

DeploymentManager Ver6.6

First Step Guide

-First Edition-

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Introduction

Target Audience and Purpose

The "First Step Guide" is targeted to users who use DeploymentManager (hereinafter referred to as DPM) for their first time and explains the DPM product overview, each function, the system operation procedures and the configuration.

Document Structure

- 1 About DeploymentManager: Explains the product outline and each function of DPM.
- 2 System Design: Explains the information necessary for DPM system design.
- 3 Operating Environment: Explains the operating environment that needs confirmation before installing.
- 4 Latest Version Information: Explains the information in this version.

Appendix

Appendix A Function Tables

Appendix B For Customers Who Do Not Install a DHCP Server

Appendix C For Customers Who Do Not Install DPM Client

Appendix D For Customers Who Configure RAID on the Managed Machine

Appendix E For Customers Who Manage the Machine with HDDs of Multi Vendors

Appendix F Supplementary Information

Appendix G Revision History

DeploymentManager Manual Organization

DPM manuals are structured as shown in the table below.

The name of each manual is described in DeploymentManager manuals according to the "Name in DeploymentManager Manuals".

Name of Manual	Name in DeploymentManager Manuals	Role of Manual
DeploymentManager Ver6.6 First Step Guide	First Step Guide	For DPM users. Provides a product overview, and describes the various functions, system design procedures, operating environment and so on.
DeploymentManager Ver6.6 Installation Guide	Installation Guide	For system administrators who install DPM. Describes tasks such as how to install, upgrade, and uninstallation of DPM.
DeploymentManager Ver6.6 Operation Guide	Operation Guide	For system administrators who operate DPM. Describes the environment setup procedure for DPM operation and the operational procedure based on an actual flow.
DeploymentManager Ver6.6 Web Console Reference Guide	Web Console Reference Guide	For system administrators who operate DPM. Describes DPM screen operations. This guide is a supplement to the Installation Guide and the Operation Guide.
DeploymentManager Ver6.6 Tool Reference Guide	Tool Reference Guide	For system administrators who operate DPM. Describes about tools. This guide is supplement of Installation Guide and Operation Guide.

Name of Manual	Name in DeploymentManager Manuals	Role of Manual
DeploymentManager Ver6.6 Caution Notes and Trouble Shooting Reference Guide	Caution Notes and Trouble Shooting Reference Guide	For system administrators who operate DPM. Describes maintenance related information and troubleshooting. This guide is supplement of Installation Guide and Operation Guide.

- The latest information of DPM is available obtained from the following product site:
<http://www.nec.com/masterscope/deploymentmanager/index.html>
- Web Console Reference Guide, Tool Reference Guide and Caution Notes and Trouble Shooting Reference Guide are not included in the installation media, and are only available on the product site.

Documentation Guidelines for DeploymentManager Manuals

The following describes important points for notation used in DeploymentManager manuals.

- DPM is included in SigmaSystemCenter (SSC) and is used as a component by other software including SSC. In DeploymentManager manuals, DPM unbundled product and SSC product are described as follows:

Notation in this Manual	Product Name
DPM unbundled product	DeploymentManager Ver6.6
SSC product	DeploymentManager Ver6.6 for SSC

- The screen images in this manual are based on DPM unbundled product. The screen images may be different from those of SSC product. The screen images related to the license are only for DPM unbundled product. They are not applied to SSC product.
- Product versions and revisions are as follows.
 - Common description for DPM Ver6.6: DPM Ver6.6
 - Specific description for DPM Ver6.6x: DPM Ver6.6x
x represents revision number.
- The installation media included in DPM product is described as "Installation media" in this manual.
- IPv4 address is described as "IP address" and IPv6 address is described as "IPv6 address" in this manual.
- In the explanation, when you specify IP address on the screens of DPM installation, the Web Console and so on, the number is described by decimal notation as a rule. However, if you specify "0" on the top of each octet on the screen, the number may be processed by octal notation.

Example)

When you specify "192.168.1.024", "024" of fourth octet as octal notation and it will be "20" in decimal notation. Therefore, it will be processed as "192.168.1.20".

- 64bit OS is described as "x64" and 32bit OS is described as "x86".
- In Windows OS, the folder path in which DPM is installed or the registry key is described by those of x64. When you use x86, replace as follows if there is no notice in particular.

DPM installation folder

- (x64):C:\Program Files (x86)\NEC\DeploymentManager_Client
- (x86):C:\Program Files\NEC\DeploymentManager_Client

Registry key

- (x64):HKEY_LOCAL_MACHINE\SOFTWAREWow6432Node\NEC\DeploymentManager
- (x86):HKEY_LOCAL_MACHINE\SOFTWARE\NEC\DeploymentManager

- Procedure to start command prompt or registry editor differs depending on the version of Windows as described below.

Note:

- Incorrect use of Registry Editor might cause serious problem.
Be careful about editing registry.
-

- For Windows Server 2012/Windows 8 or later
Press R key by holding down Windows logo key and open Run dialog box on the desktop.
To start command prompt:
- x64: Enter "%WINDIR%\SysWOW64\cmd.exe" in the name field and click OK.
- x86: Enter "%WINDIR%\system32\cmd.exe" in the name field and click OK.
To start registry editor:
Enter "regedit" in the name field and click OK.
- For Windows Server 2012/Windows 8 or earlier
Select Run from Start menu.
To start command prompt:
- x64: Enter "%WINDIR%\SysWOW64\cmd.exe" in the name field and click OK.
- x86: Enter "%WINDIR%\system32\cmd.exe" in the name field and click OK.
To start registry editor:
Enter "regedit" in the name field and click OK.

- The precaution items and the related information in this manual are described as follows:

Note: is for precaution, warning and supplementary items regarding the function, operation and setting.

Reference: marks the location of the reference information.

- Displays and procedures of DPM may be different depending on the operating system for Windows OS, this document is based on Windows Server 2008 R2 and Windows 7. Replace when you use DPM on OS except Windows Server 2008 R2 and Windows 7. (There are some descriptions based on the OS except Windows Server 2008 R2 and Windows 7.)

Example)

The procedure for checking DPM version differs by operating system as follows:

- For Windows Server 2012/Windows 8 or later:
 - 1) In Windows desktop, set the mouse pointer in the upper right (or the lower right) and select **Settings** from the charm.
 - 2) **Settings** screen appears. Select **Control Panel -> Program -> Programs and Features**.
- For Windows Server 2008/Windows 7/Windows Vista:

From the **Start** menu, click **Control Panel -> Programs and Features**.
When "Version" is not displayed, perform the following procedure 1) and 2).

 - 1) Right-click **Name** in the center of the screen, and select **More**.
 - 2) In the **Choose Details** screen, select the **Version** check box and click **OK**.
- For OS other than above
 - 1) From **Start** menu, click **Control Panel -> Add or Remove Programs**.(or **Add or Remove Applications**)
 - 2) Select the applicable component, and click **Click here for support information**.

For Linux OS, this document is based on Red Hat Enterprise Linux7(x64). Replace when you use DPM on OS except Red Hat Enterprise Linux7(x64). (There are some descriptions based on OS except Red Hat Enterprise Linux 7(x64).)

- In the operation procedures, arbitrary names specified by the user (instance name of the database and so on) are described in bold and italic text as follows: ***Instance Name***.

Example)

- Restart the following service.
SQL Server (***Instance Name***)
- In the tree view, click **Resource** icon -> **Scenarios** icon -> **Scenario Group** icon.

- Syntax of the command is as follows.

Format	Description
The text without [](angled bracket) or {}(curly bracket)	Enter the text as description.
{the text in the curly bracket}	Set either of items in the curly bracket.
	Items are separated by this symbol. Select either of items.

Example)

- Syntax of command:

```
Setup.exe /s /f1"Path of the Parameter File" [/f2"Path of the Log File] SILENTDPM [FIREWALL={0|1|2}]
```

- Command to be entered:

```
Setup.exe /s /f1"C:\SilentInstall\DPM_MNG_RESetup.iss" /f2"C:\log"SILENTDPM FIREWALL=1
```

- The description about database in this manual is based on SQL Server 2016 SP1 Express that is included in the installation media. Replace it when you use the product except SQL Server 2016 SP1 Express.

Example)

DPM database path

- For SQL Server 2016 SP1 Express x64:
C:\Program Files\Microsoft SQL Server\MSSQL13.**InstanceName**\MSSQL\Binn
- For SQL Server 2014 SP2 Express x64:
C:\Program Files\Microsoft SQL Server\MSSQL12.**InstanceName**\MSSQL\Binn
- For SQL Server 2012 SP1 Express x64:
C:\Program Files\Microsoft SQL Server\MSSQL11.**Instance Name**\MSSQL\Binn
- For SQL Server 2008 R2 SP1 Express x64:
C:\Program Files\Microsoft SQL Server\MSSQL10_50.DPMDBI\MSSQL\Binn
- For SQL Server 2005 Express Edition x86:
C:\Program Files (x86)\Microsoft SQL Server\MSSQL.**x**\MSSQL\Binn
x represents the number of the instance.
- For PostgreSQL 9.5 x64:
C:\Program Files\PostgreSQL\9.5\bin

- 1MByte is calculated as 1024KByte.
1GByte is calculated as 1024MByte.

1. About DeploymentManager

1.1. DeploymentManager

DPM is system management software which provides backup/restore, cloning and patch or application installation functions. It helps cost reduction for system management costs by allowing control of managed machines to be performed all at once and remotely over a network.

1.1.1. Advantages of Installing DeploymentManager

Installing DPM enables the following advantages.

- System recovery can be performed by simple procedure.
In backup by DPM, the disk image is copied without any change. Because the copied disk image is written on the disk when restoring, you can execute system recovery easily.
- The machine cloning can be executed promptly.
The OS installation by disk duplication function, which supports backup/restore functions, allows a disk image (master image) taken from one machine (master machine) to be deployed onto other machines with identical composition. By preparing specific information (IP address, computer name and so on) for each machine as parameters in advance, the specific information can be set automatically when deploying the master image.
- You can install patches and applications depend on operational status.
For the managed machines, patches and applications selected by the administrator can be forcibly installed (scenario type) or automatically installed (automatic update type) in accordance with pre-defined conditions. Scenario type allows the administrator to operate and install the patches/applications to arbitrary machine at the arbitrary timing. (For automatic update, registering patch/application to the Management Server in advance and setting applied condition such as level of importance/schedule enable automatic installation of patch/application when condition matches). When there are multiple Management Servers, you can set up a server (Package Web Server) to share packages. Simply registering patch or application to Package Web Server helps automatic download to each Management Server.
- Supports virtual environments.
You can manage virtual machines by the same operation with physical machines. Therefore, you can simply operate with mixed environment of physical and virtual machines.

1.2. DeploymentManager Basic Functions

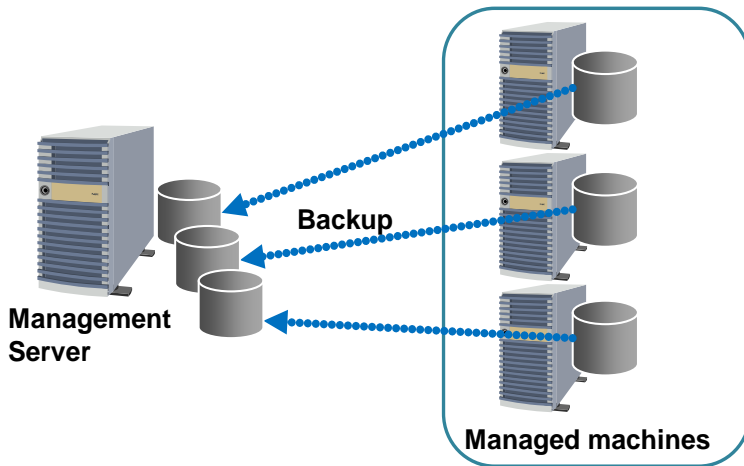
The following is explanation of the basic function of DPM.

See Appendix A, "Function Tables" for details of support status of each function.

1.2.1. Backup/Restore

The disk on which the system of the managed machine (OS) installed can be backed up or restored as the entire disk, or a partition on the disk can be backed up or restored as the entire partition. Backup/restore function has the following characteristics.

When backing up, with the OS on the managed machine shut down, a dedicated Linux OS (hereinafter referred to as "Deploy-OS") will be activated in the memory of the managed machine and the data read from the disk. This read data will be sent sequentially to the Management Server and create backup image file. When restoring, send the backup image file data from the Management Server to the managed machine, and restore the written disk contents to the disk. Executing backup when OS of the managed machine is shut down (offline backup) allows creation of backup image at a point of complete inactivity, from which the OS can be safely restarted after restoration.



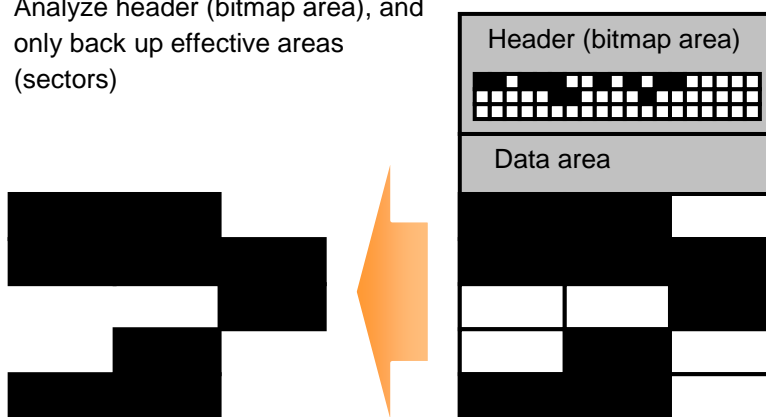
Backup Types(*1)	
Effective Sector Backup	Effective sector backup is type of backup that only backups regions (sectors) are used by partition actually. Effective sector backing up makes backup response time and backup image size minimum. (For further details of the support status for effective sector backup for each file system, see "Support for File System and Disk Type" in Appendix A, "Function Tables.")
Full Sector Backup	Full sector backup is type of backup for all sectors on the partition includes unallocated area. This takes more time than effective sector backup and the backup image file becomes larger. About partitions on the file system that does not support effective sector backup, the backup will be executed by full sector backup automatically. (For further details on the support status for full sector backup for each file system, see "Support for File System and Disk Type" in Appendix A, "Function Tables.")

*1

- You can backup or restore two or more disks at one time by one scenario.
- The backup image data can be compressed when using either, effective sector backup or full sector backup.
- When backup of an entire disk is executed, it can be restored to the empty disk.
When you restore also the backup image of partition unit, it can be restored to an empty disk. See "Support for File System and Disk Type" in Appendix A, "Function Tables" for details.
- When you restore the backup image of partition unit to the disk in use, specify the same partition of the original disk. In addition, the type of the file system and the partition size should be the same between the original partition and the target partition.

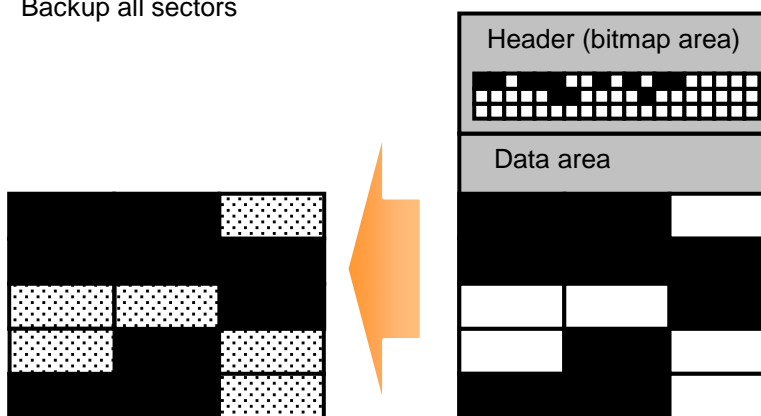
· For Effective Sector Backup

Analyze header (bitmap area), and
only back up effective areas
(sectors)



· For Full Sector Backup

Backup all sectors



Note:

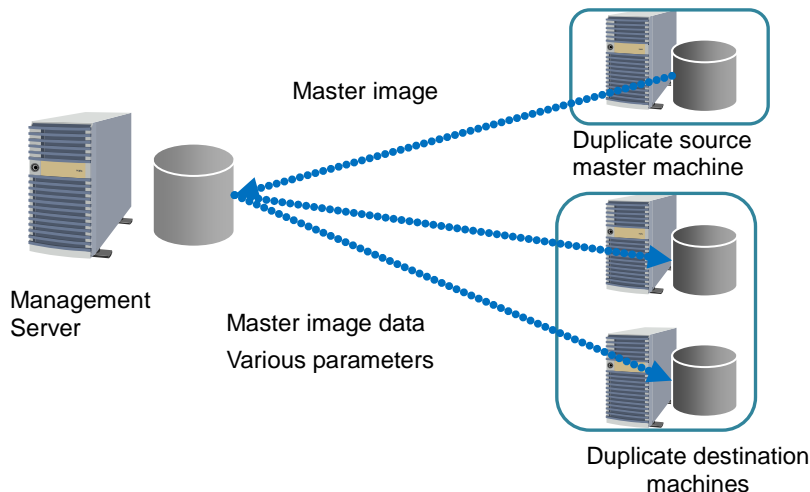
- The bitmap area is to manage the disk sector information.
-

Backup for RAID Configuration	
Backup for Hardware RAID	Backup/restoring of hard disk connected to RAID controller, which is supported by DPM. For RAID, backup by a unit of the entire logical disk will be executed.
Backup for Software RAID	The backup/restoring of software RAID volume (RAID0, RAID1, RAID1 Span, RAID5, and others) created via OS function or disk management application is not possible. For FT servers, depending on the machine model, backup after releasing RAID or backup by the scenario with the setting of full sector not releasing RAID is possible. Contact your sales or support representative about information on the backup procedure for each machine model.
Other Functions	
Disk Configuration Check	The disk configuration check function allows the hard disk configuration of the managed machines to be checked before executing backup/restore functions.
CD Boot	Concerning the boot type of the managed machines, there are network boot (uses DHCP server) and a CD boot (does not use DHCP server) types. For CD boot, creating bootable CD and setting it in the target machine will allow backup/restoring to be executed without using DHCP server. Concerning application without using DHCP server, see Appendix B, "For Customers Who Do Not Install a DHCP Server", and Appendix A, "Operating DPM without Using the DHCP Server" in <i>Operation Guide</i> .
Local restoring	You can restore the backup image only by the managed machine without the Management Server by storing the image on DVD (CD) media and using by the media. This function is supported only for the backup image of disk unit in DPM Ver4.0 or later. In addition, this is not supported for the image, which was backed up by specifying two or more disks. For details, contact your sales or support representative.

1.2.2. OS Installation by Disk Duplication

OS installation by disk duplication function, which uses the backup/restore functions, allow the disk image of a single machine (master machine) to be cloned (duplicated).

In the OS installation by disk duplication function, the specific information is deleted by the tool to delete the specific information on one machine, and then a backup image (master image) of the machine is created. This machine can be cloned by restoring this master image on the duplication destination machines and setting parameters.

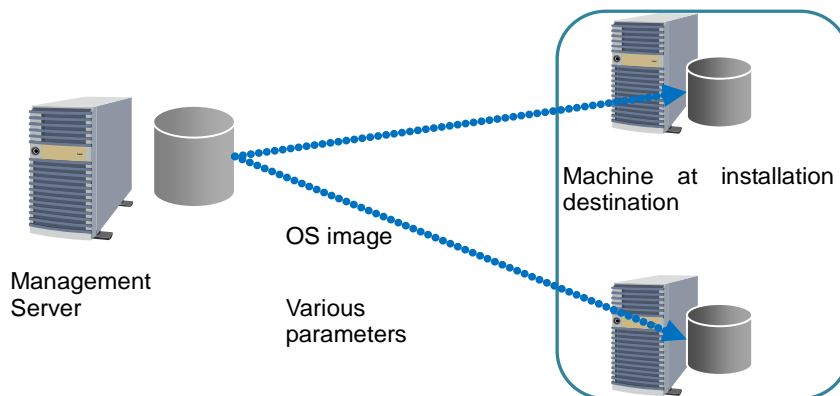


By preparing individual information for each machine (IP address, computer name, and so on) as parameters in advance, the setting of this individual information will also be made automatically when deploying the master image, meaning no control on the managed machine side is required. In addition, including patches, applications, and so on in the master image allows them to be deployed with an identical configuration.

1.2.3. OS Clear Installation

You can do a clear (new) installation of the Linux OS at the same time as doing the detailed settings on the managed machine.

The OS clear installation function creates an OS image on the Management Server from the OS media. The OS is then installed in the target machines using this OS image from the Management Server, and various parameters such as computer name and IP address are set.

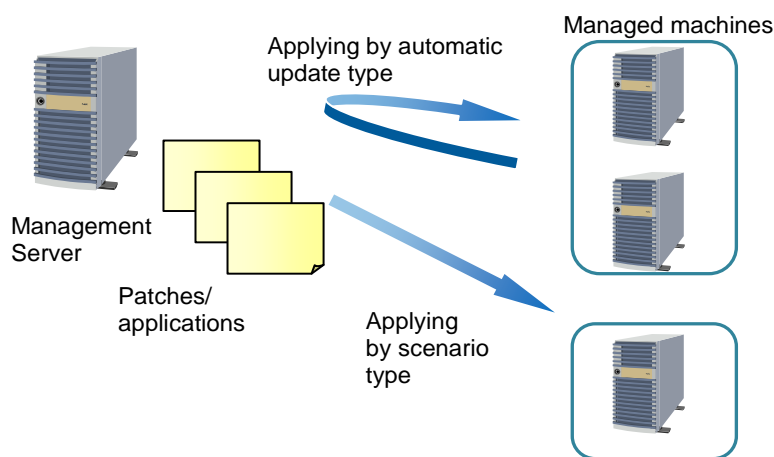


An OS clear installation can be controlled entirely remotely, with no control on the managed machine side required. By initially creating all required settings as parameters, those operations that would normally be performed by a local set up, such as the creation of partitions, formatting and setting of specific information (IP address, computer name, and so on) will all be automatically performed. This is all completed automatically in a single action from the Management Server.

1.2.4. Service Packs/HotFixes/Linux Patch Files/Application Installation

Service packs, hotfixes, Linux patch files, and applications for the managed machines can be installed either forcefully by control from the side of the Management Server(scenario type), or when automatically determined to be required by the managed machine that is the installation target's side (automatic update type). (The installation of service packs/hotfixes/Linux patch files/applications may be called remote updates in this manual.)

The image registration tools provided by DPM (Image Builder or PackageDescriber) register the service packs, hotfixes, Linux patch files, and applications to the Management Server or the Package Web Server in units called packages. (For detail of a configuration using the Package Web Server, see Section 2.1.5, "System Configuration.") This package is distributed and applied to the managed machines.



The function to install service packs, hotfixes, Linux patch files, and applications enables the following operations depending on the operation scene and the status of the managed machine.

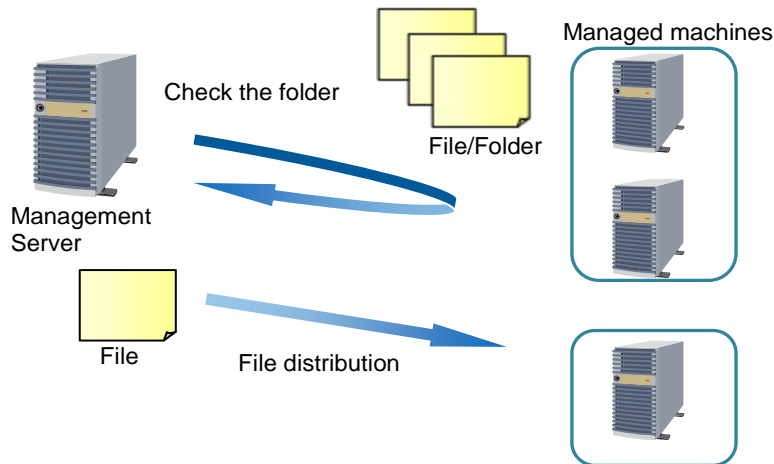
- The patch application status of each managed machine can be checked from the Web Console. This allows users to find which machine installation has failed and to determine if need another installation, and to perform the procedure.
- When new machines are added the required patches can all be applied in a single batch.
- You can apply a patch/application that requires administrator authority. (DPM performs installations on the local system account).
- Patches and applications can also be installed even when not logged into the managed machines.
- The timing of the installation on the managed machines can be selected. For example, if the machine is in use, application can be performed the next time the managed machine is booted up.
- Even if the managed machine is turned off, the remote power on function can be used to boot up the machine to allow installation of patches and applications.
- For a configuration featuring multiple Management Servers, the Package Web Server allows the package to be made common to all of them, and managed from a single source.
- Using multicast allows installation on a larger number of machines in a single batch.

1.2.5. File Distribution

On the Web Console, you can see the detailed information of files or folders on the managed machine.

You can copy or overwrite a file on the Management Server to the arbitrary place on the managed machine, or execute and delete the file on the managed machine.

In addition, when distributing files, you can execute the distributed file at the distribution destination.



2. System Design

2.1. Examining the System Configuration of Deployment Manager

This section explains the procedure to determine the system configuration when introducing DPM.

2.1.1. System Configuration

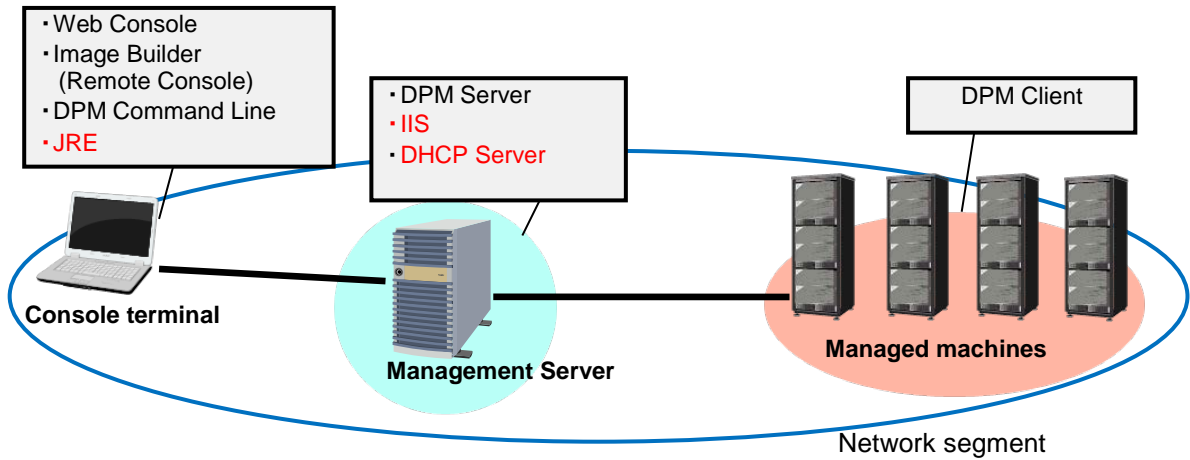
Explains the configuration of DPM. The role of each machine when you use DPM is as follows.

Role	Description	Installed components
Management Server (Required)	The machine, which manages, managed machines.	<ul style="list-style-type: none"> • DPM Server(Required)(*1) • IIS(Required) • .NET Framework(Required) • ASP.NET(Required) • DHCP Server(Optional) • NFS Server(Optional) • JRE(Optional)
Database Server (Option)	<p>The machine for the database which manages the configuration information of managed machines and so on.</p> <p>By configuring the Database Server, the Management Server and the database(SQL Server, PostgreSQL) can be separated. When you configure the database on the Management Server, the Database Server is not necessary.</p>	SQL Server PostgreSQL (Either of above is required)
Package Web Server (Option)	<p>The machine, which shares packages between multiple Management Servers.</p> <p>The packages saved in the Package Web Server are downloaded to the Management Server by HTTP protocol. You can also configure the Package Web Server on the Management Server.</p>	<ul style="list-style-type: none"> • IIS(Required) • JRE(Required) • PackageDescriber(Required)
Console terminal (Option)	The machine which operates the Management Server.	<ul style="list-style-type: none"> • Web Console (It is not required to install) • Image Builder (Remote Console) (Option) • DPM Command Line (Option) • JRE (Option)
Managed machine (Required)	The machine on which DPM functions are executed.	<ul style="list-style-type: none"> • DPM Client (Option)

*1

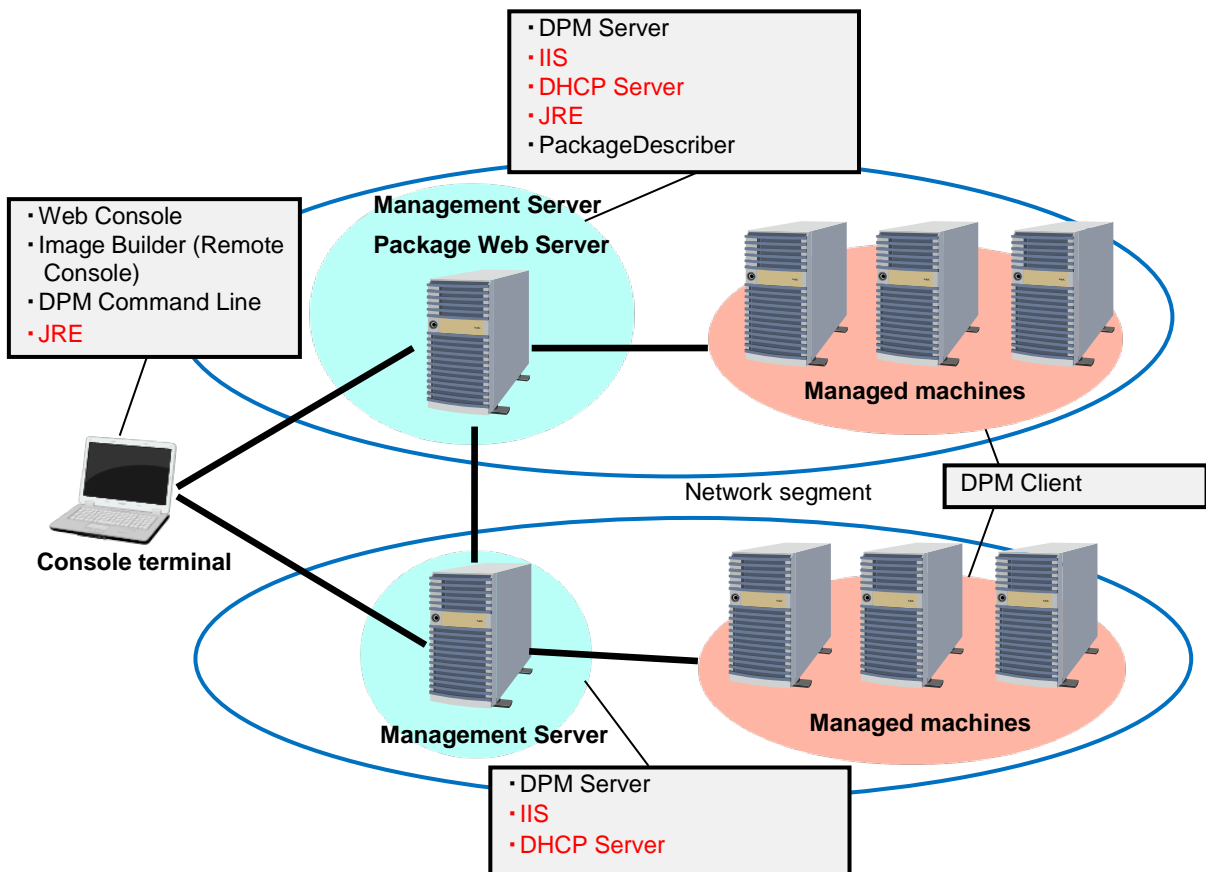
If you install DPM Server, you can install SQL Server 2016 SP1 Express at the same time.

When the Management Server is single, the example of the configuration is as follows.



Black characters: Components which are included in the installation media
Red characters: Components that you need to prepare separately. (These are not included in the installation media.)

When multiple Management Servers are configured, the example of the configuration is as follows.



Black characters: Components which are included in the installation media
Red characters: Components that you need to prepare separately. (These are not included in the installation media.)

2.1.2. Component Configuration of the DeploymentManager

The components used in DPM are as follows.

■ Management Server Side Components

Component Name	Description	Circumstances Under Which Installation is Required
DPM Server	Manages the managed machines and executes processes to the managed machines by instructions from the Web Console or DPM Command Line.	Required
SQL Server	Manages the information of the managed machines and so on by the database.	Required Either SQL Server or PostgreSQL is required. When using SQL Server, configure a database either on the Management Server or on the Database Server (different machine from the Management Server). When configuring on the Management Server, SQL Server 2016 SP1 Express is installed concurrently with the installation of DPM Server. When using PostgreSQL, configure the database manually either on the Management Server or on the Database Server.
PostgreSQL		
IIS	Used for providing web based functions on DPM.	Required (As this is not included in the DPM installation media, you need to prepare this separately.)
.NET Framework	Used for execution as the base of Web Console.	Required .NET Framework 4 or later is necessary. When using SQL Server 2016 as the database on the Management Server, .NET Framework 4.6 (either of 4.6, 4.6.1 or 4.6.2) is necessary. .NET Framework 4.6.2 or later is not installed, you can install .NET Framework 4.6.2 from DPM installer.
ASP.NET		
Web Console	User interface to check the	Installation is not required.

	condition of the managed machine and to execute process for the managed machine.	(Required components will be downloaded from the Management Server via web browser).
DHCP Server	Uses DHCP server to assign IP addresses in the operation by network boot. If it is difficult to install DHCP server, you can operate DPM without DHCP server (You can boot managed machines by bootable CD). In that case, some functions are restricted. See Appendix B, "For Customers Who Do Not Install a DHCP Server" for details. Because DHCP server is used to assign IP address used by network boot temporarily, it is possible to use fixed IP address in the installed OS on each managed machine.	Required for the following functions. <ul style="list-style-type: none"> • Backup/restore/disk configuration check by network boot • OS installation by disk duplication • OS clear installation • BIOS/firmware update (As this is not included in the DPM installation media, you need to prepare this separately.)
NFS Server	This is used to distribute OS image when you execute OS clear installation.	This is required for OS clear installation. (As this is not included in the DPM installation media, you need to prepare this separately.)
JRE	Uses JRE as Java execution environment when you execute Image Builder or PackageDescriber.	This is required when you use following functions. <ul style="list-style-type: none"> • To create Linux installation parameter files for OS clear installation • To create Linux disk duplication parameter files • To create packages by PackageDescriber (This is not included in the installation media of DPM. You need to prepare it separately.)
Image Builder	This is a tool for creating packages, disk duplication data file, and so on and registering them on the Management Server.	Installed at the same time as DPM Server. You need to install Image Builder or DPM Command Line separately when you use them on a machine, which is not the Management Server. (In this case, Image Builder is described as Image Builder (Remote Console).)
DPM Command Line	The command line interface that executes the processing for the managed machines and checks the status of their execution.	
PackageDescriber	This is a tool to create packages and registers them on the Package Web Server. In addition, you can use this on the Package Web Server.	Required to share packages between multiple Management Servers. (Even if the Management Server is single, it is required to specify detailed conditions when applying a patch by the automatic update type.

■ Managed Machine Side Components

Component Name	Description	Circumstances Under Which Installation is Required
DPM Client	Transfers data with DPM Server and controls the managed machines. When it is difficult to install DPM Client, it is possible to operate without DPM Client. In that case, some functions are restricted. See Appendix C, "For Customers Who Do Not Install DPM Client" for details.	Required for the following functions. <ul style="list-style-type: none"> • OS installation by disk duplication • Installing service packs/hotfixes/Linux patch files/applications • Shutdown • File Operation • File Execution In addition, this is required to enable the following settings. <ul style="list-style-type: none"> • Check the completion of a scenario by the communication with DPM Client in the setting of DPM Server • Forced Execution Of A Reboot Is Performed Before Execution in Scenario Execution Option Setting

2.1.3. Technologies Used in DeploymentManager

The following is an explanation of the technologies used in the DPM. See the technologies explained in this section and design your system.

2.1.3.1. Wake On LAN (WOL)

The DPM uses **Wake On LAN (WOL)** in order to power on a managed machine, which is powered off, remotely. Powering on using WOL is a function that broadcasts a packet called a magic packet, which includes the MAC address of the managed machine. By configuring direct broadcast routing settings on the network device, managed machines in other segments can be powered on remotely.

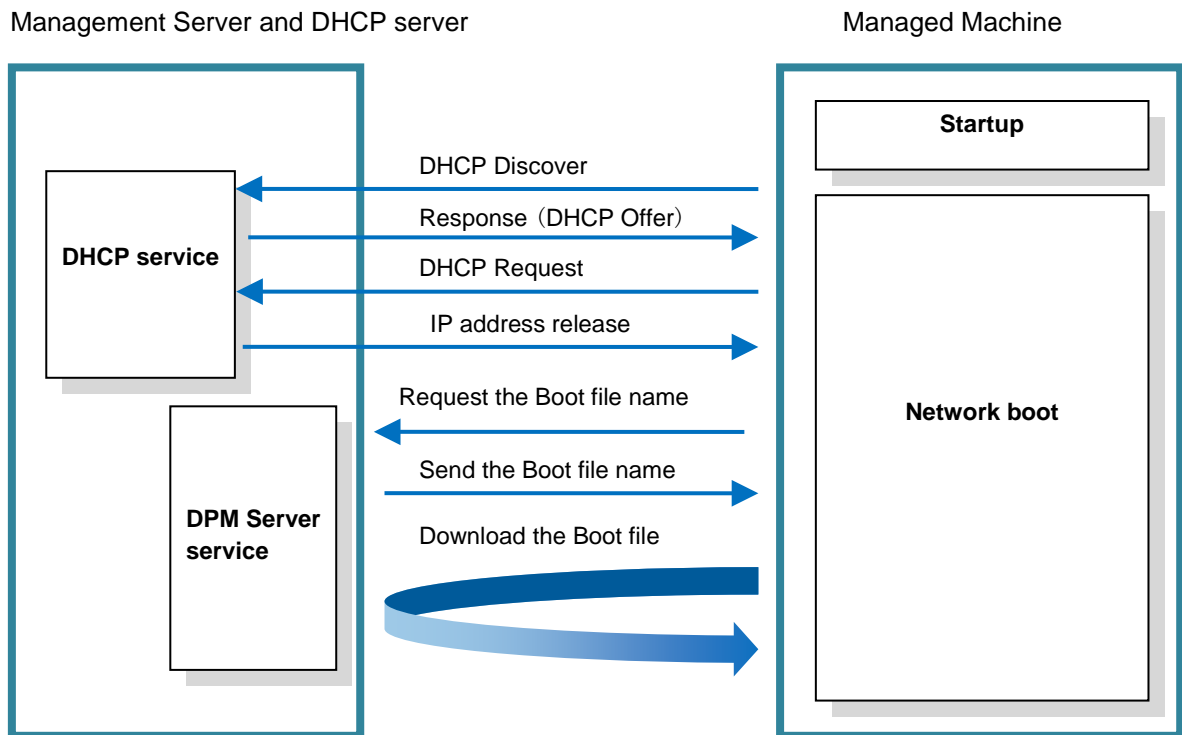
Used Function	Power On
Conditions required to perform WOL	<ul style="list-style-type: none"> • Have a LAN board that supports WOL. • Set WOL settings in BIOS menu or the LAN driver settings of OS, and so on. For more details of the conditions required to perform WOL, see the description on managed machines in Section 3.9.2, "Precautions." If you manage the machine with a LAN board that does not support WOL, then power on it manually.

See Section 3.9.2 "Precautions" about precautions for WOL.

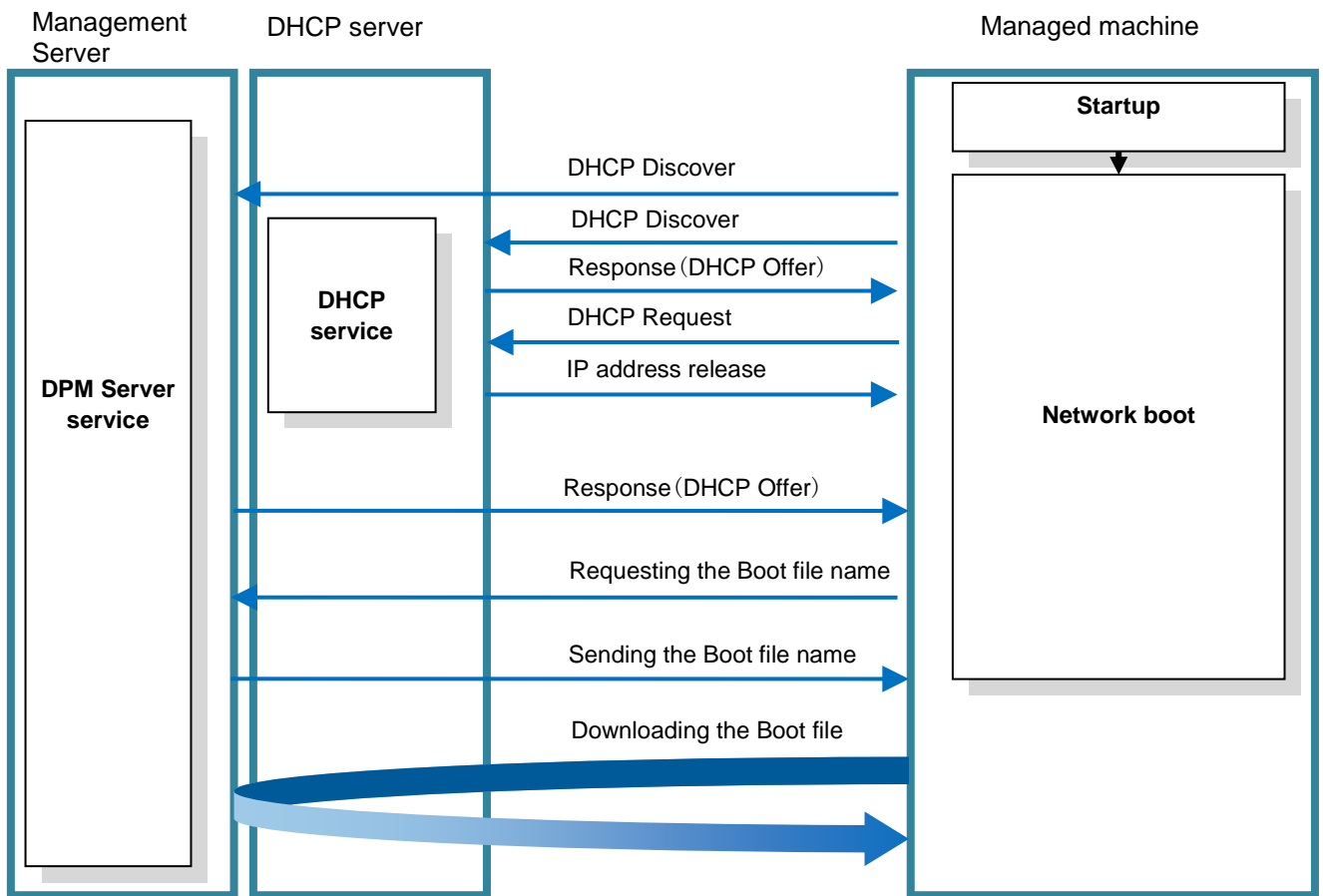
2.1.3.2. Network Boot

A network boot is one way to boot a machine, using a standard called PXE (Preboot eXecution Environment). Normally, when a machine has an OS installed it is booted from a boot file contained inside the hard disk drive (HDD), but during a network boot the boot file is downloaded from a server on the network and then used to perform the boot. The DPM uses network boots to locate new machines, perform activation checks and for tasks such as backup/restoring.

- Communication Sequence in a Network Boot (When the Management Server and DHCP server are on the same Server)



- Communication Sequence in a Network Boot (When the Management Server and DHCP server are different servers)



Used Functions	<ul style="list-style-type: none"> • Backup/Restore/Disk Configuration Check (when operating using DHCP server) • OS Installation by Disk Duplication • OS clear installation • BIOS/firmware update • Register a New Managed Machine
Conditions required to perform a network boot	<ul style="list-style-type: none"> • A DHCP server is operated on the network. • LAN board for the managed machine can boot by PXE. • In the BIOS or UEFI boot menu of the managed machine, the boot order of the LAN board is set higher than that of the HDD.

- When you construct DHCP server and the managed machine in the different segments, set DHCP relay agent on the network device.
- When you configure DPM Management Server and DHCP server on the same machine, assign IP address from DHCP server on the DPM Management Server.
- Stop either TFTP service to coexist software with TFTP service in the DPM Management Server because DPM has TFTP service.
See Section 2.1 "Installing DPM Server" in *Installation Guide* for details of the installation and the setting.
- When DPM Server and MasterScope Network Manager are installed on the same machine, it is necessary to configure the cooperative setting for Trivial File Transfer Protocol (TFTP) service on MasterScope Network Manager and TFTP service on DPM.
If you do not configure the cooperative setting, TFTP service on MasterScope Network Manager conflicts with TFTP service on DPM, and therefore each TFTP service might not work properly. See Appendix F, "Configuring DPM Server and MasterScope Network Manager on the Same Machine" in *Installation Guide* for details.
- When registering a machine mounted with two or more LAN boards on DPM, set only BIOS starting sequence for LAN board which DPM manages above HDD, and set the rest below HDD.
If you set LAN board which does not manage above HDD might cause error such as the scenario execution error.

Note:

- Use the onboard LAN card of the managed machine for the network boot.
 - Do not configure the network boot server (PXE server) on the same network of DPM Server.
When you configure the network boot server (PXE server) on the same network of DPM Server, execute setting at each PXE server to avoid responding from two or more PXE server for the request of the network boot from the managed machine.
Select "**DHCP Server is installed on the machine**" from **Detail Setting** screen -> **DHCP Server** tab on DPM Server and reserve IP address dispensing avoids responding network boot request from outward of the managed machine.
When you are in the environment where cannot configure DHCP server, or when the managed machine cannot network boot, you can backup/restore/disk configuration check by the CD boot as a substitute for the network boot.
Unlike the case of the network boot, insert and eject the boot CD on the managed machine.
In addition, the functions require network boot become unavailable.
See Appendix B, "For Customers Who Do Not Install a DHCP Server" for details of functions can be used under the environment where DHCP server cannot install.
-

2.1.3.3. UUID

UUID stands for Universal Unique Identifier. It is a 16Byte numerical value housed in a SMBIOS configuration, and is used to uniquely identify hardware.

In order to manage the managed machines, the DPM stores their MAC address and UUID information. The MAC address is used as the key for processes such as turning the power on using WOL, but for machine that have multiple LAN boards (multiple MAC addresses), UUID is used to uniquely identify them. Even if the LAN boards are exchanged, causing the MAC address to change, the machine will be still recognized as the same machine it was before.

Used Function	Management for the managed machines
----------------------	-------------------------------------

When you replace the motherboard, there is a case that UUID is also changed.

In that case, change UUID from **Edit Machine** screen or DPM Command Line.

See Section 3.7.2 "Edit Managed Machine" in *Web Console Reference Guide* or Section 4 "DPM Command Line" in *Tool Reference Guide* for details.

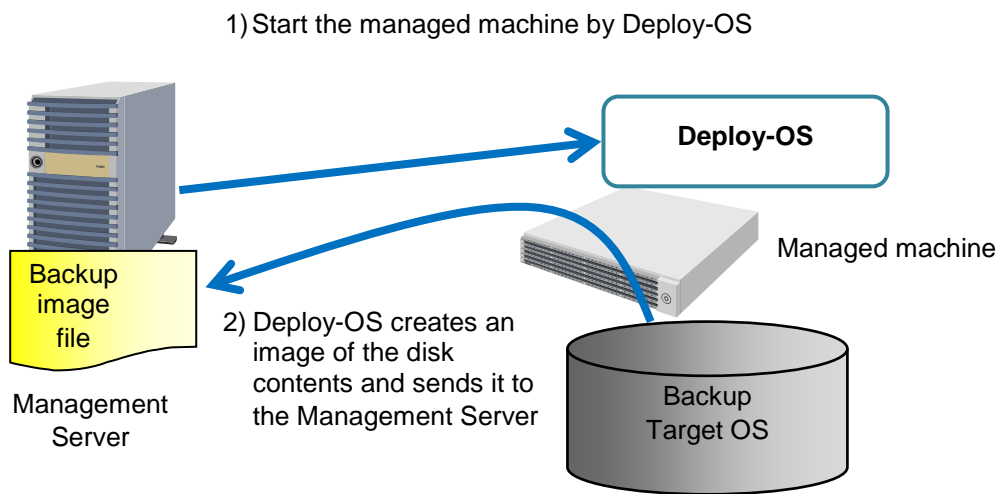
When you boot the replaced machine before changing UUID on DPM, there is a possibility that the machine might be added to **New Machine** group.

In this case, delete machine from **New Machine** group and change UUID.

2.1.3.4. Deploy-OS

Deploy-OS is Linux OS customized for DPM. When executing backup/restoring, Deploy-OS is sent as boot image from the Management Server to the managed machine. On the managed machine, Deploy-OS is booted and reads the managed machine's disk and sends disk data via the network to the Management Server. In order to read the disk data and send the data via the network, Deploy-OS is required to contain a disk controller and LAN board device driver.

By specifying Deploy-OS corresponding to each managed machine by the Web Console or DPM Command Line, the disk controller and LAN board device driver corresponding to each machine model can be built. Contact your sales or support representative about the information on Deploy-OS corresponding to the machine model. Also, contact your sales or support representative about the procedure to obtain Deploy-OS, which is not included in the installation media.



Used Function	<ul style="list-style-type: none"> · Backup/restore/disk configuration check · OS Installation by Disk Duplication
----------------------	--

Note:

- When you execute backup/restore/disk configuration check or OS installation by disk duplication, use Deploy-OS appropriate to the target machine model.

2.1.3.5. Multicast Distribution

You can choose from two types of image distribution using the DPM, unicast (default) and multicast. The multicast type allows the same image (same packet) to be sent to multiple managed machines, so it reduces network load in comparison to the unicast when distributing the same image to multiple managed machines.

Function Used	<ul style="list-style-type: none">· Install patch/application· OS Installation by Disk Duplication (used when restoring)
----------------------	---

Note:

- If one of the distribution destinations does not receive the data, it will be resent to all the managed machines. Depending on the network environment, there is a case that the function can be effective and sometimes it can be ineffective in reducing network load.
-

2.1.4. Structure of DeploymentManager

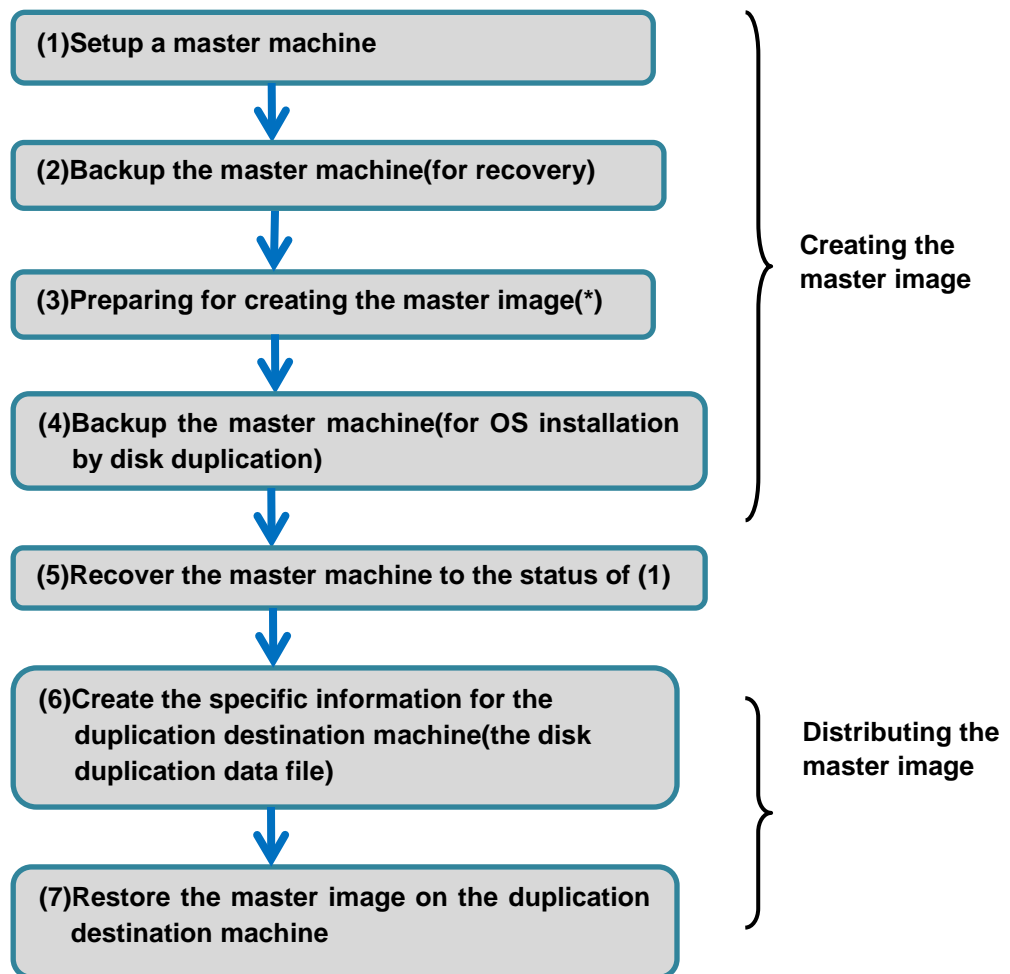
The following is an explanation of how the DPM operates. See the explanation in this section and design your system.

2.1.4.1. OS Installation by Disk Duplication

In the OS installation by disk duplication function, the specific information is deleted by the tool for one machine, and then a backup image (master image) of the machine is created. This machine can be cloned by restoring this master image on the duplication destination machine and setting parameters.

As the tool to delete the specific information or set parameters, the Sysprep (System Preparation Utility) tool provided by Microsoft is used for Windows OS. The tool which is included in DPM installation media (LinuxRepSetUp) is used for Linux OS.

<Flow of OS installation by disk duplication (for Windows OS)>



*In the case of Linux, execute the tool to delete the specific information (LinuxRepSetUp).

- (1) Prepare the master machine for duplication. Set up manually such as setting parameters, installing applications, and so on, on the master machine.
- (2) Backup the master machine by the Web Console or DPM Command Line. You need to create the image to return the master machine to the state immediately after the setup after creating the master image.
- (3) Execute built-in scenario on the master machine or execute delete tool for the specific information in the installation media.
There are two ways to delete specific information with or without usage of Sysprep.

Without using Sysprep takes less time for disk duplication installation.
In addition, built-in scenario is executed without using Sysprep.

- (4) Backup the master machine by the Web Console or DPM Command Line. This backup image file, after deletion of specific information, is the master image to perform the duplication.
- (5) To recover the master machine to the state just after setup, restore the backup image created at step (2) on the master machine.
- (6) Prepare the specific information for the duplication destination machine (the disk duplication data file) by Image Builder.
- (7) Restore the master image (created at step (4)) on the duplication destination machines by the Web Console or DPM Command Line. After restoring, the disk duplication data file is automatically downloaded to the duplication destination machines, and the specific information is set by Sysprep.

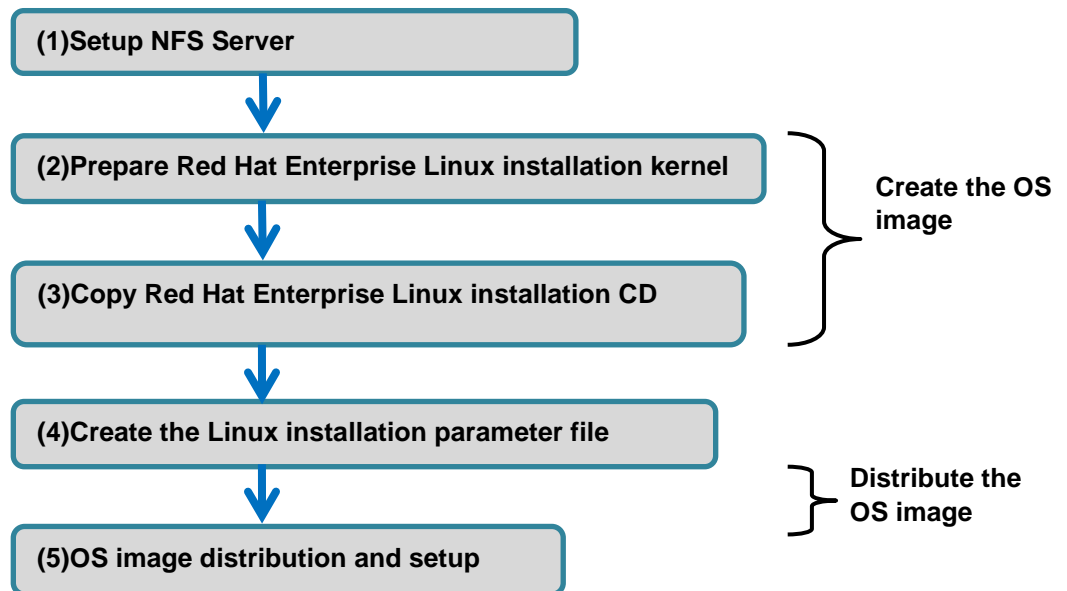
See Section 3.3, "OS Installation by Disk Duplication (Windows)" in *Operation Guide* and Section 3.4, "OS Installation by Disk Duplication (Linux)" in *Operation Guide* about the procedure of OS installation by disk duplication.

See Section 2.2.3, "OS Installation by Disk Duplication" about precautions.

2.1.4.2. OS Clear Installation

By using an OS image and Linux installation parameter file, DPM sets up the OS on the managed machine automatically.

OS clear installation can be executed only for Red Hat Enterprise Linux.



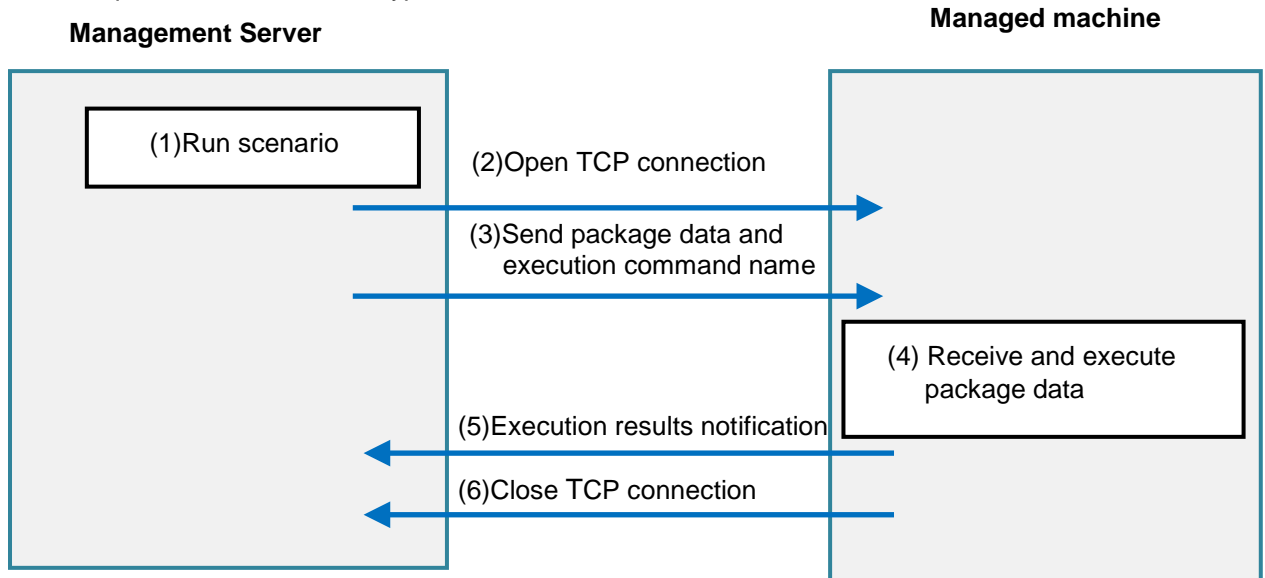
- (1) Set up an NFS Server to distribute the OS image.
- (2) Prepare the mini-kernel for network installation (file name: vmlinuz and initrd.img) that is loaded first in the network boot. Copy them to the applicable folder on the Management Server from the OS media and so on.
- (3) Use Image Builder to register an installation image of Red Hat Enterprise Linux on the Management Server.
- (4) Create a Linux installation parameter file to perform settings on the managed machine.
- (5) Execute the scenario for OS distribution. By executing the scenario, the OS image is distributed to the managed machine. In addition, the Linux installation parameter file is distributed, and the setting on the managed machines is executed automatically.

See Section 2.2.4, "OS Clear Installation" for precautions.

2.1.4.3. Service Packs/HotFixes/Linux Patch Files/Application Installation

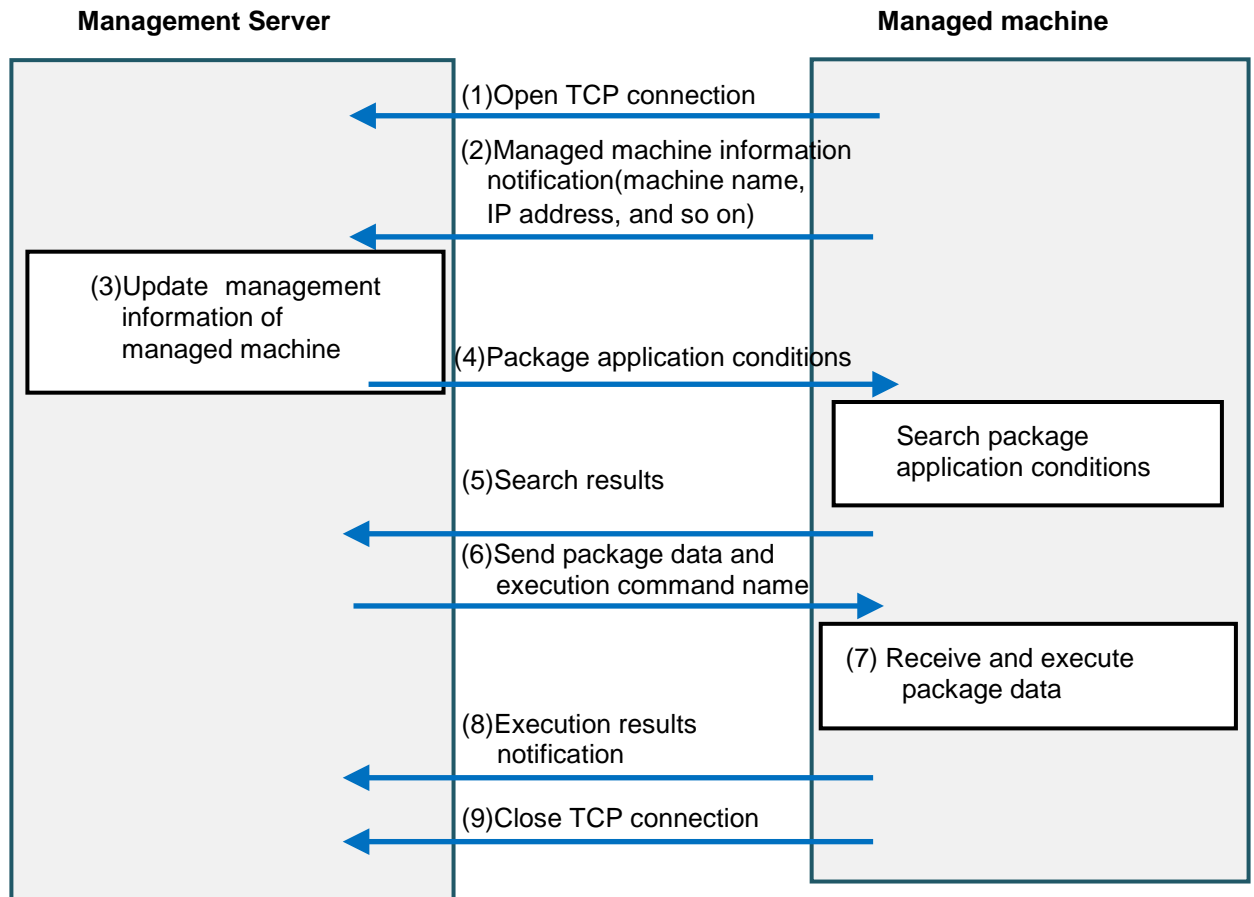
Patch/application installation on DPM communicates with the service(DPM client) installed on the managed machine and sends the execute files (.exe/.msu/.rpm and so on) and the script files (.bat/.vbs/.sh and so on) to execute. There are two distribution types: scenario type and automatic update type.

<The sequence of the scenario type>



- (1) Execute the scenario by the Web Console or DPM Command Line.
- (2) Connect the Management Server to the managed machine.
- (3) The Management Server sends the package data and command name for executing that is set in the scenario to the managed machine.
- (4) By executing the executable file or the script file that is included in the package data, you can install the patch or application.
- (5) The managed machine sends a report of the results of the execution to the Management Server.
- (6) The connection between the Management Server and managed machine is cut.

<The sequence of the automatic update type>



- (1) Connect the managed machine to the Management Server.
- (2) Managed machine notifies the managed machine information to the Management Server.
- (3) An update of the management data of the managed machine on the Management Server is performed.
- (4) The information about the application conditions (OS/dependency information/application information) for the package is sent from the Management Server to the managed machine.
- (5) Based on the condition to apply package on the managed machine, return the applicable package information.
- (6) The Management Server sends the package data and execution command name to the managed machine.
- (7) The managed machine receives the package data. By executing the executable file or the script file that is included in the package data, you can install the patch or application. (The actual time at which this will be executed depends on the automatic update settings).
- (8) The managed machine sends a report of the results of the execution to the Management Server.
- (9) The connection between the Management Server and managed machine is cut.

Before application, the service pack, hotfix, Linux patch file, or application will be registered to the Management Server or the Package Web Server using Image Builder or PackageDescriber. Distribution will be automatically performed from the Management Server to any of the machines that meet the following conditions.

- The package is for the targeted OS of automatic update.
- The package urgency is **high** or **highest**.
- In the case of a service pack, the major version and minor version, or ID information is entered.
- In the case of Hotfix, the MS number or ID information is entered.
- In the case of an application, the display name or ID information is entered.

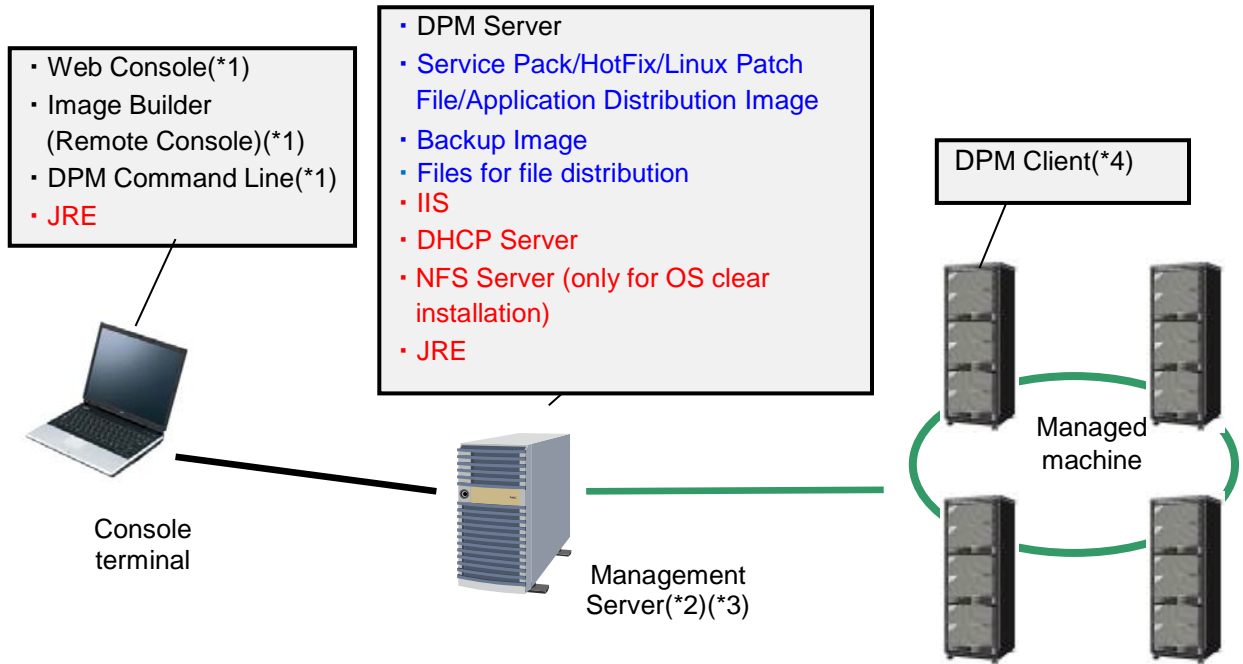
Service pack/HotFix/Linux patch file/applications distributed by DPM should meet the following requirements.

- Silent installation can be executed. (Response such as key entry during the installation is not necessary. Or, silent installation can be executed with the script file (.bat/.vbs for Windows, shell script for Linux).
- OS does not reboot during installation.
- For Windows, the operation performs by the user authority, the local system account. Therefore, do not access to the registry under HKEY_CURRENT_USER and files on the network.
- The size of the patch/application and so on does not exceed 2GByte.
- When an executable file (setup.exe/update.exe and so on), which installs the patch/application and so on, generates multistep process (executable file->child process-> grandchild process) during the installation of the patch/application, finish the generated child process after waiting until the grandchild process finishes.
However, when an executable file is a script file such as bat/sh, finish the executable file after waiting until the generated child process finishes.

2.1.5. System Configuration

This is the example of DPM system configuration. Various configurations are possible depend on the system.

The following is the basic DPM configuration.



Black characters: Components which are included in the installation media
Red characters: Components that you need to prepare separately. (These are not included in the installation media.)
Blue characters: Images that you need to register or are created in the operation

*1

The Web Console, Image Builder and DPM Command Line can also be operated on the same machine as the Management Server.

*2

Image Builder and DPM Command Line will be also installed when DPM Server is installed.

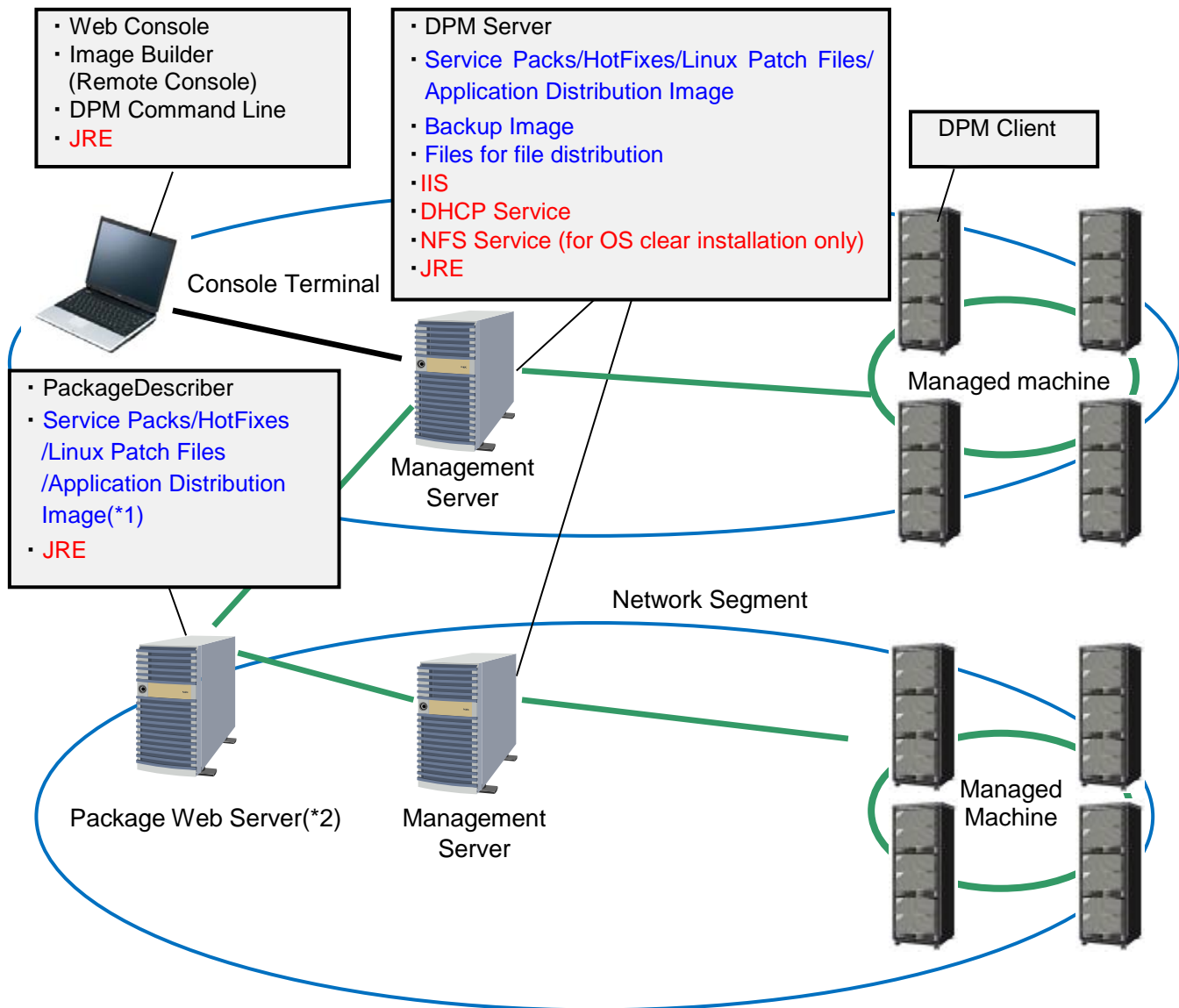
*3

- When you use DHCP server configured on the Management Server, that DHCP server should be the only DHCP server on the same network.
When using a DHCP server configured on a different server, multiple DHCP servers can work on the same network.
- You can set either of operation using a DHCP server or operation not using it on a single Management Server. When you want to perform both kinds of operation simultaneously, such as the case that certain machines are managed with a DHCP server and other machines are managed without a DHCP server, you need to set up two Management Servers. (One is operated with a DHCP server, and the other is operated without a DHCP server).
- When **Use A DHCP Server** is set on DPM Server, multiple DPM Servers cannot be operated on the same network.
Follow either of the below steps when executing multiple DPM Servers with **DPM Server with Use A DHCP Server** setting on the same network.
 - Stop the service of DPM other than the corresponding machine to be operated and the service of DHCP Server.
 - Prepare DHCP Server for each PXE Server and set reservation of IP dispensing.
When **Do Not Use A DHCP Server** is set on the all Management Servers or **Use A DHCP Server** is set on one Management Server and **Do Not Use A DHCP Server** is set to the rest of the Management Servers, you can install multiple units.
See Section 1.2.2, "Setting Up the DHCP Server" in *Installation Guide* for the setting procedure of DHCP server.
- The Management Server can be the cluster constitution system.

*4

You can also operate DPM without installing DPM Client.(Some functions cannot be used.)

The following is a configuration that includes multiple Management Servers. By registering packages such as patches and applications to the Package Web Server, they do not need to be registered on each Management Server.



Black characters: Components which are included in the installation media
 Red characters: Components that you need to prepare separately. (These are not included in the installation media.)
 Blue characters: Images that you need to register or are created in the operation

*1 The distribution image is downloaded from the Package Web Server to the Management Servers.

*2 You can also configure the Package Web Server on the Management Server.

The other precautions are the same as those in the example of basic configuration.

2.2. Precautions Regarding System Configuration

2.2.1. Network Environment

Precautions for the network environment is described as follows.

Confirm that the network managed by DPM meets the following hardware and software environment. Change the settings if it does not meet this.

Hardware environment

LAN Configuration	The Management Server and the managed machine are connected using a LAN of 100Mbps or more. (1Gbps or more is recommended)
Other	<ul style="list-style-type: none"> · When using a switching hub or a router with spanning tree protocol (STP) that has self-diagnosis function, turn off the STP of the port to which a managed machine is to be connected. Generally, the STP check requires about 30-60 seconds and you cannot communicate on the network during this time. Therefore, the network communication by the network boot or CD boot after the power on cannot work normally. Even if the STP is set for ports connecting to devices except managed machines, when an operating LAN is disconnected because of network failure and so on, it takes some time as well to find a new route. Therefore, the communication cannot be available at this time. · On DPM, "Speed" and "Duplex" is negotiated as "Auto" setting. For switch setting, set "Speed" and "Duplex" as "Auto." If it is not set to Auto, the DPM will not be able to do WOL. In addition, the backup/restore capability will be reduced if you are operating at a fixed value (100Mbps FULL) and so on. In addition, when the switch or the hub has different communication rate is included or when you cascade the switch and the hub has different communication rate, there is a possibility that performance might degrade remarkably.

Software environment

DHCP Server	<p>This is required to use all DPM functions.</p> <p>If you do not set up DHCP server on the network, set Do Not Use A DHCP Server on DPM. See Appendix B, "For Customers Who Do Not Install a DHCP Server" for details.</p> <p>You cannot install and use DHCP server software of a third party on the same machine as DPM Server. Use the Windows standard DHCP server when you set up the DHCP server on the same machine.</p>
NFS Server	NFS Server is required to execute OS clear installation by DPM.

- When the managed machine with multiple LAN boards is used and IP addresses in the same segment are assigned to the multiple LAN boards, communication may fail if there are any LAN boards, which are not connected to LAN cables.
It is recommended that the LAN board, which is not connected to the LAN cable is to be assigned by DHCP without assigning fixed IP or the LAN board should not be set.
- DPM may not operate properly if the other applications and so on are using communication port listed in Appendix D, "Network Port and Protocol List" in *Caution Notes and Trouble Shooting Reference Guide*.
Check the usage status of ports by other applications before installing DPM.
- You cannot change the limit (MTU. Normally 1500Byte) for TFTP communication packets when using DPM.
- It is recommended to install DHCP server before installing DPM Server.
When you installed DHCP server after installing DPM Server, change the setting of DHCP Server after installing DPM server.
See Section 1.2.2, "Setting Up the DHCP Server" in *Installation Guide* and Section 2.7.1.4, "DHCP Server Tab" in *Web Console Reference Guide* for details.

If there are problems with the DHCP server or the network configuration

The following message will appear for a few seconds during network boot and application obstacles can occur such as errors with DPM scenario execution.

PXE-E51:No DHCP or proxyDHCP offers were received.

If the above message is displayed, confirm if the DHCP server was able to assign an IP address to the managed machine. Particular attention is required to the followings.

- DHCP server is recognized by the domain controller
- The DHCP server is active
- The DHCP server scope is set correctly
- The DHCP server has not run out of managed IP addresses
- STP is not set on the router or the switch
(See the above "Hardware environment".)

Regarding managing managed machines when the Management Server exceeds the network segment

On multiple network segments that exceed the router, set the following on the switch or router in advance to use DPM to manage machines.

- Direct broadcast routing for doing WOL.
- Set multicast routing protocol to use multicast transmission.
- Set DHCP relay agent.
 - When you operate DPM with DHCP server, set DHCP relay agent so that DHCP packets are relayed to DHCP server. When DHCP server and the Management Server are different machines, set DHCP relay agent so that the DHCP packets are also relayed to the Management Server.
 - When DPM Client searches the Management Server without the DHCP server, set DHCP relay agent so that DHCP packets are relayed to the Management Server. (When DPM Client searches the Management Server, a part of DHCP communication sequence is used and DPM Client uses UDP:68 port.)
- Routing and forwarding for the port that DPM uses for communication. See Appendix D, "Network Port and Protocol List" in *Caution Notes and Trouble Shooting Reference Guide* for the ports used on DPM.

Note:

- Router settings can be set after installing DPM.
To manage machines in other segments, create scopes which can lease IP addresses for those segments.
-

Regarding DPM operation on a Tag VLAN environment

Functions that perform network boot or CD boot (backup/restore/OS installation by disk duplication, and so on) are not supported in an environment that uses a TagID between the managed machine and the switch (*)/router.

In this case, you will be able to use functions performed with network boot or CD boot by structuring it not to use the TagID only on the network between the managed machine and the switch (*)/router as follows.

- Set the network to be able to communicate using Default VLAN.
- Set packets including a TagID do not flow on a VLAN that includes managed machines, for example by using the port group configuration function.

There will be no effect on the DPM operations even if using TagID on the network between the Management Server and the switch (*)/router. You can install service packs/hotfixes/Linux patch files/applications even in an environment using TagID if you do not perform a network boot or a CD boot.

Note:

- Virtual switch in the virtual environment is included.
-

Regarding ports used by DPM

There is a possibility that open port/program might be needed again when the network profile is changed even under the environment that the port/program for DPM is opened.

For detail of the port opening, see Section 3.1.Port Opening Tool in *Tool Reference Guide*.

The DPM service may not be able to start when there is a conflict between the port that DPM is using and the port used by other service or application due to the effect of ephemeral port, depending on the type of OS.

The procedure for confirming and handling an ephemeral port is as follows.

See Appendix D, "Network Port and Protocol List" in *Caution Notes and Trouble Shooting Reference Guide* for the port numbers used by DPM.

Also, see Section 1.6 "Port Change Procedure on DPM" in *Caution Notes and Trouble Shooting Reference Guide* for procedure of customizing port.

· For Windows OS

The setting and confirmation procedures differ between the OS of Windows Vista/2008 or later and the OS of Windows XP/2003 or earlier.

- For the OS of Windows Vista/2008 or later

See the procedure of the following Microsoft Knowledgebase for performing confirmation and handling using netsh command.

Microsoft support online (<https://support.microsoft.com/en-us/kb/929851>)

[Confirmation procedure]

Confirm if the port used by DPM is an ephemeral port from the following command output results.

```
netsh int ipv4 show dynamicport tcp
netsh int ipv4 show dynamicport udp
```

Example)

Start Port:26000

Number of Ports:4000

In this case, 26000 through 29999 are used as ephemeral ports and there is a possibility that DPM cannot start.

[Countermeasure]

Change the range of the ephemeral ports so that the ports used by DPM are not in the ephemeral port range.

Execute the following command and adjust so the ports that DPM is using are not included.

```
netsh int ipv4 set dynamicport tcp start=XXXXX num=YYYYY
netsh int ipv4 set dynamicport udp start=XXXXX num=YYYYY
```

Set it with **XXXXXX** being the starting port for the ephemeral ports and **YYYYYY** being the number of ports used as ephemeral ports. You need to consider port number used by other applications when deciding the range of port.

- For the OS of Windows XP/2003 or earlier

[Confirmation Procedure]

Confirm the following registry values.

See the [Procedure to handle] when the setting value is larger than the maximum of the port used by DPM.

This phenomenon does not apply because of using the Windows default value of 5000 as the maximum value when the following registry does not exist.

Key	HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
Name	MaxUserPort

If port competition occurs even though the registry does not exist, the following problem might be occurring.

Microsoft support online (<https://support.microsoft.com/en-us/kb/953230>)

[Countermeasure]

Add the following registry to reserve the ports to be used by DPM. Add the following value if it already exists.

Key	HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
Name	ReservedPorts
Value	26509,26510,26511,26529
Type	REG_MULTI_SZ

· For Linux OS

[Confirmation procedure]

Confirm the content of the following files.

See the [Procedure to handle] if the ports used by DPM are included in the file.

/proc/sys/net/ipv4/ip_local_port_range

Example)

```
# cat /proc/sys/net/ipv4/ip_local_port_range
26000 61000
```

In the case of the above output results, 26000 through 61000 are being used as ephemeral ports so DPM may not be able to start.

[Countermeasure]

You can change the ephemeral port range, or change the DPM start order.

In the case of Red Hat Enterprise Linux 7 or later, perform the procedure in "Ephemeral port change procedure"

- Ephemeral port change procedure

Change the setting so the ephemeral ports are automatically changed at start up.
See the OS documentation regarding the procedure for using sysctl.

<Procedure>

- (1) Add the following line to the /etc/sysctl.conf file.
Create it if it does not exist.

```
net.ipv4.ip_local_port_range = XXXXX ZZZZ
```

Set it with **XXXXX** being the starting port for the ephemeral ports and **ZZZZ** being the end port number. You need to consider port number used by other daemons when deciding the range of port.

- (2) In the case of SUSE Linux Enterprise, make boot.sysctl active.
In the case of Red Hat Enterprise Linux, this is automatically set at the time of startup.

- Procedure for changing the DPM start order

Change the start order of DPM Client according to the following policy.

- After the network (start order 10) and syslog daemon (start order 12)
- Before other daemons that use ephemeral ports

<Procedure>

- (1) Edit the following file.
/etc/init.d/depagt

Before editing: # chkconfig: 35 40 89

After editing: # chkconfig: 35 **xx** 89

xx is the startup position. Enter the new startup position here.

It starts from the lowest number.

- (2) Execute the following command.
chkconfig depagt reset

2.2.2. Backup/Restore

Precautions for backup/restore are described as follows.

Regarding the backup/restore target machine

- Confirm that the LAN board and hard disk controller of machines, that backup/restoring are executed, are supported by the DPM.
For supporting devices, it could be necessary to install the module for the machine model.
For details, contact your sales or support representative.
- Backup/restoring cannot be executed for Active Directory server (domain controller).
Restoring the same contents when backup by backup/restore function is possible.
There is a possibility when ActiveDirectory Server functioning as the server in the domain, the consistency might not be taken in the whole domain due to loss of the information after backup.

Regarding the target disk/partition

- Maximum number of disk
If the number of disk connected exceeds the maximum number for each disk type as follows, those disks that are above the maximum number of disks will not be able to be backed up.

Disk Type	Maximum number of disks
IDE	4
RAID(*1)	32
SmartArray(*2)	32
SCSI, FC, RAID except the above and SmartArray except the above	256 (*3)(*4)(*5)(*6)

*1

The following RAID controllers are the target.

- Mylex AcceleRAID 160
- Mylex AcceleRAID 352

*2

Ccis related array controller is the target.

*3

The total disk number connected via the device listed on **Disk Type**.

*4

Backup/restore for the logical disk on SAN connected by FC controller corresponds to the SAN boot configuration for iStorage.

For detail of the state of FC controller, contact your sales or support representative.

When the configuration is not SAN boot configuration or the logical disk on SAN is not iStorage, backup/restore is not supported.

When redundancy setting procedure for the path is set, "number of logical disk multiplied by number of redundancy" is recognized.

Also, the same number of disks will be recognized as the number of redundancy.

Check the disk number by disk configuration check before backup/restore.

*5

Maximum number of disks is 128 when "NEC Express5800 001" is used in the setting of Deploy-OS.

*6

In the case of FC, No.0 - 255 of logical disk number is target. Even if the number of disks does not exceed the maximum number of disks, you cannot backup the disk whose logical disk number is No. 256 or more.

- Maximum number of partitions

In the following disk type, you cannot backup when the number of partitions exceeds the maximum number.

Disk Type	Maximum number of partitions
Basic disk	1000 (*1)
Dynamic disk (*2)	2000

*1

In the case of GPT type, the maximum number is 128 because of limitation of GPT disk management area.

*2

For Windows OS, do not select **Mount in the following empty NTFS folder** when you create a volume. When you select it, you need to set the full sector in the scenario.

Regarding the range that can be recovered with the backup/restore function in response to a physical defect or logical defect with a hard disk

- For backup/restoring per disk unit

The disk management information will be restored on the disk along with the disk contents.

- For backup/restoring per partition unit

When you restore the backup image of partition unit on the disk in use, only the contents of the partition are restored. When you restore the backup image on an empty disk, the management information of the disk is also restored.(*1)

Therefore, disk physical failures and logical failures as follows.

- In the case of a physical failure, you can recover from it by using the backup image file of either of disk unit or partition unit after replacing with a hard disk that works properly.
- In the case of a logical failure, you can recover from it without replacement of the hard disk if you use a backup image file of either of disk unit or partition unit. (*2)

*1

See "Support for File System and Disk Type" in Appendix A, "Function Tables" for details.

*2

You may not be able to recover it with partition unit backup, depending on the location of the failure.

It is recommended that you use the partition unit backup together with the disk unit backup.

Regarding the target disk data

- See Appendix A, "Function Tables" for the supported file systems.
- It is not recommended that you backup a partition that is not formatted. You can backup such a partition by the full sector backup.
- It is not recommended that you duplicate (restore) to the HDD whose size is different from the HDD of the backup target. However, as the exception, there is a case that you can restore to the disk whose size is larger than the disk that you backed up.
- Take measures in advance seeing Appendix E, "For Customers Who Manage the Machine with HDDs of Multi Vendors" in the following cases.
HDD is supported by multi vendors and you need to restore the backup image on the disk whose vendor is different from the original disk.
HDD with a different size may be supported as maintenance parts in the future.
- Backup/restoring cannot be executed in the either of following cases.

The entire disk is designated	<ul style="list-style-type: none"> · When restoring to a disk with a different type (IDE/SCSI and so on) than the backup disk.
When partition unit is designated	<ul style="list-style-type: none"> · When restoring a partition that is formatted with a different file system or with a different Byte unit size than at the time of backup. <ul style="list-style-type: none"> -The following error may occur when restoring the backup image on a partition with a different size. Cannot restore the data to a partition of a different size than the size you backed up. Specify a partition with the following size. (required size of a partition to restore) (size of the specified partition) (XXXXXX Bytes) (XXXXXX Bytes) -The following error may occur when restoring the backup image on a partition with a different file system. Cannot restore the data to a partition of a different type than the type you backed up. Specify a partition with the type same as you backed up. (ID of the backed-up partition) (ID of the specified partition) (0xXX) (0xXX)

- The following phenomenon may occur if the HDD to be backed up has bad sectors.
 - An error may occur during the backup even if there is no data saved in those sectors.
 - Even if an error does not occur, using that backup image file to restore will result in the file being read incorrectly and problems, such as that the OS does not start up, may occur.
- If there are bad sectors, swap in a new HDD or physically formatting the HDD and then doing a restore from a previously gathered backup image.
- Confirm if there are bad sectors by executing Scan Disk or Check Disk from the OS for the target HDD.
- See the Help for the OS you are using for the process for executing Scan Disk or Check Disk. It is recommended that you execute Scan Disk or Check Disk before executing backup.

Regarding backup of multiple disks/partitions

- Backup all disks/partitions on which necessary data is stored in either of the following corresponding cases. In order to maintain consistency of the information between disks and between partitions, be careful not to start the OS until the backup/restoring for all of the disks/partitions has completed. Select **Turn Off Power After Scenario Execution** in the **Option** tab of the scenario so that the OS does not start during the scenario execution.
 - When the backup source and the restore destination are on different devices
 - When the data required for OS start is saved over multiple disks
 - When the data necessary for the OS start and the data necessary for OS installation by disk duplication (Windows: sysprep, Linux: /opt/dpmclient) is saved across multiple disks.
 - When files or data required by the system are saved on a different HDD
 - When disks are linked by several disks or several partitions, such as when mounting another drive.
 - When it is necessary to have consistency in the data between disks or partitions (dynamic disk, LVM1/LVM2, and so on)

Regarding the backup image file volume

- The approximate estimates of the compression rate for a backup file using effective sector backup is as follows for a backup of a machine immediately after OS installation.

For Windows OS	Approximately 60%
For Linux OS	Approximately 40%

- All sectors will be backed up when a full sector backup is executed. As a result, if there will be no compression or the compression rate will be low, the backup image size may be the same size as the disk capacity being backed up. (For further details on the support status for backup for each file system, see "Support for File System and Disk Type" in Appendix A, "Function Tables.")
- When you execute a backup, backup data is temporarily created as a temporary file. This temporary file is renamed to the file name specified in the scenario upon the backup completion. Therefore, if there is an already created backup image, you will need disk space for the temporary file in addition to the already created backup image file.
- If you are using generation management, the image file (generation management number +1) is created so be careful that the hard disk to which the image file will be saved has enough disk capacity.
Example)
If the generation management number is five, and the size of one image file is approximately 5GByte, then 5GByte x (5+1+1) = 35GByte including above temporary file, so a maximum of 35GByte of free space will be required.
- Be careful since the backup image size cannot exceed the size limited for each file on the file system of the destination partition.

Regarding the timeout value for communication between the Management Server and the managed machine

If you backup an NTFS/ext2/ext3/ext4 partition with a large size, the following message may be displayed on the managed machine and a scenario error may occur.

```
ERROR: Broken pipe.  
To resolve the problem, please refer to User's Guide.  
Press 'p' key to poweroff, 'r' key to reboot:
```

[Countermeasure]

Change the value for the timeout of the communication between the Management Server and the managed machine.

In addition, the set value will be different depending on the managed machine speck and partition size.

Registry

```
Key:HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\bkressvc\Parameters  
Name :UnicastReceiveTimeoutMillisec  
Value :60000  
Type :REG_DWORD
```

Example)

In the following case, you set approximately 1800000 to the UnicastReceiveTimeoutMillisec because a scenario error occurred.

```
CPU : Pentium4 3.40GHz  
Memory : 512MByte  
Partition size : 1TByte  
File system : ext3  
Block size : 1024Byte
```

Others

- Confirm the OS license rules sufficiently so that there is no violation when executing backup/restore functions.
- A partition with the name "System Reserved" may be automatically created when you install Windows Server 2008 R2 or Windows 7.
This partition may be necessary for the operation of Windows. Be careful of the following for backup/restoring of a Windows system partition using partition units.
 - If partition with the volume name "System Reserved" exists when confirming the partition structure from the Windows disk management, be sure to backup/restore this with the Windows system partition.
 - Do not start up the Windows system or change any system configurations with the tools on the "System Reserved" partition until all the backup/restoring of the Windows system partition and the "System Reserved" partition has completed.
- See Section 3.5, "OS Clear Installation (Linux)" in *Operation Guide*, Section 3.6, "Installing Service Packs, HotFixes, Linux Patch Files, and Applications (Scenario Type)" in *Operation Guide*, and Section 3.7, "Distributing the BIOS/Firmware Update Floppy Disk Image" in *Operation Guide* regarding executing floppy disk image distribution, OS installation, service pack/hotfix/Linux patch file/application installation, and so on at the same time as a backup, register the image and set it from the "HW Setting", "OS" and "Package" tabs.

2.2.3. OS Installation by Disk Duplication

Precautions for disk duplication is described as follows.

- Be sure to use the same machine model and same hardware configuration device for the master machine that serves as the duplication source and the machine that serves as the duplication destination. For example, if you create a master without a USB keyboard/mouse connected but a USB keyboard/mouse is connected to the duplication destination, a new device may be detected after the completion of OS installation by disk duplication, and the machine may be required to reboot.
- Duplication (restore) on the HDD with a different size from the master machine is not recommended. However, as an exception, you can restore to a larger size disk than at the time of backup. Take measures in advance seeing Appendix E, "For Customers Who Manage the Machine with HDDs of Multi Vendors" in the following cases.
 - HDD is supported by multi vendors and you need to restore the backup image on the disk whose vendor is different from the original disk.
 - HDD with a different size may be supported as maintenance parts in the future.
- Confirm the OS license rules sufficiently so that there is no violation when executing OS installation by disk duplication.

For Windows OS

- The following items exist when executing OS installation by disk duplication.
 - Items set using the Sysprep mini-setup
 - Items originally set by DPM
 - Items returned to default by Sysprep

It is necessary to confirm that the applications operating on the master machine are not affected by either of the above in advance.

- You will not be able to operate properly if there is installed software that depends on the SID (Security Identifier) or the computer name. In this case, uninstall the software from the machine that will be the duplication source or execute the OS installation by disk duplication before installing.
- Configure it so that the Windows startup drive is the C drive when executing OS installation by disk duplication in an environment with Windows OS installed. In addition, if a drive is added or changed, the drive letter may be changed after the disk duplication. See Section 3.3.4, "Precautions/Others" in *Operation Guide* for details.
Also, when you execute OS installation by disk duplication, install DPM Client on the drive, which is not affected by reassigning the drive letter. (C drive is recommended.)
- When you combine an OS image created by DPM Ver6.6 with a disk duplication data file created by an old version (DPM Ver4.0 - 6.51) or combine an OS image created by an old version with a disk duplication data file created by DPM Ver6.6, you can use the range of functions supported by the old version that was used. (Functions that were added by version upgrades are not supported.)
- An Active Directory server (domain controller) cannot be set up using the OS installation by disk duplication.

For Linux OS

The bonding driver at the time of OS installation by disk duplication is not supported. Remove the bonding setting from the master. It may not work correctly to reflect the specific information if it is not removed.

2.2.4. OS Clear Installation

Precautions for OS clear installation is described as follows.

- It is recommended that files be created with the same version of DPM when combining an OS image and a Linux installation parameter file.
When you combine an OS image created by DPM Ver6.6 with a Linux installation parameter file created by an old version (DPM Ver4.0-6.51) or combine an OS image created by an old version with a Linux installation parameter file created by DPM Ver6.6, you can use the range of functions supported by the old version that was used (Functions that were added by version upgrades are not supported.)
- In addition to DPM, DHCP Server and NFS Server are required to do the network installation of Red Hat Enterprise Linux using DPM. A DHCP Server and an NFS Server can be built on a non-Windows system (For example, they can be configured on Linux.)
- When you configure NFS Server on Windows OS, the service for NFS (Network File System) is necessary. About the installation procedure of NFS Server, see the document with the product.

2.2.5. Others

Precautions for others are described as follows.

- DPM can be operated in the cluster environment. When building a cluster configuration, contact your sales or support representative.
- When you use DHCP server, you can use all functions of DPM. When it is difficult to install DHCP server, you can operate DPM without DHCP server. (Functions that you can use on DPM are limited.) For details, see Appendix B, "For Customers Who Do Not Install a DHCP Server."
- If it is difficult to install DPM Client on managed machines, you can also operate DPM without installing DPM Client. (Some functions cannot be used.) See Appendix C, "For Customers Who Do Not Install DPM Client" for details.

2.3. Deployment Manager Product Line and License

DPM product line and licenses are described.

2.3.1. Product Line

The DPM unbundled product and products included in DPM are as follows.
For the software includes SigmaSystemCenter which uses DPM as component, the relevant licenses to use each product not the license for DPM unbundled product is required.
See the various product sites for details on product configurations and licenses and contact your distributor.

- **DeploymentManager**

The version of each component included in this product is as follows.

Component name	Version
DPM Server	6.60.000
DPM Client (Windows)	6.60.000
DPM Client (Linux)	6.6
Image Builder (Remote Console)	6.60.000
DPM Command Line	6.60.000
PackageDescriber	6.60.000

This is a DPM unbundled product. The DPM product site is below.
DeploymentManager (<http://www.nec.com/masterscope/deploymentmanager/index.html>)

- **SigmaSystemCenter**

DPM is included with SigmaSystemCenter (hereinafter SSC). The SSC product site is below.
SigmaSystemCenter (<http://www.nec.com/sigmasystemcenter/index.html>)

2.3.2. Product Configurations and License

DeploymentManager (unbundled product) is consists of the following products. See Section 2.3.1, "Product Line" for details on the product configurations and the licenses for the product configuration of the other software includes SigmaSystemCenter.

Product Name	Description
DeploymentManager Ver6.6	This is the DPM main product. One is needed per Management Server. Licenses are not given for the managed machines with the stand-alone product. Separate licenses are required according to the number and models of the managed machines. One license is required for each Management Server in the case of a cluster configuration.
DeploymentManager Ver6.6 Server Target License (1)	<p>This license is needed when managed machines use a server OS.</p> <p>Example)</p> <ul style="list-style-type: none"> - Windows Server 2003/Windows Server 2003 R2/Windows Server 2008/Windows Server 2008 R2/Windows Server 2012/Windows Server 2012 R2/Windows Server 2016 are server OS. - A server license is needed if the OS is a Linux OS (Red Hat Enterprise Linux, SUSE Linux Enterprise). - For example, if 10 managed machines in which Windows Server 2008 R2 is installed are being managed, then 10 server licenses are required (five server licenses x two bundles, or five server licenses x one bundle + one server license x five bundles, or one server license x 10 bundles).
DeploymentManager Ver6.6 Server Target License (5)	
DeploymentManager Ver6.6 Server Target License (20)	
DeploymentManager Ver6.6 Client Target License (1)	<p>This license is needed when managed machines use a client OS.</p> <p>Example)</p> <ul style="list-style-type: none"> -Windows XP/Windows Vista /Windows 7/Windows 8/Windows 8.1/Windows 10 are client OS. -For example, if there are 20 managed machines on which Windows 7 is installed, then 20 client target licenses are required (10 client licenses x two bundles, or 10 client target licenses x one bundle + one client target license x 10 bundles, or one client target license x 20 bundles).
DeploymentManager Ver6.6 Client Target License (10)	
DeploymentManager Ver6.6 Client Target License (50)	
DeploymentManager Ver6.6 Client Target License (100)	

Licensing Policy

- Purchase one license for each machine being managed by a Management Server. For example, if you buy two products and manage 50 client OS machines on each, purchase two bundles of fifty client licenses, and not one bundle of 100 client licenses.
- If you use the OS installation by disk duplication function, then a number of licenses equal to the number of the managed machines that are registered, including master machines and duplicate machines, is required.
- One license is needed for each virtual machine operating in virtualization software. When a moving virtual machine between virtual machine servers such as VMware VMotion, it is considered as a same managed machine and you do not need to purchase a license additionally.
- One license is required for each FT server.

- A number of products equal to the number of nodes in a cluster is required when using a cluster configuration for Management Servers, but only purchase a number of licenses equal to the actual number of the managed machines. In this case, register the same license to multiple servers.

Hardware Transfer

- When transferring the hardware of the Management Server, uninstall DPM from the server before transferring, and install DPM in the server after transferring. In this case, continuous use is possible. There is no need to re-purchase the main product.
- When transferring hardware of managed machine, purchasing new license is necessary.

Version upgrade

In case of the major version-up, the license for the new version is required.

Example)

- In case of the major version-up from DPM Ver5.x to DPM Ver6.x, a license for the new version is required.
- In case of the minor version-up from DPM Ver6.0 to DPM Ver6.6, the existing license can continue to be used.

2.4. DeploymentManager Process up to DeploymentManager Operation

Explains the workflow necessary for operating DPM. Build the system while reading each manual.

(1) Confirm the operating environment.

After selecting a system configuration, make sure that the DPM operating environment matches your environment.

See Section 3, "Operating Environment" for details.

(2) Set the necessary settings before installation of DPM.

Install and set modules needed to run DPM before installing DPM.

See Section 1, "Before Installing DPM" in *Installation Guide* for details.

(3) Install DPM.

Install DPM according to the configuration decided by system design.

See Section 2, "Installing DPM" in *Installation Guide* for details.

(4) Prepare before operating DPM.

Start the Web Console and register the license key.

See Section 5, "Preparing for DeploymentManager Operation" in *Installation Guide* for details.

(5) Register resources to DPM.

Register managed machines. See Section 2, "Registering Resources on DeploymentManager" in *Operation Guide* for details on registration.

(6) Prepare before executing a scenario. What should be done at this point depends on the used functions. See the procedures for each function in *Operation Guide*.

When using backup/restore/disk configuration check or OS installation by disk duplication, specify Deploy-OS corresponding to the machine model. For the information of Deploy-OS, contact your sales or support representative. Confirm the support status, and if it is necessary to install the module for the machine model, install it.

See Section 1.1, "Operation Flow: From Startup to Scenario Execution" in *Operation Guide* for details of the procedure after creation of a scenario.

3. Operating Environment

Before installing DPM, you need to design the system, considering the system requirement, the hardware environment and so on.

3.1. Information on Included Software

This section provides information on software included with the DPM unbundled product.

See the relevant product sites listed in Section 2.3.1, "Product Line" for details on products included in SSC products.

The installation media includes the following components aside from the DPM components listed in Section 2.1, "Examining the System Configuration of DeploymentManager".

- Microsoft SQL Server 2016 SP1 Express x64
- .NET Framework 4.6.2

3.2. Management Server

This section describes system requirements for the Management Server. Install DPM Server in the Management Server.

3.2.1. System Requirements

The system requirements for the Management Server are as follows.

Hardware environment

CPU	2GHz or more, Multiple core	
Memory Size	Approximately 156MByte Note: Memory used for each service listed in "Software environment" -> "Other" listed as follows are not included. Additional memory is required for the following operations.	
	For one machine that is registered	Approximately 0.3MByte
	For creating one scenario	Approximately 0.07MByte
	For one machine on which a scenario is executed simultaneously	Approximately 8.5MByte
	For one machine on which automatic update is executed	Approximately 0.2MByte
	When using Image Builder	Approximately 40MByte
Disk Capacity	Refer to the following total disk capacity. <ul style="list-style-type: none"> · DPM Server module: Approximately 366MByte · SQL Server 2016 SP1 Express: Approximately 1550MByte(*1) · .NET Framework: Approximately 1100MByte · Database (*1) <ul style="list-style-type: none"> -DPM Server install: Approximately 256MByte -Space for the data calculated by the following formula. Number of registered machines x 10KByte + number of registered packages x 3KByte + number of registered machines x 0.15KByte x number of registered packages 	

	<p>Example) This will be approximately 1.0GByte for 40,000 registered machines, and 100 registered packages.</p> <ul style="list-style-type: none"> -Space to save results of file distribution: Approximately 20MByte • Space for files of backup images, OS images, setup parameter files, and BIOS/firmware update images. • Space of twice the size of files for service packs/hotfixes/Linux patch files/application images (because DPM creates compressed files for distribution.) • When you execute file distribution, the space calculated by the following formula is necessary. The size of files + twice the size of files (when you use the function to compress) x the number of the managed machines to which the file is distributed (The maximum is 5. If you distribute a file to 6 or more machines at the same time, DPM processes distribution sequentially.) <p>Approximately 6GByte is temporarily necessary when installing SQL Server 2016 SP1 Express.</p> <p>Disk capacity to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.</p>
Others	100Mbps or more LAN board (1Gbps or more recommended) CD/DVD drive

*1

This is not required when you configure the Database Server (different machine from the Management Server).

Software environment

OS	x64	Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*2)(*3) Windows Storage Server 2008 R2 (SP1)(*2)(*3) Windows Server 2012 Standard/Datacenter (No SP)(*2) Windows Storage Server 2012 Standard/Workgroup (No SP)(*2)(*4) Windows Server 2012 R2 Standard/Datacenter (No SP)(*2) Windows Storage Server 2012 R2 Standard/Workgroup (No SP)(*2)(*4) Windows Server 2016 Standard/Datacenter (No SP)(*2)
Database Engine(*1)(*5)		Microsoft SQL Server 2016 Express/Standard/Enterprise x64 Microsoft SQL Server 2014 Express/Standard/Business Intelligence/Enterprise x86/x64 Microsoft SQL Server 2012 Express/Standard/Business Intelligence/Enterprise x86/x64 Microsoft SQL Server 2008 R2 Express/Standard/Enterprise/Datacenter x86/x64 Microsoft SQL Server 2008 Express/Standard Edition/Enterprise x86/x64 Microsoft SQL Server 2005 Express Edition/Standard Edition/Enterprise Edition x86 PostgreSQL 9.5 x64(*6)
Java Execution Environment		JRE7/8 (*7)
Others		Internet Information Service (IIS) 7.5/8.0/8.5/10.0 .NET Framework 4.6/4.6.1/4.6.2(*5)(*8) ASP .NET(*9) DHCP server

*1

When you configure the Database Server (different machine from the Management Server), see Section 3.3, "Database Server."

*2

Full installation is supported.

The default installation option for Windows Server 2016 is Server Core. However, Server Core is not supported on the Management Server.

*3

SQL Server 2016 is not supported as the database engine. "No SP" is not supported SQL Server 2012 and SQL Server 2014.

*4

You cannot install DHCP server on Windows Storage Server 2012 Workgroup/Windows Storage Server 2012 R2 Workgroup. Operate without DHCP server or install DHCP server on the machine which is not the Management Server.

*5

The following is included in the installation media.

- Microsoft SQL Server 2016 SP1 Express
- .NET Framework 4.6.2.

*6

We confirm the operation of PostgreSQL only on Windows.

*7

Download Windows x86 version from the site of Oracle Corporation.
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

*8

When using SQL Server 2016 as the database on the Management Server, .NET Framework 4.6 (either of 4.6, 4.6.1 or 4.6.2) is necessary.

Even when you do not use SQL Server 2016,.NET Framework 4 or later is necessary.

*9

The following is necessary.

- For Windows Server 2016: ASP.NET 4.6 or later
- For Windows Server 2012/Windows Server 2012 R2: ASP.NET 4.5 or later
- For Windows Server 2008/Windows Server 2008 R2: ASP.NET 4.0 or later

Note:

- Use TCP/IP for the Management Server and specify the fixed IP address.
 - Specify the total number of IP address for the Management Server for the all LAN boards as 128 or less.
 - Microsoft does not recommend the installation for SQL Server to the domain controller. Therefore, when you install the Management Server on the domain controller, configure the Database Server on the different machine.
-

3.3. Database Server

This section describes system requirements for the Database Server.

Note:

- Database Server is not necessary when you configure the database on the Management Server.
-

3.3.1. System Requirements

The system requirements for the Database Server are as follows.

Hardware environment

General	This is based on system requirements of "OS" and "Database Engine" in the following "Software environment." See "Hardware environment" - "Disk Capacity" in Section 3.2.1, "System Requirements" about the procedure to estimate the disk capacity which is used by DPM Instance. Disk capacity to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.
----------------	---

Software environment

OS	Compliant with the system requirements of the database engine.
Database Engine	Microsoft SQL Server 2016 Express/Standard/Enterprise x64 Microsoft SQL Server 2014 Express/Standard/Business Intelligence/Enterprise x86/x64 Microsoft SQL Server 2012 Express/Standard/Business Intelligence/Enterprise x86/x64 PostgreSQL 9.5 x64(*1)

*1

We confirm the operation of PostgreSQL only on Windows.

3.4. Web Console

This section describes system requirements for the Web Console.

Note:

- Change the security setting on Internet Options from Internet Explorer.
See 5.1.1 "Starting the Web Console" in *Installation Guide* for details.
-

3.4.1. System Requirements

The system requirements for the Web Console are as follows.

Hardware environment

Display	A display with resolution of 1024 x 768 or more Graphics card which can display 256 colors or more is required.
----------------	--

Software environment

Web Browser	<ul style="list-style-type: none">· Internet Explorer 9/10, 11 (compatible mode)<ul style="list-style-type: none">- Both browsers of x86/x64 can be used.- For Internet Explorer 9/10, the following setting is necessary.<ol style="list-style-type: none">1) Start IE.2) Display the menu bar and select [Tools]-[Compatibility View Settings].3) Delete the website if DPM Web Console is included in [Websites you've added to Compatibility View].(Example: localhost,127.0.0.1)4) Uncheck the check box of [Display intranet sites in Compatibility View].- In the case of Internet Explorer 11, you do not need to set compatible mode. (Internet Explorer 8 compatible mode is automatically set when the Web Console is launched.)- Use the version of the web browser, which OS recommends.· Microsoft Edge
--------------------	--

3.5. Image Builder (Remote Console)

This section describes system requirements for Image Builder (Remote Console).

3.5.1. System Requirements

The system requirements for Image Builder are as follows.

Hardware environment

CPU	Depend on the OS
Memory Size	Approximately 40MByte
Disk Capacity	Approximately 6.8MByte When creating an image file, a separate space is needed temporarily for storage. Space to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.
Other	A display with resolution of 800 x 600 or more is required.

Software environment

OS	x64	Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*1) Windows Storage Server 2008 R2 (SP1)(*1) Windows Server 2012 Standard/Datacenter (No SP)(*1) Windows Storage Server 2012 Standard/Workgroup (No SP)(*1) Windows Server 2012 R2 Standard/Datacenter (No SP)(*1) Windows Storage Server 2012 R2 Standard/Workgroup(No SP)(*1) Windows Server 2016 Standard/Datacenter (No SP)(*1) Windows 7 Professional /Ultimate/ Enterprise (No SP/SP1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP)
	x86	Windows Vista Business/Enterprise/Ultimate (No SP) Windows 7 Professional/Ultimate/Enterprise (No SP/SP1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP)
Java Execution Environment	JRE7/8(*2)	

*1

Full installation is supported.

The default installation option for Windows Server 2016 is Server Core.

However, Server Core is not supported on the Image Builder (Remote Console).

*2

Download Windows x86 version from the site of Oracle Corporation.

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

Note:

- Installation of Image Builder is not necessary on the machine which DPM Server is installed.
-

3.6.DPM Command Line

This section describes system requirements for DPM Command Line.

3.6.1. System Requirements

The system requirements for DPM Command Line are as follows.

Hardware environment

CPU	Compliant with the OS
Memory Size	Approximately 6.0MByte
Disk Capacity	Approximately 1MByte Disk capacity to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.

Software environment

OS	x64	Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*1) Windows Storage Server 2008 R2 (SP1)(*1) Windows Server 2012 Standard/Datacenter (No SP)(*1) Windows Storage Server 2012 Standard/Workgroup (No SP)(*1) Windows Server 2012 R2 Standard/Datacenter (No SP)(*1) Windows Storage Server 2012 R2 Standard/Workgroup(No SP)(*1) Windows Server 2016 Standard/Datacenter (No SP)(*1) Windows 7 Professional /Ultimate /Enterprise (No SP/SP1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP)
	x86	Windows Vista Business/Enterprise/Ultimate(No SP) Windows 7 Professional/Ultimate/Enterprise (No SP/SP1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP)

*1

Full installation is supported.

The default installation option for Windows Server 2016 is Server Core.

However, Server Core is not supported on the DPM Command Line.

Note:

- Use the same version/revision of DPM Command Line and DPM Server.
For example, if you are using DPM Server of DPM Ver6.6, use DPM Command Line of DPM Ver6.6.
 - DPM Command Line is not necessary to install on the machine in which DPM Server has been installed.
-

3.7. Package Web Server

This section describes system requirements for the Package Web Server.

Note:

- The Package Web Server does not need to be configured if there is only one Management Server.

When installing two or more Management Servers, you can manage packages in common to register on each Management Server through the introduction of the Package Web Server. If you use the Package Web Server, packages are automatically downloaded to each Management Server by registering them to the Package Web Server. Therefore, you do not need to register the same package to multiple Management Servers. Use PackageDescriptor to register packages to the Package Web Server. HTTP protocol is used when packages are downloaded from the Package Web Server to the Management Server.

When the Package Web Server and the Management Server are on the same server, the Package Web Server can be configured using the IIS used by the Management Server. Therefore, you do not need to install an HTTP server for the Package Web Server. About configuring the Package Web Server, see Appendix B, "Configuring the Package Web Server" in *Installation Guide*.
-

3.7.1. System Requirements

The system requirements for the Package Web Server are as follows.

Hardware environment

CPU	Compliant with the OS
Memory Size	Approximately 256MByte
Disk Capacity	Enough disk space is required to store the package. (Compressed files to distribute are created in addition to the actual files. Therefore, twice the size of files is necessary.)

Software environment

OS	x64	Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*1) Windows Storage Server 2008 R2(SP1)(*1) Windows Server 2012 Standard/Datacenter(No SP)(*1) Windows Storage Server 2012 Standard/Workgroup(No SP)(*1) Windows Server 2012 R2 Standard/Datacenter(No SP)(*1) Windows Storage Server 2012 R2 Standard/Workgroup (No SP)(*1) Windows Server 2016 Standard/Datacenter(No SP)(*1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP)
	x86	Windows 8 Pro/Enterprise(No SP) Windows 8.1 Pro/Enterprise(No SP) Windows 10 Pro/Enterprise(No SP)
Other	Internet Information Service (IIS) 7.5/8.0/8.5/10.0	

*1

Full installation is supported.

The default installation option for Windows Server 2016 is Server Core.

However, Server Core is not supported on the Package Web Server.

3.8. PackageDescriber

This section describes system requirements for PackageDescriber.

3.8.1. System Requirements

The system requirements for PackageDescriber are as follows.

Hardware environment

CPU	Compliant with the OS
Memory Size	Approximately 64MByte
Disk Capacity	Approximately 1.1MByte When you create a package, additional disk capacity to store temporarily is necessary.

Software environment

OS	x64	Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*1) Windows Storage Server 2008 R2(SP1)(*1) Windows Server 2012 Standard/Datacenter(No SP)(*1) Windows Storage Server 2012 Standard/Workgroup(No SP)(*1) Windows Server 2012 R2 Standard/Datacenter(No SP)(*1) Windows Storage Server 2012 R2 Standard/Workgroup(No SP)(*1) Windows Server 2016 Standard/Datacenter(NoSP)(*1) Windows 7 Professional /Ultimate /Enterprise(No SP/SP1) Windows 8 Pro /Enterprise(No SP) Windows 8.1 Pro /Enterprise(No SP) Windows 10 Pro /Enterprise(No SP)
	x86	Windows Vista Business/Enterprise/Ultimate(No SP) Windows 7 Professional/Ultimate/Enterprise(No SP/SP1) Windows 8 Pro/Enterprise(No SP) Windows 8.1 Pro/Enterprise(No SP) Windows 10 Pro/Enterprise(No SP)
Java Execution Environment	JRE7/8(*2)	

*1

Full installation is supported.

The default installation option for Windows Server 2016 is Server Core.

However, Server Core is not supported on the PackageDescriber.

*2

Download Windows x86 version from the site of Oracle Corporation.

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

3.9. Managed Machines (Physical Machines)

This section describes system requirements for the managed machines which are physical machines. DPM Client is installed in the managed machines and managed.

3.9.1. System Requirements

The system requirements for physical managed machines are as follows.

Hardware environment

Memory Size	<ul style="list-style-type: none"> ▪ 12MByte is needed when DPM Client is installed ▪ 320MByte is needed during backup/restoring (768MByte or more is recommended)(*1)
Disk Capacity	<ul style="list-style-type: none"> ▪ 10MByte is needed when DPM Client is installed. ▪ The maximum disk capacity that can be backed up is 8TByte or less.(*2) ▪ The maximum partition size that can be backed up is 2TByte or less. ▪ When you execute file distribution, twice the size of distributed files is necessary. <p>Disk capacity to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.</p>
Others	<ul style="list-style-type: none"> ▪ 100Mbps or more LAN board(1Gbps or more recommended) ▪ A LAN board supporting PXE boot (network boot) (when using DHCP) ▪ A LAN board enabling WOL (if remote power ON is needed) ▪ Deploy-OS supports devices on the managed machine.(when using backup/restore/disk configuration check or OS installation by disk duplication) ▪ Backup/restore/disk configuration check or OS installation by disk duplication cannot be executed when a security function, such as TPM(Trusted Platform Module) which is a function of HW, is enabled. ▪ Contact your sales or support representative for the support of the secure boot function on UEFI FW. ▪ Single boot environment (The machine in multi boot environment cannot be managed.)

*1

In the case of 320MByte (minimum), the following are the maximum partition size.

NTFS : 256GByte
 ext2/ext3/ext4 : 512GByte
 Other : 2TByte

*2

There is a case that the maximum disk capacity is 2TByte depending on the machine model. For details, contact your sales or support representative.

Note:

- It may be necessary to install the module for the machine model according to the machine model. For more details, contact your sales or support representative.
-

Software environment

OS(*1)	x64	Windows Server 2003 Standard Edition/Enterprise Edition/Datacenter Edition(SP2) Windows Server 2003 R2 Standard Edition/Enterprise Edition/Datacenter Edition(SP2) Windows Server 2008 Standard /Enterprise /Datacenter (No SP/SP1/SP2)(*2) Windows Server 2008 R2 Standard/Enterprise/Datacenter (No SP/SP1)(*2) Windows Server 2012 Standard/Datacenter (No SP)(*2) Windows Server 2012 R2 Standard/Datacenter (No SP)(*2) Windows Server 2016 Standard/Datacenter (No SP)(*2) Windows 7 Professional/Ultimate/Enterprise (No SP/SP1) Windows 8 Pro /Enterprise(No SP) Windows 8.1 Pro /Enterprise(No SP) Windows 10 Pro /Enterprise(No SP) Red Hat Enterprise Linux 5(excluding 5.0)/5 AP(excluding 5.0 AP) Red Hat Enterprise Linux 6 Red Hat Enterprise Linux 7 SUSE Linux Enterprise 10 SUSE Linux Enterprise 11
	x86	Windows Server 2003 Standard Edition/Enterprise Edition (SP2) Windows Server 2003 R2 Standard Edition/Enterprise Edition (SP2) Windows Server 2008 Standard/Enterprise (No SP/SP1/SP2)(*2) Windows XP Professional (SP3) Windows Vista Business/Enterprise/Ultimate (No SP/SP1/SP2) Windows 7 Professional/Ultimate/Enterprise (No SP/SP1) Windows 8 Pro/Enterprise (No SP) Windows 8.1 Pro/Enterprise (No SP) Windows 10 Pro/Enterprise (No SP) Red Hat Enterprise Linux 5(excluding 5.0)/5 AP(excluding 5.0 AP) Red Hat Enterprise Linux 6 SUSE Linux Enterprise 10 SUSE Linux Enterprise 11

*1

Supported function differs depending on the OS. See Appendix A, "Function Tables" for details.

*2

Server Core installation is not supported.

The default installation option for Windows Server 2016 is Server Core.

However, Server Core is not supported on the managed machine.

3.9.2. Precautions

The precautions are as follows.

Boot Order of BIOS Configuration

BIOS configuration differs depending on the used BIOS. For details, see the hardware manual, or contact your sales or support representative. When you changed the BIOS configuration, be careful sufficiently.

<When you configure DHCP Server on the network>

In order to perform PXE boot (network boot), set the network higher than HDD(hard disk drive) in

the boot order of BIOS. If there are multiple LAN boards, set only the LAN board managed by DPM higher than HDD and others lower than HDD. If you set the LAN board which is not managed by DPM higher than HDD, a scenario execution error may occur.

Even when you configure multiple LAN boards by teaming, set only the LAN board to be booted by PXE higher than HDD. DPM uses UUID, and MAC address of the LAN board to be booted by PXE as the key to identify the managed machine. Therefore, if the LAN board to be booted by PXE out of teamed LAN boards have a failure, you need to set the boot order of BIOS again.

In the case of Express5800/Blade Servers, LAN1 is higher than LAN2 in the boot order when shipped. When you use LAN1, you do not need to set BIOS.

<When you do not configure DHCP Server on the network>

You need to boot the machine from the bootable CD to execute backup, restore, or disk configuration check scenario. Set the boot order of BIOS so that CD is the top.

LAN Boards

If the LAN board configuration is changed in a managed machine by doing any of the following, reboot the managed machine so that the information held by the Management Server is updated.

- LAN board added
- LAN board removed
- Installation position of LAN board changed
- Startup order in BIOS changed

When switching a LAN board between managed machine in which UUID is registered to the Management Server and a managed machine in which it is not, the UUID registered machine should be rebooted before rebooting the UUID unregistered machine.

Remote Power On Function

• To use the remote power on function, the managed machine meets the following requirements.

- WOL is possible on the managed machine's on-board LAN.
On the managed machine, WOL is possible from S5 state after shutting down from the OS. Also, the power state of the managed machine to be used with WOL is S5 state. (S5 state = shut down)
- BIOS is set for WOL.
Setting items are Wake On LAN, Remote Power On, Resume Power On, and so on.
The setting procedure of BIOS depends on the BIOS being used. See your hardware manual for details or contact the seller. Use extreme caution when changing the BIOS configuration.
- Set the WOL settings in the OS LAN driver settings.
This is needed for some machine model/OS combinations. See the hardware manual for the setting procedure.

- Precautions regarding the remote power on function are as follows.
- Do not set a password for startup in the BIOS security settings.
- Do not leave floppy disk or CD/DVD in the managed machine.
- WOL is not possible on Wireless LAN or mobile communication cards.
- WOL is not possible on virtual machines.
- Make sure the MAC addresses displayed in the main screen of the DPM Web Console are the same as the MAC addresses of the managed machines.
- If a managed machine is forcibly powered off by, for example, long-pressing the power button, WOL might fail the next time depending on the hardware specifications. In this case, turn the machine on manually to start the OS and then shut it down so that the next WOL will work.
- Some machine models of the managed machine will not wake on LAN if the power is turned off after automatically registering the machine to DPM via network boot. If the power does not come on, turn it on manually.
- With DPM, "Speed" and "Duplex" are negotiated using the "Auto" setting. Set the "Speed" "Duplex" to the "Auto" for the switch setting. If it is not set to Auto, the DPM will not be able to do WOL. Check the LAN link-up with the managed machine off. If the LAN is not linked up, WOL may fail from DPM.

Check the switch ports and the OS driver configuration, and set Link Speed and Duplex to Auto. If the power does not come on, turn it on manually.

- Depending on the machine, WOL may fail if the LAN link speed is changed. Check the link lamp with the power off, or contact your sales or support representative.
- When you configure teaming of LAN(AFT, SFT, or ALB) by Intel PROSet, the MAC address of the teamed virtual LAN and that of the physical LAN(the MAC address which is registered on the Management Server) need to be the same to power on the managed machine remotely from DPM.
- Set the following settings if the DPM Management Server is on a different segment from a managed machine.
 - Set the network device for direct broadcast routing.
 - Set the gateway and subnet mask to the managed machine registered to DPM.
- Because powering on with DPM (WOL) depends on the hardware configuration, check the hardware configuration if the problem is not resolved after performing the above checks.

Logical Disk on SAN connected by FC Controller

See "Regarding the target disk/partition" in Section 2.2.2 "Backup/Restore" when using backup/restore function for the logical disk on SAN connected by FC controller on DPM.

File System and Disk Type for the Managed Machines

When backup/restore function is used on DPM, see "Support for File System and Disk Type" in Appendix A "Function Tables" Support for each OS on the Managed Machine for details.

DPM Client

Install DPM Client in the managed machines. See Section 2.2, "Installing DPM Client" in *Installation Guide* for the installation procedure.

- Always use a DPM Client that is of the same version/revision as DPM Server. If you are using an older version of DPM Client, see Section 3.3, "Upgrading DPM Client" in *Installation Guide* to upgrade DPM Client.
- DPM Client is automatically installed if an OS clear installation or OS installation by disk duplication is executed using DPM.
- When it is difficult to install DPM Client, it is possible to operate without DPM Client.(Some functions cannot be used.)

See Appendix C, "For Customers Who Do Not Install DPM Client" for details.

IP Addresses of Managed Machines

Network connection IP addresses in the OS of managed machines can be obtained either by using automatic acquisition by DHCP or by using a fixed IP addresses.

- Specify the number of IP addresses to install DPM client as 16 per LAN board and 128 or less in total.

Windows Managed Machine

The maximum number of LAN board that enable obtaining the LAN board information, installing applications/patch files, sending the information of the managed machine, and shutting down by DPM Client can be recognized up to 8.

Linux Managed Machine

- The maximum number of LAN board that enable obtaining the LAN board information, installing applications/patch files, sending the information of the managed machine, and shutting down by DPM Client can be recognized up to 8.
- For the bonding driver to work correctly, mount the proc file system (/proc). Also, the current version of DPM Client supports only the active-backup operation mode of the bonding driver.
- The bonding drivers for Red Hat Enterprise Linux5/5 AP/6 /7 and SUSE Linux Enterprise 10/11 are supported.

3.10. Managed Machines (Virtual Environment)

This section describes system requirements for virtual environments which are managed machines.

Note:

- See 3.9.2 "Precautions" and "Support for Virtualization Environments as Managed Machines" in Appendix A "Function Tables".
-

3.10.1. System Requirements

The system requirements for virtual environments which are managed are as follows.

Hardware environment

Memory Size	<ul style="list-style-type: none">• 12MByte is needed when DPM Client is installed• 320MByte is needed during backup/restoring (768MByte or more is recommended)(*1)
Disk Capacity	<ul style="list-style-type: none">• 10MByte is needed when DPM Client is installed• The maximum disk capacity that can be backed up/restored is 8TByte or less.• The maximum partition size that can be backed up/restored is 2TByte or less.• When you execute file distribution, twice the size of distributed files is necessary. Disk capacity to store log files is also necessary. See Appendix E, "Log Files Output by DPM" in <i>Caution Notes and Trouble Shooting Reference Guide</i> for details.
Others	<ul style="list-style-type: none">• 100Mbps or more LAN board(1Gbps or more recommended)• A LAN board supporting PXE boot (network boot) (when using DHCP)• A LAN board enabling WOL (if remote power ON is needed)• Deploy-OS supports devices on the managed machine.(when using backup/restore/disk configuration check or OS installation by disk duplication)• Contact your sales or support representative for the support of the secure boot function on UEFI FW.

*1

In the case of 320MByte (minimum), the following are the maximum partition size.

NTFS : 256GByte

ext2/ext3/ext4 : 512GByte

Other : 2TByte

Virtual Environment

Virtualization Software(*1)	VMware ESXi 5.0/5.1/5.5 VMware ESXi 6/6.5 Microsoft Hyper-V/Hyper-V2.0(*2) Microsoft Windows Server 2012 Hyper-V Microsoft Windows Server 2012 R2 Hyper-V Microsoft Windows Server 2016 Hyper-V
Guest OS(*3)	Guest OS on VMware ESXi 5.0/5.1/5.5 Guest OS on VMware ESXi 6/6.5 Guest OS on Microsoft Hyper-V/Hyper-V2.0 (*2) Guest OS on Microsoft Windows Server 2012 Hyper-V Guest OS on Microsoft Windows Server 2012 R2 Hyper-V Guest OS on Microsoft Windows Server 2016 Hyper-V

*1

Supported functions differ depending on the virtualization software and version. See Appendix A, "Function Tables" for details.

*2

The guest OS on the following virtualization software can be managed.

- Hyper-V on Windows Server 2008 x64
- Hyper-V2.0 on Windows Server 2008 R2

*3

The following requirements are necessary.

- An OS that the each virtualization software supports
- An OS that is supported as a DPM managed machine (See 3.9, "Managed Machines (Physical Machines)".)

For OS that each virtualization software supports, see the user's guide or Web site of the each product.

4. Latest Version Information

This section explains the DPM latest information. Introduces functions newly added and enhanced by the new release.

4.1. New Additional Functions

The followings are the main newly added functions and enhanced functions from DPM Ver6.51 to DPM Ver6.6.

- Support PostgreSQL 9.5 as the database engine.
- Support Red Hat Enterprise Linux 7.3 as OS of the managed machine.
- You can execute files after distribution when file distribution.
- Tool to copy the created scenario to the different Management Server has been bundled.

4.2. Changed and Removed Functions

The following are the major changes from DPM Ver6.51 to DPM Ver6.6.

- Support for Windows Server 2008 on the Management Server, Image Builder (Remote Console), DPM Command Line, Package Web Server and PackageDescriber has been expired.
- Support VMware ESX Server 4.0/4.1 and VMware ESXi 4.0/4.1 for the virtualization software on the managed machine has been expired.
- Following bundled software has been upgraded.
 - SQL Server 2014 SP2 Express has been changed to SQL Server 2016 SP1 Express.
 - .NET Framework 4.5.2 has been changed to .NET Framework 4.6.2.
- The number of PCI device for the managed machine has been increased from 512 to 65536.

Appendix A Function Tables

Support for each OS on the Managed Machine

Support for managed machine on each OS is as follows.

Confirm that the managed machine (hardware) supports the following OS in addition to the following table.

DPM may not work properly if the managed machine (hardware) does not support the OS even if DPM supports it.

See the manual of each hardware product and so on about OS which are supported by the managed machine (hardware).

Function Tables (Windows OS)

Function	Windows Server 2003/ Windows Server 2003 R2/ Windows Server 2008/ Windows Server 2008 R2/ Windows Server 2012/ Windows Server 2012 R2/ Windows Server 2016/ Windows XP/ Windows Vista/ Windows 7/ Windows 8/ Windows 8.1/ Windows 10
Backup/restore/disk configuration check (*1)(*2)	Yes
OS installation by disk duplication (*1)	Yes
OS clear installation	No
Installing service packs/hotfixes/applications (scenario type)	Yes
Distribution of floppy disk image for BIOS/firmware (*1)	Yes
Installing service packs/hotfixes/applications (automatic update type)	Yes
Searching the Management Server by DPM Client	Yes
DPM Client automatic upgrade	Yes
Power ON	Yes
Shutdown	Yes
Power ON/OFF state check	Yes
Information acquisition of OS/service packs/hotfixes/applications	Yes
File Operation	Yes(*3)

*1

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

*2

When the fast startup is valid on Windows 8 or later, backup/restore function is not supported.

*3

Windows XP is not supported.

Function Tables (Linux OS)

Function	Red Hat Enterprise Linux 5/5 AP/6/7	SUSE Linux Enterprise 10/11
Backup/restore/disk configuration check (*1)	Yes	Yes(*2)
OS installation by disk duplication(*1)	Yes	Yes
OS clear installation	Yes	No
Installing Linux patch files/applications (scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware (*1)	Yes	Yes
Installing applications (automatic update type)	No	No
Searching the Management Server by DPM Client	Yes	Yes(*3)
DPM Client automatic upgrade	Yes	Yes
Power ON	Yes	Yes
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Information acquisition of OS / Linux patch files/applications	Yes	Yes
File Operation	Yes	Yes

*1

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

*2

To restore a backup image to another managed machine, see the Novell website Knowledgebase (Support TID:3048119).

*3

Start DPM Client with stopping dhcpd to use the Management Server search function on SUESE Linux Enterprise 10.

Support for Virtualization Environments as Managed Machines

Note:

- When managing virtualization environment as a managed machine, see Section 2.2, "Registering Managed Machines" in *Operation Guide* in addition to this section.

Virtualization Software

- The function support table for virtualization software of ESXi 5.0/5.1/5.5/6/6.5 is as follows.

Function	ESXi 5.0/5.1/5.5/6/6.5
Backup/restore/disk configuration check	No
OS installation by disk duplication	No
OS clear installation	No(*1)
Installing service packs/hotfixes/Linux patch file/application(scenario type)	No
Distribution of floppy disk image for BIOS/firmware (*4)	Yes
Installing service packs/hotfixes/applications (automatic update type)	No
Searching the Management Server by DPM Client	No
DPM Client automatic upgrade	No
Power ON	Yes(*2)
Shutdown	No
Power ON/OFF state check	Yes(*3)
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	No
File Operation	No

*1

OS clear installation can be executed for SSC products with the machine of Legacy BIOS mode.

*2

DPM Client cannot be installed on ESXi. PXE boot needs to be executed to detect that Power ON is completed.

*3

It is necessary to register IP address on DPM.

*4

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

- The function support table for the virtualization software for Hyper-V1.0/2.0, Windows Server 2012 Hyper-V and Windows Server 2012 R2 Hyper-V and Windows Server 2016 Hyper-V is as follows.

Function	Hyper-V1.0/2.0, Windows Server 2012 Hyper-V, Windows Server 2012 R2 Hyper-V, Windows Server 2016 Hyper-V
Backup/restore/disk configuration check(*1)(*2)	Yes
OS installation by disk duplication(*1)(*2)(*3)	Yes
OS clear installation	No
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes
Distribution of floppy disk image for BIOS/firmware(*1)	Yes
Installing service packs/hotfixes/applications (automatic update type)	Yes
Searching the Management Server by DPM Client	Yes
DPM Client automatic upgrade	Yes
Power ON	Yes
Shutdown	Yes
Power ON/OFF state check	Yes
Information acquisition of OS/service packs/hotfixes/ Linux patch files/applications information	Yes
File Operation	Yes

*1

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

*2

Do not set the virtual switch to the LAN over which DPM executes backup/restore functions. Because the MAC address of the virtual switch is passed on when restoring to another server, if a server is replaced due to a breakdown or the like, the MAC address of the server before breakdown is used, which can cause problems such as remote powering not being possible.

*3

Support for Windows Server 2012 R2 Hyper-V or later.

Guest OS

Note:

- See "Guest OS" and "Support for each OS on the Managed Machine" for details of the function supported by guest OS.

- The function support table for guest OS of VMware ESXi 5.0/5.1/5.5/6/6.5 is as follows.

Function	Guest OS for VMware ESXi 5.0/5.1/5.5/6/6.5	
	Windows(*3)	Linux
Backup/restore/disk configuration check (*1)(*2)	Yes	Yes
OS installation by disk duplication (*1)(*2)	Yes	Yes(*4)
OS clear installation	No	No
Installing service packs/hotfixes/Linux patch files/applications(scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware	-	-
Installing service packs/hotfixes/applications (automatic update type)	Yes	No
Searching the Management Server by DPM Client	Yes	Yes(*5)
DPM Client automatic upgrade	Yes	Yes
Power ON	No(*6)	No(*6)
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	Yes	Yes
File Operation	Yes	Yes

*1

Support for these functions depends on the virtualization software. Contact your sales or support representative about the support for each virtualization software.

*2

When executing backup/restore for VMware ESXi5.0 or later with operation of "**Do Not Use A DHCP Server**", CD/DVD drive is recognized earlier than processing disk. Therefore, disk number of the first target disk for backup/restore is "2". Execute disk configuration check before executing backup/restore scenario and confirm the disk number.

*3

There is a possibility that network becomes unusable when constructing the virtual machine meets all following requirements as follows on ESX 5.1.

Construct the virtual machine not to meet either of below requirements.

- "EFI" is selected as "Boot Firmware"
- "E1000E" is selected as "Network Adapter"
- **Put the guest OS into standby mode and leave the virtual machine powered on** is selected in **Power Management** and a network adapter is not selected in **Wake on LAN for virtual machine traffic on**.

*4

OS installation by disk duplication is supported only in Red Hat Enterprise Linux.

*5

In the case of SUSE Linux Enterprise 10, you need to start DPM Client in the status that dhcpcd is stopped to search the Management Server.

*6

Power on does not operate therefore scenario execution cannot be executed with power-off state.

- The function support table for guest OS of Hyper-V1.0/2.0, Windows Server 2012 Hyper-V, Windows Server 2012 R2 Hyper-V and Windows Server 2016 Hyper-V is as follows.

Function	Guest OS for Hyper-V1.0/2.0, Windows Server 2012 Hyper-V, Windows Server 2012 R2 Hyper-V, Windows Server 2016 Hyper-V	
	Windows	Linux(*5)
Backup/restore/disk configuration check (*1)(*2)(*3)(*4)	Yes (*5)(*6)(*7)	Yes (*6)(*7)
OS installation by disk duplication (*1)(*2)(*3)(*4)	Yes (*5)(*6)(*7)(*8)	Yes (*6)(*7)
OS clear installation(*3)	No	Yes (*6)
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware	-	-
Installing service packs/hotfixes/applications (automatic update type)	Yes	No
Searching the Management Server by DPM Client	Yes	Yes(*9)
DPM Client automatic upgrade	Yes	Yes
Power ON	No(*10)	No(*10)
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	Yes	Yes
File Operation	Yes	Yes

*1

Support for these functions depends on the virtualization software. Contact your sales or support representative about the support for each virtualization software.

*2

There is a case that the performance is degraded when you use this function. Also, if you set multiple virtual CPUs on the managed machine, it is additionally degraded.

In this case, decrease the number of the virtual CPUs temporarily when you use this function to avoid the effect by increasing the number of CPUs.

If you decrease the processing of displaying on the screen in the following setting, you can reduce the degrading of the performance.

- The setting file: <Folder for Image>\FD-Linux\config\BackupRestoreConf.ini
- The name of setting value: DisplIntervalTimes
- The valid range(seconds): 1-2147483647(Recommended:300)

However, if you set this, the display is updated only at the set interval on all managed machines. You can also check the progressing status in the **Backup/Restore Execute List** screen.

*3

When you use this function, configure so that static MAC address is assigned on the network device.

*4

When creating the virtual machine on Windows Server 2012 R2 Hyper-V or later, specify **Generation 1** in **Choose the generation of this virtual machine**.

When you chose **Generation 2**, this function does not work properly.

- *5
Specify the following devices when creating a virtual machine.
- Legacy network adapter
 - IDE controller
- The scenario will not complete successfully if the following devices are selected.
- Network adapter
 - SCSI controller
 - Fibre channel adapter
- See the user's guide that attached to the product for details of the setting procedure.
- *6
When creating a virtual machine, set the "Legacy network adapter" as the top of BIOS boot order.
See the user's guide that attached to the product for details on configuration.
- *7
When the disk type is GPT, backup or restore the entire disk by specifying the full sector.
- *8
For Windows Server 2003(x64)/Windows Server 2003 R2(x64), OS installation by disk duplication is not supported.
- *9
In the case of SUSE Linux Enterprise 10, you need to start DPM Client in the status that dhcpd is stopped to search the Management Server.
- *10
Power ON does not work. Therefore, you cannot execute a scenario from Power Off status.

Support for File System and Disk Type

The file system support status for the backup/restore functions is as follows.

- The backup/restoring of software RAID volume (RAID0, RAID1, RAID1 Span, RAID5, and others) created by an OS function or a disk management application cannot be executed.
- The partition which has been created or resized by any other procedure than OS standard feature cannot be backed up/restored.
- For Express5800/FT servers, depending on the machine model, backup after release of RAID or a full sector backup with RAID still in place can be executed. Contact your sales or support representative about details on the backup procedure for each machine model.
- When DPM is not corresponded to the file system of the management area (cluster partition), backup/restore for the effective sector cannot be executed.
Backup/restore for unsupported file system can be executed if you assign full sector option. Execute operational design appropriately depending on the specification of cluster system for start/stop of cluster and backup procedure for each disk.
- When the hard disk of 4K sector meets following requirements, backup or restore can be executed by the effective sector.
 - Basic Disk (GPT)
 - UEFI mode

Contact your sales or support representative for the support status of 4K sector.

For restoration destination, select the hard disk which has the same sector size of the hard disk where you back up.

When restoring the image execute backup on the hard disk of 4K sector, select the hard disk of 4K sector.

Windows OS File System Support Table(*1)

File System Type/ Partition Type	Backup/restore						
	Disk				Partition		
	Basic disk (*2)		Dynamic disk (*3)		Basic disk (*4)(*5)		Dynamic disk (*4)(*5)
	MBR	GPT(*6)	MBR	GPT(*6)	MBR	GPT(*6)	MBR
EFI system partition	-	Automatic full sector	-	Full sector	-	Automatic full sector	-
Microsoft reserved partition	-	Automatic full sector	-	Full sector	-	Automatic full sector	-
FAT16/ FAT32/ NTFS	Effective sector	Effective sector	Effective sector	Full sector	Effective sector	Effective sector	Effective sector
ReFS	Automatic full sector	Automatic full sector	Automatic full sector	Full sector	Automatic full sector	Automatic full sector	Automatic full sector
Encrypted partition (*7)	Full sector	Full sector	Full sector	Full sector	Cannot be executed	Cannot be executed	Cannot be executed
Maintenance Partition (*8)	Effective sector	Effective sector	Effective sector	Full sector	Effective sector	Effective sector	Effective sector
File systems created in Windows OS except the above	Automatic full sector	Automatic full sector	Automatic full sector	Full sector	Automatic full sector	Automatic full sector	Automatic full sector

Effective sector: Backed up or restored by the effective sector.

Automatic full sector: Backed up or restored by the automatic full sector. (You do not need to select the full sector in the scenario.)

Full sector: Select the full sector in the scenario.

Cannot be executed: You cannot backup and restore.

-: Partition type which cannot be created by MBR.

*1

Backup/restoring of the disk, which uses the storage pool function in Windows cannot be executed.

*2

Create one or more logical drive. (You cannot backup/restore disks that include an empty extended partition.)

*3

- Backup/restoring of simple volume can be executed.
- Backup/restoring of span volume, stripe volume, mirror volume, RAID5 volume, and the volume whose size is extended cannot be executed.
- Backup/restoring of the dynamic disk that Windows RE or a maintenance partition is installed except in the first partition is cannot be executed.
- When multiple dynamic-type disks are connected, backup or restore disks by one scenario at a time. When you backup or restore each disk, do not start up Windows during backup or restoring of each disk. If you start Windows during backup or restoring of each disk, Windows system may not start properly after restoring.

*4

- Backup/restoring of an extended partition as units of partitions cannot be executed.
- Backup/restoring of a logical drive as units of partitions can be executed.
- Local restoring is not supported.

*5

You can restore the backup image of partition unit on an empty disk.

- When you restore multiple backup images of partition unit, restore all partitions without starting OS between restoring.
- DPM may recognize the disk without the management area as an empty disk. When you restore the backup image of partition unit, restore after confirming that the disk is empty.
- You cannot restore the backup image of partition unit that you backed up in the version earlier than DPM Ver6.2 on an empty disk.
- When you restore the backup image of partition unit on an empty disk, specify the same partition number in the restore scenario as when you backed up.

*6

When the target is the guest OS of Hyper-V and the disk type is GPT, backup or restore the entire disk by specifying the full sector.

*7

- Backup/restoring of disks which include a partition encrypted by Encrypting File System (EFS) of NTFS are supported.
- Backup/restoring of disks which include a partition encrypted by BitLocker drive encryption cannot be executed.

*8

A maintenance partition which is created by the EXPRESSBUILDER of the Express 5800 Series can be used. About the disk which includes a maintenance partition created except by the EXPRESSBUILDER, backup or restore the entire disk by specifying the full sector in the scenario.

Linux OS File System Support Table (*1)

File System Type /Partition Type	Backup/restore			
	Disk		Partition	
	Basic disk (*2)		Basic disk (*3)(*4)	
	MBR	GPT (*5)	MBR	GPT (*5)
EFI system partition	-	Automatic full sector	-	Automatic full sector
ext2/ext3(*6)	Effective sector	Effective sector	Effective sector	Effective sector
ext4	Effective sector	Effective sector	Effective sector	Effective sector
XFS(*7)	Effective sector	Effective sector	Effective sector	Effective sector
Linux Swap Partition	Effective sector	Effective sector	Effective sector	Effective sector
LVM1(*8)	Automatic full sector	Automatic full sector	Automatic full sector	Automatic full sector
LVM2 (*8)(*9)	Automatic full sector	Automatic full sector	Automatic full sector	Automatic full sector
ReiserFS/JFS	Automatic full sector	Automatic full sector	Automatic full sector	Automatic full sector
Encrypted partition (*10)	Full sector	Full sector	Cannot be executed	Cannot be executed
Maintenance Partition (*11)	Effective sector	Effective sector	Effective sector	Effective sector
File systems created in Linux OS except the above	Automatic full sector	Automatic full sector	Automatic full sector	Automatic full sector

Effective sector: Backed up or restored by the effective sector.

Automatic full sector: Backed up or restored by the automatic full sector. (You do not need to select the full sector in the scenario.)

Full sector: Select the full sector in the scenario.

Cannot be executed: You cannot backup and restore.

-: Partition type which cannot be created by MBR.

*1

When installing Red Hat Enterprise Linux on the managed machine, install the boot loader on MBR (Master Boot Record). (If you install on the top of the boot sector, backup/restore functions cannot be executed.)

*2

Create one or more logical drive. (You cannot backup/restore disks that include an empty extended partition.)

*3

- Backup/restoring of an extended partition as units of partitions cannot be executed.
- Backup/restoring of a logical drive as units of partitions can be executed.
- Local restoring is not supported.

*4

You cannot restore the backup image of partition unit on an empty disk.

The target disk need to have the same configuration (the number of partitions/location/size/file system) with the original disk. Also, restore the backup image on the same partition when you backed up.

*5

When the target is the guest OS of Hyper-V and the disk type is GPT, backup or restore the entire disk by specifying the full sector.

*6

When you extend the file system for Ext2/3 by online resize function, verify the extended file system before backup by the validation tool (e2fsck and so on).

When the problem is detected, backup after modifying by the validation tool.

*7

- It is recommended that selecting the disk or the partition on the managed machine which can backup/restore on DPM as the journal when creating XFS file system. Storage place for the journal is displayed as "Linux XFS Journal".
- To ensure consistency of the information between XFS file system and the journal, when executing backup/restore of XFS file system, execute backup/restore "Linux XFS Journal" at one time.
- "Linux XFS Journal" execute backup/restore with automatic full sector procedure.

*8

• When PV (Physical Volume) is configured in the partition on the disk, backup/restoration are executed by the automatic full sector. When PV (Physical Volume) is configured in the entire physical disk, specify the full sector.

• When you backup/restore VG (Volume Group) over multiple disks, you need to backup/restore all disks that include VG by one scenario at a time. When you backup or restore the disks one by one, backup or restore all disks that include VG without starting Linux during backup or restoring of each disk. If you start Linux during backup/restoring of each disk, Linux system may not start properly after restoring.

• You can specify the partition (PV(Physical Volume) in LVM) on the disk as the partition unit. You cannot specify LV (Logical Volume). When you backup/restore VG (Volume Group) over multiple partitions as the partition unit, execute backup/restoring of all partitions which are included in VG without starting up Linux.

*9

See the following steps for the procedure to confirm if the LVM partition created on the basic disk is an LVM2 partition or not.

Example) To confirm the backup target disk (/dev/sda) on Red Hat Enterprise Linux 7.1

1) Execute the fdisk command and confirm the partition structure.

```
#fdisk -l /dev/sda
```

*The result will be output as follows.

```
#fdisk -l /dev/sda

Disk /dev/sda: 42.9 GB, 42949672960 bytes, 83886080 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x000223ea

Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *          2048       1026047       512000   83  Linux
/dev/sda2            1026048    83886079    41430016   8e  Linux LVM
```

2) Execute the pvdisplay command for each partition that shows "Linux LVM" in the output.

If the output of executing the pvdisplay command shows "lvm2" in the "Fmt", then it is an LVM2 partition.

```
#pvdisplay -C /dev/sda2
```

* The result will be output as follows.

```
#pvdisplay -C /dev/sda2
PV          VG          Fmt  Attr  PSize  PFree
/dev/sda2  rhel        lvm2  a--   39.51G 44.00m
```

*10

In the case of Red Hat Enterprise Linux 6.2 or later, DPM might not work properly if the trusted boot function is valid. Operate DPM with invalidating trusted boot function. About the trusted boot function, see the manual of OS.

*11

A maintenance partition which is created by the EXPRESSBUILDER of the Express 5800 Series can be used. About the disk which includes a maintenance partition created except by the EXPRESSBUILDER, backup or restore the entire disk by specifying the full sector.

Support for iSCSI Boot

Note:

- About the support status of each function, see also the above "Support for each OS on the Managed Machine" and "Support for Virtualization Environments as Managed Machines" in addition to this chapter.

The following is a function support table when a disk is connected to a managed machine using iSCSI and an iSCSI boot has been performed.

Function	Windows (*1)	Linux (*2)
Backup/restore/disk configuration check (*3)	Yes	Yes(*4)
OS installation by disk duplication (*3)	Yes	No
OS clear installation	No	No
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware (*3)	Yes	Yes
Installing service packs/hotfixes/applications (automatic update type)	Yes	No
Searching the Management Server by DPM Client	Yes	Yes
DPM Client automatic upgrade	Yes	Yes
Power ON	Yes	Yes
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Acquisition of OS/service packs/hotfixes/Linux patch files/ applications information	Yes	Yes
File Operation	Yes	Yes

*1

Windows Server 2008 only

*2

Red Hat Enterprise Linux 5.2-5.4 and 5.2 AP-5.4 AP only.

*3

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

*4

Restore function can be executed only for the managed machine from which the backup image was created and which has the same LAN board and iSCSI storage configuration.

Support for Machines in UEFI Mode as Managed Machines

Note:

- About the support status of each function, see also above "Support for each OS on the Managed Machine" and "Support for Virtualization Environments as Managed Machines".
- Contact your sales or support representative for the support of the secure boot function on UEFI FW.
- In the case of Red Hat Enterprise Linux 7 (except 7.1 or later), add grubx64.efi as UEFI boot option and set the boot order so that the order is network boot -> grubx64.efi. If the order is network boot -> shim.efi, OS cannot be started up.

The following is a function support table when the managed machine is operated by UEFI mode.

Function	Windows	Linux
Backup/restore/disk configuration check (*1)(*2)	Yes(*3)	Yes
OS installation by disk duplication (*1)(*2)	Yes(*3)	Yes
OS clear installation	No	Yes(*4)
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware (*1)	Yes	Yes
Installing service packs/hotfixes/applications (automatic update type)	Yes	No
Searching the Management Server by DPM Client	Yes	Yes
DPM Client automatic upgrade	Yes	Yes
Power ON	Yes	Yes
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	Yes	Yes
File Operation	Yes	Yes

*1

Support for these functions depends on the machine model. Contact your sales or support representative about the support for each machine model.

*2

For the managed machine in which the scenario execution was not completed properly(the scenario execution error occurred or the scenario was stopped), if you switched BIOS mode/UEFI mode without executing a scenario even once after that, restart "DeploymentManager PXE Management" service. If you execute a scenario without restarting "DeploymentManager PXE Management" service, the scenario may not be completed and the scenario execution may be repeated.

*3

In Windows OS, after executing restoring or OS installation by disk duplication, "Windows Boot Manager" may be added to the top of the boot order by Windows OS at the timing that OS is started. When Windows OS is started without network boot at the scenario execution, set the network boot of UEFI boot option in the top of the boot order and execute the scenario again.

*4

There is a possibility that HDD might be on the top of the boot order on the managed machine after OS clear installation. In that case, be careful about the following,

- Even if **Turn Off Power After Scenario Execution** is selected on the **Option** tab of the scenario, the machine is not powered off and OS is started. Depends on OS, set as follows.
- Red Hat Enterprise Linux 6/7(excluding 7.0)

- Set the boot order of the network higher than HDD.
- Red Hat Enterprise Linux 7.0
 - Add grubx64.efi as UEFI boot option and set the boot order as network boot -> grubx64.efi.

Combinations of Functions in Scenarios

Multiple functions can be combined in a single scenario in DPM. Permissible function combinations are as follows.

Function	Backup	Restore	Disk configuration check	OS clear installation	Installing service packs/hotfixes/Linux patch files/applications	Updating BIOS/firmware
Backup		No	No	Yes	Yes (*1)	Yes
Restore(*2)	No		No	No	No	Yes
Disk configuration check	No	No		No	No	No
OS clear installation	Yes	No	No		Yes	Yes
Installing service packs/hotfixes/Linux patch files/applications	Yes (*1)	No	No	Yes		Yes (*1)
Updating BIOS/firmware	Yes	Yes	No	Yes	Yes (*1)	

*1

These can be executed only when set concurrently with an OS clear installation.

Example)

Backup and installing service packs/hotfixes/Linux patch files/applications cannot be combined. Backup, OS clear installation, and service packs/hotfixes/Linux patch files/applications can be combined.

*2

Restoration when executing OS installation by disk duplication is also included.

Appendix B For Customers Who Do Not Install a DHCP Server

Note:

- About the support status for each function, see also above "Support for each OS on the Managed Machine" and "Support for Virtualization Environments as Managed Machines".
-

DPM can be operated without a DHCP server. However, the available functionality in DPM is limited if a DHCP server is not used.

This section describes supported functions and configurations that have to be done beforehand if no DHCP server is to be used.

See Appendix A, "Operating DPM without Using the DHCP Server" in *Operation Guide* for details about the procedure of the operation.

Note:

- For actual operation procedure, see "Appendix A Operating DPM without Using the DHCP Server" in *Operation Guide*.
-

- The following is a function support table for the case of **Use a DHCP Server** and **Do Not Use A DHCP Server**.

Function	Use a DHCP Server	Do not use a DHCP Server (*1)(*2)
Backup/restore/disk configuration check	Yes	Yes(*3)
OS installation by disk duplication	Yes	No
OS clear installation	Yes	No
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes	Yes
Distribution of floppy disk image for BIOS/firmware	Yes	No
Installing service packs/hotfixes/applications (automatic update procedure)	Yes	Yes
Searching the Management Server by DPM Client	Yes	Yes(*4)
DPM Client automatic upgrade	Yes	Yes
Power ON	Yes	Yes(*5)
Shutdown	Yes	Yes
Power ON/OFF state check	Yes	Yes
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	Yes	Yes
File Operation	Yes	Yes

*1

Options (power off/reboot) after scenario execution are supported only when installing service packs/HotFixes/Linux patch files/applications.

*2

Specify scenarios to backup/restore or install service packs/hotfixes/Linux patch files/applications independently. For example, a scenario in which the **Backup/Restore** tab and the **Hardware Configuration** tab are both selected is not supported.

*3

Restoration with multicast communication cannot be executed.

*4

When DHCP service is installed on DPM Server, you cannot Management Server search by DPM client.

*5

To detect the success of turning on the power on the DPM Web Console, it is necessary to install DPM Client on managed machines. If DPM Client is not installed, **Remote Power ON Error** is displayed after a certain period even if it succeeded in the power on.

■ Setting when operating **Do Not Use A DHCP Server**.

Select **Do Not Use A DHCP Server** in the **Detail Setting** screen when installing DPM Server or on the **Management** view -> **DPM Server** icon -> **Detail Setting** screen -> **DHCP Server** tab on the Web Console.(The following is the Web Console screen.)



Note:

- When **Do Not Use A DHCP Server** is selected, PXE boot cannot be done even if there is a DHCP server in the network environment and the managed machine is equipped with a LAN board which supports PXE boot (network boot).
- When you change the setting of using DHCP server nor not, reboot the management server is necessary.
The modified settings become active after restarting.

Appendix C For Customers Who Do Not Install DPM Client

You can also operate DPM without installing DPM Client. However, when you do not install DPM Client, there are functional restrictions.

This chapter describes functions, which can be used when you do not install DPM Client.

Note:

■ About the support status of each function, see also Appendix A, "Function Tables".

Function	When you install DPM Client	When you do not install DPM Client (*1)(*2)(*3)
Backup/restore/disk configuration check	Yes	Yes
OS installation by disk duplication	Yes	No
OS clear installation	Yes	No
Installing service packs/hotfixes/Linux patch files/applications (scenario type)	Yes	No
Distribution of floppy disk image for BIOS/firmware	Yes	Yes
Installing service packs/hotfixes/applications (automatic update procedure)	Yes	No
Searching the Management Server by DPM Client	Yes	No
DPM Client automatic upgrade	Yes	No
Power ON	Yes	Yes(*4)
Shutdown	Yes	No
Power ON/OFF state check	Yes	Yes(*5)
Acquisition of OS/service packs/hotfixes/Linux patch files/applications information	Yes	No
File Operation	Yes	No

*1

In the case of corresponding to any of the following, you cannot register managed machines on DPM by obtaining the information of managed machines automatically. Register managed machines manually or use the import function.

- Operation without a DHCP server
- Managed machines which do not support PXE boot

About registering managed machines, see 2.2, "Registering Managed Machines" in *Operation Guide*.

*2

Even when **Forced Execution Of A Reboot Is Performed Before Execution** in **Scenario Execution Option Setting** is selected, the setting will not be valid. (OS cannot be restarted.)

*3

Clear **Check the completion of a scenario by the communication with DPM Client** in the configuration of DPM Server.

*4

To detect the success of turning on the power on the DPM Web Console, it is necessary to operate with DHCP server. In the case of the operation without DHCP server, **Remote Power ON Error** is displayed after a certain period even if it succeeded in the power on.

*5

Specify the IP address when you register a managed machine on DPM without fail.

Appendix D For Customers Who Configure RAID on the Managed Machine

There is a case that restoring or OS installation by disk duplication cannot be executed correctly when you use a backup image file or a master image for OS installation by disk duplication created in the environment described in "The target scope".

Contact your sales or support representative about how to deal with the problem.

■ Phenomenon and cause

When you use DPM in the environment as described in "The target scope", the problem occurs that RAID configuration cannot be recognized correctly when Deploy-OS recognizes the hardware in backup/restoring. For example, when configuring RAID by two disks, normally disks are recognized as one system drive. However, disks are recognized as two non-RAID disks in this case.

Therefore, when you execute disk configuration check, there is a case that multiple disks are visible on the screen or the backup image cannot be created correctly.

■ The target scope

- DPM version
 - DPM Ver6.0 (6.00.000-6.01.000)
 - When either of the following is set on Deploy-OS
 - "Use Default Value"
 - "NEC Express5800 002"
 - DPM Ver5.1/5.2
 - When the module for the machine model (DPM51_52_013) is used

Note:

- The problem might occur on the following machine models.
 - The module for the machine model (DPM60_003)
 - The module for the machine model (DPM51_52_014)Contact your sales or support representative for details.
-

• The target machine model

This problem occurs when you use internal SATA RAID configuration on the specific machine models.

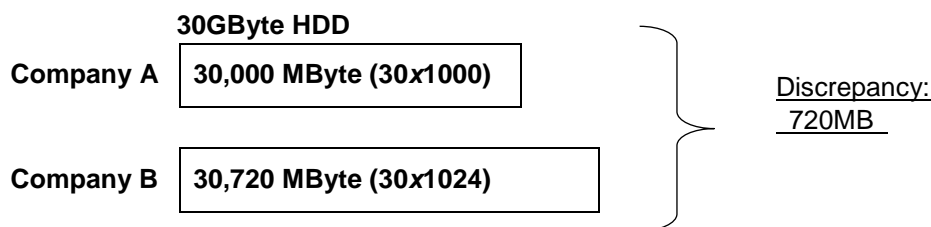
Contact your sales or support representative about the machine model.

Appendix E For Customers Who Manage the Machine with HDDs of Multi Vendors

Even if machines have the same product name, the built-in HDDs of different vendors may be mounted. Therefore, even if the same model is released in the same time, HDDs of different manufacturers are mounted and the disk capacity may be different on each device. Typical case is as follows.

Example)

If Company A calculates 1GByte as 1000MByte and Company B calculates 1GByte as 1024MByte for the same disk sold as 30GByte, the following difference occurs:



DPM does not support restoring on HDD of different size when executing backup. However, considering devices of multi-vendor, DPM supports restoring on some HDDs of different size. It is recommended that you evaluate carefully before using because all HDDs are not supported,

Note:

- Conditions that you can restore on HDDs of different size when executing backup are the following.
 - Disks larger than at the time of backup.
 - Backup when the entire disk is specified.
 - Configured as basic disks.
 - NTFS file system.

For other notes, see Section 2.2.2, "Backup/Restore."

Considering that the devices are supported by multi-vendor, it is recommended that you do either of the following in advance. Configure the disk as the basic disk is necessary.

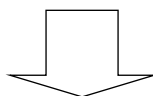
<Countermeasure 1>

If the devices are supported by multi-vendor, execute backup from the smallest disk.

<Countermeasure 2>

Considering for the possibility of changing to multi-vendor support in the future, create small partitions, configure the remainder as "Unassigned", and execute backup.

C:NTFS	D:NTFS	Unassigned
--------	--------	------------



You can restore to a smaller disk if actual partitions (in this example, C: and D:) are of the size that can be restored because unassigned area is not the target of backup.

C:NTFS	D:NTFS	Unassigned
--------	--------	------------

Note:

It is recommended that you create unassigned area with the margin of about 10% of the total area, in addition to the difference of 24MByte (1024-1000) per 1GByte as the above.

Appendix F Supplementary Information

Regarding Source Code

Some of the DPM modules include licensed software that is based on GNU General Public License Version 2.0(GPLv2) or General Public License Version 3.0(GPLv3).

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Appendix G Revision History

◆First Edition (Rev.001) (2017.8): New

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