

Release Notes

JobCenter

R15.1

-
- Windows, Windows Vista, Windows Server, Microsoft Azure, Microsoft Excel and Internet Explorer are trademarks or registered trademarks of Microsoft Corporation in the United States and other countries.
 - UNIX is exclusively licensed by The Open Group which is a registered trademark in the United States and other countries.
 - HP-UX is a trademark of Hewlett-Packard.
 - AIX is a trademark of IBM Corporation.
 - Linux is a registered trademark of Linus Torvalds in the United States and other countries.
 - Oracle Linux, Oracle Clusterware and Java are registered trademarks of Oracle and/or its affiliates.
 - Red Hat is a registered trademark of Red Hat, Inc.
 - SUSE is a registered trademark of Novell, Inc.
 - NQS is a Network Queuing System that was developed by Sterling Software for NASA Ames Research Center.
 - SAP ERP, SAP NetWeaver BW and ABAP are trademarks or registered trademarks of SAP AG.
 - Amazon Web Services is a trademark of Amazon.com, Inc. or its affiliates registered in the United States and other countries.
 - iPad and Safari are trademarks of Apple, Inc. registered in the United States and other countries.
 - All other software and hardware products mentioned herein are trademarks or registered trademarks of their respective owners.

The symbols (R), TM, and (c) are omitted in this document.

Precautions on exporting

This product (software) falls under a category of technology where establishment specified in the foreign exchange currency law is regulated. Please file necessary applications, such as permission for trade, with the Japanese government prior to exporting this product. Contact the dealer where you purchased the product or our nearest sales office for information on documents necessary for filing such applications.




Introduction

This manual provides a functional overview of the new functions of JobCenter R15.1.

Note that this document is subject to change without prior notice.

1. Legend

The legend used in this manual is explained below.

	Information that you should pay attention to.
	Supplementary information about a description in the text.
	Supplementary tip about a description in the text.
Note	Explanation of a note that appears in the text.
—	The underlined parts in the descriptions for the installation window for UNIX mean inputs from a keyboard.

2. Related manuals

The following are manuals related to JobCenter. They are contained in JobCenter Media.

For information on the latest manuals, refer to the download page of the JobCenter product site.

<http://www.nec.co.jp/middle/WebSAM/products/JobCenter/download.html> (Japanese only)

Document title	Overview
JobCenter Installation Guide	Describes how to newly install JobCenter or upgrade it.
JobCenter Quick Start Guide (Japanese only)	Describes the basic functions of JobCenter, as well as a complete set of operations, for first-time users of JobCenter.
JobCenter Basic Guide	Describes the basic functions of JobCenter, as well as how to operate it.
JobCenter Environment Guide	Describes various setting methods on the construction of environments required for using JobCenter, transferring of environment, linkage with other products, etc.
JobCenter Guide for using NQS function (Japanese only)	Describes methods of using NQS functions, the basis of JobCenter, from JobCenter.
JobCenter Guide for using operation logs and execution logs	Describes the functions for acquiring operation logs and job network execution logs from JobCenter CL/Win, as well as how to set the functions.
JobCenter Command Reference (Japanese only)	Describes JobCenter commands for performing job network entry and execution state referencing, etc. from the command line like a GUI.
JobCenter Guide for using Cluster function	Describes linkage methods for operating JobCenter in the cluster system.
JobCenter Guide for using Helper function (Japanese only)	Describes the following three functions that enable efficient operation of JobCenter using Excel: JobCenter Definition Helper (definition information maintenance), JobCenter Report Helper (business report creation), and JobCenter Analysis Helper (performance analysis).
JobCenter Guide for using SAP function (Japanese only)	Describes how to link JobCenter and SAP.
JobCenter Guide for using WebOTX Batch Server linkage function (Japanese only)	Describes how to link JobCenter and WebOTX Batch Server.
JobCenter Guide for Using the Web Function	Describes JobCenter CL/Web that is a function to monitor jobs by using a web browser.
JobCenter Guide for using the text definition function (Japanese only)	Describes how to define a job network, schedule, calendar, custom job template by using a text file.
JobCenter Guide for upgrading the version and applying the patches in a cluster environment (Japanese only)	Describes how to upgrade the version of JobCenter and apply the patches in a cluster environment.
JobCenter R15.1 Release Notes	Provides the information specific to JobCenter R15.1.

3. Revision history

Edition	Date of revision	Item	Format	Contents of revision
1	September 7, 2017	New	-	First Edition

Table of Contents

Introduction	iii
1. Legend	iv
2. Related manuals	v
3. Revision history	vi
1. Introduction	1
1.1. Product Contents	2
1.2. Remarks	4
2. Overview of JobCenter R15.1	5
2.1. New Functions and Enhanced Functions	6
2.1.1. JobCenter R15.1.1	6
2.1.2. JobCenter R15.1	6
2.2. Updated Items	7
2.2.1. Job execution environment in Windows	7
2.2.2. Windows version of License Manager	7
2.2.3. Changes in the user data directory configuration	7
2.2.4. Changing the internal architecture	8
2.2.5. Discontinuation of bundling of standard templates	9
2.2.6. Import and export functions	9
2.2.7. Connection from CL/Win R13.1 or later to MG/SV R12.10 or earlier	9
2.2.8. Modifications of the qmgr command of R13.2 and later releases	9
2.2.9. Extension of the default values for the error log file	9
2.2.10. About LicenseManager	10
2.2.11. Backup and Restore Function for Configuration Information	10
2.3. Functions Whose Supports Were Canceled in This Version	11
2.3.1. OS no longer supported by JobCenter MG/SV	11
2.3.2. OS no longer supported by JobCenter CL/Win	11
2.3.3. The OS is no longer supported by JobCenter Definition Helper, Analysis Helper, or Report Helper	11
2.4. Unsupported Functions	12
2.4.1. netatlas (UNIX version JobCenter)	12
2.4.2. Shared job network	12
2.4.3. Permission setting	12
2.4.4. Job network execution regulation	12
2.4.5. Device requests	13
2.4.6. CSV editing tool	13
2.4.7. Removed certain NQS commands	13
2.4.8. Load information collection system (lbpipeclient)	13
2.4.9. Online manual	13
2.4.10. Discontinued server environment setting functions (Windows version of JobCenter)	13
2.4.11. Job network construction and registration functions by using CSV files	14
2.4.12. API function of NQS	14
2.4.13. UCX Single Job Parts	14
2.4.14. HP-UX Version of the SAP Linkage Function	14
2.5. Function and Operating Environment Not Supported in Next and Succeeding Versions	15
2.5.1. Import and export functions	15
2.6. Functions Updated in Next and Succeeding Versions	16
2.7. Compatibility with Earlier Versions	17
3. Operating Environment	20
3.1. Supported OSs	21
3.1.1. Supported OSs	21
3.1.2. Details of OSs that support JobCenter MG/SV	21
3.1.3. Details of OSs that support JobCenter CL/Win	23

3.1.4. OSs and Excel versions supported by JobCenter Definition Helper, Analysis Helper, and Report Helper	23
3.1.5. Details of the OSs supported by JobCenter CL/Web, required software, and browsers	24
3.2. UNIX Version Details	25
3.2.1. Required memory capacity and disk capacity	25
3.2.2. Package installation directory	25
3.2.3. Disk capacity required besides the installation directory	25
3.2.4. Dependent package	26
3.3. Windows Version Details	27
3.3.1. Required memory capacity and disk capacity	27
3.3.2. Package installation directory	27
3.3.3. Disk capacity required apart from the installation directory	28
3.3.4. Dependent package	28
3.3.5. Necessary authority	29
3.4. Network Port Used in JobCenter	32
3.4.1. NQS	32
3.4.2. jccombase (JobCenter-specific protocol)	33
3.4.3. jcevent (JobCenter-specific protocol)	33
3.4.4. jnengine (JobCenter-specific protocol, in Windows only)	34
3.4.5. jcdbs (in Windows only)	34
3.4.6. https	34
3.5. Cluster Operating Environments	36
4. Functional Difference of JobCenter Server between the UNIX and Windows Version	37
4.1. Job Network	38
4.2. Job request	39
4.3. Operation/Environment Setting	41
5. Notes and Restrictions	42
5.1. Notes and Restrictions on UNIX Version MG/SV	43
5.1.1. Unusable user names	43
5.1.2. Cluster environment	43
5.1.3. Installation directory permission and root user umask value	43
5.2. Precautions and Restrictions on Windows Version MG/SV	44
5.2.1. Notes	44
5.2.2. Cluster environment	45
5.2.3. Restrictions on CL/Win	46
5.3. Notes and Restrictions on CL/Win	47
5.3.1. Screen Resolution	47
5.4. Other Information	48

1 Introduction

JobCenter is a system for performing batch processing on commercial UNIX, Linux and Windows operating systems. Batch processing places received requests in a queue and process them sequentially.

The JobCenter increases the efficiency of system operation by balancing system resource utilization.

1.1. Product Contents

JobCenter is set up from JobCenter media (DVD-ROM).

This product contains the following products.

■ JobCenter MG (manager function)

This function builds a job network (job) execution environment and monitors the state of multiple SVs. The Windows GUI (JobCenter CL/Win) is used to set up and monitor the execution environment. Although the installation media is the same as JobCenter SV, the MG license codeword is required for installation (except during the trial period).

■ JobCenter SV (job execution function)

Provides job execution functions based on NQS. This function also supports setting up a job network execution environment but cannot monitor the state of other SVs. The Windows GUI (JobCenterCL/Win) is used to set up the execution environment. Although the installation media is the same as JobCenter MG, the SV license codeword is required for installation (except during the trial period).

■ JobCenter CL/Win (Windows GUI)

GUI for connection to the manager/server on Windows. JobCenter CL/Win provides a viewer function for creating or scheduling jobs, checking the job execution result, or monitoring the state of multiple SVs in Windows. One license come with JobCenter MG.

Although CL/Win is available without license codeword registration, licenses for the number of machines that run CL/Win must be purchased.

■ JobCenter Definition Helper

This function enables you to edit the job network, schedule, and calendar by using Excel. A license is required.



If you upload and download without using Excel and use the text-format definition and editing functions, a license is not required.

■ JobCenter Report Helper

This product outputs forms of job networks, calendars, and schedules, as well as various JobCenter configuration data, by using Excel. A license is not required.

■ JobCenter Analysis Helper

This product collects and analyzes JobCenter execution records (trackers) by using Excel. A license is not required.

■ JobCenter for ERP Option(SAP ERP and SAP BI linkage function)

Provides jobs to the SAP ERP and SAP BI system.

■ JobCenter for WOBS Option(WebOTX Batch Server linkage function)

Provides and monitors jobs defined on the WebOTX Batch Server.

■ JobCenter CL/Web (Web GUI)

This product provides the viewer function that allows you to view jobs and monitor tracker states via a Web browser.

When installing CL/Web, a license codeword is required (except during the trial period).



■ Of the above, ERP Option, and WOBS Option are licensed products. These packages do not have to be installed.

Note, however, that when using ERP Option, and WOBS Option, licenses equivalent to the number of servers composing the JobCenter cluster will need to be purchased.

■ Documentation for these products is available on JobCenter Media in the form of PDF files.

1.2. Remarks

This document might be modified without prior notice.

2 Overview of JobCenter R15.1

This chapter describes features such as the new functions and updated items, of this version.

2.1. New Functions and Enhanced Functions

2.1.1. JobCenter R15.1.1

1. Support of Windows Server 2016 for JobCenter CL/Web

JobCenter CL/Web now supports Windows Server 2016. For details, refer to [Section 3.1, "Supported OSs"](#).

2.1.2. JobCenter R15.1

1. Addition of a function that submits the job network independently of the schedule

There is a new function that submits the job network independently of the schedule. For details, refer to in <Basic Guide>Chapter 7, 「Submitting the Job Network Independently of the Schedule」 .

2. Addition of HTTP connection parts (custom job template)

HTTP connection parts (custom job template) have been added. For details, refer to <Guide for using the extended custom job>Chapter 3, 「HTTP Connection Parts」 .

3. Enhancement of the function that refers to the execution result of preceding job parts

The function that refers to the execution result of preceding job parts has been enhanced. For details, refer to in <Basic Guide>Chapter 16, 「How to Check the Execution Results of Preceding Job Parts」 .

4. Addition of a function that switches the period in the tracker list automatically

There is a new function that switches the period in the tracker list automatically. For details, refer to in <Basic Guide>Section 8.8, "Switching the Period in the Tracker List Automatically".

5. Enhancement of the unit job execution result display function

There is a new function that displays the execution result of the unit job that is being executed. For details, refer to in <Basic Guide>Section 3.2.2, "Confirming the Result of an Immediate Submission (Unit Job Being Executed)".

6. Enhancement of the custom job part placement function

There is a new function that enables users to select the custom job definition from a group when placing the custom job part. For details, refer to in <Basic Guide>Section 5.5.1, "Placing a Custom Job Part".

7. Support of Windows Server 2016

JobCenter MG/SV and JobCenter CL/Win now support Windows Server 2016. For details, refer to [Section 3.1, "Supported OSs"](#).

2.2. Updated Items

2.2.1. Job execution environment in Windows

The user profile when each job is executed and the method used to specify user environment variables differs depending on the version of JobCenter being used. This affects the operation when a user command executed from a job needs to load a user profile.

JobCenter version	User profile	User environment variable
R12.7 or earlier	Loaded Cannot be changed	Not set Cannot be changed
R12.8 to R12.9	Not loaded (default) Can be changed (only on a site-by-site basis)	Not set Cannot be changed
R12.10 or later	Loaded (default) Can be changed (May be changed on a user-by-user basis)	Set (default) Can be changed (May be changed on a user-by-user basis)

The setting method when each job is executed is subject to change in R12.10 and later. For details, refer to in <Environment Guide>Section 12.3.3, "Specifying job execution settings".



If the JobCenter server has been upgraded, the setting method is the default method of the relevant version.

2.2.2. Windows version of License Manager

In R13.1 and later, License Manager also needs to be installed in the 64-bit version of Windows (x64/EM64T/AMD64) environment.



When you upgrade from JobCenter R12.10.x or earlier in the 64-bit version of Windows environment, you need to install License Manager before the upgrade. After installing License Manager, it is recommended to make sure that the license is unlocked by using the wsnlcheck command, before upgrading JobCenter.

2.2.3. Changes in the user data directory configuration

In R13.1 and later, the user data directory and file configuration has been changed.

2.2.3.1. Changes in the directory configuration for the UNIX version of JobCenter (MG/SV)

The location of the user data directory in the local site has been changed from the HOME directory of the user. When calculating the disk space used, note the difference in partitions.

User data directory (local site)

JobCenter version	User data directory
R12.10.x or earlier	\$HOME/NetShepEUI
R13.1 or later	/usr/spool/nqs/users/<user-name>

The user data directory in the cluster site is located in the site database and has not been changed.

User data directory (cluster site)

JobCenter version	User data directory
R12.10.x or earlier	<site-database>/gui/<user-name>
R13.1 or later	<site-database>/users/<user-name>

To migrate definitions from the older version, note the following.



- To inherit definitions from R12.10.x or earlier, upgrade the version of the site database or use the Helper function.
 - For information about how to upgrade the version of the local site, refer to in <Installation Guide>Section 5.1, "UNIX Version".
 - For information about how to upgrade the version of the cluster site, refer to in <Guide for using Cluster function>Section 2.6.2.2, "Upgrading the Site Database (UNIX Version)".
 - For details of the definition migration procedure using the Helper function, refer to in <Environment Guide>Section 13.2, "Migrating User Definition Data to Another Machine".

2.2.3.2. Changes in the Directory Configuration for the Windows Version of JobCenter (MG/SV)

The user data directory of the Windows version is located in the site database in both the local site and the cluster site and has not been changed.

To migrate definitions from the older version, note the following.



- When you upgrade from a version earlier than R12.10.x to R13.1 or later, the directory configuration is automatically changed. However, some user-placed files may not be relocated. If necessary, back up the data before the version upgrade.
- To inherit definitions from R12.10.x or earlier, upgrade the version of the site database or use the Helper function.
 - For information about how to upgrade the version of the local site, refer to in <Installation Guide>Section 5.2.2, "Windows Version (Normal Version Upgrade)".
 - For information about how to upgrade the version of the cluster site, refer to in <Guide for using Cluster function>Section 2.6.2.1, "Upgrading the Site Database (Windows Version)".
 - For details of the definition migration procedure using the Helper function, refer to in <Environment Guide>Section 13.2, "Migrating User Definition Data to Another Machine".

2.2.4. Changing the internal architecture

2.2.4.1. Data management by using the in-memory DB (jcdbs)

To reduce disk I/O, some data that has been managed in the disk under R12.10 and earlier Release is now managed under in-memory DB of R13.1 and later releases. This in-memory DB is managed by a new daemon process (resident process) called jcdbs.

As a result of this change, a new daemon process (resident process) called jcdbs is activated. For the memory space required by jcdbs, refer to in <Environment Guide>Chapter 19, 「System Usage Resources」 .

For the Windows version, the 23131/tcp port is used by default for inter-process communication within the server. For details about the port used by JobCenter, refer to [Section 3.4, “Network Port Used in JobCenter”](#).

2.2.4.2. Memory space required for executing a job network

As a result of the change of the internal architecture, the memory space required for executing a job network has increased by approximately 2.5 times from that of R12.10 and earlier release.

For the memory space requirement estimation method, refer to in <Environment Guide>Chapter 19, 「System Usage Resources」 .

2.2.5. Discontinuation of bundling of standard templates

Job networks and schedules, whose standard templates were offered previously, are no longer bundled with the media for R13.1 and later.

2.2.6. Import and export functions

Only the command line execution is supported for the import/export function in R13.1 and later. Because the related descriptions have been deleted in R13.1 and later, refer to the manual of the previous version to use the function. The function succeeding the import/export function is uploading/downloading of the Helper function, so use this function. The data exported by using the import/export function can be converted to the JPF format, which is the uploading file format. See below for details.

- in <Environment Guide>Section 13.2.4, “Supplement: Migrating Data in Versions Without Upload/Download Functions”

- Section 3.23, "jc_iedata_conv - Converting the import/export files to the JPF files" in <Command Reference>

2.2.7. Connection from CL/Win R13.1 or later to MG/SV R12.10 or earlier

In CL/Win R13.1 or later, a compatibility error occurs when an attempt is made to connect to MG/SV R12.10 or earlier, a warning "Cannot connect to incompatible server" is displayed and login fails. Construct an environment so that the versions of CL/Win and MG/SV match.

2.2.8. Modifications of the qmgr command of R13.2 and later releases

In R13.2 and later, the queue request information is not displayed when a subcommand of the qmgr command, "Show Long Queue", is executed while JobCenter is inactive.

2.2.9. Extension of the default values for the error log file

In R13.2, the default values of the file size and the backup count of the error log file output by JobCenter has been extended.

- UNIX version

In R13.1.x and earlier versions, the file size and the backup count are fixed. In R13.2, the values (default values) are extended and the modification is allowed.

- Windows version

In R13.2, the default values of the file size and the backup count has been extended. When JobCenter is newly installed, the default values are applied as they are. When the version is upgraded, the value greater than the previous value is used as the setting value.

For details, refer to in <Environment Guide>Section 20.2, "Changing Error Log Files".

2.2.10. About LicenseManager

In JobCenter MG/SV R14.1, no check is made to see whether the IP address specified when registering the codeword is valid on the machine.



■ If you install JobCenter MG/SV R14.1 and later to a machine with LicenseManager of R1.7 or earlier installed, upgrade the version of LicenseManager to R1.8 and later.

For details, refer to in <Installation Guide>Section 2.2, "Installing LicenseManager".

2.2.11. Backup and Restore Function for Configuration Information

In JobCenter MG/SV R14.2, default parameters have been added to the target configuration information to be backed up and restored.

For details, refer to in <Environment Guide>Section 16.2, "Backup and Restoration Target Configuration Information".

2.3. Functions Whose Supports Were Canceled in This Version

2.3.1. OS no longer supported by JobCenter MG/SV

The following operating systems are no longer supported by JobCenter MG/SV R15.1 and later.

- SUSE Linux Enterprise Server 10 SP3
- HP-UX 11i v2
- AIX 5.3

2.3.2. OS no longer supported by JobCenter CL/Win

The following operating systems are no longer supported by JobCenter CL/Win R15.1 and later.

- Windows Vista

2.3.3. The OS is no longer supported by JobCenter Definition Helper, Analysis Helper, or Report Helper

The following operating system is no longer supported by JobCenter Definition Helper, Analysis Helper, or Report Helper.

- Windows Vista

2.4. Unsupported Functions

2.4.1. netatlas (UNIX version JobCenter)

The use of NetAtlas (GUI for X Window) is not supported from version R12.2 and later. Operate using CL/Win (Windows GUI).

<NetAtlas support status in past versions>

R11.x or earlier	The NetAtlas function was frozen.
R12.1	Use of NetAtlas is supported (CL/Win recommended).
R12.2 to R12.4.x	Use of NetAtlas is not supported (only CL/Win supported).
R12.5 or later	NetAtlas is not included in the package.

2.4.2. Shared job network

In JobCenter R12.5 and later, the shared job network has been abolished. Thus, when upgrading JobCenter R12.4.x or earlier to R12.5 or later, move all job networks in the shared job network of the previous version to the job network group of an appropriate user before upgrading.

2.4.3. Permission setting

JobCenter R12.5 and later do not use the user levels A to D of the existing permission setting. Newly set access authority as the authority group.

For version upgrade, back up the following files before upgrading a version:

UNIX/Linux version	/usr/spool/nqs/gui/userlevel.f (For the cluster environment, <shared-DB-path>/nqs/gui/userlevel.f)
Windows version	%InstallDirectory%\jnwexe\spool\USERLEVEL.F (For the cluster environment, <shared-DB-path>\jnwexe\spool\USERLEVEL.F)

When you first log in from CL/Win as the JobCenter administrator after upgrading the version, the users set to the existing user levels A to C are inherited to default authority groups as follows:

User level	Default authority group
A	Job network developer (excluding the JobCenter administrator)
B	Job network operator
C	Execution supervisor
D	General user (Note: All users who do not belong to A to C are included.)

Note that the authority setting of each user level is not automatically inherited when the product is upgraded, so perform operations such as checking and moving to the appropriate authority group as the JobCenter administrator, in accordance with the instructions in <Environment Guide>Chapter 9, 「User Authority (Permission)」 .

2.4.4. Job network execution regulation

JobCenter R12.5 and later can set detailed access authority, so the job network execution regulation functions of JobCenter R12.4.x and earlier have been abolished and integrated.

The execution regulations that had to be set per user previously can be performed per authority group. Create a new authority group for which job network execution is not permitted or make the users who want to regulate job network execution belong to the default "execution supervisor" group.

2.4.5. Device requests

Device requests are no longer available.

2.4.6. CSV editing tool

The CSV editing tool is no longer available. Therefore, the tool is no longer included with the CL/Win installation media.

2.4.7. Removed certain NQS commands

The following NQS commands are no longer available.

- qdev
- qpr
- qprompt
- qstatc
- qstatd
- qstatf
- qstatp

2.4.8. Load information collection system (lpipeclient)

Of the NQS load balancing functions, the load information collection system is no longer supported. Although this system can still be set up, normal operation is not guaranteed.

Now, the load balancing function supports only the round robin system and the demand delivery system.

2.4.9. Online manual

Because the online manual has been discontinued for UNIX, the files in /opt/netshep/man are no longer installed.

2.4.10. Discontinued server environment setting functions (Windows version of JobCenter)

The [Server Environment Settings] screen was renewed in R12.8. The following functions are no longer available.

■ Changing the server administrator

Note that the JobCenter administrator account can no longer be changed after JobCenter MG/SV installation. JobCenter must be reinstalled to change this account.

(However, the password of the administrator account can be changed.)

■ Setting up the queue

The queue cannot be set up using the server environment settings. Use the manager frame of CL/Win or the qmgr subcommand to set up the queue.

2.4.11. Job network construction and registration functions by using CSV files

The job network construction and registration functions using the CSV file have been abolished. In the future, use the Definition Helper function or the text definition function.

2.4.12. API function of NQS

The API function of NQS was abolished.

2.4.13. UCX Single Job Parts

In R14.1, the UCX Single job parts are no longer available.

Note that some manuals may contain screenshots of UCX Single job windows and their explanations. In R14.1, however, they are no longer available.

2.4.14. HP-UX Version of the SAP Linkage Function

The HP-UX version of the SAP linkage function (execution control of ERP, BI, and PC jobs) of JobCenter MG/SV is no longer available.

2.5. Function and Operating Environment Not Supported in Next and Succeeding Versions

2.5.1. Import and export functions

While this version supports the import and export functions using the command line, these functions will not be supported in the next and succeeding versions. Use the upload and download features of the Helper function that are equivalent to the import and export functions.

2.6. Functions Updated in Next and Succeeding Versions

Currently, there is no plan.

2.7. Compatibility with Earlier Versions

■ Changes to the directory configuration for the Windows version of JobCenter (MG/SV)

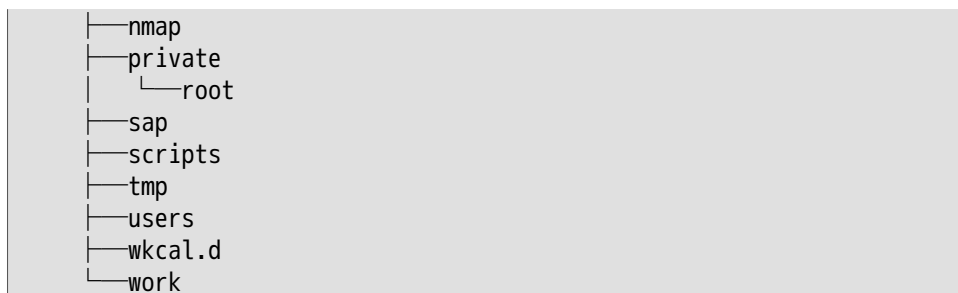
The directory configuration for R12.8 or later differs from that for earlier versions as shown below.

■ Directory configuration earlier than R12.7.x and earlier

```
[InstallDirectory]
├── ag
│   ├── lib...Combined with bin in R12.8
│   └── spool...No longer available in R12.8
├── bin
├── etc
├── ins...Function moved to setup in R12.8
├── jnwexe...No longer available in R12.8
│   ├── bin...Combined with bin in R12.8
│   ├── lib...Combined with bin in R12.8
│   └── spool
│       ├── cmn.d.C...No longer available in R12.8
│       ├── Sample.d...No longer available in R12.8
│       ├── <user-directory>...Moved to spool\users\ in R12.8
│       ├── sap.d...Moved to spool\sap in R12.8
│       └── wkcal.d...Moved to spool\wkcal.d in R12.8
├── lib
├── log...Moved to spool\log in R12.8
│   ├── debug
│   └── error
├── NMAP...Moved to spool\NMAP
├── SITE...No longer available in R12.8
├── SPOOL...Changed to spool in R12.8
│   ├── new
│   ├── private
│   └── scripts
├── TMP...No longer available in R12.8
└── users...Moved to spool\work in R12.8
```

■ Directory configuration for R12.8 or later

```
[Installation directory]
├── bin...Executable files
│   ├── check ...jc_check,jc_getinfo
│   ├── cluster...cjc-related commands
│   └── qcmd...q-series commands
├── doc
├── etc
├── lib
├── setup
├── spool
│   ├── conf
│   ├── log
│   │   ├── debug
│   │   └── error
│   └── new
│       └── requests
```



When the version is upgraded to R12.8 or later, the directory configuration automatically changes, but the locations of files you have saved might not change. Therefore, back up such files before the upgrade if necessary.

For how to upgrade, refer to in <Installation Guide>Chapter 5, 「Version Upgrade」 .

■Changes to the command paths for the Windows version of JobCenter (MG/SV)

The command paths for R12.8 or later differ from those for earlier versions as follows. For details about each command path, refer to the separately available <JobCenter Command Reference> (Japanese only).

Commands previously in the lib folder	Moved to bin
Commands previously in the bin folder	cjcls, cjcbsite, and cjcls have been moved to bin\cluster. q-series commands (such as qmgr, nmapmgr, and qdel) have been moved to bin\qcmd. Other commands remain in bin. Note that cjcinit and cjcpcopy are no longer available in R12.8 or later.
Commands previously in the jnwexe\lib folder	Moved to bin nqslcsget.exe is no longer available in R12.8 or later.

■Combination of the services in the Windows version of JobCenter (MG/SV)

In earlier versions, there were four JobCenter-related services, but these have been combined into one service in R12.8. Be especially aware of this change when monitoring processes.

Version	Service configuration
R12.7.x and ealier	NetShepherd jnwengine Service ComAgent Service Sclaunch Service
R12.8 and later	JobCenter Service

■Compatibility of calendar definition between R12.8.2 or later and R12.8.1 or earlier

The time zone setting function was implemented in the calendar as of R12.8.2.

The calendar definition format was changed in line with this implementation. Therefore, once you use the time zone setting function in the calendar in R12.8.2 or later, a calendar definition for which the time zone was set in R12.8.1 or earlier can be no longer used.

Back up calendar definitions, such as by importing or exporting them, before upgrading version R12.8.1 or earlier to R12.8.2 or later.

■ Environment that has multiple versions (different MG/SV and CL/Win versions)

Be sure to match the MG/SV version at the connection destination with the CL/Win version at the connection source. Otherwise, note that normal operation is not ensured due to a difference in functions.

■ Environment in which different versions exist (different MG and SV versions)

The following functions are supported for linkage between different versions of MG and SV.

■ Remote transfer and execution of the NQS job request

There is no restriction when both versions of linked MG and SV are R12.7 or later.

If either version is R12.6.x or earlier, these functions are supported as long as the following restrictions are satisfied.

1. SV only executes remotely transferred job requests while job networks and schedules are consolidated in MG.
2. Use an nmapmgr subcommand (add mid or add uid) instead of CL/Win on each machine to add a machine to the machine list or to perform user mapping.
3. Always specify the pipe queue on your machine as the unit job destination queue on MG. Do not directly specify a queue on a remote machine.
4. Use the qmgr subcommand (set destination) on each machine to specify a queue on a remote machine in the transfer destination queue of the pipe queue.
5. Individually connect to the version of CL/Win appropriate for each machine to specify other machine settings. (Note, however, that settings such as referencing remote machine queues and user mapping cannot be changed across machines.)

■ Event linkage feature using the event transmission part and event reception part

There is no restriction due to a difference between the versions of MG and SV.

Note that functions other than those described above are not supported.

■ Using different versions of CL/Win

Different versions (R12.x) of CL/Win can be installed on the same PC by using different installation folders. However, using different patch application levels (R12.x.y) for the same major version is not allowed (R12.x). (For example, R12.5 and R12.5.4 cannot coexist.)

The version must be R12.5 or later if you wish to individually uninstall versions. Individual uninstallation is not supported in older versions because the same GUID is assigned to each CL/Win program.

3 Operating Environment

This chapter describes the platforms and operation environments supported by JobCenter.

3.1. Supported OSs

This section introduces the correspondence between JobCenter products and OSs.

For latest information, access the following operating environment page of the JobCenter product site:

<http://www.nec.co.jp/middle/WebSAM/products/JobCenter/dousa.html>

3.1.1. Supported OSs

Each JobCenter license supports the following OSs.

Product name	Windows	Linux	HP-UX	AIX
JobCenter MG	✓	✓	✓	✓
JobCenter SV	✓	✓	✓	✓
JobCenter CL/Win	✓			
JobCenter Definition Helper, Analysis Helper, Report Helper	✓ ^{Note_1}			
JobCenter for ERP Option	✓	✓		
JobCenter for WOBS Option	✓	✓		
JobCenter CL/Web	✓ ^{Note_2}	✓ ^{Note_2}		

^{Note_1}Excel must be separately purchased.

^{Note_2}JRE must be separately purchased.

3.1.2. Details of OSs that support JobCenter MG/SV

The OSs supported by JobCenter MG/SV are listed in the table below.

✓(IPv6): Supported already (IPv6 supported), ✓: Supported already, -: Not scheduled to be supported, Blank: Not supported

OS	Version	IA-32	x64 /EM64T /AMD64	IA-64 (IPF)	PA-RISC	POWER
Windows Server ^{Note_1}	2008	-	✓	-		
	2008 R2		✓			
	2012		✓			
	2012 R2		✓(IPv6) ^{Note_2}			
	2016		✓			
Windows Storage Server ^{Note_1}	2008	-	✓			
	2008 R2		✓			
	2012		✓			
	2012 R2		✓			
	2016		✓			
Red Hat Enterprise Linux ^{Note_3}	5	-	✓	-		
	6	-	✓			
	7		✓(IPv6) ^{Note_2}			

SUSE Enterprise Linux Note_3	Server	11	-	✓	-		
		12	-	✓	-		
Oracle Linux Note_4	Note_3	5	-	✓			
		6	-	✓			
		7		✓			
HP-UX		11i v3			✓ ^{Note_5}	-	
AIX		6.1, 7.1					✓

Note_1 For details of the notes and restrictions, refer to Windows in [Section 3.1.2.1, "Notes and Restrictions"](#).

Note_2 IPv6 is not supported for the ERP Option and WOBS Option.

Note_3 This is not supported in SELinux.

Note_4 Both the UEK and the Red Hat-compatible kernel can be used.

Note_5 For details of the notes and restrictions, refer to HP-UX in [Section 3.1.2.1, "Notes and Restrictions"](#).

3.1.2.1. Notes and Restrictions

This section describes the notes and restrictions for the OSs supported by JobCenter MG/SV.

■ Windows

- Environments where operation is not guaranteed

Operation is not guaranteed in the following environments:

- Domain environments including a read-only domain controller (RODC)
- Server Core environments (For Windows Server 2012, only "Full installation" and "Minimal Server Interface" are supported. Even if the "Server Core installation" option is selected, it will not be supported. After installing Windows Server 2012, if the OS configuration is changed to the same configuration as "Server Core installation", the environment will not be supported.)

- Windows Service Hardening

Because the Windows Service Hardening function has been added as of Windows Server 2008, when you execute a JobCenter unit job script that includes a command to display a window or a batch job that contains such a command, that window is displayed in Session #0.

For information about Windows Service Hardening, refer to the URL below.

<http://technet.microsoft.com/ja-jp/library/dd314461.aspx>

Because interactive services are prohibited by default for Windows Server 2012 and later, even if a command to display a window when JobCenter starts as a service and a batch job including such a command is executed, that window will not be displayed.

- Authorities necessary for JobCenter operation

The authorities described in [Section 3.3.5, "Necessary authority"](#) are necessary to operate JobCenter. In the default Windows Server OS environment of Windows Server 2008 or later, these authorities might be removed when you add a user or change the JobCenter user group. After adding a user or changing the JobCenter user group, check the settings to determine whether necessary authorities have been granted to the user.

- Operation of touch screens

Operation of touch screens is not supported.

■ HP-UX

The following restrictions are applied to the JobCenter operating environment on 11iv3 (Itanium). Note that operations in the environment in which these restrictions are not observed are unsupported.

Item	Restrictions
User name	Set the user name with up to 15 bytes.
Group name	Set the group name with up to 16 bytes.
Host name	The host name specified in expanded_node_host_names is not supported if it exceeds 65 bytes.
OS patch	PHKL_36883 or the recommended or latest patch that includes PHKL_36883 must be applied.

3.1.3. Details of OSs that support JobCenter CL/Win

The OSs supported by JobCenter CL/Win are listed in the table below.

✓(IPv6): Supported already (IPv6 supported), ✓: Supported already, -: Not scheduled to be supported, Blank: Not supported

OS	Version	IA-32	x64/EM64T /AMD64	IA-64(IPF)
Windows ^{Note_1}	7	✓ (IPv6)	✓ (IPv6)	
	8.1 ^{Note_2}	✓ (IPv6)	✓ (IPv6)	
	10 ^{Note_2}	✓ (IPv6)	✓ (IPv6)	
Windows Server ^{Note_1}	2008	✓ (IPv6)	✓ (IPv6)	-
	2008 R2		✓ (IPv6)	-
	2012 ^{Note_2}		✓ (IPv6)	
	2012 R2 ^{Note_2}		✓ (IPv6)	
	2016		✓	
Windows Storage Server ^{Note_1}	2008	✓	✓	
	2008 R2		✓	-
	2012 ^{Note_2}		✓	
	2012 R2 ^{Note_2}		✓	
	2016		✓	

^{Note_1}Only JIS90-compatible.

^{Note_2}Operation of touch screens is not supported.

3.1.4. OSs and Excel versions supported by JobCenter Definition Helper, Analysis Helper, and Report Helper

This function supports the following OSs and Excel versions.

OS	Architecture	Excel version
Windows ^{Note_2}	IA-32, x64	2010, 2013, 2016

^{Note_2}Only JIS90-compatible.



Only IA-32 environments are supported for Windows Vista.

IA-32 and x64 environments are supported for Windows 7, Windows 8, Windows 8.1, and Windows 10.

3.1.5. Details of the OSs supported by JobCenter CL/Web, required software, and browsers

The following table shows the versions of the OSs supported by this function, required software, and supported Web browsers. (IPv6 is supported for all.)

■ CL/Web server

OS	Version	Required Software
Windows Server	2008	Java SE JRE7 or JRE8 from Oracle
	2008 R2	
	2012	
	2012 R2	
	2016	
Red Hat Enterprise Linux	5	Open JDK1.7, or Java SE JRE7 or JRE8 from Oracle
	6	
	7	



x64 environments are supported for Windows Server 2008, 2008 R2, 2012, 2012 R2, and 2016.

x64 environments are supported for Red Hat Enterprise Linux 5, 6, and 7.

■ Web browser

OS	Supported Browser	Version
Windows ^{Note_1}	Internet Explorer	11
	Firefox ESR ^{Note_2}	52
Linux	Firefox ESR ^{Note_2}	52
iOS 9 (only iPad)	Safari	9

^{Note_1} Operation of touch screens is not supported.

^{Note_2} For information about the Extended Support Release (ESR) of Firefox, refer to the URL below.

<http://www.mozilla.jp/business/>

3.2. UNIX Version Details

3.2.1. Required memory capacity and disk capacity

The disk capacity necessary for the installation directory and the minimum memory capacity necessary for operation are shown in the table below.

1. JobCenter MG/SV

Item	Description
Memory capacity	256 MB or more
Fixed disk capacity	256 MB or more ^{Note_1}

^{Note_1} JobCenter for ERP Option and JobCenter for WOBS Option need not be installed, because they are licensed products. Therefore, these products never consume HDD disk capacity.

However, the cluster environment requires that the HDD capacity required for cluster site operation be reserved on a shared disk when the cluster is set up.

For details about the cluster environment, refer to <Guide for using Cluster function>.

For details about estimating the disk capacity, refer to in <Environment Guide>Chapter 19, 「System Usage Resources」.

2. JobCenter CL/Web

Item	Description
Memory capacity	1 GB or more (2 GB or more recommended)
Fixed disk capacity	100 MB or more

3.2.2. Package installation directory

By default, the JobCenter package is installed in any of the following directories. In addition, a disk area that stores job data is required in any partition.

Installation target	OS	Installation directory
JobCenter MG/SV main program	HP-UX	/opt/netshep
	Linux	/usr/local/netshep
	AIX	/usr/lpp/NECJCpkg
JobCenter CL/Web Server main program	Linux	/usr/local/jcclweb (This can be changed.)



With the CL/Web Server, a directory can be specified during installation.

3.2.3. Disk capacity required besides the installation directory

In addition to the disk capacity for the installation directory, disk capacity is necessary to record user-defined job networks and schedule data (local site only).

For details, refer to in <Environment Guide>Section 19.3, “Estimating the Disk Space Used (For UNIX)”.

3.2.3.1. Spool directory

The definition files such as job networks, schedules, and calendars, and the definition data and execution result of the current job (standard job output and standard error output) are stored in the directory below.

■ /usr/spool/nqs

By default, job execution result information is saved for about three days. Job-independent log files and various definition files are also stored in this spool directory.

This directory requires a capacity of at least 30 MB. However, if the amount of definition information such as job networks increases or if a particularly large amount of data is output to the standard job output and standard error output, capacity equivalent to that amount will be additionally required.

3.2.4. Dependent package

1. License Manager

Because JobCenter checks the license by using License Manager, it is necessary to install the package below, register the codeword, and activate the license before installing JobCenter.

■ NECWSLM: LicenseManager



For HP-UX for Itanium or AIX platform, License Manager does not need to be installed. Register only the codeword.

For the procedure for registering the codeword, refer to in <Installation Guide>Section 2.3, "Codeword Registration".

2. "Compatible architecture support" package (in Linux EM64T only)

Install the "compatible architecture support" package in the Linux OS in advance, because some modules of the Linux version of JobCenter are created as 32-bit.

For details, refer to in <Installation Guide>Section 2.4.2, "Linux Version".

3. HP Operations Manager (formerly called OVO) linkage module (in HP-UX only)

To link events using the OPC message in HP Operations Manager, replace the current module with the linkage module (jnwopcr) appropriate for your version of HP Operations Manager (formerly called OVO) after setting up and starting JobCenter. Download the linkage module from the NEC support portal indicated in your maintenance contract, or obtain it from an NEC customer service center.

4. Applying patches or other packages

After newly installing JobCenter (MG/SV), download the latest MG/SV and CL/Win accumulated patches for addressing critical problems from the NEC support portal indicated in your maintenance contract or obtain them from an NEC customer service center and be sure to apply them before commencing operation of JobCenter.

If your OS vendor provides an OS security patch or patch cluster, apply them to the OS. For questions about other operation environments, visit the operation environment page on the JobCenter product website or contact an NEC sales representative or dealer.

<http://www.nec.co.jp/middle/WebSAM/products/JobCenter/dousa.html>

3.3. Windows Version Details

3.3.1. Required memory capacity and disk capacity

1. JobCenter MG/SV

Item	Description
Memory capacity	1.5 GB or more
Fixed disk capacity	1.5 GB or more ^{Note_1}

^{Note_1}JobCenter for ERP Option and JobCenter for WOBS Option do not need to be installed, because they are licensed products. Therefore, these products never consume HDD disk capacity.

However, the cluster environment requires that the HDD capacity required for cluster site operation be reserved on a shared disk when the cluster is set up.

For details about the cluster environment, refer to <Guide for using Cluster function>.

For details about estimating the disk capacity, refer to in <Environment Guide>Chapter 19, 「System Usage Resources」 .

2. JobCenter CL/Win

Item	Description
Memory capacity	20 MB or more
Fixed disk capacity	20 MB or more

3. JobCenter Definition Helper, Analysis Helper, Report Helper

Item	Description
Memory capacity	1 GB or more (2 GB or more recommended)
Fixed disk capacity	10 MB or more

4. JobCenter CL/Web

Item	Description
Memory capacity	1 GB or more (2 GB or more recommended)
Fixed disk capacity	100 MB or more

3.3.2. Package installation directory

By default, the JobCenter package is installed in any of the following directories. In addition, a disk area that stores job data is required in one partition.

Installation target	Installation directory (recommended)
JobCenter MG/SV main program	C:\JobCenter\SV
JobCenter CL/Win main program	C:\JobCenter\CL
JobCenter CL/Web Server main program	C:\JobCenter\jcclweb
JobCenter Definition Helper main program	Any location (However, it is necessary to place the decompressed xls file and bin directory in the same location.)
JobCenter Analysis Helper main program	Any location (However, it is necessary to place the decompressed xls file and bin directory in the same location.)

JobCenter Report Helper main program	Any location (However, it is necessary to place the decompressed xls file and bin directory in the same location.)
--------------------------------------	--



You can freely specify the installation directory during the actual installation.

Note that, when you install the package to the environment of Windows Vista or later or Windows Server 2008 or later, you cannot install it to system-protected folders. Specify a folder other than these folders.

The system-protected folders refer to folders under "system-drive\Windows", "system-drive\Program Files", and "system-drive\Program files (x86)" (in the case of the 64-bit version).

3.3.3. Disk capacity required apart from the installation directory

Besides the installation directory, the disk capacity to store defined job data and job execution results is required. %InstallDirectory% represents the JobCenter MG/SV installation directory. For details, refer to in <Environment Guide>Section 19.6, "Estimating the Disk Space Used (For Windows)".

■ Spool directory

This directory stores definition files such as job networks, schedules, and calendars, and the definition data and execution result of the current job (standard job output and standard error output). It is equivalent to /usr/spool/nqs in the UNIX version of JobCenter.

The following subdirectories are included.

```
%InstallDirectory%\spool
```

The job execution status information is saved for three days by default. Job-independent log files and various definition files, etc., are also stored in this spool directory.

This directory requires a capacity of at least 30 MB. The required capacity changes depending on the number of job networks and other definitions and the amount of job execution result data.



This directory is equivalent to /usr/spool/nqs in the UNIX version of JobCenter.

3.3.4. Dependent package

■ License Manager

JobCenter uses LicenseManager for the license check. Therefore, in order to install JobCenter, you need to install LicenseManager in advance, register the codeword, and unlock the codeword.

For the procedure for registering the codeword, refer to in <Installation Guide>Section 2.3, "Codeword Registration".

■ Microsoft Visual C++ 2015 redistributable package

The Microsoft Visual C++ 2015 redistributable package requires the use of JobCenter (MG/SV) and JobCenter CL/Win. Application of Windows update programs KB2919442 and KB2919355 is required for installation of the Microsoft Visual C++ 2015 redistributable package in the OS described below.

- Windows 8.1
- Windows Server 2012 R2

Apply KB2919442 and KB2919355 by referring to the Windows Update or Microsoft release information described below.

<https://support.microsoft.com/ja-jp/help/2919355/>

■Applying security patches or other packages

After newly installing JobCenter (MG/SV), download the latest MG/SV and CL/Win accumulated patches for addressing critical problems from the NEC support portal indicated in your maintenance contract or obtain them from an NEC customer service center and be sure to apply them before commencing operation of JobCenter.

If Microsoft provides Windows security patches (such as Hotfixes), apply them to the OS.

For details about JobCenter support conditions related to service pack (SP) application, refer to the operation environment page on the JobCenter product website or contact an NEC sales representative or dealer.

<http://www.nec.co.jp/middle/WebSAM/products/JobCenter/dousa.html>

3.3.5. Necessary authority

Normal operation of JobCenter requires that necessary authority be given to JobCenter administrator users and other JobCenter users. This authority can be usually set from [Administrative Tools] → [Local Security Policy] (For a user in domain environment, this can be set from [Domain Security Policy] and [domain controller security policy] of the domain controller).

Usually, this authority is given without problems. Depending on the security policy of the target system, however, they may be not given.

The following provides necessary authority. Give this authority to JobCenter users.

1. The permissions required by JobCenter users are as follows (these are normally assigned by the OS by default).

Permissions	Meaning
SeBatchLogonRight	Log on as batch job
SeInteractiveLogonRight	Log on locally



■The two rights are automatically granted to the JobCenter administrator when JobCenter is set up, as indicated above.


■If the JobCenter administrator is a domain environment user, the policies subject to automatic right addition are as follows.

Machine in which JobCenter is set up	Target policy
Domain controller	Domain controller security policy
Domain member server	Local security policy

2. In addition to 1, the permissions required by JobCenter administrators are as follows (these are normally assigned by the OS by default).


Permissions	Meaning
SeBackupPrivilege	Back up files and directories

SeChangeNotifyPrivilege	Scan check bypass
SeCreateGlobalPrivilege	Creation of global objects
SeDebugPrivilege	Program debugging
SeIncreaseQuotaPrivilege	Addition of memory quarter for process
SeNetworkLogonRight	Access this computer from the network
SeRestorePrivilege	Restoration of files and directories
SeSecurityPrivilege	Management of audit and security logs
SeSystemEnvironmentPrivilege	Modification of firmware environment values
SeTakeOwnershipPrivilege	Acquisition of ownership of files and other objects

 Note that of the above, SeCreateGlobalPrivilege is not subject to checking by the setting check commands (jc_check and jc_getinfo). However, this permission is required by JobCenter administrators, so be sure to assign it.

3. In addition to 1 and 2, the permissions required by JobCenter administrators are as follows (these are automatically assigned by during JobCenter Setup).


Permissions	Meaning
SeAssignPrimaryTokenPrivilege	Replace a process level token
SeServiceLogonRight	Log on as a service
SeTcbPrivilege	Act as part of the operating system

 If the JobCenter administrator is a domain environment user, the policies subject to automatic right addition are as follows.

Machine in which JobCenter is set up	Target policy
Domain controller	Domain controller security policy
Domain member server	Local security policy

4. Permissions that should preferably be assigned to the Administrators group (assigned by the OS by default)

Permissions	Meaning
SeCreatePagefilePrivilege	Creation of page file
SeIncreaseBasePriorityPrivilege	Raising scheduling priority
SeLoadDriverPrivilege	Loading and unloading device drivers
SeProfileSingleProcessPrivilege	Profile of single process
SeRemoteShutdownPrivilege	Forced shutdown from remote computer
SeShutdownPrivilege	System shutdown
SeSystemProfilePrivilege	Profile of system performance
SeSystemtimePrivilege	Changing system time

 The operation of JobCenter itself will not be affected if these permissions are not assigned. However, if a command that launches from a JobCenter job requires the

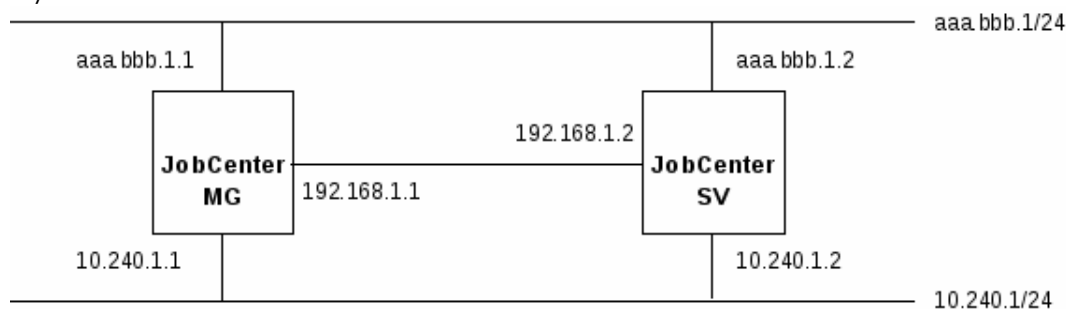
Administrators default permissions, not assigning these permissions might affect the operation of JobCenter. It is therefore recommended to assign these permissions.

For the requirements for the JobCenter user in Windows, refer to "Notes for Windows" in in <Installation Guide>Section 2.1.1, "Checking Notes in Advance".

3.4. Network Port Used in JobCenter

Transmission Control Protocol/Internet Protocol (TCP/IP) is used as the network protocol between JobCenter servers. Set up JobCenter so that both MG and SV can normally operate TCP/IP and resolve host names.

For communication between and within servers in JobCenter, several TCP/IP port numbers specified when setting up JobCenter are used. (A TCP/IP port is a connection point on the computer at which the device that exchanges data with the computer can be connected.) When using a port number different from the default, set up JobCenter so that the same number is used in all MGs and SVs that make up a given system.



In the above figure, aaa.bbb.1.1 through aaa.bbb.1.2 are global addresses while 10.240.1.1 through 10.240.1.2, 192.168.1.1, and 192.168.1.2 are private addresses. Properly set up the network routing table so that jobs transferred from MG to SV and results returned from SV to MG go through the same network.

Six types of protocols and TCP port numbers used in JobCenter MG/SV and JobCenter CL/Win are described below. Use this description as a guideline when setting up a firewall or other filtering rules.



Representation of port numbers

n/tcp→m/tcp: A TCP connection is established from the source port n to the destination port m. This connection is used for data communication in both directions.



For further details, including other notes and cautions, refer to in <Environment Guide>Chapter 2, 「Building a Network Environment」 .

3.4.1. NQS

This protocol is used to control jobs between MG and SV or SV and SV (transferring unit job requests and acquiring results).

Because NQS is used for bidirectional communication during a job transfer, result file transfer, or state report from SV to MG, the ports shown in the table below are used.

The connection is terminated immediately after the data transfer ends when a job request is transferred from MG to SV or when a job execution result is returned from SV to MG.

■Ports used with NQS protocols

JobCenter MG		JobCenter SV
512 to 1023/tcp ^{Note 1}	→	607/tcp

607/tcp	← Note 2	512 to 1023/tcp ^{Note 1}
---------	----------	-----------------------------------

^{Note 1} These ports are usually called "Well-Known Ports". Select an unused tcp port in the range from 512 to 1,023 as the source port.

^{Note 2} A connection for reporting the state from SV to MG (a job execution state report) is always maintained in addition to the connection for transferring job requests and returning results.

This connection does not perform the keepalive operation. If there is a router or firewall in the network between MG and SV, the router might detect the non-communication state and disconnect the session on one side, leaving the session half open and causing a TCP/IP communication problem.

To avoid this, specify the following settings:

- Set up the schedule so that MG periodically provides an empty job only containing "exit" to SV (to force SV to report the state to MG).
- Include SV in the MG machine group (so that SV periodically reports the state to MG).

Always maintain this connection to your computer.

3.4.2. jccombase (JobCenter-specific protocol)

This protocol is used to operate JobCenter from CL/Win. When the Nscl_Submit, Nscl_Refer, jnwsubmitcmd -r, jdh_upload, jdh_download, or jnwdelete (Windows version only) is executed, data of the command is transmitted to the target remote host by using this protocol.

It is also used to control queues between MG and SV and perform manager operation of JobCenter including machine list management etc. (It is not directly related to job control.)

A new connection is established every time CL/Win requests an operation from SV. This connection is maintained until SV transfers the result to CL/Win and is terminated immediately after the data transfer ends.

■ Ports that the jccombase protocol uses

JobCenter CL/Win		JobCenter MG/SV
1024 or greater/tcp ^{Note 1}	→	611/tcp

^{Note 1} The ephemeral port is selected and used as the source port. Please note that you will not be able to connect to an ephemeral port if it there is no free ephemeral port.

It should be noted that does not put a connection to from MG/SV CL/Win.

JobCenter MG		JobCenter SV
1024 or greater/tcp ^{Note 1}	→	611/tcp

^{Note 1} The ephemeral port is selected and used as the source port. Please note that you will not be able to connect to an ephemeral port if it there is no free ephemeral port.

It should be noted that does not put a connection to from MG/SV CL/Win.

3.4.3. jcevent (JobCenter-specific protocol)

This protocol is used by the function of transmitting/receiving job network events. A new connection is established every time the event transmission part sends an event. This connection is terminated immediately after the data transfer ends.

However, under the specific conditions, a connection may be established to send notification from the event receiver to the event sender.

When "Waits for file in another JobCenter server" is set to ON for a file waiting part, a connection that uses this protocol is established on MG/SV on the remote machine. This connection is maintained until the operation to wait for the remote file finishes.

■ Ports that the jcevent protocol uses

JobCenter MG/SV		JobCenter MG/SV
1024 or greater/tcp ^{Note 1}	→	10012/tcp
10012/tcp	← ^{Note 2}	1024 or greater/tcp ^{Note 1}

^{Note 1}The ephemeral port is selected and used as the source port. Please note that you will not be able to connect to an ephemeral port if there is no free ephemeral port.

It should be noted that does not put a connection to from MG/SV CL/Win.

^{Note 2}The event receiver establishes a connection and notifies a status to the event sender in the following cases.

- Reception acknowledgement is set to ON in the event transmission part and the event reception part is activated later and then the event is received.
- The event that was sent is overwritten by the same event later.
- Due to the event that was sent, the number of events that can be retained in the receiver is exceeded and, as a result, old received events are discarded (if JNWENGINE_OPT=-u is not specified).

3.4.4. jnwengine (JobCenter-specific protocol, in Windows only)

This protocol is used for communication between processes in the host or site. Use the port number 609/tcp.

3.4.5. jcdbs (in Windows only)

This protocol is used for communication between processes in the host or site. The ephemeral port is used to communicate with the port number 23131 / tcp as a source port. Please note that you will not be able to connect to an ephemeral port if there is no free ephemeral port.



When JobCenter is started, each resident process tries to initialize the port numbers of "NQS" to "jnwengine" above for socket communication. Note that JobCenter cannot be started if another application or process already uses these port numbers or if the JobCenter process already resides in and occupies the port numbers for some other reason.

In the case of Linux in particular, the jcombase service 611/tcp conflicts with the existing npmp-gui service, so either comment out the npmp-gui service entry or change the number of the jcombase service.

When changing the number to which the jcombase service is allocated, change the port number of the following registry key from 611 to another number as required. (Enter the corresponding setup JobCenter version for R13.x.)

[HKEY_LOCAL_MACHINE]-[SOFTWARE]-[NEC]-[JobCenter(CL/Win)]-[R13.x]-[ComBasePort]

3.4.6. https

This protocol is used for communication between the CL/Web server and Web browser.

■ Port used by the https protocol

Web browser		JobCenter CL/Web
n/tcp ^{Note 1}	→	443/tcp

^{Note 1}For the port number used by the Web browser, contact the Web browser vendor. In addition to the above, use the ephemeral port for internal communication of CL / Web server as the source port. Please note that you will not be able to connect to an ephemeral port if there is no free ephemeral port.



For further details including other notes and cautions, refer to in <Environment Guide>Chapter 2, 「Building a Network Environment」 .

3.5. Cluster Operating Environments

JobCenter supports the following cluster operating environments:

- HP Serviceguard
- Microsoft Cluster Service, Microsoft Failover Cluster
- CLUSTERPRO (product name outside of Japan: ExpressCluster)
- PowerHA(HACMP)

4 Functional Difference of JobCenter Server between the UNIX and Windows Version

The Windows version and UNIX version of JobCenter provide almost the same functions. However, difference in OS between UNIX and Windows produces slight differences in function.

Such functional differences are described below. For functions not described here, refer to <JobCenter Basic Guide>.

4.1. Job Network

- In the Windows version, suspend function of unit job is not supported.

4.2. Job request

- Batch requests are described in batch file format (BAT) in the Windows version and in UNIX shell script in the UNIX version.
- In the Windows version, resource limit values specified as batch requests are ignored.
- In the Windows version, a nice value specified as a batch request attribute is interpreted as follows.

Specified value	nice	Process priority class for Windows version
-20		REALTIME
-19 to -1		HIGH
0 to 8		NORMAL
19		IDLE

- In the Windows version, environment variables generated by executed requests are as shown below. Note that, under the default setting of R12.10 or later, if the job execution user has any environment variable with the same variable name, the value of that environment variable is overwritten.

Variable name	Value (example)	Remarks
ComSpec	C:\WINNT\System32\cmd.exe	Fixed for Windows installation directory
Path	C:\WINNT\System32;C:\WINNT	Fixed for Windows installation directory
Os2LibPath	C:\WINNT\System32\os2\dll	The value at the start of service is saved.
SystemRoot	C:\WINNT	The environment variable when the service starts is saved.
SystemDrive	C:	The environment variable when the service starts is saved.
Windir	C:\WINNT	The environment variable when the service starts is saved.
Temp	%SystemDrive%\TEMP	Use the value stored in the following registry HKEY_USERS\DEFAULT\Environment\TEMP
Tmp	%SystemDrive%\TMP	Use the value stored in the following registry HKEY_USERS\DEFAULT\Environment\TMP
ENVIRONMENT	BATCH	Fixed value
USERNAME	Jobuser	Mapped user name
QSUB_HOST	host01	Name of the host that created the job
QSUB_REQID	10.host01	Job request ID
QSUB_REQNAME	STDIN	Request name
QSUB_WORKDIR	/tmp	qsub command execution directory

Functional Difference of JobCenter Server
between the UNIX and Windows Version

QSUB_SHELL	/usr/bin/csh	SHELL environment variable for qsub command execution
QSUB_PATH	/usr/bin:/usr/sbin:/sbin	PATH environment variable for qsub command execution
QSUB_LOGNAME	user1	LOGNAME environment variable for qsub command execution
QSUB_USER	user1	USER environment variable for qsub command execution
QSUB_MAIL	/var/mail/user1	MAIL environment variable for qsub command execution
QSUB_TZ	JST-9	TZ environment variable for qsub command execution

- In the Windows version, the execution shell is cmd.exe. Operation is assumable only when cmd.exe is specified as the execution shell.
- In the Windows version, drive name (A: etc.) is available in the path name of a result file. However, a host name consisting of one character is interpreted as a drive name.
- In the Windows version, the following functions are not supported.
 - Embedded options for batch requests
 - Device requests
 - Network requests
 - Job step restart
 - API library

4.3. Operation/Environment Setting

- In the Windows version JobCenter, only operation from CL/Win is supported. JobCenter user commands of NQS system, such as qstat, are unavailable for the Windows version.

In the Windows version JobCenter, NQS information display command of qstat system is unavailable to display request information etc.

The qmgr and nmapmgr JobCenter administrator commands can be used.

- In the Windows version, the following operations and environment settings are restricted.
 - Only FIXED can be specified as the NQS shell selection method. FREE and LOGIN cannot be selected.
 - The mapping mode is fixed to TYPE3. If a job is transferred among multiple servers, referring to queues and requests in other machines from CL/Win requires a user to be mapped in the servers.
 - The system refers to the environment variable TZ in the Windows server machine system for the time zone.
 - The nqsstart and nqsstop commands are not supported. Start or stop the site by using the server environment settings or the cjcpw command.
- In the Windows version, the following operations are not supported.
 - Batch request pause/resume
 - Batch request reregister
 - Batch request move
 - Message transmission in response to batch request
 - Request execution shell change

5 Notes and Restrictions

This chapter describes the notes and restrictions on this version.

For details about the preparations required before installation, refer to in <Installation Guide>Section 2.1.1, “Checking Notes in Advance” in addition to this chapter.

For notes on using the Windows version, refer to in <Installation Guide>Section 2.4.4, “Windows Version (Normal Installation)”.

5.1. Notes and Restrictions on UNIX Version MG/SV

5.1.1. Unusable user names

- JobCenter cannot use the user name "CommonJNW". And JobCenter does not allow to use the same name for a user name and a host name.
- A user name that exceeds 15 bytes cannot be used.
- User names in which the first character is a 1-byte number, user names that include multibyte characters, spaces, and tabs, and user names that include any of the following characters: !, ", #, \$, %, &, ', (,), *, ,, ., /, :, ;, <, =, >, ?, @, [, \,], ^, `, {, |, }, and ~, cannot be used.
- LDAP linkage is not directly supported. However, if the LDAP server password encryption format is crypt and it is possible to access the user name by using the OS library function getpwnam or getpwent in the same way as when performing normal management by using /etc/passwd, LDAP linkage can be handled as a general user.
- Environments in which access control is specified on an individual user basis, such as HP-UX SMSE (Standard Mode Security Extensions), are not directly supported. However, if JobCenter is able to access the user name by using the OS library function getpwnam or getpwent, in the same way as when performing normal management by using /etc/passwd, the SMSE environment can be handled as a general user.

In this case, the security functions provided in the SMSE environment, such as account locking, are not supported. Therefore, the number of times password authentication failed when logging into or connecting to MG or SV is not counted by CL/Win, nor is the login failure recorded.

5.1.2. Cluster environment

- If queue access restrictions, etc., are set for a group in JobCenter NQS setting, the same group name and gid must be used in all the nodes constituting the cluster site.

5.1.3. Installation directory permission and root user umask value

- Installation directory permission requires access authority 755. Check the root user umask value and take care so that access authority 755 is not masked.

5.2. Precautions and Restrictions on Windows Version MG/SV

5.2.1. Notes

■ Disk format

The disk area used by JobCenter (both local and cluster sites) must be formatted as NTFS (the FAT32 format cannot be used).

Note, however, that unless the automatic creation of 8.3, "Short file name" is set to OFF, the performance of NTFS file systems drops significantly when a large number of files (10,000 or so) are created in a single folder.

In an environment in which a large number of trackers are created in a short time or a large-scale job network is created and input, it might be necessary to disable 8.3 short file name by using the fsutil behavior command of the OS (by specifying fsutil behavior set disable8dot3 1).

■ Host name

Because JobCenter provides linkage among multi-platforms, host names which start with a number are unavailable as the name of a host in which JobCenter is installed.

Also, when the job execution results are handled in JobCenter, do not use a host name consisting of one character because a host name consisting of one character in the path name of the result file is interpreted as a drive name.

■ Unusable user names

- JobCenter cannot use the user name "CommonJNW". And JobCenter does not allow to use the same name for a user name and a host name.
- A user name that exceeds 15 bytes cannot be used.
- User names in which the first character is a 1-byte number, user names that include multibyte characters, spaces, and tabs, and user names that include any of the following characters: !, ", #, \$, %, &, ', (,), *, ,, ., /, :, ;, <, =, >, ?, @, [, \,], ^, ` , {, |, }, and ~, cannot be used.

■ Initialization file (.INI file) and registry

Do not change initialization files and registry information the JobCenter installation directory and Windows directory without permission. If changes are made without permission, operation cannot be assured.

■ Environment construction on Windows

Due to issues on Windows, host name issue may not be solved correctly, preventing linkage among JobCenters from normal operation. In such cases, create a %INSTALL%\etc\resolv.def file (%INSTALL%\resolv.def in CL/Win), and then describe the IP address and host name of the host related to this file.

(For details, refer to in <Environment Guide>Section 2.3, "Resolving Names in Windows".)

■ Environment variables temp and tmp

To use JobCenter, the environment variables temp and tmp must be specified, and the specified folder must actually exist.



In particular, because JobCenter services on the local site run on the system account, unless the locations referenced by temp and tmp are specified as shown below, user application commands will not work properly.

Create the following folder in Windows Server 2008 before installation:

```
<system drive> \Windows\system32\config\systemprofile\AppData\Local\Temp\
```

If creating the above folder poses a challenge, create a folder in any location not related to JobCenter, and then specify the created folder as the value of the environment variables temp and tmp in the environment variable configuration file called the envvars file.

Setting example

```
temp = <actual folder that can be temporarily used>
```

```
tmp = <actual folder that can be temporarily used>
```

For details about the envvars file, refer to in <Environment Guide>Section 14.2.3.2, "For setting on JobCenter SV (envvars file)" .

■ IPv6 environment

The Windows version does not support an IPv6 address-only environment. IPv4 addresses are always required.



Both forward and reverse IPv4/IPv6 address lookups need to be supported for the same host name.

5.2.2. Cluster environment

- When using users that have the same user name in a cluster environment, the uid for each such user must be unified. In a domain environment, the uid for each domain user is determined according to relationships between computers in the domain and no particular changes to the settings are necessary to use a cluster (but the JobCenter administrator must also be a domain user). In a local environment, the uid must be changed to unify each computer. For how to change the uid, refer to in <Environment Guide>Section 12.4.1, "Specifying properties of a user".
- In all the nodes constituting the cluster site, the same user must be set up as the JobCenter administrator. As described in "General notes" of in <Installation Guide>Section 2.4.4, "Windows Version (Normal Installation)", the node requires local administrator authority.
- To operate the cluster site and local site simultaneously, examine this operation fully in advance and then install JobCenter because the JobCenter administrator of the local site serves as the JobCenter administrator of the cluster site.
- For a domain environment, there are restrictions on the combinations of nodes that make up a cluster site. You cannot combine a PDC and a member server together or a BDC and a member server together.
- To install JobCenter in a cluster environment, you need to use the same user name and the same uid on all nodes making up the cluster site.
- If the Windows version of JobCenter is used in a cluster environment, the information set in [Debug Log Properties] on the Server Environment Setup screen is not automatically inherited if the cluster fails over. For this reason, when modifying the information, you must set or release [Debug Log Properties] in each of the active system and standby system.
- If the Windows version of JobCenter is used in a cluster environment, you must set a password for JobCenter in each node of the active system and standby system. For this reason, before starting

job operation, log in once from CL/Win for the nodes constituting clustering without reference to MG and SV.

5.2.3. Restrictions on CL/Win

■ As for uninstallation of JobCenter SV

There are some cases, in which [JobCenter] group accessed from [Start] menu cannot be deleted by uninstallation of JobCenter SV. If you do not install a new version after uninstallation of JobCenter SV, delete the [JobCenter] group.

■ System reserved file names such as COM1 cannot be used as part names, such as those used for job networks or individual jobs.

■ If OS is shut down at the timing of starting unit job execution on a batch queue, an execution error occurs because Desktop of the job execution user is deleted by OS. If this error occurs, the batch queue may stop. For this reason, shut down OS at timings other than the timing of starting unit job execution.

5.3. Notes and Restrictions on CL/Win

5.3.1. Screen Resolution

- Set the screen resolution to 1024×768 or higher. At any lower resolution, some items may not be displayed in the screen.

5.4. Other Information

- JobCenter supports only static NAT. The dynamic NAT environment is not supported.

