Tivoli® System Automation for GDPS/PPRC HyperSwap Manager
Version 1 Release 1

Installation Guide

SC33-8270-03

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Note!
Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

This edition applies to version 1, release 1 of IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager (product number 5698-A44) and version 1, release 1 of IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager with NetView (product number 5698-A43), IBM licensed programs, and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters.

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About this document

This document describes how to install and customize IBM® Tivoli® System Automation for GDPS®/PPRC HyperSwap® Manager, and introduces its functions.

Who should use this document

This document is intended for:

- System programmers—primarily responsible for the installation, configuration, and customization of System Automation for GDPS/PPRC HyperSwap Manager
- Operators

Where to find more information

The IBM Tivoli System Automation for z/OS library

The following table shows the information units in the IBM Tivoli System Automation for z/OS® library:

Table 1. System Automation for z/OS library

Title	Order Number
IBM Tivoli System Automation for z/OS Planning and Installation	SC34-2571
IBM Tivoli System Automation for z/OS Customizing and Programming	SC34-2570
IBM Tivoli System Automation for z/OS Defining Automation Policy	SC34-2572
IBM Tivoli System Automation for z/OS User's Guide	SC34-2573
IBM Tivoli System Automation for z/OS Messages and Codes	SC34-2574
IBM Tivoli System Automation for z/OS Operator's Commands	SC34-2575
IBM Tivoli System Automation for z/OS Programmer's Reference	SC34-2576
IBM Tivoli System Automation for z/OS Product Automation Programmer's Reference and Operator's Guide	SC34-2569
IBM Tivoli System Automation for z/OS TWS Automation Programmer's Reference and Operator's Guide	SC34-2579
IBM Tivoli System Automation for z/OS End-to-End Automation Adapter	SC34-2580
IBM Tivoli System Automation for z/OS Monitoring Agent Configuration and User's Guide	SC34-2581

Related product information

The following table shows the books in the libraries on products that you will use in combination with System Automation for GDPS/PPRC HyperSwap Manager.

Table 2. Related products books

Title	Order number
GDPS/PPRC HyperSwap Manager V3.7 Installation and Customization Guide	ZG24-6746
GDPS V3.7 Messages and Codes	ZG24-1756
Tivoli NetView for z/OS Administration Reference	SC31-8854
Tivoli NetView for z/OS Application Programmer's Guide	SC31-8855

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Table 2. Related products books (continued)

Title	Order number
Tivoli NetView for z/OS Automation Guide	SC31-8853
Tivoli NetView for z/OS Command Reference Vol. 1	SC31-8857
Tivoli NetView for z/OS Command Reference Vol. 2	SC31-8858
Tivoli NetView for z/OS Customization Guide	SC31-8859
Tivoli NetView for z/OS Installation: Getting Started	SC31-8872
Tivoli NetView for z/OS Installation: Migration Guide	SC31-8873
Tivoli NetView for z/OS Messages and Codes Vol 1 (AAU-DSI)	SC31-6965
Tivoli NetView for z/OS Messages and Codes Vol 2 (DUI-IHS)	SC31-6966
Tivoli NetView for z/OS Programming Assembler	SC31-8860
Tivoli NetView for z/OS Programming Pipes	SC31-8863
Tivoli NetView for z/OS Programming PL/I and C	SC31-8861
Tivoli NetView for z/OS Programming REXX and the NetView Command List Language	SC31-8862
Tivoli NetView for z/OS Security Reference	SC31-8870
Tivoli NetView for z/OS User's Guide	SC31-8849

Chapter 1. Introduction

This document is about the following:

- System Automation for GDPS/PPRC HyperSwap Manager
- System Automation for GDPS/PPRC HyperSwap Manager with NetView®

Both of these are only available in combination with GDPS/PPRC HyperSwap Manager. They provide a limited-use version of IBM Tivoli System Automation for z/OS (SA z/OS) Version 3 Release 3. This saves you the cost of purchasing a full SA z/OS license because it is enough to give you all the functionality that is needed to implement a GDPS/PPRC HyperSwap Manager solution for data failover and recovery within a single sysplex.

The following chapters cover the steps that are required to install, set up and customize these products. Installation involves tasks that are necessary for either NetView or SA z/OS, or both. You can find more information about these individual tasks by referring to the appropriate NetView or SA z/OS manuals.

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Chapter 2. Installation and setup

This chapter provides details of the steps to follow to install System Automation for GDPS/PPRC HyperSwap Manager. This involves the following

1. Software prerequisites
2. Prepare for the installation:
   a. Prepare the MVS system
   b. Prepare the VTAM system
   c. Prepare NetView and the automation agent
   d. Prepare the automation manager
3. Update startup procedures:
   a. NetView startup
   b. Automation manager startup
4. Prepare the customization dialog
5. Set up the SA z/OS policy database
6. Customize the GDPS/PPRC HyperSwap Manager

For further details about installing NetView see *Tivoli NetView for z/OS Installation: Getting Started*, and for SA z/OS see *IBM Tivoli System Automation for z/OS Planning and Installation*.

Software prerequisites

System Automation for GDPS/PPRC HyperSwap Manager has the following software prerequisites:

- z/OS V1.9 or higher
- NetView for z/OS V5.2 or higher, if you are installing program number 5698-A44, System Automation for GDPS/PPRC HyperSwap Manager (NetView for z/OS V5.4 is delivered with program number 5698-A43, System Automation for GDPS/PPRC HyperSwap Manager with NetView)
- GDPS/PPRC HyperSwap Manager V3.7

Preparing to install

You need to carry out the following steps to prepare your system:

1. "Prepare the MVS system"
2. "Prepare the VTAM system" on page 5
3. "Prepare NetView and the automation agent" on page 5
4. "Prepare the automation manager" on page 6

Note: If you need to modify any members of the ING.SINGNPRM or use sample members of the ING.SINGSAMP libraries, copy them into private data sets and make your modifications there.

Prepare the MVS system

Table 3 on page 4 lists the members of the SYS1.PARMLIB data set that you have to edit. You do not need to edit any other members that are not given in this table.

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Table 3. SYS1.PARMLIB members that you have to edit

Member	Details
SCHED*xx*	Define NetView as *nonswappable* in MVS. You can use the sample SA z/OS member INGESCH from the ING.SINGSAMP library.
IEAAPF*xx*	Edit the IEAAPFxx member to add the following to the authorized program facility (APF): **SA z/OS** ING.SINGMOD1, ING.SINGMOD2 **NetView** CNMLINK, SCNMLNKN, SCNMLNK1 **GDPS** SGDPLOAD
LNKLST*xx*	Edit the LNKLSTxx member to add the following libraries: **SA z/OS** ING.SINGMOD1, ING.SINGMOD2 **NetView** CNMLINK, SCNMLNKN, SCNMLNK1 **GDPS** SGDPLOAD
LPALST*xx*	Edit the LPALST*xx* member to add the SA z/OS library ING.SINGMOD3 and the NetView library SCNMLPA1.
MPFLST*xx*	If you are already using an MPFLST*xx* member of your own, review the INGEMPF sample member in the ING.SINGSAMP library. Ensure that all required messages are defined with `AUTO(Y)`.
COMMND*xx*	On all GDPS systems, the COMMND*xx* member needs to contain the commands for the following: • The NetView subsystem interface (SSI) task procedure • The NetView startup procedure (see "NetView startup" on page 7) • The automation manager startup procedure (see "Automation manager startup" on page 7) If you are going to enable HyperSwap, include entries to start the three HyperSwap started tasks (`GEOXCFST`, `GEOXHSWP`, and `GEOYHSWP`) prior to NetView being started. Remember to include `SUB=MSTR` on all of the above `START` Commands.
IEFSSN*xx*	Ensure that IEFSSN*xx* contains all the subsystem record statements from the SA z/OS sample member INGESSN that is delivered in the ING.SINGSAMP library. If this has already been done during NetView installation, there are no further updates required to this member.
IEASYM*xx*	Add a SYSDEF statement in the member IEASYM*xx* to identify your user-defined systems symbols. Make sure that the NetView symbols are defined. For more details see *Tivoli NetView for z/OS Installation: Getting Started*.
LOAD*xx*	Add an IEASYM statement in member LOAD*xx* to identify the IEASYM*xx* member.

Prepare the VTAM system

To prepare the VTAM system, update the SYS1.VTAMLST data set. Edit the member that defines the NetView terminals to VTAM as follows:

1. Make sure that a new VTAM definition has been made if this is a new NetView installation. For more details see *Tivoli NetView for z/OS Installation: Getting Started*.
2. Include as many NetView operator subtask APPL statements as there are operators defined.

   Consider having a dynamic entry for these APPL statements, as follows:

   ```
   ING01*      APPL AUTH=(NVPACE,SPO,ACQ,PASS),PRTCT=ING01,         X
                  EAS=4,MODETAB=AMODETAB,DLOGMOD=DSILGMOD
   ```

   Note: `ING01` is the NetView domain ID in this example.

Prepare NetView and the automation agent

To prepare NetView carry out the following steps:

1. **Allocate required data sets:** Use the sample SA z/OS members INGALLC0, INGALLC2 and INGALLC4 from the ING.SINGSAMP library to allocate required data sets.
2. **Customize the NetView DSIPARM data set:** Concatenate the SINGNPRM and SGDPPARM product data sets to the DSIPARM DD statement in the NetView start procedure.

   Notes:

   a. The XCF group ID for the production system subplex is `INGXSG`. It is specified in the INGXINIT member of the ING.SINGNPRM library.

   b. The XCF group ID for the controlling system is INGXSG*xx*, where *xx* is the value of the z/OS system symbol &SYSCLONE. It is specified in the INGXKSYS member of the ING.SINGNPRM library.

3. **Update the NetView stylesheet:** Copy the INGSTGEN member of the ING.SINGSAMP library to the CNMSTGEN member of the DSIPARM data set of each NetView instance in your sysplex. You may modify it, if you need, but make sure that the following settings stay enabled:

   - `TOWER=SA`
   - `TOWER.SA=GDPS`
   - For the NetView instance on a production system:

     `TOWER.SA.GDPS=HM PROD`
   - For the NetView instance on the controlling system:

     `TOWER.SA.GDPS=HM KSYS`

4. **Copy the CTIHSAZZ PARMLIB concatenation:** Copy the CTIHSAZZ member from the ING.SINGSAMP sample library to SYS1.PARMLIB. Do not change this member. This member enables the automation manager to use the z/OS component trace for debugging purposes.
5. **Verify the number of available REXX environments:** Change the value of the maximum number of available REXX environments to at least 400. The variables to do this are in the sample assembly and linkedit job in SYS1.SAMPLIB(IRXTSMPE). Change the value of the ENTRYNUM parameter to at least 400. The sample is a user exit, so follow your SMP/E process for handling user exits.

6. **(Optional) Customize the AOFMSGSY member:** If you are not using the default task names and domain IDs that are provided by SA z/OS, you must customize the AOFMSGSY member in the ING.SINGNPRM data set as follows:
   a. If you have renamed any automation tasks in AOFOPF, you will need to make the corresponding changes here.
   b. If you want to define actions for messages that the SA z/OS NetView Automation Table does not trigger any action for, you may use the symbol %AOFALWAYSACTION%.

      This synonym contains the action statement that is used for all messages within a Begin-End block that SA z/OS does not trigger any action for. The default, NULL, is that no action will be taken and the message does not continue to search for further matches within the same AT.

      See "Integrating Automation Tables" in *IBM Tivoli System Automation for z/OS Customizing and Programming* for a description of these synonyms.

   You must customize it for each of your systems. The customized copy should be placed in the domain-specific data set for that system.

Prepare the automation manager

1. **Allocate required data sets:** Allocate required data sets using the sample SA z/OS members INGALLC3, INGALLC5, and INGALLC6 from the ING.SINGSAMP library.
2. **Copy sample members to HSAPLIB library:** View your automation manager startup procedure (see "Automation manager startup" on page 7) to see which library is declared in its HSAPLIB DD statement. Copy the following sample members of the ING.SINGSAMP library to that library:
   - HSAPRM00 for use in GDPS production systems
   - HSAPRMKS for use in GDPS controlling systems

   Adapt the parameter 'TAKEOVERFILE=' in your copies of HSAPRM00 and HSAPRMKS by specifying the takeoverfile datasets that were allocated by INGALLC3.
   If, in step 2 on page 5 of "Prepare NetView and the automation agent" on page 5, you have made any changes to the XCF group IDs, make the corresponding changes in your copies of HSAPRM00 and HSAPRMKS.
3. **Security Considerations:** The started task that invokes the automation manager (see INGEAMSA in the sample library) must have the following access rights:
   - If the started task is not a superuser it must have access to the OMVS segment.
   - If the automation manager is to be started before JES2 initialization has completed:
     - *For z/OS v1.9*, the started task must be defined by RACF as a superuser for UNIX system services
     - *For z/OS v1.10 or later*, superuser authorization is no longer required.
   - Read access for SYS1.PARMLIB data set.
   - Write access to the following data sets:
     - Trace data sets
     - The schedule override file
     - The configuration information file (DDname HSACFGIN)
     - The takeover file
4. **JES considerations:** Because the automation manager requires OMVS, OMVS must be customized to run without JES. (This means that OMVS should not try

to initialize colony address spaces under the JES subsystem as long as JES is not available.) Therefore the definitions in the BPXPRM*xx* member must match *one* of the following:

- Move all FILESYSTYPE specifications with an ASNAME parameter into a separate BPXPRM member. This can be activated with the automation policy by using the SETOMVS command after the message `BPXI004I OMVS INITIALIZATION COMPLETE` has been received.
- Add the parameter `'SUB=MSTR'` to the ASNAME definition, for example:

```
/*********************************************************/
/* ZFS   FILESYSTEM                                      */
/*********************************************************/
  FILESYSTYPE TYPE(ZFS) ENTRYPOINT(IOEFSCM)
        ASNAME(ZFS,'SUB=MSTR')
```

Update startup procedures

NetView startup

1. Create the NetView SSI startup procedure using the sample member CNMSJ010 in the NetView CNMSAMP library. For more details see "NetView and Subsystem Application Procedures" in *Tivoli NetView for z/OS Installation: Getting Started*.

   Ensure that the SA z/OS MSGIFAC parameter matches the value in the NetView stylesheet. It is recommended that you use the default in both cases.
2. Use the sample SA z/OS member INGENVSA from the ING.SINGSAMP library as your NetView startup procedure and customize it appropriately.
3. Carry out the following steps to grant access to NetView data sets:
   a. Authorize users to log on to NetView
   b. Use the sample SA z/OS member INGESCAT: Copy the INGESCAT member of the ING.SINGSAMP library to the DSIPARM concatenation.

      Make sure that INGESCAT is enabled by uncommenting the statement in the previously copied CNMSTGEN member:

      SECOPTS.CMDAUTH =TABLE.INGESCAT
   c. Authorize all started tasks for the STARTED class in SAF under a userid that has the proper authority for all required data sets

Automation manager startup

1. Use the sample SA z/OS member INGEAMSA from the ING.SINGSAMP library as your automation manager startup procedure and customize it appropriately.

Prepare the customization dialog

1. **Allocate required data sets:** Use the INGEDLGA sample members from the ING.SINGSAMP library to allocate required data sets. See "Step 3: Allocate Data Sets for the Customization Dialog" in *IBM Tivoli System Automation for z/OS Planning and Installation* for more details.

   Adapt the parameter 'CFGDSN=' in your copies of HSAPRM00 and HSAPRMKS by specifying the Control dataset containing the SA configuration (*.SOCNTL) that was allocated by INGEDLGA.
2. **Customize the INGEDLG sample member:** Copy INGEDLG to your SYSPROG or SYSEXEC library and adjust to match your target libraries for the customization dialog.

Set up the SA z/OS policy database

This is described in further detail in Chapter 3, "Customizing the policy database," on page 9.

Customize the GDPS/PPRC HyperSwap Manager

This is described in detail in the *GDPS/PPRC HyperSwap Manager V3.7 Installation and Customization Guide*.

Chapter 3. Customizing the policy database

SA z/OS allows you to define an automation policy for your enterprise that defines how your resources will be automated, monitored and controlled. The process of defining automation policy comprises:

- At the configuration focal point, where you have the customization dialog installed, creating the information in the policy database using the ISPF input panels of the customization dialog.
- Using the customization dialog BUILD function to produce the required configuration files
- Distributing the generated output to the sysplexes or standalone systems that you want to automate

To simplify this process, System Automation for GDPS/PPRC HyperSwap Manager comes with a best practices policy database called *HYPERSWAP that you can use as the basis for your automation policy. This chapter tells you:

- What is in the best practices policy
- How to create your own policy database from the *HYPERSWAP sample
- Which parts of this policy you need to customize to fit your particular configuration

Note: You can create *reports* for policy databases and use them to check the effects of any modifications that you make. For more information see "Creating Reports about Policy Databases" in *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

For details of how to build an automation control file from your policy database, refer to "Building and Distributing Configuration Files" in *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

Contents of the sample policy database

The *HYPERSWAP sample policy database for use with GDPS/HyperSwap Manager contains definitions for the following entry types:

- Systems (SYS)
- Processors (PRO)
- Group (GRP), that is, sysplexes and subplexes
- User entry types (UET)
- Auto operators (AOP)
- Status details (SCR)
- MVS components (MVC)
- System defaults (SDF)
- Notify operators (NFY)

Create the sample policy database

SA z/OS policy databases are created and maintained using the customization dialogs. To create the *HYPERSWAP policy database perform the following steps:

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1. Log on to TSO/E and enter `TSO INGEDLG` to display the Customization Dialog Primary Menu.
2. On the Customization Dialog Primary Menu enter `4` at the command line to select the Policies option by. This takes you to the Policy Data Base Selection panel.
3. Enter `new` at the command line on the Policy Data Base Selection panel. This takes you to the Create a New Policy Database panel.
4. On the Create a New Policy Database panel specify the following:
   - Policy Database Name
   - Enterprise Name
   - Data Set Name
   - `*EMPTY` in the **Model Policy Database** field

   Select *HYPERSWAP from the list of add-on policies and press Enter. This takes you to the New Policy Database Dataset Information panel.

   Note: You can view the associated documentation for the *HYPERSWAP policy database by entering the action code `V(iew)` in the **Action** field for it.
5. On the New Policy Database Dataset Information panel you can specify attributes for allocating the new data set. Press Enter to start creation of your new policy database. SA z/OS displays a Command Progress Display panel. When database creation has finished, the Entry Type Selection panel is displayed for your new database.

Modify policy database definitions

From the Entry Type Selection panel you can select the entry types that need to be modified; these are entry types:

- SYSTEM
- GROUP
- PROCESSOR
- USER E-T PAIRS

Further changes might be required to other entry types. For more information refer to *GDPS/PPRC HyperSwap Manager V3.7 Installation and Customization Guide*.

Entry type SYSTEM

The sample policy database defines the following systems:

- Production systems, SYS1, SYS2 and SYS3
- Controlling systems, SYK1 and SYK2

Rename these systems according to your configuration. Use the SYSTEM INFO policy item to change the data in the **Image/System name** field for each of your systems. Leave the **SDF Root Name** fields empty so that default values can apply.

If you have more production or controlling systems in your enterprise, create the appropriate number of new entries with the names that are required by your configuration. For each newly created entry, copy the data from one of the above-mentioned systems.

Use the WHERE USED policy item to link each newly created system to the appropriate groups, if necessary.

Entry type GROUP

The sample policy database defines four GROUP entry types:

- GDPSPLEX, of type STANDARD, that includes all systems of the physical sysplex
- GDPSCTL1, of type SYSPLEX, that includes the controlling system SYK1
- GDPSCTL2, of type SYSPLEX, that includes the controlling system SYK2
- SYSPLEX1, of type SYSPLEX, that includes all the production systems (SYS1–SYS3)

Note: If you need further controlling systems, ensure that each is in its own sysplex group.

Entry type PROCESSOR

Make sure your BCPii setup and customization has been done according to your hardware environment. For more information refer to *GDPS/PPRC HyperSwap Manager V3.7 Installation and Customization Guide*.

Customize the PROCESSOR entry type in the sample policy database depending on your hardware setup. Create further entries if needed. The following definitions need to be adapted according to your hardware environment:

- CPC Name / NAU
- Network Name
- Site/Location Name
- Auth Token
- LPAR names

Entry type USER E-T PAIRS

The sample policy database comes with two User E-T Pairs entry types:

- GDPS_DOMAINS_HM
- GDPS_OPTIONS_HM

Modify these as follows:

GDPS_DOMAINS_HM
Modify the E-T DATA policy for your entry (or entries) so that it reflects any modifications that you made for entry types SYSTEM or PROCESSOR (or both).

GDPS_OPTIONS_HM
Select the MASTER keyword in the E-T DATA policy for your entry (or entries) so that you can edit its list of system names.

Edit this list to reflect any modifications that you made for entry type SYSTEM. Do this by putting the name of your controlling systems first, followed by the names of the production systems, in the order that you want them to be picked as fallbacks for the controlling systems. For example:

```
'SYK1,SYK2,SYS1,SYS2,SYS3'
```

For more information refer to *GDPS/PPRC HyperSwap Manager V3.7 Installation and Customization Guide*.

Build the Control Files

When you have defined the policies for the SA z/OS components, use the BUILD command to create the configuration files. The BUILD command is available from various panels of the customization dialog. For more information about how to perform this step, refer to *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

You need to make the data in the configuration files available to the automation agents and automation managers.

Chapter 4. Using SA z/OS functions

This chapter provides details about the functions provided by System Automation for GDPS/PPRC HyperSwap Manager. These functions are categorized as follows:

- Commands that are useful for GDPS customers, see "Useful SA z/OS commands"
- Commands that are unavailable (also known as "fenced") in System Automation for GDPS/PPRC HyperSwap Manager, see "Unavailable SA z/OS commands and functions"
- Other commands

Note: There is no warranty or claim with regard to the behavior in System Automation for GDPS/PPRC HyperSwap Manager of any SA z/OS command that is not explicitly covered in this chapter.

Useful SA z/OS commands

Table 4 lists useful SA z/OS commands for GDPS. For further details refer to *IBM Tivoli System Automation for z/OS Operator's Commands*.

Table 4. Useful SA z/OS commands

Command	Use in GDPS
AOCTRACE	Debugging
DISPACF	Displaying automation control file (ACF) data
DISPAOPS	Displaying automated operators
DISPFLGS	Displaying automation flags
DISPMSGS	Displaying which automated operator handles messages
INGAMS	Displaying XCF group members; refreshing configuration data
INGAUTO	Displaying and setting automation flags
INGNTFY	Displaying notify operators

Unavailable SA z/OS commands and functions

The following SA z/OS commands or functions are not available in System Automation for GDPS/PPRC HyperSwap Manager:

- Resource Automation
- All Processor Operations functions
- All I/O Operations functions
- The NetView Management Console (NMC) focal point
- Event notification to Tivoli Enterprise Console® (TEC)
- Event notification to IBM Tivoli System Automation for Integrated Operations Management (SA IOM)
- Integration with the Tivoli Enterprise Portal (TEP)

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