EXPRESSCLUSTER X for Windows
SAP NetWeaver Configuration Example

Release 6

NEC Corporation

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CHAPTER

ONE

PREFACE

This Guide: Building the cluster system in the "EXPRESSCLUSTER X for Windows SAP NetWeaver System Configuration Guide", and giving the example of setting for actuate.

1.1 Who Should Use This Guide

This Guide is intended for administrators who want to build a cluster system, system engineers who want to provide user support, and maintenance personnel.

This Guide introduces software whose operation in an EXPRESSCLUSTER environment has been checked.

The software and setup examples introduced here are for reference only. They are not meant to guarantee the operation of each software product.

The bundled scripts are for achieving failover.

Since these scripts are not designed to monitor all the SAP processes, check and (if necessary for their usage environments and their monitoring targets) customize their contents.

1.2 How This Guide is Organized

This Guide consist of the following two guides.

- "EXPRESSCLUSTER X for Windows SAP NetWeaver System Configuration Guide"
- "EXPRESSCLUSTER X for Windows SAP NetWeaver Configuration Example"

1.3 Conventions

In this guide, **Note**, **Important**, **See also** are used as follows:

Note: Used when the information given is important, but not related to the data loss and damage to the system and machine

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Important: Used when the information given is necessary to avoid the data loss and damage to the system and machine.

See also:

Used to describe the location of the information given at the reference destination.

The following conventions are used in this guide.

Convention	Usage	Example
Bold	Indicates graphical objects, such as fields, list boxes, menu selections, buttons, labels, icons, etc.	In User Name, type your name. On the File menu, click Open Database.
Angled bracket within the command line	Indicates that the value specified inside of the angled bracket can be omitted.	`clpstat -s [-h host_name]`
Monospace	Indicates path names, commands, system output (message, prompt, etc), directory, file names, functions and parameters.	`c:\Program files\EXPRESSCLUSTER`
bold	Indicates the value that a user actually enters from a command line.	Enter the following: **# clpcl -s -a**
italic	Indicates that users should replace italicized part with values that they are actually working with.	`clpstat -s [-h host_name]`


In the figures of this guide, this icon represents EXPRESSCLUSTER.

1.4 EXPRESSCLUSTER X Documentation Set (for Internal Version 11.3*x*/12.0*x*)

The EXPRESSCLUSTER X manuals consist of the following four guides. The title and purpose of each guide is described below:

EXPRESSCLUSTER X Getting Started Guide

This guide is intended for all users. The guide covers topics such as product overview, system requirements, and known problems.

EXPRESSCLUSTER X Installation and Configuration Guide

This guide is intended for system engineers and administrators who want to build, operate, and maintain a cluster system. Instructions for designing, installing, and configuring a cluster system with EXPRESSCLUSTER are covered in this guide.

EXPRESSCLUSTER X Reference Guide

This guide is intended for system administrators. The guide covers topics such as how to operate

EXPRESSCLUSTER, function of each module, maintenance-related information, and troubleshooting. The guide is supplement to the Installation and Configuration Guide.

EXPRESSCLUSTER X Integrated WebManager Administrator's Guide

This guide is intended for system administrators who manage cluster systems using EXPRESSCLUSTER with Integrated WebManager, and also intended for system engineers who introduce Integrated WebManager. This guide describes detailed issues necessary for introducing Integrated WebManager in the actual procedures.

1.5 EXPRESSCLUSTER X Documentation Set (for Internal Version 12.1*x*or later)

The EXPRESSCLUSTER X manuals consist of the following six guides. The title and purpose of each guide is described below:

EXPRESSCLUSTER X Getting Started Guide

> This guide is intended for all users. The guide covers topics such as product overview, system requirements, and known problems.

EXPRESSCLUSTER X Installation and Configuration Guide

> This guide is intended for system engineers and administrators who want to build, operate, and maintain a cluster system. Instructions for designing, installing, and configuring a cluster system with EXPRESSCLUSTER are covered in this guide.

EXPRESSCLUSTER X Reference Guide

> This guide is intended for system administrators. The guide covers topics such as how to operate EXPRESSCLUSTER, function of each module and troubleshooting. The guide is supplement to the Installation and Configuration Guide.

EXPRESSCLUSTER X Maintenance Guide

> This guide is intended for administrators and for system administrators who want to build, operate, and maintain EXPRESSCLUSTER-based cluster systems. The guide describes maintenance-related topics for EXPRESSCLUSTER.

EXPRESSCLUSTER X Hardware Feature Guide

> This guide is intended for administrators and for system engineers who want to build EXPRESSCLUSTER-based cluster systems. The guide describes features to work with specific hardware, serving as a supplement to the Installation and Configuration Guide.

EXPRESSCLUSTER X Legacy Feature Guide

> This guide is intended for administrators and for system engineers who want to build EXPRESSCLUSTER-based cluster systems. The guide describes EXPRESSCLUSTER X 4.0 WebManager, Builder, and EXPRESSCLUSTER Ver 8.0 compatible commands.

1.6 Related documents

1.6.1 SAP NetWeaver documents

For details of SAP NetWeaver please refer to the official SAP documentation available at

https://help.sap.com/viewer/nwguidefinder

Make sure to check the "Master Guide" and the "Installation Guide" for NetWeaver according to the database you are installing on.

SAP NOTE

- #1680045: Release Note for Software Provisioning Manager 1.0
- #1710950: Inst. SAP Systems Based on NW 7.1 and higher: Windows
- #0066971: Supported SAP GUI platforms
- #1732161: SAP Systems on Windows Server 2012 (R2)
- #0019466: Downloading SAP kernel patches
- #0174911: Determining the hardware key (customer key)
- #0181543: License key for high availability environment
- #0870871: License key installation
- #1031096: Installing Package SAPHOSTAGENT
- #1841837: Support details for NEC EXPRESSCLUSTER Support on SAP NetWeaver Systems
- #2182373: NEC EXPRESSCLUSTER X: Rolling Kernel Switch in HA environments
- #2384179: SAP Systems on Windows Server 2016
- #2464065: Check of automatic maintenance mode for HA solutions
- #2630416: Support for Standalone Enqueue Server 2
- #2711036: Usage of the Standalone Enqueue Server 2 in an HA Environment
- #1693245: SAP HA Script Connector Library
- #2850906: Maintenance mode for NEC EXPRESSCLUSTER X HA Solution

Note: Related documents and URL in this guide are subject to change without notice.

1.7 Terminology in this guide

Provides information of terminology used in this guide.

This product EXPRESSCLUSTER X for Windows SAP NetWeaver

Configuration Guide EXPRESSCLUSTER X for Windows SAP NetWeaver System Configuration Guide

Configuration Example EXPRESSCLUSTER X for Windows SAP NetWeaver Configuration Example

Connecter for SAP The connecter which links with SAP included in this product.

SAP NW SAP NetWeaver

ASCS ABAP SAP Central Services Instance

ERS Enqueue Replication Server

PAS Primary Application Server

AAS Additional Application Server

DA Diagnostics Agent

Exclusive Failover group for exclusive control of ASCS/ERS instance

ENSA Standalone Enqueue Server

ENSA2 Standalone Enqueue Server 2

CHAPTER

TWO

CONFIGURATION EXAMPLE

2.1 An example of setting environment on the SAP NW

Terminology used in this chapter.

SID SAP System ID

DASID Diagnostics Agent SAP System ID

SAP_NEC_GlobalAdmin

Account automatically created for SAP NW
Example: SAP_<*SID*>_GlobalAdmin

SAP_DAA_GlobalAdmin

Account automatically created for SAP NW
Example: SAP_<*DASID*>_GlobalAdmin

SAP_LocalAdmin Account automatically created for SAP NW

2.1.1 Shared Disk

An example of setting up the shared disk used in this manual from each node is shown below.

Drive letter Node#1 / Node#2	Usage	Connection method
S:	ASCS	iSCSI

The diagram below shows the configuration with ENSA used.

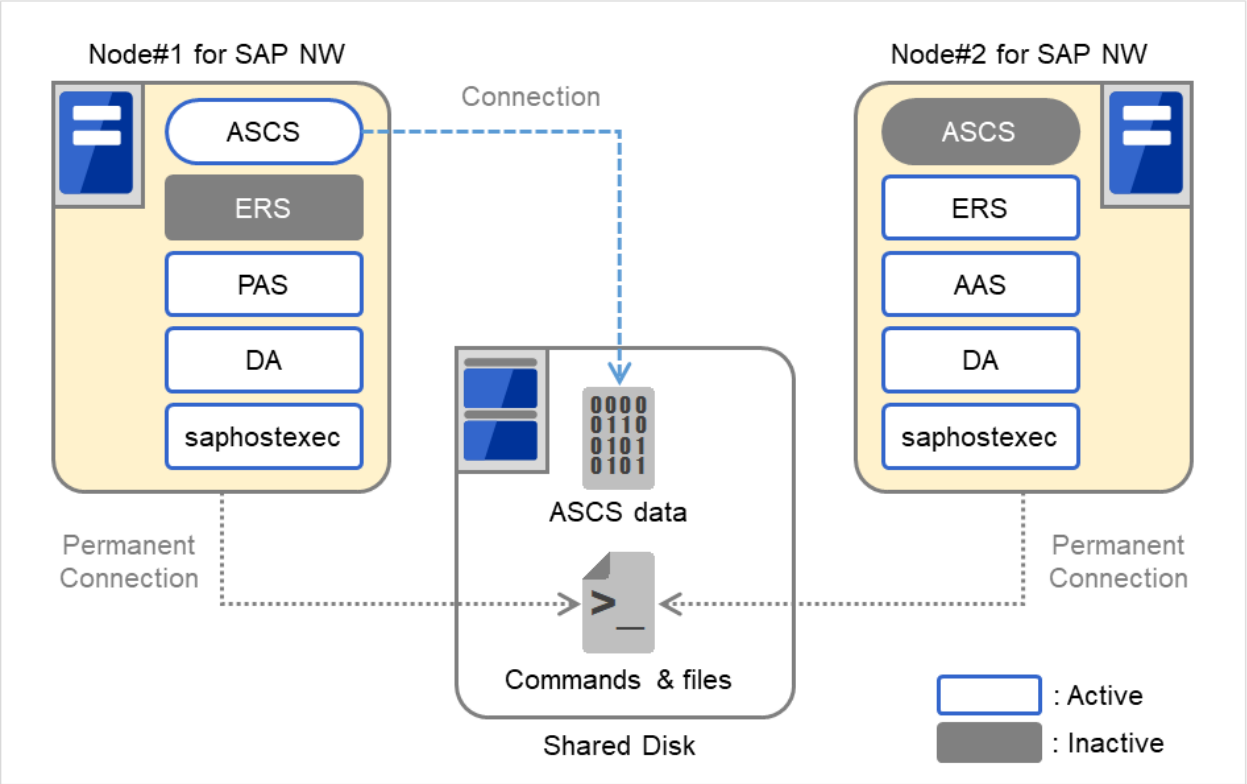

Fig. 2.1: Configuration diagram (with ENSA used) (1)

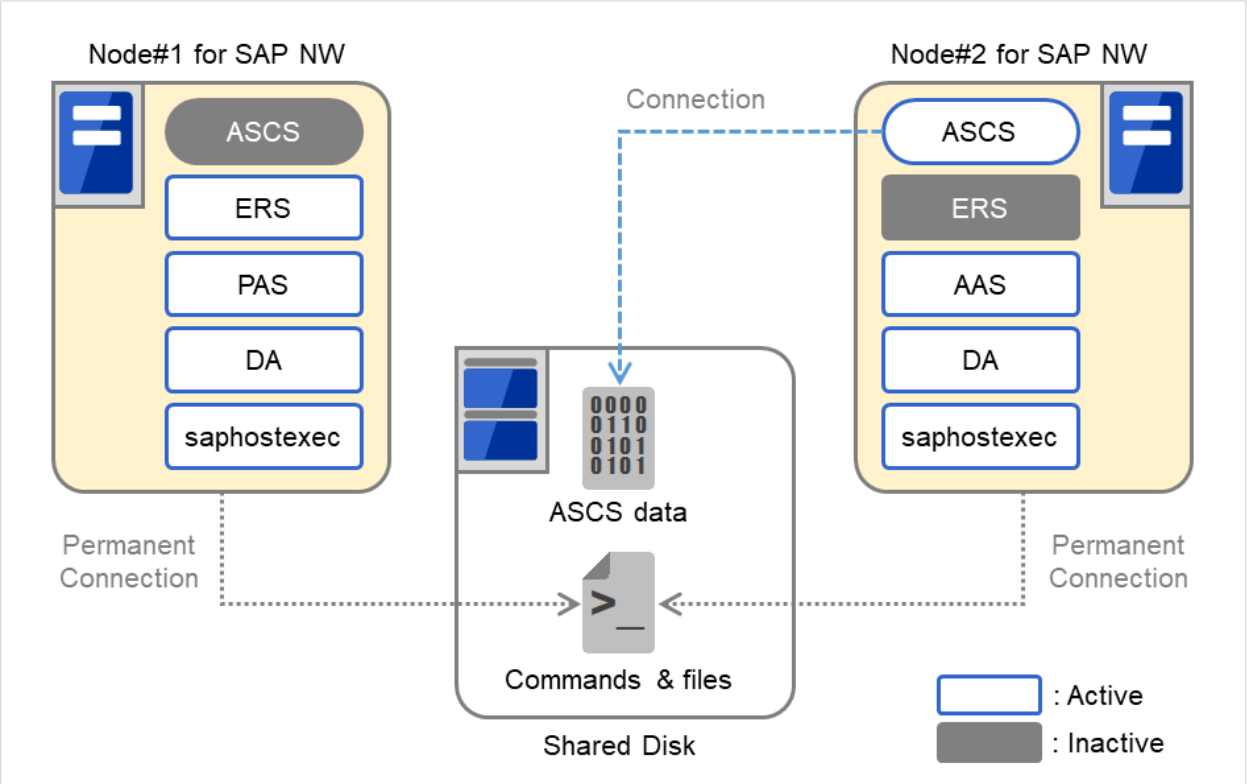

Fig. 2.2: Configuration diagram (with ENSA used) (2)

2.1.2 Floating IP

The static and floating IPs in the following table have been used for this configuration:

		Node#1	Node#2
Host Name		*sap1*	*sap2*
Inter connect IP		*192.168.10.11/24* *10.0.0.1/24*	*192.168.10.12/24* *10.0.0.2/24*
Floating IP	*managesv*	*192.168.10.100/24* (For WebManager/Cluster WebUI)	
	SAPNEC	*192.168.10.103/24* (For ASCS)	
	ERSSV	*192.168.10.104/24* (For ENSA2 configuration)	

The below is the configuration example with ENSA used.

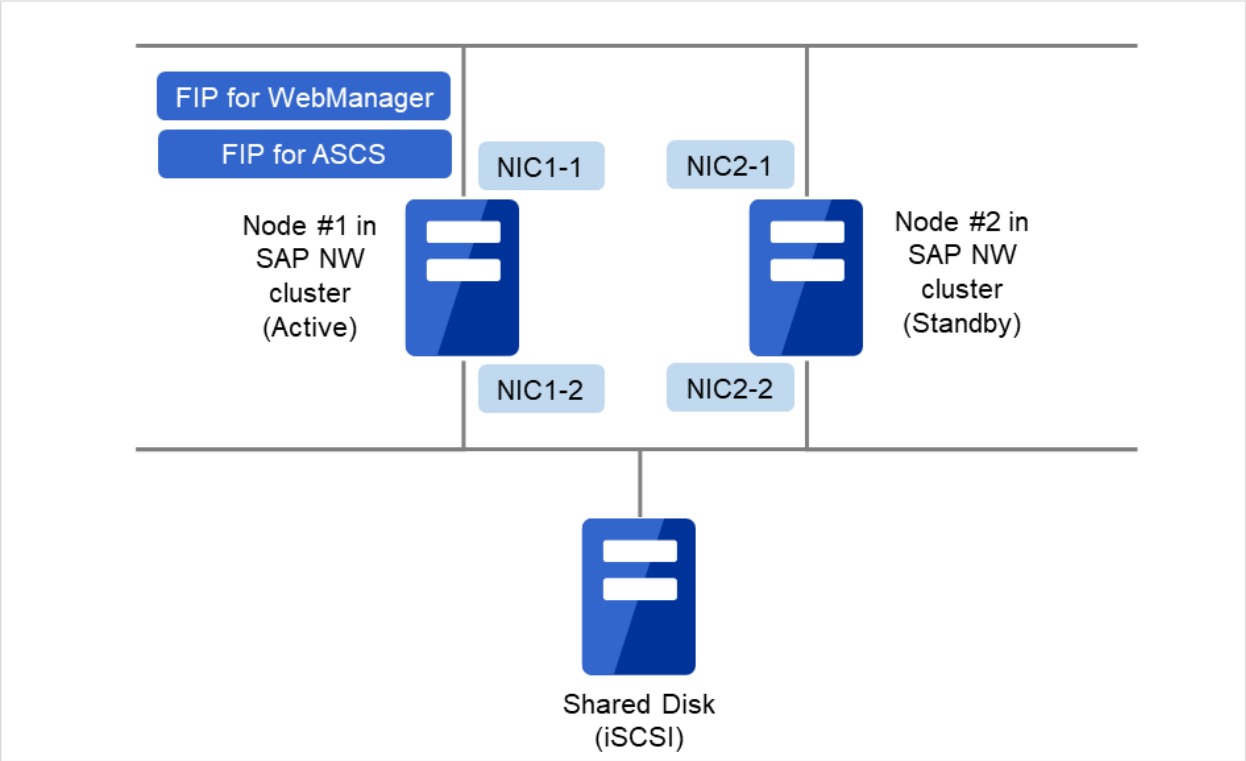

Fig. 2.3: Configuration example (with ENSA used)

Floating IP (FIP) for WebManager	192.168.10.100/24
Floating IP (FIP) for ASCS	192.168.10.103/24
NIC1-1 (eth0) IP address	192.168.10.11/24
NIC1-2 (eth1) IP address	10.0.0.1/24
NIC2-1 (eth0) IP address	192.168.10.12/24
NIC2-2 (eth1) IP address	10.0.0.2/24

2.1.3 OS Setting Example

A setting example in this manual is shown below. (Windows Server 2012)

- Node addition to hosts

```
> %windir%\System32\Drivers\Etc\hosts
```

192.168.10.103 SAPNEC
192.168.10.104 ERSSV (required only when ENSA2 is used)

- Shared disk Drive letter

Drive Letter	Owned by Cluster Group
S:	ASCS

- File sharing

	Shared name	Path	Access Permission
CIFS Resource	sapmnt	`S:\usr\sap`	Access permission: Full Control Administrators SAP_LocalAdmin SAP_NEC_GlobalAdmin NTFS Permission Administrators SAP_LocalAdmin SAP_NEC_GlobalAdmin
Node#1	saploc	`C:\usr\sap`	Access permission: Full Control Administrators (`SAP1\Administrators`) SAP_LocalAdmin (`SAP1\SAP_LocalAdmin`) NTFS Permission Administrators (`SAP1\Administrators`) SAP_LocalAdmin (`SAP1\SAP_LocalAdmin`) SAP_DAA_GlobalAdmin (`SAP1\SAP_DAA_GlobalAdmin`) SAP_NEC_GlobalAdmin
Node#2	saploc	`C:\usr\sap`	Access permission: Full Control Administrators (`SAP2\Administrators`) SAP_LocalAdmin (`SAP2\SAP_LocalAdmin`) NTFS Permission Administrators (`SAP2\Administrators`) SAP_LocalAdmin (`SAP2\SAP_LocalAdmin`) SAP_DAA_GlobalAdmin (`SAP2\SAP_DAA_GlobalAdmin`) SAP_NEC_GlobalAdmin

- Folder on shared disk

Path	Access Permission
`S:\usr\sap\<SID>`	NTFS Permission SAP_LocalAdmin SAP_NEC_LocalAdmin SAP_NEC_GlobalAdmin
`S:\usr\sap\<SID>\SYS\global\security`	NTFS Permission SAP_NEC_LocalAdmin SAP_NEC_GlobalAdmin

- Symbolic link(Node#1 / Node#2)
  - Format:

    mklink /d <*localdisk*>:\usr\sap\<*SID*>\SYS \\<*sapglobalhost*>\sapmnt\<*SID*>\SYS

    * Example:

```
mklink /d C:\usr\sap\NEC\SYS \\SAPNEC\sapmnt\NEC\SYS
```

  - Format:

    mklink /d <*localdisk*>:\usr\sap\trans \\<*trans_dir_host*>\sapmnt\trans

    * Example:

```
mklink /d C:\usr\sap\trans \\SAPNEC\sapmnt\trans
```

2.1.4 An example of setting the SAP NW

An example for "host name", "instance name" and "instance number" settings for SAP NW used in this manual is listed below.

Host Name	**Floating IP Address**	**Note**
managesv	*192.168.10.100*	For EXPRESSCLUSTER Management Group
SAPNEC	*192.168.10.103*	For ASCS
ERSSV	*192.168.10.104*	For ENSA2 configuration only

Instance	**Parameter name**	**Value of the setting**
SAP NW	SID	*NEC*
ASCS	The instance number	*10*
	The instance name	ASCS10
	Host name	*SAPNEC*

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Table 2.7 – continued from previous page

Instance	Parameter name	Value of the setting
ERS1 (for ENSA configuration)	The instance number	*21*
	The instance name	ERS21
ERS2 (for ENSA configuration)	The instance number	*22*
	The instance name	ERS22
ERS (for ENSA2 configuration)	The instance number	21
	The instance name	ERS21
PAS	The instance number	*31*
	The instance name	DVEBMGS31
AAS	The instance number	*32*
	The instance name	D32
DA1	The instance number	*97*
	The instance name	SMDA97
DA2	The instance number	*96*
	The instance name	SMDA96

2.2 EXPRESSCLUSTER setting

2.2.1 An example of setting EXPRESSCLUSTER

An example of setting EXPRESSCLUSTER used in this manual is listed below.

Note that some of the parameters are changed depending on which of ENSA or ENSA2 is used.

The following table will be the setting for creating a cluster environment of SAP NW.

Configuration example for failover groups

- Cluster configuration

Parameter name	Value of the setting
Cluster name	cluster
The number of servers	2
The number of failover groups	for ENSA configuration: 12 for ENSA2 configuration: 11

	Parameter name	Value of the setting
Heartbeat	Lankhb	2
Node#1 (Server of master)	Server name	sap1
	IP address of interconnect (Kernel Mode, Priority1)	192.168.10.11
	IP address of interconnect (Kernel Mode, Priority2)	10.0.0.1
Node#2	Server name	sap2
	IP address of interconnect (Kernel Mode, Priority1)	192.168.10.12
	IP address of interconnect (Kernel Mode, Priority2)	10.0.0.2
NP Resolution	Type	Ping
	Ping Target	192.168.10.10

- 1st group(for WebManager/Cluster WebUI)

	Parameter name	Value of the setting
	Type	failover
	Group name	Management Group
	Server group of run	Failover is possible on all servers
	The number of group resources	1
1st group resource	Type	floating ip resource
	Group resource name	Management IP
	IP Address	192.168.10.100
	Run ping	On

- 2nd group(for ASCS)

	Parameter name	Value of the setting
	Type	failover
	Group name	ASCS-Group
	Startup Server	Failover is possible on all servers
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Manual Failback
	Failover Exclusive Attribute	Normal exclusion
	Start Dependent group	none
	Stop Dependent group	ERS1-Group (for ENSA configuration) ERS-Group (for ENSA2 configuration) PAS-Group ERS2-Group (for ENSA configuration) AAS-Group
		Wait the Dependent Groups when a Cluster Stops Wait the Dependent Groups when a Server Stops
	The number of group resources	5
1st group resource Depth 0	Type	floating ip resource
	Dependent Resources	Follow the default dependency
	Group resource name	fip-ASCS

Continued on next page

Table 2.11 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Maximum Priority Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	IP Address	192.168.10.103
	Run ping	On
2nd group resource Depth 1	Type	disk resource
	Group resource name	sd-ASCS
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Maximum Priority Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Drive Letter	S:
	Servers that can run the group	sap1 sap2
3rd group resource Depth 1	Type	cifs resource
	Group resource name	cifs-ASCS
	Dependent Resources	sd-ASCS

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Table 2.11 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Maximum Priority Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Execute the automatic saving of shared configuration of drive.	Off
	Shared Name	sapmnt
	Folder	S:usrsap
	Comment	Used by SAP server to access system specific information for system <SID>
	When folder is shared not as activity failure	On
	Allow Caching	On
	Caching Settings	Manual Caching
	User limit	No limitation
	Permissions	Administrators Full Control SAP_NEC_GlobalAdmin Full Control SAP_LocalAdmin Full Control
4th group resource Depth 2	Type	script resource
	Group resource name	script-ASCS-SAP-instance_NEC_10
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Maximum Priority Server Failover Threshold Number of Servers No operation (not activate next resource)

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Table 2.11 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat User script: ascs-post-handler.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
5th group resource Depth 2	Type	script resource
	Group resource name	script-ASCS-SAP-service_NEC_10
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Maximum Priority Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat

Continued on next page

Table 2.11 – continued from previous page

	Parameter name	**Value of the setting**
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 3rd group(For ERS1 with ENSA used)(Not required when ENSA2 is used)

	Parameter name	**Value of the setting**
	Type	failover
	Group name	ERS1-Group
	Startup Server	sap1
	Startup Attribute	Manual Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	ASCS-Group
	Stop Dependent group	---------- Wait the Dependent Group when a Cluster Stops
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-ERS1-SAP-instance_NEC_21
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)

Continued on next page

Table 2.12 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat User script: exclusive-control.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource
	Group resource name	script-ERS1-SAP-service_NEC_21
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat

Continued on next page

Table 2.12 – continued from previous page

	Parameter name	Value of the setting
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 3rd group(For ERS with ENSA2 used)(Not required when ENSA is used)

	Parameter name	Value of the setting
	Type	failover
	Group name	ERS-Group
	Startup Server	sap2 sap1
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	ASCS-Group
	Stop Dependent group	---------- Wait the Dependent Group when a Cluster Stops
	The number of group resources	4
1st group resource Depth 0	Type	floating ip resource
	Dependent Resources	Follow the default dependency
	Group resource name	ERSSV
	IP Address	192.168.10.104
2nd group resource Depth 1	Type	script resource
	Group resource name	script-check_ENSA2
	Dependent Resources	Follow the default dependency

Continued on next page

Table 2.13 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Threshold 1 Stop Group
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat
3rd group resource Depth 2	Type	script resource
	Group resource name	script-ERS-SAP-instance_NEC_21
	Dependent Resources	exec-check-ENSA2
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Threshold 1 No Operation (Not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat Refer to "2.3.1. *How to use the script*" for how to cinfigure the scripts.
4th group resource Depth 2	Type	script resource

Continued on next page

Table 2.13 – continued from previous page

	Parameter name	Value of the setting
	Group resource name	script-ERS-SAP-service_NEC_21
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Threshold 1 No Operation (Not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat Refer to "2.3.1. *How to use the script*" for how to cinfigure the scripts.

- 4th group(for PAS)

	Parameter name	Value of the setting
	Type	failover
	Group name	PAS-Group
	Startup Server	sap1
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	ASCS-Group

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Table 2.14 – continued from previous page

	Parameter name	Value of the setting
	Stop Dependent group	---------- Wait the Dependent Groups when a Cluster Stops Wait the Dependent Groups when a Server Stops
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-PAS-SAP-instance_NEC_31
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource

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Table 2.14 – continued from previous page

	Parameter name	**Value of the setting**
	Group resource name	script-PAS-SAP-service_NEC_31
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 5th group(For ERS2 with ENSA used)(Not required when ENSA2 is used)

	Parameter name	**Value of the setting**
	Type	failover
	Group name	ERS2-Group
	Startup Server	sap2
	Startup Attribute	Manual Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	ASCS-Group

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Table 2.15 – continued from previous page

	Parameter name	Value of the setting
	Stop Dependent group	---------- Wait the Dependent Groups when a Cluster Stops
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-ERS2-SAP-instance_NEC_22
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat User script: exclusive-control.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource
	Group resource name	script-ERS2-SAP-service_NEC_22
	Dependent Resources	Follow the default dependency

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Table 2.15 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 6th group(for AAS)

	Parameter name	Value of the setting
	Type	failover
	Group name	AAS-Group
	Startup Server	sap2
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	ASCS-Group
	Stop Dependent group	---------- Wait the Dependent Groups when a Cluster Stops

Continued on next page

Table 2.16 – continued from previous page

	Parameter name	Value of the setting
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-AAS-SAP-instance_NEC_32
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource
	Group resource name	script-AAS-SAP-service_NEC_32
	Dependent Resources	Follow the default dependency

Continued on next page

Table 2.16 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 7th group(for DA1)

	Parameter name	Value of the setting
	Type	failover
	Group name	DA1-Group
	Startup Server	sap1
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	–

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Table 2.17 – continued from previous page

	Parameter name	Value of the setting
	Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-DA1-instance_DAA_97
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource
	Group resource name	script-DA1-service_DAA_97
	Dependent Resources	Follow the default dependency

Continued on next page

Table 2.17 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 8th group(for DA2)

	Parameter name	Value of the setting
	Type	failover
	Group name	DA2-Group
	Startup Server	sap2
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	–

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Table 2.18 – continued from previous page

	Parameter name	Value of the setting
	Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
	The number of group resources	2
1st group resource Depth 0	Type	script resource
	Group resource name	script-DA2-instance_DAA_96
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off
2nd group resource Depth 0	Type	script resource
	Group resource name	script-DA2-service_DAA_96
	Dependent Resources	Follow the default dependency

Continued on next page

Table 2.18 – continued from previous page

	Parameter name	Value of the setting
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 9th group(for hostexec1)

	Parameter name	Value of the setting
	Type	failover
	Group name	hostexec1-Group
	Startup Server	sap1
	Startup Attribute	Auto Startup
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	–

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Table 2.19 – continued from previous page

	Parameter name	Value of the setting
	Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
	The number of group resources	1
1st group resource Depth 0	Type	script resource
	Group resource name	script-hostexec1
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0
	Allow to Interact with Desktop	Off

- 10th group(for hostexec2)

	Parameter name	Value of the setting
	Type	failover
	Group name	hostexec2-Group
	Startup Server	sap2
	Startup Attribute	Auto Startup

Continued on next page

Table 2.20 – continued from previous page

	Parameter name	Value of the setting
	Failover Attribute	Auto Failover Use the startup server settings
	Failback Attribute	Auto Failback
	Failover Exclusive Attribute	Off
	Start Dependent group	–
	Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
	The number of group resources	1
1st group resource Depth 0	Type	script resource
	Group resource name	script-hostexec2
	Dependent Resources	Follow the default dependency
	Recovery Operation at Activity Failure Detection	Retry Count 0 Failover Target Server Stable Server Failover Threshold Number of Servers No operation (not activate next resource)
	Recovery Operation at Deactivity Failure Detection	Retry Count at Deactivation Failure 0 Stop the cluster service and shutdown OS
	Details	Script created with this product Start script: start.bat Stop script: stop.bat User script: setting.bat
	[Start] Type	Synchronous
	[Start] Timeout (seconds)	1800 sec
	Normal Return Value	0
	[Stop] Type	Synchronous
	[Stop] Timeout (seconds)	1800 sec
	Normal Return Value	0

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Table 2.20 – continued from previous page

	Parameter name	Value of the setting
	Allow to Interact with Desktop	Off

- 11th Group(For Exclusive1)

Parameter name	Value of the setting
Type	failover
Group name	Exclusive-Group1
Startup Server	sap1
Startup Attribute	Auto Startup
Failover Attribute	Auto Failover Use the startup server settings
Failback Attribute	Auto Failback
Failover Exclusive Attribute	Normal exclusion
Start Dependent group	–
Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
The number of group resources	0

- 12th Group(For Exclusive2)

Parameter name	Value of the setting
Type	failover
Group name	Exclusive-Group2
Startup Server	sap2
Startup Attribute	Auto Startup
Failover Attribute	Auto Failover Use the startup server settings
Failback Attribute	Auto Failback
Failover Exclusive Attribute	Normal exclusion
Start Dependent group	–
Stop Dependent group	- Wait the Dependent Groups when a Cluster Stops
The number of group resources	0

Example configuration of the Monitor Resources

- 1st monitor resource(For floating ip resource)

Parameter name	Value of the setting
Type	floating ip monitor
Monitor resource name	fipw1
Interval	60 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	0 sec
Monitor Timing	Active ManagementIP
Monitor NIC Link Up/Down	On
Recovery Action	Custom settings
Recovery Target	ManagementIP
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Final Action	No operation

- 2nd monitor resource(For floating ip resource)

Parameter name	Value of the setting
Type	floating ip monitor
Monitor resource name	fipw2
Interval	60 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	0 sec
Monitor Timing	Active fip-ASCS
Monitor NIC Link Up/Down	On
Recovery Action	Custom settings
Recovery Target	fip-ASCS
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Failover Target Server	Maximum Priority Server
Maximum Failover Count	Set as much as the number of the servers
Final Action	No operation

- 3rd monitor resource(For Disk resource)

Parameter name	Value of the setting
Type	sdw (disk TUR monitor)
Monitor resource name	sdw1
Interval	30 sec

Continued on next page

Table 2.25 – continued from previous page

Parameter name	Value of the setting
Timeout	300 sec
Retry Count	1 time
Wait Time to Start Monitoring	0 sec
Monitor Timing	Always
Disk Resource	sd-ASCS
Recovery Action	Custom settings
Recovery Target	sd-ASCS
Recovery Script Execution Count	0 time
Maximum Reactivation Count	0 time
Failover Target Server	Maximum Priority Server
Maximum Failover Count	Set as much as the number of the servers
Final Action	No operation

- 4th monitor resource(For CIFS monitor resource)

Parameter name	Value of the setting
Type	cifsw (cifs monitor)
Monitor resource name	cifsw1
Interval	60 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	0 sec
Monitor Timing	Active cifs-ASCS
Access Check	Disable
Recovery Action	Custom settings
Recovery Target	cifs-ASCS
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Failover Target Server	Maximum Priority Server
Maximum Failover Count	Set as much as the number of the servers
Final Action	No operation

- 5th monitor resource(For ASCS instance ENQ)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-ASCS-instance-ENQ
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-ASCS-SAP-instance_NEC_10

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Table 2.27 – continued from previous page

Parameter name	Value of the setting
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-ASCS-SAP-instance_NEC_10
Recovery Script Execution Count	0 time
Maximum Reactivation Count	0 time
Maximum Failover Count	1 time
Failover Target Server	Maximum Priority Server
Maximum Failover Count	Set as much as the number of the servers
Final Action	Stop the cluster service and shutdown OS

- 6th monitor resource(For ASCS instance MSG)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-ASCS-instance-MSG
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-ASCS-SAP-instance_NEC_10
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-ascs-SAP-instance_NEC_10
Recovery Script Execution Count	0 time
Maximum Reactivation Count	0 time
Maximum Failover Count	1 time
Failover Target Server	Maximum Priority Server
Maximum Failover Count	Set as much as the number of the servers
Final Action	No operation

- 7th monitor resource(For ASCS service)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-ASCS-service
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec

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Table 2.29 – continued from previous page

Parameter name	Value of the setting
Monitor Timing	Active script-ascs-SAP-service_NEC_10
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-ASCS-SAP-service_NEC_10
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	1 time
Final Action	No operation

- 8th monitor resource(For ERS1 instance with ENSA used or ERS instance with ENSA2 used)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	for ENSA configuration: genw-ERS1-instance for ENSA2 configuration: genw-ERS-instance
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	for ENSA configuration: Active, script-ERS1-SAP-instance_NEC_21 for ENSA2 configuration: Active, script-ERS-SAP-instance_NEC_21
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	for ENSA configuration: script-ERS1-SAP-instance_NEC_21 for ENSA2 configuration: script-ERS-SAP-instance_NEC_21
Recovery Script Execution Count	for ENSA configuration: 1 time for ENSA2 configuration: 0 time

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Table 2.30 – continued from previous page

Parameter name	Value of the setting
Maximum Reactivation Count	for ENSA configuration: 0 time for ENSA2 configuration: 3 time
Maximum Failover Count	for ENSA configuration: 0 time for ENSA2 configuration: 1 time
Execute Script before Final Action	On
Final Action	No operation
Script created with this product [Recovery Script]	preaction.bat
Timeout [Recovery Script]	600 sec

- 9th monitor resource(For ERS1 service with ENSA used or ERS service with ENSA2 used)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	for ENSA configuration: genw-ERS1-service for ENSA2 configuration: genw-ERS-service
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	for ENSA configuration: Active, script-ERS1-SAP-service_NEC_21 for ENSA2 configuration: Active, script-ERS-SAP-service_NEC_21
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	for ENSA configuration: script-ERS1-SAP-service_NEC_21 for ENSA2 configuration: script-ERS-SAP-service_NEC_21
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time

Continued on next page

Table 2.31 – continued from previous page

Parameter name	Value of the setting
Maximum Failover Count	for ENSA configuration: 0 time for ENSA2 configuration: 1 time
Final Action	No operation

- 10th monitor resource(For ERS2 instance with ENSA used)(Not required when ENSA2 is used)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-ERS2-instance
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-ERS2-SAP-instance_NEC_22
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-ERS2-SAP-instance_NEC_22
Recovery Script Execution Count	1 time
Maximum Reactivation Count	0 time
Maximum Failover Count	0 time
Execute Script before Final Action	On
Final Action	No operation
Script created with this product [Recovery Script]	preaction.bat
Timeout [Recovery Script]	600 sec

- 11th monitor resource(For ERS2 service with ENSA used)(Not required when ENSA2 is used)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-ERS2-service
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-ERS2-SAP-service_NEC_22

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Table 2.33 – continued from previous page

Parameter name	Value of the setting
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-ERS2-SAP-service_NEC_22
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 12th monitor resource(For PAS instance-DISP)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-PAS-instance-DISP
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-PAS-SAP-instance_NEC_31
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-PAS-SAP-instance_NEC_31
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 13th monitor resource(For PAS instance-IGS)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-PAS-instance-IGS
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-PAS-SAP-instance_NEC_31
Script created with this product	genw.bat
Monitor Type	Synchronous

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Table 2.35 – continued from previous page

Parameter name	Value of the setting
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-PAS-SAP-instance_NEC_31
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 14th monitor resource(For PAS service)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-PAS-service
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-PAS-SAP-service_NEC_31
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-PAS-SAP-service_NEC_31
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 15th monitor resource(For AAS instance-DISP)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-AAS-instance-DISP
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-AAS-SAP-instance_NEC_32
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings

Continued on next page

Table 2.37 – continued from previous page

Parameter name	Value of the setting
Recovery Target	script-AAS-SAP-instance_NEC_32
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 16th monitor resource(For AAS instance-IGS)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-AAS-instance-IGS
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-AAS-SAP-instance_NEC_32
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-AAS-SAP-instance_NEC_32
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 17th monitor resource(For AAS service)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-AAS-service
Interval	15 sec
Timeout	60sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-AAS-SAP-service_NEC_32
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-AAS-SAP-service_NEC_32
Recovery Script Execution Count	0 time

Continued on next page

Table 2.39 – continued from previous page

Parameter name	Value of the setting
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 18th monitor resource(For DA1 instance)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-DA1-instance
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-DA1-instance_DAA_97
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-DA1-instance_DAA_97
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 19th monitor resource(For DA1 service)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-DA1-service
Interval	15 sec
Timeout	60 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-DA1-service_DAA_97
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-DA1-service_DAA_97
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time

Continued on next page

Table 2.41 – continued from previous page

Parameter name	Value of the setting
Final Action	No operation

- 20th monitor resource(For DA2 instance)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-DA2-instance
Interval	30 sec
Timeout	120 sec
Retry Count	2 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-DA2-instance_DAA_96
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-DA2-instance_DAA_96
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 21th monitor resource(For DA2 service)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-DA2-service
Interval	15 sec
Timeout	120 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-DA2-service_DAA_96
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-DA2-service_DAA_96
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 22th monitor resource(For hostexec1)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-hostexec1
Interval	30 sec
Timeout	120 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-hostexec1
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-hostexec1
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 23th monitor resource(For hostexec2)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-hostexec2
Interval	30 sec
Timeout	120 sec
Retry Count	1 time
Wait Time to Start Monitoring	30 sec
Monitor Timing	Active script-hostexec2
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	script-hostexec2
Recovery Script Execution Count	0 time
Maximum Reactivation Count	3 time
Maximum Failover Count	0 time
Final Action	No operation

- 24th monitor resource(Required only when ENSA2 is used)

Parameter name	Value of the setting
Type	custom monitor
Monitor resource name	genw-check-ENSA2
Interval	30 sec

Continued on next page

Table 2.46 – continued from previous page

Parameter name	**Value of the setting**
Timeout	30 sec
Retry Count	0 time
Wait Time to Start Monitoring	5 sec
Monitor Timing	Active script-ASCS-SAP-instance_NEC_10
Script created with this product	genw.bat
Monitor Type	Synchronous
Normal Return Value	0
Recovery Action	Custom settings
Recovery Target	ERS-Group
Recovery Script Execution Count	0 time
Maximum Reactivation Count	0 time
Maximum Failover Count	1 time (number of node - 1)
Final Action	Stop Group

2.3 Bundled scripts

Terminology used in this chapter.

SID SAP System ID

DASID Diagnostics Agent SAP System ID

INAME Instance name

start.bat Sample script for starting the script resources

stop.bat Sample script for stopping the script resources

setting.bat start.bat/stop.bat setting script

ascs-post-handler.bat User script for the script resource of ASCS instance

exclusive-control.bat User script for the script resource of ERS instance

genw.bat Sample script for custom monitor resources

ers-mon-preaction.bat Recovery script for the custom monitor resource of ERS instance

The user scripts ascs-post-handler.bat, exclusive-control.bat and the recovery script ers-mon-preaction.bat are used for exclusive control of ASCS/ERS instance by EXPRESSCLUSTER.
For the exclusive control of ASCS/ERS instance, Refer to the following document.

> SAP NetWeaver System Configuration Guide
> "Illustration of exclusive control of ASCS/ERS instance by EXPRESSCLUSTER"

The Connector for SAP and bundled scripts in a media are stored in the following directory.
The above scripts are contained in the following file on the installation media.

```
<media>:\Windows\<Version of CLUSTERPRO>\common\tools\x64\clp_shi_connector.
↪zip
```

Extract the zip file in any folder. For the file configuration of the zip file, refer to "SAP NetWeaver System Configuration Guide"-"Installation of Connector for SAP".

The bundled scripts required for each configuration are listed below.

resource/monitor	folder name	file name	ENSA	ENSA2
script resource	SAP-ASCS-instance	ascs_post_handler.bat	✓	
		setting.bat	✓	✓
		start.bat	✓	✓
		stop.bat	✓	✓
	SAP-ERS-instance	exclusive_control.bat	✓	
		setting.bat	✓	✓
		start.bat	✓	✓
		stop.bat	✓	✓
		check_ensa2.bat		✓
	SAP-HostExec	setting.bat	✓	✓
		start.bat	✓	✓
		stop.bat	✓	✓
	SAP-Instance	setting.bat	✓	✓
		start.bat	✓	✓
		stop.bat	✓	✓
	SAP-Service	setting.bat	✓	✓
		start.bat	✓	✓
		stop.bat	✓	✓
custom monitor	-	ers_mon_preaction.bat	✓	
	-	genw_instance.bat	✓	✓
	-	genw_service.bat	✓	✓
	-	genw_HostExec.bat	✓	✓
	-	check_ensa2.bat		✓

2.3.1 Script resources

Apply the following sample scripts contained in the media as script resources.

Bundled scripts are listed below.

Folder name	File name	Use
SAP-ASCS-instance	ascs-post-handler.bat	For exclusive control of ASCS/ERS instance
	setting.bat	Script setting file
	start.bat	For starting ASCS instance
	stop.bat	For stopping ASCS instance
SAP-ERS-instance	exclusive-control.bat	For exclusive control of ASCS/ERS instance
	setting.bat	Script setting file
	start.bat	For starting ERS instance
	stop.bat	For stopping ERS instance
	check_ensa2.bat	For exclusive control of ASCS/ERS instance (for ENSA2 configuration)
SAP-HostExec	setting.bat	Script setting file
	start.bat	For starting SapHostExec
	stop.bat	For stopping SapHostExec
SAP-Instance	setting.bat	Script setting file
	start.bat	For starting instance
	stop.bat	For stopping instance
SAP-Service	setting.bat	Script setting file
	service_start.bat	For starting service
	service_stop.bat	For stopping service

Scripts in SAP-Instance folder are sample scripts for monitoring the PAS instance, the AAS instance and the DA instance.
Scripts in SAP-Service folder are sample scripts for monitoring all SAP instance services.

In the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later) apply each sample script to the relevant script resource by using the add function and the replace function of a script.

For details, refer to the following document:

"Reference Guide"
"Understanding script resources"

The changes made in each version are listed below.

Folder Name	File Name	EXPRESSCLUSTER Internal Version 11.3*x*/12.0*x*	EXPRESSCLUSTER Internal Version 12.1*x* or later
SAP-ASCS-instance	ascs-post-handler.bat	It does not affect the function of SAP NetWeaver as an application server, so it ends normally even in the following cases. - When it fails to start ERS instance on another node due to the absence of ERS instance to be started or other reasons after ASCS instance started.	Normal termination, but outputs an error message to the alert.
SAP-ERS-instance	exclusive-control.bat	It does not affect the function of SAP NetWeaver as an application server, so it ends normally even in the following cases. - When it fails to start/stop Exclusive-Group, a failover group for the exclusive control, due to any reasons after the script resource for ERS instance started/stopped on the same node.	Normal termination, but outputs an error message to the alert.
SAP-ERS-instance	check_ensa2.bat	-	Used when ENSA2 is used. It checks if the failover group for ASCS is activated before ERS instance is started. If it is activated, the activation fails.

Continued on next page

Table 2.47 – continued from previous page

Folder Name	File Name	EXPRESSCLUSTER Internal Version 11.3*x*/12.0*x*	EXPRESSCLUSTER Internal Version 12.1*x*or later
SAP-HostExec	start.bat	It does not affect the function of SAP NetWeaver as an application server, so it ends normally even in the following cases. - When it fails to start SAP Host Agent due to any reasons.	For the sample script mentioned on the left, specify the end value by the STRICT_RETVAL parameter in clp_shi_connector.conf. For details, refer to SAP NetWeaver System Configuration Guide - "Setting items"
		It detects the abnormal termination of hostexec process by the returned value of saphostexec command.	It detects the abnormal termination of hostexec process by the returned value of saphostexec command. The detection accuracy has been improved.
SAP-HostExec	stop.bat	It does not affect the function of SAP NetWeaver as an application server, so it ends normally even in the following cases. - When it fails to start SAP Host Agent due to any reasons.	For the sample script mentioned on the left, specify the end value by the STRICT_RETVAL parameter in clp_shi_connector.conf. For details, refer to SAP NetWeaver System Configuration Guide - "Setting items"
SAP-Service	start.bat	When sharing a shared folder with CIFS resources in an AWS environment, the start of ASCS service may fail on the failover destination node.	Wait until the shared folder becomes referable before ASCS instance service is started (the maximum time period is according to the "TIMEOUT" value (in seconds) on setting.bat).
SAP-Service	stop.bat	It does not wait for instance service to be stopped completely.	It waits for instance service to be stopped completely.

How to use the script

- **Failover group name:** ASCS-Group
  - **Exec resource name:** script-ascs-SAP-service_NEC_10

    Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the ASCS resource"

    Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

    Modify "INAME" to the ASCS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

    J drive is specified for "PATH" in this manual. Set an appropriate drive letter to your configuration.

    Modify "TIMEOUT" to the time in seconds until ASCS instance starts or stops.

    "TIMEOUT" is the time period used for each waiting process in the script (e.g. waiting process for sapcontrol command executed in the script).

    Therefore, if more than 1 waiting processes exist in the same script, the total waiting time is calculated as "TIMEOUT" value multiplied by the number of the waiting process at a maximum.

    The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered as well.

    The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

    Rename "ASCS_INSTANCE_HOST_NAME" as the host name for ASCS instance.

    Example in this manual

    ```
    set INSTANCE_RESOURCE_NAME=script-ASCS-SAP-instance_NEC_10
    set SID=NEC
    set INAME=ASCS10
    set PATH=%PATH%; S:\usr\sap\%SID%\%INAME%\exe
    set TIMEOUT=600
    set DELAY=5
    set ASCS_INSTANCE_HOST_NAME=SAPNEC
    ```

    Note: To estimate the necessary time to start or stop the group resource of ASCS instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** PAS-Group
  - **Exec resource name:** script-PAS-SAP-instance_NEC_31

    Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

    Modify "INAME" to the PAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

```
set SID=NEC
set INAME=DVEBMGS31
```

– **Exec resource name:** script-PAS-SAP-service_NEC_31

Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the PAS resource"

Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

Modify "INAME" to the PAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

Modify "TIMEOUT" to the time in seconds until PAS instance starts or stops.

"TIMEOUT" value multiplied by the number of the waiting process at a maximum.

The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered

as well.

The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-PAS-SAP-instance_NEC_31
set SID=NEC
set INAME=DVEBMGS31
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of PAS instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*) /Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** AAS-Group
  – **Exec resource name:** script-AAS-SAP-instance_NEC_32

Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

Modify "INAME" to the AAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

Example in this manual

```
set SID=NEC
set INAME=D32
```

– **Exec resource name:** script-AAS-SAP-service_NEC_32

Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the AAS resource"

Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

Modify "INAME" to the AAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

Modify "TIMEOUT" to the time in seconds until AAS instance starts or stops.

"TIMEOUT" value multiplied by the number of the waiting process at a maximum.

The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered

as well.

The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-AAS-SAP-instance_NEC_32
set SID=NEC
set INAME=D32
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of AAS instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** DA1-Group
  - **Exec resource name:** script-DA1-instance_NEC_97

    Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Modify "INAME" to the DA1 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Example in this manual

    ```
    set SID=DAA
    set INAME=SMDA97
    ```

  - **Exec resource name:** script-DA1-service_NEC_97

    Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the DA1 (Node#1) resource"

    Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

Modify "INAME" to the instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

Modify "TIMEOUT" to the time in seconds until DA1 instance starts or stops.

"TIMEOUT" value multiplied by the number of the waiting process at a maximum.

The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered

as well.

The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-DA1-instance_DAA_97
set SID=DAA
set INAME=SMDA97
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of DA1 instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** DA2-Group
  - **Exec resource name:** script-DA2-instance_NEC_96

    Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Modify "INAME" to the DA2 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Example in this manual

    ```
    set SID=DAA
    set INAME=SMDA96
    ```

  - **Exec resource name:** script-DA2-service_NEC_96

    Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the DA2 (Node#2) resource"

    Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Modify "INAME" to the instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

    Modify "TIMEOUT" to the time in seconds until DA2 instance starts or stops.

    "TIMEOUT" value multiplied by the number of the waiting process at a maximum.

The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered

as well.

The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT"

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-DA2-instance_DAA_96
set SID=DAA
set INAME=SMDA96
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of DA2 instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** hostexec1-Group
  - **Exec resource name:** script-hostexec1

    It is not necessary to edit setting.bat. The default service name is "SAPHostExec."

- **Failover group name:** hostexec2-Group
  - **Exec resource name:** script-hostexec2

    Same as script-hostexec1 above.

Usage of bundled sample scripts (for ENSA congiguration)

- **Failover group name:** ASCS-Group
  - **Exec resource name:** script-ASCS-SAP-instance_NEC_10

    Modify the "SID" variable in setting.bat to the SID set in "SAP NetWeaver System Configuration Guide" - "Installation of ASCS Instance (Node#1)"

    Modify the "SAP_ERS_INO" to the sequence of ERS1 instance INO and ERS2 instance INO set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)" Use a space for delimiter.

    Modify "INAME" to the ASCS instance name set in "SAP NetWeaver System Configuration Guide" - "Installation of ASCS Instance (Node#1)"

    Example in this manual

```
set SID=NEC
set SAP_ERS_INO=21 22
set INAME=ASCS10
```

Note: If any failover group of ERS instances is not working, the failover group of the ERS instance is started automatically when the administrator starts or moves the ASCS instance manually. For disabling the auto startup of ERS instance failover groups, change the value of "ENABLED" in the script setting file (setting.bat) of the ASCS instance to 0, upload the setting through the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later), and then start or move ASCS instance manually.

- **Failover group name:** ERS1-Group
  - **Exec resource name:** script-ERS1-SAP-instance_NEC_21

    Modify the "SID" variable in setting.bat to the SID set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify the "SAP_ERS_INO" to the sequence of ERS1 instance INO and ERS2 instance INO set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)" Use a space for delimiter.

    Modify "INAME" to the ERS1 instance name set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify the "EXCLUSIVE_GROUP" to the common failover group name among the failover groups for exclusive control set in "SAP NetWeaver System Configuration Guide" - "Create failover groups"

    Modify the "APS" value to the AS instance number running on the same node. If the value is not correct, the result of sapcontrol -function GetSystemInstanceList might become incorrect after ASCS-Group failover.

    Example in this manual

    ```
    set SID=NEC
    set SAP_ERS_INO=21 22
    set INAME=ERS21
    set EXCLUSIVE_GROUP=Exclusive-Group
    set APS=31
    ```

  - **Exec resource name:** script-ERS1-SAP-service_NEC_21

    Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in "SAP NetWeaver System Configuration Guide" - "Setting up the ERS1 (Node#1) resource (for ENSA configuration)"

    Modify "SID" to the SID set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify "INAME" to the ERS1 instance name set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify "TIMEOUT" to the time in seconds until ERS1 instance starts or stops.

    "TIMEOUT" value multiplied by the number of the waiting process at a maximum.

    The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered as well.

    The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-ERS1-SAP-instance_NEC_21
set SID=NEC
set INAME=ERS21
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of ERS1 instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

- **Failover group name:** ERS2-Group
  - **Exec resource name:** script-ERS2-SAP-instance_NEC_22

    Modify the "SID" variable in setting.bat to the SID set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify the "SAP_ERS_INO" to the sequence of ERS1 instance INO and ERS2 instance INO set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)" Use a space for delimiter.

    Modify "INAME" to the ERS2 instance name set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify the "EXCLUSIVE_GROUP" to the common failover group name among the failover groups for exclusive control set in "SAP NetWeaver System Configuration Guide" - "Create failover groups"

    Modify the "APS" value to the AS instance number running on the same node. If the value is not correct, the result of sapcontrol -function GetSystemInstanceList might become incorrect after ASCS-Group failover.

    Example in this manual

    ```
    set SID=NEC
    set SAP_ERS_INO=21 22
    set INAME=ERS22
    set EXCLUSIVE_GROUP=Exclusive-Group
    set APS=32
    ```

  - **Exec resource name:** script-ERS2-SAP-service_NEC_22

    Modify the "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in "SAP NetWeaver System Configuration Guide" - "Setting up the ERS2 (Node#2) resource (for ENSA configuration)"

    Modify "SID" to the SID set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

    Modify "INAME" to the ERS2 instance name set in "SAP NetWeaver System Configuration Guide" - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "TIMEOUT" to the time in seconds until ERS2 instance starts or stops.
"TIMEOUT" value multiplied by the number of the waiting process at a maximum.
The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered
as well.
The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".
"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-ERS2-SAP-instance_NEC_22
set SID=NEC
set INAME=ERS22
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: To estimate the necessary time to start or stop the group resource of ERS2 instance, start or stop the group resource with "DELAY=1", and then check alerts using the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later).

Usage of bundled sample scripts (for ENSA2 configuration)

- **Failover group name:** ASCS-Group
  - **Exec resource name:** script-ASCS-SAP-instance_NEC_10

    Modify "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"..
    Modify "SAP_ERS_INO" to the INO for ERS instance set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)".
    Modify "INAME" to the ASCS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)".

    Example in this manual

    ```
    set SID=NEC
    set SAP_ERS_INO=21
    set INAME=ASCS10
    ```

- **Failover group name:** ERS-Group
  - **Exec resource name:** script-check-ENSA2

    On check_ensa2.bat , modify <*ASCS_GROUP*> to the failover group name for ASCS, and <*ERS_GROUP*> to the failover group name for ERS.

– **Exec resource name:** script-ERS-SAP-instance_NEC_21

Modify "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)".

Modify "SAP_ERS_INO" to the INO for ERS instance set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)".

Modify the "APS" value to the AS instance number running on the same node. If the value is not correct, the result of sapcontrol -function GetSystemInstanceList might become incorrect after ASCS-Group failover.

Example in this manual

```
set SID=NEC
set SAP_ERS_INO=21
set INAME=ERS21
set APS=31 32
```

– **Exec resource name:** script-ERS-SAP-service_NEC_21

Modify "INSTANCE_RESOURCE_NAME" variable in setting.bat to the resource name set in SAP NetWeaver System Configuration Guide - "Setting up the ERS resource (for ENSA2 configuration)"

Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "INAME" to the ERS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "TIMEOUT" to the time in seconds until ERS instance starts or stops.

"TIMEOUT" is the time period used for each waiting process in the sample script (e.g. waiting process for sapcontrol command executed in the sample script).

Therefore, if more than 1 waiting processes exist in the same sample script, the total waiting time is calculated as "TIMEOUT" value multiplied by the number of the waiting process at a maximum.

The values for **Start Script Timeout** and **Stop Script Timeout** of the script resource must be considered as well.

The script confirms whether the instance has started (stopped) or not every "DELAY" seconds until the elapsed time reaches "TIMEOUT".

"ASCS_INSTANCE_HOST_NAME" is not required to be set.

Example in this manual

```
set INSTANCE_RESOURCE_NAME=script-ERS-SAP-instance_NEC_21
set SID=NEC
set INAME=ERS21
set TIMEOUT=600
set DELAY=5
set ASCS_INSTANCE_HOST_NAME=
```

Note: In order to confirm the time period required to start/stop the group resource for ERS instance, perform the start/stop of the group resource with 1 set for DELAY and check the alerts on

WebManager (for Internal Version 11.3*x*/12.0*x*) or Cluster WebUI (for Internal Version 12.1*x*or later).

2.3.2 Custom monitor

Set the following bundled sample scripts in a media as custom monitor resources.

Bundled sample scripts are listed below.

File name	Use
check_ensa2.bat	For ASCS/ERS exclusion control when ENSA2 is used
ers-mon-preaction.bat	Bundled script for the recovery of ERS instance monitoring
genw-SAP-HostExec.bat	For monitoring the SapHostExec.
genw-SAP-instance.bat	For monitoring the instance.
genw-SAP-service.bat	For monitoring the instance services.

On the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later) apply each sample script to the relevant custom monitor resource by using the script replacement function.

For details, refer to the following document:

"Reference Guide"
"Understanding custom monitor resources"

On the WebManager (for Internal Version 11.3*x*/12.0*x*)/Cluster WebUI (for Internal Version 12.1*x*or later) apply bundled sample script for the recovery of ERS instance monitoring to the ERS monitor resource by using the replace function of the recovery script.

For details, refer to the following document:

For Internal Version 11.3*x*/12.0*x*:

"Reference Guide"
"Displaying and changing the settings of a monitor resource (common to monitor resources)"

For Internal Version 12.1*x*or later:

"Reference Guide"
"Monitor resource properties"

The changes made in each version are listed below.

File name	EXPRESSCLUSTER Internal Version 11.3*x*/12.0*x*	EXPRESSCLUSTER Internal Version 12.1*x*or later
check_ensa2.bat	-	When ENSA2 is used, it triggers a monitoring error if the failover groups for ASCS and ERS are activated on the same node.

Continued on next page

Table 2.48 – continued from previous page

File name	EXPRESSCLUSTER Internal Version 11.3*x*/12.0*x*	EXPRESSCLUSTER Internal Version 12.1*x*or later
ers-mon-preaction.bat	It does not affect the function of SAP NetWeaver as an application server, so it ends normally even in the following cases. - According to the specification of SAP NetWeaver, ERS instance on a failover node must be stopped after the failover of ASCS instance was performed. As the stop of ERS instance was detected, ERS instance is supposed to be activated on other node than the failover destination of ASCS instance. - It is not considered as abnormal if the ERS could not be started due to the absence of ERS instance to be started or any other reasons.	For the sample script mentioned on the left, specify the end value by the "STRICT_RETVAL" parameter in clp_shi_connector.conf. For details, refer to SAP NetWeaver System Configuration Guide - "Setting items"
genw-SAP-HostExec.bat	It detects the abnormal termination of the process in SAP Host Agent by the return value of saphostexec command.	It detects the abnormal termination of the process in SAP Host Agent by the return value of saphostexec command. The detection accuracy has been improved.
genw-SAP-instance.bat	As a result of checking the statuses of the processes, which compose each instance, by sapcontrol -function GetProcessList, it triggers a monitoring error if the results are not all GREEN.	As a result of checking the statuses of the processes, which compose each instance, by sapcontrol -function GetProcessList, it triggers a monitoring error if the results are not all GREEN or contain any other status than GREEN or YELLOW. Use the "YELLOW_AS_ERROR" parameter in clp_shi_connector.conf for determining which case is recognized as a monitoring error. Refer to the SAP NetWeaver System Configuration Guide - "Setting items" for more details.

Usage of the sample scripts

- **Custom monitor name:** genw-ASCS-instance-ENQ

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Modify "INAME" to the ASCS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Although "PATH" is set to the J drive in this manual, set a drive letter appropriate to your configuration.

  When ENSA is used, set "TARGET" as enserver.EXE. When ENSA2 is used, set it as enq_server.EXE.

  Example in this manual

  ```
  set SID=NEC
  set INAME=ASCS10
  set PATH=%PATH%;S:\usr\sap\%SID%\%INAME%\exe
  set TARGET=enserver.EXE
  ```

- **Custom monitor name:** genw-ASCS-instance-MSG

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Modify "INAME" to the ASCS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Although "PATH" is set to the J drive in this manual, set a drive letter appropriate to your configuration.

  Modify "TARGET" to msg_server.EXE.

  Example in this manual

  ```
  set SID=NEC
  set INAME=ASCS10
  set PATH=%PATH%;S:\usr\sap\%SID%\%INAME%\exe
  set TARGET=msg_server.EXE
  ```

- **Custom monitor name:** genw-ERS1-instance (for ENSA configuration)

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "INAME" to the ERS1 instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "TARGET" to enrepserver.EXE.

  Example in this manual

  ```
  set SID=NEC
  set INAME=ERS21
  set TARGET=enrepserver.EXE
  ```

- **Custom monitor name:** genw-ERS2-instance (for ENSA configuration)

Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "INAME" to the ERS2 instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "TARGET" to enrepserver.EXE.

Example in this manual

```
set SID=NEC
set INAME=ERS22
set TARGET=enrepserver.EXE
```

- **Custom monitor name:** genw-ERS-instance (for ENSA2 configuration)

  Modify "SID" variable to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "INAME" to the ERS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "TARGET" to the enq_replicator.EXE.

  Example in this manual

  ```
  set SID=NEC
  set INAME=ERS21
  set TARGET=enq_replicator.EXE
  ```

- **Custom monitor name:** genw-PAS-instance-DISP

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Modify "INAME" to the PAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Modify "TARGET" to disp+work.EXE.

  Example in this manual

  ```
  set SID=NEC
  set INAME=DVEBMGS31
  set TARGET=disp+work.EXE
  ```

- **Custom monitor name:** genw-PAS-instance-IGS

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Modify "INAME" to the PAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Modify "TARGET" to igswd.EXE.

Example in this manual

```
set SID=NEC
set INAME=DVEBMGS31
set TARGET=igswd.EXE
```

- **Custom monitor name:** genw-AAS-instance-DISP

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Modify "INAME" to the AAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Modify "TARGET" to disp+work.EXE.

  Example in this manual

```
set SID=NEC
set INAME=D32
set TARGET=disp+work.EXE
```

- **Custom monitor name:** genw-AAS-instance-IGS

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Modify "INAME" to the AAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Modify "TARGET" to igswd.EXE.

  Example in this manual

```
set SID=NEC
set INAME=D32
set TARGET=igswd.EXE
```

- **Custom monitor name:** genw-DA1-instance

  Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Modify "INAME" to the DA1 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Modify "TARGET" to jstart.EXE.

  Example in this manual

```
set SID=DAA
set INAME=SMDA97
set TARGET=jstart.EXE
```

- **Custom monitor name:** genw-DA2-instance

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

Modify "INAME" to the DA2 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

Modify "TARGET" to jstart.EXE.

Example in this manual

```
set SID=DAA
set INAME=SMDA96
set TARGET=jstart.EXE
```

- **Custom monitor name:** genw-ASCS-service

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Modify "INAME" to the ASCS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"

  Although "PATH" is set to the J drive in this manual, set a drive letter appropriate to your configuration.

  Example in this manual

  ```
  set SID=NEC
  set INAME=ASCS10
  set PATH=%PATH%;S:\usr\sap\%SID%\%INAME%\exe
  ```

- **Custom monitor name:** genw-ERS1-service (for ENSA configuration)

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "INAME" to the ERS1 instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Example in this manual

  ```
  set SID=NEC
  set INAME=ERS21
  ```

- **Custom monitor name:** genw-ERS2-service (for ENSA configuration)

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify "INAME" to the ERS2 instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Example in this manual

  ```
  set SID=NEC
  set INAME=ERS22
  ```

- **Custom monitor name:** genw-ERS-service (for ENSA2 configuration)

  Modify "SID" variable to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Modify "INAME" to the ERS instance name set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

Example in this manual

```
set SID=NEC
set INAME=ERS21
```

- **Custom monitor name:** genw-PAS-service

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Modify "INAME" to the PAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of PAS Instance (Node#1)"

  Example in this manual

  ```
  set SID=NEC
  set INAME=DVEBMGS31
  ```

- **Custom monitor name:** genw-AAS-service

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Modify "INAME" to the AAS instance name set in SAP NetWeaver System Configuration Guide - "Installation of AAS Instance (Node#2)"

  Example in this manual

  ```
  set SID=NEC
  set INAME=D32
  ```

- **Custom monitor name:** genw-DA1-service

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Modify "INAME" to the DA1 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Example in this manual

  ```
  set SID=DAA
  set INAME=SMDA97
  ```

- **Custom monitor name:** genw-DA2-service

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Modify "INAME" to the DA2 instance name set in SAP NetWeaver System Configuration Guide - "Installation of DA Instances (Node#1 and Node#2)"

  Example in this manual

  ```
  set SID=DAA
  set INAME=SMDA96
  ```

- **Custom monitor name:** genw-hostexec1
- **Custom monitor name:** genw-hostexec2

  For SAPHOSTEXEC, use the default SAP NW path without modification.

- **Custom monitor name:** genw-check-ENSA2 (for ENSA2 configuration)

Copy the contents of check_ensa2.bat on genw.bat and rename the *<ASCS_GROUP>* of check_ensa2.bat as ASCS failover group and *<ERS_GROUP>* as ERS failover group.

Example in this manual

```
ASCS-Group
ERS-Group
```

Usage of the bundled sample scripts for recovery action (only for ENSA configuration)

- **Custom monitor name:** genw-ERS1-instance

  Modify the "SID" variable in setting.bat to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify the "SAP_ASCS_INO" to ASCS instance INO set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"
  Modify the "SAP_ERS_INO" to the sequence of ERS1 instance INO and ERS2 instance INO set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)" Use a space for delimiter.

  Example in this manual

  ```
  set SID=NEC
  set SAP_ASCS_INO=10
  set SAP_ERS_INO=21 22
  ```

- **Custom monitor name:** genw-ERS2-instance

  Modify "SID" to the SID set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)"

  Modify the "SAP_ASCS_INO" to ASCS instance INO set in SAP NetWeaver System Configuration Guide - "Installation of ASCS Instance (Node#1)"
  Modify the "SAP_ERS_INO" to the sequence of ERS1 instance INO and ERS2 instance INO set in SAP NetWeaver System Configuration Guide - "Installation of ERS Instances (Node#1 and Node#2)" Use a space for delimiter.

  Example in this manual

  ```
  set SID=NEC
  set SAP_ASCS_INO=10
  set SAP_ERS_INO=21 22
  ```

CHAPTER

THREE

LEGAL NOTICE

3.1 Disclaimer

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CHAPTER

FOUR

REVISION HISTORY

Edition	Revised Date	Description
1st	Apr 17, 2018	New guide
2nd	Apr 10, 2019	Correction of errors. 2.3.1. *How to use the script* 2.3.2. *Usage of the sample scripts* Added the configuration of ENSA2. 2.2.1. *An example of setting EXPRESSCLUSTER* 2.3. *Bundled scripts* Added the sample script required for each configuration. 2.3. *Bundled scripts* Added the list of changes made on sample scripts for each version. 2.3.1. *Script resources* 2.3.2. *Custom monitor* Added the explanation for **TIMEOUT** 2.3.1. *How to use the script*
3rd	Apr 10, 2020	Added description of **APS** 2.3.1. *How to use the script* Add term 2.1. *An example of setting environment on the SAP NW* Add required permissions 2.1.3. *OS Setting Example*
4th	May 13, 2020	Added SAP NOTE #2850906 1.6.1. *SAP NetWeaver documents*
5th	Jul 10, 2020	Correction of errors.(Moved **APS** description from script-PAS-SAP-instance_NEC_31, script-AAS-SAP-instance_NEC_32 to script-ERS1-SAP-instance_NEC_21, script-ERS2-SAP-instance_NEC_22) 2.3.1. *How to use the script*

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Table 4.1 – continued from previous page

Edition	Revised Date	Description
6th	Apr 09, 2021	Corresponds to the internal version 12.30.