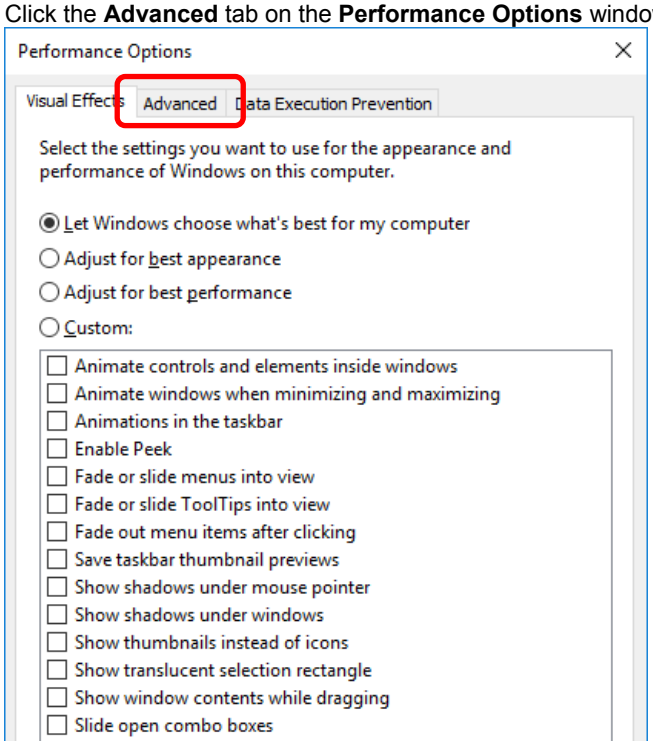
Note the following when specifying a dump file:

- We recommend specifying Kernel memory dump for Write debugging information.
- Specify a drive that has a free space of at least "the memory capacity mounted on the server 400 MB".
- The size of the debug information (memory dump) changes if DIMM is added. Make sure that the free space of the drive to store the debug information (memory dump) is sufficient.

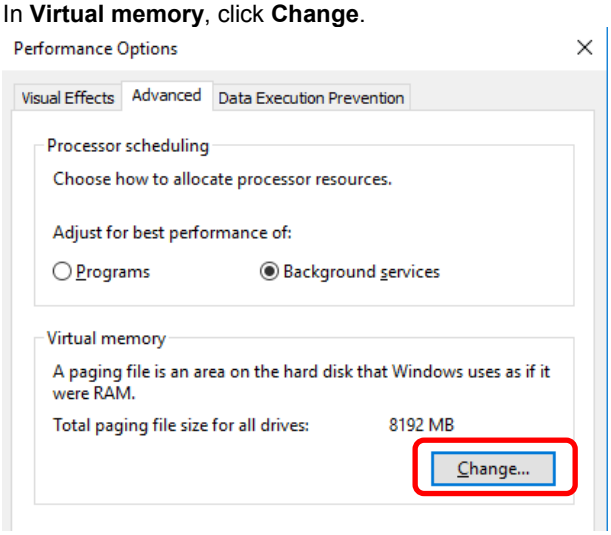
5. In **Performance**, click **Settings**.



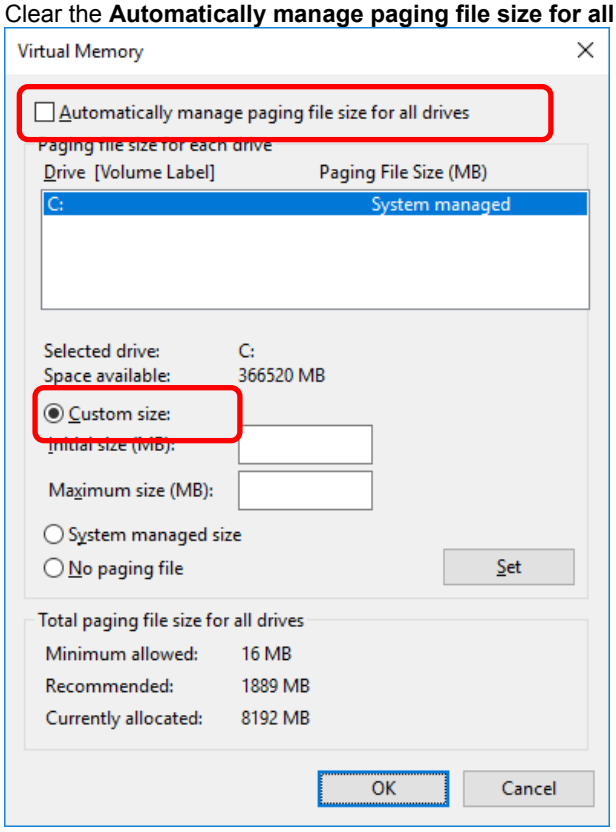
6. Click the **Advanced** tab on the **Performance Options** window.



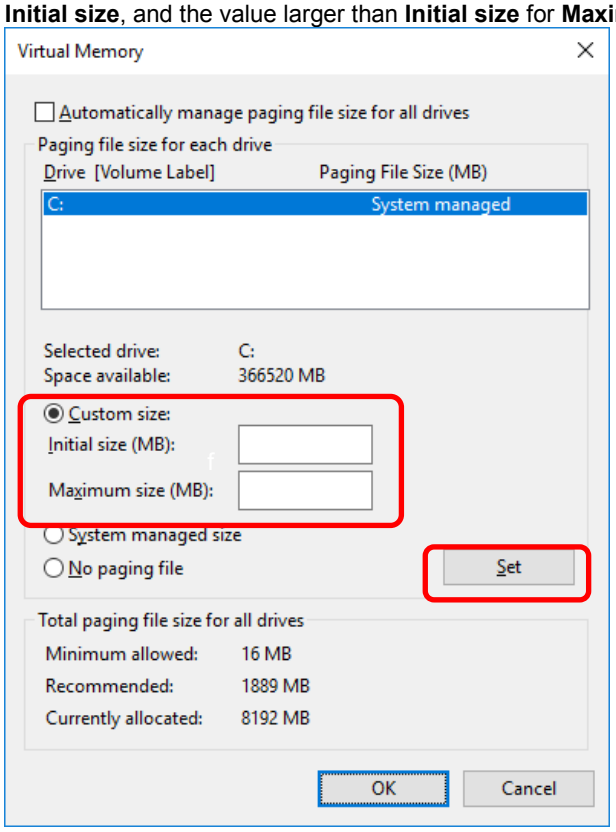
7. In **Virtual memory**, click **Change**.



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:

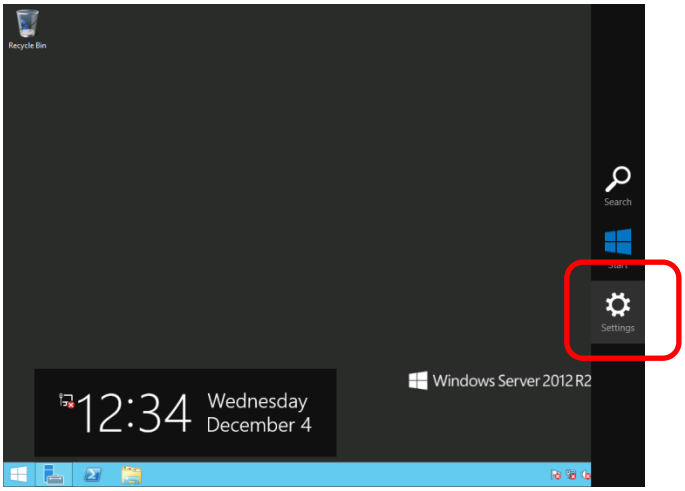
- The paging file is used to collect debug information (dump file). The boot volume must have a paging file of its initial size (total capacity of physical memory mounted + 400MB or larger) is enough to store the dump file. Make sure to specify a sufficient paging file size (recommended size: (total capacity of physical memory mounted) x1.5 or more).
- See "System Partition" in Chapter 1 (2.1 Before Starting Setup) for recommended value.
- When DIMM is added, re-specify the paging file according to the increased memory size.

10. Click **OK**.
If a message to restart Windows appears, restart the system according to on-screen message.

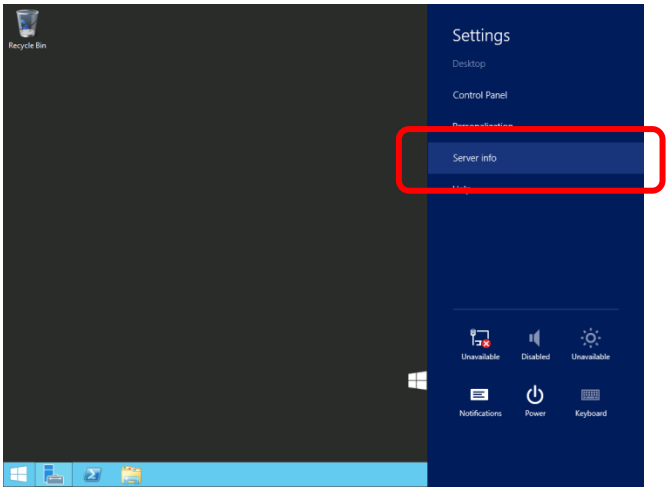
Specification of the memory dump settings is now complete.

5.1.2 For Windows Server 2012 R2

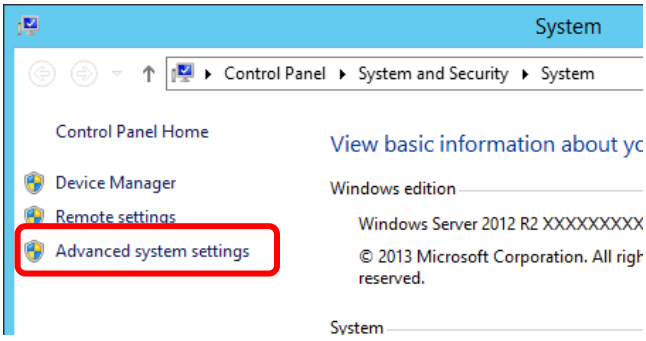
1. On Charms Bar, click **Settings**.



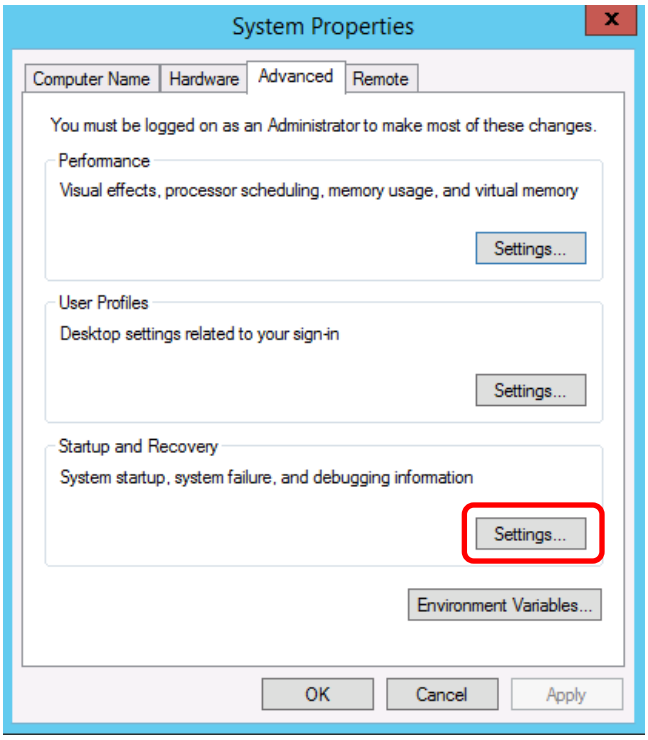
2. Click **Server info**.



3. Click **Advanced system settings**.

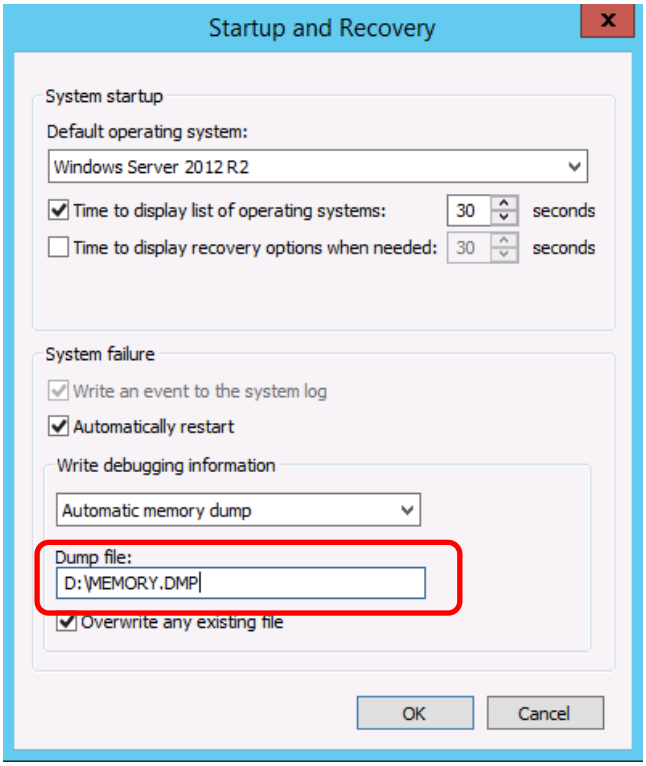


4. In **Startup and Recovery**, click **Settings**.



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

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

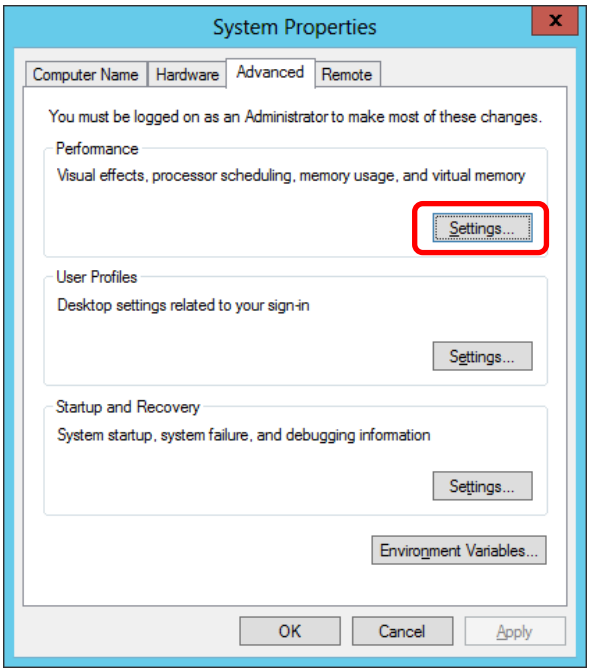


Note the following when specifying a dump file:

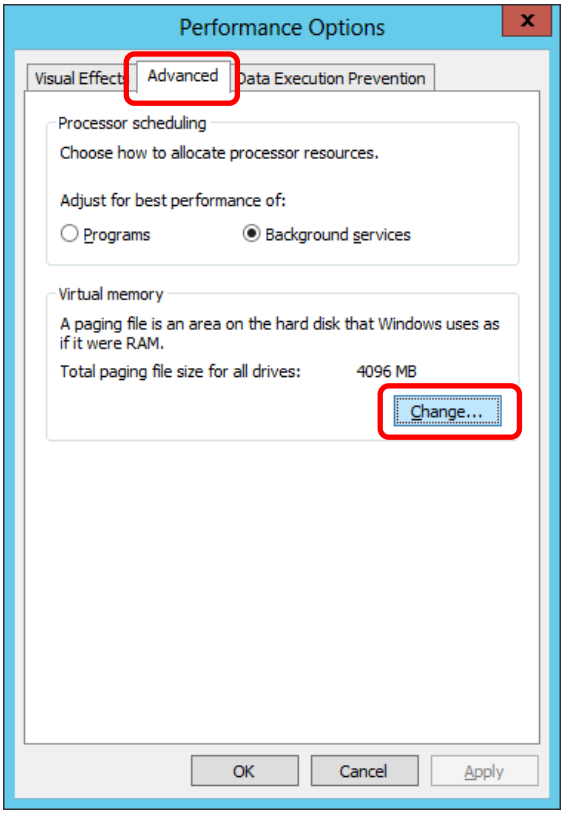
- We recommend specifying **Kernel memory dump** for **Write debugging information**.
- Specify a drive that has a free space of at least "(total size of physical memory) + 400 MB".

- The size of the debug information (memory dump) changes if DIMM is added. Make sure that the free space of the drive to save the debug information is sufficient.

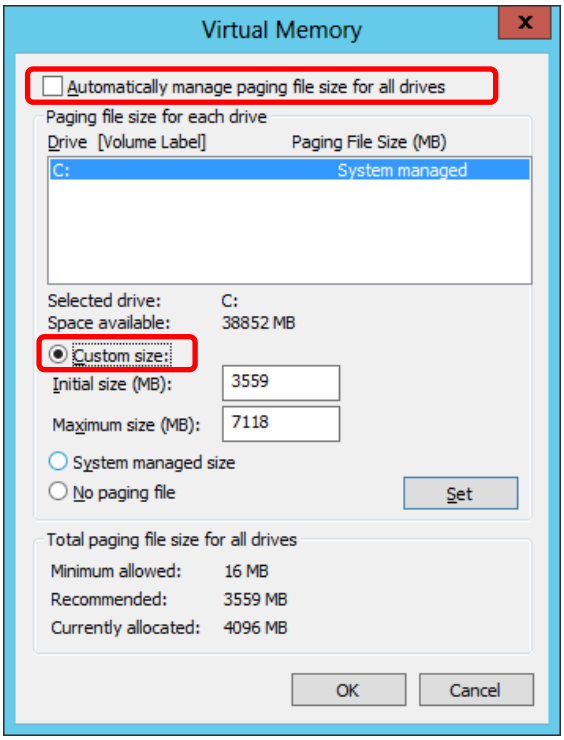
6. In **Performance**, click **Settings**.
   The **Performance Options** window will appear.



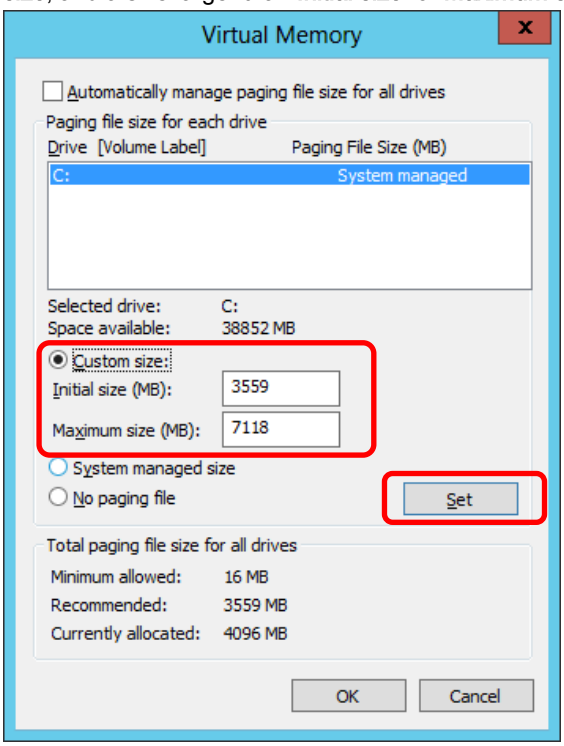
7. Click the **Advanced** tab on the **Performance Options** window.
   In **Virtual memory**, click **Change**.



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) + 400MB 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* (*Before Starting Setup*) for recommended value.
- When DIMM is added, re-specify the paging file according to the increased 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.

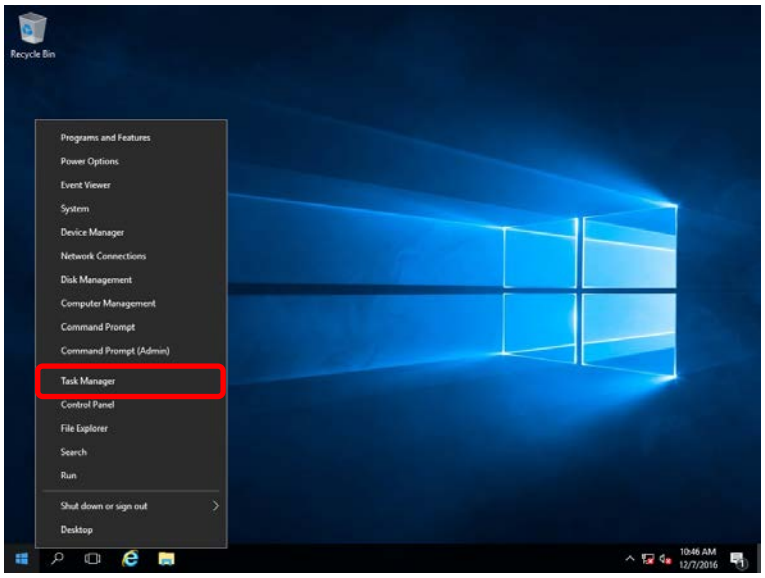
5.2 How to Create a User-mode Process Dump File

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

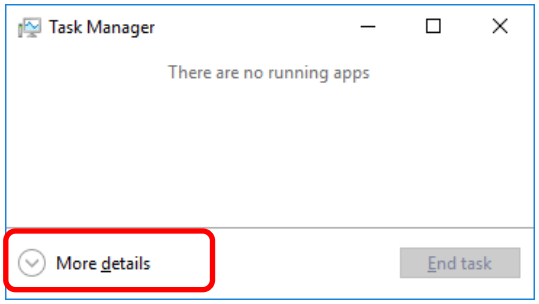
You can get a user-mode process dump file using the following procedures without closing the pop-up window that reported the error:

5.2.1 For 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**.



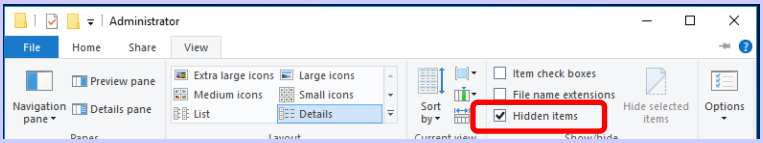
2. Click **More details**.



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

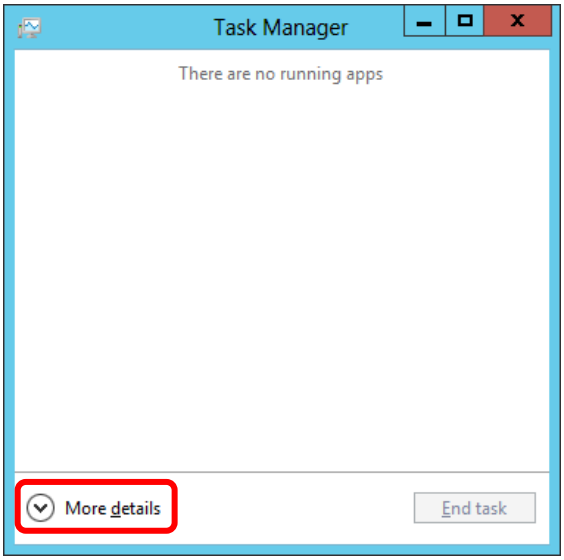
Tips If the folder is not displayed, open Explorer, select **Hidden items** on the **View** tab.



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

5.2.2 For 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**.

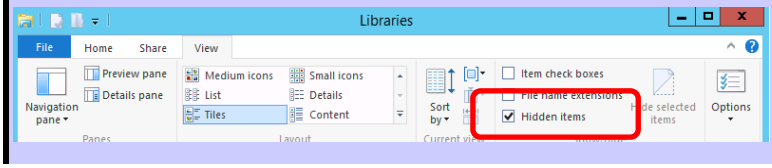


3. Click the **Processes** tab.
4. Right-click the name of the process that you want to get debugging information, and then click **Create Dump File**.
5. A dump file for the process is created in the following folder:

   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.

6. Windows OS Parameter File

Create a parameter file by configuring setup information required for OS installation.

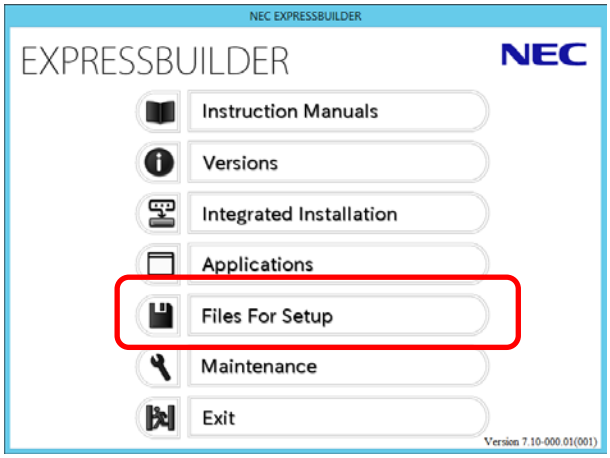
If a parameter file is used when performing Setup with EXPRESSBUILDER, you can re-install an OS with settings used at the previous installation. It is therefore recommended to use a parameter file to set up the server.

6.1 Creating Windows OS Parameter File

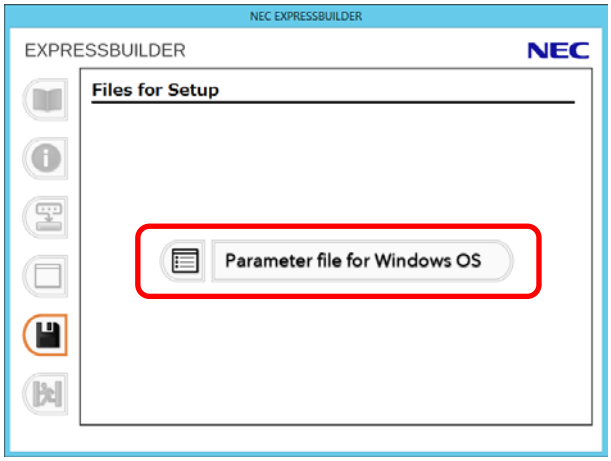
Note Do not remove EXPRESSBUILDER DVD from the drive while creating a parameter file.

Tips Create a parameter file on Internet Explorer 7 or later.

1. Start Windows on the server or another computer.
2. Insert the EXPRESSBUILDER DVD into the optical disk drive. Use Windows Autorun feature to launch program.
3. Click **Files For Setup** on the menu.



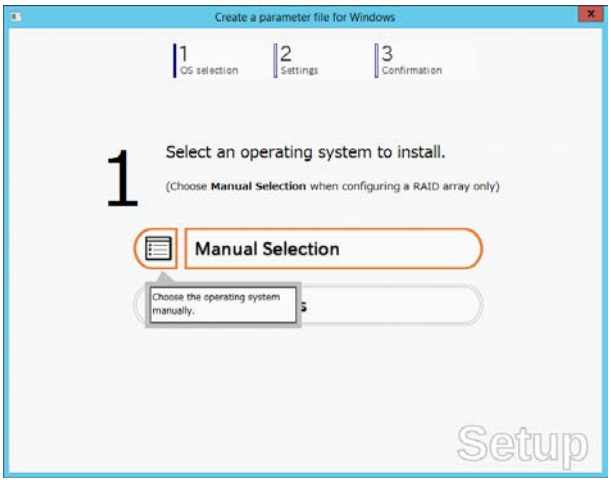
4. Click **Parameter file for Windows OS**.



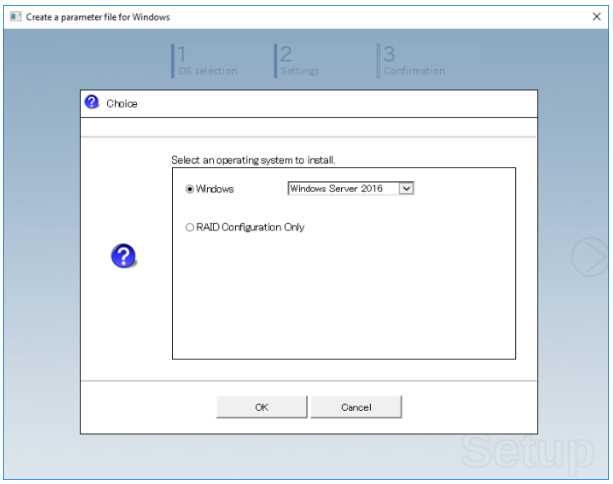
5. On the **OS selection** menu, select the OS to install or specify the parameter file.
   - ☐ Not using a parameter file : Go to Step 6.
   - ☐ Using a parameter file : Go to Step 7.

6. To create a parameter file, select an OS from the menu by using the following procedure.

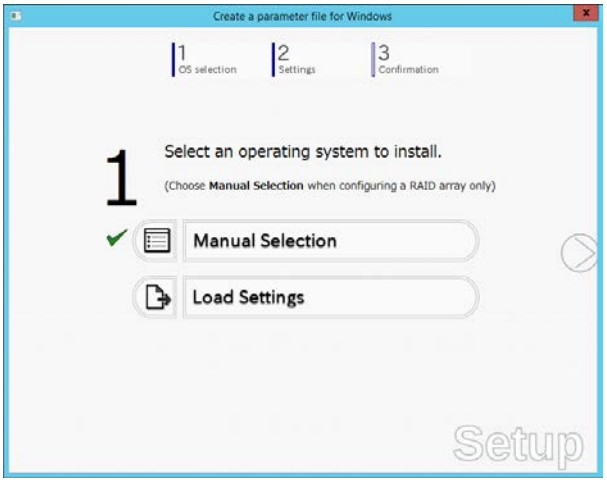
   6-(1) Click **Manual Selection**.



   6-(2) From the **Windows** list, select **OS**, and then click **OK**.

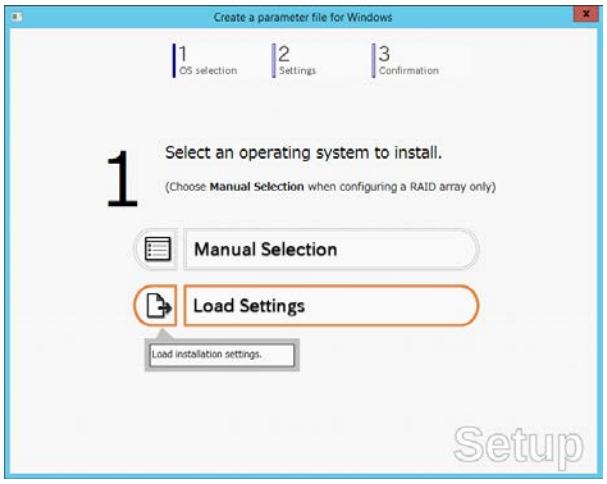


   6-(3) Click ⓒ on the right side of the screen. → Go to step 8.

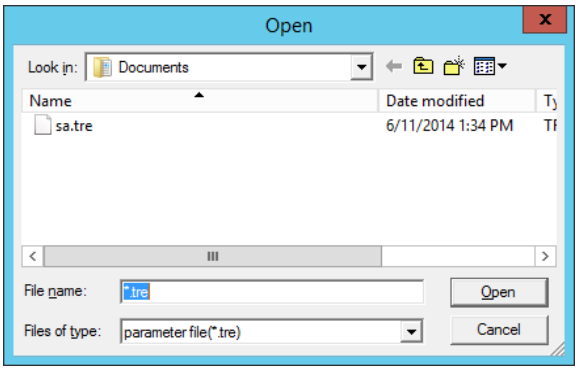


7. To modify a parameter file, load the parameter file by using the following procedure.

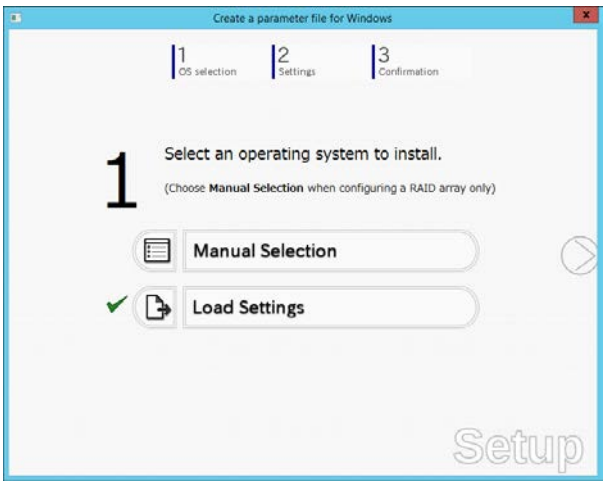
7-(1) Click **Load Settings**.



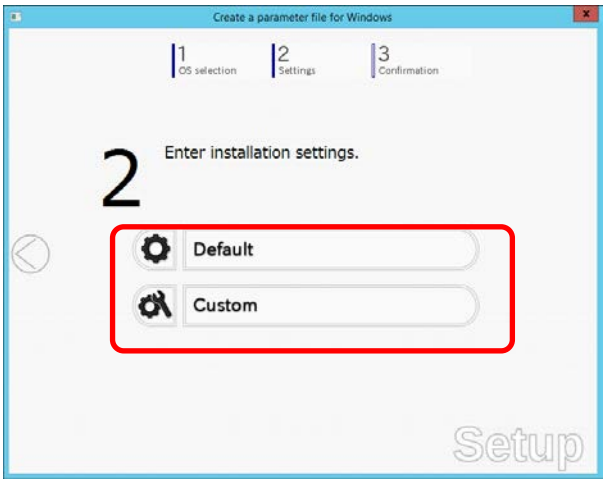
7-(2) Follow the on-screen instruction to load the parameter file (*.tre).



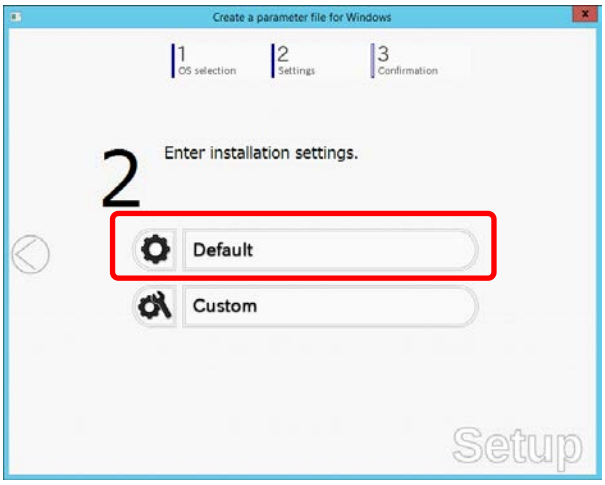
7-(3) Click ⓒ on the right side of the screen. → Go to step 11.



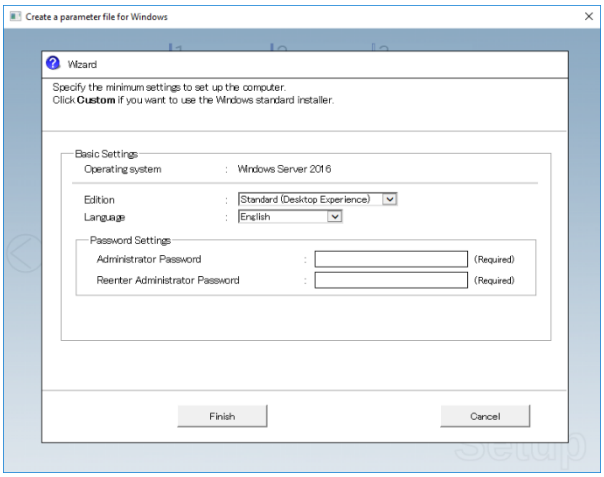
8. Specify the setup parameters by using either of the following methods:
   ☐ **Default** :Go to step 9
   ☐ **Custom** :Go to step 10.



9. Click **Default**.



9-(1) Select an edition of the OS in the **Edition** list.
Type a password, and then click **Finish**.

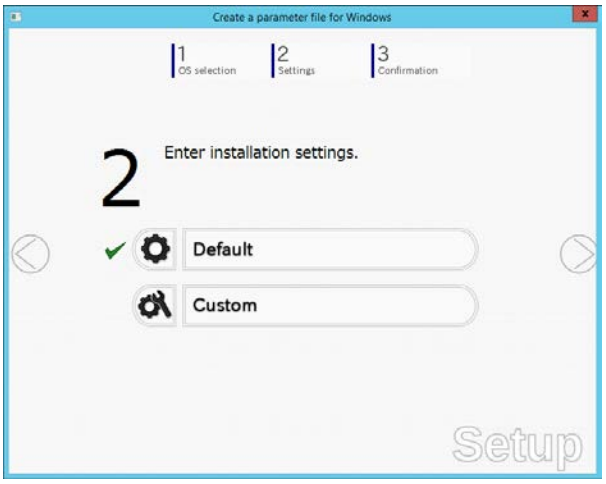


Note

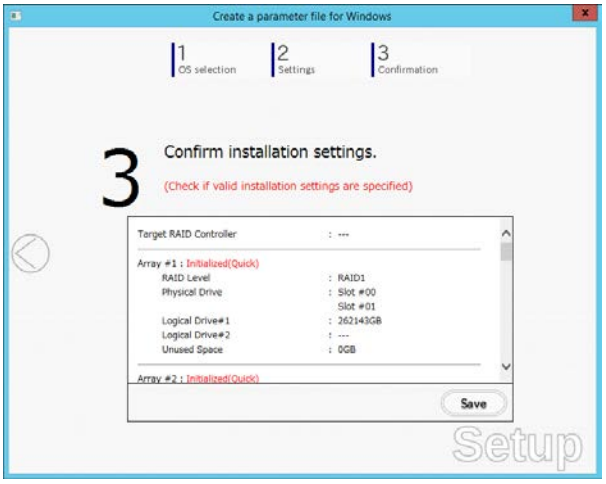
Computer name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains six or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z), and symbols.

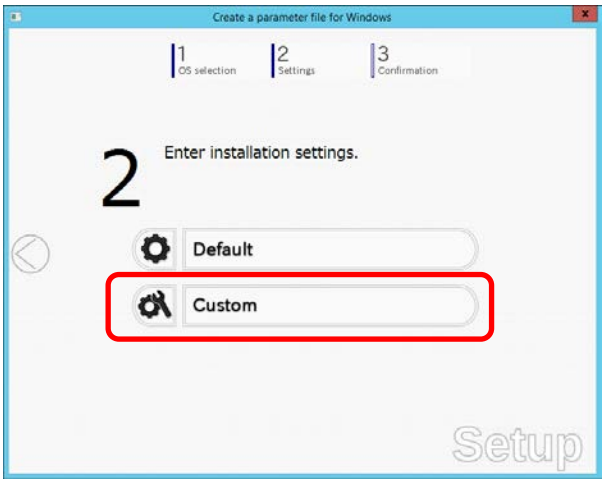
9-(2) Click ⊳ on the right side of the screen.



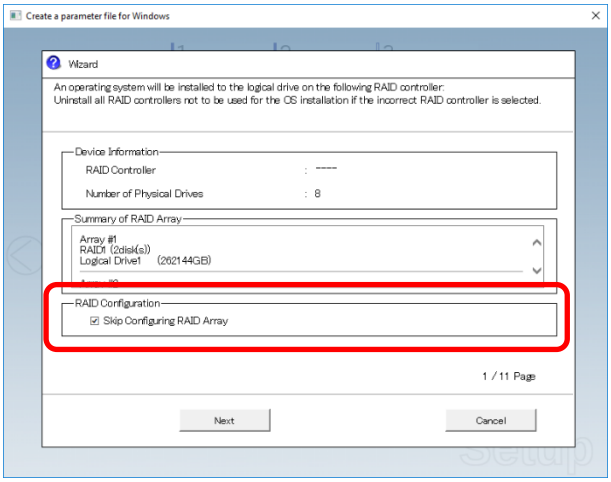
9-(3) Check the settings, and then click **Save**.
Save the file according to the on-screen instructions. → Go to step 12.



10. Click **Custom**.



10-(1) Use this menu to configure the RAID system as needed.



Creating new logical drives

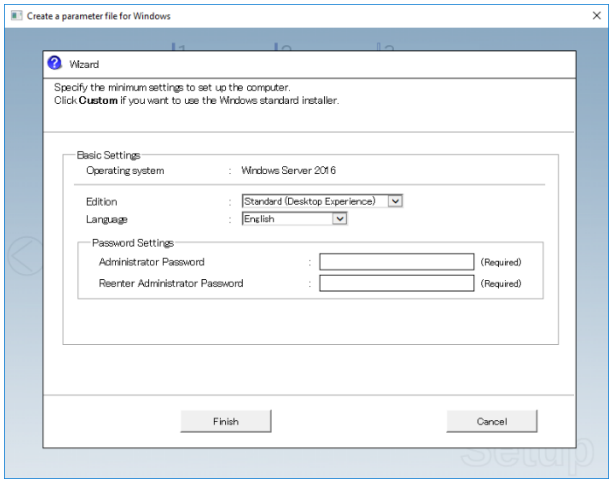
Clear the **Skip Configuring RAID Array** check box, and then click **Next**.
Set up the logical drives in accordance with the wizard.

Important **If you proceed with the wizard, the existing RAID array and the data of hard disk drives will be deleted.**

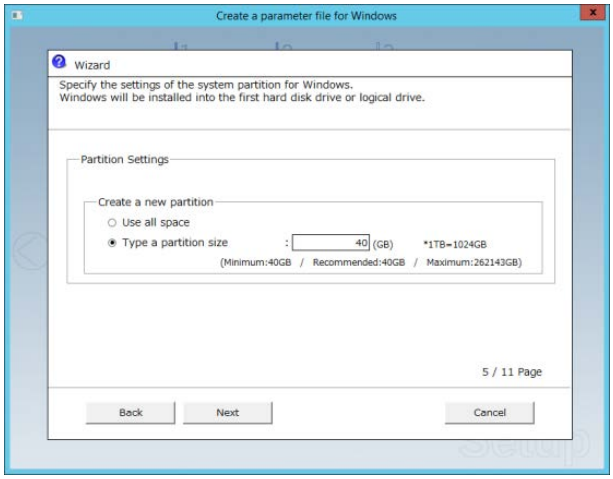
Skipping the creation of logical drives

Select **Skip Configuring RAID Array**, and then click **Next**.

10-(2) Specify the settings of **Basic Settings** as needed, and then click **Next**.



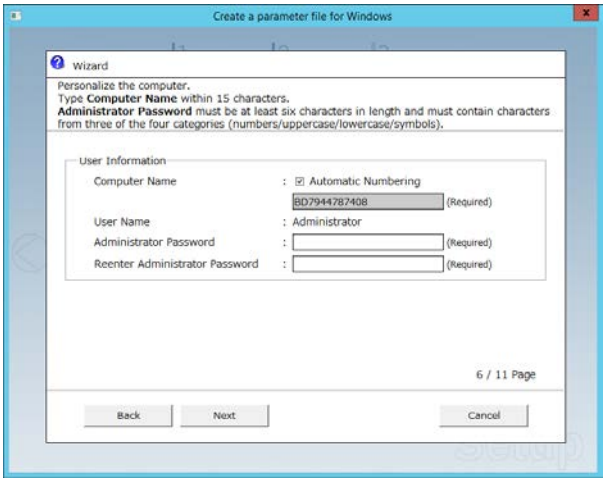
10-(3) Specify the settings of **Partition Settings** as needed, and then click **Next**.



Important

- **Backing up user data, as needed, is recommended.**
- **Partition size**
  - **Specify a partition size larger than the minimum required for installing the operating system. (See *Chapter 1 (Before Starting Setup)*.)**
- **All data on the hard disk drive will be deleted.**

10-(4) Enter user information, and then click **Next**.



Note

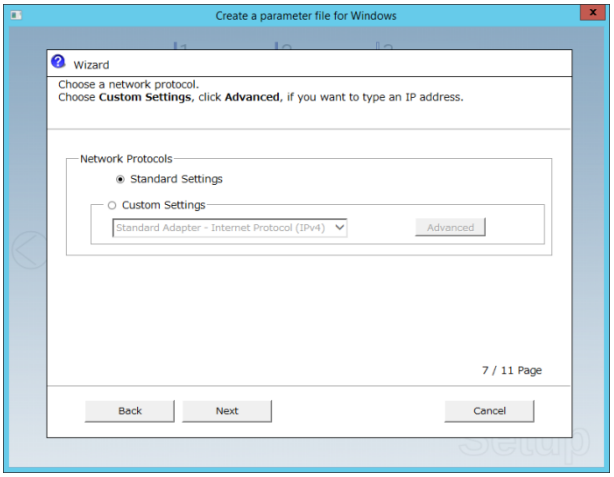
Computer Name and Administrator Password are required parameters.
Enter Administrator Password that satisfies the following conditions:

- Contains six or more characters
- Contains characters from at least three of the following categories: numbers, uppercase letters (A - Z), lowercase letters (a - z), and symbols.

Tips

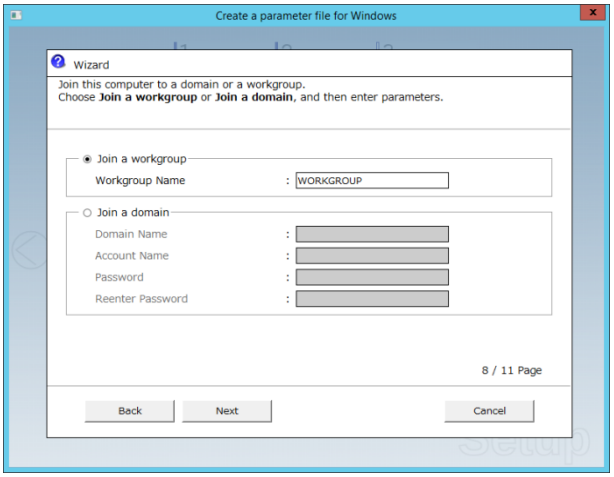
- The default setting of Computer Name is assigned by automatic numbering. If you want to assign another Computer Name, clear **Automatic Numbering**, and type your Computer Name.
- If a parameter file is used for setup or if you return to a previous screen, •••••• is displayed in the Administrator password and Reenter Administrator password text boxes.

10-(5) Specify the settings of **Network Protocols** as needed, and then click **Next**.

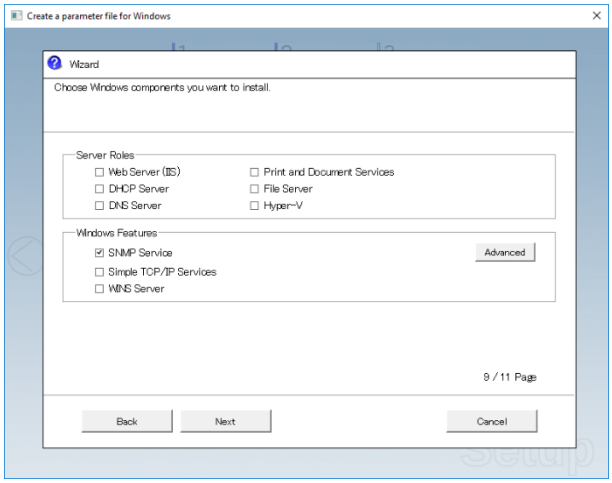


Tips The order of entry in **Custom settings** may differ from the numbering of LAN ports.

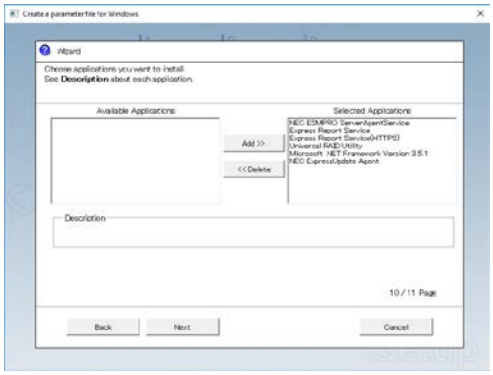
10-(6) Specify the domain or workgroup as needed, and then click **Next**.



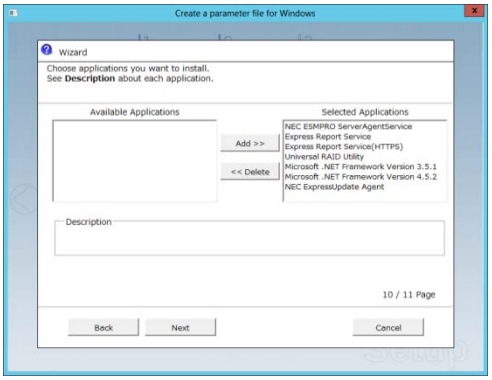
10-(7) Specify the settings of Windows components as needed, and then click **Next**.



10-(8) Specify the settings of applications as needed, and then click **Next**.

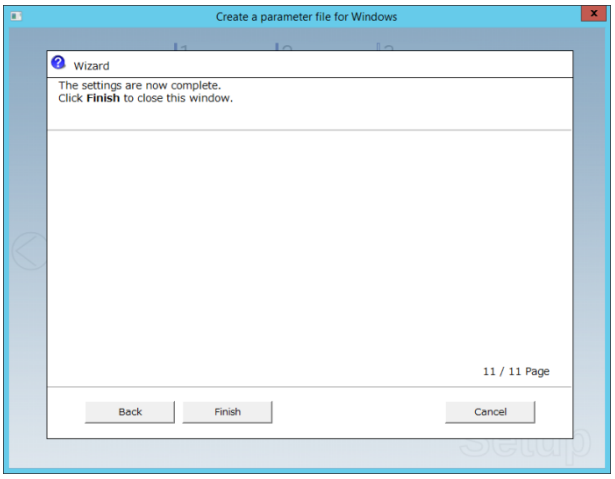


Windows Server 2016

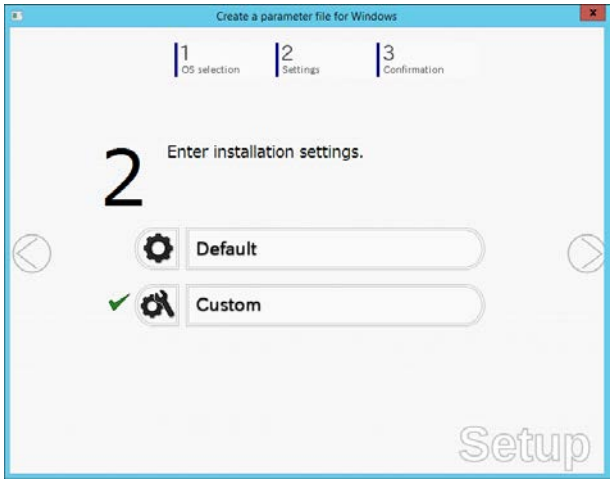


Windows Server 2012 R2

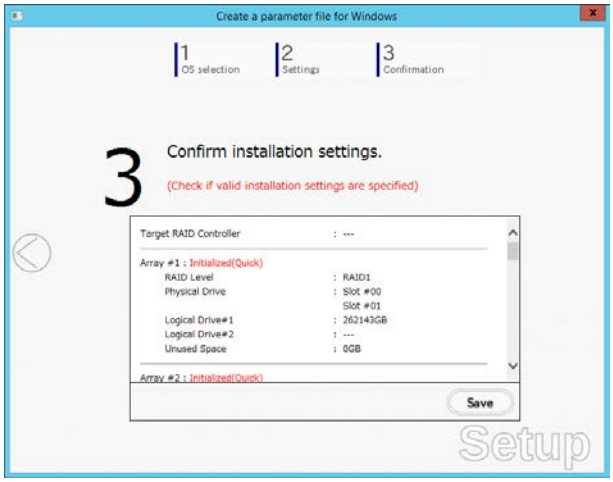
Click **Finish** at the following window.



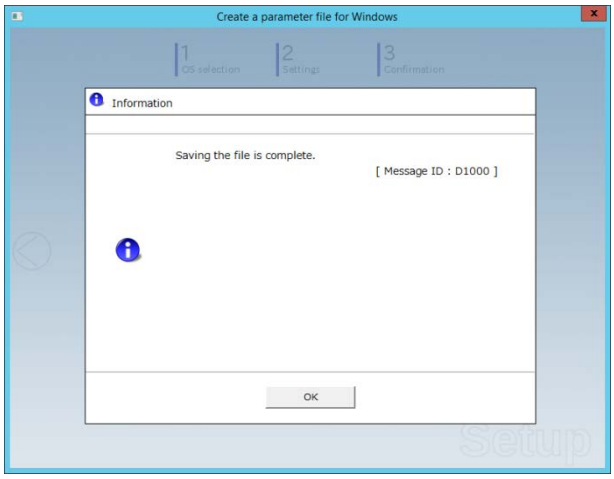
10-(9) On the following screen, click ⓒ on the right side of the screen.



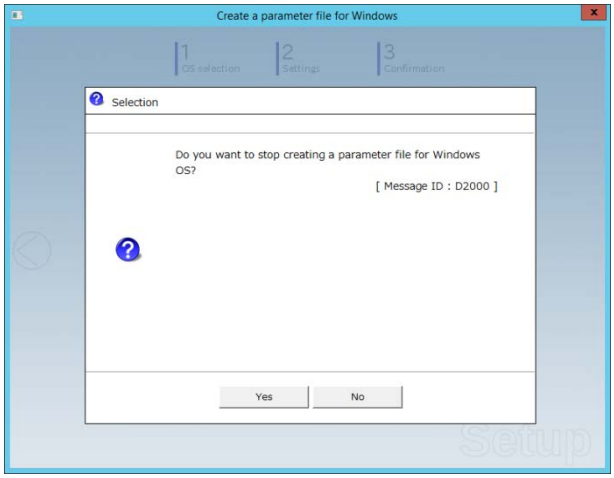
11. Check the settings, and then click **Save**.



12. Click **OK**.



13. Click **Yes** to complete parameter file creation.



Parameter file creation is now complete.

NEC Express5800 Series
Express5800/D120h

2

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.

1.1 NEC ESMPRO ServerAgentService (for Windows)

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

You can install it automatically when Windows OS is installed with EXPRESSBUILDER.

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

1.2 Server Configuration Utility

You can configure the monitoring setting of WDT and OS shutdown for the server by using this utility.

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

1.3 NEC ExpressUpdate Agent

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

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

Tips

Updates are available for some firmware and software that do not support NEC ExpressUpdate. Refer to the following website to install these packages.

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

1.4 Universal RAID Utility

Universal RAID Utility is an application used to manage and monitor the following RAID controllers:

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

For details about how to install and operate Universal RAID Utility, see "*Universal RAID Utility User's Guide*" on the attached EXPRESSBUILDER DVD.

If the requirements, such as the operating system, for Universal RAID Utility described in "*Universal RAID Utility User's Guide*" differs from the one described in the user's guide of this product, follow the requirements in the user's guide of this product.

1.4.1 Installing and setting up Universal RAID Utility

(1) Setup with EXPRESSBUILDER

When you use EXPRESSBUILDER, Universal RAID Utility can be easily installed along with Windows. Choose **Setup** in EXPRESSBUILDER and follow the displayed instructions.

(2) Setup using Universal RAID Utility installer

The Universal RAID Utility installer can be launched from the autorun menu of EXPRESSBUILDER.

Choose **Integrated Installation** from the autorun menu and follow the displayed instructions.

Download **.NET Framework Versions 2.0 to 3.5** from the following web site and install it when you use Universal RAID Utility on Windows Server 2012 R2, or Windows Server 2016.

http://msdn.microsoft.com/en-us/library/vstudio/hh506443.aspx

1.4.2 Management by NEC ESMPRO Manager

NEC ESMPRO Manager Ver. 5.5 or later is used to remotely reference and monitor the RAID system that is managed by Universal RAID Utility.

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

1.5 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.

You can install it automatically when Windows OS is installed with EXPRESSBUILDER.

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

1.6 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.

1.6.1 Installation

Follow the steps below to install this utility.

1. Log on to Windows as an Administrator, and then insert EXPRESSBUILDER DVD into the optical disk drive. Autorun Menu will appear automatically.
2. 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 The installation drive requires a free space of at least 2.5 GB.

1.6.2 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
  ```

1.7 Ezclct Viewer

Ezclct Viewer can display the log files collected by NEC Product Info Collection Utility. This utility can be installed by using EXPRESSBUILDER as described below.

1.7.1 Installation

Follow the steps below to install this utility.

1. Log on to Windows as an Administrator, and then insert EXPRESSBUILDER DVD into the optical disk drive. Autorun Menu will appear automatically.
2. Click **Applications** from the menu and then click **Ezclct Viewer** and **install**.

   The installation will start. Follow the instructions in the dialog boxes until installation is complete.

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

1.7.2 Uninstallation

Choose **Programs and Features** from **Control Panel** and then click **Ezclct Viewer**. Follow the instructions in the dialog boxes.

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 and the RAID system of the server. To use these features, install the bundle software for the server such as NEC ESMPRO ServerAgentService.

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

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)*" in EXPRESSBUILDER.

Glossary

Term	Description
BIOS Setup Utility (SETUP)	Software for setting BIOS. You can run this software by pressing <Del> key during POST.
BMC	Baseboard Management Controller (BMC) is a built-in controller that supports the IPMI version 2.0 protocol. BMC can manage the server hardware.
BMC RESET Switch	A switch for resetting the BMC of the server. This resets the BMC without clearing the BMC settings. Use the switch if the problem on the BMC occurs.
DUMP Switch	A switch that is used for collecting the memory dump if an error occurs. You can specify the destination of the dump by using the Windows function.
EXPRESSBUILDER	Standard software for setting up the server easily. This also includes several useful applications and instruction manuals.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (MG)	Software that can report the server failure to the contact center by E-mail, modem or HTTPS without NEC ESMPRO ServerAgentService. This software is installed with NEC ESMPRO Manager to "PC for Management".
ExpressUpdate	A feature for updating BIOS, firmware, driver, and software of the server. This feature is available when NEC ESMPRO Manager cooperates with EXPRESSSCOPE ENGINE 3 and ExpressUpdate Agent.
ExpressUpdate Agent	Software for performing ExpressUpdate. This is installed to the server.
Flash FDD	An optional USB device that can use as a floppy disk drive.
NEC ESMPRO	Standard software for the server management. This consists of some applications for managing or monitoring.
NEC ESMPRO Manager	Software for managing a number of servers on network.
NEC ESMPRO ServerAgentService	Software for monitoring the server. This works with NEC ESMPRO Manager. You can choose Service Mode or Non-Service Mode when installing this software. Service Mode resides as the OS service and Non-Service Mode does not use the OS service to reduce memory, CPU power, and other OS resources.
OEM driver	A Windows driver for the mass storage device.
OS standard installer	An installer that stored in Windows installation disc. Use this installer if you want to install the OS manually.
Offline tools	Software that can read and change SEL, SDR, FRU, and other IPMI data. You can start Offline tools from EXPRESSBUILDER.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
RAID Configuration Utility	Software for configuring RAID arrays. You can run this software during POST.
Server Configuration Utility	Software for setting BIOS and BMC.
Starter Pack	Software package for the server. This software includes the customized drivers for Windows. This must be installed before using Windows on the server.
TPM Kit	An optional product of Trusted Platform Module for the server.
Universal RAID Utility	Software for setting RAID arrays on Windows/Linux. This software is operated on "PC for Management" with NEC ESMPRO Manager.
Windows OS parameter file	A file that saved settings for installing Windows. You can install with the saved settings in this file when installing Windows with EXPRESSBUILDER.

Revision Record

Document Number	Date Issued	Description
10.117.01-102.01	July 2017	Newly created
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NEC Express Server

Express5800/D120h
Installation Guide (Windows)

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